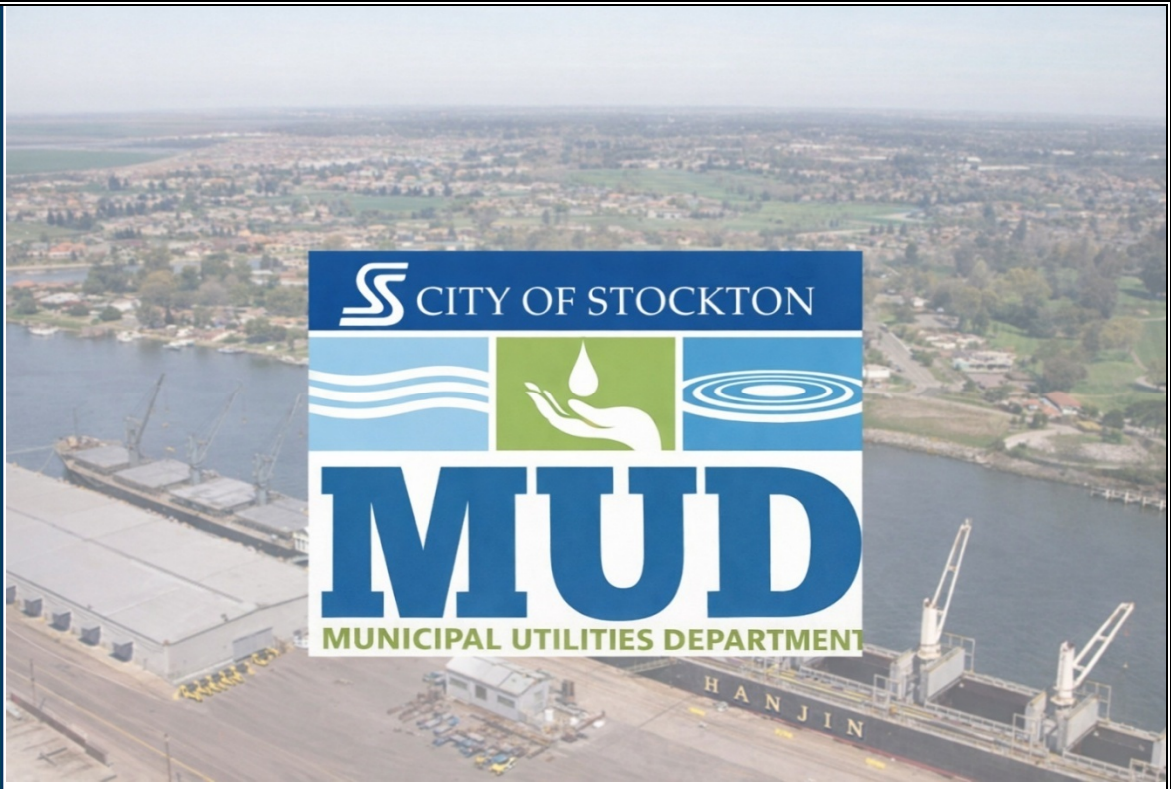


Public Draft 2025 Urban Water Management Plan

April 2026

PREPARED BY:

verdantas

80 Blue Ravine Road, Suite 280
Folsom, CA 95630
(916) 608-2212

[THIS PAGE LEFT BLANK INTENTIONALLY]

2025 URBAN WATER MANAGEMENT PLAN

PREPARED FOR

CITY OF STOCKTON
MUNICIPAL UTILITIES DEPARTMENT

APRIL 2026
PUBLIC DRAFT

[THIS PAGE LEFT BLANK INTENTIONALLY]

Table of Contents

Executive Summary **1**
Lay Description **2**
1 Introduction **1-1**
1.1 Background 1-1
1.2 System Overview 1-1
1.3 Content of the UWMP 1-2
1.4 Lay Description 1-3
1.5 Anticipated Document Use 1-3
1.6 UWMP Organization 1-3
2 Plan Preparation **2-1**
2.1 Basis for Preparing a Plan 2-1
2.2 Individual or Regional Planning and Compliance 2-2
2.3 Regional Planning 2-2
2.4 Fiscal or Calendar Year and Units of Measure 2-2
2.5 Coordination and Outreach 2-3
2.5.1 Wholesale and Retail Coordination 2-3
2.5.2 Coordination with Other Agencies and the Community 2-3
2.5.3 Notice to Cities and Counties 2-4
3 System Description **3-1**
3.1 General Description 3-1
3.2 Service Area and Boundary 3-3
3.3 Service Area Climate 3-3
3.4 Service Area Population and Demographics 3-5
3.4.1 Population Projections 3-7
3.4.2 Service Area Demographics and Socioeconomics 3-7
3.5 Land Uses Within the Service Area 3-10
3.5.1 Existing Land Use 3-10
3.5.2 Projected Land Use 3-10
4 Water Use Characterization **4-15**
4.1 Non-Potable vs. Potable Water Use 4-15
4.2 Past, Current, and Projected Water Use by Sector 4-15

4.2.1 Past Water Use 4-16
4.2.2 Current Water Use 4-17
4.2.3 Projected Water Use 4-18
4.2.4 Water Use for Lower Income Households 4-19
4.3 Estimated Future Water Savings 4-20
4.4 Distribution System Water Loss 4-21
4.5 Data Provided to Wholesale Agency – To Be Developed in Future Submittal 4-1
4.6 Climate Change 4-1
5 SB X7-7 Baselines, 2020 Targets, and 2025 Reporting 5-1
5.1 Compliance with 20% by 2020 Water Use Target 5-1
6 Water Service Reliability and Drought Risk Assessment 6-1
6.1 Reliability Assessment Approach 6-1
6.2 Service Area and Supply Overview 6-1
6.3 Surface Water Supplies 6-4
6.3.1 San Joaquin River Diversion 6-4
6.3.2 Stockton East Water District 6-5
6.3.3 Woodbridge Irrigation District 6-5
6.4 Groundwater Supplies 6-6
6.4.1 Groundwater Sources 6-6
6.4.2 Operational Role of Groundwater 6-8
6.4.3 Updated Groundwater System Condition and Capacity 6-8
6.4.4 Groundwater Reliability and Planning Considerations 6-10
6.5 Water Supply Data (Past Five Years) 6-11
6.6 Other Water Supplies 6-12
6.6.1 Wastewater Collection 6-12
6.6.2 Recycled Water 6-15
6.7 Water Supply Reliability Projects 6-16
6.7.1 Sodium Hypochlorite Facility 6-18
6.7.2 Land Annexation 6-18
6.7.3 Advanced Metering Infrastructure (AMI) 6-18
6.8 Summary of Water Supply Reliability 6-18
6.9 Energy Intensity 6-20

7 Water Supply Reliability and Drought Risk Assessment 7-1
7.1 Purpose and Planning Framework 7-1
7.2 Water Supply Reliability Assessment 7-1
7.2.1 SEWD Supply Assessment 7-1
7.2.2 WID Supply Assessment 7-2
7.2.3 San Joaquin River Supply Assessment 7-3
7.2.4 City of Stockton (COS) Groundwater Wells 7-4
7.2.5 Normal Year Supply and Demand Comparison 7-5
7.2.6 Single Dry Year Supply and Demand Comparison 7-6
7.2.7 Multiple Dry Years Supply and Demand Comparison 7-7
7.3 Drought Risk Assessment (DRA) 7-9
7.4 DRA Water Source Reliability 7-10
7.5 Summary 7-11
8 Water Shortage Contingency Plan 8-1
8.1 City Water Shortage Contingency Plan 8-1
8.2 Seismic Risk Assessment and Mitigation Plan 8-1
8.3 Water Shortage Contingency Plan Adoption, Submittal, and Availability 8-2
9 Demand Management Measures 9-1
9.1 Water Conservation Program Overview 9-1
9.2 Water Waste Prevention Ordinances 9-1
9.2.1 DMM Description 9-1
9.2.2 Implementation over the Past Five Years 9-1
9.2.3 Plans for Continued Implementation / Planned Activities 9-1
9.3 Metering 9-1
9.3.1 DMM Description 9-1
9.3.2 Implementation over the Past Five Years 9-2
9.3.3 Plans for Continued Implementation / Planned Activities 9-2
9.4 Conservation Pricing 9-2
9.4.1 DMM Description 9-2
9.4.2 Implementation over the Past Five Years 9-2
9.4.3 Plans for Continued Implementation / Planned Activities 9-2
9.5 Public Education and Outreach 9-2

9.5.1 DMM Description 9-2
9.5.2 Implementation over the Past Five Years 9-3
9.5.3 Plans for Continued Implementation/Planed Activities 9-4
9.6 Programs to Assess and Manage Distribution System Real Loss 9-4
9.6.1 DMM Description 9-4
9.6.2 Implementation over the Past Five Years 9-4
9.6.3 Plans for Continued Implementation / Planned Activities 9-4
9.7 Water Conservation Program Coordination and Staffing Support 9-5
9.7.1 DMM Description 9-5
9.7.2 Implementation over the Past Five Years 9-5
9.7.3 Plans for Continued Implementation / Planned Activities 9-5
10 Plan Adoption, Submittal, and Implementation 10-1
10.1 Notice of Plan Preparation 10-1
10.1.1 Notices to Cities, Counties, and the Public 10-1
10.2 Public Hearing and Adoption - To Be Developed in Future Submittal 10-1
10.3 Plan Submittal - To Be Developed in Future Submittal 10-2
10.3.1 Submitting a UWMP and Water Shortage Contingency Plan to DWR - To Be Developed in Future Submittal 10-2
10.3.2 Electronic Data Submittal - To Be Developed in Future Submittal 10-2
10.3.3 Submitting a UWMP, Including WSCP, to the California State Library - To Be Developed in Future Submittal 10-2
10.3.4 Submitting a UWMP to Cities and counties - To Be Developed in Future Submittal 10-2
10.4 Public Availability - To Be Developed in Future Submittal 10-2
10.5 Notification to Public Utilities Commission - To Be Developed in Future Submittal 10-2
10.6 Plan Implementation - To Be Developed in Future Submittal 10-2
10.7 Amending an Adopted Urban Water Management Plan - To Be Developed in Future Submittal 10-2
10.7.1 Amending a UWMP or WSCP - To Be Developed in Future Submittal 10-2
10.7.2 Submitting Revised Water Shortage Contingency Plan - To Be Developed in Future Submittal 10-2
10.8 California Department of Water Resources Review of Submitted Plans - To Be Developed in Future Submittal 10-2

List of Figures

Figure 1-1: COSMUD Water Service Areas 1-5
Figure 3-1: Service Area Facilities 3-2
Figure 3-2: Monthly Average Temperatures Within the City 3-4
Figure 3-3: Monthly Average Rainfall and Evapotranspiration 3-5
Figure 3-4: Screenshot of the City's Boundary Uploaded into the DWR Population Tool..... 3-6
Figure 3-5: Major Languages Spoken at Home 3-8
Figure 3-6: Population by Race 3-8
Figure 3-7: Bedroom Count in Occupied Housing Units ..... Error! Bookmark not defined.
Figure 3-8: Home Construction Year 3-8
Figure 3-9: Exiting Land Use Designations 3-13
Figure 3-10: New and Upcoming Developments 3-14
Figure 6-1: Existing Water Supply Sources 6-3
Figure 6-2: Active Groundwater Wells in COSMUD Service Area 6-7
Figure 6-3: Percent Water Supply by Source 6-11

List of Tables

Table 2-1: Public Water Systems (DWR Table 2-1 Retail) 2-1
Table 2-2: Plan Identification (DWR Table 2-2 Retail) 2-2
Table 2-3: Supplier Identification (DWR Table 2-3 Retail) 2-3
Table 2-4: Water Supplier Information Exchange (DWR Table 2-4 Retail) 2-3
Table 3-1: Population - Current and Projected 3-7
Table 3-2: Future Planned Development within COSMUD Water Service Area 3-10
Table 4-1: Historical Use by Sector 4-17
Table 4-2: 2025 Actual Total Uses for Potable and Non-Potable Water (DWR Table 4-1 Retail) 4-18
Table 4-3: Projected Water Use (DWR Submittal Table 4-2 Retail) 4-19
Table 4-4: Inclusion in Water Use Projections (DWR Submittal Table 4-3 Retail) 4-20
Table 4-5: Water Loss Audit Reporting (DWR Submittal Table 4-5 Retail) 4-22
Table 4-6: Progress Towards 2028 Water Loss Standard (Table 4-6 Retail) 4-1
Table 5-1: SB X7-7 2020 Target Progress (DWR Submittal Table 5-1 Retail) 5-2
Table 6-1: Summary of Well Facilities 6-9
Table 6-2: Volume of Groundwater Pumped in Past Five Years (DWR Table 6-1 Retail) 6-10
Table 6-3: Total Water Supply per Year (AFY) 6-11
Table 6-4: Wastewater Collected Within Service Area in 2025 (DWR Table 6-2 Retail) 6-13
Table 6-5: Wastewater Treatment and Discharge Within Service Area in 2025 (DWR Table 6-3 Retail) 6-14
Table 6-6: Recycled Water Direct Beneficial Use Within Service Area (DWR Table 6-4 Retail) 6-16
Table 6-7: 2020 Recycled Water Use Projection and 2025 Actual Use (DWR Table 6-5 Retail) 6-16
Table 6-8: Methods to Encourage Future Recycled Water Use (DWR Table 6-6 Retail) 6-16
Table 6-9: Expected Future Water Supply Projects or Programs (DWR Table 6-7 Retail) 6-17
Table 6-10: Water Supplies - 2025 Actual (DWR Table 6-8 Retail) 6-19
Table 6-11: Water Supplies - Projected (DWR Table 6-9 Retail) 6-19
Table 6-12: Energy Intensity (DWR Table 0-1B) 6-20
Table 7-1: Basis of Water Year Data for SEWD (DWR Table 7-1 Retail) 7-2
Table 7-2: Basis of Water Year Data for WID (DWR Table 7-1 Retail) 7-3
Table 7-3: Basis of Water Year Data for the San Joaquin River (DWR Table 7-1 Retail) 7-4
Table 7-4: Basis of Water Year Data for COS Groundwater Wells (DWR Table 7-1 Retail) 7-5
Table 7-5: Normal Year Supply and Use Comparison (DWR Table 7-2 Retail) 7-6
Table 7-6: Single Dry Year Supply and Use Comparison (DWR Table 7-3 Retail) 7-7
Table 7-7: Multiple Dry Years Supply and Use Comparison (DWR Table 7-4 Retail) 7-8
Table 7-8: Five-Year Drought Risk Assessment (DWR Table 7-5 Retail) 7-10

List of Attachments

Attachment A: UWMP Checklist Arranged By Subject
Attachment B: DWR Standardized Uwmp Tables For Retail Urban Water Suppliers
Attachment C: DWR Population Tool Input And Output
Attachment D: 2025 Water Shortage Contingency Plan
Attachment E: Water Supply Redundancy Evaluation
Attachment F: SEWD Contract
Attachment G: WID Contract
Attachment H: SMC Chapters 13.28 and 13.32
Attachment I: 2021 COS Water Master Plan Update 2021
Attachment J: City of Stockton 2020 Sphere of Influence
Attachment K: 2040 General Plan - Envision Stockton
Attachment L: SAWS Water Education Program Annual Report
Attachment M: Classroom Aquarium Education Program Slides
Attachment N: Notification Letters to Cities and Counties

EXECUTIVE SUMMARY

Executive Summary

The City of Stockton Municipal Utilities Department (COSMUD) prepared this 2025 Urban Water Management Plan (UWMP) to comply with the California Urban Water Management Planning Act. The UWMP serves as the COSMUD's long-term planning document for managing potable water supplies and demands over a 25-year planning horizon through 2050. This Plan updates the COSMUD's 2020 UWMP and reflects current system conditions, updated planning assumptions, and applicable state requirements. For purposes of this UWMP, the terms "COSMUD" and "City" are used interchangeably to refer to the City of Stockton's Municipal Utilities Department and its municipal water system. The term "City of Stockton" is used when referring to demographics and limits specific to the City of Stockton independent from COSMUD's service area.

SERVICE AREA AND WATER SYSTEM

COSMUD provides potable water service to the North and South Stockton service areas, while the central portion of the City is served by a private water utility. As of the end of 2025, COSMUD served approximately 51,887 service connections within a service area population of about 191,000. The City operates a diversified, conjunctive-use water system designed to provide reliable service under a wide range of hydrologic and operational conditions.

WATER SUPPLY PORTFOLIO

The City's water supply portfolio includes surface water diversions from the San Joaquin River under the City's water rights, treated potable water purchased from the Stockton East Water District (SEWD), untreated surface water purchased from the Woodbridge Irrigation District (WID) and treated at the City's Delta Water Treatment Plant, and groundwater extracted from municipal wells in the Eastern San Joaquin Groundwater Basin. These supplies are operated as an integrated system to balance reliability, sustainability, and operational flexibility. Surface water supplies are prioritized during normal conditions, while groundwater provides an essential supplemental and drought-response supply.

WATER USE AND DEMAND PROJECTIONS

The UWMP evaluates historical, current, and projected water use by customer sector and incorporates anticipated population growth, land use planning, and conservation requirements into demand projections. Projected demands are informed by the City's adopted General Plan, Sphere of Influence planning documents, and the 2021 Water Master Plan Update. While overall demand is expected to increase over time, conservation programs and efficiency standards are incorporated into projections to help manage future water use.

WATER SUPPLY RELIABILITY AND DROUGHT RISK

Water supply reliability is assessed by comparing projected supplies and demands under normal-year, single dry-year, and multiple consecutive dry-year conditions. The analyses demonstrate that the City has sufficient water supplies to meet projected demands through 2050 under all evaluated conditions using its adopted conjunctive-use strategy. The UWMP also includes a Drought Risk Assessment that evaluates the potential impacts of future drought conditions on water supplies and informs long-term drought preparedness.

WATER SHORTAGE CONTINGENCY PLANNING

The UWMP incorporates the City's Water Shortage Contingency Plan (WSCP), which establishes water shortage stages, response actions, enforcement authorities, and communication procedures. The WSCP provides a structured framework for responding to water supply shortages caused by drought, regulatory constraints, infrastructure disruptions, or emergency events, while protecting public health and safety.

DEMAND MANAGEMENT AND WATER USE EFFICIENCY

COSMUD implements a comprehensive water conservation program that includes water waste prevention ordinances, universal metering, conservation-based rate structures, public education and outreach, and programs to assess and manage distribution system water loss. These demand management measures support efficient water use, reduce system losses, and contribute to long-term water supply reliability.

Lay Description

COSMUD's 2025 UWMP documents the City's water management planning efforts to ensure adequate water supply to meet demands over the next 25 years. The Plan evaluates current conditions and future needs over a 25-year planning period through 2050 and explains how the City will continue to provide water during normal conditions, droughts, and emergencies.

Based on the analyses in this UWMP, the City has sufficient water supplies to meet projected demands through 2050 under normal conditions as well as during single dry years and multiple consecutive dry years. Future water demands are based on expected population growth, land use planning, and historical water use patterns. Although demand is expected to increase over time, the City's available supplies are adequate to meet these needs when operated as an integrated system.

As detailed in Chapter 4, the City's projected demands in 2050 are 31,670 AFY which will be met by the City's supply of 65,900 AFY. As discussed in Chapter 7, the City has adequate supply to meet demands during normal, single-dry, and multiple dry years. Through the Drought Risk Assessment (DRA), it was determined the City's existing supplies will meet 2026-2030 demands in drought

conditions without the need to implement their Water Shortage Contingency Plan (WSCP) which is discussed in Chapter 8.

CHAPTER 1 - INTRODUCTION

1 Introduction

This chapter provides a discussion of the fundamentals of the City of Stockton Municipal Utilities Department (COSMUD) 2025 Urban Water Management Plan (UWMP) including background information, a system overview, content of the UWMP, the required Lay Description of the UWMP, the anticipated document use, and the organization of this UWMP. COSMUD is the City of Stockton's (City) department responsible for water, wastewater, and stormwater utilities. For purposes of this UWMP, the terms "COSMUD" and "City" are used interchangeably to refer to the City of Stockton's Municipal Utilities Department and its municipal water system. The term "City of Stockton" is used when referring to demographics and limits specific to the City of Stockton independent from COSMUD's service area.

1.1 Background

This UWMP has been prepared for the City in compliance with Division 6, Part 2.6, of the California Water Code (CWC), Sections 10610 through 10645. The 1983 bill mandated urban water suppliers to create a UWMP for long-term water supply planning, outlining how they will ensure sufficient water resources for current and future needs.

Urban water suppliers having more than 3,000 service connections or supplying more than 3,000 acre-feet per year for retail or wholesale are required to submit an UWMP every 5 years to the California Department of Water Resources (DWR). The UWMP deadline for the 2025 cycle is set for July 1, 2026. The 2025 UWMP serves as an update to the 2020 plan, originally submitted to DWR in June 2021, with subsequent data provided in March 2022.

DWR released the final 2025 UWMP Guidebook in February 2026 which has been updated from the 2020 version. COSMUD's UWMP has been developed in close consultation with DWR's 2025 Guidebook, utilizes the DWR's guidance plan's checkboxes, and follows the recommended organization and outline presented in the Guidebook. Alongside the 2025 UWMP, the COSMUD also updated the previously developed Water Storage Contingency Plan (WSCP), which is included in this report. The WSCP outlines the City's approach to managing both expected and unexpected water shortages.

1.2 System Overview

The City of Stockton is in the Central Valley of California, approximately 50 miles south of Sacramento. The San Joaquin River originates in the Sierra Nevada and flows westward across the San Joaquin Valley before turning north and ultimately joining the Sacramento River at the Sacramento–San Joaquin Delta. COSMUD provides water service to the northern and southern portions of the City of Stockton. The California Water Service Company (Cal Water) provides water

service to Stockton's central area. This UWMP does not include the central area of the City of Stockton within its scope.

The North Stockton water service area is mostly residential, bordered by Eight Mile Road to the north, Cascade and Columbia Railroad to the east, Calaveras River to the south, and the City of Stockton limits to the west. The South Stockton water service area includes residential neighborhoods on the west side, along with industrial and agricultural land. Its boundaries are generally French Camp Slough to the north, the City of Stockton limits to the east and south, and the San Joaquin River to the west. As of the end of 2025, COSMUD serves 51,887 connections. Figure 1-1 illustrates COSMUD's service area.

COSMUD operates a diversified, conjunctive use potable water system serving the North and South Stockton service areas. The system relies on a combination of locally controlled surface water, purchased surface water, and groundwater supplies to provide operational flexibility and long-term reliability. Surface water sources include direct diversions from the San Joaquin River under the City's water rights, treated potable water purchased from the Stockton East Water District (SEWD), and untreated surface water purchased from the Woodbridge Irrigation District (WID) and treated at the City's Delta Water Treatment Plant.

SEWD supplies originate from regional reservoirs on the Stanislaus and Calaveras Rivers and provide treated water delivered directly into the City's distribution system. WID supplies originate from the Mokelumne River and support the City's surface water portfolio, with additional supply becoming available as agricultural lands are annexed and converted to urban use. Groundwater extracted from municipal wells in the Eastern San Joaquin Groundwater Basin supplements surface water supplies and serves as a critical reliability and drought response resource. COSMUD operates these sources as an integrated system, prioritizing surface water during normal conditions to support groundwater sustainability while maintaining groundwater capacity to respond to dry years, infrastructure outages, and emergency conditions.

Additional details on the City's water system, including water rights and other supply reliability information, are provided in Chapter 6.

1.3 Content of the UWMP

The UWMP serves as a planning tool to help the City manage and deliver water to its service area, outlining actions to address changing water and management conditions. The City's 2025 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.

This UWMP addresses all subjects required by the Urban Water Management Planning Act ("Act") which permits "levels of water management planning commensurate with the numbers of

customers served and the volume of water supplied." All applicable sections of the Act are discussed in this UWMP, and a completed copy of the 2025 Urban Water Management Plan Checklist organized by subject is included in Attachment A.

1.4 Lay Description

CWC §10630.5 requires each UWMP to include a Lay Description that explains the agency's water system and planning approach in clear, nontechnical language. The Lay Description must describe, at a high level, how much water the agency has available on a reliable basis, how much water it expects to need in the foreseeable future, and the strategies the agency will use to meet those needs. It must also summarize the key challenges facing the agency and include any additional information necessary to provide a general understanding of the agency's overall water management plan.

Consistent with the DWR Urban Water Management Plan Guidebook, a lay description and summary of COSMUD's water system, supplies, and demands is provided in the Executive Summary.

1.5 Anticipated Document Use

The City is committed to implementation of the projects, plans, and discussions provided within this document. The 2025 UWMP is intended to serve as a general, flexible, and open-ended document that periodically can be updated to reflect changes in water supply trends, and conservation and water use efficiency policies. This UWMP, along with other City planning documents, will be used by City staff to guide water use and management efforts through the year 2030, when the next UWMP is required.

1.6 UWMP Organization

The City's UWMP was prepared in accordance with DWR's 2025 Guidebook. This plan adheres to the recommended structure, which reflects revisions from earlier guidebooks. All tables recommended in the DWR Guidebook have been inserted into the appropriate UWMP chapters, and are included as in Attachment B.

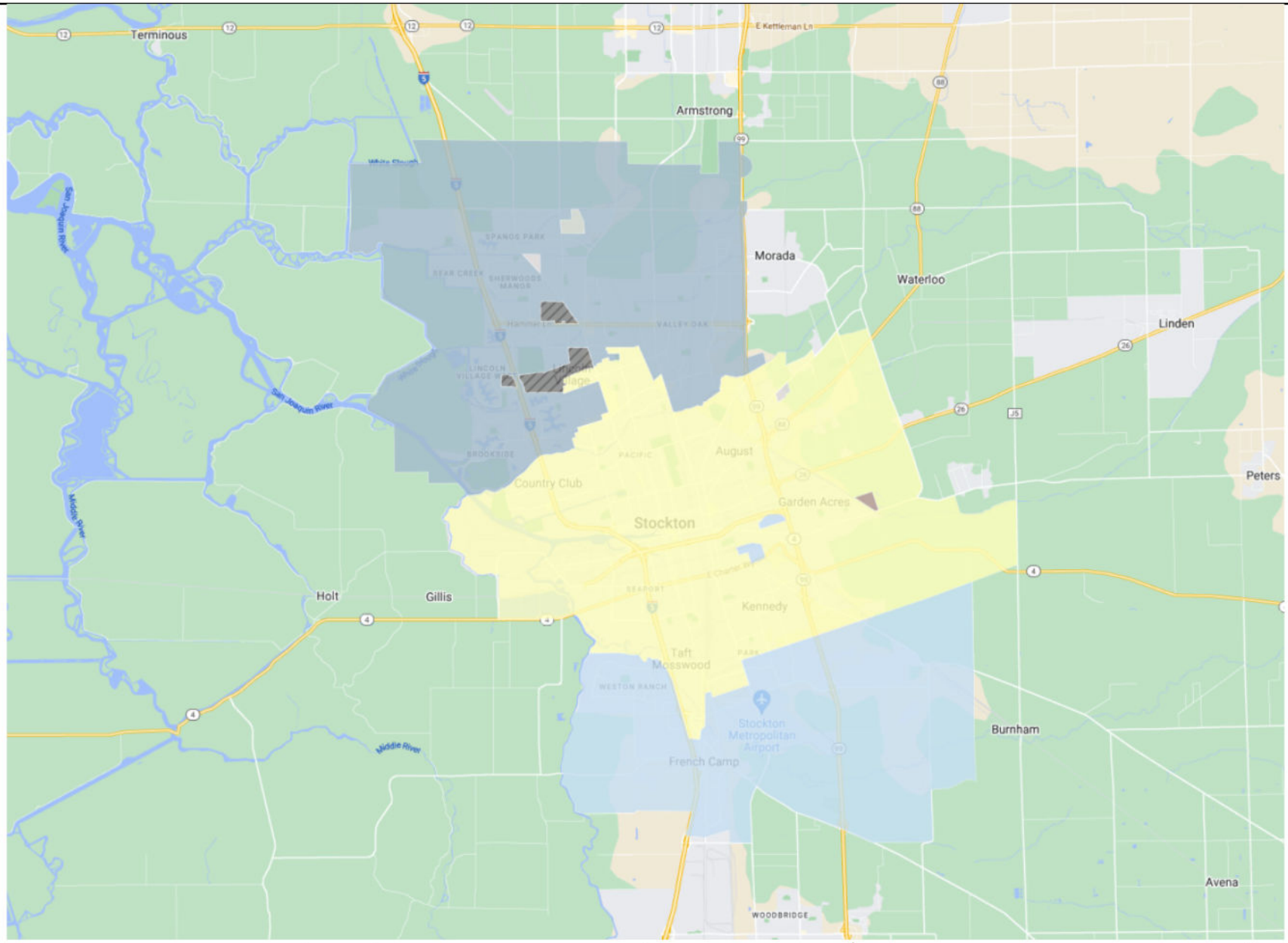
This 2025 UWMP is organized into the following chapters:

- Chapter 1: Introduction
- Chapter 2: Plan Preparation
- Chapter 3: Service Area Description
- Chapter 4: Water Use Characterization
- Chapter 5: SBX7-7 Baselines, 2020 Targets and 2025 Reporting
- Chapter 6: Normal-Year 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 2025 UWMP also contains the following appendices of supplemental information and data:

- Attachment A: UWMP Checklist Arranged by Subject
- Attachment B: DWR Standardized UWMP Tables for Retail Urban Water Suppliers
- Attachment C: DWR Population Tool Input and Output
- Attachment D: Draft 2025 Water Shortage Contingency Plan
- Attachment E: Water Supply Redundancy Evaluation
- Attachment F: SWED Contract
- Attachment G: WID Contract
- Attachment H: SMC Chapters 13.28 and 13.32
- Attachment I: 2021 COS Water Master Plan Update 2021
- Attachment J: City of Stockton 2020 Sphere of Influence
- Attachment K: 2040 General Plan - Envision Stockton



verdantas

80 Blue Ravine Rd., Suite 280
Folsom, CA 95630

Phone: (916) 608-2212

N

Legend

- COSMUD - SOUTH
- COSMUD - NORTH
- CAL WATER
- SAN JOAQUIN COUNTY - (COSMUD SERVED)
- SAN JOAQUIN COUNTY
- SEWD

CITY OF STOCKTON MUNICIPAL UTILITIES DEPARTMENT

WATER SERVICE AREA

FIGURE

1 - 1

CHAPTER 2 – PLAN PREPARATION

2 Plan Preparation

This chapter covers the methods involved in creating the 2025 UWMP. It discusses the rationale behind the plan, regional planning considerations, whether fiscal or calendar years are used for reporting, units of measurement, as well as how the plan is coordinated and how outreach is conducted.

The City prepared this UWMP with the assistance of its consultant, Verdantas, Inc, as permitted by Section 10620(e) of the CWC. During the preparation of the UWMP, previously developed planning documents for the City, including but not limited to the 2020 UWMP and the 2021 City of Stockton Water Master Plan Update, were reviewed and information from those documents incorporated, as applicable, into this UWMP.

2.1 Basis for Preparing a Plan

In accordance with the Urban Water Management Planning Act, urban water suppliers are required to prepare an UWMP every 5 years. 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. Every person that becomes a supplier is required to adopt an UWMP within one year of becoming a supplier. As demonstrated in Table 2-1, the City is a retail urban water supplier that provides water supplies to 51,887 potable water customers (connections) and supplies 32,060 AF of potable water.

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

Submittal Table 2-1 Retail: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025
			(AF)
CA3910012	City of Stockton	51,887	32,060
Total		51,887	32,060
NOTES: Volume of water supplied is in acre-feet (AF)			

COSMUD is categorized as a Public Water System (PWS) according to the California Health and Safety Code 116275. A PWS is defined as:

> *"…a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year".*

2.2 Individual or Regional Planning and Compliance

As shown in Table 2-2, the City has prepared the 2025 UWMP on an individual reporting basis, covering only the COSMUD service area as previously shown in Figure 1-1. The City has coordinated its efforts with SEWD, WID, Cal Water, San Joaquin County, and the Eastern San Joaquin Groundwater Authority.

Table 2-2: Plan Identification (DWR Table 2-2 Retail)

Select Only One	Type of Plan		Name of RUWMP or Regional Alliance
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	n/a
	☐	Water Supplier is also a member of a Regional Alliance	n/a
☐	**Regional Urban Water Management Plan (RUWMP)**		n/a

2.3 Regional Planning

The City has prepared this 2025 UWMP on an individual reporting basis; however, the City regularly collaborates with SEWD, WID, Cal Water, Eastern San Joaquin Groundwater Authority and San Joaquin County. These agencies work together to address water supply issues and assess both the region's available water resources and projected demands for the SEWD 2025 UWMP. SEWD additionally supported the City during the preparation of this plan. Detailed information regarding the anticipated future availability and reliability of water supplies from SEWD is provided in Chapters 6 and 7 of this UWMP.

2.4 Fiscal or Calendar Year and Units of Measure

The City's water supply and demand data are all presented on a calendar year basis and in units of acre-feet (AF). These units are used consistently for all data presented within this UWMP. COSMUD is a water retailer, and therefore, has presented all data into the DWR standard tables that are prescribed for retailers. Table 2-3 summarizes the reporting conventions used in this UWMP.

Table 2-3: Supplier Identification (DWR Table 2-3 Retail)

Type of Supplier (select one or both)	
☐	Supplier is a wholesaler
☑	Supplier is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables are in calendar years
☐	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Unit	AF

2.5 Coordination and Outreach

This section provides a discussion of the City's coordination efforts with surrounding water suppliers and with the public.

2.5.1 Wholesale and Retail Coordination

As shown in Table 2-4, the City purchases wholesale raw water from WID and treated water from SEWD. When a water agency depends on a wholesale provider for its water supply, both agencies must share details about their expected water supply and demand.

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 (h).
Wholesale Water Supplier Name
Stockton East Water District
Woodbridge Irrigation District

2.5.2 Coordination with Other Agencies and the Community

The development of the 2025 UWMP has been coordinated with other agencies and the community.

2.5.2.1 Coordination with Other Agencies

CWC §10620(d)(3) requires urban water suppliers to coordinate their Urban Water Management Plan (UWMP) preparation with relevant agencies in the region, including other water suppliers sharing a common source, water management agencies, and related entities. The City sent 60-day notices to SEWD, WID, and Cal Water to inform them about the UWMP's development. Additionally, SEWD and WID provided data needed for the City to complete chapters 6 and 7 of this UWMP.

2.5.2.2 Coordination with the Community - To Be Developed in Future Submittal

2.5.3 Notice to Cities and Counties

CWC §10621(b) requires that agencies notify cities and counties to which they serve water that their UWMP is being updated and reviewed. The CWC specifies that this must be done at least 60-days prior to the public hearing. The City sent notices regarding their UWMP development to San Joaquin County, and San Joaquin County Groundwater Authority. Further discussion of notices to cities, counties, and the public is included in Chapter 10.0 of this UWMP.

CHAPTER 3 – SYSTEM DESCRIPTION

3 System Description

This Chapter provides a description of the COSMUD's water system, including a general description, service area boundary maps, climate, population, demographics, and land uses.

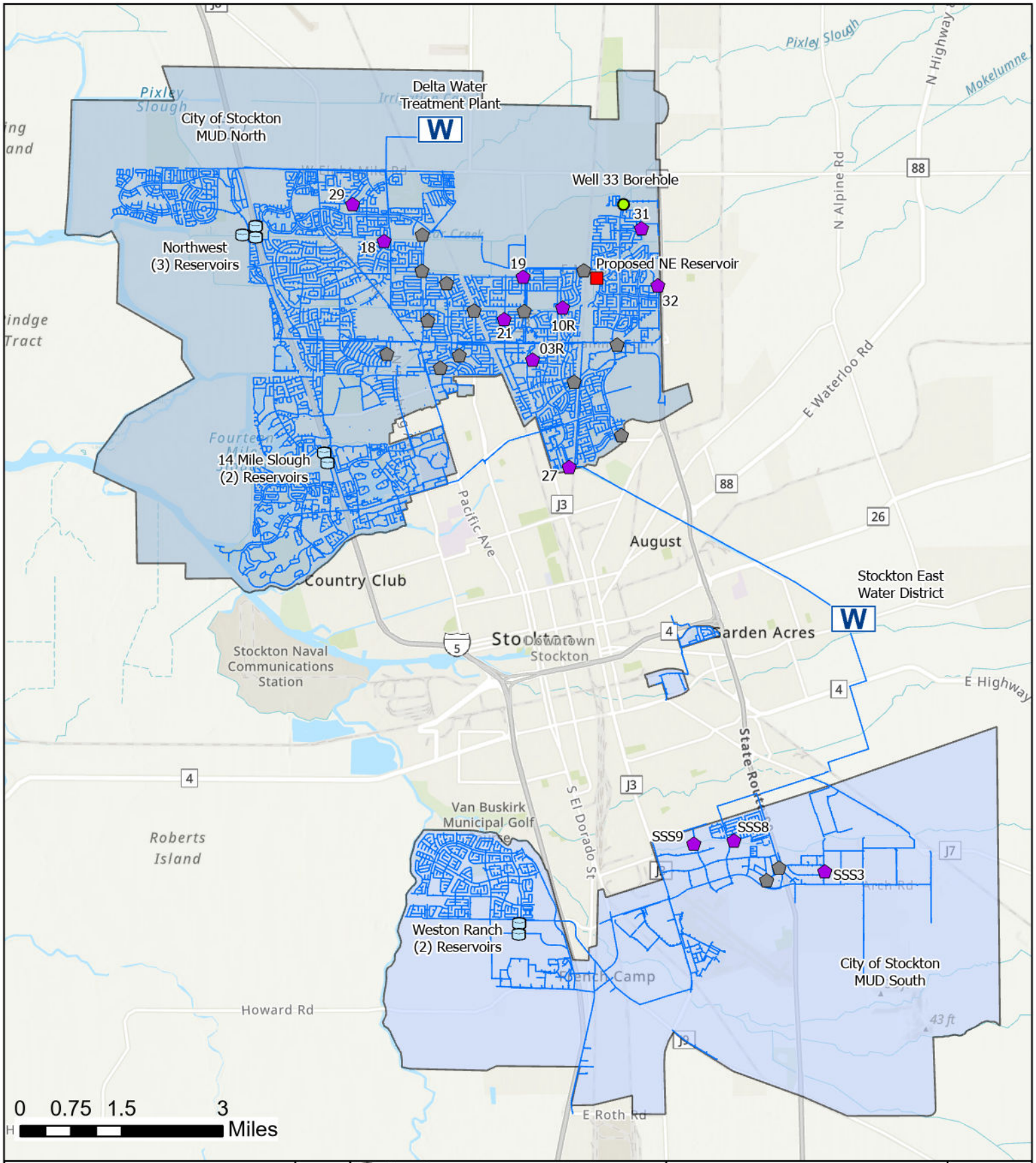
3.1 General Description

The City of Stockton is in San Joaquin County (County) within California's northern San Joaquin Valley, adjacent to the San Joaquin River and the Sacramento–San Joaquin Delta and serves as the primary urban center within the County. Founded in 1849 during the California Gold Rush and incorporated in 1850, the City of Stockton developed as a river-based transportation and commercial hub and has since evolved into a diverse urban community within a predominantly agricultural region. Land uses within the service area include residential, commercial, industrial, and public facilities, while surrounding agricultural lands and associated processing, transportation, and port activities continue to influence regional water demands.

COSMUD is a public municipal water supplier operated by the City of Stockton. COSMUD was established to provide and manage potable water, wastewater, and stormwater services within the City in support of public health, regulatory compliance, and planned urban growth. COSMUD serves the North Stockton and South Stockton service areas, while the central portion of the City is served by a private water utility, Cal Water. As a City of Stockton department rather than an independent special district, COSMUD operates under the City of Stockton's council–manager form of government, with policy oversight provided by the Stockton City Council and administrative responsibility delegated to the City Manager and Municipal Utilities Director.

COSMUD sources water by diverting supply from the San Joaquin River and buying raw water from WID, which is then processed at COSMUD's Delta Water Treatment Plant. Additionally, COSMUD purchases treated water from SEWD and extracts water from groundwater wells located in North Stockton and South Stockton. COSMUD's current water system is composed of 12 active groundwater wells, three storage reservoir sites (7 reservoirs), and 584 miles of distribution and transmission pipe. A map of the COSMUD's existing facilities is shown in Figure 3-1.

EXHIBIT 1



verdantas

80 Blue Ravine Rd., Suite 280
Folsom, CA 95630
Phone: (916) 608-2212

N

Reservoir
Water Well (Active)
Water Well (Inactive or Standby)
W Water Treatment Plant
Well 33 Borehole
Water line
City of Stockton Limits
Proposed Reservoir

CITY OF STOCKTON MUNICIPAL UTILITIES DEPARTMENT

FIGURE

SERVICE AREA FACILITIES

3-1

3.2 Service Area and Boundary

The City of Stockton is in San Joaquin County in north-central California, within the northern San Joaquin Valley. The City of Stockton lies approximately 50 miles south of Sacramento and 70 miles east of San Francisco. Interstate 5 and California State Highway 99 run north-to-south along the western and eastern sides of the City of Stockton. California State Highway 4 runs east-to-west and connects Interstate 5 and California State Highway 99.

As of the end of 2025, COSMUD serves 51,887 connections within their service area. The service area is approximately 44 square miles and is made up of the North Stockton and South Stockton areas. Central Stockton is served by Cal Water. The North Stockton water service area is mostly residential, bordered by Eight Mile Road to the north, Cascade and Columbia Railroad to the east, Calaveras River to the south, and the City limits to the west. The South Stockton water service area includes residential neighborhoods on the west side, along with industrial and agricultural land. Its boundaries are generally French Camp Slough to the north, the City limits to the east and south, and the San Joaquin River to the west.

Of the 51,887 current connections:

- 49,315 (95.04%) of the connections are residential
- 1,578 (3.04%) of the connections are commercial and institutional
- 975 (1.88%) of the connections are irrigation
- 19 (0.04%) of the connections are industrial

3.3 Service Area Climate

The City of Stockton's climate characteristics include hot, dry summers and mild, and wet winters. The Western Regional Climate Center (WRCC) maintains historic climate data for selected cities throughout the West. The Stockton Airport (AP) climate station is in South Stockton near the Stockton Metropolitan Airport. This station was selected to provide representative climate data for the City's service area. Seventy-seven (77) years of historic data obtained from the WRCC web site (www.wrcc.dri.edu) for the Stockton AP station was utilized for this climate data analysis.

The lowest average monthly temperature occurs in the winter and is approximately 38 degrees Fahrenheit. The highest average monthly temperature reaches approximately 92 degrees Fahrenheit in the summer. Figure 3-2 presents the monthly average temperature based on historical data.

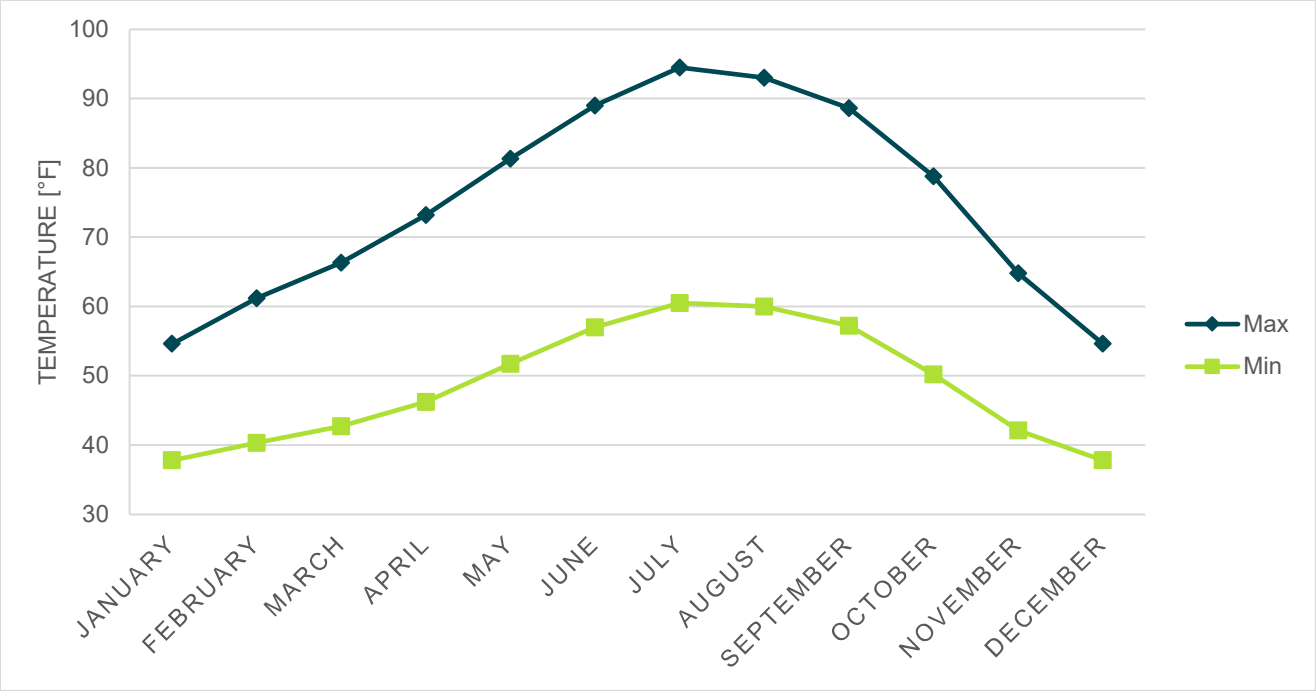


Figure 3-2: Monthly Average Temperatures Within the City
(Data Source: WRCC, Stockton AP Station)

The rainy season typically runs from November through March, with the heaviest rainfall observed between December and February. Summers are typically dry with little to no rainfall. Monthly precipitation during the winter months ranges from 1 to 2.5-inches. Low humidity conditions in the City of Stockton generally occur during the summer months from June through September. The moderately hot and dry weather during the summer months typically results in higher water demands.

The California Irrigation Management Information System (CIMIS) web site (www.cimis.water.ca.gov) tracks and maintains records of evapotranspiration (ETo) for select cities. ETo statistics used for this system come from the Holt station, located approximately 12 miles east of the City. ETo is a standard way to estimate how much water plants need. It represents the amount of water that would evaporate and be used by a healthy, well-watered grass field and is measured in inches over time.

The monthly average ETo and monthly average precipitation are presented in inches in Figure 3-3. As the figure indicates, a greater quantity of water is evaporated during June, July, and August in correlation to high temperatures and low humidity, which typically results in higher water demands.

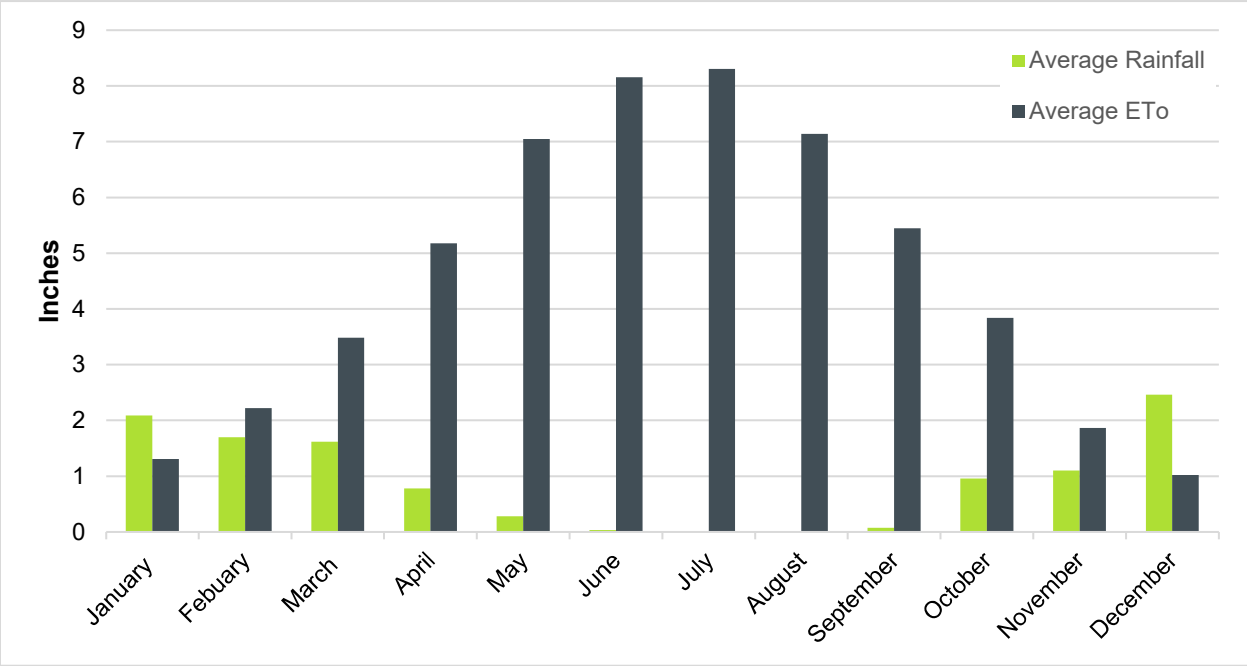


Figure 3-3: Monthly Average Rainfall and Evapotranspiration
(Data Source: CIMIS Holt Station 248, 2016-2025)

The City recognizes that climate change is expected to increase hydrologic variability within the service area, including hotter temperatures, longer and more frequent droughts, and more extreme precipitation events. These conditions may increase seasonal and peak water demands, reduce surface water reliability, and place additional stress on water system operations.

To account for these uncertainties, the UWMP evaluates water supply reliability under normal-year, single dry-year, and multiple consecutive dry-year conditions, which collectively reflect a range of potential future climate stresses. While climate change may increase the frequency and severity of drought conditions, the City's diversified, conjunctive-use water supply portfolio and demand management programs provide flexibility to maintain reliable service. The Water Shortage Contingency Plan (WSCP) serves as the primary mechanism for managing short-term or extreme climate-driven supply disruptions. The WSCP is discussed in Chapter 8 and is included in Attachment D of this UWMP.

3.4 Service Area Population and Demographics

The DWR Population Tool, found on DWR's 2025 UWMP website, was used to estimate both the current (2025) population and the population during the City's baseline period. COSMUD's water service area differs from the City boundaries, so the population tool shows only the population within the service area.

The DWR Population Tool determines service area population for census years by extracting U.S. Census data, at the block level, for City service boundaries that existed at each Census year in the tool (1990, 2000, and 2010). For census blocks that straddle the service area boundary, the tool determines the percentage of the census block's land area that is within the service area boundary and applies that percentage to the census block population. Census data for 2025 is not yet available using this tool; therefore, the tool calculates the 2025 population using historical data and current number of service connections. The City's service area used to determine the 2025 service area population is shown in Figure 3-4.

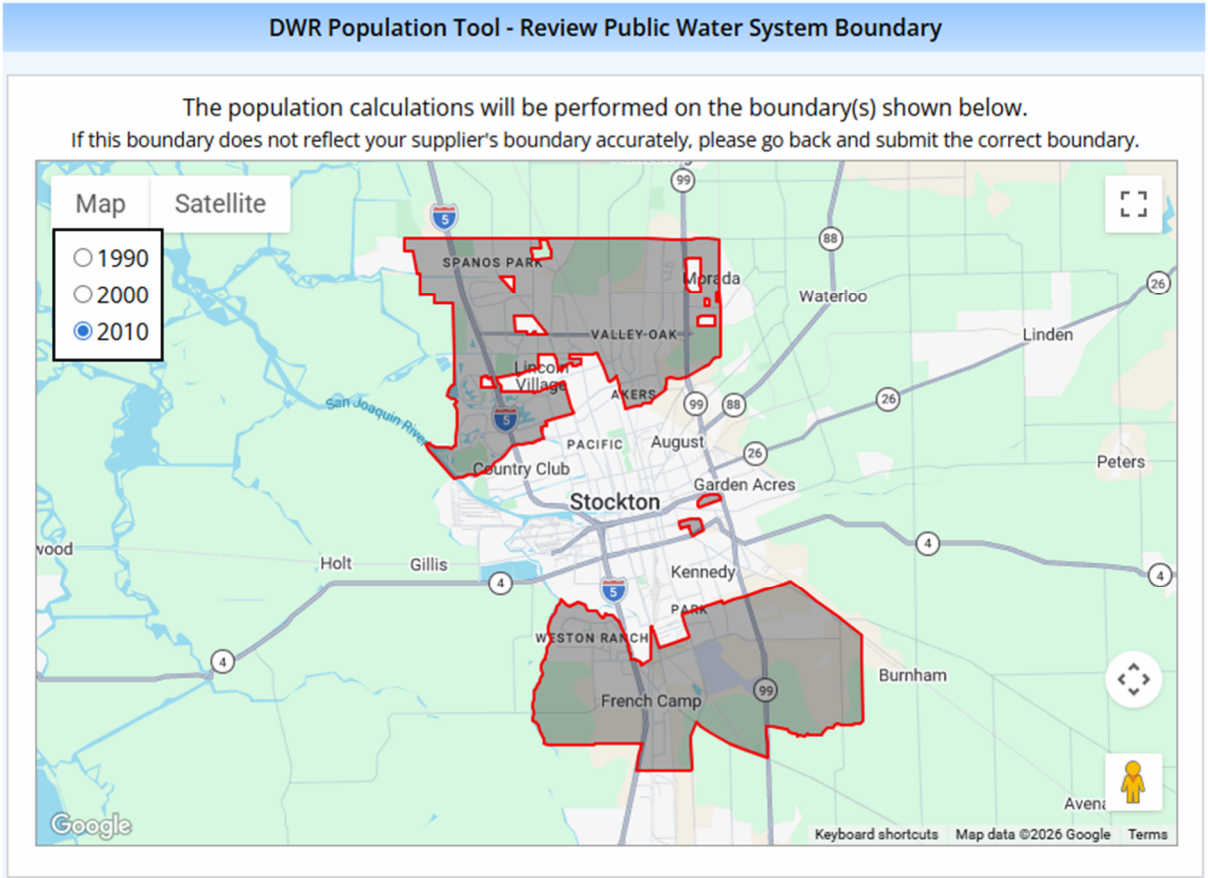


Figure 3-4: Screenshot of the City's Boundary Uploaded into the DWR Population Tool

The 2025 population within the COSMUD service area was estimated to be 191,302[1] based on the DWR Population tool. A summary of the input and output data from this tool is provided in Attachment C.

[1] This population estimate is based on SDWIS population estimates. The population estimate will be updated when DWR Population tool becomes available.

3.4.1 Population Projections

The City's January 2021 Water Master Plan Update (2021 WMP)[2], developed by West Yost Associates, outlines the projected future land uses that were determined by the City's 2040 General Plan Update (2040 GPU)[3] and April 2020 Sphere of Influence Plan/Municipal Service Review (April 2020 SOI/MSR Report)[4]. The 2021 WMP determined the future planned development within the City's water service area in the near-term (2030) and the future (2040). Future land use designations within the City's water service area include Single and Multi-Family Residential, Commercial, Industrial (limited to South Stockton), and Parks. The predominant focus of upcoming development plans is on single and multi-family residential units.

The 2021 WMP determined an annualized growth rate within the City of 1.44 percent. This estimate is based on the San Joaquin Council of Governments (SJCOG) population projections between 2020 and 2040 for the City. This annual growth rate was used to estimate the City's projected population in 5-year increments from 2025 to 2050. The current and projected population within the City's water service area is outlined in Table 3-1.

Table 3-1: Population - Current and Projected

Population Served	2025	2030	2035	2040	2045	2050 (opt)
	191,302*	205,478	220,705	237,060	254,627	273,496
NOTES: The 2025 population was estimated using the DWR Population Tool. The growth rate of 1.44% per year was used to estimate COSMUD's Service Area population for the years 2030 through 2050.						

*This population estimate is based on SDWIS population estimates. Will be updated when DWR Population tools become available.

3.4.2 Service Area Demographics and Socioeconomics

As previously stated, the COSMUD's water service area spans the north and south portions of the City of Stockton; therefore, the United States Census Bureau's City of Stockton profile was chosen as demographically representative for COSMUD's service area. Figures 3-5 through 3-8 demonstrate the primary race, language, and household demographics based on the US Census Bureau's 2020-2024 ACS 5-year estimates[5] and the US Bureau of Labor Statistics Economy at Glance[6].

[2] City of Stockton, 2021. *Water Master Plan Update.* City of Stockton, California. – Included in Attachment I

[3] City of Stockton. 2018. *Envision Stockton 2040 General Plan Update.* City of Stockton, California. – Included in Attachment K

[4] City of Stockton. 2020. *Sphere of Influence Plan and Municipal Service Review.* City of Stockton, California. – Included in Attachment J

[5] https://www.census.gov/quickfacts/fact/table/stocktoncitycalifornia/IPE120224#IPE120224

[6] https://www.bls.gov/eag/eag.ca_stockton_msa.htm#eag_ca_stockton_msa.f.1

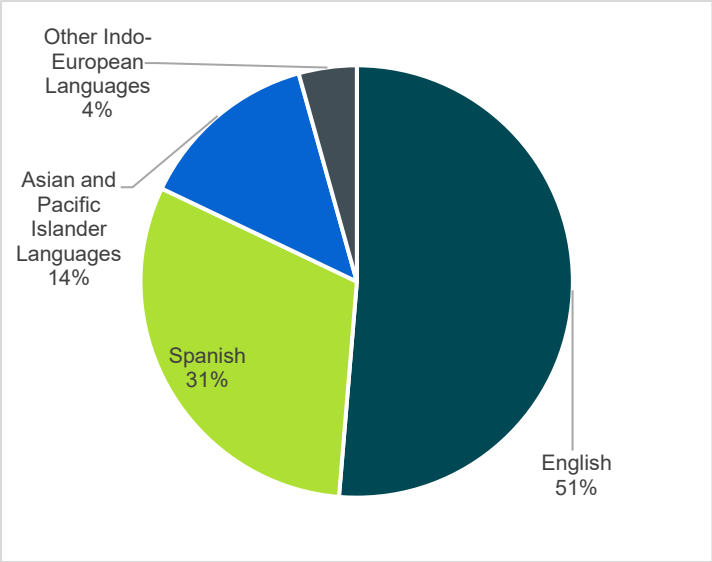


Figure 3-5: Major Languages Spoken at Home

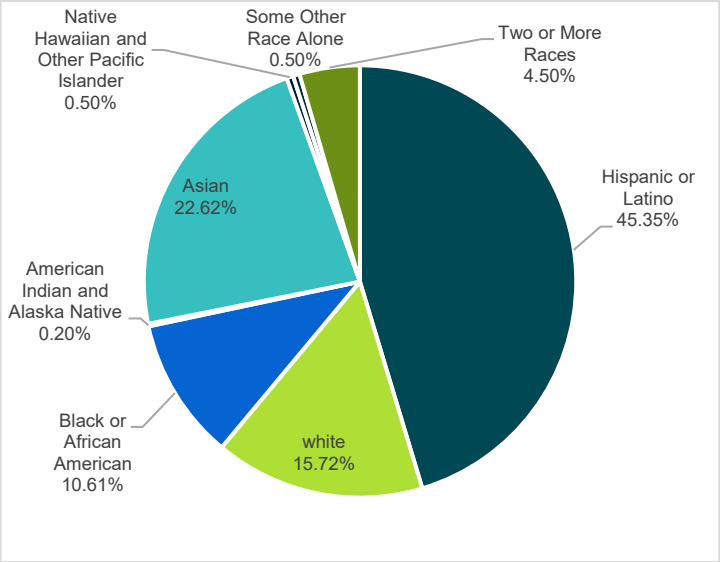


Figure 3-6: Population by Race

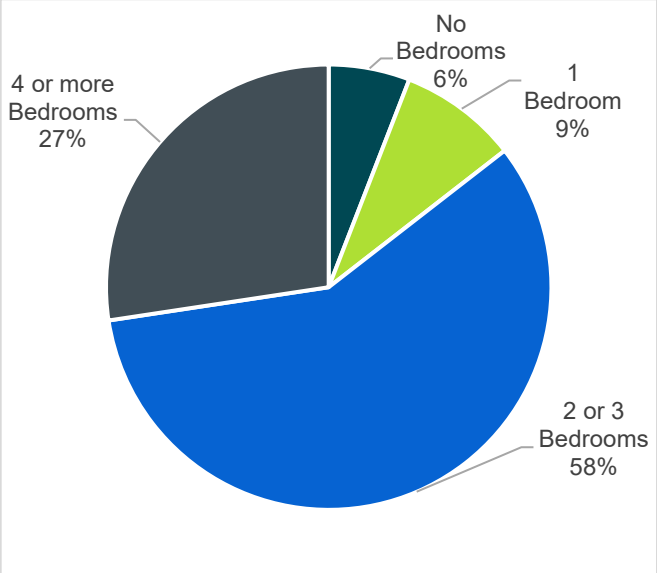


Figure 3-7: Bedroom Count in Occupied Housing Units

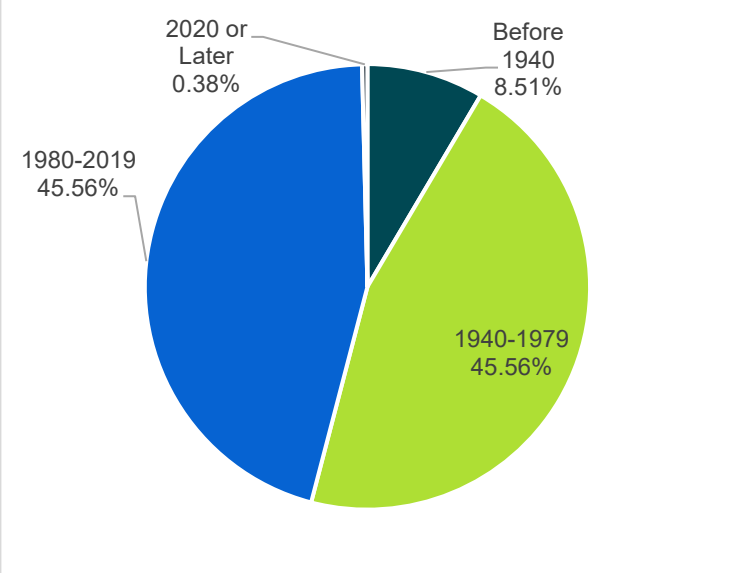


Figure 3-8: Home Construction Year

The City of Stockton is predominantly Hispanic or Latino while the primary language spoken at home is English follow by Spanish. The following describes additional demographics and information about the City of Stockton:

- Population and Demographics
    - The median age for the City of Stockton is 34.2 years.
- Housing, Families and Living Arrangements:
    - The average household size is 3.2 persons per household.
    - The median gross rent in the City of Stockton is $1,635.
    - The home ownership rate in the City of Stockton is 53.7%.
    - Figure 3-7 shows the bedroom count in occupied housing units
    - The median home construction year in the City of Stockton 1979.
- Economy, Income, Education, and Poverty:
    - The median household income for City of Stockton residents is $79,907.
    - 15.5% of all individuals and 22.5% of individuals under 18 are living in poverty.
    - The City of Stockton has an unemployment rate of 6.4%
    - The percentage of individuals aged 25 and up with at least a high school diploma is 77.5%. The percentage of individuals aged 25 and up with at least a bachelor's degree is 20.0%.
- Health
    - 10.1% of individuals under the age of 65 have a disability.
    - 7.7% of individuals under the age of 65 are without health insurance.

The City of Stockton's demographic and housing characteristics have several implications for water management and planning. The City of Stockton's relatively young population and larger average household size of 3.2 persons per household, combined with a substantial share of large single-family homes, suggest higher residential indoor water demand and potential outdoor irrigation needs.

The predominance of older housing —over half of units constructed prior to 1980—indicates a continued need for infrastructure rehabilitation, leak reduction, and targeted water-use efficiency programs to address aging plumbing and distribution systems.

Socioeconomic conditions, including moderate median household income, elevated poverty rates, and a diverse linguistic population, highlight the importance of affordability considerations,

equitable rate structures, customer assistance programs, and multilingual outreach for conservation and drought response.

3.5 Land Uses Within the Service Area

The City's 2021 WMP land use projections are based on projected land uses from the 2040 General Plan Update and the April 2020 SOI/MSR Report. It identifies planned development in the City's water service area through 2030 and 2040, including single- and multi-family residential, commercial, industrial (in South Stockton only), and parks. This section describes, in further detail, the existing and projected land use for COSMUD service area.

3.5.1 Existing Land Use

COSMUD's North Stockton water service area consists primarily of residential, single and multi-family land uses, with some commercial and parks land designations. The South Stockton water service area includes residential neighborhoods on the west side but is primarily composed of land designated as industrial. Figure 3-9 shows a map of the City's existing land use designations.

3.5.2 Projected Land Use

As previously stated, the City's 2021 WMP projects future land use within the COSMUD service area by using projections acquired from the City's 2040 GPU and the April 2020 SOI/MSR Report. The 2040 GPU defines anticipated development across sixteen study areas across the City, while the SOI/MSR Report addresses near-term (2030) development and associated municipal service needs. Together, these documents provide for approximately 40,900 new residential dwelling units city-wide, with SOI/MSR projects assumed to be completed by 2030 and remaining planned projects by 2040.

As listed in the City's 2021 WMP, Table 3-2 provides an overview of anticipated development within the COSMUD water service area, categorized by land use designation in accordance with the 2040 GPU and SOI/MSR Report.

Table 3-2: Future Planned Development within COSMUD Water Service Area
(Data Source: 2021 WMP)

Future Land Use Designation	Units	Near-Term (2030) Total Development	Future (2040) Total Development
North Stockton			
Single Family Residential	DU	2,100	16,700
Multi Family Residential	DU	500	4,212
Commercial	Acres	23	167

Future Land Use Designation	Units	Near-Term (2030) Total Development	Future (2040) Total Development
Industrial	Acres	0	0
Parks	Acres	41	451
South Stockton			
Single Family Residential	DU	0	8,955
Multi Family Residential	DU	0	1,575
Commercial	Acres	55	273
Industrial	Acres	1,354	1,753
Parks	Acres	9	224

As of April 2025, the City's planning website lists seven development agreements within COSMUD's service area. Figure 3-10 shows the location of the major development projects listed in this section:

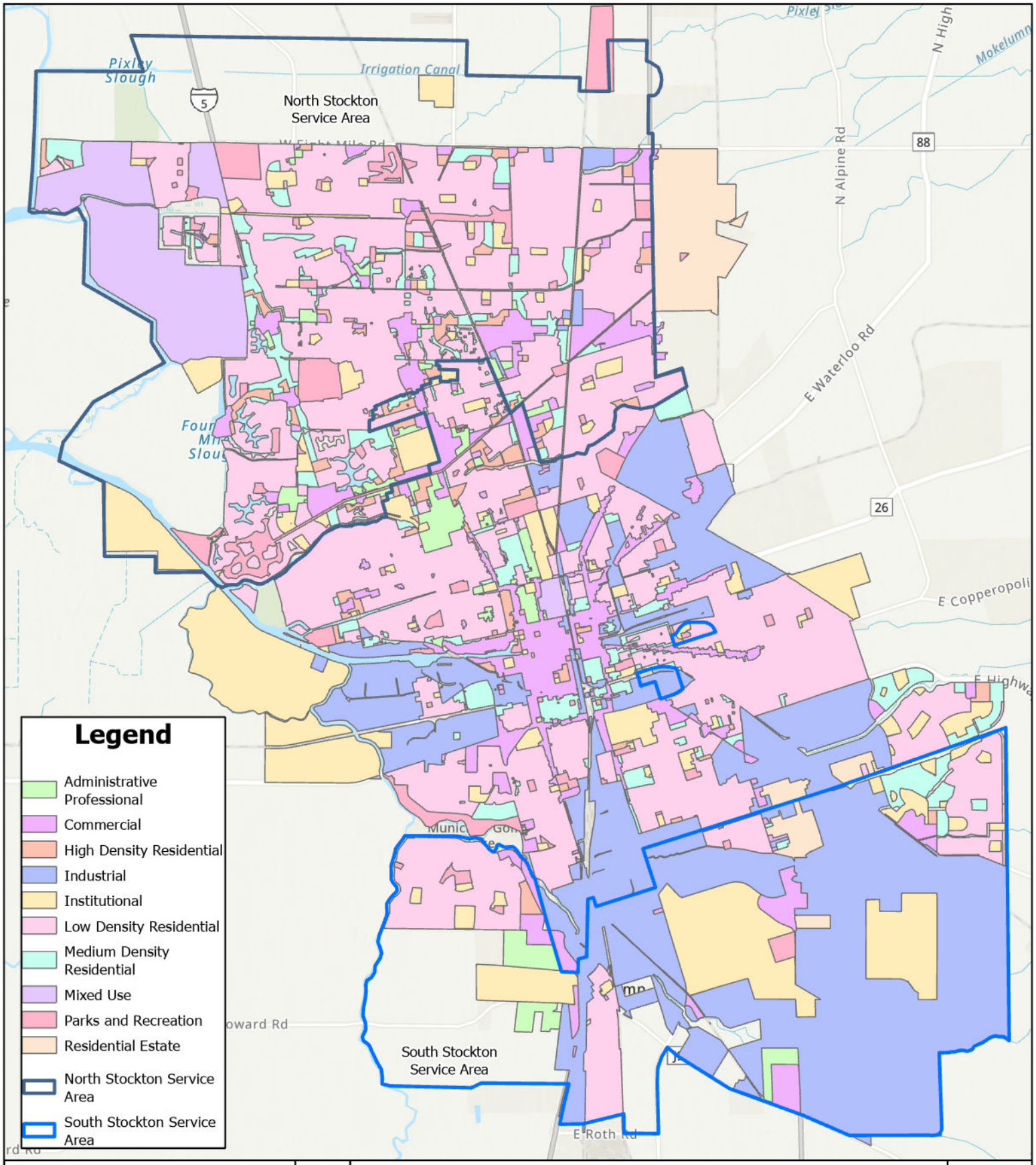
- Westlake at Spanos Park West (North Stockton): The development agreement facilitates construction of approximately 689.6 acres into a 2,800-unit residential community. This project is currently under construction.
- Crystal Bay (North Stockton): Planned residential community encompassing approximately 173 acres and 1,343 dwelling units, featuring a range of park and open space amenities in the northwest area of the City. This project has been approved but construction is pending.
- Delta Cove (North Stockton): The addition of 1,545 residential units. This project has been approved but construction is pending.
- Cannery Park (North Stockton): This project initially proposed the construction of 1,116 single-family detached housing units and 210 multi-family housing units, 1,452,508 square feet of light industrial business parkland, and 1,078,763 square feet of commercial land use. This project is under construction.
- Sanctuary (North Stockton): This project proposed 5,758 units of residential development on approximately 1,967 acres. This project is approved and pending construction.
- Mariposa Industrial (South Stockton): This project will establish a new industrial development of seven warehouses on approximately 203.48 acres on six largely vacant parcels with agricultural uses and two residences. This project is under construction.
- Mariposa Lakes (South Stockton): This project includes the addition of 10,566 residential units. The Mariposa Lakes site is comprised of approximately 3,810 acres of unincorporated

lands located four miles southeast of downtown Stockton and 3.5 miles northeast of the Stockton Metropolitan Airport. This project is approved and pending construction.

In an April 2024 Major Residential Project Map posted on the City's planning webpage, the City lists six additional large residential projects within COSMUD's service area in addition to the already listed City development agreements, including the 1,409-unit LeBaron Ranch Subdivision. These developments add up to approximately 5,350 additional residential units. Additionally, an Active Multi-Family Housing Development Map posted on the City's planning webpage and updated in July 2024, lists five additional multi-family housing developments totaling approximately 870 units within the COSMUD service area.

North Stockton will experience the largest increase in residential development. The largest planned development within this area is the Sanctuary development. The Mariposa Lakes Project in South Stockton is the largest planned development within the City. Even though this development site falls within both the COSMUD and Cal Water service areas, the Water Master Plan Update conservatively assumes that COSMUD will provide water to the entire Mariposa Road Community area. The Mariposa Industrial development will also provide South Stockton with an increase in commercial and industrial development.

EXHIBIT 1



verdantas

80 Blue Ravine Rd., Suite 280
Folsom, CA 95630
Phone: (916) 608-2212

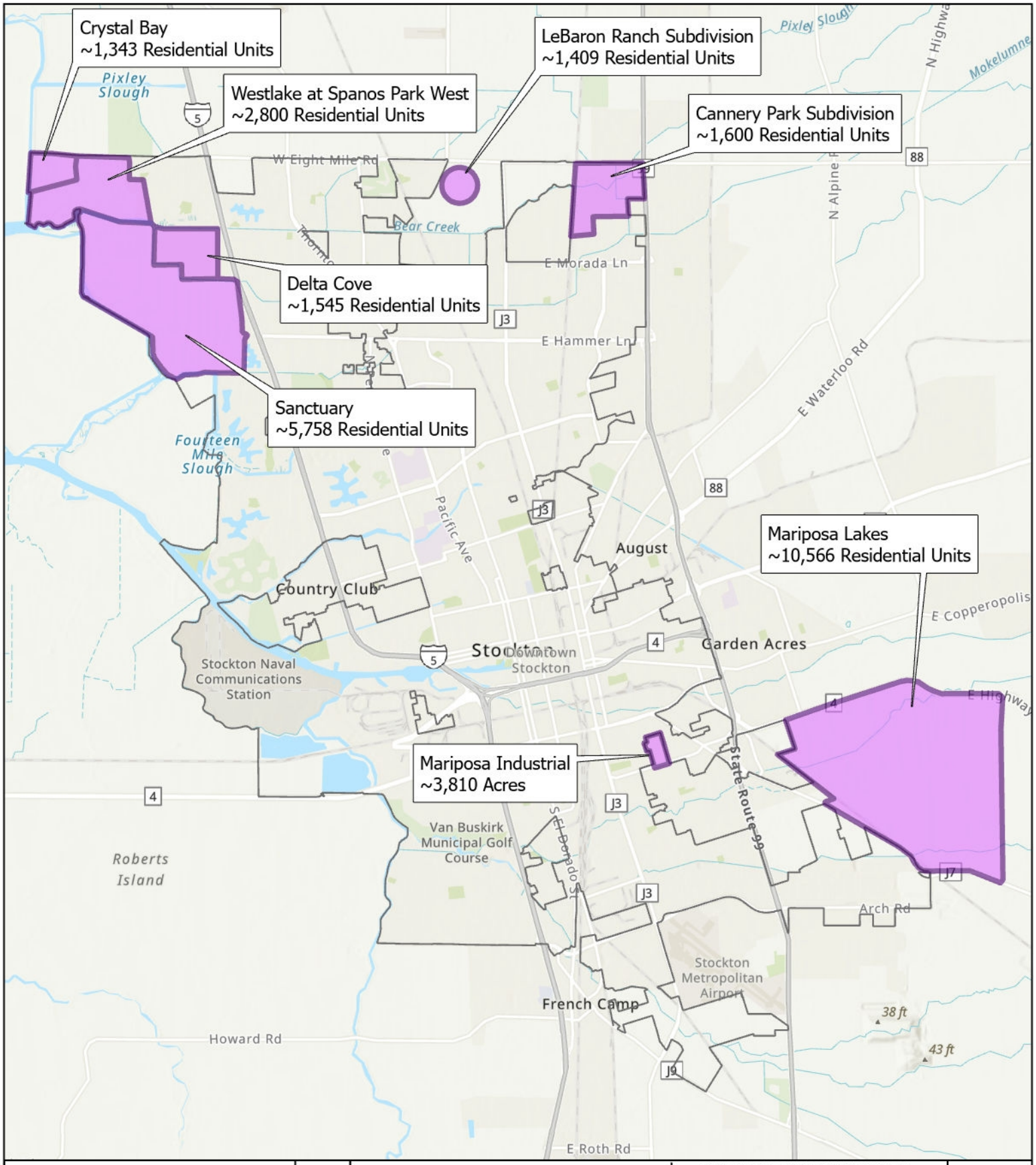
N

CITY OF STOCKTON MUNICIPAL UTILITIES DEPARTMENT

FIGURE

EXISTING LAND USE DESIGNDATIONS

3-9



verdantas

80 Blue Ravine Rd., Suite 280
Folsom, CA 95630
Phone: (916) 608-2212

N

City of Stockton Limits

0 0.75 1.5 3 Miles

CITY OF STOCKTON MUNICIPAL UTILITIES DEPARTMENT

NEW AND UPCOMING DEVELOPMENTS

FIGURE 3-10

CHAPTER 4 – WATER USE CHARACTERIZATION

4 Water Use Characterization

The purpose of this chapter is to summarize COSMUD's use of potable water within their service area. To provide a complete picture of how the water is being allocated and used, the water use is divided by customer types. Once customer types are established, historical water use, current water use, and projected water use will be examined. COSMUD's water loss data and future estimated savings are examined, alongside low-income household water use.

4.1 Non-Potable vs. Potable Water Use

Potable water is water which has been deemed safe for consumption and is treated to ensure there are no biological, chemical, or physical impurities within the final product. COSMUD solely supplies potable water within its service area and does not distribute non-potable water of any kind. COSMUD gets its water from multiple sources, including surface water from the intake on the Sacramento San Joaquin Delta and Mokelumne River via wholesale water from Woodbridge Irrigation District (WID) which is then treated at the Delta Water Treatment Plant (DWTP). The disinfection process of DWTP uses chloraminate which is not compatible with free chlorine disinfection. The South Stockton service area uses free chlorine disinfection; therefore, the DWTP only serves the North Stockton service area.

Surface water imported from the Stanislaus River and Calaveras River is purchased from the wholesale source Stockton East Water District (SEWD). The surface water is treated by SEWD and can be distributed to the entire COSMUD service area.

There are twelve (12) active wells and four (4) standby wells in the North Stockton distribution area. In the South Stockton distribution area, there are two (2) active and two (2) standby wells. The majority of COSMUD's distribution network is made up of treated surface water, and the wells are used as supplementary water supplies when necessary.

4.2 Past, Current, and Projected Water Use by Sector

DWR identifies ten distinct categories of water use. Within COSMUD's service area, water use is tracked and reported in seven of these categories, while the remaining three are not applicable. The sectors that make up COSMUD's service area include single family, multi-family, commercial, landscape, sales/transfers/exchanges to other suppliers, industrial, and other. The sectors in which COSMUD has identified their water use are 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.
- Landscape – Water connections supplying water solely for landscape irrigation. Such landscapes may be associated with multi-family, commercial, industrial, or institutional/governmental sites, but are considered a separate water use sector if the connection is solely for landscape irrigation.
- Sales/Transfers/Exchanges to other Suppliers – DWR has included "Transfers" as a part of the Sales/Transfers/Exchanges to other Suppliers sector. COSMUD receives water from other suppliers and therefore would have a sector for "Transfers outlined in the UWMP water use sectors table. A transfer is considered a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer, sale, lease, or exchange of water.
- 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.
- Other – Any other water demand that is not adequately described by the water sectors defined above. System water losses are not to be reported in the "Other" category.

Furthermore, DWR has defined additional sectors which are not applicable in COSMUD's water use case. The sectors not included within COSMUD's service area include Conjunctive Use, Groundwater Recharge, Saline Intrusion Barriers, Agricultural, and Institutional/Governmental water use types.

4.2.1 Past Water Use

Table 4-1 outlines the historical water use by sector, as outlined in the UWMP from 2010, 2015, and 2020.

Table 4-1: Historical Use by Sector

Use Type (Sector)	2010*	2015*	2020**
Single Family	18,639	13,764	15,758
Multi-Family	3,047	2,854	3,030
Commercial	4,471	3,652	4,700
Landscape	3,392	2,152	3,255
Sales/Transfers/Exchanges to other Suppliers	163	1,476	1,830
Industrial	642	723	709
Other (optional)	53	-	132
Distribution System Water Loss	3,107	1,699	4,991
Total	**33,496**	**26,320**	**34,404**

* Source: COSMUD 2020 UWMP Table 4-1
** Source: COSMUD 2020 UWMP Table 4-2
Note: Units are in acre-feet (AF)

Over a 10-year period, COSMUD's water consumption has increased by less than 1,000 AF. This increase can be attributed to increased commercial consumption, sales/transfers/exchanges to other suppliers, and increased losses in the water distribution system. The data show a decrease in single family and multi-family use type within COSMUD's service area.

4.2.2 Current Water Use

The current water use for COSMUD is reflected in Table 4-2. The sectors listed in the table reflect the sole water use sectors found within COSMUD's service area.

Table 4-2: 2025 Actual Total Uses for Potable and Non-Potable Water (DWR Table 4-1 Retail)

Submittal Table 4-1 Retail: 2025 Actual Total Uses for Potable and Non-Potable Water Water Code Section 10631(d)(1)			
Use Type		2025 Actual Water Use	
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 (OPTIONAL) Drop down list	Volume (AF)
Add additional rows as needed			
Single Family		Potable	15,374
Multi-Family		Potable	2,927
Commercial	Includes Institutional/Governmental use type	Potable	6,083
Landscape	Irrigation	Potable	3,400
Sales/Transfers/Exchanges to other Suppliers	Metered to San Joaquin County	Potable	931
Industrial		Potable	526
Other (optional)	Hydrant Meters/Jumpers	Potable	70
Distribution System Water Loss		Potable	2,749
Subtotal Potable			32,060
Subtotal Non-Potable			0
Total			32,060
NOTES: Volume is measured in Acre-Feet (AF)			

4.2.3 Projected Water Use

Table 4-3 outlines the projected water use per sector from 2030 through 2050. Projected water demands were calculated assuming an annual population growth rate of 1.44%, or 7.20% every 5 years. This growth rate was applied as a generalized growth rate to each sector to make a conservative estimate of water demands in the next 25 years.

Table 4-3: Projected Water Use (DWR Submittal Table 4-2 Retail)

Submittal Table 4-2 Retail: Total Uses of Potable, and Non-Potable Water - Projected Water Code Section 10631(d)(1)							
Use Type		**Projected Water Use** (Report To the Extent that Records are Available)					
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 (OPTIONAL) Drop down list	**2030** (AF)	**2035** (AF)	**2040** (AF)	**2045** (AF)	**2050** (AF)
Single Family		Potable	16,481	17,668	18,940	20,303	21,765
Multi-Family		Potable	3,138	3,364	3,606	3,865	4,144
Commercial	Includes Institutional/Governmental use type	Potable	6,521	6,990	7,494	8,033	8,612
Landscape	Irrigation	Potable	3,645	3,907	4,189	4,490	4,813
Sales/Transfers/Exchanges to other Suppliers	Metered to San Joaquin County	Potable	998	1,070	1,147	1,230	1,318
Industrial		Potable	564	604	648	695	745
Other (optional)	Hydrant Meters/Jumpers	Potable	75	80	86	92	99
Distribution System Water Loss		Potable	2,947	3,159	3.387	3,630	3,892
		Subtotal Potable	34,368	36,843	39,496	42,339	45,388
		Subtotal Non-Potable	0	0	0	0	0
		Total	34,368	36,843	39,496	42,339	45,388

It should be noted that population growth does not equate to each sector equally, but in order to maintain conservative water demand, the growth rate was uniformly applied to all sectors. When the DWR's population tool is updated, the water use projections will be updated to more accurately reflect projected consumption.

4.2.4 Water Use for Lower Income Households

The DWR requires retail water suppliers to include projected water use for lower-income households in their projected water use for the UWMP. Including lower-income projected water use will assist the City in addressing the requirement of Government Code 65589.7, which prioritizes lower income households water needs.

The City of Stockton's 2040 General Plan includes its updated Housing Element for 2023-2031. The report classifies 31.7% of the population as low-income households, which is defined as households making less than 80% of the area's median income of $85,000, adjusted for family size.

Table 4-2 and Table 4-3 have lower income households included in their projections. This is confirmed in Table 4-4 below.

Table 4-4: Inclusion in Water Use Projections (DWR Submittal Table 4-3 Retail)

Submittal Table 4-3 Retail: Inclusion in Water Use Projections Water Code Section 10631 (a), 10631 (d)(4)(A), and 10631 (d)(4)(B)	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) **Drop down list (y/n)**	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. **OPTIONAL** Suppliers may complete Optional Submittal Table 4-4 R to quantify the expected savings.	California Code of Regulations, Title 23 Waters, Division 2 DWR, Chapter 2.7 Model Water Efficient Landscape Ordinance (MWELO), updated 2015
Are Lower Income Residential Demands Included In Projections? (Refer to Appendix K of UWMP Guidebook) **Drop down list (y/n)**	Yes
OPTIONAL If the method for accounting Lower Income Residential Demands has been included, provide page number where this accounting can be found. (An example is included in Appendix K.)	n/a

Using projected water use data from Table 4-3, and the information from the City's updated Housing Element, it is estimated that approximately 6,300 AF will be allocated to lower income households in the year 2050.

4.3 Estimated Future Water Savings

Water savings from codes, standards, ordinances, or transportation and land use plans can decrease water use and are allowed to be incorporated into COSMUD's demand projections. As of 2020, COSMUD was able to reduce their water consumption by 20% as outlined in Chapter 5 of this UWMP. This conservation was accomplished via public outreach campaigns as well as an adherence to MWELO standards to decrease irrigation water use. Until May 21, 2024, the City was in a Stage 2 Water Shortage Emergency but has since downgraded to a Stage 1 Water Shortage Emergency. This

enforces Stockton Municipal Code (SMC) 13.28 Water Conservation Guidelines, which include the following:

- Outdoor watering is only allowed between 6:00pm and 8:00pm on the following days:
  - Sunday/Wednesday for addresses ending in 0, 2, 4, 6, or 8
  - Tuesday/Saturday for addresses ending in 1, 3, 5, 7, or 9
- Wash vehicles with a hose that has a shutoff nozzle or similar device, or at a car wash that uses recycled water.
- No watering non-functional turf at commercial, industrial, and institutional properties.
- No watering outdoor landscapes during and within 48 hours after measurable rainfall.
- No using running water to clean driveways, sidewalks, or other paved areas, unless for health and safety purposes.

As COSMUD has implemented MWELO practices for the entirety of this updated UWMP, the water savings has been incorporated into data found in Table 4-2 for water use projections; therefore, the data reflects these passive savings in the future.

The SMC Chapters 13.28 (Water Conservation) and 13.32 (Water Storage Emergencies) is included in Attachment H.

4.4 Distribution System Water Loss

Water system losses are divided into two categories – apparent losses and real losses. Apparent losses are made up of systematic data handling errors, customer metering inaccuracies, and unauthorized consumption. Real losses are made up of physical water losses within the water system. Real water losses include leaks, breaks, and overflows. Real losses can be exacerbated by a lengthened duration of each leak, break, or overflow.

COSMUD has reported the water system losses to the DWR Water Loss Audit Program for the five (5) years leading up to 2025, as shown in Table 4-5. COSMUD's water loss audit data transitioned from the calendar year to fiscal year beginning in July 2021. Due to this transition, there is a gap in audit data for the first half of 2021.

Table 4-5: Water Loss Audit Reporting (DWR Submittal Table 4-5 Retail)

Submittal Table 4-5 Retail: Water Loss Audit Reporting Water Code Section 10631(d)(3)(A)		
Public Water System ID # Reported in Table 2-1 R	Reporting Period	Submitted to DWR Water Loss Audit Program (yes/no)
Report submittal status for all five years for each Public Water System as available. **Add rows as needed**		
	2020	Yes
	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes
NOTES: Gap in water loss audit data from 1/1/21 to 6/30/21 2020 audit data: Stockton City of - Validated Water Audit 2020.xlsx 2021/2022 audit data: City of Stockton FY2022 - Validated Audit.xlsx 2022/2023 audit data: City of Stockton FY2023 Validated Audit.xlsx 2023/2024 audit data: City of Stockton FY2024 Water Loss Audit Validated.xlsx 2024/2025 audit data: City of Stockton FY2025 - Validated Audit.xlsx		

Water Use Efficiency (WUE) standards were developed for each urban retail water supplier in California serving more than 3,000 connections or that produce more than 3,000 AF of water per year. These standards are tailored to each agency based on current and historic losses, with all agencies required to meet their standard by January 1, 2028. As of the most recent AWWA Water Loss Audit submitted to DWR, the COSMUD service area consists of 51,730 connections. Based on 2025 AWWA Water Loss Audit Data, COSMUD will need to reduce their real water loss from 17.4 Gallons per Service Connection per Day (GPSCD) to 16.5 GPSCD, which is approximately a 5.5% reduction in real losses within the next two years. COSMUD is currently surpassing their apparent water loss standard set by the State Water Board, with apparent losses currently at 10.3 GPSCD with the standard having been set at 11.7 GPSCD, which 12% below of the 2028 Standard. The most recent data for progress towards the WUE standards are outlined in Table 4-6.

Table 4-6: Progress Towards 2028 Water Loss Standard (Table 4-6 Retail)

Submittal Table 4-6 Retail: Progress Towards 2028 Water Loss Standard
Water Code Section 10631(d)(3)(C)

Public Water System ID # Reported in Submittal Table 2-1 R	Did the Water Board Calculate a Water Loss Standard for this Public Water System? (y/n) If no, Supplier will not complete this row.	Real Water Loss					Apparent Water Loss				
		State Water Board Standard		Most Recent AWWA Water Loss Audit			State Water Board Standard		Most Recent AWWA Water Loss Audit		
		2028 Real Water Loss Standard per Unit per day	Units for Real Water Loss Drop down list	Number of Units (Connections or Miles corresponding with units selected)	Volume of Total Real Loss (from AWWA Water Loss Audit) (AF)	Real Water Loss Per Unit per Day	2028 Apparent Water Loss Standard per Unit per Day	Units for Apparent Water Loss	Number of Connections	Volume of Total Apparent Loss (from AWWA Water Loss Audit) (AF)	Apparent Water Loss Per Unit per Day
Add additional rows as needed.											
CA3910012	Yes	16.5	Gallons per Service Connection per Day (GPSCD)	51,730	1,007.8	17.4	11.7	Gallons per Service Connection per Day (GPSCD)	51,730	597.4	10.3

4.5 Data Provided to Wholesale Agency – To Be Developed in Future Submittal

4.6 Climate Change

In 2025, the City of Stockton published the Stockton Metropolitan Statistical Area Priority Climate Action Plan (PCAP) under the U.S. Environmental Protection Agency's (EPA) Climate Pollution Reduction Grants Program. The document establishes a plan to reduce greenhouse gas emissions, enhance climate resilience, and advance equitable benefits for all communities in San Joaquin County.

The PCAP identifies climate change as a leading cause of potential water-related challenges in the Stockton region as climate conditions become more extreme and less predictable. Potential challenges include both increased flood conditions through heavy storms and reduced water availability through longer and more frequent droughts as the climate changes. As water drought conditions increase, there could be an increased reliance on groundwater, raising costs for the community.

Solutions proposed in the PCAP to mitigate impacts on potable water due to climate change include protecting wetlands and natural systems to help absorb floodwaters and buffer storm impacts, addressing saltwater intrusion risks in the Bay-Delta by protecting levees and managing groundwater resources, implementing drought-tolerant landscaping, and implementing water efficiency/conservation practices in the area.

CHAPTER 5 – SB X7-7 BASELINES, 2020 TARGETS, AND 2025 REPORTING

5 SB X7-7 Baselines, 2020 Targets, and 2025 Reporting

The Water Conservation Act, or Senate Bill X7-7, requires all water suppliers to implement water efficiency measures that will reduce their per-capita water consumption for both urban and agricultural uses. This statewide legislation sought to reduce per-capita water consumption by 20% by 2020.

For the development of COSMUD's 2020 UWMP, the City's individual target of compliance was assessed to determine whether the SBX7-7 goal was met. The following section details COSMUD's compliance with the 2020 water use target.

5.1 Compliance with 20% by 2020 Water Use Target

As part of the 2015 UWMP, retail suppliers identified their 2020 demand reduction targets with one of four methods identified in SBX7-7:

Target Method 1: 80% of 10- to 15-year baseline gallons per-capita per day (GPCD).

Target Method 2: The sum of the following performance standards:

- Indoor residential use
- Landscape use, including dedicated and residential meters or connections equivalent to the State Model Landscape Ordinance (70% of reference evapotranspiration)
- 10% reduction in baseline commercial, industrial institutional (CII) water use by 2020.

Target Method 3: 95% of Hydrologic Regional Target from the 20% by 2020 Water Conservation Plan

Target Method 4: Identify water savings obtained through approved practices and subtract them from the baseline GPCD.

Target Method 3 was used for calculating COSMUD's 2020 water use target. Table 5-1 outlines the SBX7-7 Target GPCD and the actual 2020 GPCD.

Table 5-1: SB X7-7 2020 Target Progress (DWR Submittal Table 5-1 Retail)

Submittal Table 5-1 Retail: SB X7-7 2020 Target Progress Water Code Section 10608.40						
☐	**Check the box if the Supplier was not an Urban Water Supplier during or before the 2020 UWMP reporting cycle. Proceed to the next table.**					
Was Supplier part of a merger or consolidation since 2020?	Regional Alliance Target or Individual Target? Drop down list	2020 Target	Actual 2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?	**Only for suppliers that did not meet the Target in 2020 See DWR NOTES below.**	
					Actual 2025 GPCD (From SB X7-7 Compliance Form)	Did Supplier meet the 2020 Target in 2025?
No	Individual Target	165	158	Yes		NA
NOTES:						

The 2025 UWMP does not have any new statutory requirements. COSMUD was able to obtain their targeted reduction by 2020 and no further reporting requirements are necessary.

CHAPTER 6 – WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT

6 Water Service Reliability and Drought Risk Assessment

This chapter summarizes the City's current and future water supply portfolio, how individual supplies are managed conjunctively, and how climate change and regulatory factors may affect availability. It also reports the energy intensity associated with treating and delivering water within the COSMUD service area.

6.1 Reliability Assessment Approach

The reliability assessment characterizes the City's existing and planned water supplies and evaluates their ability to meet projected demands under a range of hydrologic conditions, consistent with the requirements of the Urban Water Management Planning Act and guidance provided in the Draft 2025 Urban Water Management Plan Guidebook. The City's water supply portfolio and long-term planning assumptions are primarily informed by the 2021 City of Stockton Water Master Plan Update, which serves as the City's adopted engineering and operational framework for water system planning. The 2026 Well Technical Memo also serves as an important reference to inform recent groundwater supply updates since the Water Master Plan. This UWMP provides a planning-level summary of water supply, operations, and reliability for regulatory review.

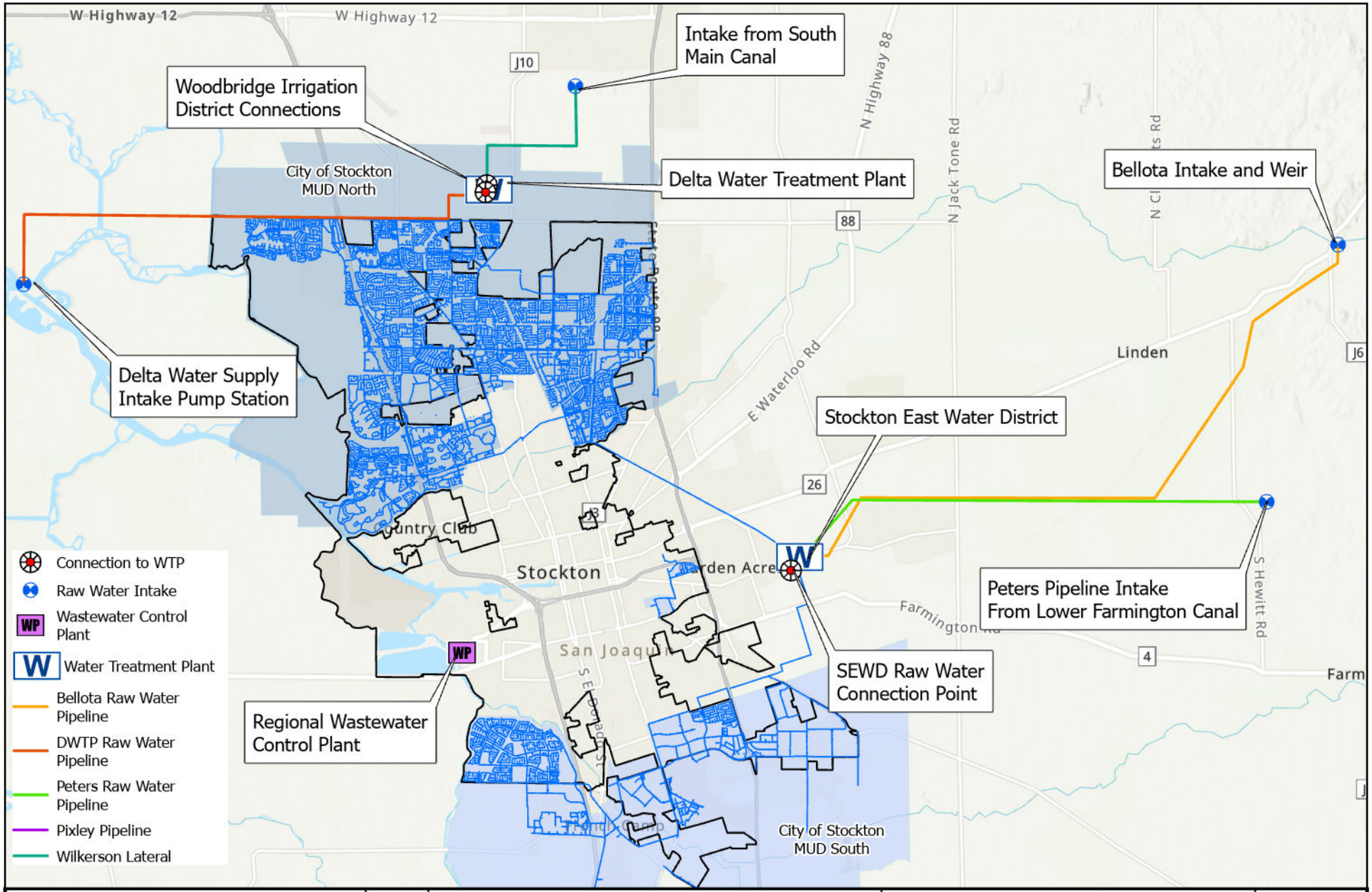
6.2 Service Area and Supply Overview

The City provides potable water service to customers within the City limits and surrounding areas through COSMUD. The City operates a diversified, conjunctive use water supply portfolio comprised of surface water, groundwater, and purchased water supplies to meet potable water demands throughout its service area. Primary surface water sources include direct diversions from the San Joaquin River under the City's water rights, as well as purchased treated surface water from SEWD. In addition, the City purchases untreated surface water from the WID, which is conveyed to the Delta Water Treatment Plant for treatment prior to distribution within the potable water system.

Groundwater extracted from municipal production wells within the Eastern San Joaquin Groundwater Basin provides a critical supplemental supply and serves as the City's primary drought response resource during dry and multiple dry year conditions. While the City does not operate a dedicated non-potable recycled water distribution system, treated wastewater discharges contribute to indirect potable reuse by augmenting surface water availability in the San Joaquin River in accordance with applicable regulatory requirements.

Collectively, these water supply sources are operated under the City's adopted conjunctive use strategy to enhance system reliability, provide operational flexibility, and reduce vulnerability to hydrologic

variability, regulatory constraints, and long-term demand growth. Figure 6-1 depicts the City's existing surface water supply sources and their respective connections to the distribution system.



verdantas

80 Blue Ravine Rd., Suite 280
Folsom, CA 95630
Phone: (916) 608-2212

N

0 0.751.5 3 4.5 6 Miles

CITY OF STOCKTON MUNICIPAL UTILITIES DEPARTMENT

EXISTING WATER SUPPLY SOURCES

FIGURE 6-1

6.3 Surface Water Supplies

Surface water is the City's primary source of supply during normal and wet hydrologic conditions. Raw water is diverted from the San Joaquin River and conveyed to the City's treatment facilities, where it is treated to meet all applicable state and federal drinking water standards.

6.3.1 San Joaquin River Diversion

The City is authorized to divert surface water from the San Joaquin River for municipal use under Water Right Permit No. 21176. Raw water diverted from the river is conveyed to the City's Delta Water Treatment Plant, where it is treated to meet applicable drinking water standards prior to distribution within the potable water system. The San Joaquin River diversion represents a core component of the City's local surface water supply portfolio and is operated in coordination with wastewater discharge requirements.

The availability of San Joaquin River supplies is influenced by hydrologic conditions, Delta water quality, and regulatory requirements governing river operations and environmental protections. As documented in the City's 2021 Water Master Plan, this supply is managed as part of an integrated surface water system that balances diversion operations with treatment plant capacity and system demands. During periods when surface water diversion is constrained due to seasonal, hydrologic, or regulatory conditions, the City relies on alternative surface water sources and groundwater supplies to maintain potable water service reliability.

In 1996, the City submitted a water right application to the State Water Resources Control Board (State Water Board) requesting authorization to divert up to 125,900 acre-feet per year (AFY) from the San Joaquin River to meet projected long-term demands through 2050. The State Water Board divided the application into two separate applications, Application 30531A and Application 30531B. Application 30531A authorized diversions of up to 33,600 AFY from the San Joaquin River for use within the City's 1990 General Plan boundary and was approved under Water Right Permit 21176, issued on March 8, 2006, pursuant to California Water Code (CWC) Section 1485. Under this permit, allowable diversions are limited to the volume of treated wastewater discharged by the City to the San Joaquin River as part of an indirect potable reuse strategy, with a maximum permitted diversion of 33,600 AFY. Diversions under Section 1485 are subject to seasonal and environmental pumping restrictions. Application 30531B, which proposes additional diversions of up to 92,300 AFY, has been canceled by the State. The City intends to pursue area of origin water rights per water code section 10500-10506.

6.3.2 Stockton East Water District

The City purchases treated potable water from SEWD as part of its surface water supply portfolio. SEWD supplies originate from New Melones Reservoir on the Stanislaus River and New Hogan Reservoir on the Calaveras River and are treated prior to being delivered directly into the City's distribution system.

SEWD is a wholesale water supplier serving urban water retailers within the Stockton Metropolitan Area, including the City, Cal Water, and two small maintenance districts, and provides irrigation water to agricultural users in San Joaquin County. SEWD's surface water supplies are obtained under agreements with the U.S. Bureau of Reclamation, and the District has filed additional water right applications to divert excess wet-weather flows from the Calaveras River, Little Johns Creek, and other tributaries, which are currently under review by the State Water Resources Control Board. From 1977 to 2012, SEWD was the sole provider of treated surface water to COSMUD and supplied a substantial portion of its total water demand. The South Stockton service area currently receives water from both SEWD and groundwater sources. In 2020, approximately 7,000 AF of water supplied by SEWD accounted for about 20 percent of COSMUD's total supply.

Operation of the DWTP beginning in 2012 provided COSMUD with a reliable surface water supply under Water Right Permit 21176 for use throughout its service area. COSMUD will continue to receive SEWD water under the Second Amended Contract, which expires in 2035 and provides for continued service under then-current or mutually agreeable terms. In North Stockton, completion of the North Stockton Pipeline Hypochlorite Facility in 2021 enables integration of DWTP and SEWD supplies, allowing increased SEWD deliveries and reduced groundwater pumping during peak demand periods. The City's Contract is SWED is included in Attachment F.

6.3.3 Woodbridge Irrigation District

The City of Stockton purchases untreated surface water from the WID as part of its surface water supply portfolio. WID diverts surface water from the Mokelumne River under pre-1914 water rights at the Woodbridge Diversion Dam, which impounds Lodi Lake, with additional authorized diversions from hydraulically connected sloughs within the Mokelumne River system, including Pixley Slough and Beaver Slough. Water delivered by WID to the City is conveyed to the Delta Water Treatment Plant, where it is treated prior to distribution. Under a 2008 agreement with the Woodbridge Irrigation District (WID), additional surface water supplies become available to the City as WID-served agricultural lands within the northern portion of the City are annexed and converted to residential and industrial use. The agreement provides for an incremental increase in WID supply at a rate of 3.0 acre-feet per year (AFY) per acre annexed, allowing up to 6,500 AFY of additional supply to become available to the City. Based on anticipated annexation and land use conversion, total WID supplies available to the City could increase from 6,500 AFY to approximately 9,500 AFY by 2035.

WID supplies supplement the City's local surface water diversions and contribute to overall surface water availability, particularly during periods when San Joaquin River diversions are limited. As noted in the City's 2021 Water Master Plan, WID water serves an important operational role within the City's integrated surface water system by supporting reduced reliance on groundwater pumping during normal hydrologic conditions. Accordingly, this supply also contributes to regional groundwater sustainability by offsetting the need for increased groundwater extraction.

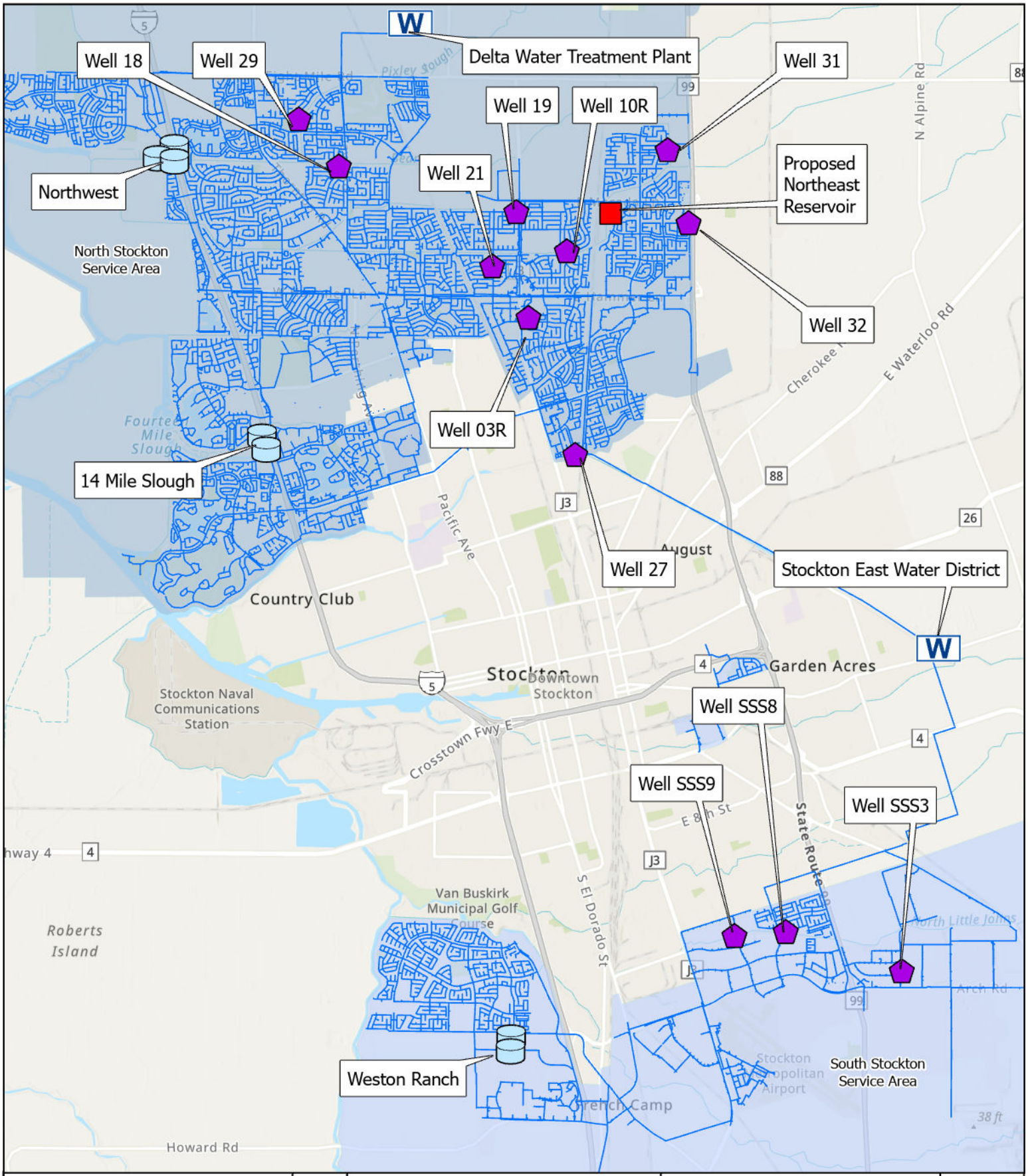
Unused entitlements may be banked under specific conditions, including delays in the City's Delta Water Supply Project startup or dry-year curtailments. Banked water is subject to availability as determined by WID, is limited to 2,000 AFY delivery, and generally expires after eight years if unused. The City's Contract with WID is included in Attachment G.

6.4 Groundwater Supplies

6.4.1 Groundwater Sources

The City's groundwater supply is derived from 12 active municipal production wells located in the Eastern San Joaquin Groundwater Basin, which underlies both the North Stockton and South Stockton service areas. Groundwater is extracted through a system of COSMUD-owned wells distributed across the service area and is treated as needed to meet applicable drinking water standards prior to delivery to customers. This basin is the same groundwater source identified and described in the City's prior Urban Water Management Plans and the 2021 Water Master Plan, and it remains a key component of the City's conjunctive-use water supply portfolio.

The City coordinates groundwater management with regional partners through participation in basin-wide groundwater sustainability planning efforts, consistent with applicable State requirements. Groundwater use is managed to balance supply reliability, water quality considerations, and long-term basin sustainability. Figure 6-2 below depicts all active groundwater wells within the service area.



verdantas

80 Blue Ravine Rd., Suite 280
Folsom, CA 95630
Phone: (916) 608-2212

N

Legend

- Reservoir
- Water Well (Active)
- Water Treatment Plant
- Proposed Reservoir
- COSMUD Water Line
- City Limits

CITY OF STOCKTON MUNICIPAL UTILITIES DEPARTMENT	FIGURE
ACTIVE GROUNDWATER WELLS IN COSMUD SERVICE AREA	6-2

6.4.2 Operational Role of Groundwater

Groundwater serves both as a supplemental and reliability supply within the City's water system. Under normal operating conditions, groundwater is used conjunctively with surface water supplies to meet system demands, manage peak usage, and provide operational flexibility. During dry years, emergency events, or periods when surface water supplies are constrained or unavailable, groundwater plays a critical role in maintaining water service reliability.

As documented in prior Urban Water Management Plans, the City does not rely on continuous maximum groundwater pumping under normal conditions. Instead, groundwater capacity is preserved to support drought response, emergency operations, and system resiliency.

6.4.3 Updated Groundwater System Condition and Capacity

After adopting the 2021 Water Master Plan, the City experienced an operational event in summer 2024 during which both surface water treatment sources—the Delta Water Treatment Plant and Stockton East Water District supplies—were temporarily unavailable at the same time. During this period, the City relied exclusively on groundwater facilities, highlighting the importance of groundwater system conditions and redundancy.

In response, the City commissioned a Water Supply Redundancy Evaluation prepared by West Yost Associates and completed in January 2026, which provides the most current assessment of groundwater well status and capacity. The 2026 Water Supply Evaluation Technical Memo evaluated the current condition of the City's groundwater well facilities, including capacity, age, and rehabilitation potential to establish potential opportunities for system reliability and cost efficiency. Table 6-1 below summarizes active and inactive wells outlined in the Water Supply Redundancy Evaluation, and a copy is included in Attachment E. The evaluation updated well capacities and operational status based on a March 2025 well rehabilitation status review and found that:

- Total active groundwater capacity has decreased slightly since the 2021 Water Master Plan, particularly in North Stockton, due to several wells becoming inactive or requiring mechanical repair or treatment.
- In South Stockton, active groundwater capacity remains generally consistent with levels reported in prior planning documents. Several inactive or standby wells were evaluated for rehabilitation potential, with only a limited number identified as viable candidates based on age, site constraints, and water quality considerations. Table 6-2 lists the volume of groundwater pumped in the previous 5 years.

Table 6-1: Summary of Well Facilities

Summary of Well Facilities		
Well Number	**Well Pump Capacity (gpm)**	**Status**
03R	2,000	Active
10R	3,200	Active
15	1,805	Standby
18	800	Active
19	1,780	Active
20	1,800	Inactive
21	1,800	Active
24	430	Inactive
25	1,600	Inactive
26	1,970	Inactive
27	2,200	Active
28	1,600	Standby
29	2,500	Active
30	2,200	Standby
31	2,000	Active
32	2,000	Active
SS1	1,000	Inactive
SS2	1,295	Standby
SS3	2,000	Active
SS8	1,500	Active
SS9	2,500	Active

Note: Wells 11, 16, SS4, and SS5 are omitted from the 2026 Technical Memo and will be included upon further coordination with COSMUD.

Table 6-2: Volume of Groundwater Pumped in Past Five Years (DWR Table 6-1 Retail)

Submittal Table 6-1 Retail: Groundwater Volume Pumped Water Code Section 10631(4) and 10631(4)(c)							
☐	Check the box if the Supplier does not pump groundwater. Proceed to the next table.						
☐	Check the box if all or part of the groundwater described below is desalinated. (OPTIONAL)						
Groundwater Type **Drop Down List** May use each category multiple times	Water Type (OPTIONAL) **Drop down list**	Location or Basin Name	2021 (AF)	2022 (AF)	2023 (AF)	2024 (AF)	2025 (AF)
Add additional rows as needed							
Alluvial Basin	Non-Potable	San Joaquin Valley Basin, Eastern San Joaquin Subbasin	7089	1547	2430	1066	956
		Total	7,089	1,547	2,430	1,066	956

6.4.4 Groundwater Reliability and Planning Considerations

The groundwater capacity assessment performed by West Yost Associates utilizes a conservative planning scenario approach and assumes complete loss of surface water supplies, representing an emergency or redundancy condition rather than typical system operation. Under this groundwater-only scenario, existing groundwater capacity is not sufficient to meet maximum-day demands without additional well rehabilitation or new well construction.

This finding does not conflict with the conclusions of the 2020 UWMP or the 2021 Water Master Plan, which determined that overall water supplies are sufficient to meet future demands under normal, single-dry, and multiple-dry year conditions using a conjunctive-use approach. Instead, the evaluation highlights a separate resiliency consideration: the level of investment required to maintain service during rare but critical events involving simultaneous surface water outages.

For this 2025 UWMP, groundwater continues to be characterized as a reliable supplemental supply that supports system resiliency when integrated with surface water supplies. Long-term planning for groundwater improvements, including rehabilitation, new wells, and treatment, is addressed through the City's master planning and capital improvement processes rather than relied upon as an assumption for routine water supply availability.

6.5 Water Supply Data (Past Five Years)

To characterize recent operational use of the City's water supply portfolio, Table 6-3 summarizes total water supplied over the most recent five-year period from the City's four primary sources: Municipal groundwater wells, SEWD, San Joaquin River diversions, and WID. Reviewing recent supply trends is important because it reflects actual system operations, hydrologic conditions, and regulatory or infrastructure constraints. The accompanying Figure 6-3 illustrates the relative contribution of each source over this period, highlighting shifts in reliance among surface water, purchased supplies, and groundwater consistent with the City's conjunctive-use strategy.

Table 6-3: Total Water Supply per Year (AFY)

Total Supply per Year (AFY)					
Year	COSMUD Wells	SEWD	San Joaquin	WID	Total
2020	8,635	6,762	9967	8,657	34,021
2021	7,089	7,579	14,447	5,038	34,152
2022	1,548	16,207	7,204	7,035	31,994
2023	2,432	12,558	5,967	9,591	30,548
2024	1,066	17,239	6,134	7,016	31,456
2025	956	16,571	4,910	9,341	31,778

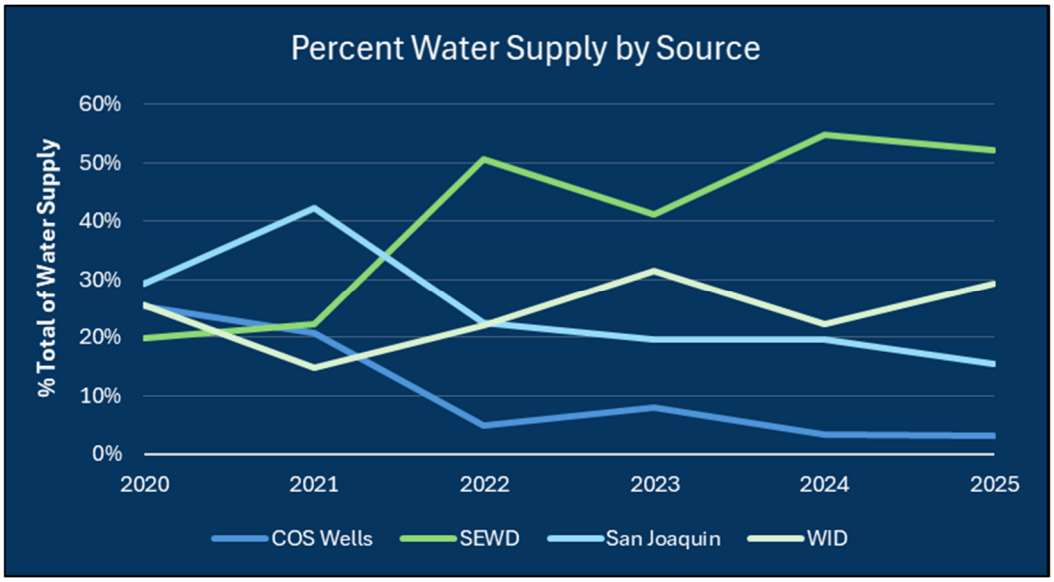


Figure 6-3: Percent Water Supply by Source

While the Water Supply Redundancy Evaluation discussed in Section 6.4.3 found a slight decrease in active groundwater capacity, the recent increase in purchased potable water from SEWD and decrease in groundwater pumping is more readily explained by the City's adopted conjunctive-use strategy, which deliberately prioritizes surface water in normal years and reserves groundwater as a drought and

reliability supply rather than a base supply. It also reflects an effort to reduce long-term basin impacts, and improved water use efficiency and conservation.

6.6 Other Water Supplies

In addition to surface water and groundwater, the City continues to evaluate opportunities to enhance supply reliability through:

- Operational storage and system optimization,
- Water use efficiency and demand management programs, and
- Long-term planning studies identified in the Water Master Plan.

While recycled water, desalination, and water transfers are not primary potable supply sources at this time, the City monitors regulatory developments and regional opportunities that could affect future supply portfolios, as discussed in both the 2021 Water Master Plan and the 2020 UWMP.

6.6.1 Wastewater Collection

COSMUD provides regional wastewater collection, treatment, and disposal services for the City of Stockton, the Port of Stockton, and surrounding urbanized areas of San Joaquin County. Wastewater is conveyed to the Regional Wastewater Control Facility (RWCF), where it is treated to tertiary standards and discharged to the San Joaquin River.

Under Water Right Permit 21176, issued by the State Water Resources Control Board on March 8, 2006, the City is authorized to divert water from the San Joaquin River pursuant to California Water Code Section 1485, up to 33,600 acre-feet per year, limited to the volume of treated wastewater discharged to the river. This authority supports the City's indirect potable reuse program, which relies on coordinated RWCF discharges and Delta Water Treatment Plant diversions rather than a dedicated recycled water distribution system. Although the RWCF produces tertiary-treated effluent suitable for unrestricted non-potable reuse, recycled water is not delivered directly to customers. Table 6-4- below shows the volume of wastewater collected within the service area.

Table 6-4-: Wastewater Collected Within Service Area in 2025 (DWR Table 6-2 Retail)

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2025 Water Code Section 10633(a)				
☐	Check the box if there is no wastewater collection system. Proceed to the next table.			
Wastewater Collection			**Recipient of Collected Wastewater**	
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? OPTIONAL **Drop Down List**	Volume of Wastewater Collected from UWMP Service Area 2025 (AF)	Name of Wastewater Treatment Plant (WWTP) and Place ID Number **Drop down list**	Is WWTP Located Within UWMP Area? **Drop Down List**
Add additional rows as needed				
COSMUD	Metered	10,894	Stockton Regional WW Control Facility, Place ID 258739	Yes
Total Wastewater Received from UWMP Service Area in 2025:		10,894		
NOTES: Units are in acre-feet (AF). Collected wastewater volume includes that which is produced by Cal Water and San Joaquin County service areas since they are not metered separately.				

Table 6-5 below displays the volume of wastewater treated and discharged in 2025 within the COSMUD water service area provided.

Table 6-5: Wastewater Treatment and Discharge Within Service Area in 2025 (DWR Table 6-3 Retail)

Submittal Table 6-3 Retail: Wastewater Treatment and Outcomes Within UWMP Service Area in 2025
Water Code Section 10633(a)

Wastewater Treatment Plant Name and Place ID Number	Does This Plant Treat Wastewater Generated Outside the UWMP Service Area? (OPTIONAL)	2025 Volume of Wastewater Received from UWMP Service Area (As Reported in Submittal Table 6-2 R)	Total 2025 Volume of Water Treated	2025 Outcomes of Treated Wastewater											
				Water Recycled Within UWMP Service Area (enter data as applicable)		**Water Recycled Outside of UWMP Service Area** (enter data as applicable)	**Effluent Discharge that is not a Permitted Recycled Water Use** (enter data as applicable)	**Required Discharge for Instream Flow** (enter data as applicable)	**Delivered to Another Entity for Additional Treatment** (enter data as applicable)						
				Treatment Level		Volume	Treatment Level	Volume	Treatment Level	Volume	Treatment Level	Volume	Treatment Level	Volume	Name of other entity
		(AF)	(AF)			(AF)		(AF)		(AF)		(AF)		(AF)	
Stockton Regional WW Control Facility, Place ID 258739	Yes	11,077	9,413				Non-Potable	4,910		0		0		0	
Total		11,077	9,413		0		4,910		0			0		0	

NOTES: Units are in acre-feet (AF). Volumes of treated wastewater and discharged wastewater are provided by Wastewater Operations QOR Sharepoint.

6.6.2 Recycled Water

The 2020 UWMP did not indicate any recycled water use projections; however, Table 6-7 below shows the City does has one source of recycled water in the form of indirect potable reuse. The quantity of water discharged from the wastewater treatment plant can be recaptured and recycled as needed, resulting in approximately 30,000 AF of water over the next 25 years.

Table 6-6: Recycled Water Direct Beneficial Use Within Service Area (DWR Table 6-4 Retail)

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area Water Code Section 10633 (c)(e)										
☑	Check box if recycled water is not used and is not planned for use within the service area of the supplier. The supplier will only complete the column on "Potential Recycled Water Use" and submit an accompanying narrative on the feasibility of that potential recycled water use.									
Use Type **Drop down list**	Water Type (after treatment if treated) (OPTIONAL) **Drop down list**	Additional Information (as needed)	2025 (AF)	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (opt) (AF)	**Potential Recycled Water Use** Volume	**Potential Recycled Water Use** Narrative page number (OPTIONAL)
Add additional rows as needed										
Agricultural irrigation			-	-	-	-	-	-	-	-
Landscape irrigation (exc golf courses)			-	-	-	-	-	-	-	-
Golf course irrigation			-	-	-	-	-	-	-	-
Commercial use			-	-	-	-	-	-	-	-
Industrial use			-	-	-	-	-	-	-	-
Geothermal and other energy production			-	-	-	-	-	-	-	-
Recreational impoundment			-	-	-	-	-	-	-	-
Wetlands or wildlife habitat			-	-	-	-	-	-	-	-
Groundwater recharge (IPR)			-	-	-	-	-	-	-	-
Reservoir water augmentation (IPR)			-	-	-	-	-	-	-	-
Indirect potable reuse			4,910	5,000	5,000	5,000	5,000	5,000	29,910	-
Other (Description Required)			-	-	-	-	-	-	-	-
		Total	0	0	0	0	0	0	0	0

Table 6-7: 2020 Recycled Water Use Projection and 2025 Actual Use (DWR Table 6-5 Retail)

Submittal Table 6-5 Retail: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual Water Code Section 10633 (e)		
☑	Check the box if recycled water was not used in 2025 nor previously projected for use in 2020. Proceed to the next table.	
Use Type Drop Down list	2020 Projection for 2025 (AF)	2025 Actual Use (AF)
Add additional rows as needed		
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)	-	-
Indirect potable reuse	-	4,910
Other (Description Required)	-	-
Total	0	4,910

Table 6-8 shows that the City does not plan to expand recycled water use in the future.

Table 6-8: Methods to Encourage Future Recycled Water Use (DWR Table 6-6 Retail)

Submittal Table 6-6 Retail: Methods to Encourage Future Recycled Water Use Water Code Section 10633 (f)			
☑	Check the box if the Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use (AF)
Add additional rows as needed			
Total		**(AF)**	0

6.7 Water Supply Reliability Projects

COSMUD water demands are expected to grow over the next 25 years, and to accommodate this growth while maintaining reliable service, the City will continue to advance the water supply initiatives identified in the previous UWMP. The initiatives outlined in Table 6-9 below are intended to enhance supply flexibility, improve reliability, and ensure efficient use of available resources.

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

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs Water Code Section 10631 (f)							
☐	Check the box if there are no expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Procees to the next table.						
☐	Check the box if 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.						
Name of Future Projects or Programs	Joint Project with other suppliers?		Additional Description (as needed)	Water Type (after treatment if treated) (OPTIONAL) **Drop Down list**	Planned Implementation Year	Planned for Use in Year Type **Drop Down List**	Expected Increase in Water Supply to Supplier (This may be a range)
	Drop Down List (yes/no)	If Yes, Supplier Name					(AF)
North Stockton Pipeline Hypochlorite Facility Project [(a)]	Yes	SEWD	Construct new sodium hypochlorite injection system to combine supply from the DWTP and SEWD	Potable	Completed in 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	Non-Potable	2030	All Year Types	6500 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	
Well 30	No		Construct new Well 30	Potable	TBD	TBD	32 AFY
Well 33 Borehole	No		Develop Well 33	Potable	TBD	TBD	3.4 AFY

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.

6.7.1 Sodium Hypochlorite Facility

After initiating chloramine disinfection in the North Stockton system, COSMUD isolated North Stockton from Stockton East Water District (SEWD) deliveries due to incompatibility between disinfection strategies. SEWD's DJWWTP uses free chlorine, while the City's DWTP supplies water treated for chloramination; blending these supplies can contribute to degraded chlorine residual and increased potential for disinfection byproduct formation, with associated taste and odor concerns.

To restore operational flexibility and improve reliability, COSMUD advanced the North Stockton Pipeline Hypochlorite Facility Project to enable conveyance and blending of SEWD and DWTP supplies in North Stockton. The project included installation of a sodium hypochlorite feed system, which was completed in 2021, to increase available chlorine upstream of the existing North Stockton Pipeline Ammonia Facility, supporting stable chloramination and maintaining acceptable residual in blended water while reducing the potential for undesirable byproduct formation.

6.7.2 Land Annexation

The 2020 UWMP outlined a potential increase in WID water supply from 6,500 AFY to 13,000 AFY by the year 2030 due to the nature of the City's 2008 contract with WID. Since then, the City has acquired an additional 740 acres of land through annexations and reorganizations. As the contract with WID states, every acre of land annexed equates to an additional 3.0 AFY available for the City to purchase – thereby increasing the available water supply from WID to 8,720 AFY.

6.7.3 Advanced Metering Infrastructure (AMI)

COSMUD is actively pursuing implementation of Advanced Metering Infrastructure (AMI) to improve metering efficiency and system operations. COSMUD currently serves 51,887 water meters, which are read using a combination of manual and touch-read methods. AMI can reduce operational costs, enhance customer service, and support leak detection and consumption awareness; however, no measurable reductions in water demand have been observed to date. Implementing AMI remains an active and ongoing effort.

6.8 Summary of Water Supply Reliability

Combined, the City's surface water and groundwater sources form a flexible water supply system that can meet projected demands during normal years and help maintain reliability during dry and multiple dry years. Detailed information on supply availability is provided in the UWMP tables and discussed further in Chapter 7.

Table 6-10 and 6-11 below display the existing and projected normal year water supplies, respectively. Projected water supplies numbers for WID in Table 6-11 have been provided by them directly.

Table 6-10: Water Supplies – 2025 Actual (DWR Table 6-8 Retail)

Submittal Table 6-8 Retail: Water Supplies — 2025 Actual Water Code Section 10631 (b)			
Water Supply		**2025**	
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	**Water Type** (after treatment if treated) (OPTIONAL) **Drop Down list**	**Actual Volume** (AF)
Purchased or Imported Water	SEWD	Potable	16,571
Purchased or Imported Water	WID	Potable	9,341
Surface water (not desalinated)	San Jaoquin River Diversion	Potable	4,910
Groundwater (not desalinated)	City-owned wells	Potable	956
		Subtotal Potable	31,778
		Subtotal Non-Potable	0
		Total	31,778
NOTES: Units are in acre-feet (AF).			

Table 6-11: Water Supplies – Projected (DWR Table 6-9 Retail)

Submittal Table 6-9 Retail: Water Supplies — Projected Water Code Section 10631 (b)							
Water Supply			**Projected Water Supply (Report to the Extent Practicable)**				
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool	Additional Detail on Water Supply	**Water Type** (after treatment if treated) (OPTIONAL) **Drop Down list**	**2030** Reasonably Available Volume (AF)	**2035** Reasonably Available Volume (AF)	**2040** Reasonably Available Volume (AF)	**2045** Reasonably Available Volume (AF)	**2050 (opt)** Reasonably Available Volume (AF)
Add additional rows as needed							
Purchased or Imported Water	SEWD		20,000	20,000	20,000	20,000	20,000
Purchased or Imported Water	WID		8,850	9,850	10,850	11,850	13,000
Surface water (not desalinated)	San Joaquin River Diversion		24,800	25,000	25,000	25,000	25,000
Groundwater (not desalinated)	City-owned wells		15,400	15,400	15,400	15,400	15,400
		Subtotal Potable	0	0	0	0	0
		Subtotal Non-Potable	0	0	0	0	0
		Total	69,050	70,250	71,250	72,250	73,400

6.9 Energy Intensity

Pursuant to CWC §10631.2(a), this UWMP reports on the energy intensity of COSMUD water service for a one-year period, using readily available data provided by the City. Energy intensity is expressed in kilowatt-hours per acre-foot (kWh/AF) and represents the energy used by COSMUD to divert, pump, treat, store, and distribute water within facilities the City owns and operates; energy associated with Stockton East Water District (SEWD) treatment/delivery and Woodbridge Irrigation District (WID) conveyance is not included. For the year 2025, the overall energy required to deliver water throughout the system is estimated to be about 275 kilowatt-hours per acre-foot (kWh/AF). Additional details are provided in Table 6-12 below.

Table 6-12: Energy Intensity (DWR Table O-1B)

Water Delivery Product drop down list (If delivering more than one type of product recommend using Table O-1C)	Retail Potable Deliveries	**Only for Water Delivery Products Under the Urban Water Supplier's Operational Control**		
Start Date of Reporting Period	1/1/2025	**Sum of All Water Management Processes**	**Non-Consequential Hydropower**	
End Date of Reporting Period	12/31/2025			
Is upstream embedded energy in the values reported?				
Units of Measure for Water	(AF)	**Total Utility** See DWR NOTES	**Hydropower**	**Net Utility**
Volume of Water Entering Process		29,311	-	29,311
Energy Consumed (kWh)		8,065,961	-	8,065,961
Energy Intensity (kWh/AF)		275	-	275
Quantity of Self-Generated Renewable Energy (Solar)				
179,887 kWh				
Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)				
Metered Data				
Data Quality Narrative:				
Energy consumption was provided for the groundwater wells, reservoir pump and booster stations, San Joaquin River intake, and the DWTP.				
Narrative:				
The water service area is supplied by surface water from the San Joaquin River, purchased water from SEWD and WID, and groundwater from City-owned production wells. An overview of each water supply source is provided in Section 6.3. Energy data summarize monthly energy consumption associated with operation of the Delta Water Treatment Plant (DWTP), groundwater wells, and reservoirs, with limited on-site solar generation at the DWTP.				

CHAPTER 7 –WATER SUPPLY RELIABILITY AND DROUGHT RISK ASSESSMENT

7 Water Supply Reliability and Drought Risk Assessment

This chapter evaluates the City's ability to reliably meet water demands under a range of hydrologic conditions, including normal year, single dry year, and multiple consecutive dry year scenarios. The assessment builds on the water supply characterization presented in Chapter 6 and compares projected supplies and demands to identify potential vulnerabilities. This chapter also includes the City's Drought Risk Assessment (DRA) and provides the analytical basis for the Water Shortage Contingency Plan described in Chapter 8.

7.1 Purpose and Planning Framework

The water supply reliability assessment evaluates COSMUD's water service reliability through 2050 by identifying key factors affecting supply and comparing projected supplies and demands under normal, single-dry, and five-consecutive-dry year conditions. This chapter contains reasonable estimates for projected available water supplies and builds off the 2020 UWMP. Results indicate projected supplies are sufficient to meet existing and future demands under normal and dry conditions.

7.2 Water Supply Reliability Assessment

The Water Supply Reliability Assessment evaluates the City's ability to meet projected water demands under:

- Normal water year conditions – defined as water supplies the City considers available during normal conditions
- Single dry year conditions – defined as the year with the lowest available water supply to the City
- Multiple consecutive dry year conditions – defined as a five-consecutive-year drought where average water supply available is the lowest.

Under normal conditions, surface water supplies are expected to meet most demands, supplemented as needed by groundwater. During dry and multiple dry years, groundwater production increases to offset reduced surface water availability, consistent with the City's adopted operational strategy.

7.2.1 SEWD Supply Assessment

The reasonably available supplies established in Table 7-21 below result from coordination with SEWD on historically available water supply to establish the supply reliability metrics. The normal available volume given by SEWD was 27,200 AFY.

Table 7-1: Basis of Water Year Data for SEWD (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 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐ Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. **Location:** [insert location from UWMP]	
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available 27,200	**% of Average Supply**
Average Year	2025	27,200	100%
Single-Dry Year	2020	22,500	83%
Consecutive Dry Years 1st Year	2015	20,983	77%
Consecutive Dry Years 2nd Year	2016	22,649	83%
Consecutive Dry Years 3rd Year	2017	25,778	95%
Consecutive Dry Years 4th Year	2018	27,564	101%
Consecutive Dry Years 5th Year	2019	28,562	105%

7.2.2 WID Supply Assessment

The reasonably available supplies established in Table 7-2 below result from coordination with WID on historically available water supply. WID supplied historical available volumes and aided in determining the supply reliability metrics. The normal available volume given by WID was 8,850 AFY.

Table 7-2: Basis of Water Year Data for WID (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 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐ Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. **Location:** [insert location from UWMP]	
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
		8,850	
Average Year	2021	8,850	100%
Single-Dry Year	2020	4,080	46%
Consecutive Dry Years 1st Year	2020	4,080	46%
Consecutive Dry Years 2nd Year	2021	7,993	90%
Consecutive Dry Years 3rd Year	2022	4,760	54%
Consecutive Dry Years 4th Year	2023	4,628	52%
Consecutive Dry Years 5th Year	2024	9,913	112%

7.2.3 San Joaquin River Supply Assessment

Under CWC Section 1485, Water Right Permit 21176 authorizes diversion from the San Joaquin River in an amount equal to the City's wastewater treatment plant discharge, up to 33,600 AFY, subject to seasonal pumping restrictions due to environmental constraints. The Permit 21176 Petition for Extension of Time (Appendix H in the 2020 UWMP) summarizes water available for diversion from 2012 through 2040 based on wastewater discharge and applicable ESA pumping restrictions. Because the Petition was completed prior to 2020, volumes for 2020–2040 represent projected availability. Base-year San Joaquin River water supply availability is summarized in Table 7-3.

Table 7-3: Basis of Water Year Data for the San Joaquin River (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 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐ Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. **Location:** [insert location from UWMP]	
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
		19,900	
Average Year	2012-2019	19,900	100%
Single-Dry Year	2014	18,150	91%
Consecutive Dry Years 1st Year	2012	18,300	92%
Consecutive Dry Years 2nd Year	2013	19,000	95%
Consecutive Dry Years 3rd Year	2014	19,000	95%
Consecutive Dry Years 4th Year	2015	18,100	91%
Consecutive Dry Years 5th Year	2016	21,300	107%

7.2.4 City of Stockton (COS) Groundwater Wells

The reasonably available supplies established in Table 7-4 are assumed to remain the same during wet and dry seasons. Following the calculations provided in the 2020 UWMP, multiplying the approximate size of the water service area, 38,500 acres, by an assumed pumping rate of 0.4 ac-ft/acre/year results in a reasonably available volume of 15,400 AF. The pumping rate decreased from 0.6 to 0.4 to reflect the decreasing demand on groundwater supplies over the past five years, although the volume available did not actually decrease.

Table 7-4: Basis of Water Year Data for COS Groundwater Wells (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 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐ Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. **Location:** [insert location from UWMP]	
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
		15,400	
Average Year	2020	15,400	100%
Single-Dry Year	2019	15,400	100%
Consecutive Dry Years 1st Year	2015	15,400	100%
Consecutive Dry Years 2nd Year	2016	15,400	100%
Consecutive Dry Years 3rd Year	2017	15,400	100%
Consecutive Dry Years 4th Year	2018	15,400	100%
Consecutive Dry Years 5th Year	2019	15,400	100%

7.2.5 Normal Year Supply and Demand Comparison

Normal year supply projections from this chapter and projected demands from Chapter 4 are compared in Table 7-5 below. The average projected surplus for a normal supply year over the next 25 years is 47,700 AF.

Table 7-5: Normal Year Supply and Use Comparison (DWR Table 7-2 Retail)

Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison Water Code Section 10635 (a)					
	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals (autofill from Submittal Table 6-9 R)	76,250	77,450	78,450	79,450	80,600
SEWD	20,000	20,000	20,000	20,000	20,000
WID	8,850	9,850	10,850	11,850	13,000
San Joaquin River	24,800	25,000	25,000	25,000	25,000
COSMUD Wells	15,400	15,400	15,400	15,400	15,400
Demand Totals (autofill from Submittal Table 4-2 R)	29,768	30,233	30,704	31,183	31,670
Surplus/(shortfall)	46,482	47,217	47,746	48,267	48,930

7.2.6 Single Dry Year Supply and Demand Comparison

Single Dry year supply projections from this chapter and projected demands from Chapter 4 are compared in Table 7-6 below. The average projected surplus for a single dry year over the next 25 years is 34,100 AF.

Table 7-6: Single Dry Year Supply and Use Comparison (DWR Table 7-3 Retail)

Submittal Table 7-3 Retail: Single Dry Year Supply and Use Comparison Water Code Section 10635(a)					
	2030	2035	2040	2045	2050 (Opt)
	(AF)	(AF)	(AF)	(AF)	(AF)
Supply totals	64,830	64,830	64,830	64,830	64,830
SEWD	6,600	6,600	6,600	6,600	6,600
WID	4,080	4,080	4,080	4,080	4,080
San Joaquin River	18,150	18,150	18,150	18,150	18,150
COSMUD Wells	15,400	15,400	15,400	15,400	15,400
Demand Totals	29,768	30,233	30,704	31,183	31,670
Surplus/(shortfall)	35,062	34,597	34,126	33,647	33,160

7.2.7 Multiple Dry Years Supply and Demand Comparison

Multiple Dry years supply projections from this chapter and projected demands from Chapter 4 are compared in Table 7-7 below. The average projected surplus for multiple dry years over the next 25 years is 38,000 AF.

Table 7-7: Multiple Dry Years Supply and Use Comparison (DWR Table 7-4 Retail)

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Use Comparison Water Code Section 10635(a)						
		2030	2035	2040	2045	2050 (Opt)
		(AF)	(AF)	(AF)	(AF)	(AF)
First year	Supply Totals	58,763	58,763	58,763	58,763	58,763
	SEWD	20,983	20,983	20,983	20,983	20,983
	WID	4,080	4,080	4,080	4,080	4,080
	San Joaquin River	18,300	18,300	18,300	18,300	18,300
	Groundwater Wells	15,400	15,400	15,400	15,400	15,400
	Demand Totals	30,468	31,293	31,293	31,183	31,670
	Surplus/(shortfall)	28,995	28,530	28,059	27,580	27,093
Second year	Supply Totals	65,042	65,042	65,042	65,042	65,042
	SEWD	22,649	22,649	22,649	22,649	22,649
	WID	7,993	7,993	7,993	7,993	7,993
	San Joaquin River	19,000	19,000	19,000	19,000	19,000
	Groundwater Wells	15,400	15,400	15,400	15,400	15,400
	Demand Totals	30,468	31,293	31,293	31,183	31,670
	Surplus/(shortfall)	34,574	33,749	33,749	33,859	33,372
Third year	Supply Totals	64,938	64,938	64,938	64,938	64,938
	SEWD	25,778	25,778	25,778	25,778	25,778
	WID	4,760	4,760	4,760	4,760	4,760
	San Joaquin River	19,000	19,000	19,000	19,000	19,000
	Groundwater Wells	15,400	15,400	15,400	15,400	15,400

Table 7-8: Multiple Dry Years Supply and Use Comparison (DWR Table 7-4 Retail) continued

	Demand Totals	31,168	32,353	32,353	31,183	31,670
	Surplus/(shortfall)	33,770	32,585	32,585	33,755	33,268
Fourth year	Supply Totals	66,592	66,592	66,592	66,592	66,592
	SEWD	27,564	27,564	27,564	27,564	27,564
	WID	4,628	4,628	4,628	4,628	4,628
	San Joaquin River	19,000	19,000	19,000	19,000	19,000
	Groundwater Wells	15,400	15,400	15,400	15,400	15,400
	Demand Totals	31,868	33,413	33,413	31,183	31,670
	Surplus/(shortfall)	34,724	33,179	33,179	35,409	34,922
Fifth year	Supply Totals	72,875	72,875	72,875	72,875	72,875
	SEWD	28,562	28,562	28,562	28,562	28,562
	WID	9,913	9,913	9,913	9,913	9,913
	San Joaquin River	19,000	19,000	19,000	19,000	19,000
	Groundwater Wells	15,400	15,400	15,400	15,400	15,400
	Demand Totals	32,568	34,473	34,473	31,183	31,670
	Surplus/(shortfall)	40,307	38,402	38,402	41,692	41,205

7.3 Drought Risk Assessment (DRA)

The drought risk assessment evaluates COSMUD's ability to meet projected water demands during a severe drought lasting five consecutive water years. This assessment relies on historic five-year hydrologic drought within COSMUD's water supply portfolio. Drought risk is assessed by comparing projected water supplies under constrained conditions against projected water demands, and the analysis is intended to identify potential supply shortfalls and inform long-term planning and drought preparedness actions. Reduced surface water availability, groundwater pumping constraints, and environmental or regulatory limitations are key factors influencing drought vulnerability. For this UWMP, the DRA considers five consecutive dry years from 2026 through 2030.

7.4 DRA Water Source Reliability

Table 7-8 below provides the anticipated water supply over the next five years in a hypothetical drought scenario. Total supplies values were calculated by summing the consecutive five-year drought values provided for each water source in Tables 7-1 through 7-4, which establish the lowest amount of water available based on historical data for five consecutive years. Total water use for the year 2030 was taken from the projected water use for 2030 found in Table 4-3, and an assumed 1.5 percent reduction in demand was assumed for years 2026 through 2029. The total water use projected for 2026 is identical to the average water demand between 2020 and 2025, which is 32,325 AFY.

Table 7-9: Five-Year Drought Risk Assessment (DWR Table 7-5 Retail)

Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment Water Code Section 10635(b)(3)		
2026		**Total**
Total Water Use	(AF)	32,352
Total Supplies	(AF)	58,763
Surplus/Shortfall w/o WSCP Action		26,411
2027		**Total**
Total Water Use	(AF)	32,845
Total Supplies	(AF)	65,042
Surplus/Shortfall w/o WSCP Action		32,197
2028		**Total**
Total Water Use	(AF)	33,345
Total Supplies	(AF)	64,938
Surplus/Shortfall w/o WSCP Action		31,593
2029		**Total**
Total Water Use	(AF)	33,853
Total Supplies	(AF)	65,692
Surplus/Shortfall w/o WSCP Action		31,839
2030		**Total**
Total Water Use	(AF)	34,368
Total Supplies	(AF)	75,175
Surplus/Shortfall w/o WSCP Action		40,807

7.5 Summary

Based on the analyses presented in this chapter and supporting UWMP tables, the City has sufficient water supplies and system capacity to meet projected demands over the planning horizon under normal, single dry, and multiple dry year conditions, consistent with the conclusions of the 2021 Water Master Plan and prior UWMP cycles. In a five-year drought scenario between 2026 and 2030, the average surplus of water supplies is 32,570 AF.

CHAPTER 8 –WATER SHORTAGE CONTINGENCY PLAN

8 Water Shortage Contingency Plan

Water shortage contingency planning is a proactive planning process intended to prepare for and respond to potential water supply shortages. Effective planning and preparedness enable water suppliers to maintain reliable service and minimize impacts to customers during periods of supply interruption. Water shortages may result from a variety of factors, including population growth, climate change, drought conditions, regulatory constraints, and natural or human-caused emergencies. A water shortage occurs when available water supplies are insufficient to meet normal customer demands at a given time.

The Water Shortage Contingency Plan (WSCP) outlines the establishes the procedures, authorities, and response actions the City will use to prepare for and respond to water supply shortages. The WSCP anticipates potential supply constraints and provides pre-established measures to manage and mitigate the effects of shortages, including drought and emergency events, which may occur at any time. Even where the likelihood of shortages is low, the WSCP serves as an essential component of drought preparedness and overall water supply reliability.

8.1 City Water Shortage Contingency Plan

The City's WSCP is included in Attachment D. The City's 2025 WSCP establishes a comprehensive framework for managing potential water supply shortages in the municipal water system. Its primary goals are to minimize service disruptions, protect public health and safety, and ensure regulatory compliance during droughts, infrastructure issues, regulatory constraints, or emergencies. The WSCP is closely linked to the City's 2025 UWMP but is designed to be a flexible, stand-alone document that can be updated independently. Legal authority for the plan is provided by Stockton Municipal Code Chapters 13.28 (Water Conservation) and 13.32 (Water Shortage Emergencies), which define enforceable conservation requirements, shortage stages, and response actions.

The plan describes the City's diversified, conjunctive-use water supply portfolio; procedures for completing the Annual Water Supply and Demand Assessment and submitting the Annual Water Shortage Assessment Report to the California Department of Water Resources; and six standard water shortage stages with corresponding supply augmentation, demand-reduction, operational, communication, compliance, and enforcement actions. The WSCP also documents communication protocols for foreseeable and unforeseeable events, financial considerations, monitoring and reporting procedures, and processes for plan refinement, adoption, and public availability to ensure reliable water service and protection of public health and safety during shortage conditions.

8.2 Seismic Risk Assessment and Mitigation Plan

California Water Code §10632.5(a) requires UWMPs to include a seismic risk assessment and mitigation plan for existing water system facilities and allows a supplier to meet this requirement by relying on a

Local Hazard Mitigation Plan (LHMP) if it includes a seismic risk assessment. The City participated in development of the 2023 San Joaquin County LHMP, which was adopted April 11, 2023 and later found approvable by FEMA in April 2023; however, because the 2023 LHMP does not provide the earthquake/seismic assessment needed for this UWMP, it is not used to satisfy the UWMP seismic assessment requirement.

Separately, in March 2025 the City completed an AWIA Risk and Resilience Assessment (RRA) evaluating natural hazard risks (including earthquakes) to critical potable water assets (e.g., sources, wells, treatment/chlorination, storage, pump stations, distribution, and supporting systems) to identify critical components and inform resilience improvements; RRAs must be reviewed and re-certified every five years.

The RRA is maintained as a confidential document.

8.3 Water Shortage Contingency Plan Adoption, Submittal, and Availability

This WSCP update has been prepared in tandem with the City's 2025 UWMP. The WSCP (including subsequent updates) shall be adopted in accordance with standard City procedures, which include requirements for public participation (public hearing), and approval by the City Council. Upon adoption, the WSCP will be submitted to DWR within 30 days. The adopted WSCP will be made publicly available on the City's website through the Municipal Utilities water planning pages and the City's public document repository, where adopted water planning documents are posted for public access.

CHAPTER 9 – DEMAND MANAGEMENT MEASURES

9 Demand Management Measures

COSMUD implements demand management measures (DMM) to support efficient water use and maintain water service reliability as demand grows, and supply conditions change due to climate variability and other factors. This chapter summarizes the City's conservation program and documents the status of the required demand management measures, including planned continuation.

9.1 Water Conservation Program Overview

COSMUD maintains an ongoing water conservation program applicable to all customer sectors. The following sections summarize the nature and extent of implementation of each required DMM including actions implemented during 2016–2020 and planned continuation.

9.2 Water Waste Prevention Ordinances

9.2.1 DMM Description

COSMUD implements enforceable water conservation requirements through Stockton Municipal Code (SMC) provisions addressing water waste. SMC Chapter 13.28 is dedicated to water conservation and includes prohibitions on water waste (e.g., restrictions on hosing hardscapes, washing vehicles without a shut-off nozzle, and irrigating in a manner that causes runoff).

9.2.2 Implementation over the Past Five Years

Water waste prohibitions remain in effect as a baseline demand management measure and support implementation of WSCP-related requirements and response actions. The City's WSCP legal authority framework references SMC Chapter 13.28 and SMC Chapter 13.32 as supporting authorities for shortage response actions.

9.2.3 Plans for Continued Implementation / Planned Activities

The City will continue administering water waste prohibitions and will update implementing code provisions as needed to maintain consistency with WSCP requirements and applicable state guidance.

9.3 Metering

9.3.1 DMM Description

COSMUD's service area is fully metered and all connections are billed based on metered consumption. Customer classes include single-family residential, multi-family residential, non-residential, and irrigation accounts, and metering is the basis for demand accounting and billing.

9.3.2 Implementation over the Past Five Years

Metering is maintained for all accounts and is integrated into routine customer billing and demand tracking. This measure is fully implemented as the standard approach for measuring and managing delivered water.

9.3.3 Plans for Continued Implementation / Planned Activities

COSMUD will continue installing and maintaining meters for new services and ongoing system operation. COSMUD is also actively pursuing Advanced Metering Infrastructure (AMI), as discussed in Chapter 6, to improve metering efficiency and customer access to usage data; the effort is ongoing and, to date, no discernable demand reductions have been observed.

9.4 Conservation Pricing

9.4.1 DMM Description

COSMUD applies conservation pricing through volumetric billing based on metered consumption using the City's adopted water rate schedule. Rate structures include an increasing block structure for single-family residential customers and seasonal rate structures for multi-family, non-residential, and irrigation accounts, with higher summer rates.

9.4.2 Implementation over the Past Five Years

The City routinely reviews and updates its water rates. The City's rate structure has included conservation pricing and, during prior shortage response conditions, drought recovery charges correlated to customer class and shortage response stages to encourage compliance with demand reduction actions and support financial stability under reduced sales conditions.

9.4.3 Plans for Continued Implementation / Planned Activities

COSMUD will continue using conservation-oriented rate design and periodic rate review to support efficient water use and maintain fiscal stability, consistent with WSCP implementation needs and long-term water efficiency objectives.

9.5 Public Education and Outreach

9.5.1 DMM Description

COSMUD conducts public education and outreach to promote water conservation and inform customers regarding efficient water use. Outreach components include a water conservation website, education activities, WaterSense partnership participation, and distribution of conservation information.

The Stockton Area Water Suppliers (SAWS) Water Education Program provides grade-specific water education and conservation outreach to elementary students in the Stockton area through in-class presentations, youth-oriented events, and supplemental virtual resources. The program serves schools in four districts and delivers curriculum aligned with Next Generation Science Standards (NGSS) covering water science, water supply systems, drought, conservation, and California water issues. Presentations incorporate hands-on activities and visual demonstrations, with supporting materials provided to students and teachers. The full SAWS Water Education Program Annual Report is included in Attachment L.

The Classroom Aquarium Education Program (CAEP) provides hands-on environmental education by allowing students to raise Chinook salmon in classroom aquariums. The program teaches students about aquatic ecosystems, salmon life cycles, and the importance of protecting natural resources. Instruction aligns with the California Science Education Standards and emphasizes environmental stewardship through direct observation and experiential learning. More information on the CAEP is included in Attachment M.

9.5.2 Implementation over the Past Five Years

Public education and outreach has been supported through annual budgeted program funding. Prior UWMP documentation reports an average annual outreach budget for 2016–2020 and describes outreach delivery through community venues and events, including distribution of literature and hands-on engagement activities. As a USEPA WaterSense Partner, the City uses WaterSense materials and promotes water-efficient products and water awareness.

Over the past five years, SAWS has consistently implemented the Water Education Program using a combination of in-person classroom presentations and virtual educational tools. The program has utilized digital resources, including online instructional materials and videos, to supplement classroom instruction and expand access to program content. Outreach has reached thousands of students annually through classroom presentations and youth-oriented community events, with continued demand across participating school districts.

CAEP has been implemented in Stockton-area classrooms with support from local sponsors. COSMUD became a sponsor in the 2022 salmon season, supporting participation by 18 local K–12 schools to date. Participating teachers receive required training and permits, classroom aquariums are installed prior to egg delivery, and approximately 35 Chinook salmon eggs are provided per classroom from the Mokelumne River Hatchery. Students raise salmon for approximately eight weeks before participating in a supervised release into a local stream or river.

9.5.3 Plans for Continued Implementation/Planed Activities

COSMUD will continue public education and outreach activities, including WaterSense-based messaging and community engagement, to support ongoing conservation awareness and future water-use objectives.

SAWS will continue implementing the Water Education Program through ongoing in-class presentations, virtual educational tools, and youth-oriented community events. Planned activities include maintaining grade-appropriate, standards-aligned curricula; refining and updating instructional materials as needed; continuing collaboration with school districts and educators; and sustaining staffing and coordination to support long-term water awareness and conservation education.

CAEP will continue to be implemented through ongoing partnerships with schools, sponsors, and the California Department of Fish and Wildlife. Future activities will continue to include teacher training, classroom aquarium setup, salmon egg delivery, in-class observation, and student field trips for salmon release. The program will remain aligned with state science education standards and will continue to promote student awareness of aquatic ecosystems and water resource protection.

9.6 Programs to Assess and Manage Distribution System Real Loss

9.6.1 DMM Description

COSMUD assesses distribution system losses using AWWA Water Audits and Loss Control Program methodology and reports distribution system loss consistent with UWMP reporting requirements. The COSMUD distribution system includes approximately 584 miles of distribution pipelines and transmission mains as described in prior UWMP documentation.

9.6.2 Implementation over the Past Five Years

COSMUD continues routine loss accounting and tracking consistent with AWWA audit-based practices and UWMP reporting. The City's UWMP framework includes prior five-year water loss audit reporting and recognizes emerging requirements associated with the State Water Board water loss performance standard.

9.6.3 Plans for Continued Implementation / Planned Activities

COSMUD will continue using audit-based loss tracking and operational practices intended to identify and reduce real losses. Narrative reporting will be maintained consistent with Chapter 4 water loss reporting and the 2025 Guidebook's expectation to describe current and planned leak detection/repair efforts and planning considerations for performance standards.

9.7 Water Conservation Program Coordination and Staffing Support

9.7.1 DMM Description

Water conservation program coordination is conducted by the City's Water Resources Program Manager. The Program Manager administers the DMMs, estimates conservation savings achieved, and establishes an annual program budget based on available funding and resources. Documented duties include tracking program accomplishments and annual reporting, developing conservation goals, coordinating surveys and monthly O&M reporting, tracking production/demand and submitting monthly monitoring reports, and preparing annual USEPA reporting.

9.7.2 Implementation over the Past Five Years

This DMM is ongoing and supports consistent implementation and administration of COSMUD's demand management program across customer sectors and internal City functions.

9.7.3 Plans for Continued Implementation / Planned Activities

COSMUD will continue conservation program coordination and staffing support as an enabling function for conservation program delivery, reporting, and prioritization, consistent with 2025 Guidebook expectations for documenting coordination activities and staffing support.

CHAPTER 10 – PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

10 Plan Adoption, Submittal, and Implementation

This chapter covers notification, public hearing, adoption, and submission of the COSMUD 2025 UWMP and WSCP. It also discusses plan implementation and the amendment process for both documents.

10.1 Notice of Plan Preparation

CWC §10642 requires encouragement of public participation and a public hearing prior to the adoption of the 2025 UWMP and WSCP. In order to reach the "diverse social, cultural, and economic elements of the population" within COSMUD's service area, a public hearing will be held on May 12, 2026. The public hearing will include a presentation to the public. This session will be held for review and comment of the draft UWMP and WSCP before adoption by COSMUD.

10.1.1 Notices to Cities, Counties, and the Public

The following notifications were sent to all cities and counties within which COSMUD provides water:

- **60-Day Notification Letters:** Letters were sent at least 60-days prior to the public hearing to provide notification that COSMUD was preparing its 2025 UWMP.
- **Notice of Public Hearing:** Letters will be sent out at least 2 weeks prior to the public hearing to provide notice of the planned time and location of the public hearing. These letters are also to inform that a Public Draft of COSMUD's 2025 UWMP and WSCP was available for public review on COSMUD's website.

Both notification letters are included in Attachment N.

Table 10- 1. Notifications to Cities and Counties.

County Name	60 Day Notice	Notice of Public Hearing
San Joaquin County Public Works	Yes	
Eastern San Joaquin Groundwater Authority	Yes	

10.2 Public Hearing and Adoption - To Be Developed in Future Submittal

10.3 Plan Submittal - To Be Developed in Future Submittal

10.3.1 Submitting a UWMP and Water Shortage Contingency Plan to DWR - To Be Developed in Future Submittal

10.3.2 Electronic Data Submittal - To Be Developed in Future Submittal

10.3.3 Submitting a UWMP, Including WSCP, to the California State Library - To Be Developed in Future Submittal

10.3.4 Submitting a UWMP to Cities and counties - To Be Developed in Future Submittal

10.4 Public Availability - To Be Developed in Future Submittal

10.5 Notification to Public Utilities Commission - To Be Developed in Future Submittal

10.6 Plan Implementation - To Be Developed in Future Submittal

10.7 Amending an Adopted Urban Water Management Plan - To Be Developed in Future Submittal

10.7.1 Amending a UWMP or WSCP - To Be Developed in Future Submittal

10.7.2 Submitting Revised Water Shortage Contingency Plan - To Be Developed in Future Submittal

10.8 California Department of Water Resources Review of Submitted Plans - To Be Developed in Future Submittal

ATTACHMENT A: UWMP CHECKLIST ARRANGED BY SUBJECT

Retail (x = required)	Wholesale (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	x	1	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	n/a	Ch. 1, Executive Summary
x	x	1	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.	Plan preparation	n/a	Ch. 1.4, Executive Summary
x	x	2.1	Section 2.1	10620(b)	Every person that becomes a Supplier shall adopt UWMP within one year after it has become a Supplier.	Plan preparation	n/a	Ch.2.1
x	n/a	2.5	Section 2.5	10644	Supplier shall report the Public Water Systems number, volume of delivered water, and number of connections that are included in this UWMP.	Plan preparation	2-1	Ch.2.1
x	x	2.5	Section 2.5	10644	Supplier shall report if this UWMP is an individual UWMP and whether the Supplier belongs to a regional UWMP or regional alliance.	Plan preparation	2-2	Ch. 2.2
x	x	2.5	Section 2.5	10644	Supplier shall report whether the data is in fiscal or calendar years and the units of measure used for reporting water volumes.	Plan preparation	2-3	Ch. 2.4
x	x	2.4	Section 2.4	10642	Provide supporting documentation that the Supplier has encouraged ~~d~~ 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	n/a	
x	x	2.4	Section 2.4.2	10620(d)(3)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other Suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan preparation	n/a	
x	n/a	2.4	Section 2.4.1	10631(h)	Retail Suppliers will include documentation that they have provided their Wholesale Supplier(s)—if any—with water use projections from that source.	Plan preparation	2-4 R	Ch. 2.5
n/a	x	2.4	Section 2.4.1	10631(h)	Wholesale Suppliers will provide their Suppliers with identification and quantification of the existing and planned sources of water available from the Wholesale Supplier to the Supplier during various water year types.	Plan preparation	2-4 W	
x	x	3	Chapter 3.0	10631(a)	Describe the Supplier service area.	System description	n/a	Ch. 3.2
x	x	3.3	Section 3.3	10631(a)	Describe the climate of the Supplier's service area.	System description	n/a	Ch. 3.3
x	x	3.4	Section 3.4.1	10631(a)	Provide the current and projected service area populations for 2030, 2035, 2040, 2045 and optionally 2050.	System description	3-1	Ch.3.4.1
x	x	3.4	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the Supplier's water management planning.	System description	n/a	Ch.3.4.2
x	x	3.5	Section 3.5	10631(a)	Describe the land uses within the service area… include the current and projected land uses within the existing or anticipated service area affecting the Supplier's water management planning. Describe the land uses within the service area.	System description and baselines	n/a	Ch.3.5
x	Optional	4.2	Sections 4.2.3 and 4.2.4	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System water use	4-1 and 4-2	Ch 4.2
x	Optional	4.3	Section 4.3.1	10631(d)(3)(A)	Report the distribution system water loss for each of the five years preceding the plan update.	System water use	4-5	Ch 4.4
x	n/a	4.3	Section 4.3.2	10631(d)(3)(C)	Retail Suppliers shall provide data to show the distribution loss standards were met.	System water use	4-6	Ch 4.4
x	n/a	4.2	Section 4.2.5.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the Supplier.	System water use	4-3	Ch 4.2
x	n/a	4.2	Section 4.2.5.3	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	4-3	Ch 4.3
x	n/a	4.2	Section 4.2.5.3	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System water use	4-3	Ch 4.2
x	n/a	4.2	Section 4.2.5.3	10631(d)(4)(B)(ii)	To the extent that a Supplier reports the information described in subparagraph (A), an urban water Supplier shall… 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.	System water use	4-3	Ch 4.3
x	x	4.2	Section 4.2.5.6	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System water use	n/a	Ch 4.6
n/a	x	5.1	Section 5.1	10608.36	Wholesale Suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their Retail Suppliers achieve targeted water use reductions.	Baselines and targets	n/a	
x	n/a	5.2	Section 5.2	10608.4	Retail Suppliers shall report on their compliance in meeting their water use targets. Reporting requirements will vary depending on whether the Supplier: - Was considered an urban retail water supplier in 2020, - Met its 2020 target in 2020, or - Was part of a merger or consolidation since 2020. Chapter 5 Subsections 5.2.1, 5.2.2, and 5.2.3 address each of these situations.	Baselines and targets	5-1	Ch 5
x	x	6.1	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	n/a	6.3, 6.4, 6.5
x	x	6.1	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, including changes in supply due to climate change.	System supplies	n/a	Ch 7
x	x	6.2	Section 6.2.2	10631(b)(4)(C)	Indicate whether groundwater is an existing or planned source of water available to the Supplier. If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	Water supplies and recycled water	6-1	Ch 6
x	x	6.2	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the Supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System supplies	n/a	6.5
x	x	6.2	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System supplies	n/a	6.4

x	x	6.2	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	n/a	
x	x	6.2	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins… (include) information as to whether DWR has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin…	Water supplies and recycled water	n/a	
x	x	6.2	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins… describe efforts by the Supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	Water supplies and recycled water	n/a	
x	x	6.2	Section 6.2.2.	10631(b)(4)(C)	If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	System supplies	n/a	6.4
x	x	6.2	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	6-9	6.8
x	x	6.1	Section 6.1	10631(b)	Identify and quantify the existing and planned sources of water available for 2025, 2030, 2035, 2040, 2045 and optionally 2050.	System supplies	6-8 and 6-9	6.8
x	x	6.2	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	n/a	
x	n/a	6.2	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)	6-2	6.6
x	x	6.2	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)	6-3	6.6
x	x	6.2	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the Supplier's service area.	System supplies (recycled water)	6-4	6.6.2
x	x	6.2	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)	6-4	
x	x	6.2	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 describe the actual use of recycled water in comparison to uses previously projected.	System supplies (recycled water)	6-4 and 6-5	6.6.2
x	x	6.2	Section 6.2.5	10633(f)	Describe the actions that 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)	6-6	
x	x	6.2	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)	n/a	
x	x	6.2	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System supplies	6-7	
x	x	6.2	Section 6.2.10	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 five consecutive water years.	System supplies	6-7	6.7
x	x	6.3	Section 6.3 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	O-1A, O-1B, O-1C, and O-2	6.9
x		7.1	Section 7.1	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	n/a	
x	x	7.2	Section 7.2	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 Supplier with the total projected water use over the next 20 years.	Water supply reliability assessment	7-2, 7-3, and 7-4	Ch 7
x	x	7.2	Section 7.2.3	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	n/a	
x	x	7.3	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	n/a	Ch 7
x	x	7.3	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 five consecutive years.	Water supply reliability assessment	n/a	Ch 7
x	x	7.3	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	n/a	Ch 7
x	x	7.3	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the Supplier with the total projected water use for the drought period.	Water supply reliability assessment	7-5	7.2.7
x	x	7.3	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	n/a	Ch 7
x	x	8	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water shortage contingency planning	n/a	Ch. 8
x	x	8	Chapter 8	10632(a)(1)	Provide an analysis of water supply reliability (from Guidebook Chapter 7) in the WSCP.	Water shortage contingency planning	n/a	Section 1 of WSCP
x	x	8.2	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	n/a	Section 2.1 of WSCP
x	x	8.2	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	n/a	Section 2.2 and 2.3 of WSCP
x	x	8.3	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10%, 20%, 30%, 40%, 50% shortage, and greater than 50% 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	n/a	Section 3 of WSCP
x	x	8.3	Section 8.3	10632(a)(3)(B)	Suppliers with an existing WSCP that uses different water shortage levels must cross reference their categories with the six standard categories.	Water shortage contingency planning	8-1	N/A
x	x	8.4	Section 8.4	10632(a)(4)(A)	Suppliers with WSCPs that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water shortage contingency planning	8-2	Section 4.1 of WSCP
x	x	8.4	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water shortage contingency planning	8-3	Section 4.2 of WSCP

x	x	8.4	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water shortage contingency planning	8-2	Section 4.3 of WSCP
x	x	8.4	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	Table 8-3	Section 4.4 of WSCP
x	x	8.4	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	8-2 and 8-3	Sections 4.2 of WSCP
x	x	8.4	Section 8.4.6	10632.5	The UWMP shall include a seismic risk assessment and mitigation plan.	Water shortage contingency plan	n/a	Section 4.6 of WSCP
x	x	8.5	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	n/a	Section 5 of WSCP
x	x	8.5	Section 8.5	10632(a)(5)(B), 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water shortage contingency planning	n/a	Section 5 of WSCP
x	n/a	8.6	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	n/a	Section 6 of WSCP
x	x	8.7	Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the Supplier to enforce shortage response actions.	Water shortage contingency planning	n/a	Section 7.1 of WSCP
x	x	8.7	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 Emergencies* .	Water shortage contingency planning	n/a	Section 7.2 of WSCP
x	x	8.7	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	n/a	Section 7.3 of WSCP
x	x	8.8	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	n/a	Section 8.1 of WSCP
x	x	8.8	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	n/a	Section 8.1 of WSCP
x	n/a	8.8	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	n/a	Section 8.2 of WSCP
x	n/a	8.9	Section 8.9	10632(a)(9)	Retail Suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data are collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water shortage contingency planning	n/a	Section 9 of WSCP
x	x	8.10	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the WSCP to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water shortage contingency planning	n/a	Section 10 of WSCP
x	n/a	8.11	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	n/a	Section 11 of WSCP
x	x	8.12	Section 8.12	10632(c)	Make available the WSCP to customers and any city or county where it provides water within 30 days after adoption of the plan.	Water shortage contingency planning	n/a	Section 12 of WSCP
x	n/a	9.1	Sections 9.1	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	n/a	Ch 9
n/a	x	9.2	Sections 9.2	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	n/a	10	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	n/a	
x	x	10.2	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 Supplier will be reviewing the UWMP and considering amendments or changes to the plan.	Plan adoption, submittal, and implementation	10-1	Chapter 10
x	x	10.4	Section 10.4	10621(f)	Each urban water Supplier shall update and submit its 2025 plan to DWR by July 1, 202 6.	Plan adoption, submittal, and implementation	n/a	
x	x	10.2	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the Supplier made the UWMP and WSCP available for public inspection, published notice of the public hearing, and held a public hearing about the UWMP and WSCP.	Plan adoption, submittal, and implementation	n/a	
x	x	10.2	Section 10.2.2	10642	The 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	10-1	
x	x	10.3	Section 10.3.2	10642	Provide supporting documentation that the UWMP and WSCP has been adopted as prepared or modified.	Plan adoption, submittal, and implementation	n/a	
x	x	10.4	Section 10.4	10644(a)	Provide supporting documentation that the Supplier has submitted their UWMP to the California State Library.	Plan adoption, submittal, and implementation	n/a	
x	x	10.4	Section 10.4	10644(a)(1)	Provide supporting documentation that the Supplier has submitted their UWMP to any city or county within which the Supplier provides water no later than 30 days after adoption.	Plan adoption, submittal, and implementation	n/a	
x	x	10.4	Sections 10.4.1 and 10.4.2	10644(a)(2)	The UWMP, or amendments to the UWMP, submitted to DWR shall be submitted electronically.	Plan adoption, submittal, and implementation	n/a	
x	x	10.7	Section 10.7.2	10644(b)	If revised, submit a copy of the WSCP to DWR within 30 days of adoption.	Plan adoption, submittal, and implementation	n/a	
x	x	10.5	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its UWMP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	
x	x	10.5	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its WSCP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	
x	x	10.6	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	

ATTACHMENT B: DWR STANDARDIZED UWMP TABLES FOR RETAIL URBAN WATER SUPPLIERS

Submittal Table 2-1 Retail: Public Water Systems			
Has there been a change in the number of affiliated Public Water Systems since the 2020 UWMP? (OPTIONAL)			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025 (AF)
Add additional rows as needed			
CA3910012	City of Stockton	51,887	32,060
	Total	51,887	32,060
DWR NOTES: **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Table 2-3.			
NOTES:			

Submittal Table 2-2: Plan Identification			
Select One or Both ☑	**Type of Plan**		**Name of Regional Alliance or RUWMP** (Drop Down List)
	Individual UWMP		
	☐	Water Supplier is also a member of a SB X7-7 Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES:			

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesale supplier
☑	Supplier is a retail supplier
Fiscal or Calendar Year (select one)	
☑	UWMP Tables are in calendar years
☐	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP (Select from the drop down list).	
Unit	AF

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

Submittal Table 2-4 Retail: Water Supplier Information Exchange **Water Code Section 10631(h)**
The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631 (h).
Wholesale Water Supplier Name
Add additional rows as needed
Stockton East Water District
NOTES:

10631(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.

Submittal Table 3-1 Retail: Population - Current and Projected Water Code Section 10631(a)						
Population Served	2025	2030	2035	2040	2045	2050(opt)
	191,302	205,478	220,705	237,060	254,627	273,496
NOTES:						

CWC 10631(a) describe the current and projected population of the service area including current and projected population…

Submittal Table 4-1 Retail: 2025 Actual Total Uses for Potable and Non-Potable Water Water Code Section 10631(d)(1)			
Use Type	Additional Description (as needed)	2025 Actual Water Use	
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		Level of Treatment When Delivered (OPTIONAL) Drop down list	Volume (AF)
Add additional rows as needed			
Single Family		Potable	15,374
Multi-Family		Potable	2,927
Commercial	Includes Institutional/Governmental use type	Potable	6,083
Landscape	Irrigation	Potable	3,400
Sales/Transfers/Exchanges to other Suppliers	Metered to San Joaquin County	Potable	931
Industrial		Potable	526
Other (optional)	Hydrant Meters/Jumpers	Potable	70
Distribution System Water Loss		Potable	2,749
		Subtotal Potable	32,060
		Subtotal Non-Potable	0
		Total	32,060
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.			
NOTES: Volume is measured in Acre-Feet (AF)			

CWC 10631(d)(1) For an urban retail water supplier, quantify, to the extent records are available, past and current water use…identifying the uses among water use sectors including but not limited to:

Submittal Table 4-2 Retail: Total Uses of Potable, and Non-PotableWater - Projected
Water Code Section 10631(d)(1)

Use Type	Additional Description (as needed)	Projected Water Use (Report To the Extent that Records are Available)					
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		Level of Treatment When Delivered (OPTIONAL) Drop down list	**2030** (AF)	**2035** (AF)	**2040** (AF)	**2045** (AF)	**2050** (opt) (AF)
Add additional rows as needed.							
Single Family		Potable	16,481	17,668	18,940	20,303	21,765
Multi-Family		Potable	3,138	3,364	3,606	3,865	4,144
Commercial	Includes Institutional/Governmental use type	Potable	6,521	6,990	7,494	8,033	8,612
Landscape	Irrigation	Potable	3,645	3,907	4,189	4,490	4,813
Sales/Transfers/Exchanges to other Suppliers	Metered to San Joaquin County	Potable	998	1,070	1,147	1,230	1,318
Industrial		Potable	564	604	648	695	745
Other (optional)	Hydrant Meters/Jumpers	Potable	75	80	86	92	99
Distribution System Water Loss		Potable	2,947	3,159	3,387	3,630	3,892
		Subtotal Potable	34,368	36,843	39,496	42,339	45,388
		Subtotal Non-Potable	0	0	0	0	0
		Total	34,368	36,843	39,496	42,339	45,388

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.

NOTES:

CWC 10631(d)(1) For an urban retail water supplier, quantify, to the extent records are available... projected water use…identifying the uses among water use sectors…

Submittal Table 4-3 Retail: Inclusion in Water Use Projections Water Code Section 10631 (a), 10631 (d)(4)(A), and 10631 (d)(4)(B)	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) **Drop down list (y/n)**	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. **OPTIONAL** Suppliers may complete Optional Submittal Table 4-4 R to quantify the expected savings.	California Code of Regulations, Title 23 Waters, Division 2 DWR, Chapter 2.7 Model Water Efficient Landscape Ordinance (MWELO), updated 2015
Are Lower Income Residential Demands Included In Projections? (Refer to Appendix K of UWMP Guidebook) **Drop down list (y/n)**	Yes
OPTIONAL If the method for accounting Lower Income Residential Demands has been included, provide page number where this accounting can be found. (An example is included in Appendix K.)	
NOTES:	

CWC10631 (d) (4) (A) Water use projections, where available, shall display and account for water savings estimated to result from adopted codes, standards, ordinances, or transpotation and land use plans identified by the urban water supplier, as applicable to the service area.

CWC 10631 (d) (4) (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.
CWC 10631(a) 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 identified in the housing element of any city, county, or city and county, in the service area of the supplier .

Submittal Table 4-5 Retail: Water Loss Audit Reporting Water Code Section 10631(d)(3)(A)		
Public Water System ID # Reported in Table 2-1 R	Reporting Period	Submitted to DWR Water Loss Audit Program (yes/no)
Report submittal status for all five years for each Public Water System as available. Add rows as needed		
	2020	Yes
	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes
DWR NOTES: Suppliers will provide a link to the WUEdata submittals of their Water Loss Audit Reports.		
NOTES: Gap in water loss audit data from 1/1/21 to 6/30/21		

CWC 10631(d)(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.

Submittal Table 4-6 Retail: Progress Towards 2028 Water Loss Standard
Water Code Section 10631(d)(3)(C)

Public Water System ID # Reported in Submittal Table 2-1 R	Did the Water Board Calculate a Water Loss Standard for this Public Water System? (y/n) If no, Supplier will not complete this row.	Real Water Loss					Apparent Water Loss				
		State Water Board Standard		Most Recent AWWA Water Loss Audit			State Water Board Standard		Most Recent AWWA Water Loss Audit		
		2028 Real Water Loss Standard per Unit per day	Units for Real Water Loss (Drop down list)	Number of Units (Connections or Miles corresponding with units selected)	Volume of Total Real Loss (from AWWA Water Loss Audit) (AF)	Real Water Loss Per Unit per Day	2028 Apparent Water Loss Standard per Unit per Day	Units for Apparent Water Loss	Number of Connections	Volume of Total Apparent Loss (from AWWA Water Loss Audit) (AF)	Apparent Water Loss Per Unit per Day
Add additional rows as needed.											
CA3910012	Yes	16.5	Gallons per Service Connection per Day (GPSCD)	51730	1007.8	17.4	11.7	Gallons per Service Connection per Day (GPSCD)	51730	597.4	10.3

Water Board's Calculated Water Loss Standards

DWR NOTES: Units of measure (AF, CCF, MG) for Water Loss **MUST** remain consistent with units reported in Submittal Table 2-3. The units reported in Submittal Table 2-3 are used in this table's calculations.

NOTES:

CWC 10631(d)(3)(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.

EXHIBIT 1

Submittal Table 5-1 Retail: SB X7-7 2020 Target Progress Water Code Section 10608.40						
☐	Check the box if the Supplier was not an Urban Water Supplier during or before the 2020 UWMP reporting cycle. Proceed to the next table.					
Was Supplier part of a merger or consolidation since 2020?	Regional Alliance Target or Individual Target? Drop down list	2020 Target	Actual 2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?	**Only for suppliers that did not meet the Target in 2020** **See DWR NOTES below.**	
					Actual 2025 GPCD (From SB X7-7 Compliance Form)	Did Supplier meet the 2020 Target in 2025?
No	Individual Target	165	158	Yes		NA
DWR NOTES: **Suppliers calculating a 2025 GPCD** will need to complete and submit SB X 7-7 Compliance Tables to verify the use of SB X7-7 Methodologies. **Suppliers that were part of a merger or consolidation since 2020** see Chapter 5 and Appendix P for guidance. NA=Not Applicable						
NOTES:						

10608.40 Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans submitted pursuant to Section 10631.

Submittal Table 6-1 Retail: Groundwater Volume Pumped Water Code Section 10631(4) and 10631(4)(c)							
☐	Check the box if the Supplier does not pump groundwater. Proceed to the next table.						
☐	Check the box if all or part of the groundwater described below is desalinated. (OPTIONAL)						
Groundwater Type **Drop Down List** May use each category multiple times	Water Type (OPTIONAL) **Drop down list**	Location or Basin Name	2021 (AF)	2022 (AF)	2023 (AF)	2024 (AF)	2025 (AF)
Add additional rows as needed							
Alluvial Basin	Non-Potable	San Joaquin Valley Basin, Eastern San Joaquin Subbasin	7089	1547	2430	1066	956
		Total	7,089	1,547	2,430	1,066	956
DWR NOTES: **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.							
NOTES							

10631(4) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information:

(C) 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.

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2025
Water Code Section 10633(a)

☐	Check the box if there is no wastewater collection system. Proceed to the next table.
	Percentage of 2025 service area served by wastewater collection system (OPTIONAL)
	Percentage of 2025 service area population served by wastewater collection system (OPTIONAL)

Wastewater Collection			Recipient of Collected Wastewater	
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? OPTIONAL **Drop Down List**	Volume of Wastewater Collected from UWMP Service Area 2025 (AF)	Name of Wastewater Treatment Plant (WWTP) and Place ID Number **Drop down list**	Is WWTP Located Within UWMP Area? **Drop Down List**
Add additional rows as needed				
COSMUD	Metered	4,910	Stockton Regional WW Control Facility, Place ID 258739	Yes
Total Wastewater Received from UWMP Service Area in 2025:		4,910		

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.
Additional Guidance. See Appendix M, Section M.21 for detailed guidance on this table.

NOTES: Units are in acre-feet (AF). Collected wastewater volume includes that which is produced by Cal Water and San Joaquin County service areas since they are not metered seperately.

CWC 10633 (a) (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.

Submittal Table 6-3 Retail: Wastewater Treatment and Outcomes Within UWMP Service Area in 2025
Water Code Section 10633(a)

☐ **Check the box if no wastewater is treated or disposed of within the UWMP service area.**
Proceed to the next table.

Wastewater Treatment Plant Name and Place ID Number **Drop down list**	Does This Plant Treat Wastewater Generated Outside the UWMP Service Area? (OPTIONAL) **Drop down list**	2025 Volume of Wastewater Received from UWMP Service Area (As Reported in Submittal Table 6-2 R)	Total 2025 Volume of Water Treated	**2025 Outcomes of Treated Wastewater**											
				Water Recycled Within UWMP Service Area (enter data as applicable)		**Water Recycled Outside of UWMP Service Area** (enter data as applicable)		**Effluent Discharge that is not a Permitted Recycled Water Use** (enter data as applicable)		**Required Discharge for Instream Flow** (enter data as applicable)		**Delivered to Another Entity for Additional Treatment** (enter data as applicable)		
				Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Name of other entity
		(AF)	(AF)											
Add additional rows as needed														
Stockton Regional WW Control Facility, Place ID	Yes	11,077	9,413						0		0		0	
Total		11,077	9,413		0		0		0		0		0	

DWR NOTES:
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.
IPR: Indirect Potable Reuse would have the treatment level of its end use requrement in the Level of Treatment drop-down.
Additional Guidance. See Appendix M, Section M.21 for detailed guidance on this table.

NOTES: Units are in acre-feet (AF). Volumes of treated wastewater and discharged wastewater are provided by Wastewater Operations QOR Sharepoint.

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...and shall include all of the following:
(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.

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area
Water Code Section 10633 (c)(e)

☑	Check box if recycled water is not used and is not planned for use within the service area of the supplier. The supplier will only complete the column on "Potential Recycled Water Use" and submit an accompanying narrative on the feasibility of that potential recycled water use.

Name(s) of Facility/ies Producing (Treating) the Recycled Water (OPTIONAL) :	
Name of Supplier Operating the Recycled Water Distribution System (OPTIONAL) :	
Supplemental Water Added in 2025 (volume) Include units (OPTIONAL) :	
Source of 2025 Supplemental Water (OPTIONAL) :	

Use Type **Drop down list**	Water Type (after treatment if treated) (OPTIONAL) **Drop down list**	Additional Information (as needed)	2025	2030	2035	2040	2045	2050 (opt)	**Potential Recycled Water Use**	
			(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	Volume	Narrative page number (OPTIONAL)
Add additional rows as needed										
Agricultural irrigation			-	-	-	-	-	-	-	-
Landscape irrigation (exc golf courses)			-	-	-	-	-	-	-	-
Golf course irrigation			-	-	-	-	-	-	-	-
Commercial use			-	-	-	-	-	-	-	-
Industrial use			-	-	-	-	-	-	-	-
Geothermal and other energy production			-	-	-	-	-	-	-	-
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	0	0

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.
Additional Guidance. See Appendix M, Section M.21 for detailed guidance on this table.
Potential recycled water use - a description of the feasibility of these uses must be included in the narrative.
Multiple Producers: If you have multiple recycled water producers, submit a separate table for each.

NOTES:

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... and shall include...
(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

Submittal Table 6-5 Retail: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual
Water Code Section 10633 (e)

☑ Check the box if recycled water was not used in 2025 nor previously projected for use in 2020.
Proceed to the next table.

Use Type Drop Down list	2020 Projection for 2025 (AF)	2025 Actual Use (AF)
Add additional rows as needed		
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

DWR NOTES:
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure reported in Submittal Table 2-3
Additional Guidance. See Appendix M, Section M.21 for detailed guidance on this table.

NOTES:

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

Submittal Table 6-6 Retail: Methods to Encourage Future Recycled Water Use Water Code Section 10633 (f)			
☑	Check the box if the 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 the UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use (AF)
Add additional rows as needed			
		Total (AF)	0
DWR NOTES: **Units of measure** (AF, CCF, MG) MUST remain consistent with units reported in Submittal Table 2-3. The units reported in Submittal Table 2-3 are used in this table's calculations. **The unit conversion to Acre Feet** addresses the Water Code's requirement that this value be provided in acre-feet.			
NOTES:			

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the serv`ice 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:
(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.

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs
Water Code Section 10631 (f)

☐	Check the box if there are no expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Procees to the next table.
☐	Check the box if some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.
	Provide page location of narrative in the UWMP

Name of Future Projects or Programs	Joint Project with other suppliers?		Additional Description (as needed)	Water Type (after treatment if treated) (OPTIONAL) **Drop Down list**	Planned Implementation Year	Planned for Use in Year Type **Drop Down List**	Expected Increase in Water Supply to Supplier (This may be a range)
	Drop Down List (yes/no)	If Yes, Supplier Name					(AF)
Add additional rows as needed							
North Stockton Pipeline Hypochlorite Facility Project [(a)]	Yes	SEWD	Construct new sodium hypchlorite injection system to combine supply from the DWTP and SEWD	Potable	Completed in 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	Non-Potable	2030	All Year Types	6500 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	

DWR NOTES:
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure reported in Submittal 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 undesireable disinfection byproducts due to different potable water treatment processes.
(b) WID supply may increase by an additional 6,500 AFY as agricultrual 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 — 2025 Actual Water Code Section 10631 (b)				
Water Supply	Additional Description (as needed)	**2025**		
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		**Water Type** (after treatment if treated) (OPTIONAL) **Drop Down list**	**Actual Volume**	**Total Entitlement** (OPTIONAL) See "DWR Notes" below
			(AF)	(AF)
Add additional rules as needed				
Purchased or Imported Water	SEWD	Potable	16,571	
Purchased or Imported Water	WID	Potable	9,341	
Surface water (not desalinated)	San Jaoquin River Diversion	Potable	4,910	
Groundwater (not desalinated)	City-owned wells	Potable	956	
		Subtotal Potable	31,778	0
		Subtotal Non-Potable	0	0
		Total	31,778	0
DWR NOTES: **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3. **Total Entitlement:** e.g. Water Right, Groundwater Allocation, Contracted Amount.				
NOTES: Units are in acre-feet (AF).				

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

Submittal Table 6-9 Retail: Water Supplies — Projected
Water Code Section 10631 (b)

Water Supply	Additional Detail on Water Supply	Water Type (after treatment if treated) (OPTIONAL) Drop Down list	y (Report to the Extent Practicable)									
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool			2030		2035		2040		2045		2050 (opt)	
			Reasonably Available Volume	Total Entitlement (OPTIONAL) See "DWR Notes" below	Reasonably Available Volume	Total Entitlement (OPTIONAL) See "DWR Notes" below	Reasonably Available Volume	Total Entitlement (OPTIONAL) See "DWR Notes" below	Reasonably Available Volume	Total Entitlement (OPTIONAL) See "DWR Notes" below	Reasonably Available Volume	Total Entitlement (OPTIONAL) See "DWR Notes" below
			(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)
Add additional rows as needed												
Purchased or Imported Water	SEWD		20,000		20,000		20,000		20,000		20,000	
Purchased or Imported Water	WID		8,850		9,850		10,850		11,850		13,000	
Surface water (not desalinated)	San Joaquin River Diversion		24,800		25,000		25,000		25,000		25,000	
Groundwater (not desalinated)	City-owned wells		15,400		15,400		15,400		15,400		15,400	
Subtotal Potable			0	0	0	0	0	0	0	0	0	0
Subtotal Non-Potable			0	0	0	0	0	0	0	0	0	0
Total			69,050	0	70,250	0	71,250	0	72,250	0	73,400	0

DWR NOTES:
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.
Total Entitlement: e.g. Water Right, Groundwater Allocation, Contracted Amount.

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 Contractor(s).
2. Because of the uncertainty of the timpacts of the Bay-Delta Water Quality Control Plan Amendment, projected SEWD supplies are assumed to remain at the current reasonably available volume.

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

Optional Submittal Table O-1B: Recommended Energy Reporting - SINGLE DELIVERY PRODUCT - TOTAL UTILITY APPROACH

Water Delivery Product drop down list (If delivering more than one type of product recommend using Table O-1C)	Retail Potable Deliveries	**Only for Water Delivery Products Under the Urban Water Supplier's Operational Control**		
Start Date of Reporting Period	1/1/2025	**Sum of All Water Management Processes**	**Non-Consequential Hydropower**	
End Date of Reporting Period	12/31/2025			
Is upstream embedded energy in the values reported?				
Units of Measure for Water	(AF)	**Total Utility** See DWR NOTES	**Hydropower**	**Net Utility**
Volume of Water Entering Process		29,311	-	29,311
Energy Consumed (kWh)		8,065,961	-	8,065,961
Energy Intensity (kWh/AF)		275	-	275

DWR NOTES:

Total Utility: The volume of water entered in the "Total Utility" column should equal the volume of water entering the distribution system (excluding recycled water); in most cases, this is the total volume calculated in UWMP Table 4-1: 2025 Actual Total Uses for Potable and Non-Potable Water. Note if recycled water is included in your Submittal Table 4-1, you must exclude it from your volume in this table.

Quantity of Self-Generated Renewable Energy

179887 kWh

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

Metered Data

Data Quality Narrative:

Energy consumption was provided for the groundwater wells, reservoir pump and booster stations, San Joaquin River intake, and the DWTP.

Narrative:

The water service area is supplied by surface water from the San Joaquin River, purchased water from SEWD and WID, and groundwater from City-owned production wells. An overview of each water supply source is provided in Section 6.3. Energy data summarize monthly energy consumption associated with operation of the Delta Water Treatment Plant (DWTP), groundwater wells, and reservoirs, with limited on-site solar generation at the DWTP.

NOTES:

OPTIONAL Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐	Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. **Location:** [insert location from UWMP]
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
		15400	
Average Year	2020	15400	100%
Single-Dry Year	2019	15400	100%
Consecutive Dry Years 1st Year	2015	15400	100%
Consecutive Dry Years 2nd Year	2016	15400	100%
Consecutive Dry Years 3rd Year	2017	15400	100%
Consecutive Dry Years 4th Year	2018	15400	100%
Consecutive Dry Years 5th Year	2019	15400	100%

DWR NOTES: Supplier may use multiple versions of Submittal Table 7-1 R 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 Submittal Table 7-1 R, in the "Note" section of each submittal table, state that multiple versions of Submittal Table 7-1 R are being used and identify the particular water source that is being reported in each submittal table.
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table reports the units of measure reported in Submittal Table 2-3.

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

OPTIONAL Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐	Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. **Location:** [insert location from UWMP]
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
		27200	
Average Year	2021	27200	100%
Single-Dry Year	2017	22500	83%
Consecutive Dry Years 1st Year	2015	20983	77%
Consecutive Dry Years 2nd Year	2016	22649	83%
Consecutive Dry Years 3rd Year	2017	25778	95%
Consecutive Dry Years 4th Year	2018	27564	101%
Consecutive Dry Years 5th Year	2019	28562	105%

DWR NOTES: Supplier may use multiple versions of Submittal Table 7-1 R 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 Submittal Table 7-1 R, in the "Note" section of each submittal table, state that multiple versions of Submittal Table 7-1 R are being used and identify the particular water source that is being reported in each submittal table.
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table reports the units of measure reported in Submittal Table 2-3.

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

OPTIONAL Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐	Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. **Location:** [insert location from UWMP]
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
		8850	
Average Year	2021	8850	100%
Single-Dry Year	2020	4080	46%
Consecutive Dry Years 1st Year	2012	4080	46%
Consecutive Dry Years 2nd Year	2013	7993	90%
Consecutive Dry Years 3rd Year	2014	4760	54%
Consecutive Dry Years 4th Year	2015	4628	52%
Consecutive Dry Years 5th Year	2016	9913	112%

DWR NOTES: Supplier may use multiple versions of Submittal Table 7-1 R 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 Submittal Table 7-1 R, in the "Note" section of each submittal table, state that multiple versions of Submittal Table 7-1 R are being used and identify the particular water source that is being reported in each submittal table.
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table reports the units of measure reported in Submittal Table 2-3.

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

OPTIONAL Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐	Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. **Location:** [insert location from UWMP]
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
		19900	
Average Year	2018	19900	100%
Single-Dry Year	2015	18150	91%
Consecutive Dry Years 1st Year	2012	18300	92%
Consecutive Dry Years 2nd Year	2013	19000	95%
Consecutive Dry Years 3rd Year	2014	19000	95%
Consecutive Dry Years 4th Year	2015	18100	91%
Consecutive Dry Years 5th Year	2016	21300	107%

DWR NOTES: Supplier may use multiple versions of Submittal Table 7-1 R 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 Submittal Table 7-1 R, in the "Note" section of each submittal table, state that multiple versions of Submittal Table 7-1 R are being used and identify the particular water source that is being reported in each submittal table.
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table reports the units of measure reported in Submittal Table 2-3.

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

Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison
Water Code Section 10635 (a)

	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (Opt) (AF)
Supply totals (autofill from Submittal Table 6-9 R)	76,250	77,450	78,450	79,450	80,600
SEWD	27,200	27,200	27,200	27,200	27,200
WID	8,850	9,850	10,850	11,850	13,000
San Joaquin River	24,800	25,000	25,000	25,000	25,000
COSMUD Wells	15,400	15,400	15,400	15,400	15,400
Use totals (autofill from Submittal Table 4-2 R)	29,768	30,233	30,704	31,183	31,670
Surplus/(shortfall)	46,482	47,217	47,746	48,267	48,930
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					

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

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

Submittal Table 7-3 Retail: Single Dry Year Supply and Use Comparison Water Code Section 10635(a)					
	2030	2035	2040	2045	2050 (Opt)
	(AF)	(AF)	(AF)	(AF)	(AF)
Supply totals	64,830	64,830	64,830	64,830	64,830
SEWD	27,200	27,200	27,200	27,200	27,200
WID	4,080	4,080	4,080	4,080	4,080
San Joaquin River	18,150	18,150	18,150	18,150	18,150
COSMUD Wells	15,400	15,400	15,400	15,400	15,400
Demand Totals	29,768	30,233	30,704	31,183	31,670
Surplus/(shortfall)	35,062	34,597	34,126	33,647	33,160
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES					

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.

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Use Comparison Water Code Section 10635(a)						
		2030	2035	2040	2045	2050 (Opt)
		(AF)	(AF)	(AF)	(AF)	(AF)
First year	Supply Totals	58,763	58,763	58,763	58,763	58,763
	SEWD	20,983	20,983	20,983	20,983	20,983
	WID	4,080	4,080	4,080	4,080	4,080
	San Joaquin River	18,300	18,300	18,300	18,300	18,300
	COSMUD Wells	15,400	15,400	15,400	15,400	15,400
	Demand Totals	29,768	30,233	30,704	31,183	31,670
	Surplus/(shortfall)	28,995	28,530	28,059	27,580	27,093
Second year	Supply Totals	65,042	65,042	65,042	65,042	65,042
	SEWD	22,649	22,649	22,649	22,649	22,649
	WID	7,993	7,993	7,993	7,993	7,993
	San Joaquin River	19,000	19,000	19,000	19,000	19,000
	COSMUD Wells	15,400	15,400	15,400	15,400	15,400
	Demand Totals	30,468	31,293	31,293	31,183	31,670
	Surplus/(shortfall)	34,574	33,749	33,749	33,859	33,372
Third year	Supply Totals	64,938	64,938	64,938	64,938	64,938
	SEWD	25,778	25,778	25,778	25,778	25,778
	WID	4,760	4,760	4,760	4,760	4,760
	San Joaquin River	19,000	19,000	19,000	19,000	19,000
	COSMUD Wells	15,400	15,400	15,400	15,400	15,400
	Demand Totals	31,168	32,353	32,353	31,183	31,670
	Surplus/(shortfall)	33,770	32,585	32,585	33,755	33,268
Fourth year	Supply Totals	66,592	66,592	66,592	66,592	66,592
	SEWD	27,564	27,564	27,564	27,564	27,564
	WID	4,628	4,628	4,628	4,628	4,628
	San Joaquin River	19,000	19,000	19,000	19,000	19,000
	COSMUD Wells	15,400	15,400	15,400	15,400	15,400
	Demand Totals	31,868	33,413	33,413	31,183	31,670
	Surplus/(shortfall)	34,724	33,179	33,179	35,409	34,922
Fifth year	Supply Totals	72,875	72,875	72,875	72,875	72,875
	SEWD	28,562	28,562	28,562	28,562	28,562
	WID	9,913	9,913	9,913	9,913	9,913
	San Joaquin River	19,000	19,000	19,000	19,000	19,000
	COSMUD Wells	15,400	15,400	15,400	15,400	15,400
	Demand Totals	32,568	34,473	34,473	31,183	31,670
	Surplus/(shortfall)	40,307	38,402	38,402	41,692	41,205

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

NOTES: Units are in acre-feet (AF)

2026		Total
Total Water Use	(AF)	32,352
Total Supplies	(AF)	58,763
Surplus/Shortfall w/o WSCP Action		26,411
2027		**Total**
Total Water Use	(AF)	32,845
Total Supplies	(AF)	65,042
Surplus/Shortfall w/o WSCP Action		32,197
2028		**Total**
Total Water Use	(AF)	33,345
Total Supplies	(AF)	64,938
Surplus/Shortfall w/o WSCP Action		31,593
2029		**Total**
Total Water Use	(AF)	33,853
Total Supplies	(AF)	65,692
Surplus/Shortfall w/o WSCP Action		31,839
2030		**Total**
Total Water Use	(AF)	34,368
Total Supplies	(AF)	75,175
Surplus/Shortfall w/o WSCP Action		40,807
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the		
NOTES: Units are in acre-feet (AF)		

Submittal Table 8-1: Cross-reference for Standard vs Supplier Shortage Levels
Water Code Section 10632(a)(3)(B)

☑	Check the box if the Supplier uses the Standard six levels of water shortage. Proceed to the next table.		
Standard Shortage Levels	**Percent Shortage Range**	**Suppliers Shortage Levels**	**Percent Shortage Range**
1	Up to 10%		
2	Up to 20%		
3	Up to 30%		
4	Up to 40%		
5	Up to 50%		
6	>50%		
NOTES:			

Submittal Table 8-2 Retail: Supply Augmentation and Other Actions Water Code Section 10632(a)(4)(A),(C) and (E)				
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier **Drop down list** These are the only categories that will be accepted by the WUEdata online submittal tool	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)	
Add additional rows as needed				
4	Exchanges	Volume	Up to Shortage Gap	Neighboring agencies
4	Transfers	Volume	Up to Shortage Gap	Potentially from Woodbridge Irrigation District
5	Exchanges	Volume	Up to Shortage Gap	Neighboring agencies
5	Transfers	Volume	Up to Shortage Gap	Potentially from Woodbridge Irrigation District
6	Exchanges	Volume	Up to Shortage Gap	Neighboring agencies
6	Transfers	Volume	Up to Shortage Gap	Potentially from Woodbridge Irrigation District
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.				
NOTES:				

10632(a)(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.

(C) Locally appropriate operational changes.

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

Submittal Table 8-3 Retail: Demand Reduction Actions Water Code Section 10632(a)(4)(B) and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions **Drop down list** These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? **For Retail Suppliers Only** Drop Down List
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)		
Add additional rows as needed					
1	Expand Public Information Campaign	Percentage	7-8%	City to encourage water customers and users to implement water conservation practices	No
1	Other - Prohibit use of potable water for washing hard surfaces	Percentage	0-1%	Washing of Street, driveways, sidewalks, buildings	Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	0-1%	Only recirculated water can be used in a fountain or other decorative feature	Yes
1	Decrease Line Flushing	Percentage		Depends on extent and frequency of current flushing activities	No
1	Landscape - Limit landscape irrigation to specific times	Percentage	0-1%		Yes
1	Implement or Modify Drought Rate Structure or Surcharge	Percentage	0-10%	Municipal Code 13.32.060	Yes
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	0-1%	Uncorrected plumbing or irrigation leaks	Yes
1	Landscape - Prohibit certain types of landscape irrigation	Percentage	0-5%	Prohibit free-flowing hoses	Yes
1	Landscape - Restrict or prohibit runoff from landscape irrigation	Percentage	0-5%	Limit excess runoff	Yes
1	Other - Require automatic shut of hoses	Percentage	0-5%		Yes
1	Reduce System Water Loss	Percentage	25-35%	Depends on extent and magnitude of current system losses	Yes
1	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Volume	0-5%		Yes
1	CII - Restaurants may only serve water upon request	Percentage	0-1%		Yes
1	CII - Lodging establishment must offer opt out of linen service	Volume	0-5%		Yes
2	Other	Volume	N/A	Refer to SMC Section 13.32.060	Yes
3	Other	Volume	N/A	Refer to SMC Section 13.32.060	Yes
4	Other	Volume	N/A	Refer to SMC Section 13.32.060	Yes
5	Other	Volume	N/A	Refer to SMC Section 13.32.060	Yes
6	Other	Volume	N/A	Refer to SMC Section 13.32.060	Yes
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES:					

10632(a)(4) Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:
(B) Locally appropriate demand reduction actions to adequately respond to shortages.
(E) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

Submittal Table 10-1 Retail: Notification to Cities and Counties Water Code Section 10621(b) and 10642		
City Name	60 Day Notice **Drop Down (yes/no)**	Notice of Public Hearing **Drop Down (yes/no)**
Add additional rows as needed		
County Name **Drop Down List**	60 Day Notice **Drop Down (yes/no)**	Notice of Public Hearing **Drop Down (yes/no)**
Add additional rows as needed		
NOTES:		

CWC 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.

CWC 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.

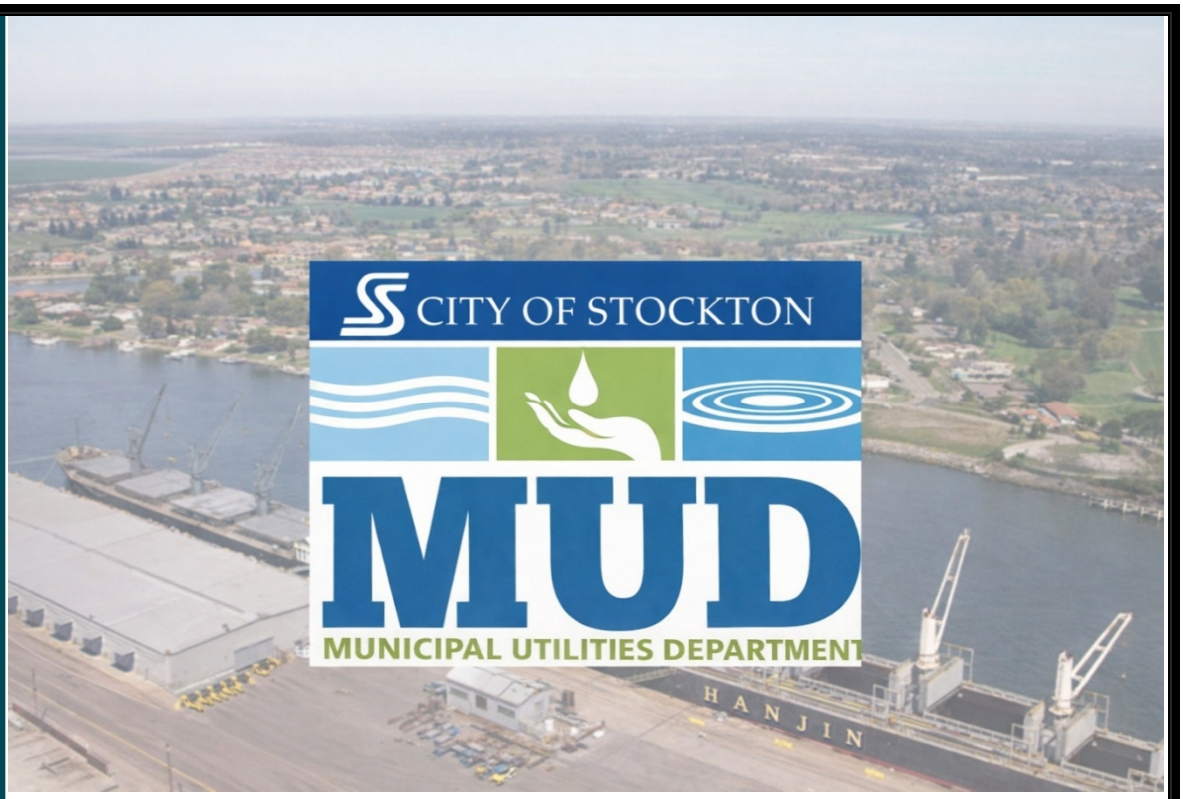
ATTACHMENT C: DWR POPULATION TOOL INPUT AND OUTPUT

PLACEHOLDER

ATTACHMENT D: 2025 WATER SHORTAGE CONTINGENCY PLAN

CITY OF STOCKTON

EXHIBIT 1



Public Draft 2025 Water Shortage Contingency Plan

April 2026

PREPARED BY:

verdantas

80 Blue Ravine Road, Suite 280
Folsom, CA 95630
(916) 608-2212

[THIS PAGE LEFT BLANK INTENTIONALLY]

Table of Contents

1 WATER SUPPLY RELIABILITY ANALYSIS 1
2 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES 2
2.1 Decision Making Process 2
2.2 Key Data Inputs 3
2.3 Assessment Methodology 4
3 SIX STANDARD WATER SHORTAGE STAGES 5
4 SHORTAGE RESPONSE ACTIONS 6
4.1 Supply Augmentation 6
4.2 Demand Reduction 7
4.3 Operational Changes 11
4.4 Additional Mandatory Restrictions 12
4.5 Emergency Response Plan 12
4.6 Seismic Risk Assessment and Mitigation Plan 12
4.7 Shortage Response Action Effectiveness 13
5 COMMUNICATION PROTOCOLS 13
5.1 Communication for Foreseeable Events 13
5.2 Communication for Unforeseeable Events 15
6 COMPLIANCE AND ENFORCEMENT 15
6.1 Stages 1 Enforcement and Penalties 15
6.2 Stages 2 and Above Enforcement and Penalties 15
6.3 Appeal and Exemption Process 16
7 LEGAL AUTHORITIES 16
7.1 City Legal Authorities 16
7.2 Declaration of Water Shortage 17
7.3 Proclamation of Local Emergency 17
8 FINANCIAL CONSEQUENCES OF WSCP 17
8.1 Financial Impacts and Mitigation Action 17
8.2 Reporting Cost of Compliance with Excessive Water Use Prohibition During Drought Emergency 18
9 MONITORING AND REPORTING 18
10 WATER SHORTAGE CONTINGENCY PLAN REFINEMENT PROCEDURES 18
11 SPECIAL WATER FEATURE DISTINCTION 19

12 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY..... 19
13 LIST OF REFERENCES – TO BE DEVELOPED IN FUTURE SUBMITTAL..... 19

List of Tables

Table 2-1: Decision-Making Process and Timeline 3
Table 3-1: Cross-Reference for Standard vs Supplier Shortage Levels (DWR Table 8-1)..... 6
Table 4-1: Supply Augmentation and Other Actions (DWR Table 8-2) 7
Table 4-2: Demand Reduction Actions (DWR Table 8-3)..... 8
Table 5-1: Communication Protocols per Shortage Stage..... 14

Public Draft
2025 Water Shortage Contingency Plan

Water shortage contingency planning is a proactive planning process intended to prepare for and respond to potential water supply shortages. Effective planning and preparedness enable water suppliers to maintain reliable service and minimize impacts to customers during periods of supply interruption. Water shortages may result from a variety of factors, including population growth, climate change, drought conditions, regulatory constraints, and natural or human-caused emergencies. A water shortage occurs when available water supplies are insufficient to meet normal customer demands at a given time.

The City of Stockton Municipal Utilities Department (COSMUD) is the City of Stockton's (City) department responsible for water, wastewater, and stormwater utilities. For purposes of this Water Shortage Contingency Plan (WSCP), the terms "COSMUD" and "City" are used interchangeably to refer to the City of Stockton's Municipal Utilities Department and its municipal water system.

This plan presents the COSMUD WSCP, which outlines the City's strategy for preparing for and responding to potential water supply shortages. The WSCP is intended to proactively reduce the risk of severe service disruptions by identifying water shortage levels (or "stages") and the corresponding response actions that would be implemented during periods of reduced supply.

The WSCP also describes the City's legal authorities, communication and public outreach procedures, compliance and enforcement measures, and monitoring and reporting requirements associated with water shortage conditions. Stockton Municipal Code (SMC) Chapter 13.28, *Water Conservation*, and Chapter 13.32, *Water Shortage Emergencies*, provide the regulatory framework supporting implementation of the WSCP. These complementary code chapters, located under Title 13 of the SMC, have been updated over time and are available at https://ecode360.com/43709814.

The City's WSCP is intended to be a document that can be updated and amended separately from the 2025 Urban Water Management Plan (UWMP).

1 Water Supply Reliability Analysis

As part of the City's 2025 UWMP, reliability planning was conducted to evaluate the City's ability to meet demands. Chapter 7 of the UWMP evaluates the reliability of the City's water supplies over the 20-year UWMP planning horizon and assesses drought-related risks in accordance with Water Code requirements and the Final 2025 UWMP Guidebook.

The City operates a diversified, conjunctive-use water supply portfolio consisting of surface water, purchased water, and groundwater. Surface water supplies include direct diversions from the San Joaquin River under Water Right Permit No. 21176, treated water purchases from the Stockton East Water District (SEWD), and untreated surface water purchased from the Woodbridge Irrigation District

(WID) and treated at the Delta Water Treatment Plant. Groundwater from municipal wells in the Eastern San Joaquin Groundwater Basin serves as a critical supplemental and drought-response supply. This integrated approach provides operational flexibility and reduces vulnerability to hydrologic variability, regulatory constraints, and infrastructure outages.

Water supply reliability is evaluated by comparing projected supplies and demands under normal, single-dry, and five-consecutive-dry-year conditions. Under normal conditions, surface water supplies are expected to meet most demands, with groundwater used conjunctively to manage peak demands and provide operational flexibility. During dry and multiple dry years, increased groundwater production offsets reduced surface water availability, consistent with the City's adopted operational strategy. The assessment assumes conservative estimates of reasonably available supplies from SEWD, WID, the San Joaquin River, and City groundwater wells, consistent with prior UWMPs and contractual obligations.

The Drought Risk Assessment (DRA) evaluates the likelihood and consequences of water shortages over a five-year planning horizon in accordance with 2025 UWMP requirements, considering hydrologic uncertainty, infrastructure reliability, and operational flexibility. Results from the 2021 Water Master Plan indicate that the City's existing infrastructure and conjunctive use strategy provide strong drought resilience, particularly when supported by active system operations and demand management measures.

The analyses and supporting UWMP tables confirm that the City has sufficient water supplies and system capacity to meet projected demands over the planning horizon under normal, single dry, and multiple dry year conditions, consistent with the conclusions of the 2021 Water Master Plan and prior UWMP cycles.

2 Annual Water Supply and Demand Assessment Procedures

Section 10632.1 of the CWC requires urban water suppliers to conduct Annual Water Supply and Demand Assessments (Annual Assessment) and submit an Annual Water Shortage Assessment Report (AWSAR) to DWR by July 1 of every year. The CWC requires suppliers to include, as part of their WSCP, specific procedures describing annual steps and timing to complete the Annual Assessment. The Annual Assessment must include a written description of the decision-making process that the City will use each year to determine its water supply reliability, and the key data inputs and assessment methodology used to evaluate the supplier's water supply reliability for the current year and one dry year.

2.1 Decision Making Process

AWSAR assesses system reliability for the next year using recent water use data before response actions are planned, helping the City anticipate shortages and proactively mitigate impacts for customers. The City will implement the decision-making process and timeline outlined in Table 2-1. This schedule may be adjusted as needed during implementation.

Table 2-1: Decision-Making Process and Timeline

TASK	TIMELINE
COSMUD Staff will gather key data inputs, perform the assessment. The assessment will be finalized based on confirmation of water supply allocations from Stockton East Water District (SEWD) and Woodbridge Irrigation District (WID).	Complete by April 1th
COSMUD Staff will complete the Annual Assessment and develop the AWSAR based on the data analysis and information gathered.	Complete by April 15th
COSMUD Staff will present the Annual Assessment and AWSAR to the COSMUD Director for review.	Complete by April 30th
COSMUD staff will finalize and resubmit the Annual Assessment and AWSAR to the COSMUD Director for Approval.	Complete by May 15th
If the Annual Assessment determines that available supply will not meet expected demands, the finalized assessment and response action recommendations will be presented to City Council for authorization.	Complete by May 30th
COSMUD Staff may work with regional water providers and San Joaquin County to declare a local emergency if needed.	Complete by May 30th
City Council will hold a public hearing to present the final water shortage assessment and recommendations. They will decide whether a water shortage exists and, if needed, adopt a resolution declaring an emergency and authorizing response actions.	Complete by June 15th
COSMUD Staff to finalize Annual Assessment and AWSAR	Complete by June 30th
Final approved documents will be submitted to DWR.	Submit by July 1st

2.2 Key Data Inputs

Planned water supplies are evaluated in the Annual Assessment for the current year and one dry year. The following factors are considered in planning water supplies, as applicable:

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 limitation
6. Infrastructure capacity constraints or changes
7. Capital improvement projects implementation
8. Delta Water Treatment Plant supply availability and/or production issues
9. SEWD supply availability and/or production issues

Planned water supply sources and quantities will be described and should be generally consistent with projections Chapter 6 (Water Supply Characterization) of the City's most recent UWMP. Significant deviations from projected supplies will be explained.

Unconstrained water demands are customer demands where no water conservation measures are in effect. Planned unconstrained water demands will be inputted into the Annual Assessment for the current year and the following one dry year. In planning for unconstrained water demands, the following factors are considered:

1. Weather conditions
2. Water year type
3. Population changes (due to development projects or other factors)
4. Anticipated new demands (due to land use changes)
5. Pending policy changes with potential impact on demand
6. Infrastructure operations

Planned water demand types and quantities will be described and should be generally consistent with the projections in Chapter 4 (Customer Water Use) of the City's most recent UWMP. Significant deviations from the projected demands will be explained.

2.3 Assessment Methodology

The City will prepare its Annual Assessment using the following procedures:

- Prepare supply estimates for each water source on an annual basis for the analysis period. The increments may be revised to monthly or seasonal periods, as needed. This will be accomplished using a spreadsheet with the supply inputs described in Section 2.2.
- Update unconstrained customer demand and estimate anticipated actual water use on an annual basis for the analysis period for the analysis period. The increments may be revised to monthly or seasonal periods, as needed. This will be accomplished using a spreadsheet with the unconstrained customer demand inputs described in Section 2.2.

- Update the infrastructure assessment with monthly estimates of water supply production for the analysis period.
- Identify and assess any region-specific factors that could potentially affect or interrupt supply availability during the analysis period.
- Refine the definition of "dry year" as relevant to dry conditions.
- Determine if there is a gap between expected supply and forecasted demand.
- Identify and incorporate any applicable constraints (infrastructure, regulatory, etc.).
- Create, assess, and recommend water resource management strategies to bridge the gap between estimated supply and expected demand, taking into account the water shortage stages outlined in this WSCP.
- Present the Annual Assessment (and resulting water shortage stage declaration and recommendations, if applicable) to City Council.

If the Annual Assessment shows a need for alternative water shortage response actions beyond those in Section 4, these alternatives will be detailed and submitted in the Annual Assessment as required by CWC 10632.2.

3 Six Standard Water Shortage Stages

CWC Section 10632 (a) (3) requires urban water suppliers to define water 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. Suppliers are required to plan for six standard water shortage levels that correspond to progressive ranges up to 10, 20, 30, 40, 50 percent shortages, and greater than 50 percent shortage. The shortage levels should align with the response actions the urban water supplier would implement to meet the severity of the shortages. As shown in Table 3-1, the City uses the standard shortage levels.

Table 3-1: Cross-Reference for Standard vs Supplier Shortage Levels (DWR Table 8-1)

☑	Check the box if the Supplier uses the Standard six levels of water shortage. Proceed to the next table.		
Standard Shortage Levels	**Percent Shortage Range**	**Suppliers Shortage Levels**	**Percent Shortage Range**
1	Up to 10%		
2	Up to 20%		
3	Up to 30%		
4	Up to 40%		
5	Up to 50%		
6	>50%		

The City's shortage response actions are addressed in the Stockton Municipal Code (SMC) Chapters 13.28 and 13.32. Chapter 13.28 establishes the City's baseline and ongoing water conservation requirements, which always apply (standard shortage level 1). Chapter 13.32 is the City's framework for declaring and responding to water shortage emergencies (standard shortage levels 2-6). A copy of the City's SMC is available in Attachment H of the City's 2025 UWMP.

4 Shortage Response Actions

CWC Section 10632(a)(4) requires urban water suppliers to have shortage response actions that align with the defined shortage levels. The City has shortage response actions in place that consist of supply augmentation, demand reduction, operational changes, and an emergency response plan.

The following sections present the individual supply augmentation, estimated demand reduction associated with each response action, additional mandatory restrictions, the City's emergency response plan, and the City's seismic risk and mitigation plan.

Actual savings and added supply will likely vary greatly based on external influences, shortage stage level, and general customer understanding of drought severity. It is assumed the savings estimates are not necessarily additive, but when implemented together as a program with all the actions in each respective stage, they are intended and estimated to eliminate each stage's identified supply to demand shortage gap.

4.1 Supply Augmentation

The City's water supply strategy relies primarily on surface water from the San Joaquin River, which is treated to meet drinking standards. Groundwater is used as a supplemental source for flexibility and reliability, especially during droughts or emergencies. Rather than maximizing groundwater pumping

at all times, the City conserves this capacity for critical periods to support drought response and ensure system resilience.

In the event that the City's water supply is insufficient to meet customer demand, and a water shortage is declared, COSMUD will seek to mitigate water shortages and augment its water supply using the strategies outlined in Table 4-1. Actions include seeking transfers and exchanges with local agencies.

Table 4-1: Supply Augmentation and Other Actions (DWR Table 8-2)

Yes	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier **Drop down list** These are the only categories that will be accepted by the WUEdata online submittal tool	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)	
4	Exchanges	Volume	Up to Shortage Gap	Neighboring agencies
4	Transfers	Volume	Up to Shortage Gap	Potentially from Woodbridge Irrigation District
5	Exchanges	Volume	Up to Shortage Gap	Neighboring agencies
5	Transfers	Volume	Up to Shortage Gap	Potentially from Woodbridge Irrigation District
6	Exchanges	Volume	Up to Shortage Gap	Neighboring agencies
6	Transfers	Volume	Up to Shortage Gap	Potentially from Woodbridge Irrigation District

4.2 Demand Reduction

During water shortage conditions, the City plans to implement a series of actions that correspond to each of the standard water shortage levels. Table 4-2 outlines demand reduction measures, their estimated impact on the shortage gap, and compliance actions including penalties, charges, or enforcement.

Table 4-2: Demand Reduction Actions (DWR Table 8-3)

Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions **Drop down list** These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? **For Retail Suppliers Only** Drop Down List
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)		
1	Expand Public Information Campaign	Percentage	7-8%	City to encourage water customers and users to implement water conservation practices	No
1	Landscape - Other landscape restriction or prohibition	Percentage	0-5%	Prohibit watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation.	Yes
1	Landscape - Other landscape restriction or prohibition	Percentage	0-5%	Prohibit irrigating ornamental turf on public street medians.	Yes
1	Landscape - Limit landscape irrigation to specific times	Percentage	0-5%	Prohibit irrigation between the hours of 11:00 am to 6:00 pm.	Yes
1	Other - Prohibit use of potable water for washing hard surfaces	Percentage	0-1%	Washing of Street, driveways, sidewalks, buildings	Yes
1	Other	Percentage	0-1%	Prohibit any use of potable water from a fire hydrant except by regularly constituted fire protection agencies for fire suppression purposes or by the responsible water agency.	Yes

Shortage Level	Demand Reduction Actions **Drop down list** These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? **For Retail Suppliers Only** Drop Down List
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)		
1	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	0-1%	Only recirculated water can be used in a fountain or other decorative feature	Yes
1	Decrease Line Flushing	Percentage	0-5%	Depends on extent and frequency of current flushing activities	No
1	Implement or Modify Drought Rate Structure or Surcharge	Percentage	0-10%	Municipal Code 13.32.060	Yes
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	0-1%	Uncorrected plumbing or irrigation leaks	Yes
1	Landscape - Prohibit certain types of landscape irrigation	Percentage	0-5%	Prohibit free-flowing hoses	Yes
1	Landscape - Restrict or prohibit runoff from landscape irrigation	Percentage	0-5%	Limit excess runoff	Yes
1	Other - Require automatic shut of hoses	Percentage	0-5%	Limit excess and unnecessary potable water use	Yes
1	Other	Percentage	0-5%	Prohibit use of potable water for dust control purposes except for public health and safety purposes.	Yes

Shortage Level	Demand Reduction Actions **Drop down list** These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		How much is this going to reduce the shortage gap?	Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)		
1	Other	Percentage	0-5%	Prohibit draining or refilling existing swimming pools between June 1st and October 1st.	Yes
1	Reduce System Water Loss	Percentage	25-35%	Depends on extent and magnitude of current system losses	No
1	Other	Percentage	0-7%	Prohibit water loss through leaks, breaks, or malfunctions within the water user's plumbing or distribution system	Yes
1	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Percentage	0-5%	Reduce excess potable water use during car washing activities	Yes
1	CII - Restaurants may only serve water upon request	Percentage	0-1%	Reduce water waste	Yes
1	CII - Lodging establishment must offer opt out of linen service	Volume	0-5%	Reduce excess water use for laundry service	Yes
2	Other	Volume	N/A	Refer to SMC Section 13.32.060	Yes
3	Other	Volume	N/A	Refer to SMC Section 13.32.060	Yes
4	Other	Volume	N/A	Refer to SMC Section 13.32.060	Yes
5	Other	Volume	N/A	Refer to SMC Section 13.32.060	Yes
6	Other	Volume	N/A	Refer to SMC Section 13.32.060	Yes

Chapter 13.28 – Water Conservation of the SMC outlines additional water conservation regulations that are always in place, regardless of the declaration of a water shortage. These include regulations that prohibit clearly defined wasteful and unreasonable water uses, including irrigation runoff, hosing hardscapes, inefficient vehicle washing, and other nonessential uses of potable water, and establishes operational limits on outdoor irrigation and related activities. These requirements apply to all customer classes and are intended to reduce discretionary water use under normal conditions while providing an enforceable baseline that remains in effect during water shortage events.

In response to a water shortage emergency, Chapter 13.32 – Water Shortage Emergencies provides a response guideline, implemented on stage-based mandatory restrictions and enforcement actions. The stages are consistent with the Six Standard Water Shortage Stages and are implemented as follows:

- **Stage 1:** Formal declaration of a water shortage emergency; baseline conservation requirements become mandatory and enforceable, building on existing conservation rules to achieve up to 10% demand reduction.
- **Stage 2:** Additional mandatory restrictions are implemented to further reduce discretionary water use; enforcement and penalties are expanded to achieve up to a 20% demand reduction.
- **Stage 3:** More restrictive limits on water use are imposed, with increased compliance and enforcement measures to achieve higher demand reductions up to a 30%.
- **Stage 4:** Broad prohibitions on nonessential water uses are implemented, with stringent enforcement to protect remaining supplies, and to achieve up to a 40% demand reduction.
- **Stage 5:** Maximum mandatory restrictions are imposed to preserve water for public health and safety needs, and to achieve up to a 50% demand reduction.
- **Stage 6:** Emergency measures are implemented to maintain minimum system operations, and essential public health and safety uses to achieve over a 50% demand reduction.

4.3 Operational Changes

In response to a water shortage condition, COSMUD may modify system operations on a short-term or long-term basis to maintain water supply reliability and protect public health. Operational changes may include the following:

- Operating a combination of active and standby groundwater wells within the North and South Stockton water service areas to offset reductions in surface water supplies.
- Prioritize and expedite repairs to leaks and breaks in the water distribution system, with meter leaks and emergency breaks typically addressed on the same day they are reported and non-emergency service line and main breaks repaired as soon as practical.
- During the duration of a water shortage condition, routine water system flushing may be limited and conducted only in areas with identified water quality concerns.

- Reducing irrigation on all City-Owned properties within the COSMUD service area.

4.4 Additional Mandatory Restrictions

The mandatory restrictions that will be enforced by the City are outlined in chapters 13.28 and 13.32 of the SMC. This series of restrictions will be implemented at different shortage levels and are summarized in the demand reduction actions in Table 4-2.

4.5 Emergency Response Plan

The City's latest Water System Emergency Response Plan (ERP) was completed in September 2025 to comply with America's Water Infrastructure Act (AWIA). This document is required by the AWIA and incorporates findings from the City's Risk and Resilience Assessment (RRA). The ERP defines procedures for responding to natural disasters, infrastructure failures, and other emergencies that could disrupt water service or threaten public health. The ERP establishes roles and responsibilities for utility staff, identifies emergency response actions to maintain or restore service, and outlines procedures for internal coordination, external agency notification, and public communication. Consistent with federal requirements, the ERP is treated as a confidential document and is not publicly released.

The City ensures ongoing water service with standby generators, purification equipment, emergency storage, and water trucks. Additionally, water facilities are built to earthquake safety standards and undergo regular inspections.

4.6 Seismic Risk Assessment and Mitigation Plan

California Water Code (CWC) Section 10632.5(a) requires that water suppliers include a seismic risk assessment and mitigation plan as part of their UWMP. The purpose of the seismic risk assessment is to assess and mitigate the vulnerability of the existing facilities in a water system. In lieu of conducting their own seismic risk assessment, it is permitted to address this CWC requirement by submitting a Local Hazard Mitigation Plan (LHMP) if it includes a seismic risk assessment. The City was a part of the team that developed the 2023 San Joaquin County Local Hazard Mitigation Plan (2023 LHMP) development team. The 2023 LHMP was adopted by the San Joaquin County Board of Supervisors and approved by FEMA in April 2023. This LHMP excludes earthquake hazards from consideration because there have been no local earthquakes in the past century; as a result, the 2023 LHMP will not be included in this UWMP.

In March of 2025, the City completed an RRA of its water system to comply with requirements of the AWIA. The RRA evaluated the vulnerability and resilience of COSMUD's potable water system to natural hazards, including earthquakes. Consistent with AWIA requirements, the assessment considered risks to critical assets such as source waters, wells, treatment and chlorination facilities, storage, pump stations, distribution infrastructure, and supporting operational systems. The assessment evaluated threat likelihood, asset vulnerability, and consequences of failure to identify critical system components and inform capital and operational improvements to enhance system

resilience. Seismic risk mitigation is addressed through ongoing risk and resilience management strategies, including incorporation of seismic resilience considerations into capital improvements and emergency response planning.

AWIA requires RRA's to be updated and re-certified every five years. The City keeps its RRA as a confidential document.

4.7 Shortage Response Action Effectiveness

Measuring reductions in water use is part of regular procedures, whether during normal or water shortage conditions. The City's water system is fully metered to keep track of water production and customer water use. Water is supplied to the distribution system based on customer needs, and monthly tracking helps monitor total demand. Through this monitoring, the City can evaluate water system supply and demand levels to determine their alignment with the water shortage response objectives. The potential savings for the shortage response actions are available in Table 4-2.

5 Communication Protocols

Per Section 10632 (a) (5) of the CWC, urban suppliers are required to describe their communication protocols and procedures in the event of a water shortage. In the event of a water shortage, the City must communicate in a timely manner to customers, interested parties, and other relevant local and state agencies.

5.1 Communication for Foreseeable Events

Foreseeable events include water shortage events that can be declared based on the City Annual Assessment procedures described in Section 2. In the presence of a potential water shortage event, The City Council may declare a water shortage emergency according to the procedures outlined in Section 13.32.020 of the SMC. A summary of actions the City could take during a specific water shortage stage is outlined in Table 5-1.

Before a water shortage is declared, the City increases public outreach on the current water supply conditions, the plans for water shortage response, and importance of water efficiency to stretch current supplies. The City's website includes links to other water conservation announcements and provides a phone number and email to the City Water Conservation Division for any specific questions.

Table 5-1: Communication Protocols per Shortage Stage

WSCP Shortage Stage	Primary Response Actions	Communications & Protocols
Stage 1 – Mandatory Conservation	Activation of mandatory conservation requirements consistent with SMC Chapter 13.28; initial demand-reduction measures implemented.	Public notification of Stage 1 declaration via City website, press release, and social media; coordination with COSMUD leadership; customer outreach emphasizing required conservation practices and reporting of water waste.
Stage 2 – Moderate Shortage	Additional mandatory restrictions implemented under SMC Chapter 13.32; expanded enforcement of conservation measures.	Formal City Council resolution declaring Stage 2; broad public notification through press releases, website updates, utility bill inserts, and social media; coordination with County Office of Emergency Services as needed; direct customer messaging on new restrictions, compliance expectations, and penalties.
Stage 3 – Significant Shortage	More restrictive mandatory limits on water use; increased enforcement and compliance actions.	Escalated communications campaign including regular public updates, targeted outreach to high-use customer classes, and coordination with City and County departments; consistent messaging on restrictions, enforcement, and potential escalation; reporting to DWR as applicable.
Stage 4 – Severe Shortage	Broad prohibitions on nonessential water uses; stringent enforcement to protect remaining supplies.	Frequent public updates via multiple platforms (website, media briefings, social media); direct notifications to affected customers; messaging prioritizing public health and safety and explaining emergency measures.
Stage 5 – Critical Shortage	Maximum mandatory restrictions imposed; water use prioritized for essential public health and safety purposes.	Emergency-level communications coordinated through appropriate City staff; frequent press briefings and alerts; direct customer notifications regarding critical restrictions and emergency protocols; coordination with regional and State agencies.
Stage 6 – Catastrophic Shortage	Emergency actions to maintain minimum system operations and essential uses only.	Emergency communications to the public through the appropriate City departments; real-time public alerts and directives; coordination with County, State, and federal agencies; continuous public information focused on health, safety, and system preservation.

5.2 Communication for Unforeseeable Events

Emergency communications protocols are also necessary to address water shortages due to unforeseeable events such as earthquakes, fires, infrastructure failures, civil unrest, and other catastrophic events. The City's ERP outlines specific communications protocols and procedures to deliver information to appropriate parties in case of an unforeseeable event.

6 Compliance and Enforcement

Stockton Municipal Code Chapters 13.28 (Water Conservation) and 13.32 (Water Shortage Emergencies) establish a progressive enforcement framework that escalates with repeated violations and increasing water shortage severity. Initial violations are typically addressed through written warnings and education to encourage voluntary compliance. Continued or repeat violations may result in administrative citations and penalties, with progressively increasing enforcement applied for subsequent or egregious violations. Upon declaration of a water shortage emergency, particularly Stages 2 through 6, Chapter 13.32 authorizes mandatory restrictions and expanded enforcement authority, including increased penalties and reduced tolerance for non-compliance, to achieve required demand reductions and protect public health and system reliability.

6.1 Stages 1 Enforcement and Penalties

During water shortage Stage 1, the City enforces the requirements of SMC Chapter 13.28. When the City becomes aware of a violation, the City issues a written notice describing the violation and ordering the violation to be corrected, cured, or abated immediately or within a reasonable period. Notices may be served by personal service or first-class mail, by posting at the premises, and a copy is mailed to the person billed for water service; notices may also be served as an addendum to the regular water service bill. Upon a second violation or failure to immediately correct the violation, the City may serve a second notice and impose a surcharge of $100 per day for each day the violation continues, which may be added to the next regular billing.

Violations of Chapter 13.28 are infractions, and each day a violation continues constitutes a separate offense. The Director may also issue cease-and-desist orders and may pursue discontinuance of water service for continued violations, subject to written notice and a hearing prior to termination, and an appeal process to the City Manager as provided in Chapter 13.28

6.2 Stages 2 and Above Enforcement and Penalties

During a declared water shortage emergency of Stage 2 and above, SMC Chapter 13.32 provides the enforcement and penalty framework for Stages 2 through 6. The first billing period after the effective date of the City Council's declaration is treated as an adjustment period, during which no penalties are imposed for water use in excess of the allocation. Beginning with the second billing period, customers who exceed their established allocation in any billing cycle are subject to an excess use charge, in addition to all other charges, based on a rate schedule adopted by City Council resolution. Excess use charges are not imposed for customers at or below specified minimum consumption thresholds.

In addition to allocation-based charges, Stage 2–6 violations are unlawful infractions. After issuance of one written warning for a violation or prohibited use, the City may install a flow restricting device for at least 48 hours and until the customer pays the applicable removal charge; repeat violations may result in a subsequent flow restrictor period of at least two weeks. Additional violations or tampering with a flow restricting device may lead to water service termination.

6.3 Appeal and Exemption Process

Customers may request allocation adjustments/increases in writing using City forms, which are reviewed by the Water Conservation Officer and decided by the Director. Allocation adjustments may be approved where reasonably necessary based on Code criteria (e.g., additional full-time residents, unusual medical needs, change in property use, demonstrated conservation measures supported by a conservation plan, and certain health care facilities where reductions are maximized without jeopardizing care).

Customers may appeal the Director's classification, allocation, or allocation-increase determination in writing; appeals may include a Department review and site visit, and sustained appeals may require installation of water-efficient fixtures and/or irrigation systems as a condition of approval. If the customer disagrees with the Director's decision, the customer may appeal to the City Manager for a final decision; a hearing is scheduled and a written decision is issued within the time frames specified in the SMC, and an appeal fee applies as set by City Council resolution.

For Stage 1 service discontinuance under SMC Chapter 13.28, an affected person may appeal the Director's decision by filing a written appeal with the City Clerk within 10 days of notice; the City Manager conducts a hearing within 10 days and may affirm, reverse, or modify the decision, which remains in effect during the appeal. The City Manager's decision is final.

7 Legal Authorities

The next sections explain which legal authorities the City uses to carry out and enforce the shortage response actions listed in the WSCP.

7.1 City Legal Authorities

The City implements this WSCP in accordance with the SMC and City Council actions authorizing water conservation, water shortage emergency declarations, and implementation and enforcement of shortage response actions. The City's primary local legal authorities for water conservation and water shortage response are the SMC Chapter 13.28 (Water Conservation) and SMC Chapter 13.32 (Water Shortage Emergencies), which the City Council has identified as complementary chapters supporting the WSCP.

The City Council has adopted ordinances amending SMC Chapters 13.28 and 13.32 to update and clarify the City's water conservation and water shortage emergency provisions. Water shortage stages and associated mandatory measures are implemented through City Council resolutions and

ordinances, including actions declaring a shortage stage and aligning local requirements with the WSCP framework.

The City provides public-facing information on current conservation requirements and shortage stage status through its Municipal Utilities water conservation webpage and maintains public access to governing documents through City-hosted webpages and repositories, including the City Clerk's municipal code portal and the City's WSCP document posting.

7.2 Declaration of Water Shortage

The City shall declare a water shortage emergency, as appropriate, in accordance with CWC Division 1, Chapter 3, Section 350 when it determines that:

- Available water supplies are insufficient to meet normal demands
- Conservation is necessary to protect public health, safety, and welfare.

Such a declaration shall be made by City Council action and shall activate the applicable water shortage stage and response actions identified in this WSCP.

7.3 Proclamation of Local Emergency

The City will work closely with other regional water providers and San Joaquin County if there is a need for proclamation of a local emergency. This coordination will take place through the City of Stockton's Office of Emergency Services (OES), which oversees citywide disaster preparedness and organizes the response of different city departments. If necessary, the City will also activate its Emergency Operations Center (EOC) to manage and support the emergency response efforts.

8 Financial Consequences of WSCP

8.1 Financial Impacts and Mitigation Action

Implementation of the WSCP shortage response actions is anticipated to result in reduced water sales revenue due to lower customer demand during shortage stages and increased operating costs associated with shortage implementation, including staff time for annual assessment/reporting and heightened compliance activities. Under the City's enforcement framework, financial impacts may also include increased enforcement administration and field activities as shortage stages escalate such as warnings/notices, follow-up, and potential flow-restrictor installation/termination processes.

To help mitigate revenue reductions and recover increased implementation costs during shortage stages, the City's municipal code provides mechanisms that may be applied during declared shortages, including surcharges for continued violations and Stage 2–6 "excess use charges", as well as fees/charges associated with prohibited flow-restrictor removal.

8.2 Reporting Cost of Compliance with Excessive Water Use Prohibition During Drought Emergency

During drought emergencies that require mandatory water use reductions, the City incurs costs to comply with excessive water use prohibitions through its previously outlined enforcement procedures and rate mechanisms. Compliance costs include administrative and staff resources associated with identifying excessive water use, issuing written notices and warnings, tracking water use relative to established allocations, billing and collecting excess use charges, and administering appeals and hearings.

Additional compliance costs may be incurred through field and operational activities outlined in this WSCP and authorized by the Municipal Code, including installation and removal of flow-restricting devices and processing of enforcement-related charges. These costs represent the City's reported cost of compliance with prohibiting excessive water use during drought emergencies.

9 Monitoring and Reporting

COSMUD's system is metered at its water sources (DWTP, SEWD, and groundwater production wells), and its customers. The City will used the information gathered from these meters to monitor and report WSCP implementation by collecting, tracking, and analyzing customer water-use and supply metrics. These data points are needed to evaluate shortage conditions, measure response effectiveness, and support compliance and enforcement. The City will prepare an Annual Assessment and an AWSAR each year using planned supply and demand inputs, present findings, and recommended actions to City Council. These yearly submissions are an important part of the WSCP's process for monitoring, determining shortages, and putting different stages into action.

To monitor customer compliance, the City will use data from water meters and billing cycles to ensure customers are following conservation and shortage rules. If a violation occurs, the City will document it by sending written notices or warnings, followed by any necessary additional actions. The City will enforce these requirements using the tools provided in the Municipal Code, such as administering allocation or excess-use charges during Stages 2–6, as well as other authorized enforcement actions.

The City keeps records of its meter readings and enforcement actions to ensure compliance with DWR reporting requirements.

10 Water Shortage Contingency Plan Refinement Procedures

The City will manage the WSCP as a dynamic tool and will periodically reevaluate and refine procedures and response actions to ensure mitigation strategies remain effective under both foreseeable and unforeseeable shortage conditions. The City will use the findings from the Annual Assessment and lessons learned during WSCP implementation to confirm whether demand-reduction actions are

achieving the intended results and to identify any operational procedures that should be adjusted to better meet the City's water conservation goals.

If the City identifies a possible change or improvement to the WSCP, it will first assess whether the change is practical to implement, likely to be effective, and in line with both the WSCP's stage structure and the relevant sections of the municipal code. If the City decides to move forward with a revised WSCP, the updated plan will be submitted for approval following the process outlined in Section 12. After City Council approval, the revised WSCP will be distributed to San Joaquin County, shared with City customers, and made available to the general public.

11 Special Water Feature Distinction

Special water features, including fountains and other decorative water features, are considered nonessential aesthetic uses of water and are subject to specific conservation limitations. Under SMC Chapter 13.28, it is unlawful to use non-recirculated water in a fountain or other decorative water feature; therefore, decorative water features are only allowable when operated with recirculated water.

12 Plan Adoption, Submittal, and Availability

This WSCP update has been prepared in tandem with the City's 2025 UWMP. The WSCP (including subsequent updates) shall be adopted in accordance with standard City procedures, which include requirements for public participation (public hearing), and approval by the City Council. Upon adoption, the WSCP will be submitted to DWR and be made available to customers within 30 days. The adopted WSCP will be made publicly available on the City's website through the Municipal Utilities water planning pages and the City's public document repository, where adopted water planning documents are posted for public access.

13 List of References – To Be Developed in Future Submittal

ATTACHMENT E: WATER SUPPLY REDUNDANCY EVALUATION

WEST YOST
Water. Engineered.

100 Howe Avenue
Suite 110S
Sacramento CA 95825

916.306.2250 phone
530.756.5991 fax
westyost.com

TECHNICAL MEMORANDUM

DATE: January 7, 2026

Project No.: 129-60-20-41
SENT VIA: EMAIL

TO: Travis Small, City of Stockton

FROM: Roberto Vera, PE, RCE #83500
Mika Mar, EIT No. 177465

REVIEWED BY: Elizabeth Drayer, PE, RCE #46872

SUBJECT: Water Supply Redundancy Evaluation

The purpose of this Technical Memorandum (TM) is to summarize findings and recommendations of West Yost's evaluation of the City of Stockton's (City) water supply redundancy. This TM is organized as follows:

- Background
- Evaluation Methodology and Criteria
- Water Demands
- Existing Groundwater Supplies
- Supply Capacity Evaluation
- Capital Cost Estimates
- Findings and Recommendations

BACKGROUND

In summer 2024, both of the City's surface water treatment sources, the Stockton East Water District (SEWD) and the Delta Water Treatment Plant (DWTP), were unexpectedly taken offline at the same time. As a result, the City had to rely entirely on its groundwater facilities for a short period of time. This event highlighted the need for the City to invest in its groundwater facilities to build additional redundancy to ensure that sufficient water supply can continue to be provided in the event of future surface water supply outages.

Additionally, the City is actively developing a groundwater recharge program, which requires additional wells to recover stored water. Additional investment in groundwater facilities is therefore not just for supply redundancy but also required to be able to maximize the benefit of the recharge program.

This evaluation estimated the number of new groundwater wells and/or well rehabilitations that are required to provide redundant groundwater supply capacity, assuming surface water supplies are not available. The City's water demands were updated from the values used in its 2021 Water Master Plan (WMP). The evaluation provides planning-level cost estimates to inform rate studies for existing customers and connection fee updates for new development.

EVALUATION METHODOLOGY AND CRITERIA

The purpose of this evaluation was to identify the additional groundwater wells and/or improvements that would be needed to maintain reliable water supply during a complete loss of surface water supplies. The analysis assumes zero surface water availability, representing a conservative planning scenario consistent with the City's redundancy and resiliency objectives as well as previous experiences.

The evaluation approach follows the performance and operational criteria established in the 2021 WMP and 2022 Water Master Plan Update (WMPU), updated to reflect current well inventory information provided by City staff in 2025. Two planning scenarios were evaluated:

- **Near-term (2030)**. Used to establish the near-term level of groundwater capacity needed to reliably meet current system demands.
- **Buildout (2040)**. Used to determine the additional improvements required to maintain redundancy under future growth conditions. Buildout demands were consistent with the 2022 WMPU. These demands assume some development changes, further detailed in the Water Demands section.

For each scenario, total firm groundwater capacity was compared to maximum day demand, assuming no surface water supply. Firm capacity was defined as 85 percent of active well capacity, consistent with the City's planning assumptions. New wells were assumed to provide a firm capacity of approximately 1,500 gallons per minute (gpm) each (assumes a total capacity of 1,765 gpm for each well).

Groundwater well capacities and operational status were updated based on the Well Rehabilitation Status List provided by City staff in March 2025. To optimize improvements and minimize capital cost, wells were identified for potential rehabilitation if they were inactive, less than 40 years old, and located on parcels of at least 0.5 acre, providing sufficient space for the addition of treatment systems and maintenance access.

WATER DEMANDS

For this evaluation, near-term (2030) demands were used to reflect the current pace of development within the City. Several development projects throughout the City have advanced sooner than anticipated in the 2021 WMP, resulting in higher projected system demands sooner than what was assumed in the 2021 WMP. To align groundwater redundancy planning with the accelerated development trends, the near-term demand condition was used in lieu of existing demands. Table 1 summarizes the near-term (2030) demands.

Table 1. Near-Term (2030) Water Demands

Area	Average Day Demand, mgd[(a)]	Maximum Day Demand, mgd[(b)]	Peak Hour Demand, mgd[(c)]
North Stockton	23.8	38.1	59.5
South Stockton[(d)]	9.8	14.9	26.5
Total	**33.6**	**53.0**	**86.0**

(a) Average day demand based on the 5-year average production from 2015 through 2019, scaled to include a 10 percent demand rebound factor. Refer to Chapter 3 from the 2021 WMP.
(b) Maximum day demand calculated using a peaking factor of 1.6 and 1.7 times the average day demand for North and South Stockton, respectively.
(c) Peak hour demand calculated using a peaking factor of 2.5 and 3.3 times the average day demand for North and South Stockton, respectively.
(d) Demands associated with the Niagara Bottling Facility (Existing Planned and the Additional) are non-peaked constant demands.

Revised buildout (2040) demands, consistent with West Yost's 2022 evaluation of future development changes[1], are summarized in Table 2. These projections reflect updated assumptions for future development. In North Stockton, demands from the Bear Creek South and Origone Subdivision projects were added. In South Stockton, demands from the Food Production Business and Niagara Bottling Facility projects were added, and demands associated with the Mariposa Lakes project were removed to reflect updated service area boundaries.

Table 2. Revised Buildout (2040) Water Demands

Area	Average Day Demand, mgd[(a)]	Maximum Day Demand, mgd[(b)]	Peak Hour Demand, mgd[(c)]
North Stockton[(d)]	30.5	48.9	76.2
South Stockton[(e)]	14.1	19.6	33.1
Total	**44.6**	**68.5**	**109.3**

(a) Average day demand based on the 5-year average production plus demands associated with all developments that will be completed by 2040.
(b) Maximum day demand calculated using a peaking factor of 1.6 and 1.7 times the average day demand for North and South Stockton, respectively. Refer to footnote (e) for more details.
(c) Peak hour demand calculated using a peaking factor of 2.5 and 3.3 times the average day demand for North and South Stockton, respectively.
(d) See "Bear Creek South Development Water System Evaluation" Technical Memorandum (West Yost Associates, 03/03/2022), refer to Table 2. Origone Subdivision demand projected based on land use information from the 2011 Origone Ranch Specific Plan and water use factors from the City's 2021 WMP. Refer to footnote (e) for more details.
(e) See "Food Production Business Project Impact Evaluation to the South Stockton Water System" Technical Memorandum (West Yost Associates, 07/01/2022) Table 2. See "Additional Niagara Bottling Facility Demand Impact Evaluation to the South Stockton Water System" Technical Memorandum (West Yost Associates, 07/22/2022) Table 2. Demands associated with the Niagara Bottling Facility (Existing Planned and the Additional) are non-peaked constant demands. Food production business demand is constant and non-peaked. Demands exclude Mariposa Lakes.

The two demand conditions summarized in Tables 1 and 2 are the basis for the subsequent supply capacity evaluation, which quantifies the number of new or rehabilitated wells required to provide firm groundwater capacity equivalent to near-term (2030) and buildout (2040) maximum day demands with no surface water supplies.

EXISTING GROUNDWATER SUPPLIES

A summary of current groundwater well facilities, including status, capacity, and rehabilitation potential, is provided in Table 3. Groundwater facility information was updated based on the Well Rehabilitation Status List provided by City staff via email on March 18, 2025. The list included current well capacities, operational status, and site characteristics such as parcel size and well age.

Wells were reviewed to identify opportunities for rehabilitation or replacement to improve system reliability and cost efficiency. Wells were considered suitable for rehabilitation if they were inactive, less than 40 years old, and located on parcels of at least 0.5 acre, providing sufficient space for the addition of treatment systems and maintenance access.

Based on discussions with City staff, Wells 25 and 30 in North Stockton were identified as the most suitable sites for near-term improvement. Well 25 is proposed for on-site replacement due to existing mechanical

[1] West Yost. December 2022. *Water System Impact Evaluation of Future (2040) Development Changes.* Technical Memorandum.

issues, while Well 30 is a candidate for treatment installation to address 1,2,3-TCP. As a result, only Well 30 was considered a viable for rehabilitation. Improvements to Well 25 would essentially result in a new well facility.

Overall, the existing active groundwater capacity has decreased slightly since completion of the 2021 WMP. In North Stockton, the total active well capacity is now approximately 18,300 gpm (26 mgd), compared to about 19,500 gpm (28 mgd) reported in the 2021 WMP. This reduction is primarily attributed to several wells that have since become inactive or require mechanical repair or treatment, including Wells 24, 25, and 30. In South Stockton, the total active capacity is approximately 6,000 gpm (8.6 mgd), which is similar to the 5,900 gpm (8.5 mgd) reported in the 2021 WMP.

Table 3. Summary of Well Facilities[a]

Well Number	Parcel Size, ac[b]	Well Status	Well Age, years	Notes	2025 Well Pump Capacity, gpm	Firm Active Well Capacity, gpm[c]	Rehabilitation or Replacement Candidate[d]
North Stockton							
3R	1.84	Active	–		2,000	1,700	–
10R	6.84	Active	–		3,200	2,720	–
15	0.11	Standby	50	Manganese Tier 2 violation	1,805	–	Unlikely
18	2.63	Active	69		800	680	–
19	0.17	Active	47		1,780	1,513	–
20	0.18	Inactive	47	Iron and manganese Tier 2 violation	1,800	–	Unlikely
21	5	Active	47		1,800	1,530	–
24	0.28	Inactive	43	Bad motor	430	–	Unlikely
25	5.36	Inactive	41	Mechanical issues (current well pumps mud)	1,600	–	Potential Replacement
26	0.19	Inactive	38	Mechanical issues	1,970	–	Unlikely
27	0.24	Active	40		2,200	1,870	–
28	0.14	Standby	28	1,2,3-TCP	1,600	–	Unlikely
29	6.36	Active	25		2,500	2,125	–
30	7.6	Standby	22	1,2,3-TCP	2,200	–	Potential Treatment
31	0.18	Active	21		2,000	1,700	–
32	0.57	Active	21		2,000	1,700	–
Existing Groundwater Well Capacity (Active)					**18,280**	**15,538**	
Existing Groundwater Well Capacity (Inactive or Standby)					**11,405**	**9,694**	
Existing Groundwater Well Capacity (Inactive or Standby and Candidate for Rehabilitation)					**2,200**	**1,870**	Well 30 is the only recommended candidate for rehabilitation

Table 3. Summary of Well Facilities[a]

Well Number	Parcel Size, ac[b]	Well Status	Well Age, years	Notes	2025 Well Pump Capacity, gpm	Firm Active Well Capacity, gpm[c]	Rehabilitation or Replacement Candidate[d]
South Stockton							
SSS #1	0.14	Inactive	41	Iron	1,000	–	Unlikely
SSS #2	0.15	Standby	72	1,2,3-TCP	1,295	–	Unlikely
SSS #3	0.14	Active	36	PFOA/PFAS	2,000	1,700	–
SSS #8	5.69	Active	25	PFOA/PFAS	1,500	1,275	–
SSS #9	0.22	Active	21		2,500	2,125	–
Existing Groundwater Well Capacity (Active)					**6,000**	**5,100**	
Existing Groundwater Well Capacity (Inactive or Standby)					**2,295**	**1,951**	
Existing Groundwater Well Capacity (Inactive or Standby and Candidate for Rehabilitation)					**0**	**0**	

(a) Status and pump capacities were updated based on 'Well Rehabilitation List v2025.xlsx', provided by the City in March 2025.
(b) Parcel sizes assumed based on County of San Joaquin District Viewer, accessed on July 31, 2025.
(c) Consistent with assumptions in the WMP, firm active well capacity is 85 percent of the active well capacity.
(d) Wells selected for rehabilitation based on age (less than 40 years old) and parcel size (at least 0.5 acres).

SUPPLY CAPACITY EVALUATION

The 2021 WMP evaluated total supply capacity based on a combination of surface water and groundwater sources. For this evaluation, only groundwater supplies were considered to determine the additional capacity needed to meet system demands during a complete loss of surface water supplies. The analysis was performed for both the near-term (2030) and buildout (2040) demand conditions to identify the well rehabilitations and new wells required to maintain reliable service.

Consistent with City planning criteria, firm groundwater capacity was assumed to be 85 percent of total active well capacity. For inactive or standby wells, firm capacity was also assumed to be 85 percent of their rated capacity, if reactivated. New wells were assumed to have a design capacity of 1,800 gallons per minute (gpm) and a firm capacity of 1,500 gpm.

These assumptions were applied to both demand scenarios to estimate total firm groundwater capacity and to identify capacity deficits under each condition. The results are summarized in the following sections.

Near-Term Water Supply Redundancy Evaluation

Table 4 summarizes the results of City's ability to meet maximum day demands, with current groundwater facilities under near-term demand conditions. As shown, the existing firm well capacity is approximately 22.4 mgd in North Stockton and 7.3 mgd in South Stockton, compared to maximum day demands of 38.1 mgd and 14.9 mgd, respectively. This results in capacity deficits of 15.7 mgd in North Stockton and 7.6 mgd in South Stockton.

To address these deficits, the following improvements are recommended:

- North Stockton
  - Rehabilitate Well 30 with treatment to restore capacity.
  - Construct seven new wells to provide additional groundwater supply capacity.
- South Stockton
  - Construct four new wells, likely with treatment.

These improvements would increase firm capacity by approximately 17.8 mgd in North Stockton and 8.6 mgd in South Stockton, resulting in surpluses of 2.1 mgd and 1.1 mgd, respectively.

Table 4. Near-Term Supply Capacity Evaluation

Component	North Stockton, mgd	South Stockton, mgd
Existing Firm Surface Water Treatment Plant Capacity	0.0	0.0
Existing Firm Well Capacity	22.4	7.3
Near-Term (2030) Maximum Day Demand	38.1	14.9
Supply Surplus (Deficit)	(15.7)	(7.6)
Additional Firm Capacity from Recommended Rehabilitated Wells	2.7 (1 well, Well 30)	No rehabilitation candidates
Additional Firm Capacity from Recommended New Wells	15.1 (7 wells)	8.6 (4 wells with treatment)
Revised Supply Surplus (Deficit)	2.1	1.1

Buildout Water Supply Redundancy Evaluation

Table 5 summarizes the results of the City's ability to meet maximum day demands under buildout (2040) conditions using groundwater-only. The analysis excludes demands associated with the Mariposa Lakes development, which is outside the City's service area. As shown in the table, the firm groundwater capacity remains approximately 22.4 mgd in North Stockton and 7.3 mgd in South Stockton, while maximum day demands increase to 48.9 mgd and 19.6 mgd, respectively. This results in deficits of 26.5 mgd in North Stockton and 12.3 mgd in South Stockton.

To address these deficits, the following additional improvements are recommended, assuming the existing-condition improvements are completed:

- North Stockton
  - Construct five additional new wells to provide increased capacity for buildout demands.
- South Stockton
  - Construct two additional new wells with treatment to provide additional firm capacity.

These improvements would increase firm capacity by approximately 25.9 mgd in North Stockton and 13.0 mgd in South Stockton, resulting in surpluses of 2.1 mgd and 0.7 mgd, respectively.

Table 5. Buildout Supply Capacity Evaluation		
Component	North Stockton, mgd	South Stockton, mgd
Buildout Firm Water Treatment Plant Capacity	0.0	0.0
Buildout Firm Well Capacity	22.4	7.3
Buildout Maximum Day Demand	48.9	19.6
Supply Surplus (Deficit)	(26.5)	(12.3)
Additional Firm Capacity from Recommended Rehabilitated Wells	2.7 (1 well, Well 30)	No rehabilitation candidates
Additional Firm Capacity from Recommended New Wells	25.9 (12 wells)	13.0 (6 wells with treatment)
Revised Supply Surplus (Deficit)	2.1	0.7

Summary of Improvements

The recommended groundwater improvements for near-term (2030) and buildout (2040) conditions are summarized in Table 6. The program includes well rehabilitation, new well construction, and treatment upgrades required to provide sufficient firm groundwater capacity under groundwater-only conditions. These improvements collectively increase the City's firm groundwater capacity in both service areas, ensuring that maximum day demands can be met under near-term (2030) and buildout (2040) conditions.

Table 6. Summary of Groundwater Well Improvements		
Timeframe	North Stockton	South Stockton
Near-Term (2030)	• 1 well rehabilitation (Well 30) • 7 new wells • 12,370 gpm of additional firm capacity	• No rehabilitation candidates • 4 new wells • 6,000 gpm of additional firm capacity
Buildout (2040)	• 5 additional wells • 7,500 gpm of additional firm capacity	• 2 additional wells • 3,000 gpm of additional firm capacity
Total	• **1 well rehabilitation (Well 30)** • **12 new wells** • **19,870 gpm of additional firm capacity**	• **6 new wells** • **9,000 gpm of additional firm capacity**

Sensitivity Evaluation

The analysis described above assumes no surface water availability to represent the most conservative condition and ensure reliable service during critical events. This evaluation also considered scenarios where partial surface water supplies from the SEWD and the DWTP could remain available. These conditions were reviewed to provide the City with planning bookends that could be considered if some amount of surface water was assumed to be available. Two sensitivity scenarios were evaluated:

- **25 percent scenario**: Assumes 25 percent of DWTP capacity (7.5 mgd) and 25 percent of SEWD's available capacity (70 percent of demand), or 3.7 mgd under near-term and buildout conditions.
- **33 percent scenario**: Assumes 33 percent of DWTP capacity (10 mgd) and 33 percent of SEWD's available capacity, or 5.0 mgd under near-term and buildout conditions.

Table 7 summarizes the reduced well requirements under these partial surface water availability conditions. The corresponding cost impacts are discussed in the Capital Cost Estimates section.

Table 7. Summary of Groundwater Well Improvements under Sensitivity Scenarios

Timeframe	North Stockton	South Stockton
25 Percent Available Scenario		
Near-Term (2030)	• 1 well rehabilitation (Well 30) • 3 new wells • 6,400 gpm of additional firm capacity	• No rehabilitation candidates • 2 new wells (with treatment) • 3,000 gpm of additional firm capacity
Buildout (2040)	• 5 additional new wells • 7,500 gpm of additional firm capacity	• 2 additional new wells (with treatment) • 3,000 gpm of additional firm capacity
Total	• **1 rehabilitation (Well 30)** • **8 new wells** • **13,900 gpm of additional firm capacity**	• **4 new wells (with treatment) 6,000 gpm of additional firm capacity**
33 Percent Available Scenario		
Near-Term (2030)	• 1 well rehabilitation (Well 30) • 2 new wells • 4,900 gpm of additional firm capacity	• No rehabilitation candidates • 2 new wells (with treatment) • 3,000 gpm of additional firm capacity
Buildout (2040)	• 5 additional new wells • 7,500 gpm of additional firm capacity	• 2 additional new wells (with treatment) • 3,000 gpm of additional firm capacity
Total	• **1 well rehabilitation (Well 30)** • **7 new wells** • **12,400 gpm of additional firm capacity**	• **4 new wells (with treatment) 6,000 gpm of additional firm capacity**

CAPITAL COST ESTIMATES

Opinions of probable capital costs were developed for the recommended groundwater improvements to provide the City with a planning-level estimate for budgeting for additional redundancy in the water supply system. These opinions reflect the cost of constructing, rehabilitating, and treating groundwater wells necessary to meet system demands under both near-term (2030) and buildout (2040) groundwater-only conditions.

The opinions of probable costs were prepared in accordance with AACE guidelines for a Class 5 estimate, appropriate for master planning and conceptual-level evaluations. Unit costs and contingency factors were based on the City's Cost Estimating Assumptions presented in Appendix D of the 2021 WMP[2] and escalated to April 2025 dollars using the Engineering News Record 20-City Construction Cost Index.[3]

Table 8 presents the total estimated capital costs under groundwater-only conditions, and Figure 1 illustrates how costs vary with different levels of surface water availability. The total cost to achieve complete groundwater redundancy is approximately $150 million through buildout, representing the most conservative planning condition. When 25 or 33 percent of surface water capacity remains available, total redundancy costs are reduced to approximately $101 million and $95 million, respectively. The difference between these two partial-supply scenarios is relatively small, indicating limited additional benefit from higher levels of available surface water. Achieving complete redundancy would require a significantly higher level of capital expenditure, approximately 50 percent greater than under the 25 or 33 percent availability conditions.

Table 8. Estimated Capital Cost of (Full Redundancy) Groundwater Improvements Assuming No Surface Water Supplies, million dollars[(a)]

Timeframe	North Stockton	South Stockton	Total
Near-Term (2030)	$52.2	$42.3	$94.5
Buildout (2040)	$34.0	$21.2	$55.2
Total	**$86.2**	**$63.5**	**$149.7**

(a) Unit costs based on April 2025 20-City Construction Cost Index for San Francisco (15,263).
(b) Costs include contingency markups of 35 percent for construction and 45 percent for other project costs (engineering costs, construction management, and program implementation costs).
(c) Estimated construction costs do not reflect an adjustment to account for the current economic bidding climate.

[2] West Yost. January 2021. *City of Stockton Water Master Plan Update*, Appendix D.

[3] The following unit cost assumptions were used: $6.80 million to install a new well without treatment; $4.54 million to rehabilitate an existing well; $3.78 million to add optional granular activated carbon (GAC) treatment to an existing well; and $10.58 million to install a new well with GAC treatment. Unit costs include contingency markups of 35 percent for construction and 45 percent for other project costs (engineering costs, construction management, and program implementation costs).

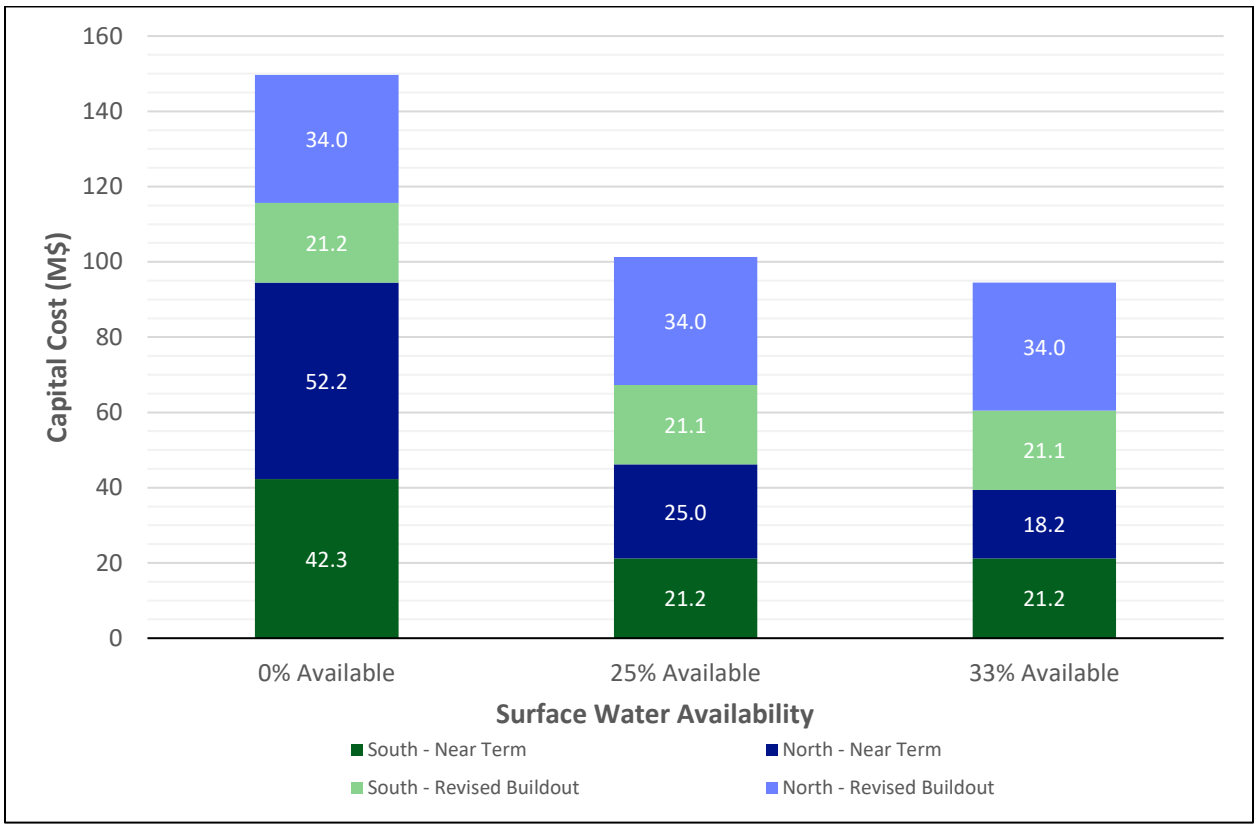


Figure 1. Total Cost of Redundancy for Various Surface Water Availability (Curtailment) Scenarios

FINDINGS AND RECOMMENDATIONS

Findings and recommended improvements from this evaluation are summarized in Table 9 below. These conclusions are based on the supply capacity evaluations presented in Tables 4 and 5, the recommended improvements summarized in Table 6, and the opinions of probable capital costs presented in Table 8. Together, these results define the groundwater improvements required for the City to achieve full redundancy under groundwater-only conditions.

- The total estimated cost for the recommended improvements is approximately $94.5 million under near-term conditions and an additional $55.2 million under buildout conditions.
- As shown on Figure 1, the sensitivity evaluation indicates that partial surface water availability would reduce total cost. If the City has confidence that some surface water treatment capacity will remain available during emergency events, a lower level of investment could be considered. Under the 25 and 33 percent availability scenarios, total costs are reduced to approximately $101 million and $95 million, respectively. Although the difference between these two scenarios is small, achieving complete redundancy would require approximately 50 percent greater investment to ensure full reliability under a groundwater-only condition.

- Other Recommended Actions:
  - Perform detailed condition assessments of existing wells prior to rehabilitation to evaluate structural integrity, equipment condition, and remaining useful life. Assessment results should be used to determine whether rehabilitation is technically and economically feasible or if well replacement is warranted.
  - Conduct a well siting study to identify and secure parcels suitable for new groundwater production wells in both North Stockton and South Stockton. The study should evaluate site feasibility based on parcel size, available utilities, hydrogeologic conditions, proximity to existing infrastructure, and potential need for water treatment.
  - Coordinate with developers to ensure that land for future groundwater production wells and related infrastructure is identified and dedicated as part of the development entitlement process.
  - Establish a phased implementation plan for well rehabilitation and new construction that prioritizes projects based on condition, remaining useful life, system benefit, and available funding.

Table 9. Summary of Recommended Improvements for Full Supply Redundancy

Timeframe	Service Area	Recommended Improvements	Incremental Increase in Firm Capacity, mgd	Estimated Capital Cost, million dollars
Near-Term (2030)	North	• Rehabilitate Well 30 with treatment • Construct 7 new wells (including Well 33)	17.8	52.2
	South	• Construct 4 new wells with treatment (including Well SSS10)	8.6	42.3
		Subtotal – Near-Term	**26.4**	**$94.5**
Buildout (2040)	North	• Construct 5 additional new wells	8.1	34.0
	South	• Construct 2 additional new wells with treatment	4.4	21.2
		Subtotal – Buildout	**12.5**	**$55.2**
		Total Estimated Capital Costs		**$149.7**

ATTACHMENT F: SEWD CONTRACT

EXHIBIT 1

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

TABLE OF CONTENTS

PARAGRAPH		PAGE
1	Definitions	4
1A	Acquisition and Construction Fund	4
1B	Agricultural Water	5
1C	Annual Audit	5
1D	Annually	5
1E	Base Monthly Payment	5
1F	Base Supply of Raw Water	5
1G	Base Supply of Treated Water	5
1H	Bond Resolution	5
1I	Bond Reserve Account	5
1J	Bond Sinking Fund Account	5
1K	Contractors	5
1L	Conveyance and Storage Facilities	6
1M	Debt Service	6
1N	Debt Service Surcharge	6
1O	Initial Delivery Date	6
1P	Initial Delivery of Water	6
1Q	Intake Facilities	6
1R	Municipal and Industrial Share	6
1S	Municipal and Industrial Water	6
1T	New debt service	7
1U	New debt service surcharge	7
1V	New Hogan Contracts	7
1W	New Hogan Dam	7
1X	New Melones Contract	7
1Y	New Melones Dam	7
1Z	New Service Area	7
1AA	Nominal Capacity	7
1BB	North Stockton Aqueduct	8
1CC	Noticed Public Hearing	8
1DD	Prime Rate	8
1EE	Parties	8
1FF	Produced Water	8
1GG	Raw Water	8
1HH	Raw Water Transmission Line	8

PARAGRAPH		PAGE
1II	Southern Water System	8
1JJ	Surplus Account	9
1KK	Treated Water	9
1LL	Water Fund	9
1MM	Water Treatment Facilities	9
1NN	Water Treatment Facilities Advances	9
1OO	Water Treatment Facilities Bonds	9
1PP	Water Treatment Plant	9
1QQ	Year	10
2	Term	10
2A	Effective Date of Second Amended Contract	10
2B	Replacement of Original Contract	10
3	Renewal; Continued Services	10
3A	Renewal	10
3B	Continued Service	10
3C	One Contractor May Renew	11
4	Water to be Furnished to the Contractors	11
4A	Obligation of Stockton East	11
4B	Water to be Made Available	11
4C	Emergency Conditions	12
4D	Additional Water	12
4E	Acceptance of Treated Water	13
4F	Scheduling of Maintenance	14
4G	Standard of Operation	14
4H	Calculation of Percentage	14
4I	Minimium Amount	14
4J	Lack of Availability of Raw Water	15
4K	Failure of System to Accept Water	15
4L	Inability to Deliver Treated Water	16
4M	Allocation of Deficiency	16
5	Payment by Contractors	16
5A	Amount to be Paid Annually	16
5B	Credit	19
5C	Audit	20
5D	Allocation of Charges	20
5E	Payment Adjustments	20
5F	Further Adjustments	21
5G	Failure to Continue Service	21
6	Time and Manner of Payment	21
6A	Monthly Payments	21
6B	Proration	22
6C	Procedures for Audit	22

PARAGRAPH		PAGE
6D	Establishing Base Monthly Payment	22
6E	Public Hearing on Base Monthly Payment	23
6F	Final Payments	23
7	Repair and Replacement Reserve Account	23
7A	Maintenance of Repair and Replacement Reserve Account	23
7B	Amount of Annual Payment	24
7C	Adjustment of Payment and Use of Account	24
8	Water Deficiency Reserve Fund	24
9	Water Treatment Facilities Reserve Fund	25
9A	Debt Service	25
9B	Operation and Maintenance	25
9C	Replacement and Expansion	25
10	Scheduling of Water	25
11	Measurement	26
12	Quality	26
13	Other Contractors	26
14	Operations	26
15	Construction of New Facilities	26
16	Attorneys Fees and Costs	27
17	Successors	27
18	Default and Remedies	27
18A	Interest	28
18B	Remedies	28
19	Notices	28
20	Subject to Bond Resolution	28
21	Specific Performance	29
22	Severability	29
23	Entire Agreement	29
24	Remedies Not Exclusive	29
25	Waiver	29
26	Titles	29
27	Gender, Number	30
28	Amendment	30
29	Controversies	30
30	Interest Received on Reserve Funds	30
31	Modification of Bond Resolution	30
32	Subject to United States Bureau of Reclamation Contract	30
33	Conduct of Public Hearings	34
34	Adjudication of Ground Water Basin	34
35	Stockton East as Contractor	34

PARAGRAPH		PAGE
36	Temporary Use of Funds	34
37	Allocation of Surplus Water Fund	35
38	Resolutions and Execution	35
39	Subject to Opinion	36
40	Subject to Removal of San Marcos Decision Strictures	36

LIST OF EXHIBITS

EXHIBIT	DESCRIPTION
A	Amortization Schedule
B	Water Delivery Points
C	Water Treatment Facilities Advances
D	Major Repair and Replacement Schedule
E	Resolution of Board of Directors of Stockton East
F	Resolution of Board of Directors of Cal-Water
G	Resolution of the City Council of the City of Stockton
H	Resolution of the Board of Supervisors Relative to Lincoln
I	Resolution of the Board of Supervisors Relative to Colonial

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 25th day of September, 1987, 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 livestock, 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".

1OO. "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.

1QQ. "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 conspicious 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 conspicious 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

ATTEST:

_____
EDWARD M. ~~STEFFANI~~
SECRETARY

APPROVED AS TO FORM:

_____
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, PRESIDENT

ATTEST:

LESTER SAXE
SECRETARY

APPROVED AS TO FORM:
McCutchen, Doyle, Brown
& Enersen

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, MAYOR

ATTEST:

FRANCES HONG
CITY CLERK

APPROVED AS TO FORM:

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 subdivision
of the State of California
governed by the Board of Supervisors of San Joaquin County

By _____
GEORGE BARBER
CHAIRMAN, Board of Supervisors
County of San Joaquin

State of California

ATTEST:

JORETTA J. HAYDE
CLERK OF THE Board
of Supervisors of the
County of San Joaquin,
State of California

By: Joretta J. Hayde
~~DEPUTY~~ CLERK

APPROVED AS TO FORM:

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 subdivision of the State of California governed by the Board of Supervisors of San Joaquin County

By George L. Barber
GEORGE BARBER, CHAIRMAN
Board of Supervisors
County of San Joaquin
State of California

ATTEST:

JORETTA J. HAYDE
CLERK OF THE Board
of Supervisors of the
County of San Joaquin,
State of California

By: Joretta J. Hayde

APPROVED AS TO FORM:

~~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	Payments: Interest (sale)	Payments: Principal (1,000s)	Total	Bond Years	Cumulative Bond Years
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	1,305,500	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	48,128
1991	1,058,750	600	1,658,750	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
94	992,250	750	1,672,250	14,250	95,625
5	869,750	800	1,669,750	16,000	111,625
6	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: $1,654,287 414,625

Average life: 20.94 years.

EXHIBIT 1

Exhibit "A"

$15,125,000 dated 2005; minimum mandatory calls starting in 1991 as per schedule.
Dated 4/1/75.

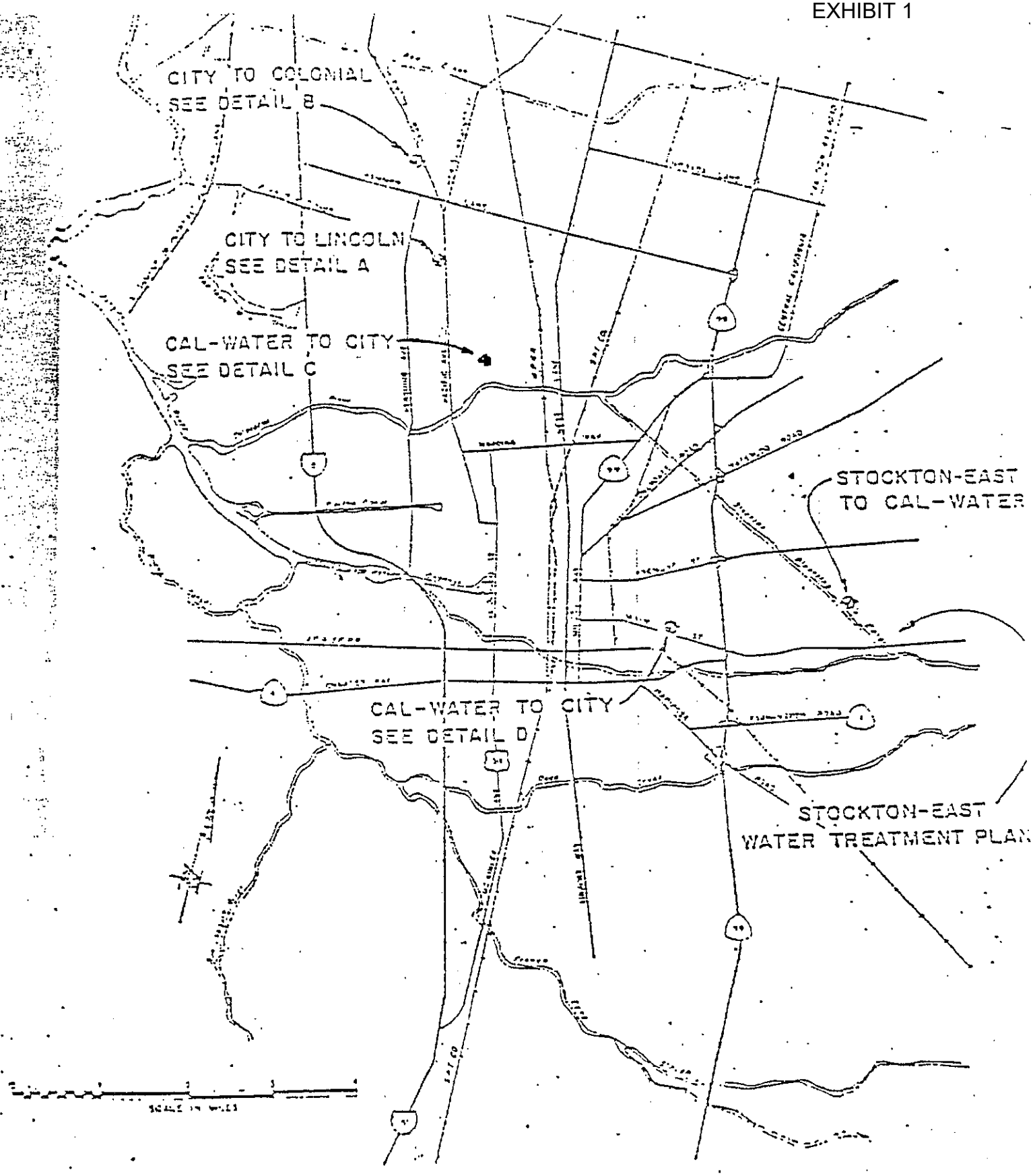
Call premiums:

Premium	Redemption Year
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:

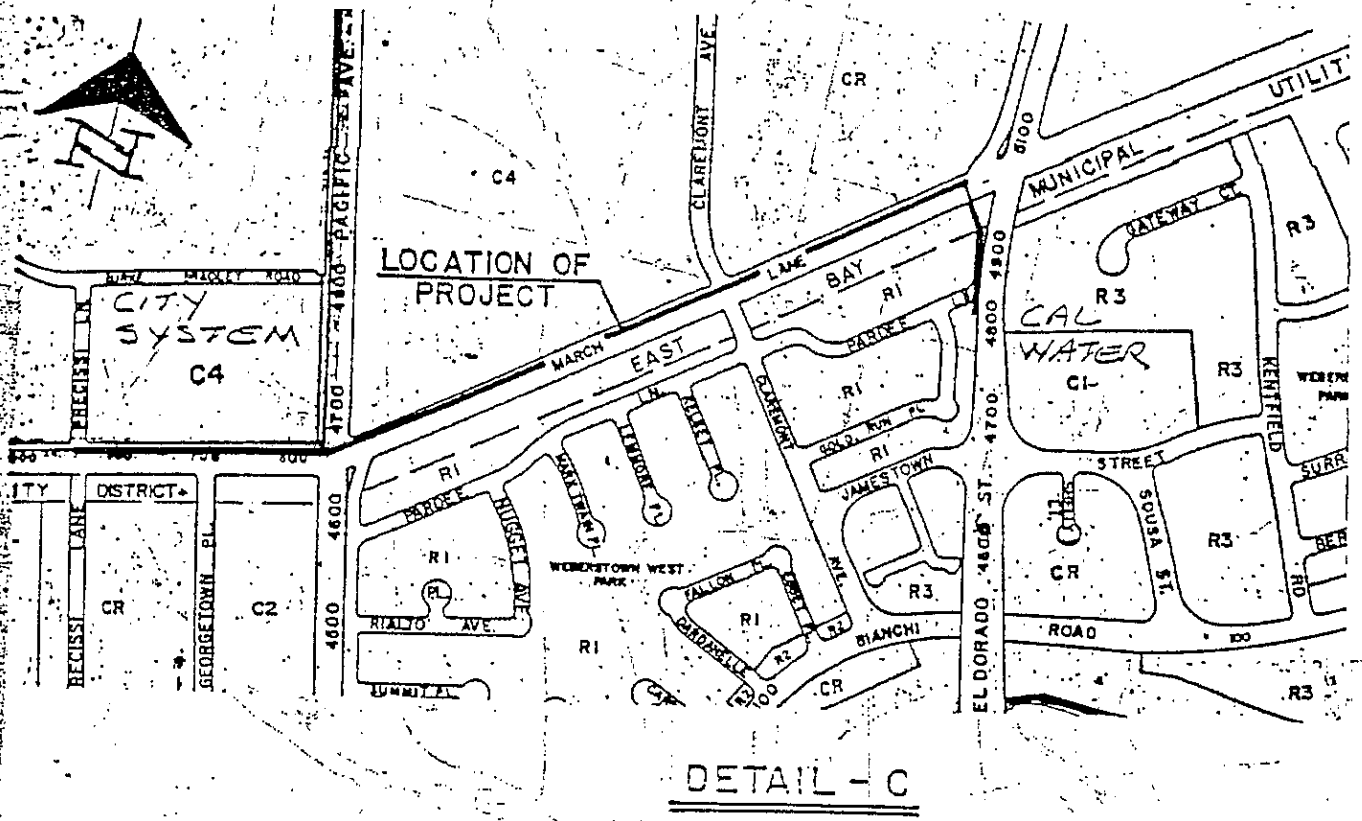
Bank of America, National Trust and Savings Association

The foregoing schedule is an example only based on interest at 7%.



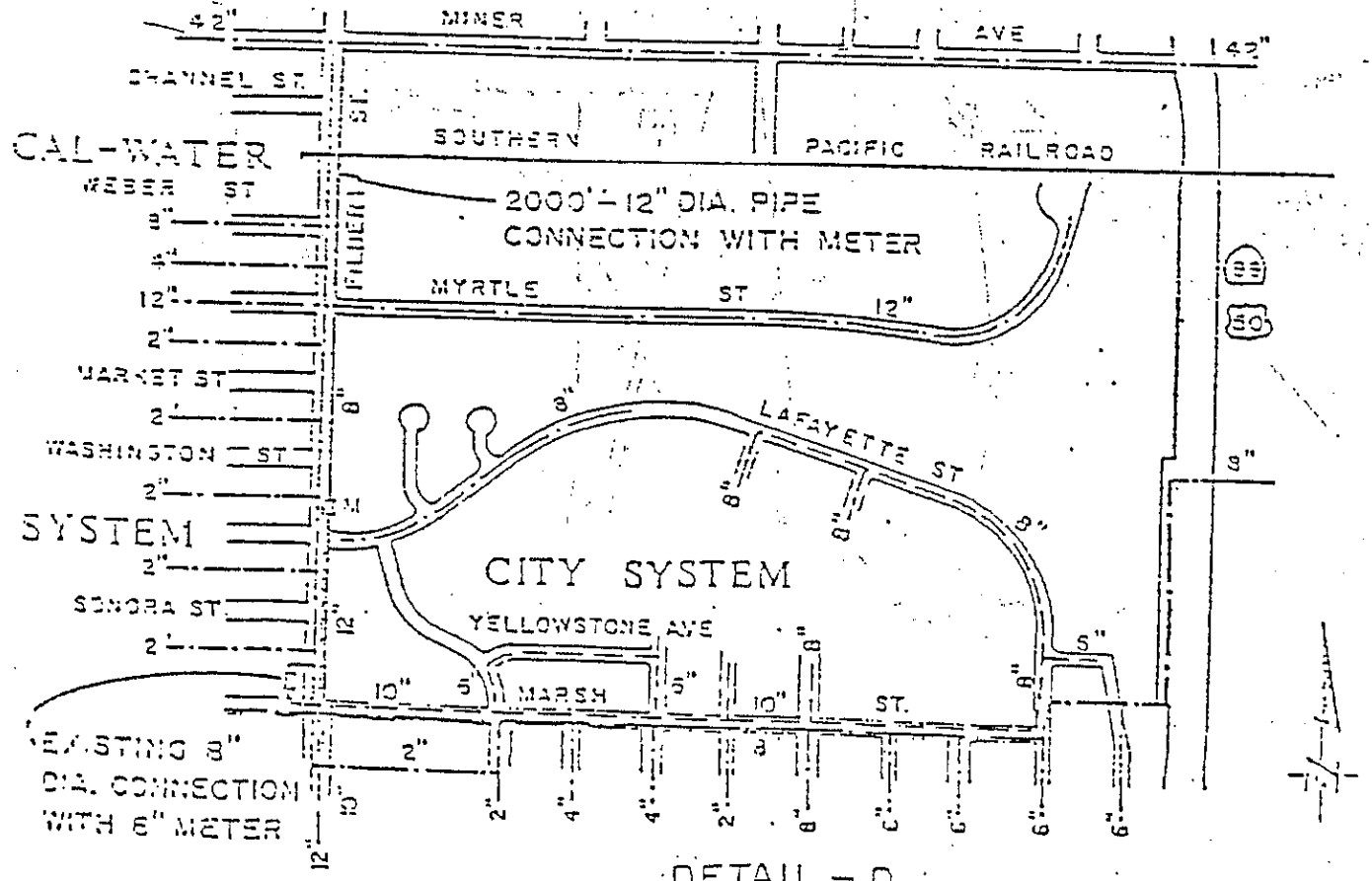
WATER DELIVERY POINTS

Exhibit "B"



DETAIL - C

CAL-WATER CONNECTION TO CITY (NORTH)



DETAIL - D

CAL-WATER CONNECTION TO CITY (DIAMOND-WALNUT)

Exhibit "B"

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	$602,039.36

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.

Item	Estimated Costs of Major Repairs and Replacements During Five-Year Periods Shown (Based on 1974 Costs in $1000)						
	0-5	5-10	10-15	15-20	20-25	25-30	30-35
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

EXHIBIT "E"
Sheet 1 of 2

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.

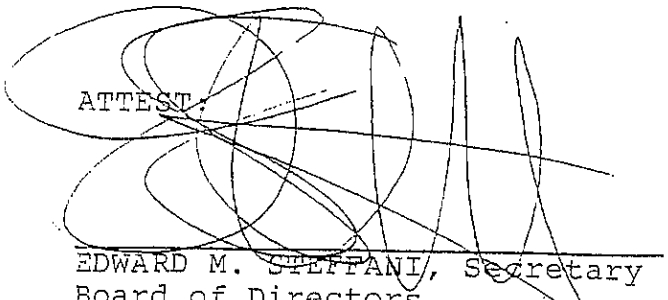
PASSED AND ADOPTED this 15th day of September, 1987, by the following vote of the Board of Directors, to wit:

AYES: BOZZANO, DONDERO, HUCKINS, LAVEN, and SOLARI

NOES: TONE

ABSENT: MACNEAR

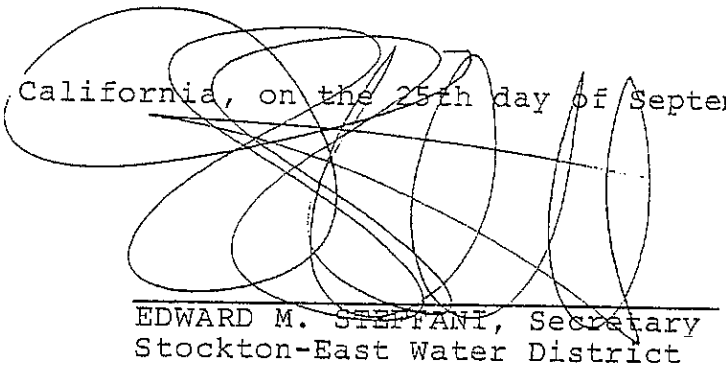
ROGER M. HUCKINS, President
Board of Directors
Stockton-East Water District



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

RESOLUTION AUTHORIZING SECOND AMENDED CONTRACT WITH STOCKTON EAST WATER DISTRICT, ET AL.

WHEREAS, there has been presented to this Board of Directors and made a part of the minutes of this meeting a proposed agreement among California Water Service Company, Stockton East Water District, a political subdivision of the State of California, the City of Stockton, a municipal corporation of the State of California, the Lincoln Village Maintenance District, a political subdivision of the State of California governed by the Board of Supervisors of San Joaquin County, and Colonial Heights Maintenance District, a political subdivision of the State of California governed by the Board of Supervisors of San Joaquin County, dated September 25, 1987, which amends the provisions of that certain contract made and entered into under date of February 11, 1975, by and among the parties to said Second Amended Contract; and,

WHEREAS, the Board deems it to be in the best interests of the Company to approve said Second Amended Contract and authorize its execution,

NOW, THEREFORE, BE IT RESOLVED that this Board of Directors hereby approves the form of said Second Amended Contract, as heretofore presented to this Board and made a part of the minutes of this meeting, and authorizes, empowers and directs (a) the execution thereof by the President, or a Vice President, and the Secretary, or an Assistant Secretary,

of the Company, for and on behalf of the Company and in its corporate name and as its corporate act and deed in as many counterparts as said officers executing the same shall deem desirable, with such amendments, revisions, modifications and changes therein as said officers shall approve, such approval to be evidenced conclusively by their execution thereof, and (b) the delivery thereof to the other parties thereto.

----oOo----

I, LESTER E. SAXE, Secretary of California Water Service Company, a California corporation, do hereby certify that the foregoing is a full, true and correct copy of certain resolutions adopted by the Board of Directors of said corporation at a regular meeting of said Board duly called and held on September 21, 1987, at which a quorum was present; that all Directors present voted in favor of said resolutions; and that said resolutions have never been annulled or revoked but are still in force and effect.

IN WITNESS WHEREOF, I have hereunto signed my name and affixed the seal of said California Water Service Company this 22nd day of September, 1987.

Lester E Saxe

Secretary of
CALIFORNIA WATER SERVICE COMPANY

EXHIBIT 1

Exhibit "G"

Resolution No. 87-0508

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

Contract attached h

part hereof.

INTR

Septemb

10

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

112 (2/87)

EXHIBIT 1

Resolution No. 90-0197

STOCKTON CITY COUNCIL

WHEREAS, by Resolution No. 90-0091 the City Council authorized the Mayor to execute the revised Addendum to the Second Amended Contract between Stockton East Water District, California Water Service Company, City of Stockton, Lincoln Village Maintenance District, Colonial Heights Maintenance District, and the County of San Joaquin; and

WHEREAS, said Addendum contained language inconsistent with the Mutual Statement of Intent executed by the parties; and

WHEREAS, said Addendum has been revised to be consistent with the Mutual Statement of Intent by adding the area one-half mile north of Eight Mile Road, which remains unincorporated, to the unincorporated area for which the County will collect the development fee; now, therefore,

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS:

1. That the Mayor is authorized to execute the revised Addendum to the Second Amended Contract between Stockton East Water District, California Water Service Company, City of Stockton, Lincoln Village Maintenance District, Colonial Heights Maintenance District, and the County of San Joaquin.

2. That a copy of said revised Addendum is attached hereto as Exhibit "A" and by reference made a part hereof.

PASSED, APPROVED AND ADOPTED this 26th day of MARCH, 1990.

/s/ JOAN DARRAH

JOAN DARRAH, Mayor
of the City of Stockton

ATTEST:

/s/ FRANCES HONG

FRANCES HONG, City Clerk
of the City of Stockton

ATTY REVIEW

DATE

EXHIBIT "A" ON FILE IN THE OFFICE OF THE CITY CLERK

EXHIBIT 1

A-90-_____

ADDENDUM TO SECOND AMENDED CONTRACT

- - - - -

The Second Amended Contract dated September 25, 1987, by and between STOCKTON EAST WATER DISTRICT, the CALIFORNIA WATER SERVICE COMPANY, the CITY OF STOCKTON, the LINCOLN VILLAGE MAINTENANCE DISTRICT, and the COLONIAL HEIGHTS MAINTENANCE DISTRICT, is hereby modified with the execution of this Addendum, as follows:

1. The County of San Joaquin, a political subdivision of the State of California will, upon execution of the Addendum, be considered to be a party to the Second Amended Contract as and for only those unincorporated areas of County's territory which are within the area bounded by the boundaries of Central San Joaquin Water Conservation District and of Stockton East Water District, described in Section 33 of Chapter 819, Statutes of 1971, as amended, and including one-half mile outside the Stockton East Water District boundary of Eight Mile Road.

2. Clause "5B" shall henceforth be renumbered as "5B(1)".

3. The parties agree that a new clause shall be added to the Second Amended Contract, which shall read as follows:

"5B(2)(a). Credit for Developer Fee Contribution: Amounts contributed by the parties to this Contract, through the establishment and levying of developer fees for the New Melones Water Conveyance Projects, shall be jointly pooled and credited to the total cost of financing the projects attributed to new development in accordance with the sums due under Subparagraph 5A and the schedule for installment payments with respect to Series B Certificates of Participation contained in the Installment Purchase Agreement by and between Stockton East Water District and California Public Agency leasing Corporation, dated April 1, 1990 ("Purchase Agreement"). The portion of the financing of the projects attributed to new development is calculated to be 80% of the municipal and industrial share of the total project costs."

4. The parties agree that a new clause shall be added to the Second Amended Contract, which shall read as follows:

"5B(2)(b). Distribution of Developer Fee Contributions: All developer fees levied and collected by these parties to the Second Amended Contract are to be transferred to Stockton East Water District, the Trustee named in the Purchase Agreement, on a quarterly basis and used exclusively to

EXHIBIT "A"

finance that portion of the New Melones Water Conveyance Projects attributed to new developments."

5. The parties agree that a new clause shall be added to the Second Amended Contract, which shall read as follows:

"5B(2)(c). Pursuant to the Purchase Agreement, Stockton East Water District is obligated to make certain minimum payments for the Series B Certificates, whether or not developer impact fees are levied or collected. To the extent, in any given year or years, the developer impact fees levied, collected and transferred to the Trustee are not sufficient, Stockton East will increase the base monthly payment, to meet those certain minimum payments, provided that, when thereafter developer fees are levied, collected and transferred to the Trustee in excess of those certain minimum payments required in the year of levy, collection and transfer, Stockton East Water District shall apply such excess first to repayment, by reduction of the base monthly payment, of the amount earlier collected to meet the certain minimum payments, prior to use of any excess for repayment of the Series B Certificates of Participation.

6. All other terms and conditions of the Second Amended Contract shall remain as written.

7. The County of San Joaquin agrees to be bound to the Second Amended Contract and this Addendum.

8. To the extent that City of Stockton and/or County of San Joaquin may be responsible for payment, or performance, of any obligation of any nature to Oakdale Irrigation District and/or South San Joaquin Irrigation District and/or Tri-Dam Power Authority, pursuant to that certain document entitled "Agreement (1) Granting an Interest in Real Property and Improvements; (2) Providing for the Operation, Maintenance, Repair and Reconstruction of Such Real Property and Improvements Located Thereon; and (3) Providing for Operation Conditions, Allocations of Liability and Responsibility", in which document grants to Purchaser, as defined therein, the necessary rights and interest for construction and generation of the New Melones Water Conveyance Project, Stockton East shall indemnify, defend, and hold harmless City of Stockton and County of San Joaquin, and each of them, from such payment or performance of any obligation; provided, however, that this indemnification, defense, and hold-harmless agreement shall not prevent any such payment of portions thereof which would otherwise be a component of payment by Contractors to Stockton-East under the Second Amended Contract from continuing to be such a component.

EXECUTED on this _____ day of _____, 1989, at Stockton, California.

COUNTY OF SAN JOAQUIN, a political subdivision of the State of California

By _____
DOUGLASS W. WILHOIT, Chairman
Board of Supervisors

ATTEST: JORETTA J. HAYDE
Clerk of the Board of Supervisors of the County of San Joaquin, State of California

By _____ (SEAL)
Deputy Clerk

APPROVED AS TO FORM:

_____
JOHN F. CHEADLE, County Counsel

ADDRESS FOR NOTICE TO BOARD: c/o Clerk, Board of Supervisors Courthouse, 222 E. Weber Avenue, Stockton, CA 95202

STOCKTON EAST WATER DISTRICT, a political subdivision of the State of California

By _____
Title _____

ATTEST:

_____
Secretary

APPROVED AS TO FORM:

_____
General Counsel

ADDRESS FOR NOTICE TO STOCKTON EAST: 'Post Office Box 5157, Stockton, CA 95205

CALIFORNIA WATER SERVICE COMPANY, A California Corporation

By_____
Title_____

ATTEST:

APPROVED AS TO FORM:
McCutchen, Doyle, Brown & Enersen

_____
Secretary

_____

ADDRESS FOR NOTICE TO CAL WATER: Post Office Box 1150, San Jose, CA 95108

CITY OF STOCKTON, a Municipal Corporation of the State of California

By_____
Mayor

ATTEST:

APPROVED AS TO FORM:

_____
FRANCES HONG
City Clerk

_____, Deputy f
ROBERT THOMAS HARRIS
City Attorney

ADDRESS FOR NOTICE TO CITY: c/o City Clerk, City Hall, Stockton, CA 95202

LINCOLN VILLAGE MAINTENANCE DISTRICT, a political subdivision of the State of California, governed by the Board of Supervisors of San Joaquin County

By_____
DOUGLASS W. WILHOIT, Chairman
Board of Supervisors
County of San Joaquin
State of California

ATTEST: JORETTA J. HAYDE
Clerk of the Board of Supervisors of the County of San Joaquin, State of California

APPROVED AS TO FORM:

By_____(SEAL)
Deputy Clerk

_____
JOHN F. CHEADLE, County Counsel

ADDRESS FOR NOTICE TO LINCOLN: c/o Board of Supervisors, Courthouse, 222 E. Weber Ave., Stockton, Ca 95202

COLONIAL HEIGHTS MAINTENANCE DISTRICT, a political subdivision of the State of California, governed by the Board of Supervisors of San Joaquin County

By_____
DOUGLASS W. WILHOIT, Chairman
Board of Supervisors
County of San Joaquin
State of California

ATTEST: JORETTA J. HAYDE
Clerk of the Board of Supervisors of the County of San Joaquin, State of California

By_____(SEAL)
Deputy Clerk

APPROVED AS TO FORM:

_____
JOHN F. CHEADLE, County Counsel

ADDRESS FOR NOTICE TO COLONIAL: c/o Board of Supervisors, Courthouse, 222 E. Weber Avenue, Stockton, CA 95202

F:PW.NM1 PW.NM2

EXHIBIT 1

CITY OF STOCKTON

C-87-07

RECEIVED
OCT 1 1987
MUNICIPAL UTILITIES DEPT.

OFFICE OF THE CITY ATTORNEY
CITY HALL
STOCKTON, CA 95202-1997
(209) 944-8333

ALLEN
COX
BIRDZELL
LAVEN
NICHOLS
FILE

DATE: September 29, 1987

TO: FRANCES HONG, City Clerk

FROM: B. W. McNATT, Deputy City Attorney

RE: AGREEMENT FOR WHEELING OF SURFACE WATER

I am ~~xxxxxxxxxx~~/attaching a fully executed original of the captioned Agreement.

_X_ For your files/information
___ Pursuant to our phone conversation/your request
___ Please sign and return
___ Please review/comment/handle
___ Please telephone me
___ Please advise how to reply
_X_ Authorized by City Council Resolution No. 87-0399 on July 20, 1987. Provides for wheeling surface water from Stockton East Water District to the Lincoln and Colonial Heights Maintenance Districts via the North Stockton Pipeline.

R. THOMAS HARRIS
CITY ATTORNEY

BW McNatt

B. W. McNATT
DEPUTY CITY ATTORNEY

BWM:gc
Attachment
cc: Director of Municipal Utilities
Director of Finance

A-87-1360

AGREEMENT FOR WHEELING OF SURFACE WATER

THIS AGREEMENT made and entered into this 15th day of September, 1987, by and between the CITY OF STOCKTON, a municipal corporation of the State of California, hereinafter referred to as "CITY", and 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";

WITNESSETH:

WHEREAS, on February 11, 1975, CITY, LINCOLN, and COLONIAL entered into a contract with Stockton East Water District and California Water Service Company providing for the delivery of treated surface water; and

WHEREAS, the hereinbefore mentioned water contract has been revised by the parties and a Second Amended Contract is currently pending for approval by each of the governing bodies of the parties; and

WHEREAS, it is necessary to enter into this agreement specifying the respective duties and obligations of CITY, LINCOLN, and COLONIAL in regards to the use of CITY's water distribution system, the cost to LINCOLN and COLONIAL for such use, and

assurance of delivery of water entitlement in accordance with the Second Amended Contract;

NOW, THEREFORE, IT IS HEREBY AGREED by and between the parties hereto as follows:

1. Purpose of Agreement. The purpose and intent of this agreement is to assure LINCOLN and COLONIAL the use of the CITY water delivery system including the North Stockton Aqueduct which is scheduled for completion on or about October 1, 1988, to specify the charges for such usage, to specify that LINCOLN and COLONIAL may replace certain interties at their expense in order to receive their full entitlement of surface water, and to set out procedures for delivery of COLONIAL and LINCOLN's entitlement to water in the event that delivery is interrupted for whatever reason by the CITY.

2. Covenant of Cooperation. The parties to this agreement do hereby covenant to enable LINCOLN and COLONIAL to take delivery of their water entitlement in conformance with the Second Amended Contract including, but not limited to, Paragraphs 4B and 4E of that Contract which provisions are expressly incorporated herein by reference.

3. Use of CITY Water Delivery System. The water delivery system of CITY, including the North Stockton Aqueduct which is currently under construction, may be used at the option of COLONIAL and LINCOLN for the delivery of their surface water entitlement from the Stockton East Water Treatment Plant to the

water supply lines of COLONIAL and LINCOLN provided, however, that the exercise of such option by COLONIAL or LINCOLN shall not cause unreasonable interference with the operation of the Stockton city water system, and the delivery of water to CITY's customers.

4. Compensation for Use of Water Delivery System. LINCOLN and COLONIAL agree to pay to CITY for the use of CITY's water delivery system the amount of $15.00 per acre foot of surface water wheeled through CITY's water delivery system. Compensation for such use of CITY's water delivery system may be adjusted from time to time upon mutual agreement of the governing bodies of the parties by means of an amendment to this agreement. Amounts due under this paragraph shall be payable within thirty (30) days of presentation of invoice by the CITY.

5. Replacement of Interties. Either LINCOLN or COLONIAL may at their option and at their expense replace the interties between the Stockton water delivery system and the water delivery system of either COLONIAL or LINCOLN. The interties may be replaced with interties which are of greater capacity in order that either LINCOLN and/or COLONIAL may receive their full entitlement of water pursuant to the Second Amended Contract and this agreement. The size, location, and manner of operation of interties shall be such as to not cause problems or to unreasonably burden the operation of the CITY's water system. The CITY, acting in good faith, shall be the sole judge of whether or not an unreasonable burden or problem exists. In the event that

LINCOLN or COLONIAL determines that it will replace an intertie, the plans and specifications for the replacement intertie will be submitted to the CITY for its approval no later than thirty (30) days prior to commencement of work on the replacement of such intertie. Approval by the CITY shall not be unreasonably withheld. County further agrees that it will install and maintain in proper working order all necessary equipment on its interties which will insure that there is no backsiphonage, pressure surge, or other condition which would adversely affect the CITY's water system. Wheeled water shall be provided at normal pressures within CITY's distribution system, but the CITY shall have no responsibility to maintain any specified minimum pressure. All interties on the aforementioned system shall be fully metered.

6. Delivery of Surface Water. It is the intent of the parties hereto that the County shall utilize its allotment from Stockton East Water District on a uniform annual flow basis insofar as possible, and that it will not "peak" on the CITY system without the prior consent of the CITY. Should the CITY be able to receive its full allotment of water, including County's allotment, from Stockton East Water District during any period, and for any reason CITY is unable to deliver the County's allotment during the same period, the CITY will nevertheless deliver the same to the County at some later date as is mutually agreed upon by the parties, which time shall not be later than twelve (12) months from the time the allotment was originally allocated to

the County. In the event Stockton East Water District is unable to deliver County's allotment of water to the CITY at a later time as specified by County, the CITY shall be relieved of its obligation under this paragraph.

7. Term. This agreement shall commence upon the completion of the North Stockton Aqueduct and continue in effect as long as the Second Amended Contract is in effect as to the parties to this agreement.

CITY OF STOCKTON, a municipal corporation of the State of California

By _____
Asst. City Manager

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney

LINCOLN VILLAGE MAINTENANCE DISTRICT, a political subdivision of the State of California

By _____
GEORGE L. BARBER, Chairman
Board of Supervisors

ATTEST: JORETTA J. HAYDE
Clerk of the Board of Supervisors of the County of San Joaquin, State of California

By _____
Deputy Clerk

(SEAL)

COLONIAL HEIGHTS MAINTENANCE DISTRICT
a political subdivision of the State
of California

By George L. Barber
GEORGE L. BARBER, Chairman
Board of Supervisors

ATTEST: JORETTA J. HAYDE
Clerk of the Board of Supervisors of the County of San Joaquin, State of California

By Caroline Jones
Deputy Clerk

(SEAL)

(15:RD "WHEELING.1")
("CPT.WHE")

2012-044-2 & 3 M

A-12-178

STOCKTON EAST WATER DISTRICT TREATED WATER SUPPLY AND COST ALLOCATION AGREEMENT BETWEEN THE CITY OF STOCKTON, CALIFORNIA WATER SERVICE COMPANY, LINCOLN VILLAGE MAINTENANCE DISTRICT, AND COLONIAL HEIGHTS MAINTENANCE DISTRICT

THIS TREATED WATER SUPPLY AND COST ALLOCATION AGREEMENT ("Agreement") is made on MAY 0 1 2012, between the City of Stockton, "City," the California Water Service Company, "Cal Water," the Lincoln Village Maintenance District, "Lincoln Village" and the Colonial Heights Maintenance District, "Colonial Heights", collectively, City, Cal Water, Lincoln Village and Colonial Heights are referred to as the "Urban Contractors".

WHEREAS, the Stockton East Water District (SEWD) delivers treated water to the Urban Contractors through its water treatment plant pursuant to the Second Amended Contract (Contract) between SEWD, City, Cal Water, Lincoln Village and Colonial Heights, dated September 15, 1987; and

WHEREAS, the Contract allocates treated water delivery between the Urban Contractors according to paragraph 4B of the Contract; and

WHEREAS, the City has constructed a new surface water supply project, the Delta Water Supply Project ("DWSP"), to provide treated drinking water to its customers; and

WHEREAS, upon commencement of operation of the DWSP in 2012, the Urban Contractors desire to allocate treated water deliveries and costs from SEWD according to provisions of this Agreement; and

NOW, THEREFORE, IN CONSIDERATION of these premises and the mutual promises contained herein the parties hereto agree as follows:

1. Recitals

Each of the parties hereto represents and warrants each to the other that the above recitals are true and correct.

2. Purpose

This Agreement specifies:

a. The annual delivery allocation by which SEWD treated surface

City Atty
Review _____
Date _____

water will be delivered to the Urban Contractors service areas after completion of the DWSP in 2012.

b. The annual cost allocation of water supplied by SEWD commensurate with the percentage of water delivered to each Urban Contractor.

3. Applicability

This Agreement shall be applicable to the Urban Contractors consistent with the following provisions of the Contract:

a. Paragraph 4B of the Contract, which states "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."

4. Delivery of Water

a. After the DWSP begins treated drinking water delivery to the City's customers in 2012, the Urban Contactors' planned deliveries and allocations of SEWD treated water in acre-feet (AF) for the 2012 "Water Year" (each 12-month period commencing on April 1 and ending on the next March 31), shall be as follows:

Urban Contractor	AF/year	Percentage of Total
City of Stockton	17,500	37.6
Cal Water	27,000	58.1
Lincoln Village	1,600	3.4
Colonial Heights	400	0.9
Total:	46,500	100.0

b. Commencing in 2013 approximately three months prior to the beginning of the 2013 "Water Year" and each year thereafter, the Urban Contractors shall review their current year SEWD treated water deliveries and determine whether they desire changes compared to the current Water Year in the amount of treated water to be delivered by SEWD for the upcoming Water Year. If they agree, the Urban Contractors will submit in writing to SEWD at least two months prior to the new Water Year the projected annual surface water delivery quantities.

(1) If SEWD will not be able to produce the total amount requested, the Urban Contractors will initially be allocated a proportional reduction in the amount of SEWD treated water requested by each for the upcoming Water Year. For example, if only 80% of the total amount requested is anticipated to be

deliverable by SEWD, each Urban Contractor shall have its requested amount reduced by 20%. In this case, the Urban Contractors may negotiate among themselves changes in the allocated amount to be delivered by SEWD and, if they agree, the Urban Contractors shall inform SEWD of their agreed upon revised delivery requests.

(2) If SEWD is capable of delivering more treated water than requested by the Urban Contractors for the upcoming Water Year, the Urban Contractors will initially be allocated a proportional increase in the amount of SEWD treated water requested by each for the upcoming Water Year. The Urban Contractors may negotiate among themselves changes in the amount to be delivered to each party by SEWD. If they agree, the Urban Contractors shall inform SEWD of their agreed upon revised delivery request.

c. It is the Urban Contractors intent that SEWD operate and maintain the main control valves on the City's North Stockton Water Pipeline, the Cal Water Central Transmission Main, and the City's South Stockton Aqueduct in conformance with the water delivery requirements as specified in the Contract, this Agreement and annual Supplements to this Agreement.

5. Contract and Payment Terms

(a) This Agreement is a treated water supply and cost allocation agreement and is not intended to, and does not alter in any manner, the parties' rights or obligations under the Contract except as to the method and amount of payments to be made by the Urban Contractors to SEWD as set forth in the Contract, at Paragraph 6 Time and Manner of Payment. As specified in Paragraph 6D of the Contract, SEWD annually determines the Base Monthly Payment to be paid by the Urban Contactors for anticipated costs of treating and delivering water for the new Water Year. The monthly payment to be made by the Urban Contractors is calculated by determining the percentage of treated water with respect to the total quantity to be delivered by SEWD to the Urban Contractors as agreed to by each party in this Agreement unless modified by the parties in a Supplement to this Agreement. If the parties agree to a Supplement to this Agreement, the percentage will be applied to the Base Monthly Payment to determine the monthly payment to be made by each party to SEWD based on the most recent Supplement.

6. Term

This Agreement will remain in effect until the parties desire to change, modify or terminate the Agreement, or through the term of the Contract.

IN WITNESS WHEREOF, the parties have executed this agreement as of the day and year first above written.

CITY OF STOCKTON

By: _____
BOB DEIS
CITY MANAGER

ATTEST:

_____
BONNIE RAIGE
City Clerk of the City of Stockton

APPROVED AS TO FORM:

_____
JOHN M. LUEBBERKE
City Attorney

CALIFORNIA WATER SERVICE COMPANY

By _____

APPROVED AS TO FORM:

_____
Lynne McGhee
Corporate Counsel

COLONIAL HEIGHTS MAINTENANCE DISTRICT

By _____
STEVE J. BESTOLARIDES
Chairman
Board of Supervisors

APPROVED AS TO FORM:

_____
Lawrence P. Meyers
Deputy County Counsel

LINCOLN VILLAGE MAINTENANCE DISTRICT

By _____
STEVE J. BESTOLARIDES
Chairman
Board of Supervisors

::ODMA\GRPWISE\COS.MUD.MUD_LIBRARY:150252.1

ATTACHMENT G: WID CONTRACT

EXHIBIT 1

RECEIVED
JUN 17 2008
CITY CLERK
CITY OF STOCKTON

AGREEMENT FOR PURCHASE OF WATER FROM THE WOODBRIDGE 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.

RM 08-229

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

Month	Amount (af)
March	1,000 ±
April	1,000 ±
May	3,000 ±
June	1,500±
July	1,000 ±
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 it 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.

WOODBRIDGE 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

::ODMA\GRPWISE\COS.MUD.MUD_Library:122607.1

ATTACHMENT H: SMC CHAPTERS 13.28 AND 13.32

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, 5 or 6, in which event the provisions of Chapter 13.32 shall prevail.
(Prior code § 9-711; Ord. 2022-07-12-1503 C.S. § 2)

§ 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;

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

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

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

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.

(Prior code § 9-712; Ord. 2017-08-22-1403 C.S. § 2)

§ 13.28.035. Water conservation—Exterior irrigation.

Notwithstanding any other provision of this code, exterior irrigation shall be limited as follows:

A. For landscape irrigation, the following schedule shall be enforced to promote water conservation:

   1. For even numbered addresses, exterior irrigation is permitted only on Wednesday and Sunday.

   2. For odd numbered addresses, exterior irrigation is permitted only on Tuesday and Saturday.

   3. For parcels that do not have a street address, exterior irrigation is permitted only on Wednesday and Sunday.

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

4. No exterior irrigation is permitted on Monday, Thursday, or Friday.

5. Exterior irrigation shall be prohibited between the hours of 8:00 a.m. to 6:00 p.m.

B. To prevent the unreasonable use of water and to promote water conservation, the use of potable water is prohibited for the irrigation of non-functional turf at commercial, industrial, and institutional sites. The use of water is not prohibited by this section to the extent necessary to ensure the health of trees and other perennial non-turf plantings or to the extent necessary to address an immediate health and safety need. Non-functional turf means turf that is solely ornamental and not regularly used for human recreational purposes or for civic or community events. Non-functional turf does not include sports fields and turf that is regularly used for human recreational purposes or for civic or community events.

(Ord. 2022-07-12-1503 C.S. § 3)

§ 13.28.040. Regulations.

During the period of November 1st through April 30th, it is unlawful for any person to use, permit, or 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)

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

§ 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)

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

§ 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)

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

CHAPTER 13.32
WATER SHORTAGE EMERGENCIES

§ 13.32.010. Purpose and scope.

This chapter adopts regulations to deal with water shortage emergency conditions which exist within the City and the City's water service areas, as declared by resolution of this City Council. These regulations shall become effective with the effective date of the ordinance codified in this chapter. A water shortage emergency declaration shall be in effect upon proper findings made by the City Council after a public hearing and shall remain in effect until the City Council finds and declares by resolution that the water shortage emergency condition has abated, has changed in degree or no longer exists.
(Prior code § 9-730)

§ 13.32.020. Findings.

The City Council finds, determines, and declares that the following shall occur prior to enforcement of the provisions of this chapter:

A. The City Council shall conduct duly noticed public hearings 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.

B. The City Council shall adopt a resolution which declares that a water shortage emergency condition exists, the facts and conclusions which support such a declaration and that the ordinary water demands and requirements of water consumers within the City cannot be satisfied.

C. The regulations set forth herein are necessary and proper to protect and conserve the water supply for human consumption, sanitation, and fire protection during the duration of the water shortage emergency condition.

D. The regulations set forth herein shall remain enforceable to the extent declared by the City Council and until such time as the City Council finds that the water shortage emergency no longer exists.

E. During the existence of a declared water shortage emergency, the provisions of this chapter shall take precedence over the provisions of the City's Water Conservation Ordinance, Stockton Municipal Code Chapter 13.28, as now enacted or hereafter amended. The provisions of the Water Conservation Ordinance shall continue in effect except where provisions of this chapter are different. Within areas of the City where water service is provided by any other water provider, the provisions of this chapter as to prohibited uses and waste shall be applicable. The Water Conservation Ordinance shall remain in effect except where more stringent requirements are set out herein.

(Prior code § 9-731)

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

§ 13.32.030. Definitions.

The following terms are defined for the purposes of this chapter:

"Allocation" means the calculated percentage of the amount of water delivered to each customer's property during the corresponding monthly billing period of the base year for which no penalty or surplus use charge shall be imposed.

"Applicant" means a person, firm, partnership, business, corporation, district or governmental agency that requests or receives water service from the City.

"Base year" means the calendar year of 1987 or any other period established by resolution of the City Council.

"Customer" means any person, firm, partnership, business, corporation, district, or governmental agency that receives water from the City ("City") Water Utility.

"Director" means the Director of the Municipal Utilities Department of the City.

"Process water" means water used to manufacture, alter, convert, clean, grow, heat or cool a product, including water used in laundries and car wash facilities.

"Water" means water used in or supplied by the City.
(Prior code § 9-732)

§ 13.32.040. Additional limits on water use available to all water users.

During Stage 2, 3, 4, 5 and 6 emergencies, the following wasteful uses shall be prohibited in addition to the prohibitions and limitations stated in the Water Conservation Ordinance, Stockton Municipal Code Chapter 13.28. In the event the provisions of the section are inconsistent with the Water Conservation Ordinance, this section shall prevail.

A. 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.

B. 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.

C. Irrigation of exterior landscaping, turf areas, open ground, crops, trees, grass, lawn, groundcover, shrubbery, or decorative plantings between the hours of 8:00 a.m. and 6:00 p.m. except irrigation by drip or mist irrigation systems shall not be restricted as to hours.

D. 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.

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

E. Violation of the above stated provisions shall be unlawful and an infraction.
(Prior code § 9-733; Ord. 2022-07-12-1503 C.S. § 4)

§ 13.32.050. Water allocations—City water utility.

A. The following classes of water use are established:

1. "Residential" which shall consist of water service to land improved with structures designed to serve as a residence for human habitation.

2. "Multiple-family residential" which shall consist of water service to land improved with structures designed to serve as a residence for more than a single-family, including apartments, condominiums, townhouses, mobilehome parks, and the like where more than one unit is served by a single meter.

3. "Nonresidential" which shall consist of water service to land improved with structures designed to serve for uses other than residential uses and land without structures but used for agricultural purposes. The following kinds of water use are, without limitation, designated as nonresidential: commercial, industrial, agricultural, municipal, schools, and churches.

4. "Process water users" which shall consist of nonresidential users which utilize water primarily to manufacture, alter, convert, clean, grow, heat, or cool a product, including laundries and vehicle wash facilities.

B. No customer shall use City water for permitted uses in excess of the respective allocation for each class of service within each stage of water shortage emergency.
(Prior code § 9-734)

§ 13.32.060. Stages of water shortage emergency.

The following stages of water shortage emergency are established. Upon declaration of the City Council that an emergency condition exists, as provided in Sections 13.32.010 and 13.32.020, the City Council shall declare the degree of emergency and identify the applicable stage and the regulations which shall be enforceable for each respective stage. During Stages 2, 3, 4, 5 and 6 additional restrictions on water use shall be enforceable as stated in Section 13.32.040.

A. Stage 1—Mandatory Water Conservation. Upon a finding made by the City Council that a Stage 1 water shortage emergency exists, the regulations set out in the Water Conservation Ordinance, Stockton Municipal Code Chapter 13.28, as presently enacted or amended shall be enforceable as to all water users.

B. Stage 2—Water Shortage Emergency. Upon declaration of the City Council that a Stage 2 water shortage emergency exists, the following regulations shall be applicable to all customers of the City's water system:

1. Residential Accounts. Residential accounts shall use 20 percent less than the quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period of the base year. Notwithstanding this

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

provision, no residential account shall receive an allocation of less than 600 cubic feet (6 CCF) of water per billing period.

2. Multiple-Family Residential Accounts. Multiple-family residences which are served by a single meter shall use 20 percent less than the total quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period during the base year. Notwithstanding this provision, no multiple-family residential account shall receive a monthly allocation of less than 400 cubic feet (4 CCF) of water per unit served on a single meter.

3. Nonresidential Accounts. Nonresidential accounts shall use 20 percent less than the quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period of the base year.

4. Process-Water User Accounts. Process-water users shall use 20 percent less than the quantity of water as recorded by meter during the corresponding billing period during the base year.

C. Stage 3—Water Shortage Emergency. The following regulations shall be applicable to all customers of the City's water system:

1. Residential Accounts. Residential accounts shall use 30 percent less than the quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period of the base year. Notwithstanding this provision, no residential account shall receive an allocation of less than 600 cubic feet (6 CCF) of water per billing period.

2. Multiple-Family Residential Accounts. Multiple-family residences which are served by a single meter shall use 30 percent less than the total quantity of water delivered to the customer's property as recorded by the meter during the corresponding billing period during the base year. Notwithstanding this provision, no multiple-family residential account shall receive a monthly allocation of less than 400 cubic feet (4 CCF) of water per unit served on a single meter.

3. Nonresidential Accounts. Nonresidential accounts shall use 30 percent less than the quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period of the base year.

4. Process-Water User Accounts. Process-water users shall use 30 percent less than the quantity of water as recorded by meter during the corresponding billing period during the base year.

D. Stage 4—Water Shortage Emergency. The following regulations shall be applicable to all customers of the City's water system:

1. Residential Accounts. Residential accounts shall use 40 percent less than the quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period of the base year. Notwithstanding this

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

provision, no residential account shall receive an allocation of less than 600 cubic feet (6 CCF) of water per billing period.

2. Multiple-Family Residential Accounts. Multiple-family residences which are served by a single meter shall use 40 percent less than the total quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period during the base year. Notwithstanding this provision, no multiple-family residential account shall receive a monthly allocation of less than 400 cubic feet (4 CCF) of water per unit served on a single meter.

3. Nonresidential Accounts. Nonresidential accounts shall use 40 percent less than the quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period of the base year.

4. Process-Water User Accounts. Process-water users shall use 40 percent less than the quantity of water as recorded by meter during the corresponding billing period during the base year.

E. Stage 5—Water Shortage Emergency. The following regulations shall be applicable to all customers of the City's water system:

1. Residential Accounts. Residential accounts shall use 50 percent less than the quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period of the base year. Notwithstanding this provision, no residential account shall receive an allocation of less than 600 cubic feet (6 CCF) of water per billing period.

2. Multiple-Family Residential Accounts. Multiple-family residences which are served by a single meter shall use 50 percent less than the total quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period during the base year. Notwithstanding this provision, no multiple-family residential account shall receive a monthly allocation of less than 400 cubic feet (4 CCF) of water per unit served on a single meter.

3. Nonresidential Accounts. Nonresidential accounts shall use 50 percent less than the quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period of the base year.

4. Process-Water User Accounts. Process-water users shall use 50 percent less than the quantity of water as recorded by meter during the corresponding billing period during the base year.

F. Stage 6—Water Shortage Emergency. The following regulations shall be applicable to all customers of the City's water system:

1. Residential Accounts. Residential accounts shall use 60 percent less than the quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period of the base year. Notwithstanding this

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

provision, no residential account shall receive an allocation of less than 600 cubic feet (6 CCF) of water per billing period.

2. Multiple-Family Residential Accounts. Multiple-family residences which are served by a single meter shall use 60 percent less than the quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period during the base year. Notwithstanding this provision, no multiple-family residential account shall receive a monthly allocation of less than 400 cubic feet (4 CCF) of water per unit served on a single meter.

3. Nonresidential Accounts. Nonresidential accounts shall use 60 percent less than the quantity of water delivered to the customer's property as recorded by meter during the corresponding billing period of the base year.

4. Process-Water User Accounts. Process-water users shall use 60 percent less than the quantity of water as recorded by meter during the corresponding billing period during the base year.

(Prior code § 9-735; Ord. 2022-07-12-1503 C.S. § 5)

§ 13.32.070. Establishment of customer allocation.

A. The Director shall classify each customer and calculate each customer's allocation. Each customer shall be notified of the Director's determination by mail deposited in the United States Postal Service.

B. Establishment of Allocations With No Customer Use History.

1. Residential. All residential customers with no water use history at the current property address shall be assigned an allocation for single- or multiple-family residential accounts, as determined by the Director, on the basis of usage by similarly situated customers or on such other basis as may be fair and equitable under all the circumstances.

2. Other Use Classifications. In order to determine water use allocations for a new nonresidential use customer, for a change in property use, or for a customer with no water use history at the current property address, an application by the customer shall be submitted to the Director designating the intended use of the property, the square footage, and number of employees. An allocation will be determined by the Director after reviewing the above factors as well as comparing water use for similar types of construction and property uses, averaging the water use and applying the appropriate percentage reduction to this amount.

(Prior code § 9-736)

§ 13.32.080. Request for increase in allocation.

A. All applicants for an increase in allocation must submit an application in writing to the City Department of Municipal Utilities on an application form provided by the

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

City.

B. Requests for increased allocations will be reviewed by the Water Conservation Officer for recommendation to the Director for approval, modified approval, or denial. Requests for increased allocations in excess of the historical use may be recommended for approval for reasons outlined in subsection D of this section.

C. All residential applicants for an additional allocation based on additional persons residing at a residence shall show proof of residency for all residents at that property.

D. Water allocations may be adjusted by the Director upon written application where the requested adjustment is found to be reasonably necessary. Factors for consideration shall include without limitation:

1. Additional people residing full time at that residence.

2. Unusual medical needs.

3. Change of property use.

4. Where a City audit of nonresidential customer's water-using appliances and usage shows that all reasonable conservation measures are being employed and the applicant provides a conservation plan demonstrating the measures employed and compliance with the plan.

5. Where a nonresidential customer has demonstrated growth in business volume over the base year in providing a water-related service to the public, the allocation may be based upon 1990 annual water use.

6. Hospitals, health care facilities, nursing care facilities, health clinics, and similar users may be excepted from the percentage reductions providing that a water conservation plan demonstrating reductions in consumption to the maximum extent feasible without jeopardizing patient care is prepared and approved by the Director.

E. A decision in writing shall be mailed to the applicant within 15 days of receipt of the application.

(Prior code § 9-737)

§ 13.32.090. Appeals.

A. Procedure. Any customer may appeal for reconsideration of the Director's classification of use, allocation or determination of a request for an increase in allocation on the basis of hardship or incorrect calculation. Appeals for reconsideration shall be processed as set forth below.

1. Any customer appealing for reconsideration of the classification or allocation shall do so in writing to the Director by either using forms provided by the City or by letter setting forth in detail the reasons for the appeal.

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

2. The appeal for reconsideration shall be reviewed by the City Department of Municipal Utilities and a site visit scheduled if required.

3. If an appeal for reconsideration is sustained, a condition of approval may include a requirement for the installation of water efficient plumbing fixtures and/or irrigation systems.

4. A staff committee or designee of the Director and the Director shall review all appeals for reconsideration and make decisions on the appeal.

5. If an applicant disagrees with the Director's decision, the decision may be appealed in the same procedural manner as specified in subsection A of this section to the City Manager or a designee, whose decision shall be final. If an appeal to the City Manager is requested, the customer shall be notified of a hearing date by mail. Such hearing shall be scheduled within 10 days of filing the appeal. A decision shall be forwarded to the applicant within 15 days of the date of the hearing.

B. Each appeal to the City Manager shall be accompanied by an appeal fee in an amount to be set by resolution of the City Council from time to time to defray the additional costs to the City.

(Prior code § 9-738)

§ 13.32.100. Enforcement and penalties.

A. The first billing period after the effective date of the Council's declaration of a water shortage emergency or the effective date stated in said resolution shall be considered an adjustment period during which no penalties will be imposed for water usage in excess of the allocation.

B. Beginning with the second billing period after the effective date and except as provided in subsection C of this section, any customer who exceeds the established allocation in any monthly billing cycle shall pay an excess use charge in addition to all other charges. The excess use charge shall be based on a rate schedule as specified from time to time by resolution of the City Council.

C. No excess use charge shall be imposed in the following circumstances:

1. Multiple-family residential customers whose consumption is 400 cubic feet (4 CCF) per unit or less during any billing period;

2. All other customers whose consumption is 600 cubic feet (6 CCF) or less during any billing period.

D. Installation of Flow Restrictor.

1. After the issuance of one written warning for violation of the provisions of this chapter, or for any use of water which is prohibited, the City may install a flow restricting device on the customer's water service which shall remain in place for a period of not less than 48 hours and until the customer has paid the

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

removal charges set forth below. The device shall not be removed except by the City.

2. If the customer, after removal of a flow restricting device by the City, shall again violate the provisions of this ordinance or the Water Conservation Ordinance, the City may install a flow restricting device which shall remain for a period of at least two weeks and until payment for removal by the City.

3. Further violations, removal of or by-passing the flow restricting device may result in termination of water service. Upon a determination by the Director that service shall be terminated, written notice of intent to disconnect shall be mailed to the customer. Said notice shall be mailed to the resident and any other person or entity known to the City who is responsible for the violation or correction of the violation, including the property owner in the case of rentals. A request for hearing on the discontinuance of service shall be requested within five days of mailing the notice. A hearing before the Director shall be held within three days of expiration of the period for requesting a hearing. The Director's final decision shall be mailed to the responsible parties within three days of the hearing. If the final decision is to discontinue service, the discontinuance shall not occur less than three days after mailing of the Director's final decision.

4. Removal Charges. The charge for removal of a flow restricting device shall be based on a rate schedule as established from time to time by resolution of the City Council. In the case of rentals, the person or entity occupying the premises and the owner shall be jointly and severally responsible for payment of said costs.

(Prior code § 9-739)

Downloaded from https://ecode360.com/ST5019 on 2026-02-26

ATTACHMENT I: 2021 COS WATER MASTER PLAN UPDATE 2021

EXHIBIT 1

CITY OF STOCKTON

Water Master Plan Update

JANUARY 2021

CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

WEST YOST

HDR

Resolution No. 2021-02-23-1501

STOCKTON CITY COUNCIL

RESOLUTION ADOPTING THE 2021 WATER MASTER PLAN UPDATE FOR THE MUNICIPAL UTILITIES DEPARTMENT

The City of Stockton Municipal Utilities Department in conjunction with West Yost Associates, has prepared and submitted the Water Master Plan Update dated January 2021; and

In accordance with the Envision Stockton 2040 General Plan Update, the Water Master Plan Update serves as a planning document for water infrastructure requirements in the near-term (2030) and future (2040) of the North and South Stockton Water Service Areas; and

The Water Master Plan Update identifies short and long-term Capital Improvement Program for water infrastructure projects, including a focused pipeline rehabilitation-and-repair program and optimization and rehabilitation of existing facilities; now, therefore,

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS:

1. That this Water Master Plan Update is in conformance with the Envision Stockton 2040 General Plan Update.

2. That the Water Master Plan Update, dated January 2021, is adopted, a copy of which is attached as Exhibit 1 and incorporated by this reference.

3. The City Manager is hereby authorized to take such other appropriate actions to carry out the purpose and intent of this Resolution.

PASSED, APPROVED, and ADOPTED February 23, 2021.

KEVIN J. LINCOLN II
Mayor of the City of Stockton

ATTEST:

ELIZA R. GARZA, CMC
City Clerk of the City of Stockton

EXHIBIT 1

FINAL REPORT | JANUARY 2021

Water Master Plan Update

PREPARED FOR

City of Stockton
Municipal Utilities Department

Water Master Plan Update

Prepared for

City of Stockton
Municipal Utilities Department

Project No. 129-60-20-41

Project Manager: Elizabeth Drayer, PE	01-27-21 Date
QA/QC Review: Polly Boissevain, PE	01-27-21 Date

EXECUTIVE SUMMARY ES-1

Water Master Plan Update Purpose and Objectives ES-1

Projected Future Land Use ES-2

Projected Future Water Production Requirements ES-4

Recommended Existing and Future Water System Improvements ES-7

Recommended Existing System Improvements ES-11

Recommended Near-Term (2030) System Improvements ES-12

Recommended Future (2040) System Improvements ES-13

Basis of Recommendations ES-13

CHAPTER 1 Introduction 1-1

1.1 Water Master Plan Update Purpose 1-1

1.2 Water Master Plan Objectives and Priorities 1-1

1.3 Previous and On-Going Studies 1-3

1.3.1 2008 Water Master Plan 1-3

1.3.2 Envision Stockton 2040 General Plan 1-4

1.3.3 Water Cost of Service Rate Study 1-7

1.3.4 2020 Urban Water Management Plan 1-7

1.3.5 Wastewater Master Plan Update 1-7

1.4 Report Organization 1-8

1.5 Acknowledgments 1-9

CHAPTER 2 Existing Water System 2-1

2.1 Existing Water Service Areas 2-1

2.2 Existing Water Supplies 2-3

2.2.1 Surface Water Supply 2-3

2.2.1.1 Delta Water Treatment Plant 2-3

2.2.1.2 Stockton East Water District 2-4

2.2.2 Groundwater Supply 2-4

2.3 Existing Water System Facilities 2-4

2.3.1 Groundwater Wells 2-5

2.3.2 Storage Reservoirs and Reservoir Pump Stations 2-8

2.3.3 Transmission and Distribution Pipelines 2-10

CHAPTER 3 Water Demands 3-1

3.1 Historical Water Production and Use 3-1

3.1.1 Historical Annual Water Production 3-1

3.1.2 Per Capita Water Use 3-8

3.1.3 Historical Water Consumption 3-11

3.1.4 Non-Revenue Water 3-12

3.2 Peak Water Use 3-13

3.2.1 Maximum Day and Peak Hour Demand 3-14
3.2.2 Recommended Demand Peaking Factors 3-14
3.2.3 Maximum Day and Peak Hour Diurnal Demand 3-15

3.3 Existing and Future Land Use and Growth Projections 3-16
3.3.1 Existing Land Use 3-16
3.3.2 Projected Future Land Use 3-16

3.4 Water Use Factors 3-20
3.4.1 Residential Water Use Factors 3-21
3.4.2 Non-Residential Water Use Factors 3-22
3.4.3 Irrigation Water Use Factors 3-22
3.4.4 Recommended Water Use Factors 3-23

3.5 Future Water Demands and Required Water Production 3-23
3.5.1 Existing Baseline Production 3-23
3.5.2 Additional Water Demand for Planned Future Development 3-24
3.5.3 Water Production Requirements for Near-Term (2030) Conditions 3-24
3.5.4 Water Production Requirements for Future (2040) Conditions 3-25

3.6 Comparison to the 2008 WMP, the 2015 UWMP and the 2018 Utility Master Plan Supplements 3-26

CHAPTER 4 Water Supply 4-1

4.1 Water Supply Overview 4-1

4.2 Surface Water Supply from the San Joaquin River 4-2
4.2.1 Water Right Permit 4-2
4.2.2 Delta Water Treatment Plant 4-2
4.2.3 Supplemental Raw Water Supply from Woodbridge Irrigation District 4-4
4.2.4 COSMUD Water Supply from the DWTP 4-4

4.3 Water Supply from the Stockton East Water District 4-5
4.3.1 Water Supply Contract 4-5
4.3.2 New Hogan Reservoir 4-5
4.3.3 New Melones Reservoir 4-6
4.3.4 COSMUD Water Supply from SEWD 4-6

4.4 Groundwater 4-7
4.4.1 Groundwater Basin Management 4-7
4.4.2 COSMUD Groundwater Use 4-9

CHAPTER 5 Water System Performance and Operational Criteria 5-1

5.1 Water System Reliability and Water Quality 5-3

5.2 Fire Flow Requirements 5-3

5.3 Water System Supply Capacity 5-4
5.3.1 Maximum Day Demand 5-4
5.3.2 Maximum Day Demand plus Fire Flow 5-5
5.3.3 Peak Hour Demand 5-5

5.4 Critical Supply/Pumping Facilities 5-6
5.5 Pumping Facility Capacity 5-6
5.6 Storage Facility Capacity 5-6
5.6.1 Operational Storage 5-7
5.6.2 Fire Flow Storage 5-7
5.6.3 Emergency Storage 5-7
5.6.4 Emergency Groundwater Storage Credit 5-8
5.6.5 Treated Surface Water Supply Credit 5-8
5.6.6 Total Storage Capacity Recommended 5-9
5.6.7 Storage Operational Strategies 5-9
5.7 Water Transmission and Distribution Pipeline Sizing 5-9
5.7.1 Water Transmission System 5-10
5.7.1.1 Average Day Demand 5-10
5.7.1.2 Maximum Day Demand 5-10
5.7.1.3 Peak Hour Demand 5-10
5.7.2 Water Distribution System 5-10
5.7.2.1 Maximum Day Demand plus Fire Flow 5-10
5.7.2.2 Peak Hour Demand 5-11
5.7.3 Other Recommended Criteria 5-11
CHAPTER 6 Hydraulic Model Update and Calibration 6-1
6.1 Hydraulic Model Background 6-1
6.2 Hydraulic Model Update Methodology 6-1
6.3 Hydraulic Model Update 6-2
6.3.1 Model Pipeline Configuration Update 6-2
6.3.2 Pipeline Roughness Characteristics 6-4
6.3.3 Water Demand Allocation 6-4
6.3.4 Elevation Extraction 6-4
6.3.5 Water System Facilities 6-5
6.3.6 Hourly Pattern Development 6-5
6.3.6.1 North Stockton 6-5
6.3.6.2 South Stockton 6-7
6.4 Hydraulic Model C-Factor Calibration 6-7
6.4.1 Development of Hydrant (C-Factor) Tests 6-7
6.4.2 Hydrant (C-Factor) Test Results 6-10
6.4.3 Hydraulic Model C-Factor Calibration Findings and Conclusions 6-10
6.5 Hydraulic Model Extended Period Simulation (EPS) Calibration 6-12
6.5.1 Hydraulic Model EPS Calibration Results 6-14
6.5.1.1 North Stockton 6-14
6.5.1.2 South Stockton 6-14
6.5.2 Hydraulic Model EPS Calibration Findings and Conclusions 6-15

CHAPTER 7 Existing Water System Analysis 7-1

7.1 Existing Water Demands 7-1

7.2 Existing Water Supply and Water System Facility Capacity Evaluation 7-3
7.2.1 Supply Capacity Evaluation 7-3
7.2.2 Pumping Capacity Evaluation 7-5
7.2.3 Storage Capacity Evaluation 7-7

7.3 Existing Water Distribution System Performance Evaluation 7-9
7.3.1 Normal Operations – Maximum Day Demand with Peak Hour 7-9
7.3.1.1 Evaluation Overview 7-9
7.3.1.2 Evaluation Results 7-10
7.3.2 Emergency Operations – Maximum Day Demand Plus Fire Flow 7-14
7.3.2.1 Evaluation Overview 7-14
7.3.2.2 Fire Flow Evaluation Results 7-14

7.4 Summary of Findings and Recommendations for the Existing Water System 7-19

CHAPTER 8 Future Water System Analysis 8-1

8.1 Future Water System Description 8-1

8.2 Future Water Demands 8-4

8.3 Future Water Supply and Water System Facility Capacity Evaluation 8-5
8.3.1 Supply Capacity Evaluation 8-6
8.3.2 Pumping Capacity Evaluation 8-9
8.3.3 Storage Capacity Evaluation 8-12

8.4 Future Water Distribution System Performance Evaluation 8-16
8.4.1 Normal Operations – Maximum Day Demand with Peak Hour 8-16
8.4.1.1 Evaluation Overview 8-16
8.4.1.2 Near-Term (2030) System Evaluation Results 8-17
8.4.1.3 Future (2040) System Evaluation Results 8-17
8.4.2 Emergency Operations – Maximum Day Demand Plus Fire Flow 8-24
8.4.2.1 Evaluation Overview 8-24
8.4.2.2 Near-Term (2030) System Evaluation Results 8-24
8.4.2.3 Future (2040) System Evaluation Results 8-25

8.5 Summary of Findings and Recommendations for the Future Water System 8-28

8.6 Other Planned or Recommended Improvements 8-30

CHAPTER 9 Recommended Water System Capital Improvement Program 9-1

9.1 Cost Estimating Assumptions 9-1

9.2 Summary of Recommended Capital Improvement Program 9-2
9.2.1 Summary of Estimated Capital Costs 9-2
9.2.2 Recommended Existing System Improvements 9-4
9.2.3 Recommended Near-Term (2030) System Improvements 9-7
9.2.4 Recommended Future (2040) System Improvements 9-9

9.3 Basis of Recommendations 9-9

CHAPTER 10 Financial Plan 10-1

10.1 Introduction 10-1

10.2 Key Assumptions 10-1

10.3 Historical Review 10-1

10.4 Development of the Financial Plan 10-2

10.4.1 Revenues 10-3

10.4.2 Operations and Maintenance 10-3

10.4.3 Capital Funding Plan 10-3

10.4.4 Debt Service 10-8

10.4.5 Reserve Funds 10-8

10.5 Summary of the Financial Plan 10-8

10.6 Connection Fees 10-10

10.7 Summary 10-10

LIST OF TABLES

Table ES-1. Future Planned Development within the COSMUD Water Service Area ES-4

Table ES-2. Existing Baseline Production (5-year Average from 2015 to 2019) with Demand Rebound ES-5

Table ES-3. Projected Water Production Requirement for Near-Term (2030) Conditions ES-5

Table ES-4. Projected Water Production Requirement for Future (2040) Conditions ES-6

Table 1-1. General Plan Goals, Policies and Actions Related to Water Service 1-5

Table 2-1. North Stockton Well Facilities 2-6

Table 2-2. South Stockton Well Facilities 2-7

Table 2-3. City of Stockton Water Storage Reservoirs 2-8

Table 2-4. City of Stockton Reservoir Pump Stations 2-9

Table 2-5. City of Stockton Distribution System Pipeline Diameters 2-10

Table 2-6. City of Stockton Distribution System Pipeline Installation Year 2-12

Table 3-1. Historical Water Production 3-3

Table 3-2. Historical COSMUD Water Production Comparison 3-8

Table 3-3. Historical Water Production, Population and Per Capita Water Use 3-9

Table 3-4. COSMUD Customer Types as of December 2019 3-11

Table 3-5. COSMUD Consumption by Customer Type 3-12

Table 3-6. Non-Revenue Water 3-13

Table 3-7. Summary of Historical Maximum Day and Peak Hour Peaking Factors 3-14

Table 3-8. Recommended Demand Peaking Factors 3-15

Table 3-9. Future Incremental Development Summary 3-17
Table 3-10. Future Planned Development within the COSMUD Water Service Area 3-20
Table 3-11. Maximum Allowable Water Use Factor for Irrigation 3-22
Table 3-12. Recommended Water Use Factors 3-23
Table 3-13. Existing Baseline Production (5-year Average from 2015 to 2019) with Demand Rebound 3-24
Table 3-14. Future Additional Water Demand 3-24
Table 3-15. Projected Water Production Requirement for Near-Term (2030) Conditions 3-25
Table 3-16. Projected Water Production Requirement for Future (2040) Conditions 3-25
Table 5-1. Summary of Recommended Water System Performance and Operational Criteria 5-2
Table 5-2. Recommended Fire Flow Requirements for Future Development 5-4
Table 6-1. Hydrant Test Locations and Status 6-9
Table 6-2. Summary of Hydrant Test Calibration Results 6-11
Table 7-1. Existing COSMUD Baseline Demands 7-1
Table 7-2. Comparison of Available versus Required Supply Capacity 7-4
Table 7-3. Comparison of Available versus Required Pumping Capacity 7-6
Table 7-4. Comparison of Available versus Required Storage Capacity 7-8
Table 7-5. Recommended Existing COSMUD Water System Pipeline Improvements 7-16
Table 7-6. Summary of Recommended Existing System Improvements 7-19
Table 8-1. Projected Near-Term (2030) COSMUD Water System Demands 8-4
Table 8-2. Projected Future (2040) COSMUD Water System Demands 8-4
Table 8-3. Near-Term (2030) Comparison of Available versus Required Supply Capacity 8-7
Table 8-4. Future (2040) Comparison of Available versus Required Supply Capacity 8-8
Table 8-5. Near-Term (2030) Comparison of Available versus Required Pumping Capacity 8-10
Table 8-6. Future (2040) Comparison of Available versus Required Pumping Capacity 8-11
Table 8-7. Near-Term (2030) Comparison of Available versus Required Storage Capacity 8-14
Table 8-8. Future (2040) Comparison of Available versus Required Storage Capacity 8-15
Table 8-9. Summary of Recommended Near-Term (2030) and Future (2040) System Improvements 8-28
Table 9-1. Summary of Improvement Costs by Water Service Area and Time Frame 9-2
Table 9-2. Existing System Capital Improvements 9-5
Table 9-3. Near-Term (2030) System Capital Improvements 9-8
Table 9-4. Future (2040) System Capital Improvements 9-11
Table 10-1. Historical Revenue Requirement 10-2

Table 10-2. Projected Water Revenues 10-4
Table 10-3. O&M Expenses 10-5
Table 10-4. Capital Improvement Plan 10-7
Table 10-5. Revenue Requirement Summary 10-9

LIST OF FIGURES

Figure ES-1. Summary of Future Developments ES-3
Figure ES-2. Comparison of Previous and Current Population and Water Production Requirements ES-7
Figure ES-3. Recommended System Improvements ES-9
Figure ES-4. Recommended Pipeline Rehabilitation Program ES-10
Figure 2-1. Water Service Areas 2-2
Figure 2-2. Existing Water System 2-11
Figure 2-3. System Pipelines by Decade of Installation 2-13
Figure 3-1. Historical Monthly Water Production for North Stockton 3-4
Figure 3-2. Historical Monthly Water Production for South Stockton 3-5
Figure 3-3. Historical Monthly Water Production for the Walnut Plant Area 3-6
Figure 3-4. Historical Monthly Water Production for COSMUD 3-7
Figure 3-5. Comparison of Historical Per Capita Demand, Average Day Production and Population 3-10
Figure 3-6. North Stockton and South Stockton Maximum Day Diurnal Patterns 3-15
Figure 3-7. Summary of Future Developments 3-18
Figure 3-8. Comparison of Previous and Current Population and Water Production Requirements 3-27
Figure 4-1. Water Supply System 4-3
Figure 4-2. Eastern San Joaquin Groundwater Subbasin 4-8
Figure 6-1. Summary of Model Pipeline Updates 6-3
Figure 6-2. Diurnal Patterns during Calibration Day (June 23, 3030) 6-6
Figure 6-3. Hydrant Test Location Map 6-8
Figure 6-4. Hydrant Pressure Recorder Map 6-13
Figure 7-1. Existing Water System 7-2
Figure 7-2. Existing System Maximum Day Demand Minimum System Pressure 7-11
Figure 7-3. Existing System Maximum Day Demand Average System Pressure 7-12
Figure 7-4. Existing System Maximum Day Demand Reservoir Level Results 7-13

Figure 7-5. Existing System Maximum Day Demand Fire Flow Results 7-15
Figure 7-6. Existing System Pipeline Improvements 7-17
Figure 7-7. Existing System Fire Flow Results with Priority 1 and 2 Pipeline Improvements 7-18
Figure 8-1. Near-Term and Future System 8-3
Figure 8-2. Near-Term (2030) System Maximum Day Demand Minimum System Pressure 8-19
Figure 8-3. Near-Term (2030) Maximum Day Demand Reservoir Level Results 8-20
Figure 8-4. Buildout (2040) System Maximum Day Demand Minimum System Pressure 8-21
Figure 8-5. Buildout (2040) System Maximum Day Demand Minimum System Pressure with Improvements 8-22
Figure 8-6. Future (2040) System Maximum Day Demand Reservoir Level Results 8-23
Figure 8-7. Near-Term (2030) System Maximum Day Demand Fire Flow Results 8-26
Figure 8-8. Buildout (2040) System Maximum Day Demand Fire Flow Results 8-27
Figure 8-9. Future System with Improvements 8-29
Figure 9-1. Recommended System Improvements 9-3
Figure 9-2. Recommended Pipeline Rehabilitation Program 9-6

LIST OF APPENDICES

Appendix A. Hydrant Testing and Hydrant Pressure Recorder Placement Plan for Model Calibration
Appendix B. Hydraulic Model Calibration Results – North Stockton
Appendix C. Hydraulic Model Calibration Results – South Stockton
Appendix D. Cost Estimating Assumptions
Appendix E. Financial Plan Worksheets

LIST OF ACRONYMS AND ABBREVIATIONS

AACE	Association for the Advancement of Cost Engineering
AC	Asbestos Cement
ADD	Average Day Demand
afy	Acre Feet Per Year
AMI	Advanced Metering Infrastructure
AWWA	American Water Works Association
AWWA M32	American Water Works Association Manual of Practice 32
BAT	Best Available Technology
CACWD	Calaveras County Water District
Cal Water	California Water Service
CIP	Capital Improvement Program
City	City of Stockton
COSMUD	City of Stockton Municipal Utilities Department
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
DSC	Debt Service Coverage
DU	Dwelling Unit
DWR	Department of Water Resources
DWSP	Delta Water Supply Project
DWSP SWSF	Delta Water Supply Project Surface Water Supply Fee
DWTP	Delta Water Treatment Plant
EGWC	Emergency Groundwater Storage Credit
ENR CCI	Engineering News Record Construction Cost Index
EPA	Environmental Protection Agency
EPS	Extended Period Simulation
FMS	Fourteen-Mile Slough
fps	Feet Per Second
ft/kft	Feet Per Thousand Feet
FTE	Full-Time Equivalent
FY	Fiscal Year
GAC	Granular Activated Carbon
GIS	Geographic Information System
gpcd	Gallons Per Capita Per Day
gpd	Gallon Per Day
gpm	Gallons Per Minute
GPU	General Plan Update
GSP	Groundwater Sustainability Plan

GWA	Eastern San Joaquin Groundwater Authority
HDR	High Density Residential
IPS	Intake Pump Station
lf	Linear Feet
M	Million
MDD	Maximum Day Demand
MDR	Medium Density Residential
MFR	Multi-Family Residential
MG	Million gallons
mgd	Million Gallons Per Day
MWELO	Model Water Efficiency Landscape Ordinance
NFPA	National Fire Protection Association
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRW	Non-Revenue Water
NW	Northwest
O&M	Operations and Maintenance
PHD	Peak Hour Demand
psi	Pounds Per Square Inch
PVC	Polyvinyl Chloride
R&R	Rehabilitation and Replacement
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
SEWD	Stockton East Water District
SFR	Single Family Residential
SGMA	Sustainable Groundwater Management Act
SOI	Sphere of Influence
SOI/MSR	April 2020 Sphere of Influence Plan/Municipal Service Review Report
SSS	South Stockton System
SWRCB	State Water Resources Control Board
TCP	1,2,3-Trichloropropane
TSWC	Treated Surface Water Supply Credit
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
WID	Woodbridge irrigation District
WR	Weston Ranch
WUF	Water Use Factor

WATER MASTER PLAN UPDATE PURPOSE AND OBJECTIVES

The purpose of this Water Master Plan Update for the City of Stockton (City) is to evaluate the existing water system infrastructure and address potential impacts of near-term and long-term planned growth to develop a comprehensive guide for the City's water system capital improvement program. The City's Municipal Utilities Department (COSMUD) operates the City's water system which serves customers in both North Stockton (serving primarily residential customers) and South Stockton (serving a mix of residential and industrial customers). Central Stockton is served by a separate water system operated by the California Water Service (Cal Water). Within Central Stockton, COSMUD operates the Walnut Plant System comprised of residential customers and the Diamond Walnut processing facility; however, the Walnut Plant System has not been evaluated as part of this Water Master Plan Update. This Water Master Plan Update only addresses the COSMUD North Stockton and South Stockton water service areas.

The City's last Water Master Plan was completed in 2008. Since that time, the City has experienced growth, constructed a surface water treatment plant, and completed an update to its General Plan (the Envision Stockton 2040 General Plan), which provides the framework for future development in the City through 2040. The Delta Water Treatment Plant was completed in 2012 which provides the City with a new treated surface water supply in North Stockton to supplement its other water supplies. Since the completion of the 2008 Water Master Plan, the State endured five years of drought starting in 2012, including the driest four consecutive years in California history. These unprecedented conditions led to statewide mandated water conservation, significant surface water supply reductions and curtailments and legislation establishing new statewide water efficiency standards.

All of these factors have led to a need to reassess the City's water needs, priorities and strategies and reevaluate the need for water system infrastructure improvements to ensure a safe and reliable water supply to support the City's existing and future residents and businesses.

The primary objectives of this Water Master Plan Update, along with the chapters in which these topics are discussed, are as follows:

- Describe the existing COSMUD water system and facilities (Chapter 2)
- Evaluate historical and existing water demands to understand recent water use trends, per capita water use and water use by customer type (Chapter 3)
- Develop future water demand projections for near-term (2030) and future (2040) conditions based on future planned development in the COSMUD water service areas and updated unit water use factors developed based on recent water use trends (Chapter 3)
- Review the City's existing water supplies and the opportunities and constraints associated with each supply source (Chapter 4)
- Review existing City and industry water system standards and refine performance and planning criteria under which the COSMUD water system will be evaluated and recommendations for future facilities will be formulated (Chapter 5)
- Update and calibrate the City's water system hydraulic model to provide an updated, accurate tool for evaluating various water system demand and operational scenarios (Chapter 6)

- Evaluate the need for new water system facilities (including pipelines, supply facilities, storage facilities and pumping facilities) to meet existing, near-term (2030) and future (2040) water demands within the COSMUD water service areas (Chapters 7 and 8)
- Develop a capital improvement program and financial plan for implementation of recommended water system improvements (Chapters 9 and 10)

PROJECTED FUTURE LAND USE

Future growth and land uses within the City are defined in the Envision Stockton 2040 General Plan (2040 GPU), which summarizes anticipated development within sixteen Study Areas located throughout the City. These areas have been specifically identified as being most likely to develop by 2040. In addition to these Study Areas, the City has identified, or is actively working with several project proponents to identify, future development areas that are either within existing City Limits or outside of City Limits but within the General Plan Sphere of Influence. The April 2020 Sphere of Influence Plan/Municipal Service Review Report (SOI/MSR) defines the anticipated level of development and municipal service needs for near-term (2030) development. Approximately 31,442 planned residential dwelling units are planned in the COSMUD water service area, which is about 77 percent of the total planned residential dwelling units City-wide. The locations of the Study Areas and proposed future development areas are shown on Figure ES-1.

For the purposes of this Water Master Plan Update, it was assumed that the Mariposa Road Community will be developed by 2040, based on the most recent land use plan, and be served entirely by COSMUD. This future development is one of the largest drivers for future growth within the COSMUD South Stockton water service area. In addition, although this development area is located within both the COSMUD water service area and the Cal Water service area, for the purposes of this Water Master Plan Update, it was conservatively assumed that the COSMUD would serve the entire Mariposa Road Community area. As described further below and in Chapter 8, any recommended future water system improvements associated with the Mariposa Road Community should be reviewed and confirmed prior to facility design and construction based on future confirmed development plans.

EXHIBIT 1

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\FES_1_FutLandUse.mxd - mmcwilliams - 1/26/2021

Study Area1
Study Area1
Study Area1
Study Area1
Crystal Bay
Westlake Villages
Delta Cove
Sanctuary
North Stockton Projects III
Tra Vigne
Cannery Park
Thornton Road and Eight Mile Road Arco Station Project
See Note 1
CarMax Superstore
Study Area2
Study Area3
University Park
Tuscany Cove
Study Area4
Study Area5
Study Area6
Study Area7
Study Area8
Study Area9
Study Area10
Study Area11
Study Area12
Study Area13
Study Area14
Study Area15
Study Area15
Study Area16
Study Area16
Mariposa Industrial Park See Note 5
Mariposa Road Community
Sanchez-Hoggan Annexation Project
NorCal Logistics Center
Airport Way and Sperry Road Commercial Project
Weston Ranch Towne Center
Tidewater Crossing
Airpark 599
Niagara Bottling Facility See Note 6
Sanchez-Hoggan Annexation Project
Veterans Affairs Medical Campus
South Stockton Commerce Center
Century Mobile Home Park
Tidewater Crossing

THORNTON RD
DAVIS RD
LOWER SACRAMENTO RD
ARMSTRONG RD
WEST LN
HARNEY LN
LIVE OAK RD
EIGHT MILE RD
EIGHT MILE RD
RINDGE RD
BEAR CREEK LEVEE RD
ASHLEY
HILDRETH LN
HAMMER LN
ALPINE RD
FAIRCHILD LN
CHEROKEE RD
WATERLOO RD
MARCH LN
ST ANDREWS DR
BROOKSIDE RD
PERSHING AVE
PACIFIC AVE
EL DORADO ST
CALIFORNIA ST
FREMONT ST
JACOBS RD
HOLT RD
AIRPORT WAY
B ST
MARIPOSA RD
MANGELS RD
INLAND DR
HOWARD RD
HARLAN RD
MANTHEY RD
LATHROP RD
AUSTIN RD
LOUISE AVE

5
99
4

Notes:
1. The southern portion of the Tra Vigne development, generally south of Bear Creek, does not have active specific plans, but is anticipated to be Low Density Residential in the future. For the purposes of 2020 WMPU, no demand was added for the area south of Bear Creek.
2. The portion of Study Area 1, west of Davis Road, does not have an associated future land use plan. Water demands for Study Area 1 planned land use are assumed to be in the area south of Eight Mile Road.
3. Study Areas 4 through 11, Study Area 13, Open Window, University Park, and Tuscany Cove are not within the COSMUD Water Service Area.
4. Study Area 2, Study Area 3, Study Area 12, Study Area 14, and Mariposa Road Community are only partially within the COSMUD Water Service Area.
5. Mariposa Industrial Park extents based on City provided project information, provided to West Yost on 10/29/2020.
6. Niagara Bottling Facility included as part of future development based on City Will Serve Letter, provided to West Yost on 10/15/2020.
7. The major developments and study areas displayed were confirmed with City Planning Staff as future projects to be included in the 2020 WMPU. Future developments are preliminary and subject to change. Upon City approval, infrastructure required to serve a development and impacts to the existing water system will need to be confirmed. Future development in areas not designated as major developments or study areas will need to be evaluated when development plans are available.
8. Refer to Table 3-9 in the 2020 WMPU for planned land use (dwelling units and acreage) for each proposed development or study area shown.

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

N
0 0.75 1.5
Miles

WEST YOST

Figure ES-1

Summary of Future Developments

City of Stockton
Water Master Plan Update

Table ES-1 summarizes the future planned development within the COSMUD water service area by land use designation consistent with the 2040 GPU and SOI/MSR Report. North Stockton will experience the largest increase in residential development. The largest planned development is the Sanctuary Project in North Stockton. It will consist of single-family, multi-family, 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 several planned projects.

Table ES-1. Future Planned Development within the COSMUD Water Service Area[(a)]

Future Land Use Designation	Units	Near-Term (2030) Total Development	Future (2040) Total Development
North Stockton			
Single Family Residential	DU	2,100	16,700
Multi Family Residential	DU	500	4,212
Commercial	Acres	23	167
Industrial	Acres	0	0
Parks	Acres	41	451
South Stockton			
Single Family Residential	DU	0	8,955[(b)]
Multi Family Residential	DU	0	1,575[(b)]
Commercial	Acres	55	273
Industrial	Acres	1,354	1,753
Parks	Acres	9	224

(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 (see Table 3-9 for additional information).

(b) All of Single Family and most of Multi Family is associated with Mariposa Road Community.

PROJECTED FUTURE WATER PRODUCTION REQUIREMENTS

Water demands were projected for near-term (2030) and future (2040) conditions for the COSMUD water service areas using the adopted water use factors applied to the proposed future development. Future water production requirements were then estimated by adding the future water demand projections and future non-revenue water to the existing baseline production.

Table ES-2. summarizes the existing baseline production for the overall COSMUD water service area and shows that the total existing baseline production for this Water Master Plan Update is 31,495 acre-feet per year (afy), or 28.1 million gallons per day (mgd). This can be compared to the existing baseline production from the 2008 Water Master Plan which was 36,380 afy, or about 32.5 mgd. This indicates that existing baseline production for this Water Master Plan Update, which includes a 10 percent demand rebound factor to account for post-drought water use increases, is about 13 percent lower than the 2008 Water Master Plan baseline production, reflecting improved water use efficiencies and on-going water conservation by the COSMUD water customers since the 2008 Water Master Plan.

Table ES-2. Existing Baseline Production (5-year Average from 2015 to 2019) with Demand Rebound

Water Service Area	Existing Average Historical Production (2015 – 2019), afy [(a)]	Demand Rebound (10 percent of Average Historical Production), afy	Existing Baseline Production, afy
North Stockton	23,450	2,345	25,795
South Stockton	5,182	518	5,700
Total, afy	**28,632**	**2,863**	**31,495**
Total, mgd	**25.6**	**2.6**	**28.1**

(a) Includes Non-Revenue Water

As shown in Table ES-3, by 2030, the water production requirement is projected to increase by approximately 20 percent systemwide. North Stockton's production requirement is projected to increase by 3.3 percent and South Stockton's production requirement is projected to increase by 93.5 percent from the existing baseline production.

Table ES-3. Projected Water Production Requirement for Near-Term (2030) Conditions

Parameter	North Stockton, afy	South Stockton, afy	Total COSMUD, afy
Existing Baseline Production (refer to Table ES-2.)	25,795	5,700	31,495
Additional Near-Term Demand by 2030 (refer to Table 3-15)	781	4,903	5,684
Future Non-Revenue Water (8%)	68	426	494
Total Production Requirement, afy	**26,644**	**11,029**	**37,673**
Total Production Requirement, mgd	**23.8**	**9.8**	**33.6**
Percent Increase from Existing Baseline Production	**3.3%**	**93.5%**	**19.6%**

As shown in Table ES-4, by 2040, the water production requirement is projected to increase by approximately 53 percent systemwide. North Stockton's production requirement is projected to increase by 27 percent and South Stockton's production requirement is projected to increase by 171 percent from the existing baseline production. The large increase in South Stockton's projected production requirement is due to the assumption that the Mariposa Road Community will be fully built by 2040 and served completely by COSMUD.

Table ES-4. Projected Water Production Requirement for Future (2040) Conditions

Parameter	North Stockton, afy	South Stockton, afy	Total COSMUD, afy
Existing Baseline Production (refer to Table ES-2.)	25,795	5,700	31,495
Additional Future Demand by 2040 (refer to Table 3-16)	6,457	8,949	15,405
Future Non-Revenue Water (8%)	561	778	1,340
Total Production Requirement, afy	**32,813**	**15,427**	**48,240**
Total Production Requirement, mgd	**29.3**	**13.8**	**43.1**
Percent Increase from Existing Baseline Production	**27.2%**	**170.6%**	**53.2%**

As shown above, the total future 2040 water production requirement presented in this Water Master Plan Update is 48,240 afy (43.1 mgd). This is compared to the total future 2035 water production requirement from the 2008 Water Master Plan which was estimated to be 110,000 afy (98.2 mgd). This represents a 56 percent drop, which is partially attributed to a decrease in existing water production from 2008 to 2019 (35.6 mgd in 2008 vs. 27.4 mgd in 2019), as well as a drop in unit water use factors due to improved water use efficiency (described in Chapter 3). However, the majority of the drop in the projected water production requirement can be attributed to the significant reduction in expected development by 2040, both in terms of the area to be developed and the projected population. Based on the planned future development identified in the Envision Stockton 2040 General Plan Update and April 2020 MSR/SOI Report, the anticipated gross development area by 2040 is 77 percent less than the 2008 Water Master Plan future gross development area. Associated with this reduced development area, there is approximately a 25 percent decrease in projected City-wide population from the 2035 General Plan to the Envision Stockton 2040 General Plan Update.

Figure ES-2 compares the City-wide population projections in the 2035 General Plan, the Envision Stockton 2040 General Plan Update and the 2015 UWMP, as well as the COSMUD water production requirements from the 2008 Water Master Plan, 2015 UWMP and this Water Master Plan Update. As shown, water production requirements have dropped significantly since the 2008 Water Master Plan was prepared. As shown on Figure ES-2, the water production requirements in the 2015 UWMP and this Water Master Plan Update generally align as similar population projections were assumed.

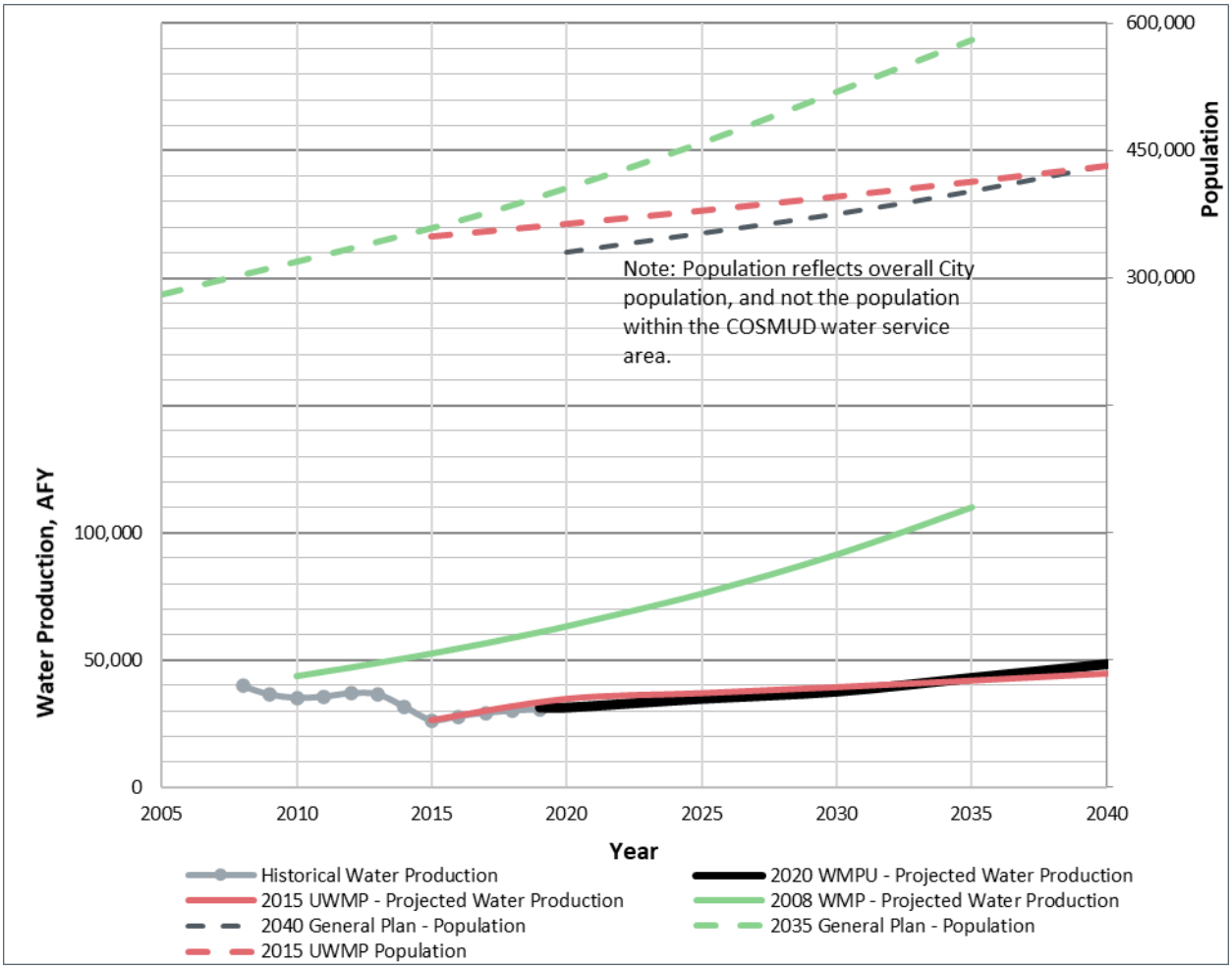


Figure ES-2. Comparison of Previous and Current Population and Water Production Requirements

The drop in future water production requirements from the 2008 Water Master Plan is reflected by less extensive recommendations for future water system improvements as described in Chapter 8 of this Water Master Plan Update.

RECOMMENDED EXISTING AND FUTURE WATER SYSTEM IMPROVEMENTS

Chapter 9 presents the recommended capital improvement program (CIP) for the COSMUD existing, near-term (2030) and future (2040) water system, based on the evaluations described in Chapters 7 and 8. A summary of the recommended improvement projects, along with estimates of probable construction costs is provided for each proposed improvement project. It also identifies which costs should be allocated to existing water customers and which costs should be allocated to future development. Discussion of the proposed financial plan to fund the recommended improvement projects, including a discussion of the Water Rate Study which has been prepared in parallel with this Water Master Plan Update, is provided in Chapter 10.

The following sections summarize the recommended existing, near-term (2030) and future (2040) water system improvements. Recommendations in this Water Master Plan Update were developed to:

- Replace aging and smaller diameter pipelines as part of a focused rehabilitation and repair (R&R) program to improve system operations and reliability
- Optimize the use and rehabilitation of existing facilities (e.g., existing inactive groundwater wells) to meet future needs without adversely impacting existing water rates
- Coordinate existing and near-term improvements with the on-going Water Rate Study to ensure that recommendations can be adequately funded
- Identify future water system improvements required to support and be funded by future development

It should be noted that the recommended water system improvements described in this Water Master Plan Update are significantly less extensive than those recommended in the 2008 Water Master Plan due to the following:

- Lower water demand projections associated with the reduced growth rate included in the Envision Stockton 2040 General Plan
- Lower existing demand conditions (and subsequent maximum day and peak hour demands) due to due to recent and continuing water use efficiencies
- The proposed rehabilitation of existing inactive wells instead of the construction of new wells in South Stockton
- The availability of the Delta Water Treatment Plant (DWTP) to supply treated surface water in North Stockton water service area as the primary water supply, supplemented by groundwater supplies
- The ability to maximize the use of Stockton East Water District (SEWD) supplies in both South Stockton and North Stockton with the construction of the North Stockton Pipeline Hypochlorite Facility

Figure ES-3 presents overall recommendations for existing, near-term (2030) and future (2040) for the COSMUD North Stockton and South Stockton water service areas. Figure ES-4 presents the Priority 1 and 2 pipelines and age for the COSMUD pipelines for the recommended Priority 3 pipeline Rehabilitation and Replacement (R&R) Program.

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F8_9_FutureSystemWithImprove.mxd - wjones - 1/26/2021

North Stockton

Delta Water Treatment Plant
WTP
Well #29
Well #30
Well #18
Well #33
Well #31
Northwest
Northeast
Well #19
Well #32
Well #15
Well #10R
Well #21
Well #03R
Well #28
Well #27
14 Mile Slough
Stockton East Water District
WTP

ARMSTRONG RD
LIVE OAK RD
WEST LN
EIGHT MILE RD
RINGE RD
THORNTON RD
SACRAMENTO RD
ASHLEY LN
HILDRETH LN
HAMMER LN
ELDORADO ST
SWAIN RD
PERSHING AVE
PACIFIC AVE
CHEROKEE RD
WATERLOO RD
ALPINE RD
MARCH LN
ANDREWS DR
BROOKSIDE RD
SAN JOAQUIN RIVER
CALAVERAS RIVER
HOLT RD
FREMONT ST
MINER AVE

16" 12" 8" 24" 30" 36" 42" 18"

N
0 3,500 7,000
Scale in Feet

South Stockton

WTP
Stockton East Water District
New Well
Mariposa
Well SSS10
Well SSS9
Well SSS8
Well SSS2
Well SSS3
Weston Ranch
5
99

SAN JOAQUIN RIVER
FREMONT ST
MINER AVE
SAN JOAQUIN ST
CENTER ST
DR MARTIN LUTHER KING JR BLVD
NAVY DR
EIGHTH ST
EL DORADO ST
POCKET RD
MARIPOSA RD
B ST
NEWCASTLE RD
AUSTIN RD
JACKTONE RD
HOWARD RD
TARLTON RD
AIRPORT WAY

16" 24" 12"

N
0 3,000 6,000
Scale in Feet

Notes:
1. Near-term (2030) and future (2040) development pipelines are based on previous development plans. Pipe layout and sizing will be finalized by developers/project proponents as development plans are finalized.
2. As discussed in the chapter, a groundwater study is recommended to identify which specific wells should be rehabilitated. For the purposes of this figure, Wells 15 and 28 have been identified, as these are the only standby wells. Other wells (i.e. inactive wells) may be recommended to be rehabilitated.
3. Other improvements not shown include: Improvements to the IPS and pipelines, Priority 3 Pipeline Improvements, DWTP Campus Improvements, Groundwater Recharge Basins, Metering/AMI Improvements.

Pipelines
- Existing
- Existing System Improvements
- Near-Term (2030) Improvements
- Future (2040) Improvements
- Future Development Pipelines

Wells
- New or Rehabilitated Near-Term (2030)
- New or Rehabilitated Future (2040)
- Active Existing
- Backup Power Near-Term (2030)
- Backup Power Future (2040)

- Existing Reservoir & Pump Station
- Future (2040) Reservoir & Pump Station
- WTP Water Treatment Plant
- COSMUD Service Boundary

Figure ES-3

Future System With Improvements

City of Stockton
Water Master Plan Update

WEST YOST

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F9_2_RecExistSysImp.mxd - wjones - 1/6/2021

North Stockton

Delta Water Treatment Plant
WTP
Northwest
14 Mile Slough
Stockton East Water District
WTP
Well #29
Well #18
Well #30
Well #16
Well #9
Well #7
Well #15
Well #1
Well #4
Well #11
Well #19
Well #24
Well #31
Well #32
Well #20
Well #10R
Well #21
Well #26
Well #03R
Well #25
Well #28
Well #27
ARMSTRONG RD
LIVE OAK RD
WEST LN
EIGHT MILE RD
RINGE RD
THORNTON RD
HAMMER LN
SWAIN RD
MARCH LN
SAN JOAQUIN RIVER
CALAVERAS RIVER
HOLT RD
ASHLEY LN
HILDRETH LN
ALPINE RD
CHEROKEE RD
WATERLOO RD
PACIFIC AVE
EL DORADO ST
FREMONT ST
MINER AVE
N
0 3,500 7,000
Scale in Feet

South Stockton

WTP
Stockton East Water District
SUTTER ST
SAN JOAQUIN ST
MINER AVE
FREMONT ST
DR MARTIN LUTHER KING JR BLVD
SAN JOAQUIN RIVER
NAVY DR
EIGHTH ST
EL DORADO ST
POCKET RD
99
MARIPOSA RD
5
Well SSS9
Well SSS8
Well SSS2
Well SSS3
Well SSS1
B ST
AUSTIN RD
NEWCASTLE RD
JACKTONE RD
Weston Ranch
HOWARD RD
TARLTAN RD
AIRPORT WAY
N
0 3,000 6,000
Scale in Feet

Notes:
1. Priority 1 and 2 pipelines are recommended to be completed by 2030.
2. Priority 3 pipelines are recommended to be completed over a 40 year replacement cycle. These pipelines can be further prioritized based on age (as shown) and/or leak history. Pipelines installed after the 1980s are recommended to be further evaluated by condition to determine if replacement is really needed. For the purposes of developing a CIP, these pipelines have been included in Priority 3 improvements.

- Priority 1 and 2 Pipelines

Priority 3 Pipelines by Decade of Installation

- 1950s or Earlier or Unknown
- 1960s - 1970s
- 1980s or Later
- Existing Pipelines
- COSMUD Service Boundary
- WTP Water Treatment Plant
- Existing Reservoir & Pump Station

Wells

- Active
- Inactive
- Standby

Figure ES-4

Recommended Pipeline Rehabilitation Program

City of Stockton
Water Master Plan Update

WEST YOST

Recommended Existing System Improvements

Chapter 7 provides a summary of the evaluation of the existing COSMUD water system and its ability to meet recommended water system planning and design criteria described in Chapter 5. In general, the analysis recommends the following:

- **Pipelines.** Development of a Rehabilitation and Replacement (R&R) Program is recommended for both the North Stockton and South Stockton water service areas. The intent of this program is to replace older and undersized pipelines on a proactive and programmatic basis before they fail and require more expensive emergency repair and replacement, as well as to improve flows throughout the system. This should also include mains running through private property or through levies, or those that have known tree root damage. Pipelines were generally prioritized into the following areas:
  - Priority 1: Pipelines in this category address areas where existing available fire flow capacity is less than 50 percent of the recommended criteria.
  - Priority 2: Pipelines in this category address areas where existing available fire flow capacity is between 50 and 75 percent of the recommended fire flow criteria.
  - Priority 3: This category contains the remaining smaller diameter pipelines (generally pipelines less that 8-inch diameter[1]).

  An asset management plan should be developed so recommended pipeline improvements can be further refined by considering likelihood of failure (e.g., age, condition, leak history, etc.) and consequence of failure (e.g., disruption of water service to critical facilities, potential for damage to adjacent land use and facilities, etc.) to further refine and define program priorities and implementation.
- **Supply (Wells).** It is recommended that the COSMUD design and construct Well SSS10, as well as equip the well with backup power to address the existing storage capacity deficit.

As discussed in Chapter 7, much of the COSMUD water distribution system is older and was designed to earlier fire flow standards in place at the time the pipelines were constructed. Approximately 28 percent of the COSMUD system was installed in the 1970s or earlier, totaling approximately 164 miles of pipeline in the North Stockton and South Stockton water service areas. Due to the age of the pipelines, it is recommended that the COSMUD begin a comprehensive pipeline R&R program. As presented above, it is recommended that the program be prioritized as shown on Figure ES-4 to address areas where existing available fire flow is less than recommended criteria in place for future development.

[1] As noted in Chapter 7, smaller diameter (less than 8-inch diameter) are allowed per COSMUD standard specifications provided that all capacity requirements are met. For the purposes of this Water Master Plan Update and for budgeting purposes, it is assumed that all small diameter pipelines are replaced with 8-inch diameter pipelines.

Recommended Near-Term (2030) System Improvements

Chapter 8 provides a summary of the evaluation of the COSMUD water system and its ability to support near-term (2030) demands while meeting recommended water system planning and design criteria described in Chapter 5. In general, the analysis recommended the following:

- **Supply (Wells)**. To address storage needs resulting from projected near-term (2030) demands and to address existing aging groundwater supply facilities, improvements to the following well facilities are recommended:
  - In North Stockton, rehabilitate two existing wells to address older/aging well facilities and maintain groundwater supply reliability.
  - In South Stockton, equip existing Wells SSS3 and SSS9 with backup power to access groundwater storage during emergencies and mitigate the projected storage deficit.
  - In South Stockton, rehabilitate existing Well SSS2, and equip with backup power, to access groundwater storage during emergencies and mitigate the projected storage deficit.

Improvements in North Stockton address older/aging infrastructure and should be allocated to existing water customers. Improvements in South Stockton are triggered by increased demands associated with future development and should be allocated to future development and paid through connection fees.

In addition to the above listed capacity related improvements, other improvements were identified through discussions with COSMUD staff. These projects are included to improve system and/or water supply reliability and are summarized below. These improvements are assumed to be funded by existing water customers.

- **Groundwater Study.** A comprehensive groundwater supply study is 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).
- **Intake Pump Station and Pipeline Upgrade.** Ground settlement at the Intake Pump Station (IPS) site has required the interim repair and adjustment of station infrastructure and the 54-inch raw water pipeline that supplies the DWTP. It is recommended that the COSMUD perform additional studies to develop a long-term strategy including appropriate design features and construct improvements to station infrastructure and the raw water pipeline.
- **DWTP Campus Improvements.** COSMUD plans to develop an overall DWTP Campus to centralize treatment and distribution staff. These campus improvements would result in both management and operational efficiencies.
- **Groundwater Storage Bank Study.** A groundwater storage bank/recharge basins study is recommended to address future supply reliability by expanding/augmenting its conjunctive use portfolio, allowing for the flexibility of banking unused supply for use at a later time.
- **Advanced Metering Infrastructure (AMI) Study.** An AMI Study, design, and implementation project is recommended to improve metering technology to allow for enhanced demand tracking, management, and water loss identification.

Recommended Future (2040) System Improvements

Chapter 8 provides a summary of the evaluation of the COSMUD water distribution system and its ability to support future (2040) demands while meeting recommended water system planning and design criteria described in Chapter 5. In general, the analysis recommended the following:

- **Storage and Pumping.** To address future storage needs associated with future development, the following is recommended:
  - In North Stockton, a new 4.0 MG Northeast Reservoir and associated 12.0 mgd pump station
  - In South Stockton, a new 3.5 MG Mariposa Road Community Reservoir and associated 12.0 mgd pump station
- **Supply (Wells).** To offset storage reservoir size and/or address the projected storage deficit, access groundwater storage during emergencies, and improve water supply reliability, the following are recommended:
  - In North Stockton, construct and equip the planned Well 33 with backup power
  - In South Stockton, construct and equip a new well within the Mariposa Road Community development area, with backup power.
  - In South Stockton, rehabilitate existing Well SSS8 and equip with backup power
- **Pipelines.** To address high velocities observed in transmission pipelines downstream of the DWTP, it is recommended that 5,800 linear feet (lf) of 36-inch diameter pipelines be constructed.

Since the above listed recommendations are triggered by future demands, they should be allocated to future development and funded by connection fees.

BASIS OF RECOMMENDATIONS

The evaluations described in this Water Master Plan Update and the recommended capital improvement plan presented are based on several key assumptions which are described throughout this report. These assumptions include the timing, type and extent of future development projects within the COSMUD North Stockton and South Stockton water service areas. The current assumptions for future planned development, used for this Water Master Plan Update, are described in Chapter 3. Should these assumptions change (e.g., development timing is expedited or delayed, future planned land uses are changed, or the extent of development is changed or does not occur at all) the timing, need and sizing for water system improvements may be affected. Before COSMUD proceeds with the design and construction of recommended water system improvements, future development plans and associated water system facility capacity needs should be reviewed and confirmed.

In particular, as described in this Water Master Plan Update, the Mariposa Road Community is a large potential future development area in South Stockton. The development area's previous entitlement has expired, and therefore it is not known if this project area will be developed or if it will be developed as previously planned. For the purposes of this Water Master Plan Update, it was assumed that the Mariposa Road Community will be developed by 2040, based on the most recent land use plan, and be served entirely by COSMUD. This future development area is one of the largest drivers for future growth within the COSMUD South Stockton water service area. In addition, although this development area is physically located within both the COSMUD water service area and the Cal Water service area, for the purposes of

this Water Master Plan Update, it was conservatively assumed that the COSMUD would serve the entire Mariposa Road Community area. As described in Chapter 8, and as summarized above, future water system improvements have been identified to serve the future Mariposa Road Community area. However, before COSMUD proceeds with the design and construction of water system improvements for the Mariposa Road Community, actual development plans and associated facility capacity needs should be reviewed and confirmed.

1.1 WATER MASTER PLAN UPDATE PURPOSE

The purpose of this Water Master Plan Update for the City of Stockton (City) is to evaluate the existing water system infrastructure and address potential impacts of near-term and long-term planned growth to develop a comprehensive guide for the City's water system capital improvement program. The City's Municipal Utilities Department (COSMUD) operates the City's water system which serves customers in both North Stockton (serving primarily residential customers) and South Stockton (serving a mix of residential and industrial customers). Central Stockton is served by a separate water system operated by the California Water Service (Cal Water). Within Central Stockton, COSMUD operates the Walnut Plant System comprised of residential customers and the Diamond Walnut processing facility; however, the Walnut Plant System has not been evaluated as part of this Water Master Plan Update. This Water Master Plan Update only addresses the COSMUD North Stockton and South Stockton water service areas.

The City's last Water Master Plan was completed in 2008. Since that time, the City has experienced growth, constructed a surface water treatment plant, and completed an update to its General Plan (the Envision Stockton 2040 General Plan), which provides the framework for future development in the City through 2040. The Delta Water Treatment Plant was completed in 2012 which provides the City with a new treated surface water supply to supplement its other water supplies.

Since the completion of the 2008 Water Master Plan, the State endured five years of drought starting in 2012, including the driest four consecutive years in California history. These unprecedented conditions led to statewide mandated water conservation, significant surface water supply reductions and curtailments and legislation establishing new statewide water efficiency standards.

All of these factors have led to a need to reassess the City's water needs, priorities and strategies and reevaluate the need for water system infrastructure improvements to ensure a safe and reliable water supply for the City's existing and future residents and businesses.

1.2 WATER MASTER PLAN OBJECTIVES AND PRIORITIES

The primary objectives of this Water Master Plan Update for the City of Stockton are to:

- Describe the existing COSMUD water system and facilities
- Evaluate historical and existing water demands to understand recent water use trends, per capita water use and water use by customer type
- Develop future water demand projections for near-term (2030) and future (2040) conditions based on future planned development in the COSMUD water service areas and updated unit water use factors developed based on recent water use trends
- Review the City's existing water supplies and the opportunities and constraints associated with each supply source
- Review City and industry water system standards and refine performance and planning criteria under which the COSMUD water system will be evaluated and recommendations for future facilities will be formulated
- Update and calibrate the City's water system hydraulic model to provide an updated, accurate tool for evaluating various water system demand and operational scenarios

- Evaluate the need for new water system facilities (including pipelines, supply facilities, storage facilities and pumping facilities) to meet existing, near-term (2030) and future (2040) water demands within the COSMUD water service areas
- Develop a capital improvement program and financial plan for implementation of recommended water system improvements

This Water Master Plan Update has been prepared to be consistent with the mission of the City's Municipal Utilities Department:

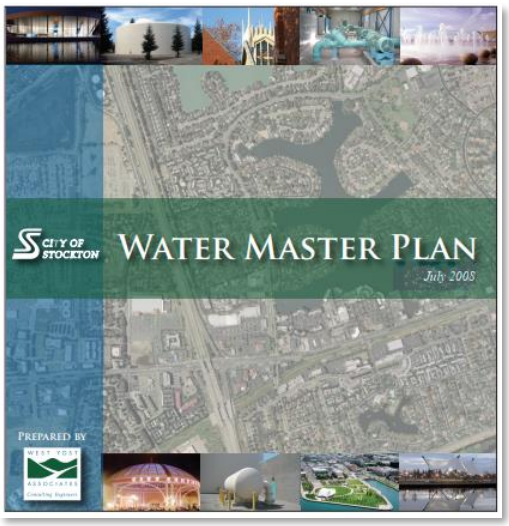
> *The City of Stockton Municipal Utilities Department's mission is to provide high-quality drinking water on demand; collect, treat, and dispose of wastewater; and collect and dispose of stormwater, all in accordance with applicable regulations and responsible business practices.*

Based on discussions with City staff, key priorities for the Water Master Plan Update include the following:

- Develop a Water Master Plan that reflects the strength and robustness of the City's water system and facilities
- Clearly define long-term water supply and infrastructure needs so that water system infrastructure is neither undersized nor oversized
- Develop an updated hydraulic model that accurately represents the water distribution system, identifies deficiencies, allows for accurate assessment of needed infrastructure to serve proposed future development projects, and that can be easily updated to evaluate future changes
- Develop an updated Capital Improvement Plan that is consistent with projected water demands and proposed future development that can be used to inform water rates and connection fees
- Develop a Water Master Plan that is a user-friendly reference tool for both City staff and the development community

1.3 PREVIOUS AND ON-GOING STUDIES

1.3.1 2008 Water Master Plan



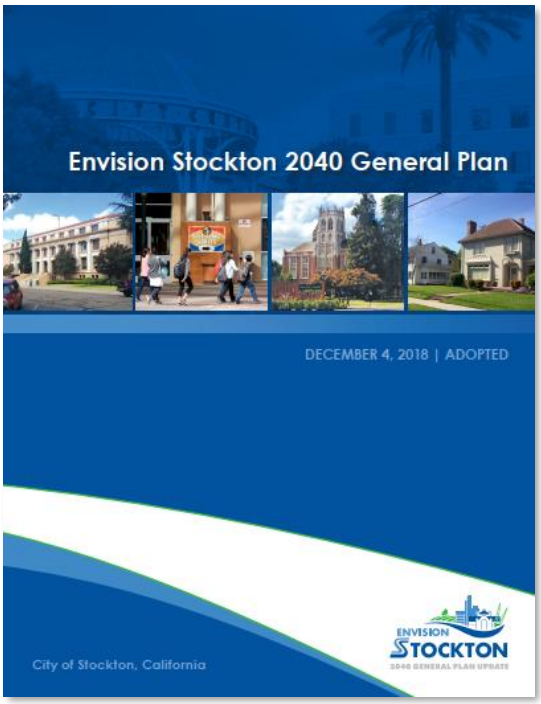
The City's previous Water Master Plan was completed in 2008 and was developed to support future development in accordance with the City's 2035 General Plan. The 2008 Water Master Plan addressed the following issues:

- The need for supplemental water supplies to meet existing and future water demands and to increase supply reliability;
- The continued use of groundwater as a supply source;
- The need for additional transmission mains, distribution pipelines, interconnections, pumping capacity, wells and storage facilities to meet the needs of existing customers and future development; and,
- The need to implement a planned capital improvement program to meet the needs of the existing water system and to accommodate future growth.

Since the completion of the 2008 Water Master Plan, the City completed the Delta Water Treatment Plant, which provides the City with a new treated surface water supply. Also, the City has updated its General Plan to provide guidance for future development within the City's Sphere of Influence.

As noted above, this Water Master Plan Update is a comprehensive update that refines unit water demand factors based on recent and projected water use trends and patterns to develop future demand projections, reflects the construction of the City's Delta Water Treatment Plant, updates the City's water system hydraulic model to evaluate system capacity, and reflects updates to future development plans to provide an evaluation of future water system needs. As described in Chapter 3 of this Water Master Plan Update, future water demands in the COSMUD water service areas are projected to be significantly lower than the water demand projections included in the 2008 Water Master Plan, primarily due to reduced growth projections within the City as reflected in the Envision Stockton 2040 General Plan. This results in significantly less extensive recommendations for water system improvements to support future water demands as compared to the 2008 Water Master Plan.

1.3.2 Envision Stockton 2040 General Plan



In March 2016, the City commenced an update of the 2035 General Plan. The updated plan, the Envision Stockton 2040 General Plan, was adopted in December 2018. The 2040 General Plan process included a comprehensive evaluation of the City's planning boundaries, including the City's Sphere of Influence (SOI). A key objective of the update was the establishment of a strategy for urban growth that both reflected the community's vision and supported the City's Climate Action Plan. This objective was achieved through extensive community outreach and engagement, resulting in a land use plan that emphasizes infill development in the City's core and supports employment and economic development citywide.

The 2040 General Plan land use map depicts proposed land use for Stockton within the SOI to accommodate the growth projected by the San Joaquin Council of Governments (SJCOG). Between 2020 and 2040, SJCOG projects that Stockton's population will grow by 102,898 to a total of 432,627 (equating to an annualized growth rate of 1.44 percent). This projection reflects growth rates that are lower than what occurred in the early 2000s and what was previously anticipated in the 2035 General Plan which had projected a population of 580,000 by 2035.[2]

Other highlights of the 2040 General Plan are summarized below:

- The General Plan increases allowable residential densities and intensity of development downtown and in the surrounding greater downtown area. Infill policies are prevalent, particularly for downtown and South Stockton.
- Compared to the previous 2035 General Plan, the land use plan reduces by almost 8,000 acres (12 square miles) the amount of agricultural land that could be developed with urban land uses.
- Compared to the previous 2035 General Plan, the projected Citywide population at buildout of the General Plan has been reduced by 25 percent.
- The General Plan features a new policy to create an Ag Belt between Stockton and Lodi in collaboration with Lodi, the County, and property owners.
- The General Plan provides guidance for reevaluating the City's public infrastructure, such as roadways and water and sewer distribution systems, which will help the City to determine whether the capital and ongoing maintenance cost of infrastructure can be supported by development projects.

[2] Stockton General Plan 2035 Goals & Policies Report, Community Development Objectives (page B-2), December 2007.

As part of the General Plan preparation, Utility Master Plan Supplements were prepared to assess the needed utility infrastructure improvements to support the planned development envisioned in the General Plan. As part of the Potable Water Master Plan Supplement[3], water demand projections were prepared and water system infrastructure capacity was evaluated for the land use alternatives considered, and recommendations were developed for updating backbone infrastructure plans to reflect the adopted land use plan (additional discussion of the water demand projections developed for the Utility Master Plan Supplements is provided in Chapter 3). The 2040 General Plan Update also included the preparation of an Infrastructure Financing Strategy to address these infrastructure needs.

The City's General Plan is built on a number of goals and policies that are related to the provision of safe and reliable water supplies. Included in the Safety Element of the City's General Plan is Goal SAF-3: Clean Water. Access to safe water is a fundamental human need for both physical and social health. Maintaining clean water supplies requires constant vigilance, significant expenditures, and sometimes changes in behavior, especially as the impacts of human activities become more pervasive. Water supply, quality, and distribution are vital to Stockton's ability to serve its population now and in the future. Regulatory pressures, droughts, and saline intrusion affecting groundwater supplies have already strained the region's water supplies. As a result, the City has focused attention on the availability of existing surface water supplies and is cooperating with other agencies in the region to manage groundwater resources at a sustainable yield.

Table 1-1 summarizes the General Plan goals, policies and actions related to water service within the City.

Table 1-1. General Plan Goals, Policies and Actions Related to Water Service

General Plan Policy	General Plan Action
Land Use Element: Goal LU-5: Protected Resources Protect, maintain, and restore natural and cultural resources	
Policy LU-5.1: Integrate nature into the city and maintain Stockton's urban forest	Action LU-5.1C: Require landscape plans to incorporate native and drought-tolerant plants in order to preserve the visual integrity of the landscape, conserve water, provide habitat conditions suitable for native vegetation, and ensure that a maximum number and variety of well-adapted plants are maintained.
Policy LU-5.2: Protect natural resource areas, fish and wildlife habitat, scenic areas, open space areas, agricultural lands, parks, and other cultural/historic resources from encroachment or destruction by incompatible development.	Action LU-5.2H: Comply with applicable water conservation measures.
	Action LU-5.2I: Coordinate with water agencies and non-profit organizations to promote public awareness on water quality and conservation issues and consistency in water quality impacts analyses.
Policy LU-5.4: Require water and energy conservation and efficiency in both new construction and retrofits.	Action LU-5.4A: Require all new development, including major rehabilitation, renovation, and redevelopment, to adopt best management practices for water use efficiency and demonstrate specific water conservation measures.

[3] Stockton General Plan Update – Potable Water Master Plan Supplement, prepared by West Yost Associates, December 12, 2017.

Table 1-1. General Plan Goals, Policies and Actions Related to Water Service

General Plan Policy	General Plan Action
Land Use Element: Goal LU-6: Effective Planning Provide for orderly, well-planned and balanced development	
Policy LU-6.1: Carefully plan for future development and proactively mitigate potential impacts	Action LU-6.1B: Monitor the rate of growth to ensure that it does not overburden the City's infrastructure and services and does not exceed the amounts analyzed in the General Plan EIR.
	Action LU-6.1D: Require that all utility connections outside the city limit be for land uses that are consistent with the General Plan.
	Action LU-6.1E: Do not approve new development unless there is infrastructure in place or planned and funded to support the growth.
	Action LU-6.1F: Evaluate and implement adjustments to the Public Facilities Fee structure to encourage development in areas where infrastructure is already present and ensure that non-infill development pays its fair share of anticipated citywide capital facilities and operational costs.
Policy LU-6.3: Ensure that all neighborhoods have access to well-maintained public facilities and utilities that meet community service needs.	Action LU-6.3A: Require development to mitigate any impacts to existing sewer, water, stormwater, street, fire station, park, or library infrastructure that would reduce service levels.
	Action LU-6.3B: Ensure that public facilities, infrastructure, and related land area and other elements are designed, and right-of-way is acquired, to meet 2040 planned development requirements to avoid the need for future upsizing or expansion, unless planned as phased construction.
	Action LU-6.3C: Coordinate, to the extent possible, upgrades and repairs to roadways with utility needs, infrastructure upgrades, and bicycle and pedestrian improvements (i.e., "dig once").
Safety Element: Goal SAF-3: Clean Water Sustain clean and adequate water supplies	
Policy SAF-3.1: Secure long-term renewable contracts and related agreements to ensure that surface water rights will be available to meet projected demand.	Action SAF-3.1A: Actively participate in appropriate forums designed to discuss and solve regional water supply and quality issues.
Policy SAF-3.2: Protect the availability of clean potable water from groundwater sources.	Action SAF-3.2A: Continue to cooperate with San Joaquin County and Cal Water to monitor groundwater withdrawals and ensure that they fall within the target yield for the drinking water aquifer.
Policy SAF-3.3: Encourage use of recycled ("gray") water for landscaping irrigation to reduce demand on potable supplies.	Action SAF-3.3A: Require new development to install non-potable water infrastructure for irrigation of large landscaped areas where feasible.
	Action SAF-3.3B: Investigate and implement Code amendments to allow installation of dual plumbing and/or rainwater capture systems to enable use of recycled water and/or captured rainwater generated on- site.

1.3.3 Water Cost of Service Rate Study

In parallel with this Water Master Plan Update, HDR is preparing an update of the City's Water Cost of Service Rate Study. Water rate studies typically review and analyze updated cost information from administration, production, distribution, maintenance of existing and future capital project improvements and regulatory requirements. In addition, debt service coverage and purchase water costs are also included. The new cost of service rate study will determine if a water rate increase is warranted based on new cost information.

This Water Master Plan Update provided a list of recommended water system improvements which will be considered in the Water Cost of Service Rate Study as appropriate. As described in Chapter 9, water system improvements are recommended to meet both existing and future system needs. System improvements needed to meet existing system needs are allocated to existing users and are to be funded through water rates. System improvements needed to expand the production and distribution system to meet future system needs to serve future planned development are allocated to future users and are to be funded through water service connection fees. Water service connection fees are not a part of the Water Cost of Service Rate Study.

HDR has prepared a summary of the proposed financial plan to fund water system improvements. This is provided in Chapter 10 of this Water Master Plan Update.

1.3.4 2020 Urban Water Management Plan

The Urban Water Management Planning Act requires every urban water supplier in California that either provides over 3,000 acre-feet of water annually, or serves more than 3,000 urban connections, to prepare and adopt an Urban Water Management Plan (UWMP) that includes specified content, including an urban water shortage contingency analysis. The adopted UWMP must be submitted to the California Department of Water Resources (DWR) and other entities. Urban water suppliers are required to submit an UWMP every five years. The 2020 UWMP is due to DWR on July 1, 2021.

Work performed for this Water Master Plan Update will inform the development of the City's 2020 UWMP, including water demand projections and projected water supplies.

1.3.5 Wastewater Master Plan Update

In parallel with this Water Master Plan Update, an update to the City's Wastewater Master Plan is also being prepared by West Yost. Where applicable, work on both master plans has been coordinated to ensure that the two plans are consistent in their assumptions, projections and recommendations where appropriate. In particular, it is important is to ensure that water demand projections and wastewater flow projections are coordinated so that both systems can be appropriately planned to meet the needs of the City's residents and businesses.

1.4 REPORT ORGANIZATION

This Water Master Plan Update is organized into the following chapters:

Chapter 1: Introduction	Describes the purpose, objectives and priorities for the Water Master Plan Update, its relationship to other on-going studies, report organization and acknowledgments
Chapter 2: Existing Water System	Provides background information on the existing COSMUD water service areas, water supplies and water system facilities
Chapter 3: Water Demands	Presents historical, current and projected future water demands based on planned future development in accordance with the City's Envision 2040 General Plan
Chapter 4: Water Supply	Provides an overview of the existing COSMUD water supply sources and plans to optimize available water supplies for the future
Chapter 5: Design/System Performance Criteria	Defines the recommended performance and operational criteria for the COSMUD water system, including supply, storage and pumping capacity, fire flow requirements, minimum and maximum system pressures, and maximum pipeline velocity and head loss
Chapter 6: Hydraulic Model Update and Calibration	Describes the update, refinement and calibration of the COSMUD existing water distribution system hydraulic model used to analyze the COSMUD distribution system performance
Chapter 7: Existing Water System Analysis	Describes the evaluation of the existing COSMUD water system in comparison to the criteria developed in Chapter 5 and provides recommendations for existing system improvements
Chapter 8: Future Water System Analysis	Describes the evaluation of the COSMUD water system and its ability to meet projected future water demands in comparison to the criteria developed in Chapter 5 and provides recommendations for future system improvements
Chapter 9: Recommended Water System Capital Improvement Program	Provides a detailed summary of recommended capital improvements for the COSMUD water system to meet existing and projected future demands
Chapter 10: Financial Plan	Provides an overview of funding options to implement the recommended capital improvements for the COSMUD water system

The following appendices to this Water Master Plan Update contain additional technical information, assumptions and calculations:

Appendix A: Hydrant Testing and Hydrant Pressure Recorder Placement Plan for Model Calibration	Outlines the hydrant testing that was performed in June 2020 and the associated collection of water distribution system pressure data using hydrant pressure recorders to obtain data needed to calibrate the COSMUD water system hydraulic model to actual system conditions as described in Chapter 6
Appendix B: Hydraulic Model Calibration Results – North Stockton	Presents results from the hydraulic model calibration process for the North Stockton water system comparing model-predicted results to field-collected data as described in Chapter 6
Appendix C: Hydraulic Model Calibration Results – South Stockton	Presents results from the hydraulic model calibration process for the South Stockton water system comparing model-predicted results to field-collected data as described in Chapter 6
Appendix D: Cost Estimating Assumptions	Describes cost estimating assumptions used to estimate construction costs for recommended water system improvements as described in Chapter 9
Appendix E: Financial Plan Worksheets	Provides the worksheets prepared by HDR in support of the financial plan presented in Chapter 10 and the water rate study being prepared in parallel with this Water Master Plan Update

1.5 ACKNOWLEDGMENTS

The development of this Water Master Plan Update would not have been possible without the focused involvement and assistance of City staff. In particular, the following staff provided comprehensive information, significant input and important insights throughout development of this Water Master Plan Update:

John Abrew	Director of Municipal Utilities Department
Ariana Adame	Planning Manager, Community Development Department
Gemma Biscocho	Senior Civil Engineer, Engineering Division (Project Manager for Water Master Plan Update)
Juan Chavez	Engineering Services Manager, Engineering Division
Lance Cook	Water Systems Superintendent, Water Field Office
Matt Diaz	Planning Manager/Advanced Planning, Community Development Department
Ali Gharegozloo	Principal Engineer, Engineering Division
Eric Houston	Chief Plant Operator, Water Treatment Plant

Stephen Kenning	Assistant Director of Municipal Utilities Department
Mel Lytle	Assistant Director of Municipal Utilities Department
Mitchell Maidrand	Deputy Director of Municipal Utilities Department, Water Resources Division
Jeff Marasovich	CMMS/SCADA Systems Manager
Michael McDowell	Deputy Director of Planning and Engineering, Community Development Department
Ann Okubo	Associate Civil Engineer, Engineering Division
Rudy Quinones	Water Systems Supervisor, Water Field Office
Travis Small	Plant Operations Supervisor, Water Treatment Plant
Danny Trejo	Program Manager III, Water Resources Division

This chapter describes the COSMUD existing water system, which generally serves the northern and southern areas of Stockton. System information is based on a review of previous studies, design reports, maps, plans, operating records, and discussions with the COSMUD staff. Key sections of this chapter include:

- Existing Water Service Areas
- Existing Water Supplies
- Existing Water System Facilities

2.1 EXISTING WATER SERVICE AREAS

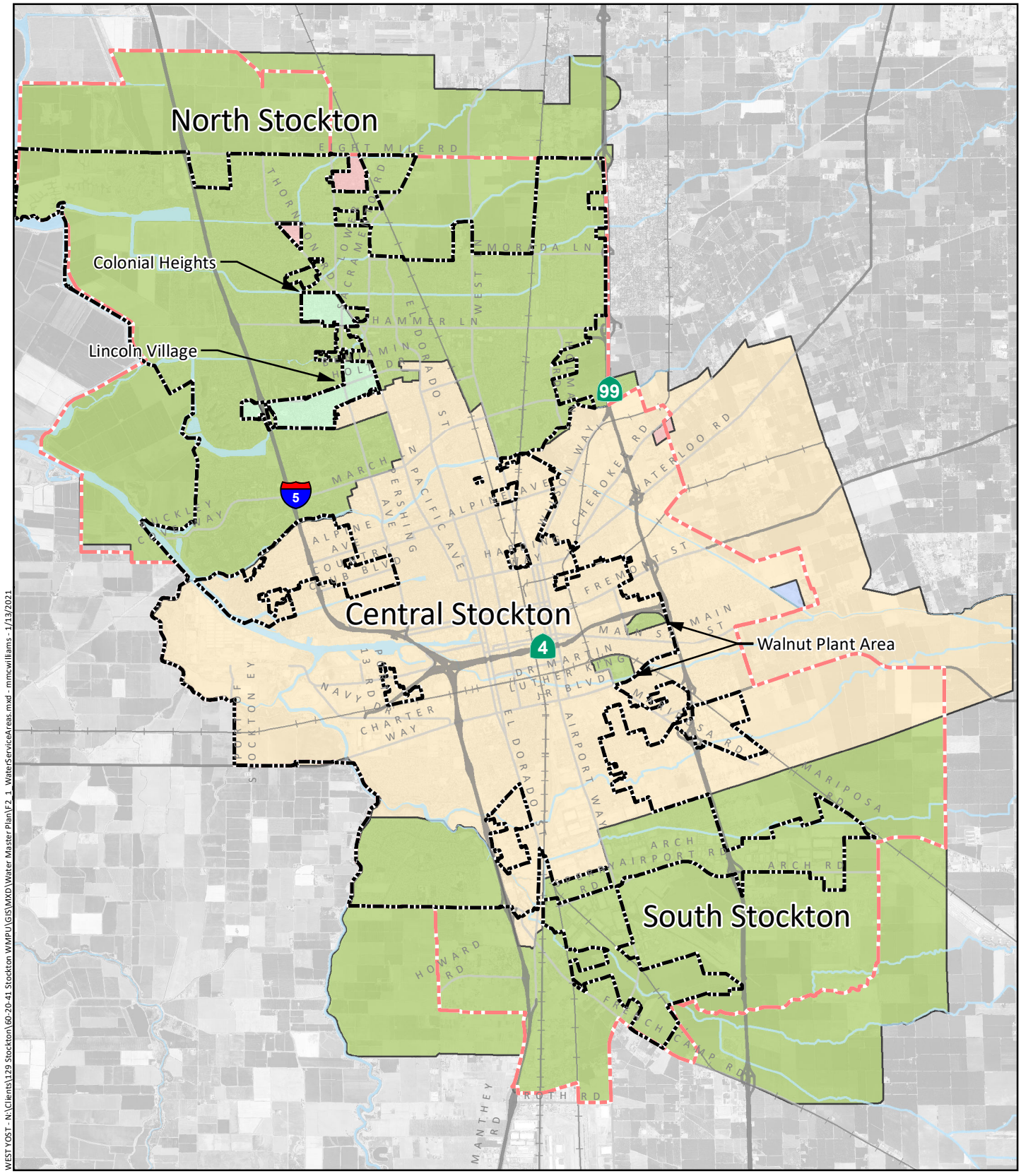
The City is located in the Central Valley of California and is the County seat for San Joaquin County. California State Highway 99 and Interstate 5 run north and south through the City on the east and west boundaries, respectively, and California State Highway 4 (the Crosstown Freeway) connects the two. The San Joaquin River flows from the south and terminates at the Delta area of Central Stockton.

As shown on Figure 2-1, the City of Stockton can be generally 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[4].
- Central Stockton: Served by the California Water Service (Cal Water).
- South Stockton: Served by the COSMUD.

This Water Master Plan Update only addresses the areas served by the COSMUD within the General Plan SOI, which includes most of North and South Stockton. 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. Since the completion of the previous Water Master Plan, residential developments off of Eight Mile Road have continued to develop. 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.

[4] Two of the County islands in North Stockton (Colonial Heights and Lincoln Village) receive water that is delivered by the COSMUD.



City of Stockton Limits
City of Stockton Sphere of Influence
California Water Service Area
San Joaquin County (served by COSMUD)
San Joaquin County
City of Stockton Municipal Utilities Department
Stockton East Water District

N

0 1 2
Miles

Figure 2-1

Water Service Areas

City of Stockton
Water Master Plan Update

WEST YOST

2.2 EXISTING WATER SUPPLIES

The COSMUD water service areas are served by an existing water supply portfolio comprised of a conjunctive use system, which includes:

- 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) and treated at the City's Delta Water Treatment Plant (DWTP), with supplemental 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 supplies from San Joaquin River 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 the COSMUD from City-owned and operated wells in the underlying Eastern San Joaquin Groundwater Subbasin

Details regarding these water supply sources are provided in Chapter 4. The water supply and treatment facilities are described as follows.

2.2.1 Surface Water Supply

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 Woodbridge Irrigation District and treated at the City's DWTP, and treated surface water from SEWD.

Due to differing disinfection processes that present water quality issues related to low chlorine residual and disinfection byproducts, COSMUD provides water from the DWTP only in its North Stockton water distribution system. Water from SEWD can be conveyed to both North and South Stockton distribution systems. At the time of preparation of this Water Master Plan Update, the COSMUD is in the process of implementing the North Stockton Pipeline Hypochlorite Facility that would allow SEWD supplies to be conveyed to the North Stockton system and combined with DWTP-produced water supply (this project is discussed further in Chapter 4).

2.2.1.1 Delta Water Treatment Plant

The San Joaquin River provides the largest portion of the City's potable water supply. When the City received its water rights permit in 2006, the City implemented the Delta Water Supply Project (DWSP) 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 million gallons per day (mgd). In 2019, it produced 68 percent of the COSMUD water supply. The DWTP treatment process includes ozone oxidation and disinfection and membrane filtration with chlorine added as a residual disinfectant. Treated water is stored in a 4-million-gallon (MG) storage tank and aqueous ammonia is added to provide a chloramine residual before distribution to the North Stockton water service area.

As described further in Chapter 4, the City's water supply from the San Joaquin River is curtailed annually from February 15 to June 15 due to environmental restrictions. During this period, the COSMUD obtains raw water from WID to augment its water supply. WID conveys raw water through its Wilkinson Canal and Pixley Lateral Pipeline to the DWTP for treatment.

2.2.1.2 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. SEWD's Dr. Joe Waidhofer Water Treatment Plant (DJWWTP) has a current capacity of 60 mgd and is located in Central Stockton. In 2019, SEWD produced approximately 20 percent of the COSMUD water supply.

The SEWD receives water from New Melones (Stanislaus River) and New Hogan (Calaveras River) Reservoirs. Diverted water is temporarily stored in three small earthen reservoirs at the DJWWTP. The South, North and Intake reservoirs contain 30, 24, and 26 MG of raw water when full, respectively. The treatment process is comprised of coagulation, flocculation, sedimentation, filtration, and disinfection. Granular activated carbon (GAC) is used for removing organic contaminants and controlling taste and odor problems, while chlorine gas is used for disinfection. Recently, SEWD has proposed to change the DJWWTP disinfection process from chlorine gas to liquid sodium hypochlorite. Treated water is then pumped into the distribution system manifold from a 20 MG underground finished water reservoir. The manifold splits the flow in the South Stockton Aqueduct, the Cal Water distribution system, and the North Stockton Aqueduct.

The COSMUD supplies SEWD treated water to its South Stockton water service area. At the time of preparation of this Water Master Plan Update, the COSMUD has commenced construction of the North Stockton Pipeline Hypochlorite Facility that would allow SEWD water supplies to be conveyed to the North Stockton system and combined with the DWTP-produced water supply. This project is discussed in further detail in Chapter 4 (Section 4.2.1).

2.2.2 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.

2.3 EXISTING WATER SYSTEM FACILITIES

As described above, the COSMUD operates a water distribution system that contains two 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 comingle 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.

2.3.1 Groundwater Wells

There are currently twelve (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. The North Stockton system also includes ten (10) inactive wells, which 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. Table 2-1 summarizes the information on the North Stockton wells.

There are currently four (4) operational (i.e., active or standby) groundwater wells in South Stockton. The design capacities range from 1,400 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. The South Stockton system also has one (1) inactive well, which is currently not permitted for use. 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. Table 2-2 summarizes the information on the South Stockton wells which are designated as South Stockton System (SSS) wells.

Table 2-1. North Stockton Well Facilities

Well Number	Location	Installed HP	Pumping Capacity, gpm[(a)]	Year Drilled	Depth, ft	Well Status	Well Age, years	Backup Power Installed
1	Rivara Road	40	648	1954	268	Inactive	66	No
3R	West Lane	200	2,000	--	--	Active	--	Yes
4	Villa Dorado Park	75	1,050	1965	602	Inactive	55	No
7	Galloway Drive	40	550	1963	238	Inactive	57	No
9	Don Carlos Drive	50	540	1955	290	Inactive	65	No
10R	Valverde Park	200	2,000	--	--	Active	--	No
11	Inglewood	75	1,100	1958	317	Inactive	62	No
15[(a)]	Mosher Slough and WPRR	150	1,805	1975	600	Standby	45	No
16	Lower Sacramento Road	200 (gas)	2,000	1976	600	Inactive	44	No
18	Hickock Drive	60	800	1956	211	Active	64	No
19	1233 Sutherland	200	2,000	1978	500	Active	42	No
20[(a)]	West Lane/ Summerview Drive	200 (gas)	1,800	1978	545	Inactive	42	No
21	Cortez Park	200	2,000	1978	500	Active	42	No
24	Saffron Way	150	1,040	1982	495	Inactive	38	No
25	Panella Park	200 (gas)	1,600	1984	570	Inactive	36	No
26	Hammer and EBMUD	N/A	1,970	1987	450	Inactive	33	No
27	Bonaire Circle	200	2,000	1985	575	Active	35	No
28	Wild Grape Drive	120	1,295	1997	560	Standby	23	No
29	Autumn Oak Place	200	3,200	2000	500	Active	20	Yes
30	Grider Way	200	2,200	2003	540	Active	17	Yes
31	Ivano Lane	200	2,000	2004	410	Active	16	Yes
32	North State Route 99 (West Frontage Road)	200	2,000	2004	480	Active	16	Yes
Total Active Well Pumping Capacity, gpm			**20,200**					
			mgd	**29.1**				
Total Standby Well Pumping Capacity, gpm			**3,100**					
			mgd	**4.5**				

Source: Status and backup power are based on City of Stockton's Permit Amendment dated January 7, 2020 (active wells are highlighted in green) and other information is based on the City of Stockton's 2008 Water Master Plan.

(a) Well capacities based on the most recent capacity reported on *"Well Rehabilitation List Status 103020.xlsx"*, provided to West Yost on October 30, 2020.

Table 2-2. South Stockton Well Facilities

Well Number	Location	Installed HP	Pumping Capacity, gpm[(a)]	Year Drilled	Depth, ft	Well Status	Well Age, years	Backup Power Installed
SSS 1[(a)]	4728 Quantas Lane	200	1,000	1984	600	Inactive	36	No
SSS 2[(a)]	4605 W Highway 99 Frontage Road	100	1,295	1953	172	Standby	67	No
SSS 3	4748 Frontier Way	200	2,000	1989	625	Active	31	Yes
SSS 8[(a)]	4120 Pock Lane	250	1,010	2000	410	Standby	20	No
SSS 9	B Street	200	2,800	2004	372	Active	16	No
Total Active Well Pumping Capacity, gpm			**4,800**					
mgd			**6.9**					
Total Standby Well Pumping Capacity, gpm			**2,305**					
mgd			**3.3**					

Source: Status and backup power are based on City of Stockton's Permit Amendment dated January 7, 2020 (active wells are highlighted in green) and other information is based on the City of Stockton's 2008 Water Master Plan

(a) Well capacities based on the most recent capacity reported on *"Well Rehabilitation List Status 103020.xlsx"*, provided to West Yost on October 30, 2020.

2.3.2 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 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 3 MG storage reservoirs located at Weston Ranch (WR). Table 2-3 summarizes the information for each storage facility. Each reservoir has an altitude valve which opens to fill the reservoir based on reservoir levels. Generally, these valves are equipped with sustaining features that allow the altitude valve to maintain a minimum upstream pressure, thereby avoiding low system pressures during fill cycles.

Table 2-3. City of Stockton Water Storage Reservoirs

Reservoir Name	Tank	Reservoir Type	Reservoir Material	Year Installed	Diameter, feet	Overflow Elevation, feet	Bottom Elevation, ft	Nominal Storage Capacity, MG
North Stockton								
Northwest	1	Cylindrical	Steel	1996	120	45.9	4.9	3.4
	2	Cylindrical	Steel	1996	120	45.9	4.9	3.4
	3	Cylindrical	Steel	2008	120	45.9	4.9	3.4
Fourteen-Mile Slough	1	Cylindrical	Steel	1995	120	35	0	3.0
	2	Cylindrical	Steel	1995	120	35	0	3.0
South Stockton								
Weston Ranch	1	Cylindrical	Steel	1995	135	44	15	3.0
	2	Cylindrical	Steel	2010	135	44	15	3.0
							Total Storage Capacity, MG	**22.2**

There is a pump station at each of the reservoir sites to pump the stored water from the at-grade reservoirs into the distribution system during higher system demands. Table 2-4 summarizes the information for each reservoir pump station. As shown on Table 2-4, 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.

Table 2-4. City of Stockton Reservoir Pump Stations

Pump Station Location	Pump No.	Nominal Capacity, gpm	Horsepower	Total Capacity, gpm	Firm Capacity[(a)] gpm
North Stockton					
Northwest 10001 North I-5 Frontage Road	1	5,000	200	25,200	20,200
	2	3,800	150		
	3	3,800	127		
	4	3,800	127		
	5	3,800	150		
	6	5,000	200		
Fourteen-Mile Slough 5656 Feather River Drive	1	3,300	150	14,550	11,250
	2	3,300	150		
	3	2,650	125		
	4	2,650	125		
	5	2,650	125		
South Stockton					
Weston Ranch 750 French Camp Road	1	3,000	125	12,000	9,000
	2	3,000	125		
	3	3,000	125		
	4	3,000	125		

(a) Firm capacity is the total installed capacity with the largest pump out of service.

2.3.3 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. Table 2-5 provides a summary of distribution system pipelines by pipe diameter. As shown on Table 2-5, about 60 percent of the distribution system is comprised of pipelines which are 8-inches in diameter or less. Figure 2-2 shows the existing water distribution system.

Table 2-5. City of Stockton Distribution System Pipeline Diameters[(a)]

Pipeline Diameter	Length of Pipeline		Percent in Water System
Inches	feet	miles	
North Stockton			
4 or less	67,736	12.8	2.2
6	309,182	58.6	10.0
8	1,156,797	219.1	37.5
10 to 12	616,959	116.8	20.0
Greater than 12 but less than 24	102,600	19.4	3.3
24 or greater	171,447	32.5	5.6
Unknown	16,441	3.1	0.5
North Stockton Subtotal	**2,441,164**	**462.3**	**79.2%**
South Stockton			
4 or less	7,386	1.4	0.2
6	35,779	6.8	1.2
8	249,737	47.3	8.1
10 to 12	127,325	24.1	4.1
Greater than 12 but less than 24	128,966	24.4	4.2
24 or greater	83,814	15.9	2.7
Unknown	7,770	1.5	0.3
South Stockton Subtotal	**640,777**	**121.7**	**20.8%**
Total	**3,081,941**	**584**	**100.0%**

(a) Data summarized from the City of Stockton's GIS pipeline feature class provided April 2020. Only pipelines with an FEA Code for "encased city line" or "city line" are included. Pipelines with an unspecified/blank diameter or a diameter of zero are included in the Unknown category.

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F2_2_ExistingSystem.mxd - bvera - 11/18/2020

Delta Water Treatment Plant
WTP
Well #29
Northwest
Well #18
Well #30
Well #31
Well #19
Well #24
Well #32
Well #16
Well #9
Well #15
Well #20
Well #10R
Well #7
Well #21
Well #26
Well #1
Well #4
Well #03R
Well #11
Well #25
14 Mile Slough
Well #28
Well #27
Stockton East Water District
WTP
Well SSS9
Well SSS8
Well SSS2
Well SSS3
Well SSS1
Weston Ranch
0 0.6 1.2
Miles

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

- Water Treatment Plant
- Storage Tank and Pump Station
- Active Well
- Inactive Well
- Standby Well

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

Figure 2-2

Existing Water System

City of Stockton
Water Master Plan Update

WEST YOST

Age and material of pipeline is not well documented in the City's GIS system. In previous studies, pipeline install dates were estimated based on construction of nearby buildings. This information was correlated back to the COSMUD water system to gain an estimate of the age of water system pipelines, assuming that both systems were constructed around the same time. Table 2-6 and Figure 2-3 summarize pipelines by approximate installation decade ranges. Based on conversations with COSMUD Operations staff, pipeline materials predominantly consist of asbestos cement (AC) and polyvinyl chloride (PVC). Based on the City's GIS, there are also small amounts of cast iron, ductile iron, concrete lined and coated, and steel pipelines. In general, pipelines constructed before the mid-1980s generally consist of AC. Around the mid-1980s and thereafter, COSMUD transitioned to primarily PVC.

Table 2-6. City of Stockton Distribution System Pipeline Installation Year[(a)]

Decade of Pipeline Installation	Length of Pipeline		Percent of Water System
	feet	miles	
North Stockton			
1950s or earlier	109,632	20.7	3.6
1960s	161,722	30.6	5.2
1970s	535,088	101.3	17.4
1980s	320,196	60.6	10.4
1990s	353,192	66.9	11.5
2000s	672,891	127.4	21.8
2010s	37,837	7.2	1.2
Unknown	250,606	47.5	8.1
North Stockton Subtotal	**2,441,164**	**462.3**	**79.2%**
South Stockton			
1960s	8,816	1.7	0.3
1970s	51,879	9.8	1.7
1980s	11,202	2.1	0.4
1990s	219,430	41.6	7.1
2000s	184,289	34.9	6.0
2010s	13,087	2.5	0.4
Unknown	152,075	28.8	4.9
South Stockton Subtotal	**640,777**	**121**	**20.8%**
Total	**3,081,941**	**584**	**100.0%**

(a) Data summarized from the City of Stockton's GIS pipeline feature class and the PipelineInstallDate.dbf file, provided April 2020. Only pipelines with an FEA Code for "encased city line" or "city line" are included. Pipelines with an installation year of zero are shown in the Unknown category.

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F2_3_PipeAge.mxd - mmcwilliams - 12/15/2020

NORTH STOCKTON

Delta Water Treatment Plant

WTP

Northwest

14 Mile Slough

Stockton East Water District

WTP

0 3,500 7,000

Scale in Feet

SOUTH STOCKTON

Stockton East Water District

WTP

Weston Ranch

0 3,000 6,000

Scale in Feet

Notes:
1. Pipeline information is from StocktonWaterSystem.gdb and PipelineInstallDate.dbf provided by the City in April 2020.

WTP Water Treatment Plant

Storage Tank and Pump Station

No Date Available

1940s or earlier

1950s

1960s

1970s

1980s

1990s

2000s

2010s

COSMUD Water Service Boundary

California Water Service

San Joaquin County (served by COSMUD)

San Joaquin County

Stockton East Water District

Figure 2-3

System Pipelines by Decade of Installation

City of Stockton
Water Master Plan Update

WEST YOST

This chapter describes the COSMUD historical, current and projected near-term and future water demands. The projected near-term and future demands are based on refined water use factors and planned future development from the City's recently updated 2040 General Plan Update (GPU) along with other specific planned development projects the City has identified. Projected near-term and future water demands will be used to evaluate the future water production required and the adequacy of the COSMUD available water supplies and capacity of the COSMUD water system to reliably deliver water to its customers.

The following sections of this chapter present the COSMUD historical and current water demands, along with planned future development, projected water demands, and future water production required for the near-term (2030) and future (2040) timeframes:

- Historical Water Production and Use
- Historical Peak Water Use
- Existing and Future Land Use and Growth Projections
- Water Use Factors
- Future Water Demands and Required Water Production
- Comparison to the 2008 WMP, the 2015 UWMP and the 2018 Utility Master Plan Supplements

3.1 HISTORICAL WATER PRODUCTION AND USE

The following sections summarize the historical water production for the COSMUD water service areas which include generally North and South Stockton and the Walnut Plant water service area in Central Stockton that is surrounded and served by the California Water Service (Cal Water) through a wheeling agreement.

3.1.1 Historical Annual Water Production

Historically, the COSMUD has obtained purchased water from SEWD and groundwater produced by the COSMUD groundwater wells. In 2012, the DWTP was completed and began delivering treated surface water to the COSMUD North Stockton water service area. After introducing surface water from DWTP in the North Stockton water service area, the COSMUD slowly reduced its supplies from SEWD until June 2016, at which point it solely depended on DWTP and local groundwater supplies in the North Stockton water service area, and utilized supplies from SEWD only in the South Stockton water service area. The primary reason for the use of DWTP supplies in North Stockton and SEWD supplies in South Stockton is due to differing disinfection processes that present water quality issues related to low chlorine residual and the potential for formation of disinfection byproducts. This is described further in Chapter 4.

Table 3-1 summarizes the annual water production for the COSMUD North and South Stockton water service areas, as well as the Walnut Plant Area located in Central Stockton[5]. In North and South Stockton, a surface water to groundwater mix of approximately 74 and 26 percent, respectively, was supplied from 2006 to 2010. When the DWTP came online in 2012, the COSMUD began utilizing more surface water, approximately 90 percent of the overall production, but the supply mix dropped back down to about 76 percent surface water due to the drought. The five-year average surface water supply has averaged approximately 86 percent. The reliance on groundwater has decreased since 2012 with the availability of additional surface water supplies treated at the DWTP.

Figure 3-1 displays the monthly water production from 2006 through 2019 for the COSMUD North Stockton water service area. Prior to 2012, North Stockton relied on water supply from SEWD and groundwater wells. Since 2012, North Stockton has transitioned to relying on water supply from the DWTP supplemented by groundwater wells. The highest average day water production occurred in 2007 with a total of 28.4 mgd. The lowest average day water production occurred in 2015 with a total of 19.6 mgd. In 2019, the average day water production was 21.9 mgd. Water production decreased from 2007 to 2015, attributed to the 2008 economic downturn, the recent drought, and water conservation measures implemented due to the drought. Since 2015, there appears to be a rebound in water production in North Stockton from pre-drought conditions, but water demands are still below pre-drought conditions.

Figure 3-2 displays the monthly water production from 2006 through 2019 for the COSMUD South Stockton water service area. South Stockton is supplied by SEWD, supplemented by groundwater. The DWTP does not supply South Stockton since it is not hydraulically connected. The highest average day water production occurred in 2007 and 2008 with a total of 7.1 mgd. The lowest average day water production occurred in 2015 with a total of 3.8 mgd produced, at the height of the drought. In 2019, the average day water production was 5.3 mgd. The same trends occurred in South Stockton as in North Stockton, and there was a steady decrease in water production from 2007 through 2015 and then a rebound from 2015 to 2019.

Figure 3-3 displays the monthly water production from 2006 through 2019 for the COSMUD Central Stockton water service area. The Walnut Plant Area in Central Stockton relies exclusively on water purchased from SEWD and wheeled through the Cal Water system. The Walnut Plant Area is hydraulically isolated from the North and South Stockton water service areas. The highest average day water production occurred in 2006 with a total of 0.4 mgd. The Walnut Plant Area has since experienced an overall decrease in water demand. In 2019, the average day water production was 0.2 mgd.

Figure 3-4 displays the monthly water production from 2006 through 2019 for the entire COSMUD water service area. The highest average day production, systemwide, occurred in 2007 with a total of 35.8 mgd produced for the COSMUD. The lowest average day production occurred in 2015 with only 23.5 mgd produced. Since 2015, the average day production has been increasing and in 2019, 27.4 mgd of water was produced for the COSMUD.

[5] As noted in Chapter 1, the Walnut Plant Area has not been evaluated in this Water Master Plan Update. However, discussion of water production for the Walnut Plant Area has been included here as it is part of the total COSMUD water production.

Table 3-1. Historical Water Production[(a)]

	North Stockton						South Stockton						Total					
Year	SEWD, af	DWSP, af	Groundwater, af	Total, af	Surface Water Percent of Total, af	Groundwater Percent of Total, af	SEWD, af	Groundwater, af	Total, af	Surface Water Percent of Total, af	Groundwater Percent of Total, af	Walnut Plant Area (SEWD), af	SEWD, af	DWSP, af	Groundwater, af	Total, af	Surface Water Percent of Total, af	Groundwater Percent of Total, af
2006	18,010	0	11,309	29,320	61%	39%	4,079	2,009	6,088	67%	33%	407	22,496	0	13,319	35,815	63%	37%
2007	20,461	0	11,326	31,787	64%	36%	7,101	876	7,977	89%	11%	311	27,873	0	12,202	40,075	70%	30%
2008	21,364	0	10,280	31,644	68%	32%	7,157	841	7,998	89%	11%	256	28,776	0	11,121	39,897	72%	28%
2009	21,985	0	6,810	28,795	76%	24%	6,845	698	7,542	91%	9%	241	29,072	0	7,508	36,579	79%	21%
2010	22,730	0	5,034	27,764	82%	18%	6,820	439	7,260	94%	6%	236	29,786	0	5,473	35,260	84%	16%
2011	22,001	0	5,797	27,798	79%	21%	7,483	211	7,694	97%	3%	234	29,718	0	6,008	35,727	83%	17%
2012	17,546	9,559	3,219	30,325	89%	11%	6,360	175	6,535	97%	3%	240	24,146	9,559	3,394	37,100	91%	9%
2013	10,564	15,463	3,772	29,799	87%	13%	6,288	314	6,602	95%	5%	291	17,143	15,463	4,085	36,692	89%	11%
2014	9,391	9,598	6,842	25,831	74%	26%	5,165	386	5,551	93%	7%	220	14,777	9,598	7,228	31,603	77%	23%
2015	2,211	14,059	5,641	21,911	74%	26%	3,241	978	4,219	77%	23%	182	5,634	14,059	6,619	26,312	75%	25%
2016	139	18,922	3,569	22,629	84%	16%	4,822	179	5,002	96%	4%	214	5,175	18,922	3,748	27,845	87%	13%
2017	2	20,843	2,852	23,696	88%	12%	5,190	114	5,304	98%	2%	241	5,433	20,843	2,965	29,241	90%	10%
2018	0	21,229	3,206	24,435	87%	13%	5,426	30	5,456	99%	1%	212	5,639	21,229	3,236	30,103	89%	11%
2019	0	20,809	3,770	24,579	85%	15%	5,920	8	5,928	100%	0%	176	6,096	20,809	3,778	30,684	88%	12%
Average	**11,886**	**9,320**	**5,959**	**27,165**	**78%**	**22%**	**5,850**	**518**	**6,368**	**92%**	**8%**	**247**	**17,983**	**9,320**	**6,478**	**33,781**	**81%**	**19%**
5-Year Average	**470**	**19,172**	**3,807**	**23,450**	**84%**	**16%**	**4,920**	**262**	**5,182**	**94%**	**6%**	**205**	**5,595**	**19,172**	**4,069**	**28,837**	**86%**	**14%**

(a) Source: Data for 2009-2019 (City Monthly Month_Year.xlsx) provided by City staff in May 2020.

Last Revised: 09-02-16; o\c\418\02-14-36\e\T120\Ch3_TablesandFigures.xlsx

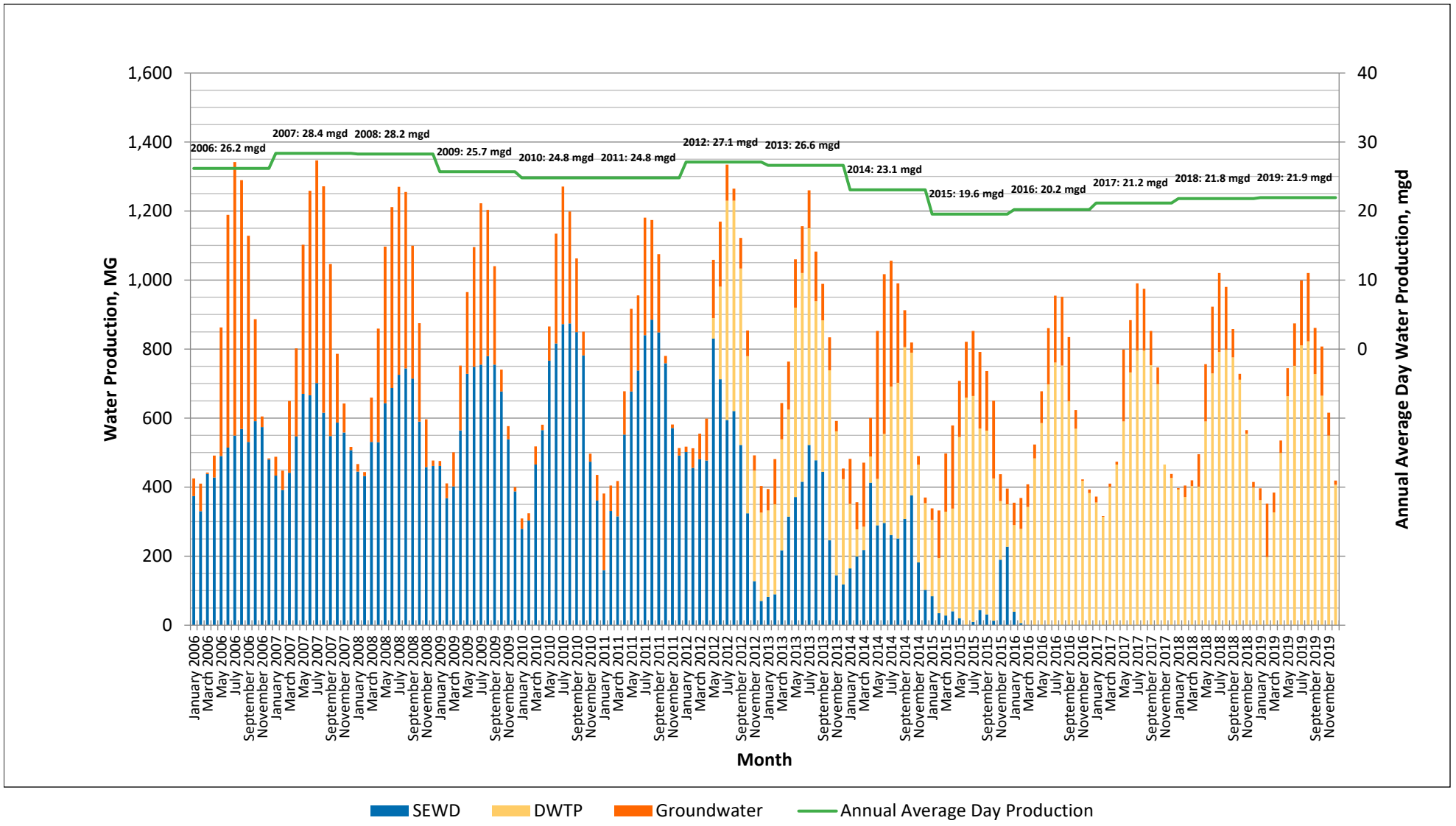


Figure 3-1

Historical Monthly Water Production for North Stockton

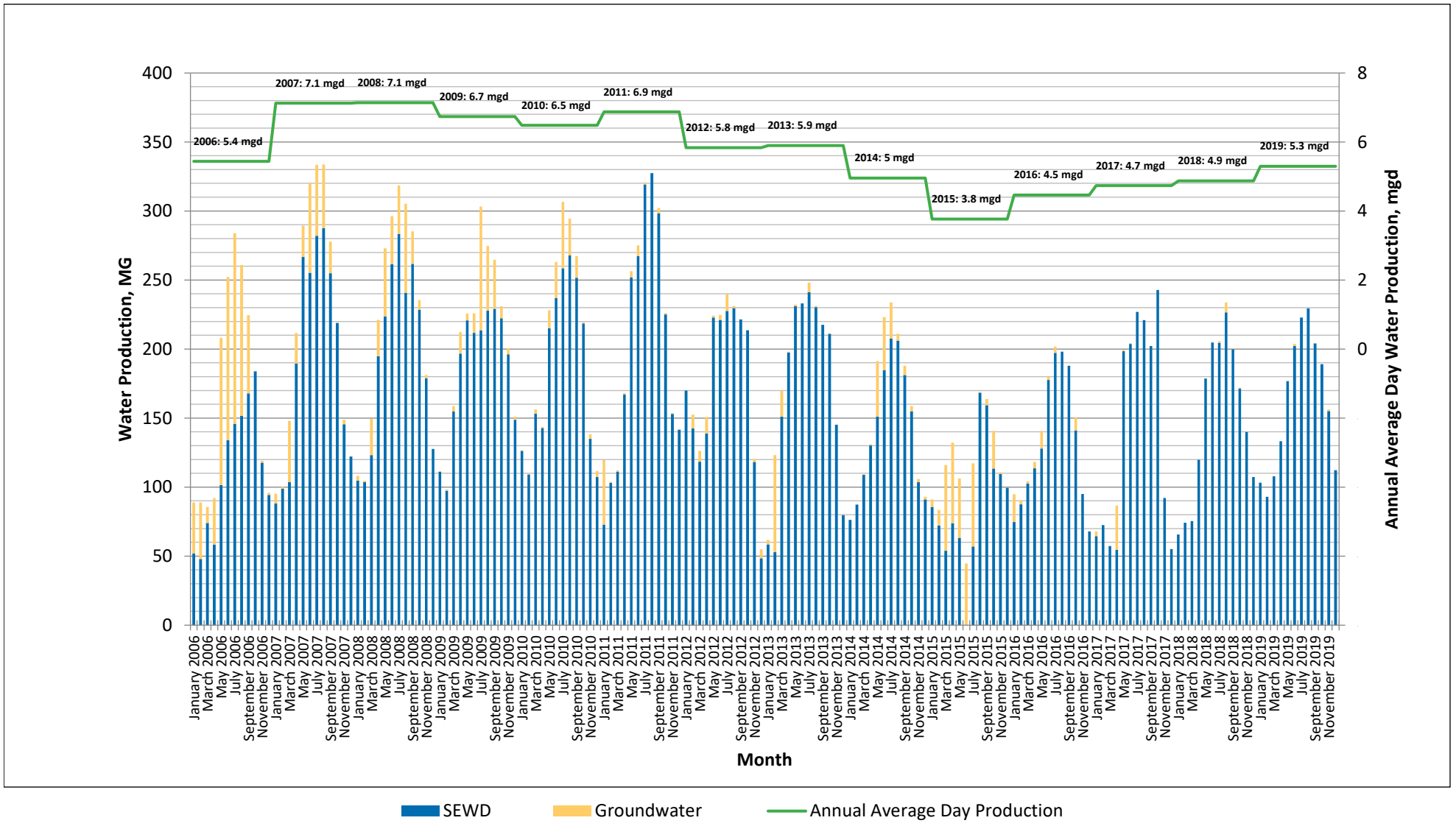
City of Stockton
Water Master Plan Update

Notes:

1. Source: Data for 2009-2019 (City Monthly Month_Year.xlsx) provided by City staff in May 2020.
2. Abbreviations: MG = million gallons; mgd = million gallons per day; SEWD = Stockton East Water District; DWTP = Delta Water Treatment Plant.

WEST YOST

Last Revised: 09-02-16; o\c\418\02-14-36\e\T120\Ch3_TablesandFigures.xlsx



Notes:

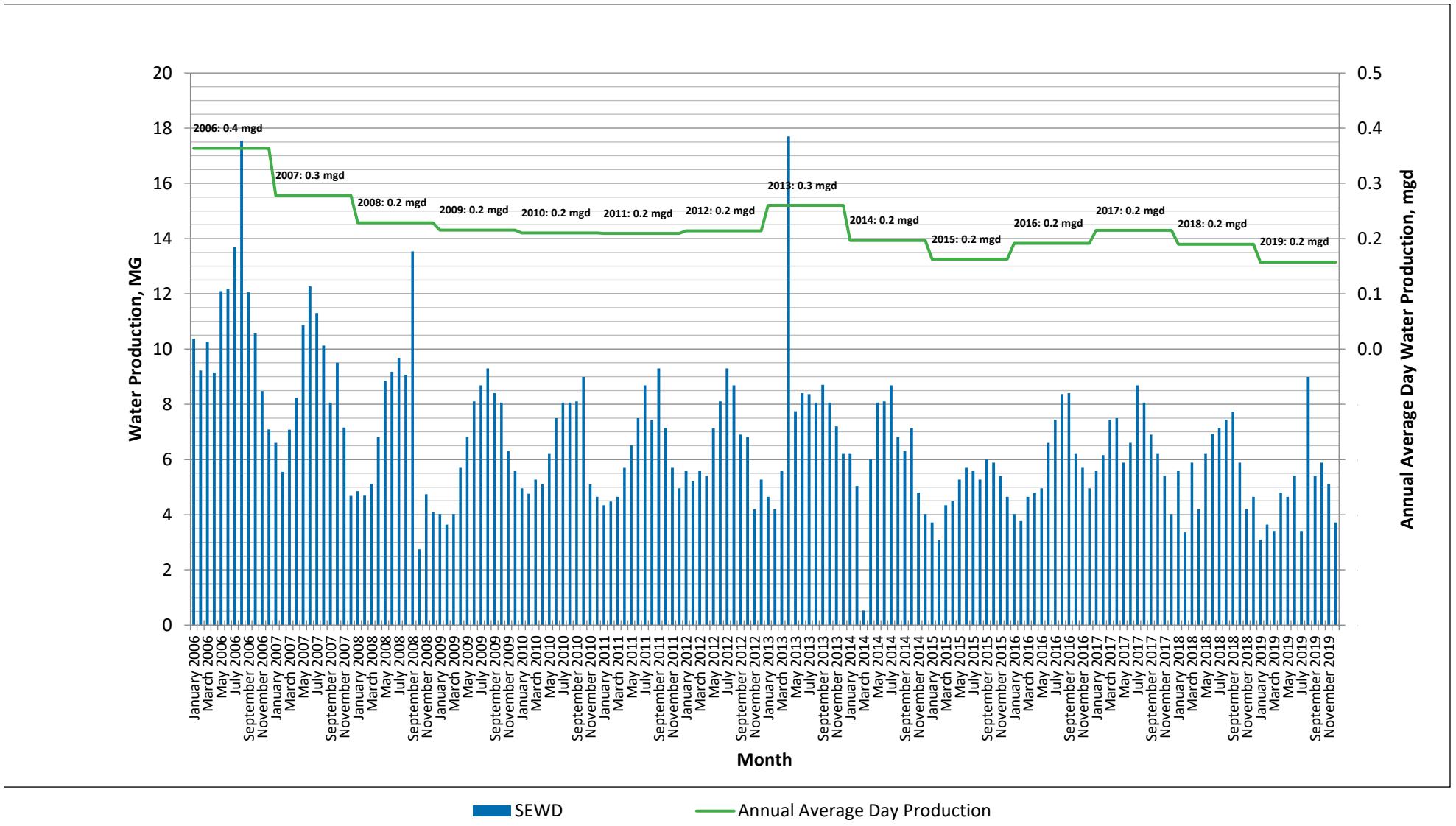
1. Source: Data for 2009-2019 (City Monthly Month_Year.xlsx) provided by City staff in May 2020.
2. Abbreviations: MG = million gallons; mgd = million gallons per day; SEWD = Stockton East Water District.

Figure 3-2

Historical Monthly Water Production for South Stockton

City of Stockton
Water Master Plan Update

Last Revised: 09-02-16; o\c\418\02-14-36\e\T120\Ch3_TablesandFigures.xlsx



Notes:

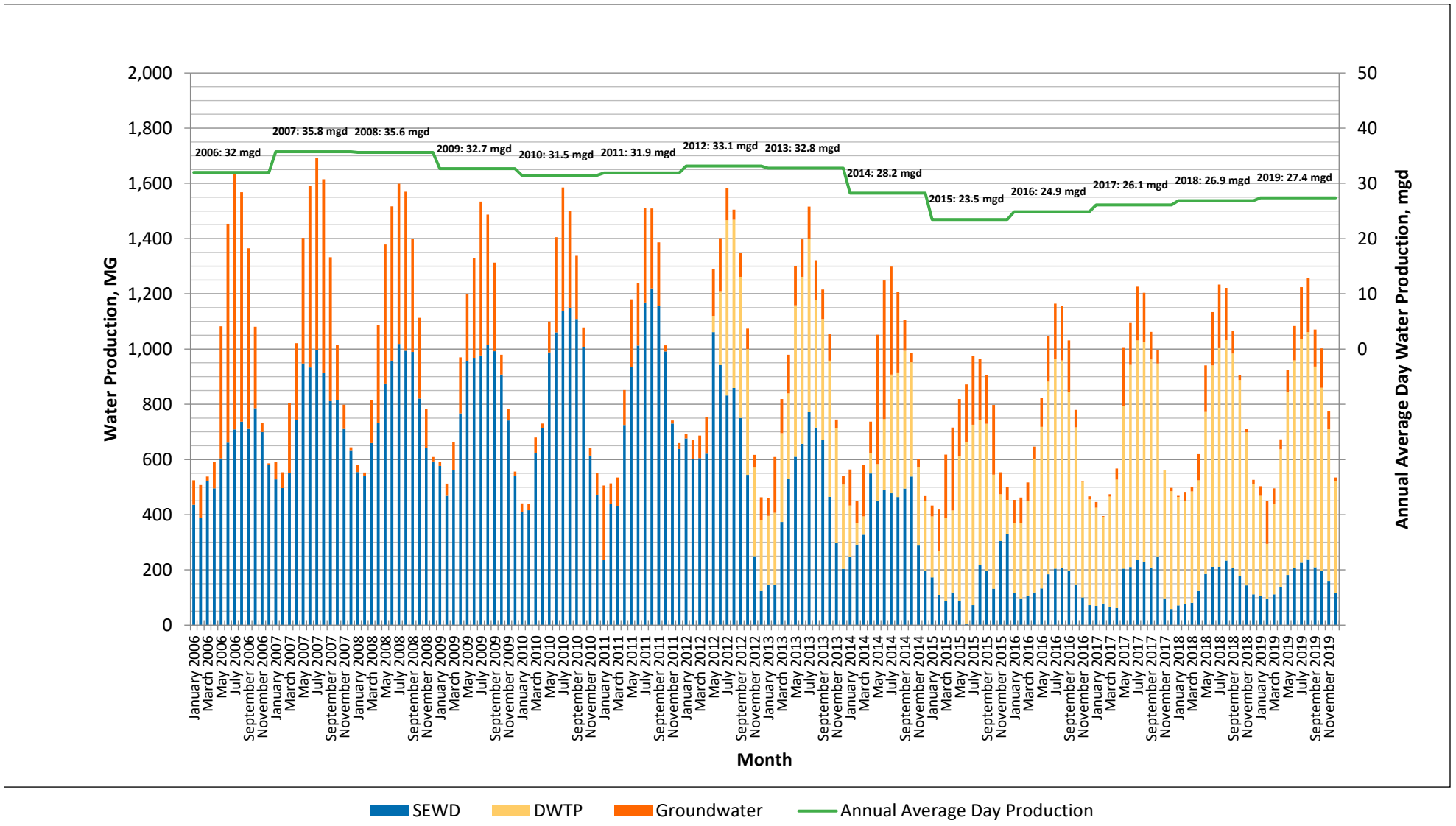
1. Source: Data for 2009-2019 (City Monthly Month_Year.xlsx) provided by City staff in May 2020.
2. Abbreviations: MG = million gallons; mgd = million gallons per day; SEWD = Stockton East Water District.

Figure 3-3

Historical Monthly Water Production for the Walnut Plant Area

City of Stockton
Water Master Plan Update

Last Revised: 09-02-16; o\c\418\02-14-36\e\T120\Ch3_TablesandFigures.xlsx



Notes:

1. Source: Data for 2009-2019 (City Monthly Month_Year.xlsx) provided by City staff in May 2020.
2. Abbreviations: MG = million gallons; mgd = million gallons per day; SEWD = Stockton East Water District; DWTP = Delta Water Treatment Plant; COSMUD = City of Stockton Municipal Utility District.

Figure 3-4

Historical Monthly Water Production for COSMUD

City of Stockton
Water Master Plan Update

Table 3-2 summarizes the historical water production by water service area. It compares the baseline water production established in the 2008 WMP to the historical average production (2006 to 2019) and the most recent 5-year average production (2015 through 2019). In general, the COSMUD has experienced a decrease in water production compared to the 2008 WMP baseline production. As discussed later in this chapter, due to the trend in water production increasing from 2015 through 2019, a 10 percent rebound factor will be applied to the 5-year average production from 2015 through 2019 to establish the existing baseline production.

Table 3-2. Historical COSMUD Water Production Comparison[a]

Timeline	North Stockton, afy	South Stockton, afy	Total, afy
2008 WMP Baseline Production[b]	30,380	6,000	36,380
Historical Average Production (2006 to 2019)	27,165	6,368	33,533
5-Year Average Production (2015 through 2019)	23,450	5,182	28,632
Percent Difference between the Recent 5-Year Average Production and the 2008 WMP Baseline Production	**-23%**	**-14%**	**-21%**

(a) Does not include production for the Walnut Plant Area which is minimal and was not evaluated in this Water Master Plan Update.
(b) From Table 3-9 of the 2008 WMP; reflects average of 2004 and 2005 production.
afy = acre feet per year

3.1.2 Per Capita Water Use

Historical per capita water use for the COSMUD water service areas from 2006 to 2019 is presented in Table 3-3 and on Figure 3-5. The per capita water use shown is based on total water production for the COSMUD water service areas (representing all water uses, including all residential and non-residential uses) divided by the COSMUD water service area population. The COSMUD per capita water use has decreased from a maximum of 209 gallons per capita per day (gpcd) in 2007 and 2008 to 153 gpcd in 2019. Recent water use has decreased significantly as indicated by the average per capita water use for the last five years (2015 to 2019), which is equal to 147 gpcd. This lower per capita water use is primarily a response to increased water conservation efforts during and since the recent drought.

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 and set a goal of achieving a 20 percent statewide reduction in urban per capita water use by December 31, 2020. To meet the urban water use target requirement, each retail supplier was required to adopt an interim per capita water use target for 2015 and a final per capita water use target for 2020. The City's adopted targets were 172 gpcd for 2015 and 165 gpcd for 2020.[6] As shown in Table 3-3, the City's 2015 per capita water use was 138 gpcd, well below and in compliance with the City's 2015 goal of 172 gpcd. Although 2020 production data was not available for incorporation into this Water Master Plan Update, it is anticipated that the City's 2020 per capita water use will be in compliance with the City's 2020 goal. Additional discussion regarding the City's compliance with SB X7-7 is provided in the City's 2015 Urban Water Management (UWMP).

[6] City of Stockton, 2015 Urban Water Management Plan, Table 4-1.

Table 3-3. Historical Water Production, Population and Per Capita Water Use

Year	Average Day Water Production, mgd[a]	COSMUD Water Service Area Population[b]	Per Capita Water Use, gpcd
2006	32.0	172,895	185
2007	35.8	170,944	209
2008	35.6	170,017	209
2009	32.7	170,153	192
2010	31.5	178,387	176
2011	31.9	172,941	184
2012	33.1	172,347	192
2013	32.8	171,816	191
2014	28.2	171,183	165
2015	23.5	170,417	138
2016	24.9	172,706	144
2017	26.1	174,995	149
2018	26.9	177,284	152
2019	27.4	179,573	153

(a) Source: Production data are from the consumption, production, and meter data tables in WaterTable.xlsx, provided by the City in May 2020.

(b) Source: Population numbers from 2009 to 2015 are from the City's 2015 UWMP for the COSMUD water service area only. Population numbers from 2016 to 2019 were linearly interpolated, using the 2020 population estimate provided in the 2015 UWMP.

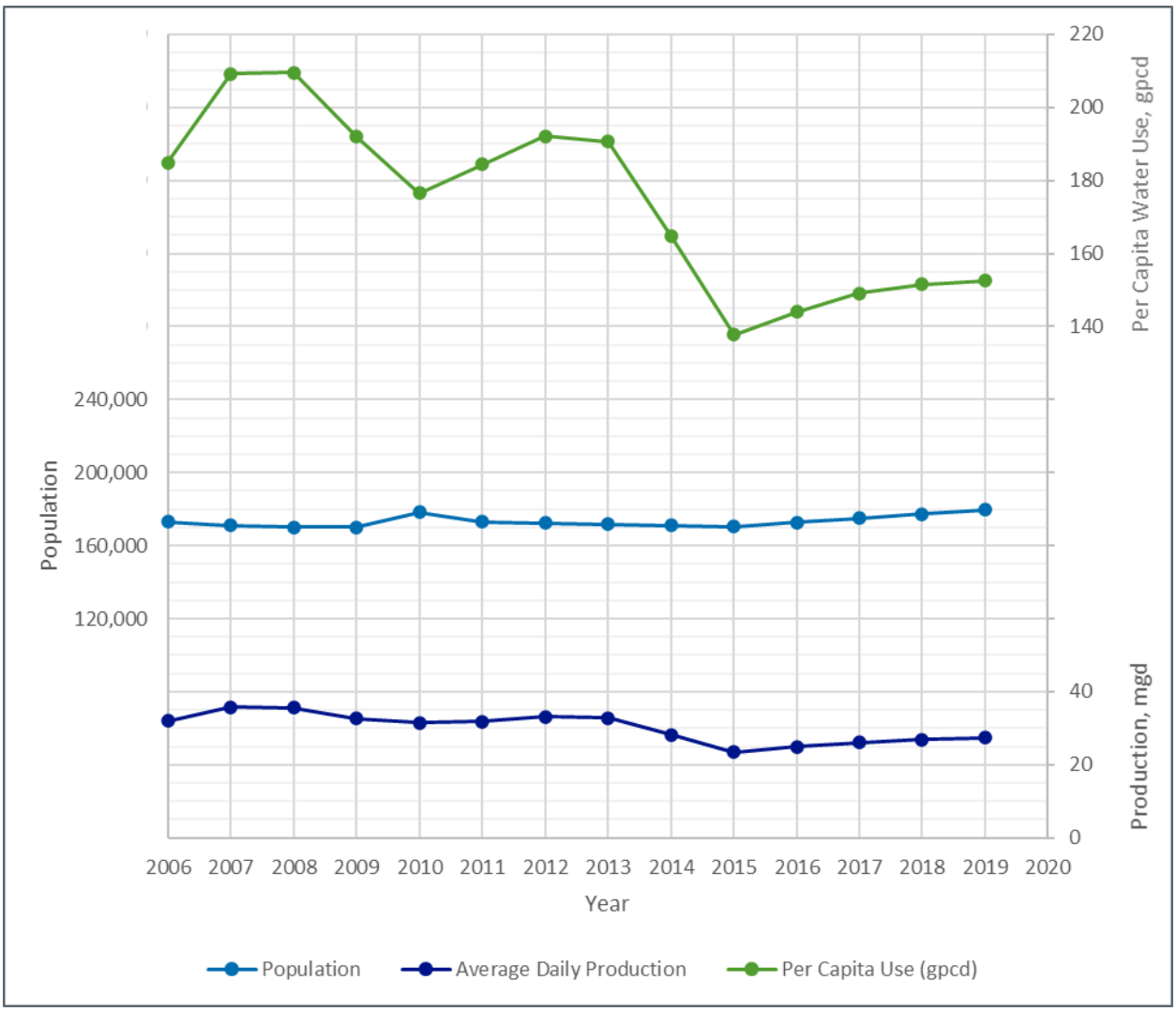


Figure 3-5. Comparison of Historical Per Capita Demand, Average Day Production and Population

3.1.3 Historical Water Consumption

The COSMUD tracks its water consumption through customer meter records. As of 2019, the COSMUD has approximately 49,200 metered water use accounts that serve various customer types. Table 3-4 summarizes the number of customers by meter type. As shown in Table 3-4, the predominant customer type in the COSMUD water service area is residential (either single family or multi-family), which accounts for approximately 95 percent of the total number of water meters. The COSMUD also serves residential customers that are located in unincorporated pockets of San Joaquin County that lie within the COSMUD water service area. Non-residential metered accounts make up approximately 5 percent of the total metered accounts.

Table 3-4. COSMUD Customer Types as of December 2019[(a)]

Customer Type	Number of Meters	Customer Type as a Percent of Total Accounts
Residential		
Single Family and Multi-Family	46,739	95%
Non-Residential		
Industrial	19	<1%
Commercial and Institutional	1,487	3%
Irrigation	912	2%
Non-Residential Subtotal	2,418	5%
Total	**49,157**	**100%**

(a) Source: Data is from the consumption, production, and meter data tables in the WaterTable.xlsx, provided by the City in May 2020.

Table 3-5 summarizes the COSMUD water consumption by customer type from 2017 through 2019. Residential customers account for an average of 69 percent of the total consumption, but make up approximately 95 percent of the total metered accounts as described above. Non-residential customers account for about 31 percent of the total consumption, but make up only 5 percent of the total metered accounts.

Table 3-5. COSMUD Consumption by Customer Type[a]

Customer Type	Consumption, af		
	2017	2018	2019
Residential			
Single Family	14,698	15,077	14,930
Metered to SJ County	1,573	1,422	1,671
Multi Family	2,729	2,772	2,799
Residential Subtotal	19,000	19,272	19,400
Residential Percent of Total	70.4%	69.5%	68.9%
Non-Residential			
Commercial/Institutional	4,265	4,569	4,811
Irrigation	2,816	3,037	3,137
Other (Industrial)	785	790	713
Hydrants Meters/Jumpers	117	45	88
Non-Residential Subtotal	7,984	8,440	8,748
Non-Residential Percent of Total	29.6%	30.5%	31.1%
Residential & Non-Residential Total	26,984	27,712	28,148

(a) Source: Data is from the consumption, production, and meter data tables in the WaterTable.xlsx, provided by the City in May 2020.
(b) San Joaquin County meters are assumed to be residential.

3.1.4 Non-Revenue Water

Non-Revenue water (NRW) is the difference between the quantity of water produced and the quantity of water consumed or metered. Customer water use typically does not equal the total water production because of unmeasured system losses. These "lost" flows, previously referred to as unaccounted for water, are now referred to as NRW. Water utilities strive to minimize the amount of NRW; however, it is difficult to eliminate entirely. There are various reasons why the total customer water use is less than the total amount of water produced by the City. The most common reasons for NRW are due to system losses such as leakage, errors in measurement, and unmetered usage as discussed in detail below:

- Leakage: Leakage is frequently the largest component of NRW and includes losses from distribution and transmission mains, customer service laterals up to the meter, and tanks. The amount of leakage varies from system to system, but there is a general correlation between the age of a system and the amount of NRW. Other factors affecting leakage include system pressure (the higher the pressure, the more leakage), frequency of main and service pipe breaks, and the extent of leakage detection and control policies.

- Errors in Measurement: Flow measurements are not always exact, and thus metered customer usage may contain inaccuracies. Some flow meters under-register actual usage at low flow rates, especially as they age.
- Unmetered Usage: COSMUD may have unauthorized, unmetered connections or other types of unmetered water use. Not all unmetered usage is due to water theft, as fire hydrants, blow-offs, and other maintenance appurtenances are typically not metered.

An estimate of NRW is required for water system planning to project future water production needs, as a system will always have some amount of water loss. NRW ranging from 5 to 10 percent is typical for many water utilities. At the time this Water Master Plan Update was being prepared, the State Water Resources Control Board was in the process of developing water loss performance standards to minimize water waste through system leaks. This is consistent with recommendations from the American Water Works Association (AWWA) which call for the development of system-specific loss targets and key performance indicators for assessing water loss.[7] Adoption of a proposed regulation is anticipated by July 2021.[8]

Table 3-6 summarizes the non-revenue water for the COSMUD system from 2017 through 2019 by comparing water production to water consumption. Based on the 2017, 2018 and 2019 water consumption versus water production, the NRW is approximately 8 percent of the water production. The NRW will be accounted for when projecting the future water production required for near-term (2030) and future (2040) conditions.

Table 3-6. Non-Revenue Water[(a)]

Year	Production, afy	Consumption, afy	NRW, afy[(b)]	NRW as a Percent of Production
2017	29,241	26,984	2,256	7.7%
2018	30,103	27,712	2,390	7.9%
2019	30,684	28,148	2,534	8.3%

(a) Source: Production data are from the consumption, production, and meter data tables in WaterTable.xlsx, provided by COSMUD in May 2020.
(b) Water loss is equal to production minus consumption.

3.2 PEAK WATER USE

Water system facilities are generally sized to meet peak demand conditions. The peaking conditions of most concern for facility sizing (e.g., supply, pumping and storage) are typically Maximum Day plus Fire Flow demand or Peak Hour demand. This section reviews historical peak water use for the COSMUD water service areas, and includes discussion of the maximum day demand, peak hour demand and hourly variations of demand during the maximum demand day.

[7] Key Performance Indicators for Non-Revenue Water, AWWA Water Loss Control Committee Report, November 2019.
[8] SWRCB Fact Sheet on Water Loss Performance Standards, November 18, 2020.

3.2.1 Maximum Day and Peak Hour Demand

Table 3-7 summarizes the average, maximum day, and peak hour demands and the corresponding peaking factors from 2018 and 2019. Only 2018 and 2019 were considered, as this is most representative of recent water use trends after the recent drought. 2020 data was not available for evaluation in this Water Master Plan Update and would likely not be representative of normal system conditions due to the impacts of stay-at-home orders and business closures in response to the COVID-19 pandemic. West Yost reviewed the COSMUD-provided SCADA data to identify historical maximum day and peak hour demands for the respective water service areas. Separate peaking factors for the North Stockton and South Stockton water service areas were calculated as these areas currently operate hydraulically separate from one another. In the 2008 WMP, peaking factors were developed on a systemwide basis since SEWD supplied both water service areas.

Table 3-7. Summary of Historical Maximum Day and Peak Hour Peaking Factors

Year	Average Day Demand (ADD), mgd	Maximum Day Demand (MDD), mgd	Peak Hour Demand (PHD), mgd	Maximum Day Peaking Factor (MDD/ADD)	Peak Hour Peaking Factor (PHD/ADD)
North Stockton					
2018	21.8	33.3	50.2	1.5	2.3
2019	21.9	30.8	48.1	1.4	2.2
South Stockton					
2018	4.9	8.7	16.0	1.8	3.3
2019	5.3	9.0	14.8	1.7	2.7

3.2.2 Recommended Demand Peaking Factors

Table 3-8 summarizes the recommended peaking factors for this WMP. These peaking factors will be subsequently used to evaluate and size distribution system pipelines, storage and reservoir pumping facilities, as well as define water supply needs and capacity requirements.

For planning purposes, the maximum day peaking factors for North Stockton and South Stockton are recommended to be 1.6 and 1.7, respectively. The recommended peaking factors for North and South Stockton are similar to the previous systemwide peaking factor of 1.7 used in the 2008 WMP. For North Stockton, while the historical maximum day peaking factors have been slightly less than the recommended factor of 1.6, the 1.6 factor is recommended as it is anticipated that water use might continue to rebound somewhat. For South Stockton, the historical peaking factor of 1.7 is considered to be appropriate even though the 2018 factor was calculated to be 1.8.

The peak hour peaking factors for North Stockton and South Stockton vary, as the land uses are distinctly different between the two water service areas. The recommended peak hour peaking factor for North Stockton is 2.5 times average day and the recommended peak hour peaking factor for South Stockton is 3.3 times average day. In the 2008 WMP, the peak hour demand was not calculated due to insufficient data. The adopted peak hour peaking factor in the 2008 WMP was estimated to be 3.5 times average day, systemwide, based on a single data point. The reduction in the North Stockton peak hour peaking factor is attributed to lower overall water use, particularly irrigation water use. The slight reduction in the South Stockton peak hour peaking factor reflects a decrease in large industrial customers in South Stockton.

Table 3-8. Recommended Demand Peaking Factors	
Demand Condition	Peaking Factor[(a)]
Maximum Day Demand	
North Stockton	1.6 times Average Day Demand
South Stockton	1.7 times Average Day Demand
Peak Hour Demand	
North Stockton	2.5 times Average Day Demand
South Stockton	3.3 times Average Day Demand

3.2.3 Maximum Day and Peak Hour Diurnal Demand

The maximum day demand (including the peak hour) diurnal was developed by reviewing SCADA data from 2018 and 2019. The diurnal pattern was then subsequently adjusted so that it is consistent with the peaking factors that are summarized above in Table 3-8. Figure 3-6 shows the maximum day with peak hour diurnal pattern developed as part of this Water Master Plan Update. This diurnal pattern is separate from the diurnal pattern developed for the model calibration (discussed in Chapter 6) and is subsequently used in Chapters 7 and 8 for the existing and future distribution system evaluations, respectively.

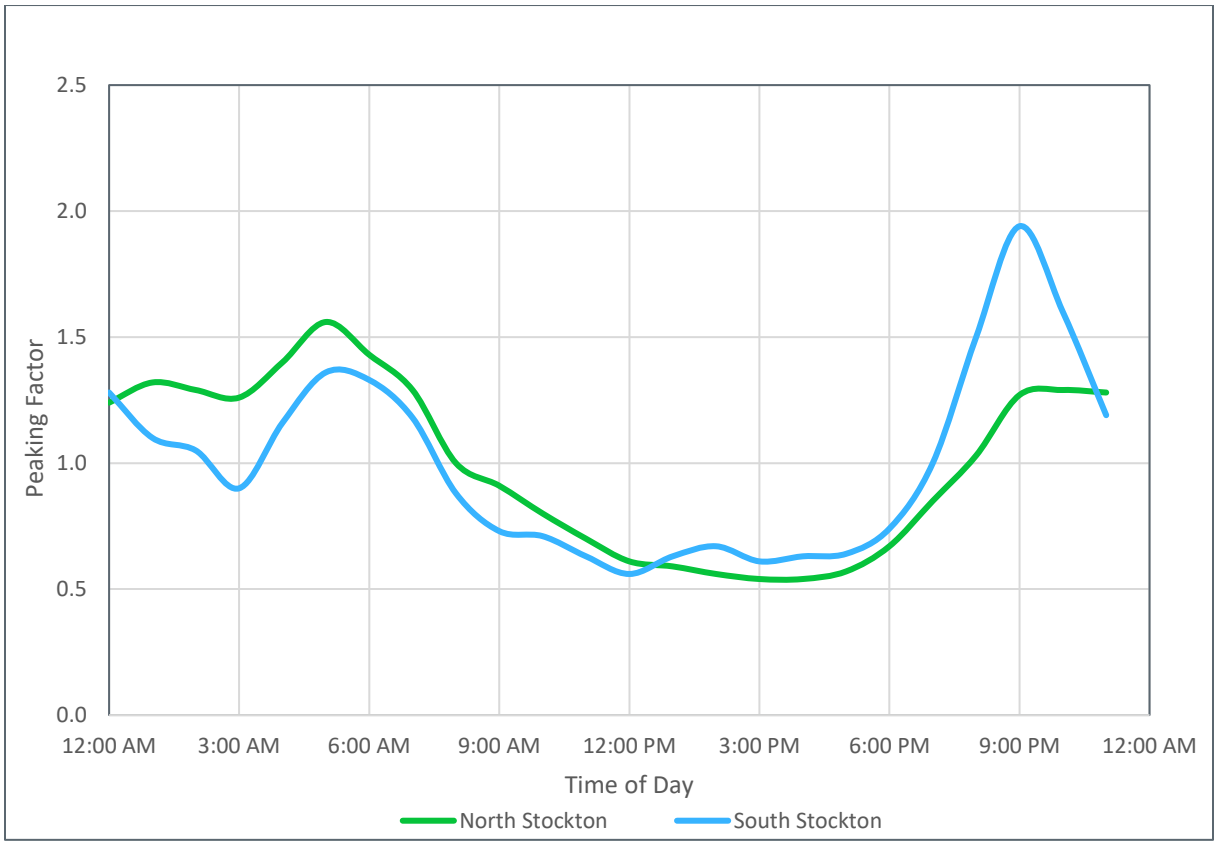


Figure 3-6. North Stockton and South Stockton Maximum Day Diurnal Patterns

3.3 EXISTING AND FUTURE LAND USE AND GROWTH PROJECTIONS

The following sections discuss the existing and projected future land use for the COSMUD water service area.

3.3.1 Existing Land Use

Generally speaking, North Stockton is primarily comprised of residential land uses and South Stockton is mostly comprised of industrial and commercial uses with some residential uses (with most residential uses being located in the Weston Ranch development area).

Water use for developed parcels within the COSMUD water service area is captured by the metered water consumption data. This water consumption data (described in Section 3.1.3) was spatially located by linking metered billing/consumption data to the COSMUD meter shapefile. This data was used to update the water system hydraulic model, which is discussed in Chapter 6.

3.3.2 Projected Future Land Use

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 Study Areas, the City has identified, or is actively working with several project proponents to identify, future development areas that are either within existing City Limits or outside of City Limits but within the General Plan Sphere of Influence (SOI). The April 2020 Sphere of Influence Plan/Municipal Service Review Report (SOI/MSR Report) defines the anticipated level of development and municipal service needs for near-term (2030) development. The 2040 GPU and SOI/MSR Report provide for a total of 40,900 new residential dwelling units city-wide. 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). Near-term (2030) and future (2040) projects are indicated in Table 3-9.

West Yost compared the planned development projects listed in both the 2040 GPU and the SOI/MSR Report to the future planned developments listed on the City's Planning webpage to determine if projected land use has changed since the completion of the 2040 GPU. Future development plans and land uses were reviewed and confirmed with City Community Development Department staff in July 2020. Table 3-9 provides a summary of planned future development projects within the entire City area, and identifies those projects that are within the COSMUD water service area along with their land use type and projected dwelling units and/or acreage and estimated time of completion (near-term vs. future). New project information obtained from the City's Planning webpage review is noted in the table footnotes. Projected residential acreages and dwelling units and non-residential acreages summarized in this table are net new or incremental. Figure 3-7 shows the approximate locations and boundaries for the projects that are listed in Table 3-9.

Table 3-9. Future Incremental Development Summary

Study Area or Development Name[u]	Water Service Provider	Percentage Within COSMUD Water Service Area	COSMUD Area	Percent Developed by 2030	Future Incremental Development							
					Single Family (Dwelling Units)	Single Family (Developable Gross Acres)	Multi-Family Family (Dwelling Units)	Multi-Family Family (Developable Gross Acres)	Parks (Developable Gross Acres)	Commercial (Developable Gross Acres)	Industrial (Developable Gross Acres)	Total Area (Developable Gross Acres)
Study Areas												
Study Area 1 - Eight Mile Road Area	COSMUD	100%	North	13%	1,379.0	232.1	1,197.7	73.2	157.0	0.6	0.0	462.9
Study Area 2 - Pacific Avenue Corridor	COSMUD Cal Water	5%	North	0%	0.0	0.0	5.5	0.2	0.0	0.2	0.0	0.4
Study Area 3 - West Lane and Alpine Road Area[e]	COSMUD Cal Water	10%	North	0%	7.7	6.0	68.0	2.2	0.0	0.6	0.0	8.8
Study Area 4 - Port/Waterfront	Cal Water	0%	--	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Study Area 5 - El Dorado/Center Corridors	Cal Water	0%	--	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Study Area 6 - Miner/Weber Corridors	Cal Water	0%	--	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Study Area 7 - Wilson Way Corridor	Cal Water	0%	--	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Study Area 8 - I-5/Highway 4 Interchange	Cal Water	0%	--	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Study Area 9 - Railroad Corridor at California Street	Cal Water	0%	--	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Study Area 10 - I-5 and Charter Way Area	Cal Water	0%	--	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	Cal Water	0%	--	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Study Area 12 - Airport Way Corridor	COSMUD Cal Water	20%	South	0%	0.0	0.0	21.5	0.9	0.0	2.0	2.6	5.6
Study Area 13 - Mariposa and Charter Area	Cal Water	0%	--	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Study Area 14 - East Weston Ranch	COSMUD Cal Water	100%	South	0%	0.0	0.0	0.0	0.0	0.0	14.8	0.0	14.8
Study Area 15 - South of French Camp Road	COSMUD	100%	South	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Study Area 16 - E French Camp Rd Area	COSMUD	100%	South	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Subtotal (Study Areas)	**1,386.7**	**238.1**	**1,292.6**	**76.5**	**157.0**	**18.3**	**2.6**	**492.5**
Approved/Pending Development Projects Within City Limit												
Westlake Villages	COSMUD	100%	North	0%	2,630.0	680.0	0.0	0.0	12.8	0.0	0.0	692.8
Delta Cove	COSMUD	100%	North	0%	1,164.0	132.7	381.0	47.6	57.7	2.6	0.0	240.6
North Stockton Projects III	COSMUD	100%	North	0%	2,220.0	355.0	0.0	0.0	0.0	0.0	0.0	355.0
Cannery Park	COSMUD	100%	North	0%	981.0	272.0	210.0	16.0	0.0	104.0	0.0	392.0
Nor Cal Logistics Center[f]	COSMUD	100%	South	100%	0.0	0.0	0.0	0.0	0.0	0.0	325.0	325.0
Crystal Bay	COSMUD	100%	North	0%	951.0	19.4	392.0	78.7	10.0	0.0	0.0	108.1
Sanctuary	COSMUD	100%	North	0%	5,452.0	1,026.0	1,618.0	67.4	193.0	35.5	0.0	1,321.9
Tidewater Crossing[g]	COSMUD	100%	South	50%	0.0	0.0	0.0	0.0	17.2	20.3	792.0	829.5
Open Window	Cal Water	0%	--	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weston Ranch Town Center	COSMUD	100%	South	0%	0.0	0.0	0.0	0.0	0.0	41.5	0.0	41.5
Airport Way and Sperry Road Commercial Project[h]	COSMUD	100%	South	100%	0.0	0.0	0.0	0.0	0.0	2.0	0.0	2.0
Tuscany Cove[i]	Cal Water	0%	--	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CarMax Superstore Project[j]	COSMUD	100%	North	100%	0.0	0.0	0.0	0.0	0.0	10.6	0.0	10.6
Thornton and Eight Mile Road Development[k]	COSMUD	100%	North	100%	0.0	0.0	0.0	0.0	0.0	2.1	0.0	2.1
University Park[l]	Cal Water	0%	--	0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Subtotal (Approved/Pending Projects Within City Limit)	**13,398.0**	**2,485.1**	**2,601.0**	**209.7**	**290.7**	**218.6**	**1,117.0**	**4,321.0**
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence												
Mariposa Road Community[m]	COSMUD Cal Water	100%	South	0%	8,955.0	939.0	1,553.0	585.0	206.3	150.0	0.0	1,880.3
Airpark 599[n]	COSMUD	100%	South	100%	0.0	0.0	0.0	0.0	0.0	5.4	259.7	265.1
Tra Vigne[o]	COSMUD	100%	North	100%	1,165.0	260.7	340.0	11.7	20.4	10.4	0.0	303.2
Mariposa Industrial Park[p]	COSMUD	100%	South	100%	0.0	0.0	0.0	0.0	0.0	0.0	203.5	203.5
Sanchez-Hoggan Annexation Project[q]	COSMUD	100%	South	100%	0.0	0.0	0.0	0.0	0.0	0.0	169.8	169.8
Century Mobile Home Park[r]	COSMUD	100%	South	100%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Veterans Affairs Medical Campus[s]	COSMUD	100%	South	100%	0.0	0.0	0.0	0.0	0.0	37.0	0.0	37.0
Niagara Bottling Plant[t]	COSMUD	100%	South	100%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Subtotal (Approved/Pending Projects Outside City Limit but Within Sphere of Influence)	10,120.0	1,199.7	1,893.0	596.7	226.7	202.8	632.9	2,858.9
Remaining Development Outside of Study Areas and Outside of Approved/Pending Projects	COSMUD	50%	North	100%	750.6	635.2	0.0	0.0	0.0	0.0	0.0	635.2
				Grand Total 2040 (Buildout)	**25,655.3**	**4,558.2**	**5,786.6**	**882.9**	**674.3**	**439.7**	**1,752.5**	**8,307.6**
				Grand Total 2030 (Near-Term)	**2,099.7**	**927.0**	**499.9**	**21.5**	**49.9**	**77.8**	**1,353.9**	**2,430.1**

(a) Developable gross acres is defined as the existing or planned total developable area associated with the stated land use types (e.g., Single Family, Multi Family, Commercial, Industrial) and does not represent the Total Area. Therefore, developable gross area does not include other area associated with other land use types such open space, mixed use, roads, etc.
(b) Existing Dwelling Units/Developable Gross Acres is defined as the count of units or sum of area that is currently developed.
(c) Net New Dwelling Units/Developable Gross Acres is defined as the total incremental new units/area of the associated land use type that is planned to be added (or removed if it is being redeveloped).
(d) 2040 Dwelling Units/Developable Gross Acres is defined as the total anticipated unit count or area of the associated land use type that is expected by 2040. This is calculated by summing Existing with Net New.
(e) Updated per Calaveras Estates IV Initial Study/Mitigated Negative Declaration report (IS/MND) (October 2017). Project is contained within Study Area 3.
(f) Updated per NorCal Logistics Draft Environmental Report (February 2015). Developable gross acres for industrial land use, 325 acres, includes the Niagara Bottling Plant.
(g) Exhibit C-2 City of Stockton Rezone (VVH Engineers, February 2019). A large portion of Tidewater Crossing is now the South Stockton Commerce Center.
(h) Updated per Airport Way and Sperry Road Commercial Project IS/MND (January 2018).
(i) Updated per Tuscany Cove IS/MND (March 2018).
(j) Updated per CarMax Auto Superstore DEIR (November 2018).
(k) Updated per Thornton Road and Eight Mile Road Arco Station Project IS/MND (October 2017).
(l) Update per University Park Master Development Plan (December 2003).
(m) Not updated, values reflect the previous planning efforts described in the 2018 Placeworks Utility Supplement. The development's entitlement has expired. For the purposes of this water master plan, it is assumed that the Mariposa Road Community will be served entirely by COSMUD for water.
(n) Updated per land use plan as of 10/15/2019, assuming all phases (Phases 1 through 3) are built.
(o) Updated per Tra Vigne EIR Table 2-2 (April 2018) and Exhibit 4.1 (NorthStar Engineering Group, September 2019).
(P) Updated per Annexation Application (Septermber 2020).
(q) Updated per Sanchez-Hoggan Annexation DEIR (March 2020).
(r) Century Mobile Home Park Consolidation with the City of Stockton Water Main Extension Project (Blackwater Engineers, March, 2015)
(s) Updated per Veterans Affairs Clinic Off-Site Improvement Project DEIR (September 2019).
(t) Niagara Bottling Plant acreage not known. Project proponents have requested a maximum capacity of 1,800 gpm, assumed to be non-peaked. See footnote f.
(u) The major developments and study areas listed in Table 3-7 were confirmed with City Planning Staff as future projects to be included in the 2020 WMPU. The future developments are preliminary and subject to change. Upon City approval, infrastructure required to serve a development and impacts to the existing water system will need to be confirmed. Future development in areas not designated as major developments or study areas will need to be evaluated when development plans are available. Refer to Figure 3-7 for the approximate location of each future development and study area.

EXHIBIT 1

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F3_7_FutLandUse.mxd - mmcwilliams - 1/26/2021

Study Area1
Study Area1
Study Area1
Study Area1
Crystal Bay
Westlake Villages
Delta Cove
Sanctuary
North Stockton Projects III
Tra Vigne
Cannery Park
Thornton Road and Eight Mile Road Arco Station Project
See Note 1
CarMax Superstore
Study Area2
Study Area3
University Park
Tuscany Cove
Study Area4
Study Area5
Study Area6
Study Area7
Study Area8
Study Area9
Study Area10
Study Area11
Study Area12
Study Area13
Study Area14
Study Area15
Study Area15
Study Area16
Study Area16
Mariposa Industrial Park See Note 5
Mariposa Road Community
Sanchez-Hoggan Annexation Project
NorCal Logistics Center
Airport Way and Sperry Road Commercial Project
Weston Ranch Towne Center
Tidewater Crossing
Airpark 599
Niagara Bottling Facility See Note 6
Veterans Affairs Medical Campus
South Stockton Commerce Center
Sanchez-Hoggan Annexation Project
Century Mobile Home Park
Tidewater Crossing

HARNEY LN
ARMSTRONG RD
LIVE OAK RD
EIGHT MILE RD
THORNTON RD
DAVIS RD
LOWER SACRAMENTO RD
WEST LN
RINDGE RD
BEAR CREEK LEVEE RD
ASHLEY
HILDRETH LN
HAMMER LN
ALPINE RD
FAIRCHILD LN
CHEROKEE RD
WATERLOO RD
MARCH LN
ST ANDREWS DR
BROOKSIDE RD
PERSHING AVE
PACIFIC AVE
EL DORADO ST
CALIFORNIA ST
FREMONT ST
JACOBS RD
HOLT RD
AIRPORT WAY
B ST
MARIPOSA RD
MANGELS RD
INLAND DR
HOWARD RD
HARLAN RD
MANTHEY RD
LATHROP RD
AUSTIN RD
LOUISE AVE

Notes:
1. The southern portion of the Tra Vigne development, generally south of Bear Creek, does not have active specific plans, but is anticipated to be Low Density Residential in the future. For the purposes of 2020 WMPU, no demand was added for the area south of Bear Creek.
2. The portion of Study Area 1, west of Davis Road, does not have an associated future land use plan. Water demands for Study Area 1 planned land use are assumed to be in the area south of Eight Mile Road.
3. Study Areas 4 through 11, Study Area 13, Open Window, University Park, and Tuscany Cove are not within the COSMUD Water Service Area.
4. Study Area 2, Study Area 3, Study Area 12, Study Area 14, and Mariposa Road Community are only partially within the COSMUD Water Service Area.
5. Mariposa Industrial Park extents based on City provided project information, provided to West Yost on 10/29/2020.
6. Niagara Bottling Facility included as part of future development based on City Will Serve Letter, provided to West Yost on 10/15/2020.
7. The major developments and study areas displayed were confirmed with City Planning Staff as future projects to be included in the 2020 WMPU. Future developments are preliminary and subject to change. Upon City approval, infrastructure required to serve a development and impacts to the existing water system will need to be confirmed. Future development in areas not designated as major developments or study areas will need to be evaluated when development plans are available.
8. Refer to Table 3-9 in the 2020 WMPU for planned land use (dwelling units and acreage) for each proposed development or study area shown.

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

N
0 0.75 1.5
Miles

Figure 3-7

Summary of Future Developments

City of Stockton
Water Master Plan Update

Since COSMUD only serves the North Stockton and South Stockton areas, with Cal Water providing water service to the Central Stockton area, West Yost determined which future planned developments will be served by COSMUD, and which future planned developments are only partially within the COSMUD water 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 residential dwelling units City-wide.

It should be noted that portions of Study Areas located outside the General Plan SOI (e.g., portions of Study Areas 1 and 15) have not been evaluated in this Water Master Plan Update. Similarly, areas within the General Plan SOI which are not designated as Study Areas or planned development projects have not been evaluated in this Water Master Plan Update 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.

The Mariposa Road Community in South Stockton is a large future development area that will likely consist of a mix 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 Water Master Plan Update, it was assumed that the Mariposa Road Community will be developed by 2040, based on the most recent land use plan, and be served entirely by COSMUD. This future development is one of the largest drivers for future growth within the COSMUD South Stockton water service area. In addition, although this development area is located within both the COSMUD water service area and the Cal Water service area, for the purposes of this Water Master Plan Update, it was conservatively assumed that the COSMUD would serve the entire Mariposa Road Community area. As described further in Chapter 8, any recommended future water system improvements associated with the Mariposa Road Community should be reviewed and confirmed prior to facility design and construction based on future confirmed development plans.

Table 3-10 summarizes the future planned development within the COSMUD water service area by land use designation. North Stockton will experience the largest increase in residential development. The largest planned development is the Sanctuary Project in North Stockton. It will consist of single-family, multi-family, 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 the South Stockton Commerce Center.

As noted in Table 3-9, the Niagara Bottling Plant Project is included in the industrial acreage for the NorCal Logistics Center; however, the water demands for this project are specific to the proposed operations of the project and have been estimated separately. Updated plans for this facility have not been formally submitted to the COSMUD; however, project proponents have specified a desired water capacity of 1,800 gpm. This value was used in the water demand projections discussed in subsequent sections.

Table 3-10. Future Planned Development within the COSMUD Water Service Area[a]

Future Land Use Designation	Units	Near-Term (2030) Total Development	Future (2040) Total Development
North Stockton			
Single Family Residential	DU	2,100	16,700
Multi Family Residential	DU	500	4,212
Commercial	Acres	23	167
Industrial	Acres	0	0
Parks	Acres	41	451
South Stockton			
Single Family Residential	DU	0	8,955[b]
Multi Family Residential	DU	0	1,575[b]
Commercial	Acres	55	273
Industrial	Acres	1,354	1,753
Parks	Acres	9	224

(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 (see Table 3-9 for additional information).

(b) All of the Single Family Residential and most of the Multi Family Residential is associated with the Mariposa Road Community.

DU = Dwelling Unit

3.4 WATER USE FACTORS

To develop land use-based water demand projections, water use factors are applied to the projected land uses (refer to Section 3.3.2 Projected Future Land Use). To develop water use factors, COSMUD staff provided West Yost with the following data:

- 2018 - 2020 water meter records with Location IDs
- Spatially-located water meter locations with Location IDs and APNs
- City of Stockton 2040 General Plan (2040 GPU) land use maps in GIS format
- City of Stockton April 2020 Sphere of Influence Plan/Municipal Service Review Report

Water use factors were then determined by using the following methodology:

- Annual water meter records were first linked to the spatially-located water meter locations by using the Location ID
- Spatially-located water meter locations were then linked to the parcel file with the City's 2040 GPU land use designations by using the APN

This process provided the means to calculate water use factors for each land use designation defined in the 2008 WMP by using the total water use data from the water meter records that have been linked to parcels assigned with a 2040 GPU land use designation and dividing that by the corresponding linked acreage. The area-based water use factors (WUFs) were then compared with the water use factors

reported in the 2008 WMP for most land use designations. It should be noted that the 2008 WMP only developed area-based WUFs. Current land use information, specifically for residential land uses, is projected in terms of dwelling units. Therefore, area-based WUFs for residential land uses were developed for the sole purpose of comparison to the 2008 WMP factors.

In addition, land use designations defined in the 2008 WMP do not entirely align with the current, simplified land use designations contained in the 2040 GPU. Similar to the area-based factors above, WUFs were developed using the 2008 WMP and 2035 GP report for the purposes of comparison. Recommended factors were developed to coordinate with the designations contained in the 2040 GPU. The following subsections provide additional details on how unit water use factors were developed for the residential and non-residential land use designations.

3.4.1 Residential Water Use Factors

Single family residential and multi-family residential WUFs were developed using the 2018 and 2019 consumption data and compared to the water use factors developed in the 2008 WMP.

Single family residential (SFR) land uses were assumed to include low density residential and condominium land uses (defined previously in the 2008 WMP). The calculated area-based SFR WUF (2.2 afy/ac) was found to have decreased by approximately 11 percent from the 2008 WMP SFR WUF (2.5 afy/ac). The dwelling unit-based SFR WUF was also calculated using the approximate number of single family residential dwelling units in the COSMUD water service area (as estimated by meter size) and was determined to be 242 gallon per day (gpd)/DU. This number was calculated by summing up all 2018 and 2019 consumption for meters with a City Rate Class Code of Single Family, and dividing it by the number of dwelling units in each respective year.

Multi-family residential (MFR) land uses typically include medium-density (MDR) and high-density (HDR) residential land uses such as apartments, duplexes and triplexes. MFR WUFs were calculated for medium-density and high-density residential land uses with the 2040 GPU land use designations to compare with the 2008 WMP MFR WUF. Based on initial calculations, it was found that the MFR WUFs were significantly higher than the 2008 WMP MFR WUFs and more than the SFR WUFs. However, it is unclear if the 2018 and 2019 consumption data included irrigation water use for multi-family residential accounts. Also, the number of actual dwelling units per MFR account is unclear. Therefore, the MFR WUF was alternatively developed using the State of California's indoor water use goal of 50 gpcd[9] by 2030 and the average number of people per household (estimated to be 3.5 persons [10]). Therefore, the recommended water use factor for multi-family residential is 175 gpd/DU.

The recommended MFR WUF does not specifically include outdoor irrigation, as the landscaped areas and types of plantings are project specific and not yet known. This water demand component, however, is not anticipated to be large as landscaped areas associated with multi-family residential developments are typically quite small, and the number of planned multi-family residential dwelling units is particularly small when compared to the number of single family residential dwelling units. As development plans are submitted to the City for multi-family residential projects, it is recommended that the City review specific

[9] Per Assembly Bill 1668 and Senate Bill 606.

[10] The SOI/MSR Report assumed 3.23 persons per household based on the State of California, Department of Finance population and housing estimates. This value was rounded to 3.5 for purposes of estimating the multi-family residential water use factor.

project details and include irrigation uses based on the proposed landscape plans. The recommended factor for this irrigation component is 2.26 afy/ac, as summarized in Table 3-11 below.

3.4.2 Non-Residential Water Use Factors

Calculated non-residential WUFs were found to have significantly decreased from those defined in the 2008 WMP. For the purposes of this WMP, WUFs for these land use types (i.e., Commercial, Industrial) were taken from the 2008 WMP, and reduced by 30 percent, consistent with water use decreases observed in 2018 and 2019. Resulting WUFs are as follows:

- Commercial: 1.62 afy/ac
- Industrial: 1.40 afy/ac

3.4.3 Irrigation Water Use Factors

The 2018 and 2019 water consumption data did not specify meters for irrigation use or quantify irrigated landscape areas. Based on a spatial review of meters adjacent to parks, the majority of the meters at these locations had an assigned rate class of commercial. Due to the uncertainty of how much water is actually used for irrigation and what the irrigated areas are, the irrigation water use factor was developed using the 2015 Model Water Efficiency Landscape Ordinance (MWELO). New development projects for residential, commercial, industrial and institutional projects requiring a permit, plan check or design review that have 500 square feet or more of landscape are required to comply with the MWELO. The standards to be set shall incorporate the principles of the MWELO, which takes into account evapotranspiration adjustment factors, landscape areas, maximum applied water allowance, reference evapotranspiration, and special landscape area.

Table 3-11 summarizes the maximum allowed potable water use for irrigation for residential (multi-family) and non-residential (e.g., parks) land uses using the MWELO guidelines. These factors should be utilized to estimate irrigation water demands when detailed land use plans which specify landscaping plans are available.

Table 3-11. Maximum Allowable Water Use Factor for Irrigation[(a)]

Land Use	Maximum ETAF[(b)]	Water Use Factor, afy/ac
Residential	0.55	2.26
Non-Residential	0.45	1.85
Special Landscape Areas[(c)]	1.00	4.12

(a) Based on the California Code of Regulations, Title 23 Waters, Division 2 DWR, Chapter 2.7 Model Water Efficient Landscape Ordinance (MWELO), updated 2015.

(b) ETAF = Evapotranspiration Adjustment Factor = (Plant Factor based on Hydrozone Area)/(Irrigation Efficiency)

(c) Special Landscape Areas are areas dedicated solely to edible plants, recreational areas, areas irrigated with recycled water, or water features using recycled water.

3.4.4 Recommended Water Use Factors

Table 3-12 summarizes the recommended water use factors by land use designation. In general, the water use factors have decreased between 10 percent and 30 percent from the 2008 WMP. These refined water use factors are appropriate for use in projecting future water demands as discussed in the following sections.

Table 3-12. Recommended Water Use Factors

Future Land Use Designation	Dwelling Unit Based WUF, gpd/DU	Area-Based WUF, afy/acre
Single Family Residential	242	-
Multi-Family Residential	175	-
Commercial	-	1.62
Industrial	-	1.40
Parks	-	1.85

3.5 FUTURE WATER DEMANDS AND REQUIRED WATER PRODUCTION

Water demands were projected for near-term (2030) and future (2040) conditions for the COSMUD water service areas using the adopted water use factors applied to the future proposed development. Future water production requirements were then estimated by adding the future water demand projections and future non-revenue water to the existing baseline production. The specific steps used in the development of this projection method and the results are discussed below for both near-term (2030) and future (2040) conditions.

3.5.1 Existing Baseline Production

The average annual water production for the North and South Stockton water service areas from 2015 through 2019 (most recent data) was used to establish the existing baseline production. The average annual water production from 2015 through 2019 for the COSMUD water service areas was 25.6 mgd, or 28,632 afy (refer to Table 3-2).

When comparing 2015 use to 2019 use (refer to Table 3-1), there has been about 16 percent increase in water use. Mandatory conservation measures implemented by the City during the recent drought significantly reduced water use, but since the end of the drought the mandatory conservation measures have been relaxed and water use as increased (rebounded) somewhat. Allowing for some continued rebound is recommended as it provides an additional buffer in existing baseline production requirements and helps ensure sufficient supply capacity. A 10 percent demand rebound factor is recommended and will be added to existing water production to establish the existing baseline production.

Table 3-13 summarizes the existing baseline production for the overall COSMUD water service area and shows that the total existing baseline production for this Water Master Plan Update is 31,495 afy, or 28.1 mgd. This can be compared to the existing baseline production from the 2008 WMP which was 36,380 afy, or about 32.5 mgd. This indicates that existing baseline production for this WMP, with the rebound factor included, is about 13 percent lower than the 2008 WMP baseline production, reflecting

improved water use efficiencies and on-going water conservation by the COSMUD water customers since the 2008 WMP.

Table 3-13. Existing Baseline Production (5-year Average from 2015 to 2019) with Demand Rebound

Water Service Area	Existing Average Historical Production (2015 – 2019), afy	Demand Rebound (10 percent of Average Historical Production), afy	Existing Baseline Production, afy
North Stockton	23,450	2,345	25,795
South Stockton	5,182	518	5,700
Total	**28,632**	**2,863**	**31,495**

3.5.2 Additional Water Demand for Planned Future Development

Based on the projected future growth (Table 3-9) and the updated water use factors (Table 3-12), water demands for near-term (2030) and future (2040) conditions were estimated. Table 3-14 summarizes the additional projected water demand from planned future development for the near-term (2030) and future (2040) timeframes.

Table 3-14. Future Additional Water Demand

Water Service Area	Additional Demand by 2030 (Near-Term)		Additional Demand by 2040 (Future)[(a)]	
	mgd	afy	mgd	afy
North Stockton	0.7	781	5.8	6,457
South Stockton	4.4	4,903	8.0	8,949
Total	**5.1**	**5,684**	**13.8**	**15,405**

(a) The additional demand by 2040 (Future) includes the additional demand by 2030 (Near-Term).

It should be noted that the Niagara Bottling Plant Project accounts for about 60 percent of the additional near-term South Stockton demand, and the Mariposa Road Community accounts for approximately 38 percent of South Stockton's future additional water demand at 2040.

3.5.3 Water Production Requirements for Near-Term (2030) Conditions

Table 3-15 summarizes the projected production requirements within the COSMUD water service area by the near-term (2030) timeframe. The projected near-term (2030) production requirement includes the existing baseline production, the additional near-term (2030) demand and future non-revenue water.

By 2030, the water production requirement is projected to increase by approximately 20 percent systemwide. North Stockton's production requirement is projected to increase by 3.3 percent and South Stockton's production requirement is projected to increase by 93.5 percent and from the existing baseline production.

Table 3-15. Projected Water Production Requirement for Near-Term (2030) Conditions			
Parameter	North Stockton, afy	South Stockton, afy	Total COSMUD, afy
Existing Baseline Production (refer to Table ES-2.)	25,795	5,700	31,495
Additional Near-Term Demand by 2030 (refer to Table 3-14)	781	4,903	5,684
Future NRW (8%)	68	426	494
Total Production Requirement, afy	**26,644**	**11,029**	**37,673**
Total Production Requirement, mgd	**23.8**	**9.8**	**33.6**
Percent Increase from Existing Baseline Production	**3.3%**	**93.5%**	**19.6%**

3.5.4 Water Production Requirements for Future (2040) Conditions

Table 3-16 summarizes the projected production requirements within the COSMUD water service area by the future (2040) timeframe. The projected future (2040) production requirement includes the existing baseline production, the additional future (2040) demand and future non-revenue water.

By 2040, the water production requirement is projected to increase by approximately 53 percent systemwide. South Stockton's production requirement is projected to increase by 171 percent and North Stockton's production requirement is projected to increase by 27 percent from the existing baseline production. The large increase in South Stockton's projected production requirement is due to the assumption that the Mariposa Road Community will be fully built by 2040 and served completely by COSMUD[11].

Table 3-16. Projected Water Production Requirement for Future (2040) Conditions			
Parameter	North Stockton, afy	South Stockton, afy	Total COSMUD, afy
Existing Baseline Production (refer to Table ES-2.)	25,795	5,700	31,495
Additional Future Demand by 2040 (refer to Table 3-14)	6,457	8,949	15,405
Future NRW (8%)	561	778	1,340
Total Production Requirement, afy	**32,813**	**15,427**	**48,240**
Total Production Requirement, mgd	**29.3**	**13.8**	**43.1**
Percent Increase from Existing Baseline Production	**27.2%**	**170.6%**	**53.2%**

[11] As further described in Chapter 8, the future manner and extent of the development of the Mariposa Road Community is uncertain at this time. As such, any future recommended capital improvements required to serve the Mariposa Road Community should be confirmed when development plans are confirmed.

3.6 COMPARISON TO THE 2008 WMP, THE 2015 UWMP AND THE 2018 UTILITY MASTER PLAN SUPPLEMENTS

This section compares the projections developed for this Water Master Plan Update to previous projections included in the 2008 Water Master Plan, the 2015 UWMP, and the 2018 Utility Master Plan Supplements prepared in support of the Envision Stockton 2040 General Plan.

The total future (2040) water production requirement presented in this Water Master Plan Update is 48,240 afy (43.1 mgd) (see Table 3-16). This is compared to the total future 2035 water production requirement from the 2008 Water Master Plan which was estimated to be 110,000 afy (98.2 mgd). This represents a 56 percent drop, which is partially attributed to a decrease in existing water production from 2008 to 2019 (35.6 mgd in 2008 vs. 27.4 mgd in 2019), as well as a drop in unit water use factors due to improved water use efficiency (described above in Section 3.4). However, the majority of the drop in the projected water production requirement can be attributed to the significant reduction in expected development by 2040, both in terms of the area to be developed and the projected population. Based on the planned future development identified in the Envision Stockton 2040 General Plan Update and April 2020 MSR/SOI Report, the anticipated gross development area by 2040 is 77 percent less than the 2008 Water Master Plan future gross development area. Associated with this reduced development area, there is approximately a 25 percent decrease in projected City-wide population from the 2035 General Plan to the Envision Stockton 2040 General Plan Update.

Figure 3-8 compares the City-wide population projections in the 2035 General Plan, the Envision Stockton 2040 General Plan Update and the 2015 UWMP, as well as the COSMUD water production requirements from the 2008 Water Master Plan, 2015 UWMP and this Water Master Plan Update. As shown, water production requirements have dropped significantly since the 2008 Water Master Plan was prepared. As shown on Figure 3-8, the water production requirements in the 2015 UWMP and this Water Master Plan Update generally align as similar population projections were assumed.

In support of the Envision Stockton 2040 General Plan, Utility Master Plan Supplements were prepared to project future water system infrastructure needs. In the Potable Water Master Plan Supplement, future water demands (water production requirements) were estimated based on the 2040 General Plan land use assumptions and were estimated to be 39.9 mgd for 2040. Although a different methodology was used for the Master Plan Supplement projections, the projection is similar to the 43.1 mgd projected for 2040 in this Water Master Plan Update.

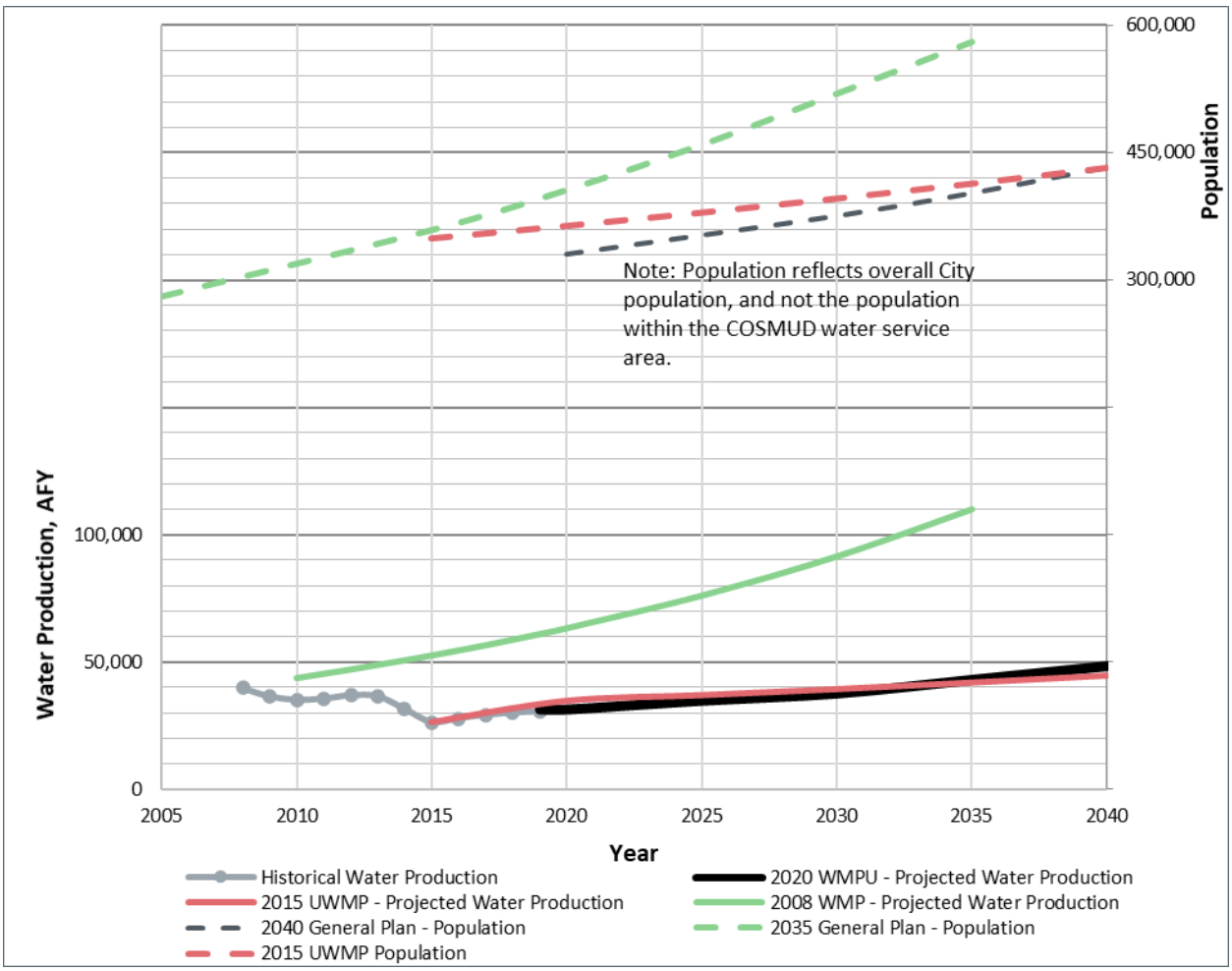


Figure 3-8. Comparison of Previous and Current Population and Water Production Requirements

The drop in future water production requirements from the 2008 Water Master Plan is reflected by less extensive recommendations for future water system improvements as described in Chapter 8 of this Water Master Plan Update.

This chapter provides an overview of the City's water supplies which include both surface water supplies and groundwater supplies. The availability and reliability of the City's water supplies are evaluated in the City's 2020 Urban Water Management Plan, which was prepared concurrent with this Water Master Plan Update.

4.1 WATER SUPPLY OVERVIEW

The City's existing water supply portfolio consists of the following sources:

- Surface water from the San Joaquin River that is diverted at the Intake Pump Station on Empire Tract located in the Sacramento-San Joaquin Delta (Delta) and treated at the City's DWTP, with supplemental 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 the SEWD conveyed from the New Melones (Stanislaus River) and New Hogan (Calaveras River) Reservoirs
- Groundwater pumped by COSMUD from City-owned and operated wells from the underlying Eastern San Joaquin Groundwater Subbasin

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 Water Master Plan Update, 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. The project is discussed in further detail in Section 4.3.4.

As described in Chapter 3, COSMUD water demands are projected to increase from 30,684 afy in 2019 to 48,240 afy by 2040. At the same time, COSMUD plans to reduce or offset its groundwater use in accordance with groundwater sustainability objectives. Future COSMUD water supply consists of utilizing permit and contract surface water supplies together with the conjunctive use of groundwater resources.

Details about the City's water supply sources are described in the following sections.

4.2 SURFACE WATER SUPPLY FROM THE SAN JOAQUIN RIVER

Water supply from the San Joaquin River is a recent addition to the City's water supply portfolio and currently provides about 68 percent of its total water supply.[12] 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 4-1. Since the completion of the DWTP in 2012, the Delta has become a major source of water supply for COSMUD. Water supply from the DWTP is currently used in the COSMUD North Stockton system, along with local groundwater.

4.2.1 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 divided the water right application into two separate applications, Application 30531A and 30531B.

Application 30531A proposed diversions of up to 33,600 afy from the Delta 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 under California Water Code Section 1485. The City's water right permit from the State Water Board was issued on March 8, 2006 under Water Right Permit 21176. 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 California Water Code (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 permitted under Water Right Permit 21176 is not restricted as long as the same amount of wastewater is discharged into the San Joaquin River. However, it should be noted that Section 1485 water is subject to pumping restrictions 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 (NMFS)[13] restrictions. When water diversion is curtailed, the City obtains supplemental water supply from Woodbridge Irrigation District as described below in Section 4.2.3.

4.2.2 Delta Water Treatment Plant

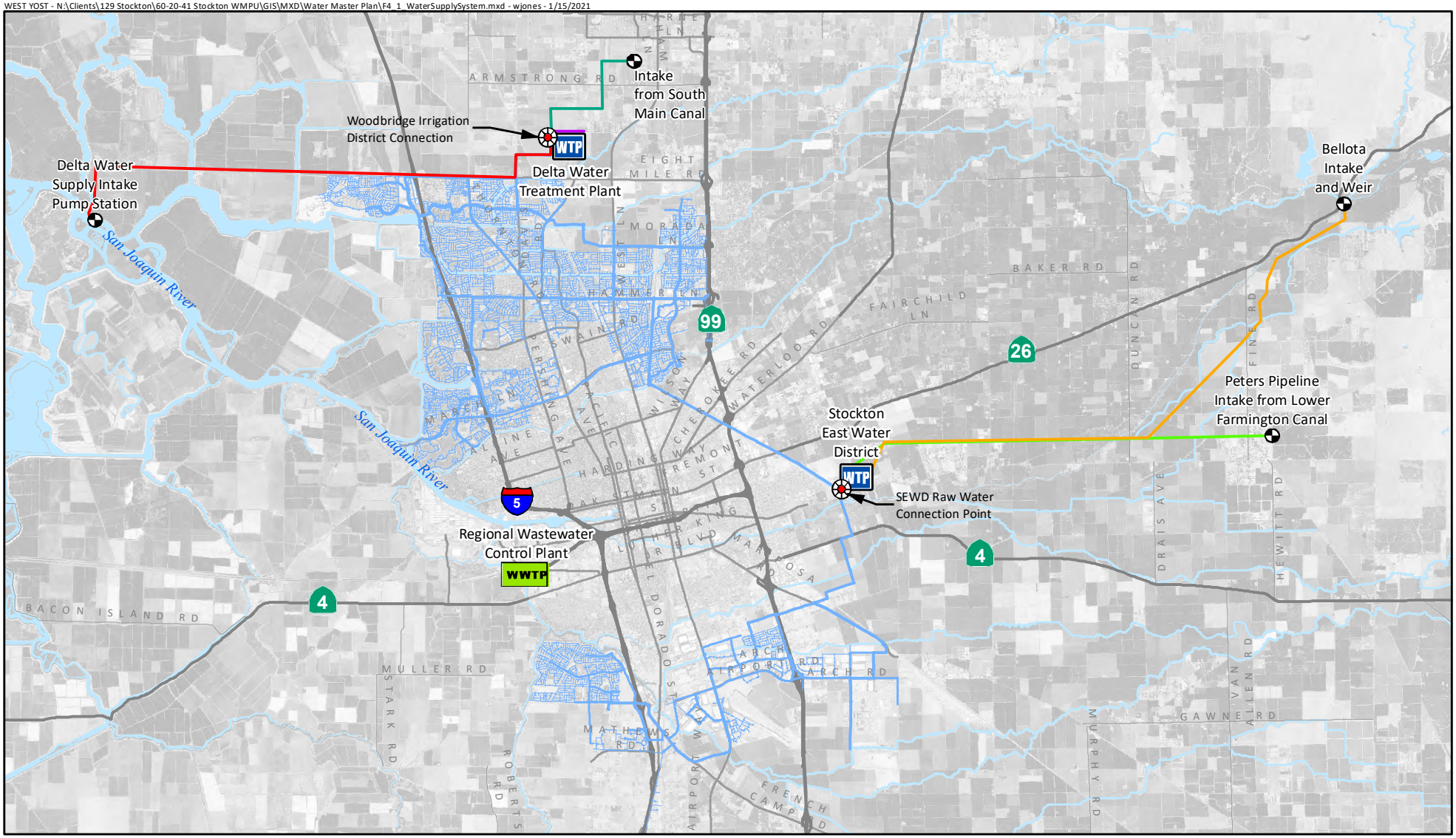
Subsequent to the State Water Board water right permit issuance for Application 30531A, COSMUD proceeded with Phase 1 of its DWTP project with an initial capacity of 30 mgd. The DWTP and its associated intake facility on the San Joaquin River were completed and commenced operation in 2012. Since completion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

[12] Based on 2019 Water Production (see Table 3-1).

[13] The National Marine Fisheries Service (NMFS) is also known as National Oceanic and Atmospheric Administration (NOAA) Fisheries.

EXHIBIT 1

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F4_1_WaterSupplySystem.mxd - wjones - 1/15/2021



- 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.

N

0 1.5 3
Miles

WEST YOST

Figure 4-1

Water Supply System

City of Stockton
Water Master Plan Update

4.2.3 Supplemental Raw Water Supply from Woodbridge Irrigation District

In 2008, the City executed a 40-year purchase agreement with WID for 6,500 afy for municipal and industrial water use. 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 the San Joaquin River water is 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 4-1.

The City's 2008 contract with WID includes a provision for an 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 2025.[14]

4.2.4 COSMUD Water Supply from the DWTP

The COSMUD North Stockton water service area currently receives water from the DWTP and groundwater supplies. In 2019, the City treated 20,809 af from the San Joaquin River and WID at the DWTP, providing about 68 percent of the entire COSMUD water demands.[15]

For purposes of this Water Master Plan Update, and the water system capacity evaluation and hydraulic analyses described in Chapters 7 and 8, it has been assumed that treated water supplies from the DWTP will be available up to the capacity of the DWTP to meet existing and projected water demands in the North Stockton water service area, together with groundwater supplies. This assumption is based on the nature of the City's Water Right Permit 21176 (e.g., the indirect potable reuse strategy) and the availability of supplemental water supply from the Woodbridge Irrigation District when water diversion from the San Joaquin River is curtailed. Additional 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 the City's Urban Water Management Plan. One of the key objectives of the Water Master Plan is to identify needed infrastructure improvements to meet the projected water demands, without demand reduction. Additional discussion regarding this assumption is provided in Chapters 7 and 8.

[14] City of Stockton 2015 Urban Water Management Plan, Section 4.

[15] 2019 Water Production (see Table 3-1).

4.3 WATER SUPPLY FROM THE 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). The COSMUD point of connection to SEWD is shown on Figure 4-1. 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 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 an emergency presents a need.[16]

4.3.1 Water Supply Contract

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 Contractors to share the cost and deliveries of the DJWWTP in the mid-1970's. 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) 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 between the Urban Contractors, which recognizes supply allocations, varying use and financial obligations between the Urban Contractors and SEWD. The Reconciliation Agreement is currently in effect.

4.3.2 New Hogan Reservoir

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

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, 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, SEWD can rely on about 83,000 afy of supply from the New Hogan Project in normal water years under safe yield operation.

[16] SEWD, 2015 Urban Water Management Plan, Section 4.

However, if CACWD exercises its percentage entitlement (43.5 percent), SEWD's available supply from this source would be reduced.

4.3.3 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.

4.3.4 COSMUD Water Supply from SEWD

The COSMUD South Stockton water service area currently receives water from SEWD and groundwater supplies. In 2019, COSMUD use of SEWD water was about 6,100 af, about 20 percent of the COSMUD total supply.[17]

Historically, SEWD was the sole source of treated surface water to COSMUD and provided a significant portion of the total water 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.

For the North Stockton system, the planned 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.

For the purposes of this Water Master Plan Update, and the water system capacity and hydraulic analyses described in Chapters 7 and 8, it has been assumed that treated water supplies from SEWD will be available to meet up to 70 percent of existing and projected water demands in the South Stockton water service area. This assumption is based on actual curtailments in SEWD deliveries during the recent drought. Remaining demands in the South Stockton water service area will be assumed to be met using groundwater supplies from existing and new groundwater wells. 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 the City's Urban Water Management Plan. One of the key objectives of the Water Master Plan Update is to identify needed infrastructure improvements to meet the projected water demands, without demand reduction. Additional discussion regarding this assumption is provided in Chapters 7 and 8.

[17] Historical Water Production (see Table 3-1)

4.4 GROUNDWATER

As described in Chapter 2, the City currently has groundwater wells located in the North Stockton and South Stockton systems, as shown on Figure 2-2. These wells are used to pump groundwater to meet peak summer demands or during dry years when available surface water supplies may be limited.

4.4.1 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 4-2. 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 the DWR as being in a state of critical overdraft. 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 pumping.

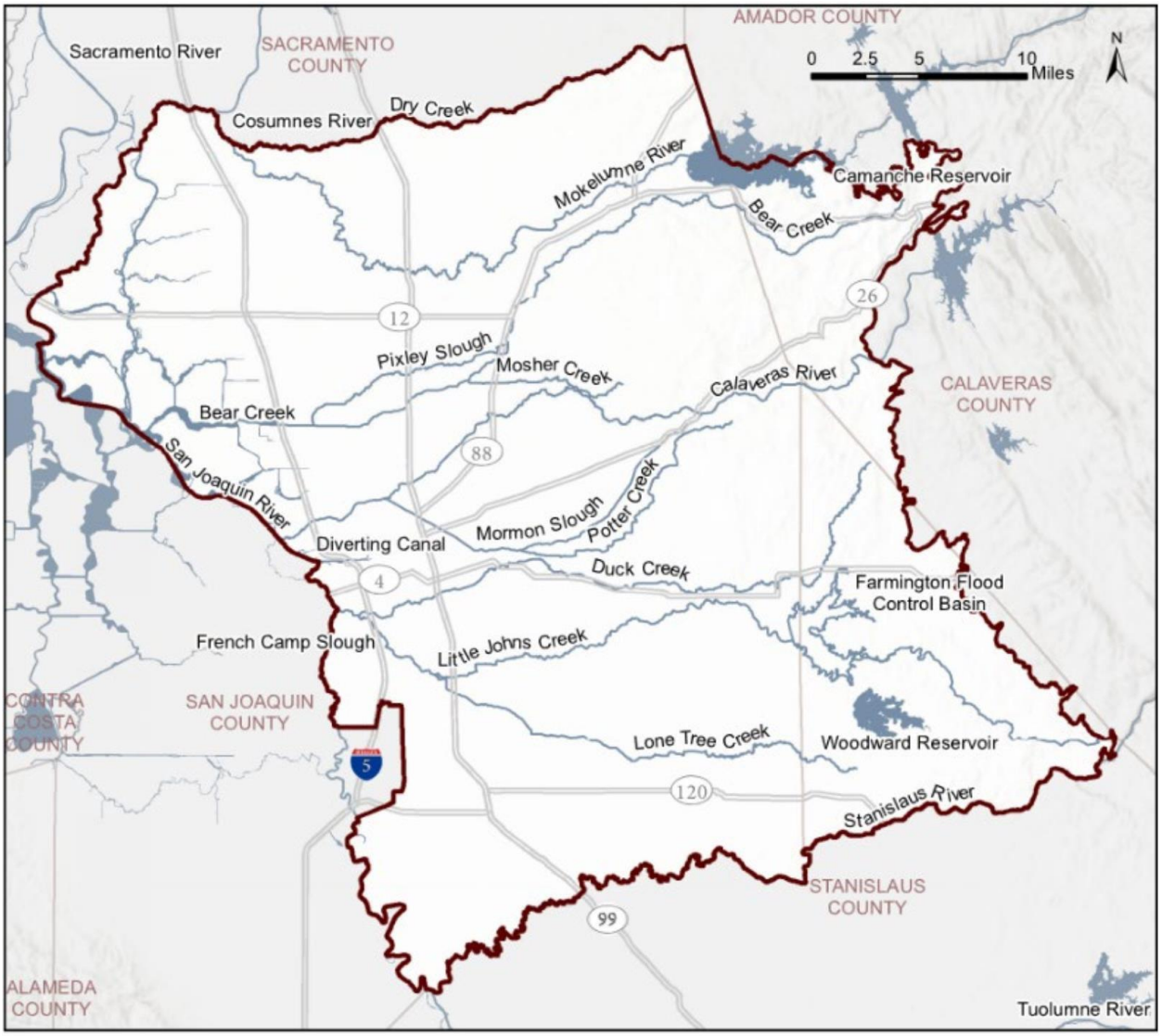


Figure 4-2. Eastern San Joaquin Groundwater Subbasin

The City has partnered with other users through the Eastern San Joaquin Groundwater Authority (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, the 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.[18]

In the GSP project list, COSMUD may potentially implement advanced metering infrastructure to reduce groundwater demand. COSMUD also manages its groundwater demands by implementing demand management measures outlined in the City's Urban Water Management Plan. The demand management measures include: a 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 projects 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.

4.4.2 COSMUD Groundwater Use

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.

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. In 2019, COSMUD pumped only 3,778 af from the groundwater basin, about 12 percent of the COSMUD total water supply.[19]

In the future, COSMUD plans to use less groundwater in wet and average years. It plans to continue groundwater use to meet peak demand and in dry years to make up for reductions in surface water deliveries.

[18] Eastern San Joaquin Groundwater Authority, Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan, November 2019.

[19] Historical Water Production (see Table 3-1).

The purpose of this chapter is to define the recommended performance and operational criteria for the COSMUD water distribution system. These criteria include required fire flow and flow duration, definition of high demand conditions, definition of “emergency events”, system pumping capacity, system storage capacity (including operational, fire flow, and emergency storage components), minimum and maximum system pressures, and maximum pipeline velocity and head loss.

Table 5-1 summarizes the recommended criteria and the following sections of this chapter present the recommended performance and operational criteria for sizing the COSMUD water system:

- Water System Reliability and Water Quality
- Fire Flow Requirements
- Water System Supply Capacity
- Critical Supply Facilities
- Pumping Facility Capacity
- Water Storage Capacity
- Water Transmission and Distribution Pipeline Sizing

Table 5-1. Summary of Recommended Potable Water System Performance and Operational Criteria

Component	Criteria	Remarks / Issues
Fire Flow Requirements (flow [gpm] @ duration [hours])		
Single Family Residential	2,000 gpm @ 2 hrs	Fire flows based on new development requirements. Existing development will be evaluated on a case by case basis, because of the historical varying standard.
Multi Family Residential	3,000 gpm @ 3 hrs	
Commercial/Office	2,500 gpm @ 4 hrs (with approved automatic sprinkler system)	
Industrial	4,500 gpm @ 4 hrs (with approved automatic sprinkler system)	
Institutional	4,500 gpm @ 4 hrs (with approved automatic sprinkler system)	
Water System Capacity		
Maximum Day Demand	Provide firm capacity equal to the maximum day demand	Met through a combination of surface water treatment plants, and groundwater wells only.
Maximum Day Demand plus Fire Flow	Provide firm capacity equal to maximum day demand plus fire flow	Met through a combination of surface water treatment plants, and groundwater wells, storage and booster pumping facilities.
Peak Hour Demand	Provide firm capacity equal to peak hour demand	Met through a combination of surface water treatment plants, and groundwater wells, storage and booster pumping facilities.
Pumping Facility Capacity		
Pumping Capacity	Provide the greater of maximum day concurrent with fire flow or peak hour demand	Assume firm pumping capacity. Sufficient pumping capacity should also be provided so that the maximum day demand can be supplied using firm pumping capacity with no assistance from storage reservoirs.
Backup Power	Equal to the firm capacity of the pumping facility	On-site generator for critical stations.[(a)] Plug in portable generator for less critical stations.
Surface Water Treatment Capacity		
Treated Surface Water Supply/Pumping Capacity	Provide capacity equal to maximum day demand	
Water Storage Capacity		
Operational	25 percent of maximum day demand	
Fire	Equal to the largest fire flow requirement and associated duration (e.g., Industrial)	2,000 gpm @ 2 hrs = 0.24 MG 2,500 gpm @ 4 hrs = 0.48 MG 3,000 gpm @ 3 hrs = 0.54 MG 4,500 gpm @ 4 hrs = 0.96 MG
Emergency	1 x average day demand	
Emergency Groundwater Credit (EGWC)	Equal to the 85 percent of active groundwater supply that can be reliably accessed (facilities equipped with auxiliary power)	The maximum combined storage credit is limited to the recommended emergency storage capacity.
Treated Surface Water Credit (TSWC)	Equal to the smaller of the available treated surface water supply sources	
Total Water Storage Capacity	Operational + Fire + Emergency - EGWC - TSWC	Total storage should be evaluated by pressure zone.
Water Transmission Line Sizing		
Diameter	18-inches in diameter or larger	Locate new transmission pipelines within designated utility corridors wherever possible.
Average Day Demand Condition		Criteria based on requirements for new development, existing transmission mains will be evaluated on case-by-case basis. Evaluation will include age, material type, velocity, head loss, and pressure.
Maximum Pressure [psi]	80 psi	
Minimum Pressure [psi]	45 psi	
Maximum Head loss [ft/1000 ft]	3 ft/kft	
Maximum Velocity [ft/sec]	3 fps	
Maximum Day Demand Condition		
Minimum Pressure [psi]	45 psi	
Maximum Head loss [ft/1000 ft]	3 ft/kft	
Maximum Velocity [ft/sec]	5 fps	
Peak Hour Demand Condition		
Minimum Pressure [psi]	45 psi	
Maximum Head loss [ft/1000 ft]	3 ft/kft	
Maximum Velocity [ft/sec]	5 fps	
Hazen Williams "C" Factor	130	For consistency in hydraulic modeling.
Pipeline Material	Ductile Iron, Concrete Cylinder, or Steel	
Water Distribution Line Sizing		
Diameter	Less than 18-inches in diameter	Must verify pipeline size with maximum day plus fire flow analysis. Locate new distribution pipelines within designated utility corridors wherever possible.
Maximum Day w/ Fire Flow Demand Condition		
Minimum Pressure [psi] (at fire node)	20 psi	
Maximum Head loss [ft/1000 ft]	10 ft/kft	
Maximum Velocity [ft/sec]	10 fps	
Peak Hour Demand Condition		
Minimum Pressure [psi]	45 psi	
Maximum Head loss [ft/1000 ft]	7 ft/kft	
Maximum Velocity [ft/sec]	7 fps	
Hazen Williams "C" Factor	130	For consistency in hydraulic modeling.
Pipeline Material	PVC	
Other Criteria		
Maximum Water Service Pressure	80 psi	Per California Plumbing Code, install PRV if service pressure is greater than 80 psi.

[(a)] A pumping facility is defined as critical if it provides service to pressure zone(s) and/or service area(s) without sufficient emergency storage and that meet the following criteria:
- The largest facility that provides water to a particular pressure zone and/or service area;
- A facility that provides the sole source of water to single or multiple pressure zones and/or service areas;
- A facility that provides water from a water treatment plant or supply turnout; or
- A facility that provides water from key groundwater supply wells (determined based on capacity, water quality and location).

5.1 WATER SYSTEM RELIABILITY AND WATER QUALITY

Attention to enhancing the reliability of the system under all conditions is an important part of maintaining high quality water service. Water system reliability is achieved through a number of system features including: (1) appropriately sized storage facilities; (2) redundant or "firm" pumping capacity, transmission/distribution, and supply facilities where required; and (3) alternative power supplies. Reliability and water quality are also improved by designing looped water distribution pipelines and avoiding dead-end distribution mains whenever possible. Looping pipeline configurations reduce the potential for stagnant water and the associated problems of poor taste and low chlorine residuals. In addition, proper valve placement is also necessary to maintain reliable and flexible system operation under both normal and abnormal operating conditions.

Water quality standards largely pertain to protecting public health and consistently delivering a satisfactory product to the customer. The U.S. Environmental Protection Agency (EPA) and the State Water Resources Control Board (SWRCB) DDW are the agencies responsible for establishing water quality standards. The EPA and the DDW prescribe regulations that limit the amount of certain contaminants in the water provided by a public water system. The COSMUD, as water purveyor, is responsible for ensuring that the applicable water quality standards and regulations are met at all times.

5.2 FIRE FLOW REQUIREMENTS

The COSMUD is the water purveyor for the northern, southern and Walnut Plant areas of the City, and the City of Stockton Fire Department (Fire Department) is concerned with the availability of adequate water supply during fires. The COSMUD is responsible for water supply and distribution, while the Fire Department establishes minimum water flows required for firefighting purposes.

Both the COSMUD and Fire Department conform to the 2019 California Fire Code and use Appendix B (and Appendix BB) of the code, Fire Flow Requirements for Buildings, to assist in establishing minimum fire flows and durations. The Stockton Municipal Code (Title 15 – Buildings and Construction, Section 15.08.080) specifies the following additional requirements with respect to automatic sprinkler systems:

> *An automatic sprinkler system shall be installed in all new construction, regardless of occupancy classification, where the total floor area is 6,000 square feet or more. This does not include occupancy classes of A-2/H, I,F-1 and S-1; these occupancies shall be protected as per the California Building and Fire Codes.*

When a municipal water system is designated to provide supply during a fire flow condition, it must meet minimum standards for fire flow rate and duration and residual pressure. Specifically, when delivering fire flow, the water system must concurrently meet maximum day demands and maintain at least 20 pounds per square inch (psi) residual pressure for all customer service locations in the distribution system.

Existing pipelines are assumed to meet fire flow standards that were in place at the time of construction, which are generally lower than current standards. Therefore, the evaluation of the COSMUD water system under existing demand conditions presents systemwide available fire flow only and does not recommend pipeline improvements to increase existing fire flow capacity. However, COSMUD can use these results as a guide for sizing pipeline improvements and to develop a rehabilitation and replacement program which prioritizes replacing existing smaller diameter (and typically older) pipelines to improve overall flows throughout the distribution system. This is discussed further in Chapters 7 and 9.

For the COSMUD, the recommended fire flow requirements for future development are generalized based on land use type, as presented in Table 5-2, since actual future building types are not yet known.

Table 5-2. Recommended Fire Flow Requirements for Future Development[a,b]

Land Use Designation	Non-Sprinklered			Sprinklered[c,d]		
	Fire Flow, gpm	Duration, hours	Recommended Storage, MG	Fire Flow, gpm	Duration, hours	Recommended Storage, MG[j]
Single Family Residential[e]	2,000	2	0.24	--	--	--
Multi Family Residential[f]	3,000	3	0.54	--	--	--
Commercial/Office[g]	4,000	4	0.96	2,500[i]	4	0.48
Industrial	8,000	4	1.92	4,500[i]	4	0.96
Institutional[h]	8,000	4	1.92	4,500[i]	4	0.96

(a) Construction type and fire flow calculation area are not generally known during the development of a master plan; consequently, fire flow requirements set forth in this table are based on previous estimates for these land use types and similar communities.

(b) Unique projects or projects with alternate materials may require higher fire flows and should be reviewed by the Fire Chief on a case-by-case basis (e.g., proposed commercial/industrial areas and schools).

(c) Specific fire flows were estimated from 2019 California Fire Code, Appendix B, and depend on construction type and fire area. These fire flow requirements are based on buildings being fully sprinklered.

(d) Normally allows for up to a 50 percent reduction in fire flow if a building is provided with an automatic sprinkler system. However, the CFC also requires that no fire flow be less than 1,000 gpm for single family residential or 1,500 gpm for all other building types. For a more conservative fire flow estimate, Single Family and Multiple Family Residential buildings were considered non-sprinklered for this Water Master Plan.

(e) Single Family Residential includes Residential Estate and Low Density Residential land uses.

(f) Multi Family Residential includes Medium and High Density Residential land uses.

(g) Commercial/Office includes Commercial or Administrative Professional.

(h) Institutional includes schools, hospitals, or other governmental buildings.

(i) Fire flow includes a 500 gpm demand for on-site sprinkler flow.

(j) Recommended storage volumes do not include the volume associated with 500 gpm sprinkler flow.

As described below, fire flows and the expected duration are also used to establish storage requirements.

5.3 WATER SYSTEM SUPPLY CAPACITY

Maximum day demand, maximum day demand plus fire flow, and peak hour demand conditions will be used to assess the adequacy of the COSMUD water supply and distribution system under existing and future conditions. Adopted peaking factors for maximum day and peak hour demands are discussed in Chapter 3. The following subsections discuss the assumptions and recommended criteria for each demand condition.

5.3.1 Maximum Day Demand

The COSMUD must be able to provide a firm supply capacity equal to the maximum day demand, which can be met by a combination of treated surface water supplied from the SEWD and DWTP and groundwater wells. Even though the City's water service areas have seven water storage tanks and associated pump stations, this storage is limited to meeting daily peak demands and only holds one average day of emergency storage and fire flows, and therefore cannot be counted on as a reliable source

to meet the maximum day demand requirements. In addition, California Code of Regulations requires that system supplies meet the maximum day demand.

Firm groundwater supply capacity assumes that 85 percent of the active COSMUD well capacity (not including standby wells) is available at any given time. An active well is defined as any well that is currently operational. Wells that are abandoned, deemed as standby,[20] or temporarily out of service due to mechanical breakdowns, routine maintenance, water quality or other operational issues, or wells that pump directly into tanks are not considered active.[21] This conservative planning-level assumption ensures the reliability and flexibility of the system to provide sufficient supply capacity to meet the maximum day demand, especially considering increasing regulation of groundwater pumping, and aging infrastructure.

5.3.2 Maximum Day Demand plus Fire Flow

In accordance with typical industry standards, the COSMUD water distribution system should have the capability to meet a system demand condition equal to the maximum day demand concurrent with a fire flow event while meeting the recommended system performance criteria (e.g., minimum and maximum system pressures), which are discussed in subsequent sections of this Chapter.

Maximum day demand plus fire flow should be met from a combination of supply sources (i.e., treated surface water from the SEWD and DWTP plus groundwater) and water storage reservoirs. The analysis of fire flow evaluations will be conducted assuming the largest pump at each pump station is offline. In addition, the COSMUD groundwater well system (well pumps) will be assumed to pump at firm capacity during a fire flow evaluation. It is also assumed that reservoir pump stations with only one pump, or without back-up power capability (either an on-site generator or adaptor for a plug-in generator), will not be available during fire flow evaluations. These conservative assumptions ensure the reliability and flexibility of the system to provide sufficient fire flow during emergency conditions.

5.3.3 Peak Hour Demand

Peak hour demand should be met from a combination of supply sources (i.e., treated surface water from the SEWD and DWTP plus groundwater) and water storage reservoirs. Assumptions regarding firm pumping capacity will also apply during a peak hour demand condition. During a peak hour demand condition, the COSMUD water system should be able to meet the recommended system performance criteria (i.e., minimum and maximum system pressures) discussed below in *Section 5.7 Water Transmission and Distribution Pipeline Sizing*.

[20] Standby wells could also be used to meet demands, in an emergency, but these have been conservatively assumed to not be available.

[21] Well status is based on the City of Stockton's Permit Amendment, dated January 7, 2020.

5.4 CRITICAL SUPPLY/PUMPING FACILITIES

Critical pumping facilities are defined as those facilities that provide service to a water service area(s) without sufficient emergency storage (see Emergency Storage section below) and that meet the following criteria:

- The largest pumping facility that provides water to a particular water service area
- A pumping facility that provides the sole source of water to single or multiple water service areas
- A pumping facility that provides water from a water treatment plant or supply turnout
- A pumping facility that provides water from key groundwater supply wells (determined based on capacity, water quality and location)
- All reservoir pump stations

All critical pumping facilities should be equipped with an on-site, back-up power generator. At less critical facilities, a plug-in adapter and transfer switch can be used to allow interconnection to a portable generator, which will be brought to the site by COSMUD staff during a prolonged power outage. In addition, portable generator connections will be configured at all reservoir pump stations.

5.5 PUMPING FACILITY CAPACITY

Sufficient water system pumping capacity (finished surface water pump stations, wells, or reservoir pump stations) should be provided to meet the greater of the following two demand conditions:

1. A maximum day demand concurrent with a fire flow event (e.g., larger industrial fire flow) with reservoir pump stations and well pumps assumed to operate at firm pumping capacity
2. A peak hour demand with reservoir pump stations and well pumps assumed to operate at firm pumping capacity

The highest demand requirement between these two demand conditions sets the water system pumping capacity requirement.

5.6 STORAGE FACILITY CAPACITY

The total treated water storage capacity required is based on the following three major components:

- Operational Storage
- Fire Flow Storage
- Emergency Storage

A discussion of these three storage components, along with a discussion of “credits” for groundwater supply available within each area and treated surface water supply is also discussed below. Also described are potential operational strategies for the COSMUD storage facilities based on seasonal water demand patterns (i.e., winter vs. summer) and the zone within the COSMUD distribution system to help optimize

system operations by facilitating tank turnover to minimize water quality issues (e.g., stale water, loss of disinfectant residual).

5.6.1 Operational Storage

Over any 24-hour period, water demands will vary. Higher water demands will typically occur during the early morning hours when people are irrigating landscape and getting ready to go to work or school. Water demands will then typically decline to some nominal baseline level (depending on the proximity to adjacent commercial/industrial areas) and will then begin to increase again depending on outside water needs (and corresponding temperature), until it reaches a higher water demand in the early evening hours as people return home from work or school. Throughout the year, the peaks of this cycle will vary according to customer needs; thereby, creating maximum day and peak hour demands.

Usually, water treatment plants, supply turnouts, and/or wells are operated at a constant rate over a 24-hour period (baseline) and augmented by additional flow from storage tanks and/or wells, during high demand periods, as needed. Storage tanks are normally refilled when demands drop below the baseline water production flow rate. The storage volume used to meet these peak demand periods is called operational storage.

Ideally, the operational storage requirement should be calculated based on the diurnal demand pattern within the water service area. If sufficient data is not available to develop a diurnal demand pattern, then the recommended volume of water to be stored as operational storage should be at least equal to 25 percent of the total volume of water needed to meet the water service area maximum day demand. For this Water Master Plan Update, it is recommended that the COSMUD plan for an operational storage volume equivalent to 25 percent of the maximum day demand.

5.6.2 Fire Flow Storage

As discussed above, fire flow requirements are based on the 2019 California Building Code, generalized to adjacent land uses. These requirements are based on flow (in gpm) for the building/land use type (e.g., commercial, residential, school, industrial), size of building (in square feet), and type of construction (e.g., wood frame, metal, masonry, installation of sprinklers). After a fire flow requirement is established, it is multiplied by the required fire flow duration to produce an estimate of the total volume of fire flow storage required. Table 5-2 presents the recommended fire flow criteria and associated required fire flow storage. As shown in Table 5-2 the largest fire flow event (assuming installation of sprinklers) requires a fire flow storage volume of 0.96 MG.

If unavailable by gravity storage, the fire flow must be supplied with a National Fire Protection Association (NFPA) rated fire pump. If an NFPA-rated fire pump is not used, a pump(s) and motor(s) combination with a backup power source of sufficient capacity to meet the required maximum fire flow and minimum residual pressure requirements as determined by the Fire Department's Fire Chief will be required.

5.6.3 Emergency Storage

A reserve of stored water is also required to meet demands during an emergency. An emergency is defined as an unforeseen or unplanned event that may degrade the quality or quantity of potable water supplies available to serve customers. There are three types of emergency events that a water utility typically prepares for:

- **Minor emergency**. A fairly routine, normal, or localized event that affects a few customers, such as a pipeline break, malfunctioning valve, hydrant break, or a brief power loss. Utilities plan for minor emergencies and typically have staff and materials available to address them.
- **Major emergency**. A disaster that affects an entire, or large, portion of a water system, lowers the quantity and quality of the water, or places the health and safety of the community at risk. Examples include water treatment plant failures, raw water contamination, or major power grid outages. Water utilities infrequently experience major emergencies.
- **Natural disaster**. A disaster caused by natural forces or events that create water utility emergencies. Examples include earthquakes, forest or brush fires, hurricanes, tornados or high winds, floods, and other severe weather conditions such as freezing or drought that damage or cause water system facilities to not be able to operate.

No specific standard exists for the amount of emergency storage that a utility should maintain. Determination of the required volume of emergency storage is a system-specific policy decision based on the assessment of the risk of failures and the desired degree of system reliability. The amount of required emergency storage is a function of several factors including the diversity of the supply sources, redundancy and reliability of the production facilities, and the anticipated length of the emergency outage. In developing an emergency storage requirement for the COSMUD, typical industry standards were used. For this Water Master Plan Update, it has been assumed that the emergency storage requirement will be based on maintaining a minimum quantity of emergency storage volume equivalent to one average day demand.

5.6.4 Emergency Groundwater Storage Credit

Based on the available COSMUD groundwater wells, groundwater storage can account for a portion of the recommended emergency storage. The following must be true to use the groundwater supply to offset the need to provide surface storage:

- Groundwater supply is of potable water quality and can be reliably accessed (i.e., wells are equipped with on-site emergency generator or a plug-in adapter and transfer switch)
- Groundwater supply is not already being relied upon to meet the COSMUD average day demand requirements
- Sufficient water distribution facilities are available to distribute this water to demand areas

It will be assumed that only the firm groundwater supply will be available for an emergency groundwater storage credit to offset the COSMUD emergency storage requirement. For planning purposes, it is assumed that 85 percent of the active and reliable COSMUD groundwater pumping capacity (i.e., capacity of active wells with on-site generators) is available to supplement required emergency storage for one average day. This conservative assumption accounts for wells out of service for reasons other than power loss (e.g., maintenance, or water quality).

5.6.5 Treated Surface Water Supply Credit

Because the COSMUD has two available surface water treatment plants, and the fact that their source water is independent of one another (Stanislaus and Calaveras Rivers vs. the San Joaquin and Mokelumne Rivers), the capacity of one of the water treatment plants can account for a portion of recommended

emergency storage. For the purposes of this Water Master Plan Update, it is assumed that the smaller of the two WTPs, will be available to offset a portion of the emergency storage requirement. The full credit only applies if North Stockton and South Stockton are operated as a single zone, with the ability to convey water from north to south and south to north. Currently, COSMUD operates the North Stockton and South Stockton systems independent from one another. Due to this limitation, the treated surface water supply credit can only be applied to North Stockton, and is limited to surplus SEWD supply capacity after South Stockton demands are met.

5.6.6 Total Storage Capacity Recommended

The recommended COSMUD potable water storage capacity should be the sum of the following components:

- Operational: Volume of water necessary to meet diurnal peaks observed throughout the day, assumed to be equivalent to at least 25 percent of the maximum day demand
- Fire Flow: Volume of water necessary to supply a single large fire flow event
- Emergency: Volume of water necessary to provide an average day demand
- Emergency Groundwater Storage Credit: Equal to the firm groundwater supply that can be reliably accessed (facilities equipped with auxiliary power); assumed to be 85 percent of the active groundwater pumping capacity
- Treated Surface Water Supply Credit: Equal to the excess capacity available in the smaller of the reliably available treated surface water supply sources (DWTP or SEWD)

The recommended storage volume requirements are established to identify infrastructure required to meet the stated operational and emergency conditions. The amount of total system storage and system peaking capacity required to meet these criteria will change over time as the COSMUD potable water demands increase.

5.6.7 Storage Operational Strategies

The operations of the COSMUD storage tanks can be varied seasonally to optimize tank operations and facilitate tank turnover to maintain water quality throughout the system. Based on the criteria discussed above, if water demands are evaluated seasonally (e.g., winter vs. summer), the required operational storage volumes for the winter months would be less than the required storage volumes for the summer months as the water demands are lower. Therefore, storage levels in the tanks could be maintained at lower levels in the winter months to facilitate better tank turnover or selected tanks could be removed from service during the low demand conditions, provided that fire-fighting ability is not compromised. Similarly, demand patterns in various parts of the COSMUD water system vary and required storage volumes can be tailored to the area served by each tank, in addition to the seasonal demand patterns.

5.7 WATER TRANSMISSION AND DISTRIBUTION PIPELINE SIZING

The following criteria will be used as guidelines for sizing new transmission and distribution pipelines. However, the existing COSMUD water system will be evaluated on a case–by-case basis. For example, if an existing pipeline experiences head loss in excess of the criteria described below during a maximum day demand plus fire flow event, this condition, by itself, does not necessarily indicate a problem as long as the minimum system pressure criterion is satisfied. Consequently, the existing COSMUD water system will

be evaluated using pressure as the primary criterion; and secondary criteria, such as velocity, head loss, age, and material type, will be used as indicators to locate where water system improvements may be needed.

New transmission and distribution pipelines to serve the future planning areas within the COSMUD water service areas should be located within designated utility corridors wherever possible. These designated utility corridors should be within public rights-of-way to minimize or eliminate the need for utility easements within private property.

5.7.1 Water Transmission System

Transmission pipelines are generally 18 inches in diameter or larger and should be designed based on the criteria described below for average day, maximum day, and peak hour demand conditions. The criteria reflect industry standards and West Yost's experience working with the existing COSMUD water system.

5.7.1.1 Average Day Demand

- Pressures should be maintained between a maximum of 80 psi and a minimum of 45 psi
- The maximum velocity within transmission pipelines should be 3 feet per second (fps)
- Head losses within the transmission system pipelines should be limited to 3 feet per thousand feet (ft/kft) of pipeline

5.7.1.2 Maximum Day Demand

- The minimum of allowable service pressure in the water transmission main should be 45 psi
- The maximum velocity within the transmission system pipelines should be 5 fps
- Head losses within the transmission system pipelines should be limited to 3 ft/kft of pipeline

5.7.1.3 Peak Hour Demand

- The minimum residual pressure during a peak hour demand should be 45 psi
- The maximum velocity within the transmission system pipelines should be 5 fps
- Head losses within the transmission system pipelines should be limited to 3 ft/kft of pipeline

5.7.2 Water Distribution System

Distribution pipelines are generally less than 18 inches in diameter and should be sized based on the criteria described below for maximum day demand plus fire flow and peak hour demand conditions. The criteria reflect industry standards and West Yost's experience working with the existing COSMUD water system.

5.7.2.1 Maximum Day Demand plus Fire Flow

- The minimum allowable residual pressure should be 20 psi at the flowing fire hydrant
- The maximum velocity within the distribution system pipelines should be 10 fps, or the head losses within the distribution system pipelines should be limited to 10 ft/kft of pipeline, whichever criteria is more conservative given the specific hydraulic/system condition

5.7.2.2 Peak Hour Demand

- The minimum residual pressure during a peak hour demand should be 45 psi
- The maximum velocity within the distribution system pipelines should be 7 fps, or the head losses within the distribution system pipelines should be limited to 7 ft/kft of pipeline, whichever criteria is more conservative given the specific hydraulic/ system condition

5.7.3 Other Recommended Criteria

It is generally recommended that maximum pressures at customer service locations do not exceed 80 psi. Should pressures exceed 80 psi at customer service locations, individual pressure regulating valves should be installed in accordance with California Plumbing Code requirements (Section 608.2 Excessive Water Pressure) to avoid potential damage to customer fixtures (e.g., water heaters, hoses).

This chapter describes the update, refinement, and calibration of the COSMUD existing water distribution system hydraulic model to reflect existing conditions. The COSMUD water system Geographic Information System (GIS) was used to confirm the configuration of water system facilities in the existing model. The hydraulic model was calibrated to a high degree of accuracy, per general guidelines established by the American Water Works Association Manual of Practice 32 (AWWA M32), and to a level that is acceptable for use for planning purposes or detailed design/operational studies. The resulting updated hydraulic model was subsequently used to evaluate the adequacy of existing and future COSMUD water systems to meet existing and future needs (see Chapters 7 and 8, respectively).

The hydraulic model updates, calibration, and verification efforts are described in the following sections of this chapter:

- Hydraulic Model Background
- Hydraulic Model Update Methodology
- Hydraulic Model Update
- Hydraulic Model C-Factor Calibration
- Hydraulic Model Extended Period Simulation (EPS) Calibration

6.1 HYDRAULIC MODEL BACKGROUND

The COSMUD computerized hydraulic model was originally developed in 1999 using the H_2ONET software. It was updated and dynamically calibrated in 2008 by West Yost as part of the 2008 Water Master Plan. At that time, it consisted of two separate models: one for North Stockton and one for South Stockton. Since the 2008 update, new developments have been constructed within the COSMUD water service area and the DWTP was constructed. The hydraulic model was updated to include the DWTP finished water reservoir and pump station. Since the DWTP is a significant new addition to the COSMUD water system, it was important to make sure the hydraulic model was calibrated with this new facility online. In addition, COSMUD is actively working on implementing the North Stockton Pipeline Hypochlorite Facility, which will allow SEWD water supplies to be conveyed from the SEWD DJWWTP to North Stockton. As part of this latest hydraulic model update, the two models for North Stockton and South Stockton were combined into one model to allow for the evaluation of coordinated operations of the North Stockton and South Stockton systems. Also, as described further in Chapter 7, the update of the COSMUD hydraulic model also allows for a systemwide fire flow evaluation to be performed to determine available fire flow capacity for adjacent land uses in the distribution system.

6.2 HYDRAULIC MODEL UPDATE METHODOLOGY

West Yost completed the following tasks to update the COSMUD hydraulic model:

- Used the existing COSMUD water distribution system maps (GIS) to update the existing hydraulic model
- Incorporated new facilities that were constructed and operating as of January 2020;
  - DWTP finished water reservoir and pump station
  - New Weston Ranch reservoir

- Verified that the existing hydraulic model system configuration (pipeline sizes, alignments, connections, and other facility sizes and locations) is representative of the current COSMUD water system
- Allocated 2019 existing water demands by using the COSMUD water meter information to properly distribute water demands within the hydraulic model
- Assigned elevations to junctions using the COSMUD high resolution raster file
- Confirmed roughness factors assigned in previous versions of the model using hydrant test results
- Dynamically calibrated the COSMUD water system hydraulic model to simulate pressures, levels and flows observed in the field and recorded by the COSMUD Supervisory Control and Data Acquisition (SCADA) system

To accomplish these tasks, West Yost worked closely with COSMUD staff to obtain and review the following available data:

- As-built information, where needed, such as for the DWTP, Westlake Villages, and the Veterans Affairs Off-Site Utility Improvements
- System operation plans
- Metered account water consumption data
- Historical SCADA system data
- Hydrant flow testing data
- Hydrant pressure data gathered by hydrant pressures recorders (HPRs)

The updated hydraulic model was calibrated under summer (maximum day) demand conditions using a developed diurnal demand pattern and an EPS model scenario. The calibration utilized SCADA and field data collected on June 23, 2020, which was the peak demand day concurrent with deployment of HPRs.

6.3 HYDRAULIC MODEL UPDATE

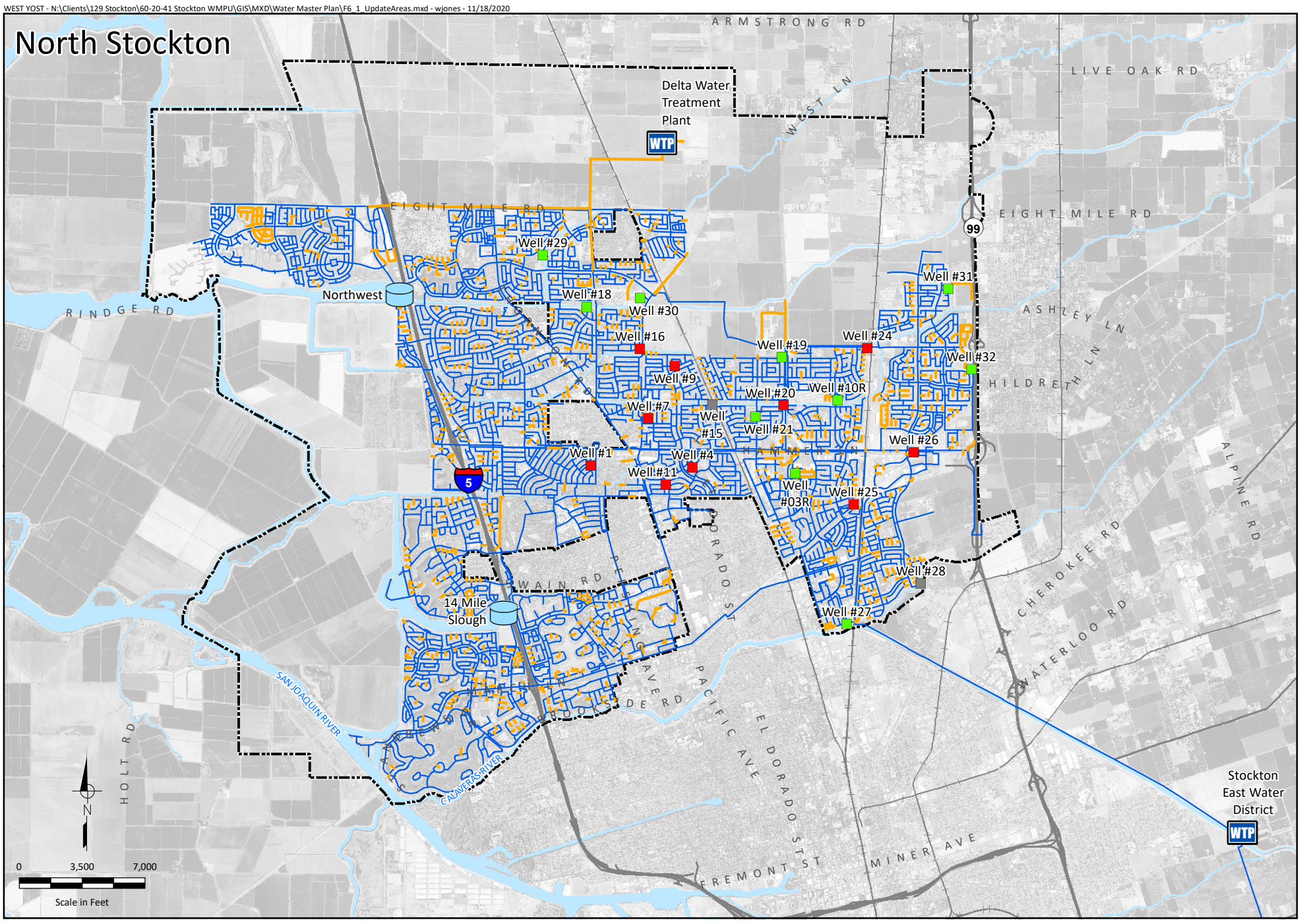
The following sections describe the findings of West Yost's model review and the specific updates made to the water distribution system hydraulic model.

6.3.1 Model Pipeline Configuration Update

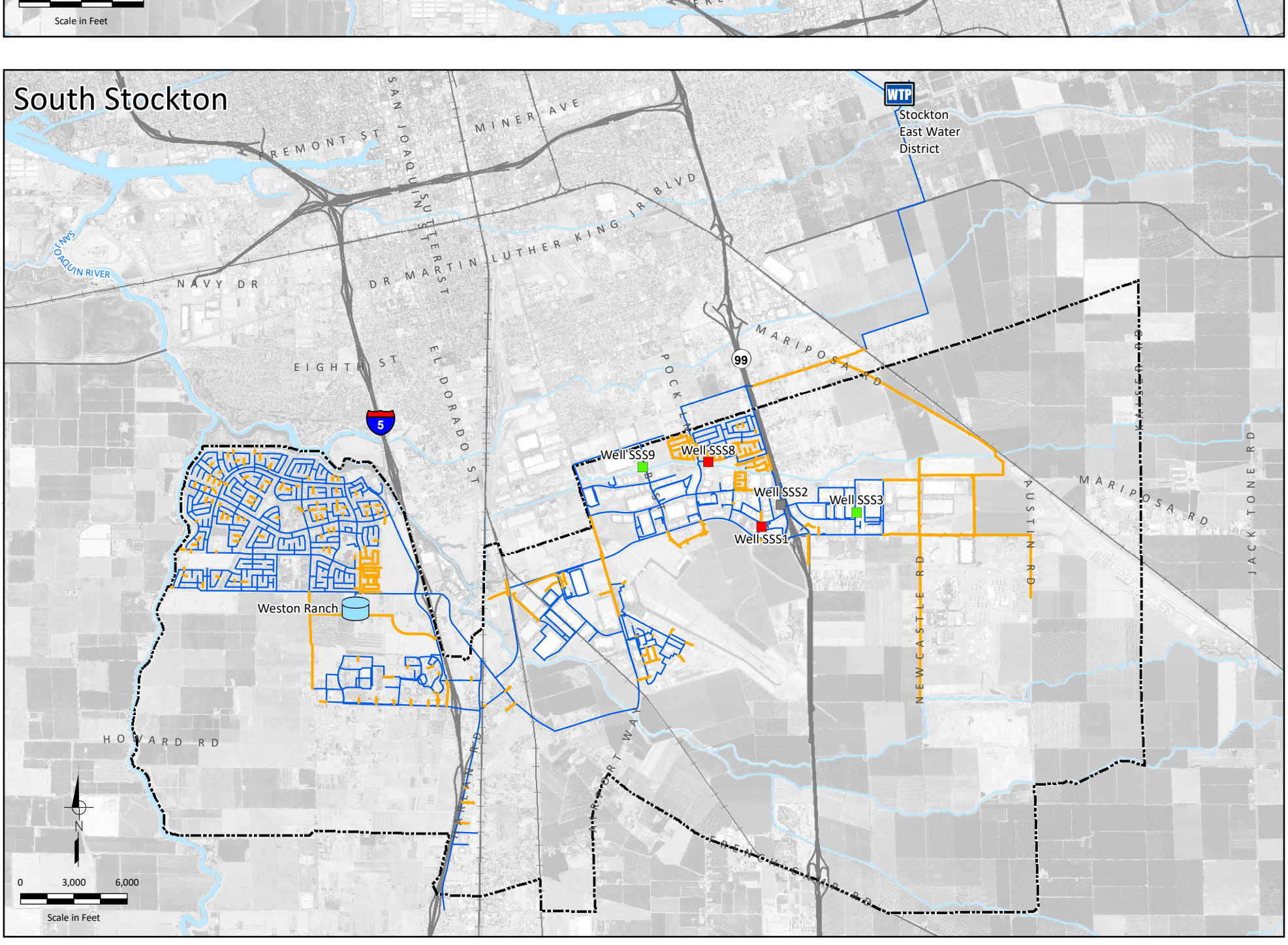
West Yost compared the latest hydraulic model with the GIS geodatabase file provided by COSMUD staff to verify and, if needed, update the pipeline diameters and configurations of the existing model to be consistent with the GIS geodatabase. In addition, West Yost reviewed as-built information for development projects that were in construction or scheduled to be completed soon (e.g., Veterans Affairs facility improvements, etc.). Figure 6-1 summarizes the pipelines that were added or updated with more recent information (pipeline diameters, materials, etc.).

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F6_1_UpdateAreas.mxd - wjones - 11/18/2020

North Stockton



South Stockton



- Updated Pipelines
- Existing Pipelines (Unaltered)
- COSMUD Water Service Boundary
- Water Treatment Plant
- Storage Tank & Booster Pump Station

Wells

- Active
- Inactive
- Standby

Figure 6-1

Summary of Model Pipeline Updates

City of Stockton
Water Master Plan Update

WEST YOST

6.3.2 Pipeline Roughness Characteristics

C-factors indicate the roughness (or smoothness) of the interior of a pipeline. The lower the C-factor, the rougher the pipeline interior and the higher the friction loss in the pipeline. Typically, C-factors are assigned to pipelines based on the characteristics of the pipeline (e.g., age, material type, and size). The COSMUD GIS geodatabase contains limited information on material and pipe age. During the last hydraulic model update, C-factors were assigned on the basis of anticipated material type and were subsequently adjusted based on approximate age (i.e., if one area was older with respect to another, C-factors were reduced slightly in the older area). For the purposes of this update, C-factors were not reassigned, but instead were assumed to be correct and later confirmed as part of the C-factor calibration process which was based on hydrant testing and data collected in the field. The results of that process are discussed further in the Hydraulic Model C-Factor Calibration section below.

6.3.3 Water Demand Allocation

The COSMUD GIS geodatabase contains a feature class for spatially-located water meters. COSMUD staff also provided a spreadsheet containing customer account information and water consumption for 2018-2019. The consumption data was reviewed, and it was determined that the 2019 demands were the most representative to use for the hydraulic model, as this data set contained the latest customer accounts and recently completed developments and was slightly higher than 2018 consumption. Since water meters were already spatially located, approximately 99 percent of the 2019 metered water consumption was able to be linked to the spatially located water meters.

The water use data for 2019 was linked by location ID to the water meter feature class. Then the InfoWater Demand Allocator tool was used to automatically assign the spatially-located demand point to the pipeline closest to its position in the water system.[22] The demand allocation results were reviewed to confirm that the demands were allocated appropriately (i.e., demands not placed on large transmission pipelines). Special attention was paid to locations with parallel pipelines, since several locations include parallel transmission pipelines and distribution system pipelines.

6.3.4 Elevation Extraction

The node features in the hydraulic model require that elevations be assigned to calculate pressures in the system. It is important to use the most accurate elevation data available when assigning elevations to the hydraulic model. The COSMUD provided a raster file that contains elevations for most of the area within the City limits. The raster provided was used to assign elevations to the hydraulic model for junctions, using the Elevation Extractor tool in InfoWater. Elevations assigned in the hydraulic model range from a low of 7.5 feet below sea level in the northwest corner of the distribution system, along Westlake Drive, to a high of 51.5 feet above sea level east of the Stockton East Water District Treatment Plant.

[22] The allocator locates the nearest pipeline to assign demands, and then assigns demands to the junctions connected to the pipeline, based on their proximity to the meter.

6.3.5 Water System Facilities

After the pipelines and nodes were confirmed in the hydraulic model, major system facilities (i.e., groundwater wells, storage tanks and associated pump stations, and treatment plants) were reviewed in the model to confirm correct configuration. Tank elevations (i.e., base, inlet, and overflow) were confirmed at the various tank locations, based on available information. It should be noted that all tank sites were modeled with one tank that contains an equivalent diameter of all tanks present at that location.

Pump curves and pumping water elevations in the wells were also updated. Pumping water elevations at several North Stockton wells were adjusted (increased) by an average of 50 feet. This increase in groundwater levels can be attributed to North Stockton's switch to relying primarily on treated surface water rather than groundwater, thus groundwater levels have increased. Pump curves in the hydraulic model were compared to recent pump tests and, where appropriate, were updated using affinity laws to more closely align with operating points recorded during 2019 pump tests.

6.3.6 Hourly Pattern Development

COSMUD staff provided SCADA system data at 15-minute intervals from June 12, 2020 to June 25, 2020, which corresponds with the HPR monitoring period. The SCADA information included flows, tank levels, and pump discharge pressures for all of the facilities in North and South Stockton that were in operation during this monitoring period. To conduct the extended period calibration, West Yost compiled well and treatment plant production, and tank flows, to develop hourly diurnal patterns for both North and South Stockton. The diurnal pattern from June 23, 2020 was chosen for the extended period calibration because the demand on this day approximated a maximum day demand (approximately 44.4 mgd), and the fluctuations throughout the day (peak demand in both North and South Stockton) were the highest compared to the other days in the monitoring period. The following subsections provide the methodology used to develop the diurnal pattern for each water service area.

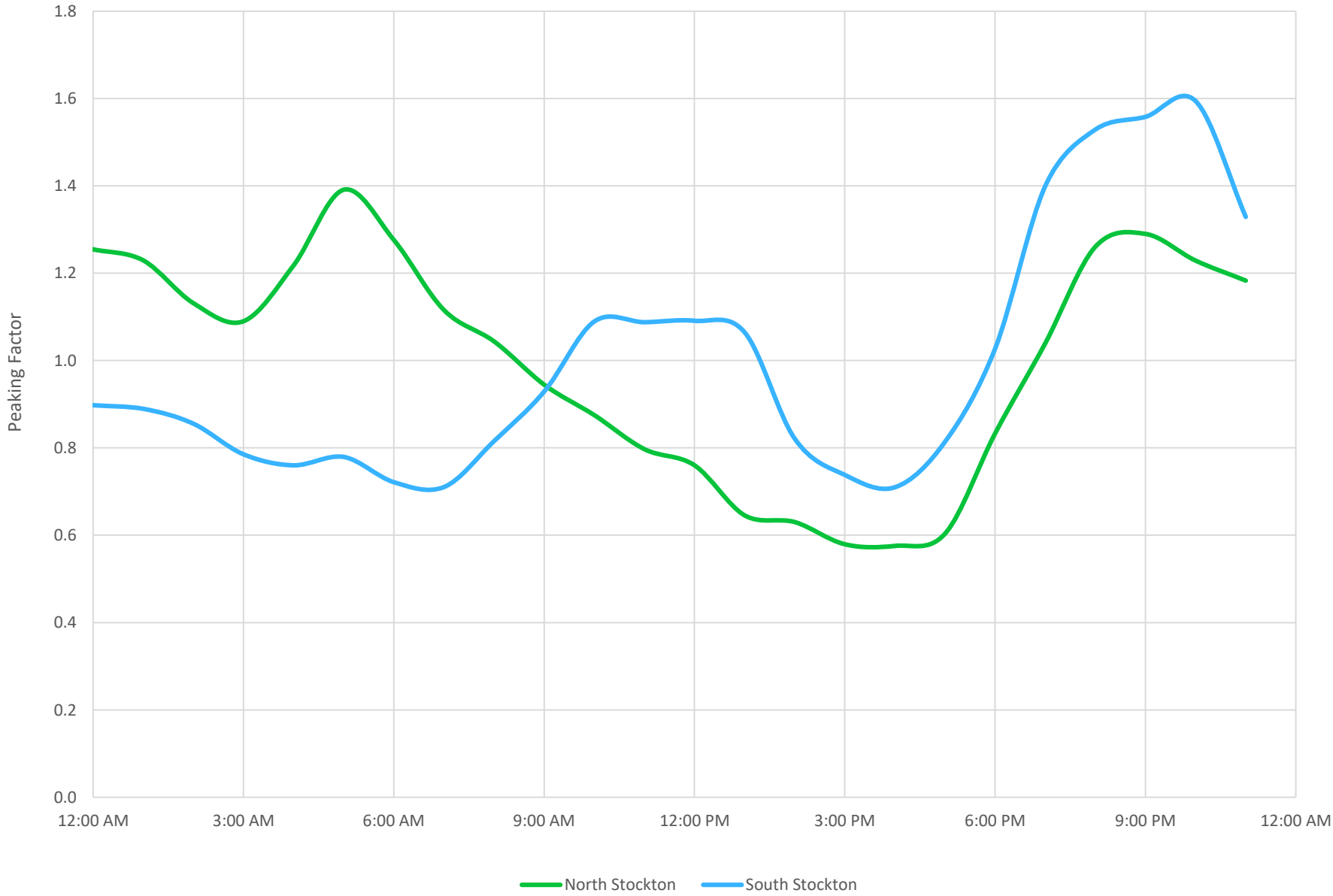
6.3.6.1 North Stockton

The North Stockton water service area is supplied predominantly from the DWTP, with some water also supplied from existing groundwater wells. The following is a summary of the facilities that supplied water to the North Stockton water service area during the time period monitored:

- Treatment Plants: Delta Water Treatment Plant
- Groundwater Wells: 3R, 29, 30, 31, 32
- Reservoir Pump Stations: Northwest Reservoir, Fourteen-Mile Slough Reservoir

Figure 6-2 presents the hourly diurnal pattern assumed for North Stockton. The demand in North Stockton on June 23, 2020 was approximately 36 mgd.

Figure 6-2. Diurnal Patterns during Calibration Day (June 23, 2020)



6.3.6.2 South Stockton

The South Stockton water service area is supplied from the SEWD DJWTP through the South Stockton Aqueduct. The following is a summary of the facilities that supplied water to the South Stockton water service area during the time period monitored:

- Treatment Plants: Stockton East Water District Water Treatment Plant
- Groundwater Wells: None
- Reservoir Pump Stations: Weston Ranch

Figure 6-2 contains hourly diurnal pattern assumed for South Stockton. The demand on June 23, 2020 averaged 8.4 mgd.

6.4 HYDRAULIC MODEL C-FACTOR CALIBRATION

The COSMUD hydraulic model was calibrated to confirm that the hydraulic model can accurately represent the operation of the water distribution system under stressed (i.e., fire flow) conditions. Calibration of the hydraulic model used COSMUD SCADA data and data gathered through hydrant tests and HPRs, as described in the following sections.

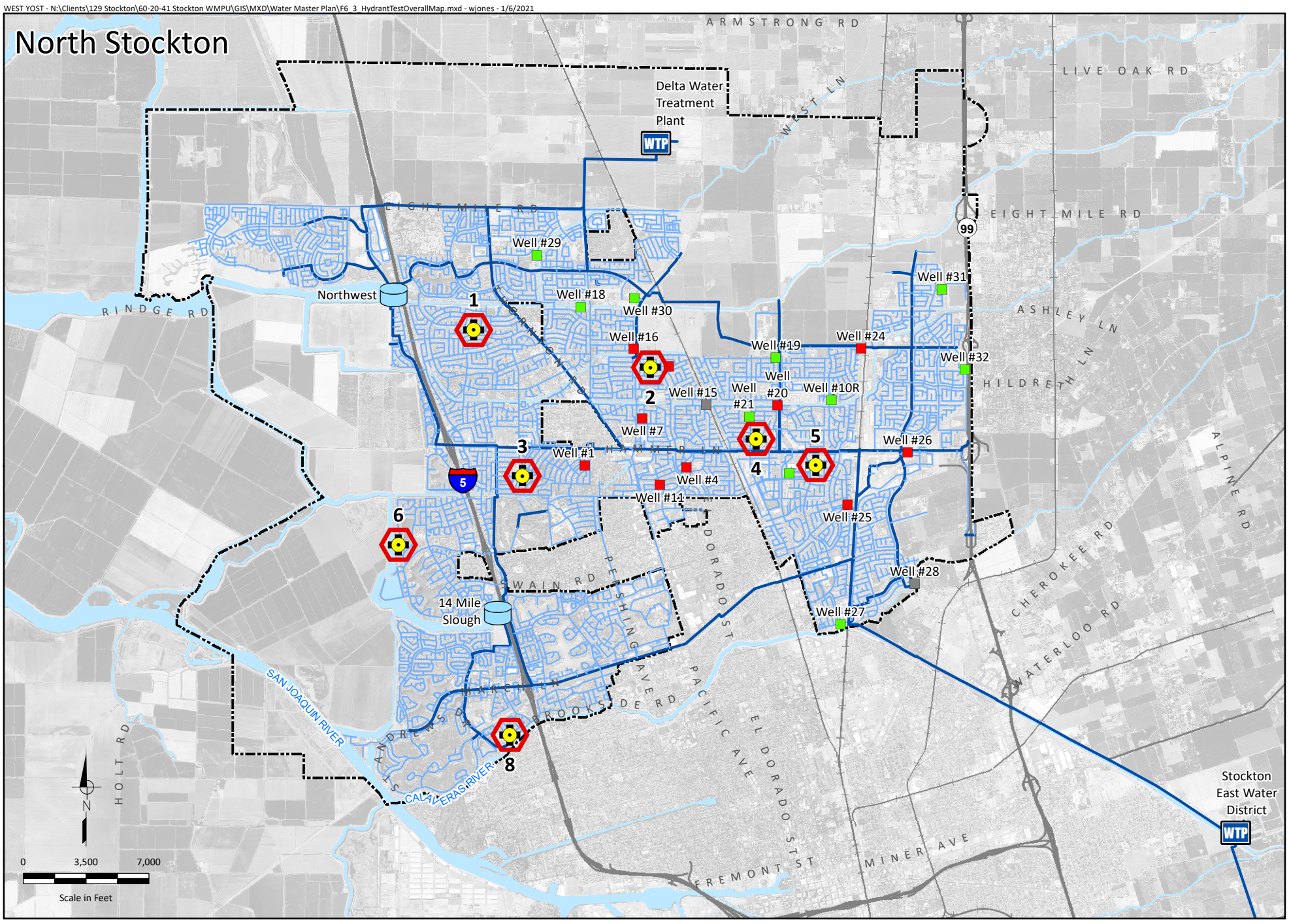
6.4.1 Development of Hydrant (C-Factor) Tests

After developing the hydraulic model, 7 locations (and 1 alternate location) were chosen for performing hydrant flow testing as shown on Figure 6-3. Selection of these hydrant test sites was based on specific pipeline size, age, and material type. Pipelines in the COSMUD water system range in size from 2 to 60 inches in diameter. Pipeline materials consist mainly of asbestos cement and PVC that were mostly installed in the 1960s through the 1990s.

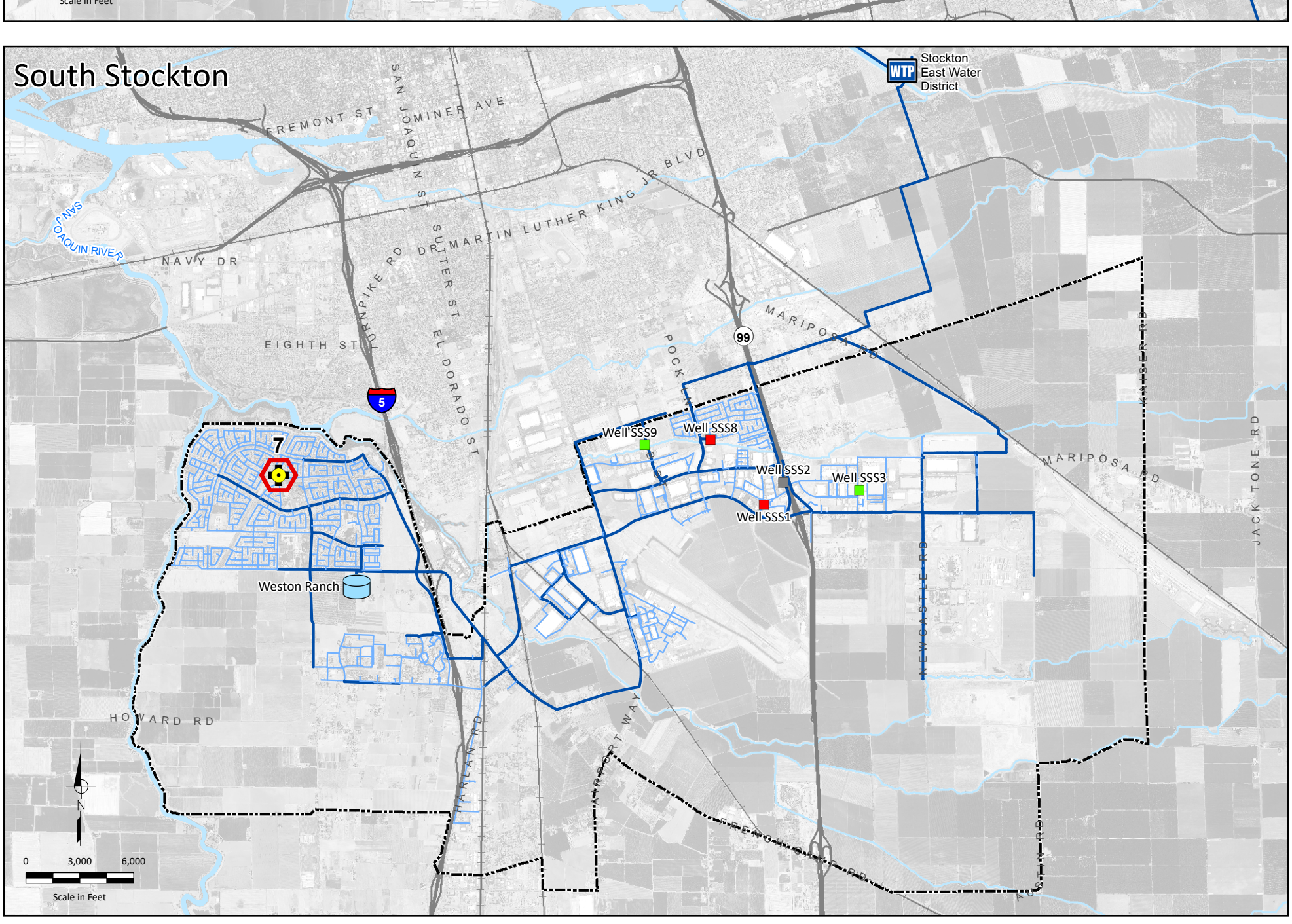
C-factors were previously assigned as part of the 2008 Water Master Plan, based in large part on hydrant testing that was conducted at that time, knowledge of material types, and adjustments to C-factors based on age. For this Water Master Plan Update, hydrant tests were used to “spot-check” and confirm the previously assigned pipeline C-factors, and to calibrate the hydraulic model so that it closely represents actual observed pressure conditions in the field. West Yost provided COSMUD with a memorandum detailing the hydrant test procedures before performing the field testing (see Appendix A). Table 6-1 provides the field status of each hydrant test.

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F6_3_HydrantTestOverallMap.mxd - wjones - 1/6/2021

North Stockton



South Stockton



COSMUD Water Service Boundary

Hydrant Test Location

Water Treatment Plant

Storage Tank & Booster Pump Station

Wells

- Active
- Inactive
- Standby

Pipelines

- Less than or Equal to 12-inch
- Greater than 12-inch

Figure 6-3

Hydrant Test Location Map

City of Stockton
Water Master Plan Update

WEST YOST

Table 6-1. Hydrant Test Locations and Status[(a)]

Test No.	Diameter, inches	Pipeline Material Type	Approximate Age	Location	Field Status
1	8	Asbestos Cement	1980s	Along Angel Drive	Completed
2	6	Asbestos Cement	1960s	Santa Maria Way and San Lucas Avenue	Completed
3	6	Asbestos Cement	1960s	Bonnie Brook Drive and Oak Creek Drive	Completed
4	10	Asbestos Cement	1970s	Along Knickerbocker Drive	Completed
5	8	Asbestos Cement	1980s	Shameran Street and Sharkon Lane	Completed
6	6	Asbestos Cement	1980s	Along Fort Donelson Drive	Completed
7	8	PVC	1990s	Along Ishi Gotto Street	Completed
8 (Alternate)	8	PVC	1980s	Along Boulder Creek Circle	Completed

(a) Seven test locations and one alternative test location were all completed.

Hydrant flow testing was performed on June 24, 2020. Each hydrant test involved flowing water through pipelines of a specific size and material type,[23] and measuring the pressure drops through the pipelines to determine friction losses. The hydrant test procedure consisted of monitoring discharge flow and pressure at the flowing hydrant, and pressure at other hydrants along the supply route to the flowing hydrant. Static pressures were measured while the flow hydrant was closed, and residual pressures were measured while the hydrant was flowing.

Each hydrant flow test performed was simulated using the hydraulic model of the COSMUD water system. The differences between observed static and residual pressures for the field hydrant test were calculated and compared to readings predicted by the model. The goal of the calibration effort was to achieve no more than 5 psi differential between the field hydrant test data and the model-predicted results, based on standard engineering practice for model calibration for water system master planning, and is similar to the general guidelines provided in AWWA M32 for developing hydraulic models for planning use.

Results from the hydrant tests are discussed in more detail in the following section.

[23] For each hydrant test, system valves were closed as necessary to isolate pipelines of a specific size and material type.

6.4.2 Hydrant (C-Factor) Test Results

The results of the simulated hydrant flow tests generally confirmed the water system pipeline configuration and the previously assigned C-factors continue to be representative of the existing pipeline roughness. C-factors did not need to be modified for any pipelines in the model. Table 6-2 summarizes the comparisons of field data and model results for the hydrant tests performed.

Only one hydrant test location (Hydrant Test 2 for a 6-inch AC pipeline installed in the 1960s) did not meet the ±5 psi tolerance limit established for calibration. At the observation hydrants furthest from the flowing hydrant (Hydrant 2D), field-observed differential pressures for Hydrant Test 2 were greater than the model-predicted values, and exceeded the tolerance limit of ±5 psi. Observation hydrants 2A, 2B and 2C, however, all calibrated to within the 5 psi tolerance limit. In addition, Hydrant Test 3, which was also a 6-inch diameter AC pipeline approximately built in 1960s, indicated that model-predicted differential pressures were within the 5 psi tolerance limit and confirmed the C-factor. It is suspected that there was a reading error or an incorrect pipeline diameter upstream of Hydrant 2D that resulted in the difference at this hydrant. Therefore, the existing C-factor for AC pipelines is still considered to be accurate.

6.4.3 Hydraulic Model C-Factor Calibration Findings and Conclusions

In summary, the results from the hydrant tests indicate that the hydraulic model is calibrated within a 5 psi pressure differential from field-observed data. Of the eight hydrant tests that were conducted, only one hydrant (Hydrant Test 2, D hydrant) did not meet the 5 psi pressure criterion. However, the C-factor for this pipeline was not adjusted because the remaining tests for pipelines with the same pipeline material and age showed alignment between the field-observed and model-predicted results.

The results indicate that the COSMUD hydraulic model can simulate fire flow or other large demand conditions within the COSMUD water system. Based on the results of the hydraulic model calibration, it can be concluded that the hydraulic model results provide a reasonable representation of the COSMUD water distribution system and can be used for planning purposes.

Table 6-2. Summary of Hydrant Test Calibration Results

Hydrant[(a)]	Field DataStatic Pressure, psi	Modeled Data					Comparison of Differential Pressures between Field and Modeled Data[(b)]
		Residual Pressure, psi	Differential Pressure, psi (Static - Residual)	Static Pressure, psi	Residual Pressure, psi	Differential Pressure, psi (Static - Residual)	
Hydrant Flow Test No. 1 [Angel Drive, Between Sutton Way and Otto Drive]							
1	54	14	N/A	54	N/A	N/A	N/A
1A	53	26	27	53	24	29	-2
1B	54	35	19	53	34	19	0
1C	56	46	10	53	47	6	4
1D	53	51	2	52	50	2	0
Hydrant Flow Test No. 2 [Santa Maria Way and San Lucas Avenue, Between Ponce De Leon Avenue and Don Borgia Way]							
2	53	4	N/A	50	N/A	N/A	N/A
2A	51	15	36	50	14	37	-1
2B	52	26	26	51	26	25	1
2C	55	35	20	51	35	15	5
2D	53	42	11	51	46	5	6
Hydrant Flow Test No. 3 [Bonnie Brook Drive and Oak Creek Drive, Between Westland Avenue and Meadow Avenue]							
3	52	1	N/A	51	N/A	N/A	N/A
3A	50	7	43	51	5	46	-3
3B	51	15	37	52	14	37	-1
3C	54	21	33	52	21	31	2
Hydrant Flow Test No. 4 [Knickerbocker Drive, Between New York Drive and Tam O Shanter Drive]							
4	50	20	N/A	49	N/A	N/A	N/A
4A	50	43	8	49	42	7	0
4B	50	45	5	49	43	6	-1
4C	53	49	4	49	45	4	0
4D	50	49	1	49	47	2	-1
Hydrant Flow Test No. 5 [Shameran Street and Sharkon Lane, Between Montauban Avenue and Hammertown Drive]							
5	50	14	N/A	50	N/A	N/A	N/A
5A	50	36	15	50	36	13	1
5B	48	40	8	50	47	3	5
5C	54	51	3	50	48	2	1
Hydrant Flow Test No. 6 [Fort Donelson Drive, Between Five Mile Drive and Palmouth Court]							
6	55	5	N/A	51	N/A	N/A	N/A
6A	50	17	33	51	17	34	-1
6B	52	32	21	52	32	19	1
6C	54	44	10	51	43	8	2
Hydrant Flow Test No. 7 [Ishi Gotto Street, Between Ken Street and Brick and Tile Circle]							
7	60	15	N/A	59	N/A	N/A	N/A
7A	59	24	35	59	25	34	1
7B	60	32	28	59	33	26	2
7C	62	40	22	58	39	19	3
7D	61	44	17	58	42	16	1
Hydrant Flow Test No. 8 [Boulder Creek Circle]							
8	52	9	N/A	49	N/A	N/A	N/A
8A	51	24	28	50	22	28	0
8B	52	29	23	50	28	22	1
8C	54	39	16	49	35	14	1
8D	51	47	5	49	45	4	0

(a) Location of hydrants can be found in the Hydrant Test Memorandum prepared by West Yost (Appendix A).
(b) The goal of the calibration effort is to achieve a differential pressure comparison within 5 psi for the observed hydrants, consistent with requirements in AWWA M32.

6.5 HYDRAULIC MODEL EXTENDED PERIOD SIMULATION (EPS) CALIBRATION

Calibrating a hydraulic model to replicate field operating conditions requires thorough knowledge of how the water system performs over a range of operating conditions. To ensure that the hydraulic model was correctly configured and capable of producing results that are consistent with those observed from the COSMUD SCADA system and collected in the field, a detailed EPS calibration process for summer conditions was conducted. The calibration was completed using SCADA and field data collected on June 23, 2020. For the EPS calibration, 16 HPRs were deployed to collect supplemental pressure data that was subsequently used to compare model-predicted results at various locations throughout the system, including high and low elevation locations, and locations that are hydraulically distant from supply points. The locations where the HPRs were set up in the system are shown on Figure 6-4.

The hourly diurnal patterns developed for each water service area, as described in the Hourly Pattern Development section above, were used in the calibration. The model was set up to replicate the system operations by applying controls to facilities based on specific conditions (i.e., pumps on or off based on tank level). Model-predicted results (i.e., facility flows and pressures, tank levels, and system pressures) were plotted and compared to the SCADA system data for the specific dates and field-collected HPR data to verify whether the COSMUD hydraulic model accurately predicts field conditions.

Model-predicted flows and levels were matched as closely as possible and aimed to be within 10 percent of field-recorded data. Pressure trends were checked to see whether results were within ±5 psi of field trends. Adjustments to the model were made, if needed, to better match field data when results from the hydraulic model did not trend well with the field data. Results from the calibration are discussed in the following sections.

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F6_4_HPROverallMap.mxd - wjones - 11/18/2020

North Stockton

Delta Water Treatment Plant
WTP
HPR 01
HPR 12
HPR 07
HPR 11
HPR 02
HPR 06
HPR 09
HPR 08
HPR 03
HPR 05
HPR 10
HPR 04
Northwest
14 Mile Slough
Well #29
Well #18
Well #30
Well #16
Well #9
Well #7
Well #1
Well #4
Well #11
Well #15
Well #19
Well #20
Well #21
Well #24
Well #10R
Well #31
Well #32
Well #26
Well #25
Well #03R
Well #28
Well #27
ARMSTRONG RD
LIVE OAK RD
EIGHT MILE RD
WEST LN
RINGE RD
ASHLEY LN
HILDRETH LN
HAMMER LN
ALPINE RD
CHEROKEE RD
WATERLOO RD
EL DORADO ST
PACIFIC AVE
PERSHING AVE
MARCH LN
BROOKSIDE RD
STANDREWS DR
SAN JOAQUIN RIVER
HOLT RD
FREMONT ST
MINER AVE
99
5
0 3,500 7,000
Scale in Feet

South Stockton

Stockton East Water District
WTP
HPR 15
HPR 16
HPR 13
HPR 14
Well SSS9
Well SSS8
Well SSS2
Well SSS3
Well SSS1
Weston Ranch
SAN JOAQUIN RIVER
NAVY DR
EIGHTH ST
DR MARTIN LUTHER KING JR BLVD
MARIPOSA RD
JACKSTONE RD
NEWCASTLE RD
AUSTIN RD
HOWARD RD
TARLTAN RD
ARPORT WAY
POCK LN
0 3,000 6,000
Scale in Feet

COSMUD Water Service Boundary
HPR Location
Water Treatment Plant
Storage Tank & Booster Pump Station

Wells
- Active
- Inactive
- Standby

Pipelines
- Less than or Equal to 12-inch
- Greater than 12-inch

Figure 6-4

Hydrant Pressure Recorder Map

City of Stockton
Water Master Plan Update

WEST YOST

6.5.1 Hydraulic Model EPS Calibration Results

Graphs of the comparisons between model-simulated results and SCADA values, as well as comparisons between model-simulated results and HPR values for the calibration date of June 23, 2020, are provided in Appendix B and Appendix C for facilities in North and South Stockton, respectively. The following summarizes the comparison of hydraulic model results with field data for each water service area.

6.5.1.1 North Stockton

Figures B-1 through B-20 of Appendix B show results for the EPS calibration in North Stockton. In general, COSMUD provides a certain minimum supply for North Stockton from the DWTP. Differences between surface water supply and demand are met through a combination of storage and groundwater. Storage tanks typically drain in the morning and fill in the afternoon. The Northwest and Fourteen-Mile Slough Reservoirs follow a consistent fill and empty cycle to mitigate potential water quality issues.

Figure B-1 shows pressure and flow results for the DWTP. The DWTP, based on SCADA data, maintains a relatively constant pressure of approximately 50 psi and also maintains a relatively constant flow of approximately 20 mgd. In the hydraulic model, the DWTP was set to maintain a downstream pressure of 50 psi. Model-predicted flow from the DWTP did oscillate and is not as consistent as the SCADA data indicates. However, the average supply throughout the day does align well and model-predicted flows are generally within 10 percent of the SCADA-predicted range, which is acceptable per AWWA M32. Pressures are also well within the target tolerance of ±5 psi.

Figures B-2 and B-3 show the tank levels in the Northwest Reservoir and the Fourteen-Mile Slough Reservoir. The model-predicted tank levels generally trended similarly to the field-recorded data for both facilities, within 10 percent of each other.

Figures B-4 through B-8 summarize the flow and pressures from the various COSMUD groundwater wells in North Stockton that were operating that day. The model-predicted flows and pressures generally trended similarly to field-recorded data for both parameters, with flows within 10 percent and pressures within ±5 psi of field-recorded information. It should be noted that the pressure at Well 31 is underpredicted in the model. However, model-predicted pressures at the two nearby HPRs 2 and 7 were within the ±5 psi tolerance of HPR/field-recorded conditions. The low pressure at Well 31 could be due to the elevation of the pressure instrument, or a SCADA reading issue. However, this difference is acceptable because all other facilities calibrated well with respect to pressure and nearby HPRs are within range.

Figures B-9 through B-20 show that the pressure trends collected by the HPRs installed in North Stockton match the pressure results from the model simulation. All model-predicted pressure results are within approximately 5 psi of the field-recorded pressures.

6.5.1.2 South Stockton

Figures C-1 and C-2 show results for the SEWD Water Treatment Plant and Weston Ranch Reservoir, respectively. In general, SEWD provides supply for South Stockton and Weston Ranch is used and filled on an as-needed basis. No wells came on in South Stockton during the calibration day.

For SEWD, model-predicted flows and pressures generally trended similarly to field-recorded data, with flows within 10 percent and pressures within ±5 psi of field-recorded information.[24] At the Weston Ranch Reservoir, the model-predicted tank levels also trended similarly to field-recorded data, within 10 percent of each other.

Figures C-3 through C-6 show the pressure trends collected by the HPRs installed in South Stockton compared to the pressure results from the model simulation. In general, the field results match the model-predicted results, with the exception of HPR 13 and HPR 14 between 10:00 am and 1:00 pm. These HPRs are located on the west side of South Stockton, furthest from SEWD and were generally within residential land uses. It is possible that the diurnal demand characteristics in this area are different, therefore the model is predicting pressures lower than observed. While pressures during these times are consistently lower, they are still within ±5 psi tolerance. In addition, model-predicted pressure at HPRs 15 and 16 were well within 1 to 2 psi of field-recorded pressures.

6.5.2 Hydraulic Model EPS Calibration Findings and Conclusions

Based on the results of the hydraulic model EPS calibration, it can be concluded that the hydraulic model provides a reasonable representation of the COSMUD water distribution system and can be used for planning evaluations and design/operational analysis for a variety of flow conditions.

Additionally, COSMUD staff should continue to update and verify facilities data and pipeline system configurations in the hydraulic model as facilities are constructed or replaced to maintain a hydraulic model that will continue to accurately represent the COSMUD water distribution system.

[24] Based on discussions with City staff, SEWD elevation was adjusted based on HPR information to 27.5 ft msl.

This chapter presents the evaluation of the COSMUD existing water system, as shown on Figure 7-1 and described in Chapter 2, and its ability to meet the recommended performance and operational criteria described in Chapter 5 under various existing water demand conditions. This evaluation includes an analysis of water supply capacity, storage capacity, and pumping capacity, as well as the existing water distribution system's ability to meet recommended operational and design criteria under maximum day demand, peak hour demand, and maximum day demand plus fire flow scenarios.

West Yost conducted this evaluation using the updated hydraulic model described in Chapter 6, which includes some new water system facilities that the COSMUD is actively working on completing. Recommendations from this evaluation are used to develop a recommended capital improvement program, which is detailed in Chapter 9.

The following sections present the evaluation methodology and results from the existing water system evaluation:

- Existing Water Demands
- Existing Water Supply and Water System Facility Capacity Evaluation
- Existing Water Distribution System Performance Evaluation
- Summary of Findings and Recommendations for the Existing Water System

7.1 EXISTING WATER DEMANDS

The COSMUD existing baseline water demands are summarized in Table 7-1. The average day demand for the purposes of this Water Master Plan Update is 28.1 mgd (31,495 afy) and represents the average annual water production from 2015 through 2019 with an added 10 percent demand rebound factor, as described in Chapter 3. Maximum day and peak hour demands were calculated based on the adopted peaking factors of 1.6 and 2.5 times the average day demand, respectively, in North Stockton, and 1.7 and 3.3 times the average day demand, respectively, in South Stockton, as described in Chapter 3.

Table 7-1. Existing COSMUD Baseline Demands[a]

Service Area	Average Day Demand (ADD)[b]		Maximum Day Demand (MDD)[c]		Peak Hour Demand (PHD)[d]	
	gpm	mgd	gpm	mgd	gpm	mgd
North Stockton	15,992	23.0	25,587	36.8	39,980	57.6
South Stockton	3,534	5.1	6,007	8.7	11,661	16.8
Total	**19,526**	**28.1**	**31,594**	**45.5**	**51,641**	**74.4**

(a) Does not include water demands for the Walnut Plant Area which are minimal and not evaluated in this Water Master Plan Update.
(b) The average day demand is based on the average annual production from 2015 through 2019, scaled to include a 10 percent demand rebound factor as described in Chapter 3.
(c) The maximum day demand is calculated using a peaking factor of 1.6 in North Stockton and 1.7 in South Stockton, times the average day demand.
(d) The peak hour demand is calculated using a peaking factor of 2.5 in North Stockton and 3.3 in South Stockton, times the average day demand.

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F7_1_ExistingSystem.mxd - wjones - 1/22/2021

Delta Water Treatment Plant
WTP
Well #29
Northwest
Well #18
Well #30
Well #31
Well #19
Well #24
Well #32
Well #16
Well #9
Well #15
Well #20
Well #10R
Well #7
Well #21
Well #26
Well #1
Well #4
Well #03R
Well #11
Well #25
Well #28
Well #27
14 Mile Slough
Stockton East Water District
WTP
Well SSS9
Well SSS8
Well SSS2
Well SSS3
Well SSS1
Weston Ranch

EIGHT MILE RD
WEST LN
MORADA LN
DAVIS RD
TAYLOR RD
HAMMER LN
BENJAMIN HOLT DR
ELDORADO ST
SWAIN RD
HOLMAN RD
CHEROKEE RD
WATERLOO RD
BUCKLEY COVE WAY
ALPINE AVE
COUNTRY CLUB BLVD
PACIFIC AVE
MCLEOD LN
HARDING WAY
CALIFORNIA ST
NEVADA ST
SIERRA WAY
WILSON WAY
FREMONT ST
FILBERT ST
PARK ST
OAK ST
WEBER AVE
MARKET ST
MAIN ST
DIAMOND AVE
DR MARTIN LUTHER KING JR BLVD
WASHINGTON ST
NAVY DR
CHARTER WAY
STOCKTON DEEP WATER CHANNEL
PORT OF STOCKTON
DAGGETT RD
AIRPORT WAY
ARCH AIRPORT RD
FARMINGTON RD
MARIPOSA RD
FRENCH CAMP RD
MATHEWS RD
ROTH RD
HAMANTHEY RD

99
5
4

N
0 0.6 1.2
Miles

Notes:
1. The Capital Improvement Project (CIP) Waterline Extension for VA Medical Facility in French Camp was included in the existing system evaluation because construction is scheduled to commence March 2021.

WTP Water Treatment Plant
Storage Tank & Booster 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 7-1

Existing Water System

City of Stockton
Water Master Plan Update

WEST YOST

7.2 EXISTING WATER SUPPLY AND WATER SYSTEM FACILITY CAPACITY EVALUATION

The following evaluations were conducted for the existing water system, with results discussed below:

- Supply Capacity Evaluation
- Pumping Capacity Evaluation
- Storage Capacity Evaluation

7.2.1 Supply Capacity Evaluation

As described in Chapter 5, the recommended supply capacity criterion requires the COSMUD to provide firm supply capacity equal to the maximum day demand. Table 7-2 summarizes existing firm supply capacity compared to existing maximum day demands in North Stockton and South Stockton. The COSMUD water supply is provided by both surface water and groundwater, and their respective firm capacities are summarized as follows.

- For North Stockton, 100 percent of DWTP capacity is assumed for firm surface water supply.
- For South Stockton, surface water supply from SEWD was assumed to be limited to approximately 70 percent of the South Stockton maximum day demand. This assumption was made to provide more flexibility under drought conditions when surface water supplies may be curtailed by assuming the use of additional groundwater supplies to meet the remaining 30 percent of the maximum day demand. Refer to Chapter 4 for more discussion regarding this assumption.
- The firm groundwater supply capacity is calculated as 85 percent of the production capacity of active wells (i.e., does not include standby or inactive wells) in North Stockton and South Stockton, respectively. Refer to Chapter 5 for more discussion regarding this assumption.

As shown in Table 7-2, there is a surplus of supply in North Stockton of 17.5 mgd and in South Stockton of 3.3 mgd, respectively. Additional supply capacity from a proposed new well, Well SSS10, is also included in Table 7-2. As discussed in the storage capacity evaluation below, there is a storage capacity deficit in South Stockton. To address the storage capacity deficit in the South Stockton water service area, Well SSS10 is recommended. Well SSS10 is already in the planning stages and it is recommended that the COSMUD continue with development of this well to address the storage capacity deficit, as well as provide additional supply capacity to the South Stockton water service area.

Table 7-2. Comparison of Available versus Required Supply Capacity

Available or Required Capacity	Notes/Basis	Capacity	
		gpm	mgd
North Stockton			
Supply			
Existing Firm Well Supply Capacity	[A] 85% of the capacity of active wells (Wells 3R, 10R, 18, 19, 21, 27, 29, 30, 31, 32)	16,916	24.4
Existing Surface Water Supply	[B] Full DWTP Capacity	20,833	30.0
Total Supply Capacity	[C] = [A] + [B]	37,749	54.4
Demand			
Existing Maximum Day Demand	[D] 1.6 times ADD (refer to Table 7-1)	25,587	36.8
North Stockton Supply Capacity Surplus (Deficit)	**[E] = [C] – [D]**	**12,162**	**17.5**
South Stockton			
Supply			
Existing Firm Well Supply Capacity	[F] 85% of the capacity of active wells (Wells SSS3 and SSS9)	4,118	5.9
Existing Surface Water Supply	[G] 70% of South Stockton MDD, 8.7 mgd (refer to Table 7-1)	4,205	6.1
Total Supply Capacity	[H] = [F] + [G]	8,323	12.0
Demand			
Existing Maximum Day Demand	[I] 1.7 times ADD (refer to Table 7-1)	6,007	8.7
South Stockton Supply Capacity Surplus (Deficit)	**[J] = [H] - [I]**	**2,316**	**3.3**
Additional Supply			
Additional Firm Supply Capacity with Well SSS10	[K] 85% of the assumed 2,000 gpm capacity	1,700	2.4
South Stockton Supply Capacity Surplus (Deficit) with Existing System Improvements	**[L] = [J] + [K]**	**4,016**	**5.8**

7.2.2 Pumping Capacity Evaluation

Existing pumping capacity was evaluated to assess its ability to deliver a reliable firm pumping capacity to the COSMUD existing water service areas to meet the greater of either the maximum day demand plus a large fire flow event or the peak hour demand (anywhere within the North or South Stockton water service areas), as described in Chapter 5. Pumping capacity is provided by a combination of supply facilities (i.e., treatment plants and groundwater wells) and reservoir pump stations. Firm pumping capacity provided by treatment plants and groundwater wells is evaluated in a manner identical to the supply capacity evaluation described above. For reservoir pump stations, a reduction in total pumping capacity is assumed to account for pumps that could be out of service due to various operational problems or maintenance at any given time. For both North Stockton and South Stockton, firm booster pumping capacity is defined as the total pump station capacity with the largest pump out of service.

Table 7-3 shows the firm pumping capacity compared to the peak hour demand in North Stockton and South Stockton and indicates there is a surplus of pumping capacity in both the North Stockton and South Stockton water service areas.

Table 7-3. Comparison of Available versus Required Pumping Capacity

Available or Required Capacity	Notes/Basis	Capacity	
		gpm	mgd
North Stockton			
Requirement			
Required Maximum Day Demand plus Fire Flow[(a)]	[A] MDD (refer to Table 7-1) plus a large industrial fire flow (4,500 gpm)	30,087	43.3
Existing Peak Hour Demand	[B] 2.5 times ADD (refer to Table 7-1)	39,980	57.6
Pumping Capacity Requirement	[C] = the greater of [A] or [B]	39,980	57.6
Capacity			
Existing Firm Pump Capacity at Reservoir Sites	[D] Total pump capacity with the largest pump offline at each reservoir site	31,450	45.3
Existing Firm Pump Capacity at Treatment Plants	[E] Limited to the existing capacity of the Delta Water Treatment Plant	20,833	30.0
Existing Firm Well Capacity	[F] 85% of the capacity of active wells (Wells 3R, 10R, 18, 19, 21, 27, 29, 30, 31, 32)	16,916	24.4
Total Existing Available Firm Pumping Capacity	[G] = [D] + [E] + [F]	69,199	99.6
North Stockton Existing Pumping Capacity Surplus (Deficit)	**[H] = [G] - [C]**	**29,219**	**42.1**
South Stockton			
Requirement			
Required Maximum Day Demand plus Fire Flow[(a)]	[I] MDD (refer to Table 7-1) plus a large industrial fire flow (4,500 gpm)	10,507	15.1
Existing Peak Hour Demand	[J] 3.3 times ADD (refer to Table 7-1)	11,661	16.8
Pumping Capacity Requirement	[K] = the greater of [I] or [J]	11,661	16.8
Capacity			
Existing Firm Pump Capacity at Reservoir Sites	[L] Total pump capacity with the largest pump offline at each reservoir site	9,000	13.0
Existing Firm Pump Capacity at Treatment Plants	[M] 70% of South Stockton MDD (refer to Table 7-1)	4,205	6.1
Existing Firm Well Capacity	[N] 85% of the capacity of active wells (Wells SSS3 and SSS9)	4,118	5.9
Total Existing Available Firm Pumping Capacity	[O] = [L] + [M] + [N]	17,323	24.9
South Stockton Existing Pumping Capacity Surplus (Deficit)	**[P] = [O] - [K]**	**5,662**	**8.2**
Improved Capacity			
Additional Firm Capacity with Well SSS10	[Q] 85% of the assumed 2,000 gpm capacity	1,700	2.4
South Stockton Pumping Capacity Surplus (Deficit) with Existing System Improvements	**[R] = [P] + [Q]**	**7,362**	**10.6**

(a) The large industrial fire flow does not include demand for on-site sprinkler flow.

7.2.3 Storage Capacity Evaluation

Water storage provides operational storage to balance differences in demands and supplies, emergency storage in case of a supply failure, and water to fight fires. The COSMUD water system has two sources of available storage: above-ground storage (i.e., storage reservoirs) and storage available in the groundwater basin. Together, these two sources of storage must be sufficient to meet the COSMUD operational, emergency, and fire flow storage criteria.

As introduced in Chapter 5, the COSMUD water storage capacity requirement is as follows:

- Operational storage equal to 25 percent of a maximum day demand
- Fire flow storage equal to the largest fire flow rate multiplied by its duration
- Emergency storage equal to one average day demand

Because the COSMUD water supply includes groundwater wells and treated surface water, the groundwater basin and treatment facilities can offset some of the required storage in the form of storage credits. A summary of available storage capacity and credits is provided below:

- Existing available storage is defined as the storage provided by all active reservoirs
- The Emergency Groundwater Storage Credit (EGWC) equals 85 percent of the active groundwater wells that can be reliably accessed (i.e., well facilities equipped with auxiliary power)
- The Treated Surface Water Supply Credit (TSWC) equals the smaller of the two treatment facilities available in North Stockton. There is no surface water credit available for South Stockton because water from DWTP cannot be transferred to South Stockton, providing no redundant treated surface water supply
- Combined, the EGWC and TSWC cannot exceed the emergency storage requirement

The existing water storage facilities, in conjunction with the available EGWC and TSWC, were evaluated to determine whether the COSMUD existing storage capacity provides the recommended operational, emergency, and fire flow storage for existing demands. Table 7-4 provides a comparison of available and required storage and indicates there is a storage capacity deficit in both the North Stockton and South Stockton areas of 3.4 MG and 2.3 MG, respectively.

As previously discussed, the COSMUD is actively working on the design and construction of the North Stockton Pipeline Hypochlorite Facility that would effectively allow SEWD water to be delivered in North Stockton. Once this project is in place, a TSWC would apply to North Stockton of 9.4 MG, maximizing total credits up to the emergency requirement in the North Stockton area and alleviating the storage capacity deficit. To alleviate the storage capacity deficit in South Stockton, it is recommended that the COSMUD continue to proceed with the design and construction of Well SSS10, and to ensure that that this well is equipped with backup power. The addition of backup power improves the reliability of Well SSS10 and allows it to be counted as part of the EGWC. As shown in Table 7-4, completion of these recommended projects mitigates the storage capacity deficit and results in a storage capacity surplus. No additional storage projects are recommended for existing system conditions.

Table 7-4. Comparison of Available versus Required Storage Capacity

Available or Required Capacity	Notes/Basis	Storage, mg
North Stockton		
Requirement		
Operational	[A] 25% of MDD (refer to Table 7-1)	9.2
Fire Flow	[B] One fire event: 4,000 gpm @ 4 hours (refer to Chapter 5)	1.0
Emergency	[C] One ADD (refer to Table 7-1)	23.0
Total Storage Requirement	[D] = [A] + [B] + [C}	33.2
Capacity		
Existing Available Storage Capacity	[E] Includes all active reservoirs	16.2
Treated Surface Water Supply Credit	[F] No credit taken, as North and South Stockton are currently hydraulically separate	0.0
Emergency Groundwater Storage Credit[(e)]	[G] 85% of the active wells equipped with backup power (Wells 3R, 29, 30, 31, 32)	13.6
Total Storage Capacity	[H] = [E] + [F] + [G]	29.8
North Stockton Existing Storage Capacity Surplus (Deficit)	**[I] = [H] - [D]**	**(3.4)**
Improved Capacity		
Treated Surface Water Supply Credit	[J] Once the North Stockton Pipeline Hypochlorite Facility is complete, the treated surface water supply credit can be used for North Stockton	9.4
North Stockton Existing Storage Capacity Surplus (Deficit) with Additional Treated Surface Water Supply Credit	**[K] = [I] + [J]**	**6.0**
South Stockton		
Requirement		
Operational	[L] 25% of MDD (refer to Table 7-1)	2.2
Fire Flow	[M] One fire event: 4,000 gpm @ 4 hours (refer to Chapter 5)	1.0
Emergency	[N] One ADD (refer to Table 7-1)	5.1
Total Storage Requirement	[O] = [L] + [M] + [N]	8.3
Capacity		
Existing Available Storage Capacity	[Q] Includes all active reservoirs	6.0
Treated Surface Water Supply Credit	[R] No credit taken, since North and South Stockton remain hydraulically separate	0.0
Emergency Groundwater Storage Credit[(e)]	[S] 85% of active wells equipped with backup power (none)	0.0
Total Storage Capacity	[T] = [Q] + [R] + [S]	6.0
South Stockton Existing Storage Capacity Surplus (Deficit)	**[U] = [T] - [O]**	**(2.3)**
Improved Capacity		
Additional Emergency Groundwater Storage Credit with Well SSS10	[V] 85% of the assumed 2,000 gpm capacity	2.4
South Stockton Storage Capacity Surplus (Deficit) with Existing System Improvements	**[W] = [U] + [V]**	**0.1**

7.3 EXISTING WATER DISTRIBUTION SYSTEM PERFORMANCE EVALUATION

The water distribution system performance evaluation identifies necessary improvements to the COSMUD water distribution system to support the COSMUD existing water demands while meeting the COSMUD recommended water system planning and design criteria, presented in Chapter 5. The following evaluations were performed to assess water distribution system performance under existing water demand conditions:

- Normal Operations – Maximum Day Demand with Peak Hour Scenario: This scenario evaluated service pressures during a peak hour on the maximum day demand condition
- Emergency Operations – Maximum Day Demand plus Fire Flow Scenario: This scenario evaluated system fire flow availability under a maximum day demand condition

The updated and calibrated water system hydraulic model, as discussed in Chapter 6, was used to evaluate existing water distribution system performance. The existing water system is expected to deliver maximum day with peak hour demand flows and maximum day demand plus fire flow within the acceptable pressure and velocity ranges as identified in the water system performance and operational criteria presented in Chapter 5.

7.3.1 Normal Operations – Maximum Day Demand with Peak Hour

The normal operations scenario evaluates the hydraulics of the COSMUD water distribution system under maximum day with peak hour demand conditions (i.e., non-fire). An overview of the evaluation and a discussion of the results are presented in the following sections.

7.3.1.1 Evaluation Overview

An EPS was conducted using the hydraulic model to evaluate system performance under a maximum day with peak hour demand condition. The diurnal pattern previously presented in Chapter 3 was incorporated into the hydraulic model and evaluated for seven consecutive days; however, only results from the last three days of the simulation are presented, as these results are not affected by initial conditions. As shown in Table 7-1, the maximum day demand is calculated using a peaking factor of 1.6 times the average day demand in North Stockton and 1.7 times the average day demand in South Stockton. This results in a total system maximum day demand of 31,594 gpm (41.5 mgd) for the existing system. The peak hour demand is calculated using a peaking factor of 2.5 times the average day demand in North Stockton and 3.3 times the average day demand in South Stockton. This results in a total system peak hour demand of 51,641 gpm (74.4 mgd) for the existing system.

During a maximum day with peak hour demand scenario, a minimum pressure of 45 psi and a maximum pressure of 80 psi is targeted to be maintained at service connections throughout the entire system. In addition, for pipelines, it is recommended that the maximum velocity not exceed 5 fps. The existing system analysis assumes the maximum day and peak hour demand would be met by a combination of surface water treatment plants, active groundwater wells, and storage reservoirs via their associated reservoir pump stations.

7.3.1.2 Evaluation Results

Results from the maximum day with peak hour demand condition indicate the existing water system generally meets the COSMUD minimum and maximum pressure criterion at most customer service locations. Figure 7-2 presents the minimum instantaneous pressures observed during the EPS simulation. As shown on Figure 7-2, in general the northeast portion of the North Stockton water service area and a single dead-end customer off a 2-inch diameter pipeline and portions of the central area in the South Stockton water service area do not meet the minimum pressure requirement of 45 psi. However, as shown on Figure 7-3, which presents average system pressures for the maximum demand day, results from the simulation indicate that service connections throughout the entire distribution system meet the minimum pressure requirement of 45 psi, except for a few spots in the northeast portion of the North Stockton water service area and one dead-end pipeline in the South Stockton water service area.

Low pressures in the northeast portion of the North Stockton water service area are largely due to higher elevations and therefore improvements to mitigate low pressures, which occur for an hour or two a day, are cost prohibitive and not recommended. In addition, DTWP discharge pressure could be increased to increase system pressures in the north east portion of North Stockton. However, as shown on Figure 7-3, average pressures remain above 45 psi in the majority of the area. The single low-pressure location in South Stockton is a direct result of head losses (HL/1,000 feet is greater than 7 ft/kft criterion) along the long dead-end 2-inch diameter pipeline. It is recommended that this 2-inch diameter pipeline be replaced with a 4-inch diameter pipeline to mitigate head losses and improve pressures. As discussed in the following sections, it is recommended that this pipeline be replaced as part of the recommended Priority 3 pipeline rehabilitation and replacement program.

Discharge pipelines at groundwater well facilities and reservoir pump stations have maximum velocities that vary between 5.6 and 11 fps. While these velocities exceed maximum recommended velocities, improvements are not recommended at these locations as they are experienced for a short distance and do not impact the primary criterion, customer service pressure. Simulated velocity results for the maximum day with peak hour demand condition indicate that the remaining pipelines within the COSMUD water system meet the velocity criterion of 5 fps, and therefore no pipelines improvements are recommended for the maximum day with peak hour demand condition.

Figure 7-4 shows reservoir water level fluctuations in system reservoirs throughout the EPS. As shown on Figure 7-4, Northwest and Fourteen-Mile Slough Reservoirs follow a repetitive turnover cycle, cycling at least once a day. In South Stockton, Weston Ranch Reservoir level fluctuations are less cyclical. This is due to the delivery pressure from SEWD and the fact that operations in the South Stockton water service area are based on maximizing use of SEWD supplies. These model-simulated reservoir level trends match operational data provided by the COSMUD. Reservoir turnover at Weston Ranch could be improved if discharge set-points were set higher, but this would result in applying back-pressure to the SEWD and Cal Water systems. Current reservoir water level fluctuations, as shown on Figure 7-4, appear to be adequate.

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F7_2_MDDMinResults.mxd - bvera - 1/18/2021

North Stockton

Delta Water Treatment Plant
WTP
Well #29
Well #18
Well #30
Northwest
Well #19
Well #10R
Well #21
Well #03R
Well #31
Well #32
Well #27
14 Mile Slough
Stockton East Water District
WTP
ARMSTRONG RD
LIVE OAK RD
WEST LN
EIGHT MILE RD
RINDGE RD
ASHLEY LN
HILDRETH LN
ALPINE RD
CHEROKEE RD
WATERLOO RD
WAIN RD
EL DORADO ST
PACIFIC AVE
DE ROOS AVE
FREMONT ST
MINER AVE
HOLT RD
SAN JOAQUIN RIVER
CALAVERAS RIVER
99
5
N
0 3,500 7,000
Scale in Feet

South Stockton

WTP
Stockton East Water District
Well SSS9
Well SSS3
Weston Ranch
SAN JOAQUIN RIVER
NAVY DR
FREMONT ST
MINER AVE
SAN JOAQUIN STREET
DR MARTIN LUTHER KING JR BLVD
EIGHTH ST
EL DORADO ST
POCKET RD
MARIPOSA RD
AUSTIN RD
NEWCASTLE RD
JACKSTONE RD
HOWARD RD
TRAFFORD RD
PORT WAY
99
5
N
0 3,000 6,000
Scale in Feet

Notes:
1. Delta Water Treatment Plant pump station discharge pressure was set to 52 psi and Stockton East Water District pump station dishcarge pressure was set to 58 psi. Active wells turned on as needed, based on local pressure/time of day.

Minimum System Pressure
- Less than 40 psi
- Between 40 and 45 psi
- Between 45 and 50 psi
- Between 50 and 55 psi
- Greater than 55 psi

- Water Treatment Plant
- Well (Active)
- Storage Tank & Booster Pump Station
- COSMUD Water Service Boundary

Maximum Velocity
- Equal to or Less than 5 ft/s
- Greater than 5 ft/s

Figure 7-2

Existing System
Maximum Day Demand
Minimum System Pressure

City of Stockton
Water Master Plan Update

WEST YOST

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F7_3_MDDAvgResults.mxd - bvera - 11/30/2020

North Stockton

Delta Water Treatment Plant
WTP
Well #29
Northwest
Well #18
Well #30
Well #31
Well #19
Well #32
Well #10R
Well #21
Well #03R
14 Mile Slough
Well #27
Stockton East Water District
WTP
ARMSTRONG RD
LIVE OAK RD
EIGHT MILE RD
WEST LN
RINDGE RD
ASHLEY LN
HILDRETH LN
ALPINE RD
CHEROKEE RD
WATERLOO RD
WAIN RD
PACIFIC AVE
EL DORADO ST
FREMONT ST
MINER AVE
HOLT RD
SAN JOAQUIN RIVER
CALAVERAS RIVER
99
5
0 3,500 7,000
Scale in Feet

South Stockton

WTP
Stockton East Water District
SAN JOAQUIN RIVER
FREMONT ST
MINER AVE
DR MARTIN LUTHER KING JR BLVD
NAVY DR
EIGHTH ST
EL DORADO ST
MARIPOSA RD
JACKSTONE RD
99
5
Well SSS9
Well SSS3
Weston Ranch
HOWARD RD
TRAPPER RD
AUSTIN RD
NEWCASTLE RD
0 3,000 6,000
Scale in Feet

Notes:
1. Delta Water Treatment Plant pump station discharge pressure was set to 52 psi and Stockton East Water District pump station dishcarge pressure was set to 58 psi. Active wells turned on as needed, based on local pressure/time of day.

Average System Pressure
- Less than 40 psi
- Between 40 and 45 psi
- Between 45 and 50 psi
- Between 50 an 55 psi
- Greater than 55 psi

- Water Treatment Plant
- Storage Tank & Booster Pump Station
- Well (Active)
- COSMUD Water Service Boundary

Average Velocity
- Equal to or Less than 5 ft/s
- Greater than 5 ft/s

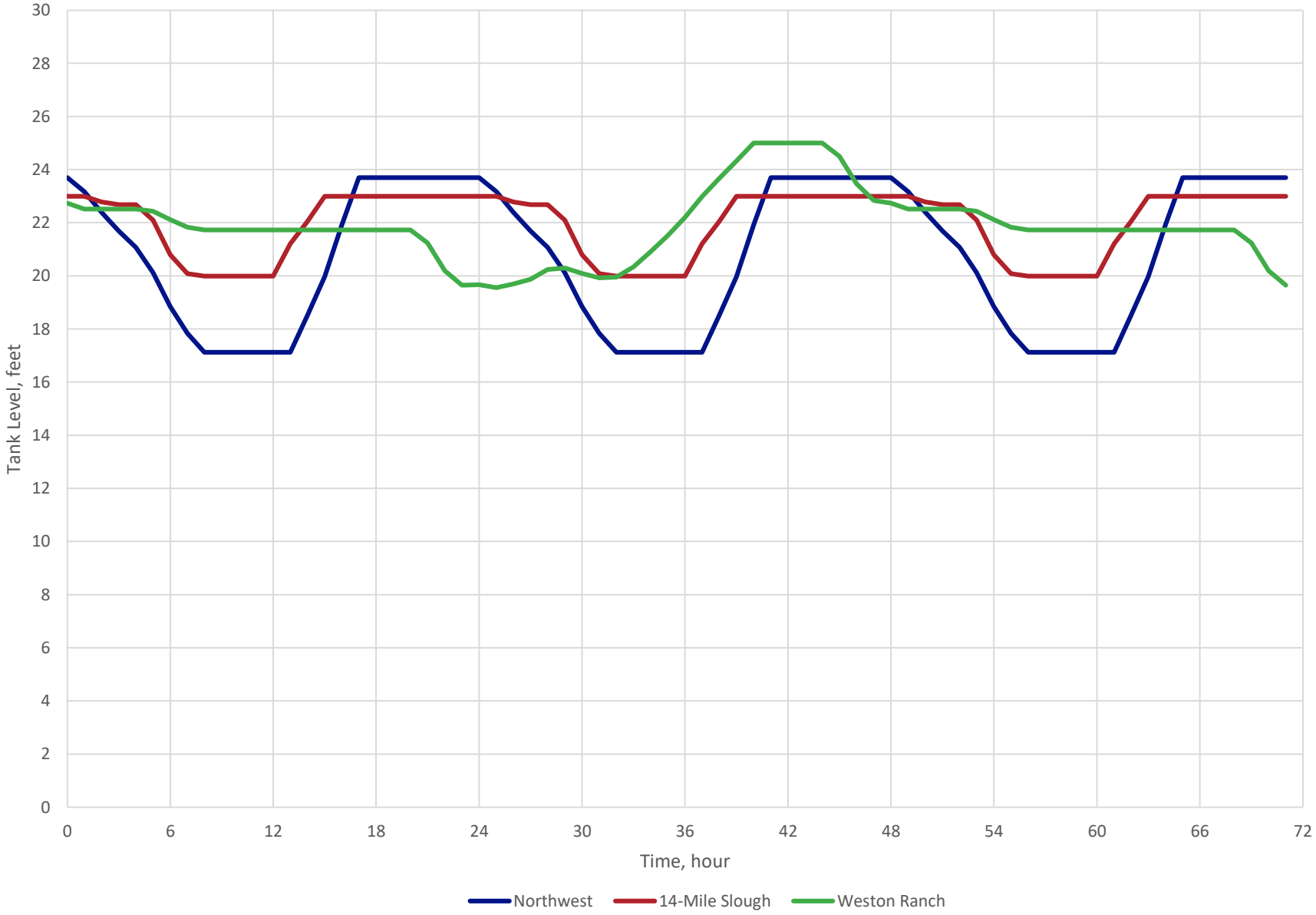
Figure 7-3

Existing System
Maximum Day Demand
Average System Pressure

City of Stockton
Water Master Plan Update

WEST YOST

Figure 7-4. Existing System Maximum Day Demand Reservoir Level Results



7.3.2 Emergency Operations – Maximum Day Demand Plus Fire Flow

The maximum day demand plus fire flow scenario evaluates the existing fire flow availability in the COSMUD distribution system under a maximum day demand condition. An overview of the evaluation and a discussion of the results are presented in the sections below.

7.3.2.1 Evaluation Overview

To evaluate the existing water system fire flow availability, InfoWater's fire flow module was used to determine the available fire flow at all junctions that represent hydrant locations throughout the system, while maintaining a minimum residual system pressure of 20 psi at all customer service locations. The analysis assumed that reservoir pump stations are operating at their firm pumping capacity. Maximum velocity is not considered in this evaluation because it is a secondary design criterion.

As discussed in Chapter 5, recommended fire flow criteria presented in Table 5-2 are established for future development and do not apply to existing system conditions. Much of the COSMUD water distribution system is older and designed to earlier fire standards in place at the time the pipelines were constructed. Therefore, the existing fire flow evaluation presents the systemwide available fire flow and how the existing system performs compared to recommended fire flow criteria. Since much of the COSMUD system is older, a rehabilitation and replacement (R&R) program is recommended to replace smaller diameter pipelines (which are typically older) over the next 40 years.

It should be noted that the 2008 WMP did not recommend any improvements for fire flow. The 2008 WMP evaluated fire flows at five key locations in both North Stockton and South Stockton (10 locations total), and since the primary criterion (pressure) was met at those locations, no improvements were recommended. For this Water Master Plan Update, a systemwide fire flow evaluation was performed to determine available fire flow capacity compared to adjacent land uses for the entire distribution system. While the primary criterion (pressure) continues to be met, at some locations available fire flow is less than the recommended fire flow criteria for new developments of similar land use types. As discussed above and in the following sections, an R&R program is recommended to replace older/smaller diameter pipelines, and it is recommended that replacement of older/smaller diameter pipelines in areas where available fire flow is less than recommended fire flow criteria be prioritized.

7.3.2.2 Fire Flow Evaluation Results

Figure 7-5 presents the available fire flow at each tested junction while maintaining a minimum residual pressure of 20 psi. Results presented on Figure 7-5 are representative of the system's capacity and do not represent available flow from a specific hydrant. Typically, fire flows exceeding 1,500 gpm are met by multiple hydrants.

As shown on Figure 7-5, there are many locations that do not meet the recommended fire flow criteria. The majority of the tested locations which do not meet current fire flow criteria are along older and/or small diameter pipelines, areas with larger fire flow requirements (i.e., 4,500 gpm), or areas with a lack of looping where high head losses (due to undersized mains) limit the ability to provide recommended fire flows while maintaining pressures greater than 20 psi. As noted previously, much of the COSMUD water distribution system is older and was designed to earlier fire standards in place at the time the pipelines were constructed.

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F7_5_FFResults.mxd - bvera - 1/18/2021

North Stockton

Delta Water Treatment Plant
WTP
Well #29
Well #18
Well #30
Northwest
Well #19
Well #31
Well #32
Well #10R
Well #21
Well #03R
14 Mile Slough
Well #27
Stockton East Water District
WTP
ARMSTRONG RD
LIVE OAK RD
WEST LN
EIGHT MILE RD
RINDGE RD
ASHLEY LN
HILDRETH LN
HAMMER LN
SWAIN RD
PACIFIC AVE
EL DORADO ST
ALPINE RD
CHEROKEE RD
WATERLOO RD
BROOKSIDE RD
FREMONT ST
MINER AVE
HOLT RD
SAN JOAQUIN RIVER
CALAVERAS RIVER
99
5
N
0 3,500 7,000
Scale in Feet

South Stockton

WTP
Stockton East Water District
Well SSS9
Well SSS3
Weston Ranch
SAN JOAQUIN RIVER
FREMONT ST
MINER AVE
DR MARTIN LUTHER KING JR BLVD
NAVY DR
EIGHTH ST
EL DORADO ST
POCKET RD
MARIPOSA RD
JACKTONE RD
AUSTIN RD
NEWCASTLE RD
HOWARD RD
TRAPPER WAY
99
5
N
0 3,000 6,000
Scale in Feet

Notes:
1. Delta Water Treatment Plant pump station discharge pressure was set to 52 psi and Stockton East Water District pump station dishcarge pressure was set to 58 psi. Active wells turned on as needed, based on local pressure/time of day.
2. The available flow at each junction is the maximum flow available while maintaining 20 psi residual system pressue.

- Available flow is ≥100% of criteria
- Available flow ≥75% but <100% of criteria
- Available flow is ≥50% but <75% of criteria
- Available flow is <50% of criteria
- Water Treatment Plant
- Storage Tank & Booster Pump Station
- Well (Active)
- COSMUD Water Service Boundary

Pipeline
- Less than or Equal to 12-inch
- Greater than 12-inch

Figure 7-5

Existing System Maximum Day Demand Fire Flow Results

City of Stockton
Water Master Plan Update

WEST YOST

As discussed in Chapter 9, an R&R program is recommended to replace older pipelines that are less than 8-inches in diameter[25], and these pipelines would be replaced over a 40-year period. The first 10 years of the recommended program prioritizes areas where current available fire flow capacity is less than the recommended fire flow. This should also include mains running through private property or through levies, or those that have known tree root damage. Pipelines were prioritized into the following categories:

- **Priority 1**: This category addresses areas where existing available fire flow capacity is less than 50 percent of the recommended criteria.
- **Priority 2**: This category addresses areas where existing available fire flow capacity is between 50 and 75 percent of the recommended fire flow criteria.
- **Priority 3**: This category contains the remaining smaller diameter (i.e., less than 8-inches) pipelines.

An asset management plan should be developed so recommended pipeline improvements can be further refined by considering likelihood of failure (e.g., age, condition, leak history, etc.) and consequence of failure (e.g., disruption of water service to critical facilities, potential for damage to adjacent land use and facilities, etc.) to further refine and define program priorities and implementation. Table 7-5 summarizes the length of Priority 1, 2 and 3 pipelines to be replaced in North Stockton and South Stockton.

Table 7-5. Recommended Existing COSMUD Water System Pipeline Improvements

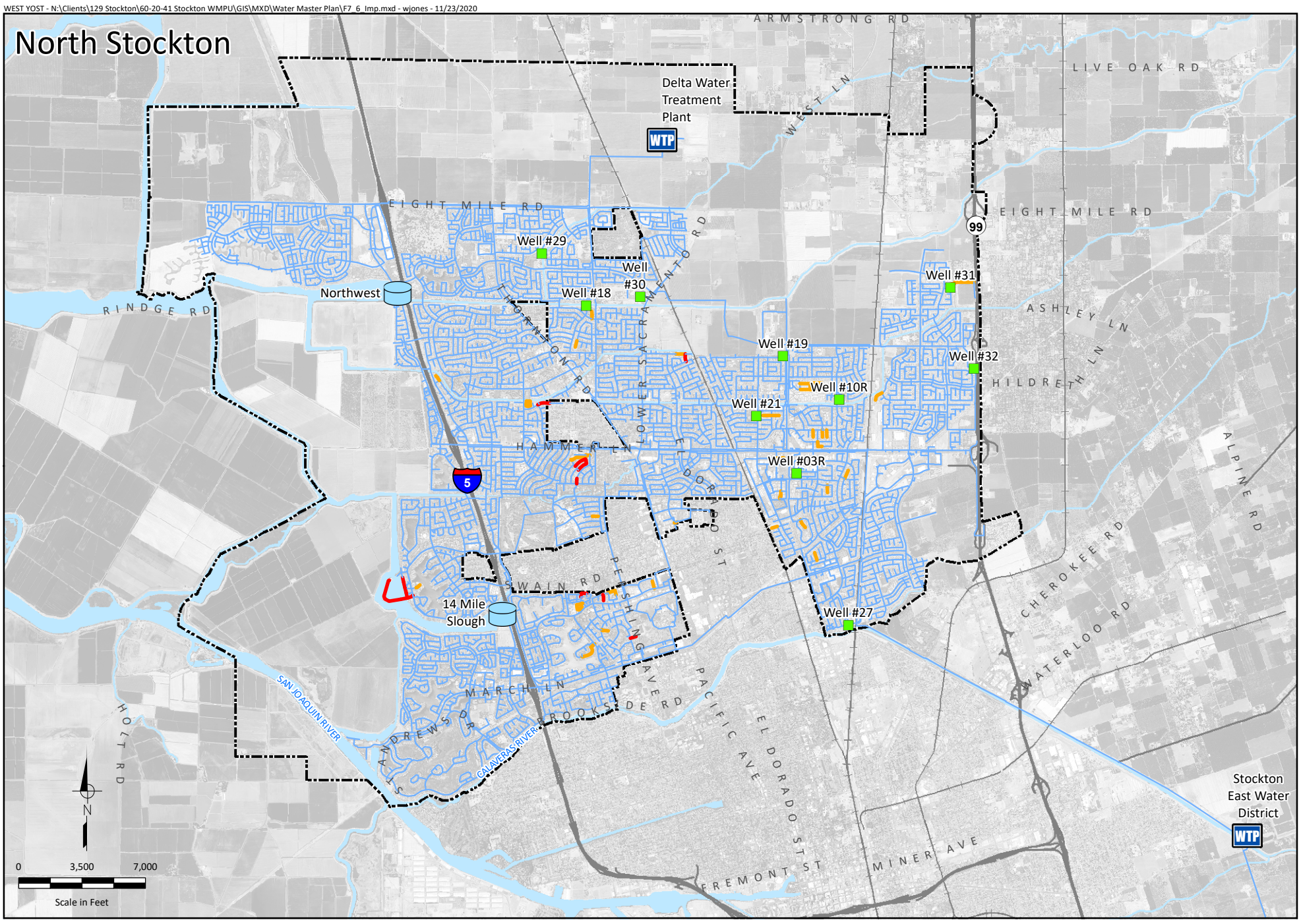
Replacement Pipeline Diameter (inches)	Feet of Pipeline		
	Priority 1	Priority 2	Priority 3
North Stockton			
8-inch	3,585	14,846	-
12-inch	4,364	4,018	330,008
Total	**7,949**	**18,864**	**330,008**
South Stockton			
8-inch	-	1,249	-
12-inch	4,923	5,445	35,445
Total	**4,923**	**6,694**	**35,445**

Figure 7-6 presents the recommended pipelines in Priority 1 and 2 categories of the recommended R&R program, which are intended to improve fire flow availability as presented in Figure 7-5. Figure 7-7 presents the fire flow results with Priority 1 and 2 R&R improvements assumed to be completed. As shown on Figure 7-7, the majority of the North Stockton and South Stockton water service areas exceeds 75 percent of the recommended fire flow criteria. Along Harland Road, in the South Stockton area, available flows remain below 50 percent of recommended fire flow criteria, even with the Priority 1 and 2 R&R improvements completed. However, a portion of this pipeline is planned to be improved (from a 12-inch diameter to a 16-inch diameter) and is part of the City's existing Capital Improvement Program (CIP). This improvement would improve fire flow availability to this area.

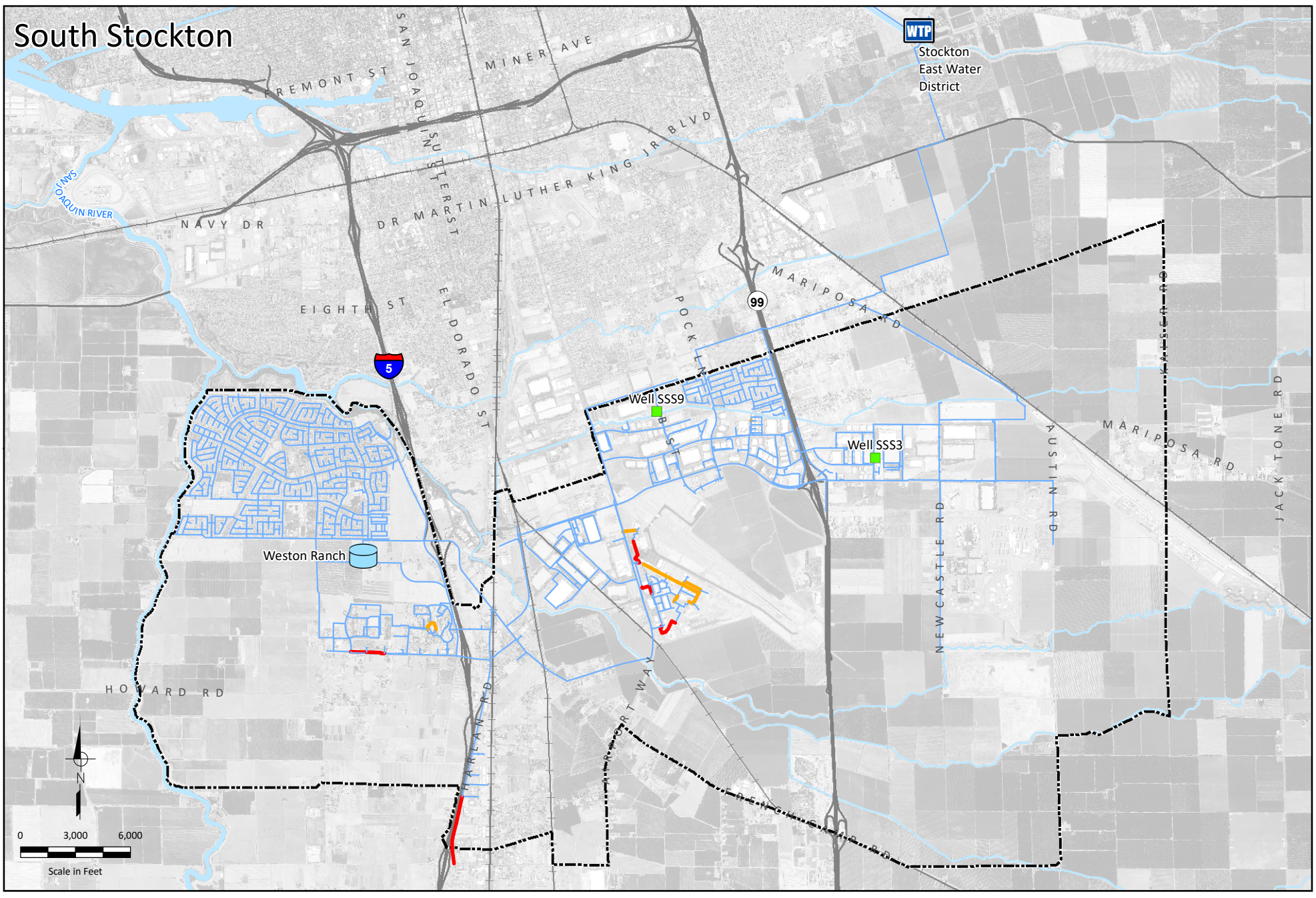
[25] Generally, 8-inch diameter pipelines are recommended as they meet the maximum velocity requirements for residential fire flow events. However, smaller diameter pipelines are allowed (per COSMUD standard specifications) provided that all capacity requirements are met and should be evaluated on a case-by-case basis. For the purposes of this Water Master Plan Update and for budgeting purposes, it is assumed that all small diameter pipelines are replaced with 8-inch diameter pipelines.

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F7_6_Imp.mxd - wjones - 11/23/2020

North Stockton



South Stockton



Pipelines

- Existing
- Improvement Priority 1
- Improvement Priority 2
- Water Treatment Plant
- Storage Tank & Booster Pump Station
- Well (Active)
- COSMUD Water Service Boundary

Figure 7-6

Existing System Pipeline Improvements

City of Stockton
Water Master Plan Update

WEST YOST

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F7_7_FFResultsImp.mxd - bvera - 1/18/2021

North Stockton

Delta Water Treatment Plant
WTP
Well #29
Well #18
Well #30
Northwest
Well #33
Well #31
Well #19
Well #32
Well #10R
Well #21
Well #03R
Well #27
14 Mile Slough
Stockton East Water District
WTP
ARMSTRONG RD
LIVE OAK RD
EIGHT MILE RD
RINDGE RD
ASHLEY LN
HILDRETH LN
HAMMER LN
WAIN RD
PACIFIC AVE
EL DORADO ST
ALPINE RD
CHEROKEE RD
WATERLOO RD
BROOKSIDE RD
FREMONT ST
MINER AVE
HOLT RD
SAN JOAQUIN RIVER
CALAVERAS RIVER
STANDRIDGE CUT
99
5
N
0 3,500 7,000
Scale in Feet

South Stockton

WTP
Stockton East Water District
Well SSS10
Well SSS9
Well SSS3
Weston Ranch
SAN JOAQUIN RIVER
NAVY DR
FREMONT ST
MINER AVE
DR MARTIN LUTHER KING JR BLVD
CENTER ST
AUSTIN RD
NEWCASTLE RD
MARIPOSA RD
JACKTONE RD
HOWARD RD
EIGHTH ST
EL DORADO ST
POCKET RD
99
5
N
0 3,000 6,000
Scale in Feet

Notes:
1. Delta Water Treatment Plant pump station discharge pressure was set to 52 psi and Stockton East Water District pump station dishcarge pressure was set to 58 psi. Active wells turned on as needed, based on local pressure/time of day.
2. The available flow at each junction is the maximum flow available while maintaining 20 psi residual system pressue.

- Available flow is ≥100% of criteria
- Available flow ≥75% but <100% of criteria
- Available flow is ≥50% but <75% of criteria
- Available flow is <50% of criteria
- Water Treatment Plant
- Storage Tank & Booster Pump Station
- Well (Active)
- COSMUD Water Service Boundary

Pipeline

- Less than or Equal to 12-inch
- Greater than 12-inch

Figure 7-7

Existing System Fire Flow Results With Priority 1 And 2 Improvements

City of Stockton
Water Master Plan Update

WEST YOST

7.4 SUMMARY OF FINDINGS AND RECOMMENDATIONS FOR THE EXISTING WATER SYSTEM

Findings and recommended improvements for the existing water system are summarized in Table 7-6 below. These recommendations are used to develop a recommended CIP, which is further described in Chapter 9.

Table 7-6. Summary of Recommended Existing System Improvements

Improvement Type	Existing System (2020)
North Stockton	
Supply	• No supply related improvements recommended.
Pumping	• No pumping improvements recommended.
Storage	• No storage improvements recommended, other than completing the North Stockton Pipeline Hypochlorite Facility which provides for a treated surface water supply credit to offset required storage.
Pipelines	• An R&R program is recommended to replace older, undersized pipelines. To prioritize the program, the existing fire flow availability, as compared to recommended fire flow criteria, was used to help prioritize R&R improvements. These improvements are shown on Figure 7-6, colored in red and orange, and are summarized in Table 7-5. • These projects could be further prioritized by targeting areas where the COSMUD has historically had leak and/or main break issues. These improvements are recommended to be implemented over the next ten years and be online by 2030. • Replacement of the remaining small diameter pipelines (i.e., pipelines not specifically identified for replacement) is also recommended. • It is recommended that an asset management plan be developed so recommended pipeline improvements can be further refined by considering likelihood of failure (e.g., age, condition, leak history, etc.) and consequence of failure (e.g., disruption of water service to critical facilities, potential for damage to adjacent land use and facilities, etc.) to further refine and define program priorities and implementation.
South Stockton	
Supply	• Construct the new Well SSS10 to mitigate existing storage capacity deficit and improve supply reliability.
Pumping	• No pumping improvements recommended.
Storage	• Construct the new Well SSS10 and equip with backup power to increase emergency groundwater storage credit by 2.4 MG. For the purposes of this Water Master Plan Update, it was assumed that this well would be able to supply 2,000 gpm.
Pipelines	• An R&R program is recommended to replace older, undersized pipelines. To prioritize the program, the existing fire flow availability, as compared to recommended fire flow criteria, was used to help prioritize R&R improvements. These improvements are shown on Figure 7-6, colored in red and orange, and are summarized in Table 7-5. • These projects could be further prioritized by targeting areas where the COSMUD has historically had leaks and/or main break issues. These improvements are recommended to be implemented over the next ten years and be online by 2030. • Replacement of the remaining small diameter pipelines (i.e., pipelines not specifically identified for replacement) is also recommended. • It is recommended that an asset management plan be developed so recommended pipeline improvements can be further refined by considering likelihood of failure (e.g., age, condition, leak history, etc.) and consequence of failure (e.g., disruption of water service to critical facilities, potential for damage to adjacent land use and facilities, etc.) to further refine and define program priorities and implementation.

This chapter presents the evaluation of the COSMUD water system, and its ability to support projected near-term (2030) and future (2040) demands (described in Chapter 3) while meeting the recommended performance and operational criteria (described in Chapter 5). As noted in Chapter 3, the future water demands projected in this Water Master Plan Update are significantly lower than those projected in the 2008 Water Master Plan, and thus the recommended water system improvements to support projected future demands are significantly less extensive than those recommended in the 2008 Water Master Plan.

This evaluation includes an analysis of water supply capacity, storage capacity, and pumping capacity, as well as the distribution system's ability to meet recommended operational and design criteria under near-term and future maximum day demand, peak hour demand, and maximum day demand plus fire flow scenarios. West Yost conducted this evaluation using the updated hydraulic model described in Chapter 6. The hydraulic model was subsequently updated to include recommended improvements developed as part of the existing water system evaluation (see Chapter 7) and assumes that improvements are completed by the future (2040) timeframe. In addition, West Yost incorporated COSMUD planned capital improvement projects as discussed in the sections below.

Evaluations, findings, and recommendations for addressing future needs identified in the COSMUD North and South Stockton water service areas (for both near-term and future demand conditions) are included in this chapter. Recommendations are used to develop a recommended CIP, which is described further in Chapter 9.

The following sections present the evaluation methodology and results from the future water system analysis:

- Future Water System Description
- Future Water Demands
- Future Water Supply and Water System Facility Capacity Evaluation
- Future Water Distribution System Performance Evaluation
- Summary of Findings and Recommendations for the Future Water System
- Other Planned or Recommended Improvements

8.1 FUTURE WATER SYSTEM DESCRIPTION

As discussed in Chapter 3, near-term (2030) and future (2040) water demand conditions are based on the Envision Stockton 2040 General Plan Update (2040 GPU) land use designations and the SOI/MSR. Both sources define the anticipated future development areas for the near-term (2030) and future (2040) time periods. To support these future development areas, water system infrastructure was extended to these areas to support the future demands. Sizing and layout of these facilities is preliminary and based on the previous 2008 WMP and/or more recent information if available, and is shown on Figure 8-1.

These pipelines serve as a basis for serving future development areas, and thus were included in the hydraulic model to simulate future conditions and allocate future demands. As future development plans are refined, infrastructure needs are expected to change and the COSMUD should require project proponents to confirm that proposed infrastructure meets all design criteria presented in Chapter 5.

Figure 8-1 shows the baseline water distribution system network planned for the near-term (2030) and future (2040), prior to identifying capacity improvements. Pipelines in dotted gray summarize pipeline extensions needed to serve near-term (2030) and future (2040) projected demands. Pipelines in green summarize Priority 1 and 2 R&R pipelines recommended in Chapter 7, as well as COSMUD planned capital improvement projects (with project IDs called out) that are identified in the adopted 2019-2024 Capital Improvement Plan. Facilities indicated in green and/or red were assumed to be online for the near-term (2030) time frame. Facilities in orange and/or gray (dashed lines) are assumed to be online for the future (2040) time frame. Additional facilities (e.g., Well 33, Northeast Reservoir) are not shown on this figure as their sizing is determined in the subsequent Facility Capacity sections of this chapter.

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F8_1_NearTermFacilities.mxd - wjones - 1/26/2021

North Stockton

Study Area1
Delta Water Treatment Plant
WTP
Thornton and Eight Mile Road Arco Station Project
Crystal Bay
Westlake Villages
Northwest
Delta Cove
Sanctuary
North Stockton Projects III
Tra Vigne
Cannery Park
CIP #M18006
Well #33
Well #31
Well #29
Well #18
Well #30
Well #16
CIP #M18004
Well #9
Well #19
Well #24
Well #32
Well #7
Well #15
Well #20
Well #10R
Well #21
Well #26
Well #4
Well #1
Well #11
Well #03R
CarMax Superstore
Well #25
CIP #M18004
Study Area2
Well #28
Well #27
14 Mile Slough
Study Area3
Stockton East Water District
WTP
SAN JOAQUIN RIVER
CALAVERAS RIVER
RINGE RD
EIGHT MILE RD
THORNTON RD
HAMMER LN
WAIN RD
MARCH LN
BROOKSIDE RD
PACIFIC AVE
EL DORADO ST
PERSHING AVE
FREMONT ST
MINER AVE
ARMSTRONG RD
LIVE OAK RD
WEST LN
ASHLEY LN
HILDRETH LN
ALPINE RD
CHEROKEE RD
WATERLOO RD
HOLT RD
ANDREWS DR
0 3,500 7,000
Scale in Feet

South Stockton

Stockton East Water District
WTP
CIP #M18007
Study Area12
Well SSS8
Well SSS9
Well SSS2
Well SSS3
Well SSS1
Well SSS10
Mariposa Road Community
Mariposa Industrial Park
NorCal Logistics Center
Sanchez-Hoggan Annexation Project
Niagara Bottling Facility
Airpark 599
Airport Way and Sperry Road Commercial Project
Study Area14
Weston Ranch Towne Center
Weston Ranch
Veterans Affairs Medical Campus
CIP #M20004
CIP #M17016
Study Area15
Tidewater Crossing
South Stockton Commerce Center
Study Area16
Tidewater Crossing
CIP #M18002
SAN JOAQUIN RIVER
NAVY DR
FREMONT ST
MINER AVE
DR MARTIN LUTHER KING JR BLVD
SAN JOAQUIN STREET
CENTER ST
AIRPORT WAY
POCKLINGTON RD
EIGHTH ST
EL DORADO ST
MARIPOSA RD
NEWCASTLE RD
JACKSTONE RD
HOWARD RD
TARLAN RD
0 3,000 6,000
Scale in Feet

Notes:
1. Near-term (2030) and future (2040) development pipelines are based on previous development plans. Pipe layout and sizing will be finalized by developers/project proponents as develpment plans are finalized.

CIP List:
1. CIP #M17016 includes the installation of an 8" diameter pipeline along Wolfe Rd & Mathews Rd.
2. CIP #M18002 includes replacement & installation of a 16" diameter pipelines along I-5 North of E. Roth Rd.
3. CIP #M18004 includes the decommissioning of Well Sites 1, 9, 11, and 16.
4. CIP #M18006 includes the equipping of Well No. 33.
5. CIP #M18007 includes installation of a 16" diameter water main on Zephyr Road.
6. CIP #M20004 includes a water line extension from Weston Ranch Reservoir to a point where the Veterans Affairs facility will connect for water service.

Pipelines
- Existing
- Existing System Improvements
- Near-Term (2030) Improvements
- Future (2040) Improvements
- Future Development Pipelines

Wells
- Proposed
- Active
- Inactive
- Standby
- Abandoned

- Water Treatment Plant
- Reservoir & Pump Station
- COSMUD Service Boundary
- City of Stockton Sphere of Influence
- Major Development (Near-Term & Future)
- Study Area Within City's Sphere of Influence
- Study Area Outside of City's Sphere of Influence

Figure 8-1

Near-Term and Future System

City of Stockton
Water Master Plan Update

WEST YOST

8.2 FUTURE WATER DEMANDS

Future demand conditions used in the water system evaluation are based on projected land uses and water use factors discussed in Chapter 3. Projected future demands were added to the existing baseline demands (described in Chapter 3 and Chapter 7) to develop projected near-term (2030) and future (2040) scenario water demands. The future water demands were spatially located in the hydraulic model based on the future development land use areas. The COSMUD future water demands for the near-term (2030) and future (2040) scenarios are summarized in Table 8-1 and Table 8-2, respectively.

Table 8-1. Projected Near-Term (2030) COSMUD Water System Demands

Service Area	Average Day Demand (ADD)[a]		Maximum Day Demand (MDD)[b]		Peak Hour Demand (PHD)[c]	
	gpm	mgd	gpm	mgd	gpm	mgd
North Stockton	16,518	23.8	26,429	38.1	41,296	59.5
South Stockton	6,838	9.8	10,364	14.9	18,425	26.5
Total	**23,356**	**33.6**	**36,794**	**53.0**	**59,721**	**86.0**

(a) The Average Day Demands are based on the existing baseline demands (refer to Table 7-1 in Chapter 7) plus the projected near-term demands (refer to Table 3-15 in Chapter 3).

(b) Maximum day demand calculated using a peaking factor of 1.6 in North Stockton and 1.7 in South Stockton, times the average day demand.

(c) Peak hour demand calculated using a peaking factor of 2.5 in North Stockton and 3.3 in South Stockton, times the average day demand.

As indicated in Table 8-1, the COSMUD near-term average day demands are expected to be 33.6 mgd, or a 20 percent increase over existing baseline demands (previously presented in Table 7-1 in Chapter 7). South Stockton water demands, in particular, are projected to increase by 92 percent by near-term (2030). Most of the increase is associated with the proposed Niagara Bottling Facility, which makes up for 54 percent of the projected demand increase in South Stockton.

Table 8-2. Projected Future (2040) COSMUD Water System Demands

Service Area	Average Day Demand (ADD)[a]		Maximum Day Demand (MDD)[b]		Peak Hour Demand (PHD)[c]	
	gpm	mgd	gpm	mgd	gpm	mgd
North Stockton	20,343	29.3	32,548	46.9	50,857	73.2
South Stockton	9,564	13.8	14,999	21.6	27,421	39.5
Mariposa Road Community	*2,081*	*3.0*	*3,538*	*5.1*	*6,867*	*9.9*
Remaining South Stockton	*7,483*	*10.8*	*11,461*	*16.5*	*20,554*	*29.6*
Overall Total	**29,907**	**43.1**	**47,548**	**68.5**	**78,278**	**112.7**

(a) The Average Day Demands are based on the existing baseline demands (refer to Table 7-1 in Chapter 7) plus the projected future (2040) demands (refer to Table 3-16 in Chapter 3).

(b) Maximum day demand calculated using a peaking factor of 1.6 in North Stockton and 1.7 in South Stockton, times the average day demand

(c) Peak hour demand calculated using a peaking factor of 2.5 in North Stockton and 3.3 in South Stockton, times the average day demand.

As indicated in Table 8-2, the COSMUD future (2040) average day demands are expected to be 43.1 mgd, or a 53 percent increase from existing baseline demands (previously presented in Table 7-1), and a 28 percent increase from near-term (2030) demands. Table 8-2 separates demands associated with the Mariposa Road Community since this future development area makes up a large portion of the future demand and the extent and timing of this development is uncertain. As discussed in the sections below, infrastructure was specifically sized to support the projected demands for Mariposa Road Community summarized in Table 8-2. Should future land use plans change for this future development area, associated infrastructure sizing will need to be reevaluated.

8.3 FUTURE WATER SUPPLY AND WATER SYSTEM FACILITY CAPACITY EVALUATION

To evaluate the capacity of COSMUD water system facilities to support near-term (2030) and future (2040) demands, the following evaluations were conducted:

- Supply Capacity Evaluation
- Pumping Capacity Evaluation
- Storage Capacity Evaluation

The Mariposa Road Community is anticipated to be developed by the future (2040) time frame. Elevations within this future development area are higher than the existing South Stockton water service area. Elevations range from 48 to 56 ft msl in this area, compared to a maximum elevation within the existing South Stockton area of 46 ft msl. This increase in elevation results in lower static pressures, as low as 44 psi, based on the current delivery pressure from SEWD (57 psi or about 166 ft hydraulic grade line). Dynamic pressures (i.e., peak demand conditions with head loss) would be sufficiently lower that they would not meet the recommended criterion for minimum pressure of 45 psi. Therefore, to serve this area it is recommended that a new pressure zone be established, along with associated infrastructure. In general, the following would be required to provide water service for this future development area:

- **New Storage Reservoir**. This reservoir would be supplied/filled by the existing South Stockton area pipelines.
- **New Reservoir Pump Station**. This reservoir pump station would pump water from the new storage reservoir and would discharge to the new pressure zone.
- **Groundwater Well**. To reduce the size of the new storage reservoir, a new well is also recommended for this future development area to increase the EGWC. While this well could also offset pumping requirements at the new reservoir pump station, the reservoir pump station is recommended to sized so that it has sufficient pumping capacity to supply the area in the event the new well is offline. This well also provides supply reliability to the future development area, and the South Stockton water service area, by diversifying the water supply for the area and reducing the dependency on SEWD.

- **Interconnections with existing South Stockton Area**. It is recommended that this future development area be interconnected with the existing South Stockton area at a few key locations. These interconnections should be identified as development plans progress and should generally include:
  - Pressure Reducing/Sustaining Valves allowing water from the new pressure zone to flow into the existing South Stockton area, in the event pressures drop (i.e., under fire flow conditions)
  - Check valves allowing water from the existing South Stockton area to flow into the new pressure zone in the event pressures drop in the new pressure zone (i.e., under fire flow conditions)

Sizing for the above listed facilities is based on the currently projected water demands for the Mariposa Community Road area, discussed in Chapter 3, and presented in the following sections. It is expected that land use plans for this area will change in the future. Therefore, projected water demands (and/or timing of future development) within the Mariposa Road Community will need to be reevaluated as future development plans are confirmed, and associated infrastructure sizing (and/or timing) will also need to be reevaluated.

8.3.1 Supply Capacity Evaluation

As described in Chapter 5, the recommended supply capacity criterion requires the COSMUD to provide enough firm supply capacity to equal the maximum day demand. Table 8-3 and Table 8-4 show the firm supply capacity compared to maximum day demand in North Stockton and South Stockton for the near-term (2030) and future (2040) demand conditions, respectively. The COSMUD water supply is provided by both surface water and groundwater, and their respective firm capacities are summarized as follows.

- For North Stockton, 100 percent of DWTP is assumed for firm surface water supply.
- For South Stockton, surface water supply from SEWD was assumed to be limited to approximately 70 percent of the South Stockton maximum day demand. The approach was undertaken to diversify the water supply portfolio and plan for additional redundant local supplies to meet the remaining 30 percent of a maximum day demand. While this assumption is more conservative than the firm capacity assumption, it provides more flexibility under drought conditions. Refer to Chapter 4 for more discussion regarding this assumption.
- The firm groundwater supply capacity is calculated as 85 percent of the production capacity of active wells (i.e., does not include standby or inactive wells) in North Stockton and South Stockton, respectively. Refer to Chapter 5 for more discussion regarding this assumption.

As shown in Table 8-3, there is a surplus of supply in both the North Stockton and South Stockton water service areas, and no additional supply is needed for near-term (2030) conditions. However, as discussed in Chapter 7, the new Well SSS10 is recommended to help meet the existing storage capacity deficit in South Stockton. Similarly, as discussed in the storage capacity evaluation below, there is a storage capacity deficit by the near-term (2030) time frame for which it is recommended that one of the existing standby wells in South Stockton (Well SSS2) be rehabilitated and equipped with backup power. Both the new Well SSS10 and recommended improvements to Well SSS2 provide an additional source of supply which is reflected in Table 8-3.

Table 8-3. Near-Term (2030) Comparison of Available versus Required Supply Capacity

Available or Required Capacity	Notes/Basis	Capacity	
		gpm	mgd
North Stockton			
Supply			
Existing Firm Well Supply Capacity	[A] 85 percent of the capacity of active wells (Wells 3R, 10R, 18, 19, 21, 27, 29, 30, 31, 32)	16,916	24.4
Existing Surface Water Supply	[B] Full DWTP Capacity	20,833	30.0
Total Supply Capacity	[C] = [A] + [B]	37,749	54.4
Demand			
Near-Term Maximum Day Demand	[D] 1.6 times ADD (refer to Table 8-1)	26,430	38.1
North Stockton Supply Capacity Surplus (Deficit)	**[E] = [C] – [D]**	**11,319**	**16.3**
South Stockton			
Supply			
Existing Firm Well Supply Capacity	[F] 85 percent of the capacity of active wells (SSS3, SSS9)	4,118	5.9
Existing Surface Water Supply	[G] 70 percent of South Stockton MDD, (refer to Table 8-11)	7,255	10.4
Total Supply Capacity	[H] = [F] + [G]	11,373	16.4
Demand			
Near-Term Maximum Day Demand	[I] 1.7 times ADD (refer to Table 8-1)	10,364	14.9
South Stockton Supply Capacity Surplus (Deficit)	**[J] = [H] - [I]**	**1,009**	**1.5**
Additional Supply			
Additional Firm Well Supply Capacity from Well SSS10	[K] 85 percent of the assumed 2,000 gpm capacity	1,700	2.4
South Stockton Supply Capacity Surplus (Deficit) with Existing System Improvements	**[L] = [J] + [K]**	**2,709**	**3.9**
Additional Firm Well Supply Capacity from Well SSS2	[M] 85 percent of the capacity of standby Well SSS2	1,101	1.6
South Stockton Supply Capacity Surplus (Deficit) with Near-Term System Improvements	**[N] = [L] + [M]**	**3,810**	**5.5**

Table 8-4 summarizes supply capacity evaluation for the future (2040) demand conditions. As shown in Table 8-4, there is surplus supply capacity in both the North Stockton and South Stockton water service areas. Similar to the near-term time frame, at future an additional well in South Stockton is recommended to be rehabilitated and equipped with backup power for the purposes of increasing storage capacity. Well SSS8 is recommended to be rehabilitated by the future (2040) timeframe. While Well SSS8 is not needed for supply purposes, it does provide an additional source of supply which is reflected in Table 8-4.

Table 8-4. Future (2040) Comparison of Available versus Required Supply Capacity

Available or Required Capacity	Notes/Basis	Capacity	
		gpm	mgd
North Stockton			
Supply			
Existing Firm Well Supply Capacity	[A] 85 percent of the capacity of active wells (Wells 3R, 10R, 18, 19, 21, 27, 29, 30, 31, 32)	16,916	24.4
Existing Surface Water Supply	[B] Full DWTP Capacity	20,833	30.0
Total Supply Capacity	[C] = [A] + [B]	37,749	54.4
Demand			
Future Maximum Day Demand	[D] 1.6 times ADD (refer to Table 8-2)	32,549	46.9
North Stockton Supply Capacity Surplus (Deficit)	[E] = [C] – [D]	**5,200**	**7.5**
Additional Supply			
Construction of Well 33	[F] 85 percent of the assumed 1,500 gpm capacity	1,275	1.8
North Stockton Supply Capacity Surplus (Deficit) with Future System Improvements	**[G] = [E] + [F]**	**6,475**	**9.3**
South Stockton			
Supply			
Existing Firm Well Supply Capacity	[H] 85 percent of the capacity of active wells (Wells SSS3 and SSS9)	4,118	5.9
Existing Surface Water Supply	[I] 70 percent of South Stockton MDD (refer to Table 8-2)	10,499	15.1
Total Supply Capacity	[J] = [H] + [I]	14,617	21.0
Demand			
Future Maximum Day Demand	[K] 1.7 times ADD (refer to Table 8-2)	14,999	21.6
South Stockton Supply Capacity Surplus (Deficit)	**[L] = [J] - [K]**	**(382)**	**(0.5)**
Additional Supply			
Additional Firm Well Supply Capacity from Existing and Near-Term System Improvements (Wells SSS10 and SSS2)	[M] 85 percent of the assumed 2,000 gpm capacity for Well SSS10 and existing capacity of Well SSS2	2,801	4.0
South Stockton Supply Capacity Surplus (Deficit) with Existing and Near-Term System Improvements	**[N] = [L] + [M]**	**2,419**	**3.5**
Additional Firm Well Supply Capacity to Improve Future System Storage / Improve Reliability (Rehabilitate Well SSS8)	[O] 85 percent of the capacity of standby Well SSS8	859	1.2
South Stockton Supply Capacity Surplus (Deficit) with Future System Improvements	**[P] = [N]+ [O]**	**3,278**	**4.7**

8.3.2 Pumping Capacity Evaluation

Pumping capacity was evaluated to assess the ability of the COSMUD to deliver a reliable firm capacity to meet the greater of either the maximum day demand plus a large fire flow event or the peak hour demand, as described in Chapter 5, under both near-term or future demand conditions. Pumping capacity is provided by a combination of supply facilities (i.e., treatment plants and groundwater wells) and reservoir pump stations. Firm pumping capacity provided by treatment plants and groundwater wells is evaluated in a manner identical to the supply capacity evaluation described above. For reservoir pump stations, a reduction in total pumping capacity is assumed to account for pumps that could be out of service due to various operational problems or maintenance at any given time. For both North Stockton and South Stockton, firm pumping capacity is defined as the total pump station capacity with the largest pump out of service.

Table 8-5 and Table 8-6 show the firm pumping capacity compared to the peak hour demand in North Stockton and South Stockton for the near-term (2030) and future (2040) demand conditions, respectively. For both North Stockton and South Stockton, under both near-term and future demand conditions, there is a surplus of pumping capacity with the storage/well improvements recommended in the storage capacity evaluation section, as described below.

Table 8-6 shows the required pumping capacity associated with the Mariposa Road Community, separate from the remaining South Stockton area. Pumping capacity for this area was evaluated separately because this area would be a new pressure zone and would be supplied by associated facilities, as discussed previously. The controlling scenario for the pumping requirement to this area is the maximum day demand plus fire flow condition, or about 11.6 mgd. As previously discussed, while pumping capacity could be met through a combination of the recommended well and associated reservoir pump station, it is recommended that the reservoir pump station be sized to meet the full pumping requirement in the event the groundwater well is out of service. Therefore, it is recommended that the reservoir pump station be sized at a firm capacity of 12.0 mgd. With the reservoir pump station and well, however, there is a 2.3 mgd pumping capacity surplus.

Table 8-5. Near-Term (2030) Comparison of Available versus Required Pumping Capacity

Available or Required Capacity	Notes/Basis	Capacity	
		gpm	mgd
North Stockton			
Requirement			
Required Maximum Day Demand Plus Fire Flow[(a)]	[A] MDD (refer to Table 8-1) plus a large industrial Fire Flow (4,500 gpm)	30,930	44.5
Required Peak Hour Demand	[B] 2.5 times ADD (refer to Table 8-1)	41,296	59.5
Pumping Capacity Requirement	[C] = [A] + [B]	41,296	59.5
Capacity			
Existing Firm Pump Capacity at Reservoir Sites	[D] Total pump capacity with the largest pump offline at each reservoir site	31,450	45.3
Existing Firm Pump Capacity at Treatment Plants	[E] Limited to the existing capacity of the Delta Water Treatment Plant	20,833	30.0
Existing Firm Well Capacity	[F] 85 percent of the capacity of active wells (Wells 3R, 10R, 18, 19, 21, 27, 29, 30, 31, 32)	16,916	24.4
Total Existing Available Firm Capacity	[G] = [D] + [E] + [F]	69,199	99.6
North Stockton Existing Pumping Capacity Surplus (Deficit)	**[H] = [G] - [C]**	**27,903**	**40.2**
South Stockton			
Requirement			
Required Maximum Day Demand Plus Fire Flow[(a)]	[I] MDD (refer to Table 8-1) plus a large industrial Fire Flow (4,500 gpm)	14,864	21.4
Required Peak Hour Demand	[J] 3.3 times ADD (refer to Table 8-1)	18,425	26.5
Pumping Capacity Requirement	[K] = [I] + [J]	18,425	26.5
Existing Capacity			
Existing Firm Pump Capacity at Reservoir Sites	[L] Total pump capacity with the largest pump offline at each reservoir site	9,000	13.0
Existing Firm Pump Capacity at Treatment Plants	[M] 70 percent of South Stockton MDD (refer to Table 8-1)	7,255	10.4
Existing Firm Well Capacity	[N] 85 percent of the capacity of active wells (Wells SSS3 and SSS9)	4,118	5.9
Total Existing Available Firm Capacity	[O] = [L] + [M] + [N]	20,373	29.3
South Stockton Existing Pumping Capacity Surplus (Deficit)	**[P] = [O] - [K]**	**1,948**	**2.8**
Improved Capacity			
Additional Firm Well Supply Capacity from Well SSS10[(d)]	[Q] 85 percent of the assumed 2,000 gpm capacity	1,700	2.4
South Stockton Pumping Capacity Surplus (Deficit) with Existing System Improvements	**[R] = [P] + [Q]**	**3,648**	**5.3**
Additional Firm Well Supply Capacity from Well SSS2	[S] 85 percent of the capacity of existing standby Well SSS2	1,101	1.6
South Stockton Pumping Capacity Surplus (Deficit) with Near-Term System Improvements	**[T] = [R] + [S]**	**4,749**	**6.8**

(a) The large industrial fire flow does not include demand for on-site sprinkler flow.

Table 8-6. Future (2040) Comparison of Available versus Required Pumping Capacity

Available or Required Capacity	Notes/Basis	Capacity	
		gpm	mgd
North Stockton			
Requirement			
Required Maximum Day Demand Plus Fire Flow[(a)]	[A] MDD (refer to Table 8-2) plus a large industrial Fire Flow (4,500 gpm)	37,049	53.4
Required Peak Hour Demand	[B] 2.5 times ADD (refer to Table 8-2)	50,857	73.2
Pumping Capacity Requirement	[C] = [A] + [B]	50,857	73.2
Capacity			
Existing Firm Pump Capacity at Reservoir Sites	[D] Total pump capacity with the largest pump offline at each reservoir site	31,450	45.3
Existing Firm Pump Capacity at Treatment Plants	[E] Limited to the existing capacity of the Delta Water Treatment Plant	20,833	30.0
Existing Firm Well Capacity	[F] 85 percent of the capacity of active wells (Wells 3R, 10R, 18, 19, 21, 27, 29, 30, 31, 32)	16,916	24.4
Total Existing Available Firm Capacity	[G] = [D] + [E] + [F]	69,199	99.6
North Stockton Existing Pumping Capacity Surplus (Deficit)	**[H] = [G] - [C]**	**18,342**	**26.4**
Improved Capacity			
Construction of Well 33	[I] 85 percent of the assumed 1,500 gpm capacity	1,275	1.8
Construction of Northeast Reservoir Pump Station	[J] 12.0 MGD firm capacity, sized based on the ability to fully empty tank in 8 hours	8,333	12.0
North Stockton Supply Capacity Surplus (Deficit) with Future System Improvements	**[K] = [H] + [I] + [J]**	**27,951**	**40.2**
South Stockton			
Requirement			
Required Maximum Day Demand Plus Fire Flow[(a)]	[L] MDD (refer to Table 8-2) plus a large industrial Fire Flow (4,500 gpm)	19,499	28.1
Required Peak Hour Demand	[M] 3.3 times ADD (refer to Table 8-2)	24,092	34.7
Pumping Capacity Requirement	[N] = [L] + [M]	24,092	34.7
Existing Capacity			
Existing Firm Pump Capacity at Reservoir Sites	[O] Total pump capacity with the largest pump offline at each reservoir site	9,000	13.0
Existing Firm Pump Capacity at Treatment Plants	[P] 70 percent of South Stockton MDD (refer to Table 8-2)	10,499	15.1
Existing Firm Well Capacity	[Q] 85 percent of the capacity of active wells (Wells SSS3 and SSS9)	4,118	5.9
Total Existing Available Firm Capacity	[R] = [O] + [P] + [Q]	23,617	34.0
South Stockton Existing Pumping Capacity Surplus (Deficit)	**[S] = [R] - [N]**	**(474)**	**(0.7)**
Improved Capacity			
Added Firm Well Capacity to Improve Existing and Near-Term System	[T] Additional capacity of Well SSS10, assuming a pumping capacity of 2,000 gpm and rehabilitation of Well SSS2 (85 percent of total capacity assumed for firm capacity)	2,801	4.0
South Stockton Pumping Capacity Surplus (Deficit) with Existing and Near-Term System Improvements	**[U] = [S] + [T]**	**2,327**	**3.4**
Added Firm Well Capacity to Improve Future System Storage and Reliability	[V] Rehabilitation of Well SSS8 (85 percent of total capacity assumed for firm capacity)	859	1.2
South Stockton Pumping Capacity Surplus (Deficit) with Future System Improvements	**[W] = [U] + [V]**	**3,185**	**4.6**
Mariposa Road Community			
Requirement			
Required Maximum Day Demand Plus Fire Flow[(a)]	[X] Maximum Day Demand (refer to Table 8-2) plus a large industrial Fire Flow (4,500 gpm)	8,038	11.6
Required Peak Hour Demand	[Y] Existing Peak Hour Demand (refer to Table 8-2)	6,867	9.9
Mariposa Road Community Pumping Capacity Requirement	[Z] = [X] + [Y]	8,038	11.6
Improved Capacity			
Added Pumping Capacity associated with new 3.5 MG storage reservoir for Mariposa Road Community	[AA] 12.0 MGD firm capacity, sized based on the ability to fully empty tank in 8 hours	8,333	12.0
Additional Capacity from New Well	[AB] New well assumed to supply 1,500 gpm (85 percent of total capacity assumed for firm capacity)	1,275	1.8
Mariposa Road Community Pumping Capacity Surplus (Deficit) with Future System Improvements	**[AC] = [AA] + [AB] - [Z]**	**1,570**	**2.3**

(a) The large industrial fire flow does not include demand for on-site sprinkler flow.

8.3.3 Storage Capacity Evaluation

Water storage provides operational storage to balance differences in demands and supplies, emergency storage in case of a supply failure, and water to fight fires. The COSMUD water system has two sources of available storage: above-ground storage (i.e., storage reservoirs) and storage available in the groundwater basin. Together, these two sources of storage must be sufficient to meet the COSMUD operational, emergency, and fire flow storage criteria.

As introduced in Chapter 5, the COSMUD water storage capacity requirement is as follows:

- Operational storage equal to 25 percent of a maximum day demand
- Fire flow storage equal to the largest fire flow rate multiplied by its duration
- Emergency storage equal to one average day demand

Because the COSMUD water supply includes groundwater wells and treated surface water, the groundwater basin and treatment facilities can offset some of the required storage in the form of storage credits. A summary of available storage capacity and credits is provided below:

- Existing available storage is defined as the storage provided by all active reservoirs
- The Emergency Groundwater Storage Credit (EGWC) equals 85 percent of the active groundwater wells that can be reliably accessed (i.e., well facilities equipped with auxiliary power)
- The Treated Surface Water Supply Credit (TSWC) equals the smaller of the two treatment facilities available in North Stockton. There is no treated surface water credit available for South Stockton because water from DWTP cannot be transferred to South Stockton, providing no redundant treated surface water supply. Since the COSMUD aims to maximize its use of SEWD water in South Stockton, the maximum credit that can be taken is difference between the full SEWD capacity (i.e., 30 mgd) and South Stockton maximum day demands.
- Combined, the EGWC and TSWC cannot exceed the emergency storage requirement

Existing water storage facilities, in conjunction with the available EGWC and TSWC, were evaluated to determine whether the COSMUD existing storage capacity provides the recommended operational, emergency, and fire flow storage for existing demands. Table 8-7 and Table 8-8 provide a comparison of available and required storage capacity for near-term (2030) and future (2040) timeframes, respectively.

As shown in Table 8-7 below, for the near-term demand condition, there is a surplus of storage capacity in North Stockton[26] and a storage capacity deficit in South Stockton of 6.1 mgd, with Well SSS10 included as recommended in the existing system analysis. To alleviate the storage capacity deficit in South Stockton, it is recommended that existing and/or rehabilitated groundwater wells be equipped with backup power. The addition of backup power at wells maximizes the COSMUD ability to generate EGWCs. Existing Wells SSS3 and SSS9 do not currently have backup power and are recommended to be equipped

[26] In subsequent sections of this chapter it is recommended that two existing wells be either rehabilitated or replaced in North Stockton by the near-term time frame. A groundwater study is also recommended in subsequent sections of this chapter to identify which wells should be rehabilitated. Capacity increases associated from rehabilitation of these wells are not accounted for and would result in an increased storage capacity surplus.

with backup power to increase the EGWC for South Stockton. Equipping Wells SSS3 and SSS9 alone does not fully mitigate the projected storage deficit. Therefore, it is recommended that Well SSS2 be rehabilitated back to active status and equipped with backup power. Well SSS2 is currently out of service due to elevated concentrations of 1,2,3-Trichloropropane (TCP). To rehabilitate this well, it is assumed that a granular activated carbon treatment system would be installed since this has been deemed a best available technology (BAT) by California Division of Drinking Water for treatment for TCP[27].

As shown in Table 8-8 below, for the future demand condition there is a storage capacity deficit in North Stockton and a slight surplus in South Stockton. To alleviate the storage capacity deficit in North Stockton, it is recommended that COSMUD planned Well 33 be constructed and equipped with backup power. The remainder of the capacity deficit would be mitigated by the new Northeast Reservoir and Reservoir Pump Station. It is recommended that this reservoir and pump station be sized at 4.0 MG, which would be adequate to cover the storage capacity deficit if one of the existing northeast wells is out of service (i.e., Wells 10R, 31, 32, future Well 33), where pressures are lower during maximum day and peak hour conditions.

Although there is a small storage capacity surplus in South Stockton (0.1 mgd), it is recommended that Well SSS8 be rehabilitated back to active status and equipped with backup power. Table 8-7, for the near-term timeframe, assumes 100 percent of the existing pumping capacity of Well SSS2. However, since Well SSS2 will require wellhead treatment, it is likely that the full capacity of this well will not be recovered, resulting in a storage capacity deficit (since the EGWC will be reduced). Rehabilitating Well SSS8 will provide the COSMUD with additional flexibility in South Stockton if the recovered capacity at Well SSS2 is any less than 100 percent and would ensure that the needed storage capacity is met. In addition, having an additional local supply source also helps to diversify the COSMUD water supply, and further reduces the reliance on SEWD.

[27] The existing SSS2 well site is located in a parking lot outside of an industrial building, and therefore cannot accommodate the additional footprint associated with wellhead treatment. It is likely wellhead treatment be sited at the nearby SSS8, which is located at a park and can accommodate the additional footprint associated with wellhead treatment. Therefore, a dedicated pipeline from SSS2 to SSS8 will need to be constructed. This alternative is recommended to be further investigated as part of the recommended Groundwater Study, discussed in subsequent sections. For cost estimating purposes, a new well cost is assumed for this improvement and is discussed in further detail in Chapter 9.

Table 8-7. Near-Term (2030) Comparison of Available versus Required Storage Capacity

Available or Required Capacity	Notes/Basis	Storage, mg
North Stockton		
Requirement		
Operational	[A] 25 percent of MDD (refer to Table 8-1)	9.5
Fire Flow	[B] One fire event: 4,000 gpm @ 4 hours (refer to Chapter 5)	1.0
Emergency	[C] One ADD (refer to Table 8-1)	23.8
Total Storage Requirement	[D] = [A] + [B] + [C]	34.3
Capacity		
Existing Available Storage Capacity	[E] Includes all active reservoirs	16.2
Treated Surface Water Supply Credit	[F] Assumes North Stockton Pipeline Hypochlorite Facility is complete, so SEWD is connected to North Stockton. The smaller of the two WTPs (DWTP) can be used for the treated surface water supply credit	10.2
Emergency Groundwater Storage Credit	[G] 85 percent of the active wells equipped with backup power (Wells 3R, 29, 30, 31, 32)	13.6
Total Storage Capacity	[H] = [E] + [F] + [G]	40.0
North Stockton Existing Storage Capacity Surplus (Deficit)	**[I] = [H] - [D]**	**5.7**
South Stockton		
Requirement		
Operational	[J] 25 percent of MDD (refer to Table 8-1)	3.7
Fire Flow	[K] One fire event: 4,000 gpm @ 4 hours (refer to Chapter 5)	1.0
Emergency	[L] One ADD (refer to Table 8-1)	9.8
Total Storage Requirement	[M] = [J] + [K] + [L]	14.5
Capacity		
Existing Available Storage Capacity	[N] Includes all active reservoirs	6.0
Treated Surface Water Supply Credit	[O] No credit taken, since water from DWTP cannot be transferred to South Stockton	0.0
Emergency Groundwater Storage Credit	[P] 85 percent of the active wells equipped with backup power (none)	0.0
Total Storage Capacity	[Q] = [N] + [O] + [P]	6.0
South Stockton Existing Storage Capacity Surplus (Deficit)	**[R] = [Q] - [M]**	**(8.5)**
Improved Capacity		
Added Emergency Groundwater Storage Credit from Well SSS10	[S] 85 percent of the assumed 2,000 gpm capacity	2.4
South Stockton Storage Capacity Surplus (Deficit) with Existing System Improvements	**[T] = [R] + [S]**	**(6.1)**
Additional Emergency Groundwater Storage Credit from equipping Wells SSS3 and SSS9 with backup power	[U] 85 percent of the capacity of existing active Wells SSS3 and SSS9	5.9
Additional Emergency Groundwater Storage Credit from Rehabilitating Well SSS2	[V] 85 percent of the capacity of existing standby Well SSS2	1.6
South Stockton Storage Capacity Surplus (Deficit) with Near-Term System Improvements	**[W] = [T] + [U] + [V]**	**1.5**

Table 8-8. Future (2040) Comparison of Available versus Required Storage Capacity

Available or Required Capacity	Notes/Basis	Storage, mg
North Stockton		
Requirement		
Operational	[A] 25 percent of MDD (refer to Table 8-2)	11.7
Fire Flow	[B] One fire event: 4,000 gpm @ 4 hours (refer to Chapter 5)	1.0
Emergency	[C] One ADD (refer to Table 8-2)	29.3
Total Storage Requirement	[D] = [A] + [B] + [C]	42.0
Capacity		
Existing Available Storage Capacity	[E] Includes all active reservoirs	16.2
Treated Surface Water Supply Credit	[F] Assumes the North Stockton Pipeline Hypochlorite Facility is complete, so SEWD is connected to North Stockton. The smaller of the two WTPs (DWTP) can be used for the treated surface water supply credit	8.4
Emergency Groundwater Storage Credit	[G] 85 percent of the active wells equipped with backup power (Wells 3R, 29, 30, 31, 32)	13.6
Total Storage Capacity	[H] = [E] + [F] + [G]	38.2
North Stockton Existing Storage Capacity Surplus (Deficit)	**[I] = [H] - [D]**	**(3.8)**
Improved Capacity		
Construction of Well 33 with backup power[(e)]	[J] 85 percent of the capacity of new well (assumed to be 1,500 gpm)	1.8
Construction of Northeast Reservoir	[K] Recommended Northeast Reservoir 4 MG nominal capacity, in the event of a well in northeast area is offline	4.0
North Stockton Buildout Storage Capacity Surplus (Deficit) with Future System Improvements	**[L] = [I] + [J] + [K]**	**2.0**
South Stockton		
Requirement		
Operational	[M] 25 percent of MDD (refer to Table 8-2)	4.1
Fire Flow	[N] One fire event: 4,000 gpm @ 4 hours (refer to Chapter 5)	1.0
Emergency	[O] One ADD (refer to Table 8-2)	10.8
Total Storage Requirement	[P] = [M] + [N] + [O]	15.9
Capacity		
Existing Available Storage Capacity	[Q] Includes all active reservoirs	6.0
Treated Surface Water Supply Credit	[R] No credit taken, since North Stockton and South Stockton remain hydraulically separate	0.0
Emergency Groundwater Storage Credit[(e)]	[S] 85 percent of the active wells equipped with backup power (none)	0.0
Total Storage Capacity	[T] = [Q] + [R] + [S]	6.0
South Stockton Existing Storage Capacity Surplus (Deficit)	**[U] = [T] - [P]**	**(9.9)**
Improved Capacity		
Added Emergency Groundwater Storage Credit from Existing and Near-Term System Improvements (Well SSS10)[(e)]	[V] 85 percent of the assumed 2,000 gpm capacity	2.4
Additional Emergency Groundwater Storage Credit from equipping Wells SSS3 and SSS9 with backup power	[W] 85 percent of the capacity of existing Wells SSS3 and SSS9	5.9
Additional Emergency Groundwater Storage Credit from rehabilitating Well SSS2	[X] 85 percent of the capacity of existing standby Well SSS2	1.6
South Stockton Storage Capacity Surplus (Deficit) with Existing and Near-Term System Improvements	**[Y] = [U] + [V] + [W] + [X]**	**0.1**
Additional Emergency Groundwater Storage Credit from Well SSS8	[Z] 85 percent of the capacity of existing standby Well SSS8	1.2
South Stockton Storage Capacity Surplus (Deficit) with Future System Improvements	**[AA] = [Y] + [Z]**	**1.3**
Mariposa Road Community		
Requirement		
Operational	[AB] 25 percent of MDD (refer to Table 8-2)	1.3
Fire Flow	[AC] One fire event: 4,000 gpm @ 4 hours (refer to Chapter 5)	1.0
Emergency	[AD] One ADD (refer to Table 8-2)	3.0
Mariposa Road Community Total Storage Requirement	[AE] = [AB] + [AC] + [AD]	5.3
Improved Capacity		
New Storage Reservoir for Mariposa Road Community	[AF] Recommended Mariposa Reservoir 3.5 MG nominal capacity	3.5
Additional Well to improve supply reliability and to contribute to emergency groundwater storage credit	[AG] 85 percent of the assumed 1,500 gpm capacity	1.8
Mariposa Road Community Storage Capacity Surplus (Deficit)	**[AH] = [AF] + [AG] - [AE]**	**0.0**

8.4 FUTURE WATER DISTRIBUTION SYSTEM PERFORMANCE EVALUATION

The water distribution system performance evaluation identifies necessary improvements to the COSMUD water distribution system to support the COSMUD near-term (2030) and future (2040) water demands while meeting the COSMUD recommended water system planning and design criteria, presented in Chapter 5. The following evaluations were performed to assess water distribution system performance under existing water demand conditions:

- Normal Operations – Maximum Day Demand with Peak Hour Scenario: This scenario evaluated service pressures during a peak hour on the maximum day demand condition.
- Emergency Operations – Maximum Day Demand plus Fire Flow Scenario: This scenario evaluated system fire flow availability under a maximum day demand condition.

The water system hydraulic model, updated with the proposed improvements to the existing system from Chapter 7, was used to evaluate the near-term (2030) and future (2040) water system performance. Additional facilities (i.e., pipes and new wells) to provide service to projected future development areas were also included in the hydraulic model, as shown on Figure 8-1. In addition, recommended improvements identified in the facility capacity evaluation above were also incorporated into the hydraulic model. The water distribution system is expected to deliver maximum day with peak hour demand flows and maximum day demand plus fire flow, at near-term (2030) and future (2040) demand conditions, within the acceptable pressure and velocity ranges as identified in the water system performance and operational criteria presented in Chapter 5.

8.4.1 Normal Operations – Maximum Day Demand with Peak Hour

8.4.1.1 Evaluation Overview

An EPS was conducted using the hydraulic model to evaluate system performance under a maximum day with a peak hour demand condition for both near-term (2030) and future (2040) demand conditions. The diurnal pattern previously presented in Chapter 3 was incorporated into the hydraulic model for both demand conditions and evaluated for seven consecutive days; however, only results from the last three days of the simulations were used, as these results are not affected by initial conditions. Table 8-1 summarizes system demands for the near-term (2030) demand condition and Table 8-2 summarizes system demands for the future (2040) demand condition.

During both a maximum day demand scenario and a peak hour demand scenario, a minimum pressure of 45 psi and a maximum pressure of 80 psi must be maintained at service connections throughout the entire system. In addition, for pipelines, it is recommended that the maximum velocity not exceed 5 fps. The near-term and future system analyses assume the maximum day and peak hour demand would be met by a combination of surface water treatment plants, active groundwater wells, and storage reservoirs via their associated reservoir pump stations.

8.4.1.2 Near-Term (2030) System Evaluation Results

Results from the maximum day with peak hour demand condition for near-term (2030) demand conditions indicate that the water distribution system generally meets the COSMUD minimum and maximum pressure criteria at most customer service locations. Figure 8-2 presents the minimum pressures observed during the EPS simulation.

For North Stockton, SEWD is assumed to be supplying North Stockton via the North Stockton Pipeline Hypochlorite Facility as this project is anticipated to be complete by 2030. Discharge pressure at DWTP was increased to 58 psi to limit the supply from SEWD. As a result of SEWD supplying North Stockton and the increase of the DWTP discharge pressure, minimum pressure results for the near-term system generally improve as compared to the existing system evaluation. Minimum pressures in the northeast remain above 50 psi. Maximum pressures throughout the entire service area do not exceed 73 psi (observed in the northwest at low elevations).

For South Stockton, some locations south of Weston Ranch Reservoir and east of Well SSS3 do not meet the minimum pressure criterion but remain predominantly greater than 40 psi. Improvements to address this area are not recommended since all pipeline velocity and head loss gradients in the area meet recommended criteria. In addition, in the future (2040), the nearby Mariposa Road Community pressure zone would have interconnections in these areas with low pressure. These connections would help improve observed low pressures. Distribution system pressures vary from a high of 71 psi in the northwest corner of the South Stockton system to a low of 41 psi east of Well SSS3, with the exception of the customer service location at the end of a 2-inch diameter dead-end pipeline in central South Stockton, previously identified in the existing system analysis.

Discharge pipelines at groundwater well facilities and reservoir pump stations have maximum velocities that vary between 5.6 and 9 fps. While these velocities exceed maximum recommended velocities, improvements are not recommended at these locations as they are experienced for a short distance and do not impact the primary criterion, customer service pressure. Simulated velocity results for the maximum day with peak hour demand condition indicate that the remaining pipelines within the COSMUD water system meet the velocity criterion of 5 fps, and therefore no pipeline improvements are recommended for the maximum day with peak hour demand condition.

Figure 8-3 shows reservoir water level fluctuations in system reservoirs throughout the EPS. As shown on Figure 8-3, the Northwest and Fourteen-Mile Slough Reservoirs follow a repetitive turnover cycle, cycling at least once a day. In South Stockton, Weston Ranch Reservoir level fluctuations are more cyclical due to the increased demand by near-term (2030).

8.4.1.3 Future (2040) System Evaluation Results

Results from the maximum day with peak hour demand condition for the future (2040) demand conditions indicates that the water distribution system generally meets the COSMUD minimum and maximum pressure criteria for at most customer service locations. Figure 8-4 presents the minimum pressures observed during the EPS simulation.

For North Stockton, for this evaluation, it is assumed that SEWD will not supply North Stockton via the North Stockton Pipeline Hypochlorite Facility, and supply from DWTP will be maximized up to 29 mgd. The intent of this assumption was to identify pipeline restrictions downstream of DWTP if the COSMUD maximized surface water supplies from the DWTP. In addition, the new Northeast Reservoir and new Well 33 are assumed to be online, as recommended in the facility capacity evaluation sections. As shown

on Figure 8-4, minimum pressures are slightly less than near-term results, but still generally meet the minimum pressure criterion. A few locations do experience minimum pressures less than 45 psi, but local improvements are not recommended as velocity and head loss criteria in pipelines are met. However, the existing 42-inch diameter transmission pipelines downstream of the DWTP finished water pump station experience velocities greater than 5 fps (up to a maximum of 6.5 fps), the maximum velocity criterion for transmission mains. It is recommended that new 36-inch diameter transmission lines be constructed to provide additional conveyance capacity from the DWTP finished water pump station. Since these pipelines are needed to meet demands in the future and/or to maximize supply from DWTP, these pipelines should be completed by 2040 and are recommended to be coupled with development north of Bear Creek. Figure 8-5 shows minimum pressure results with these recommended pipelines incorporated.

For South Stockton, results generally look identical to the near-term (2030) minimum pressure results. The customer service location at the end of a 2-inch diameter dead-end pipeline in central South Stockton continues to experience low pressures, this was previously identified in Chapter 7. It is recommended that this pipeline be replaced as part of the Priority 3 rehabilitation and replacement program discussed in Chapter 7. The Mariposa Road Community area was configured to be served by a recommended new reservoir and associated reservoir pump station, and all pressure and velocity criteria is met under this configuration.

Discharge pipelines at groundwater well facilities and reservoir pump stations have maximum velocities that vary between 5.6 and 9 fps. While these velocities exceed maximum recommended velocities, improvements are not recommended at these locations as they are experienced for a short distance and do not impact the primary criterion, customer service pressure. Simulated velocity results for the maximum day with peak hour demand condition indicate that the remaining pipelines within the COSMUD water system meet the velocity criterion of 5 fps and therefore no pipelines additional improvements are recommended for the maximum day with peak hour demand condition, except for the recommended transmission mains to mitigate velocities observed downstream of the DWTP.

Figure 8-6 shows reservoir water level fluctuations in system reservoirs throughout the EPS. The Northwest, Fourteen-Mile Slough, and proposed Northeast Reservoirs follow a repetitive turnover cycle, cycling at least once a day. In South Stockton, the Weston Ranch and the Mariposa Road Community Reservoirs also follow a repetitive turnover cycle, cycling at least once a day.

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F8_2_MDDMinResults_NTSys.mxd - wjones - 1/26/2021

North Stockton

Delta Water Treatment Plant
WTP
Well #29
Well #30
Well #18
Northwest
Well #31
Well #19
Well #32
Well #10R
Well #21
Well #03R
14 Mile Slough
Well #27
Stockton East Water District
WTP
ARMSTRONG RD
LIVE OAK RD
EIGHT MILE RD
WEST LN
RINGE RD
ASHLEY LN
HILDRETH LN
ALPINE RD
CHEROKEE RD
WATERLOO RD
WAIN RD
HOLT RD
SAN JOAQUIN RIVER
CALAVERAS RIVER
PACIFIC AVE
EL DORADO ST
FREMONT ST
MINER AVE
N
0 3,500 7,000
Scale in Feet

South Stockton

WTP
Stockton East Water District
SAN JOAQUIN RIVER
NAVY DR
FREMONT ST
MINER AVE
DR MARTIN LUTHER KING JR BLVD
EIGHTH ST
EL DORADO ST
POCKET RD
MARIPOSA RD
Well SSS10
Well SSS9
Well SSS3
AUSTIN RD
NEWCASTLE RD
JACKSTONE RD
Weston Ranch
HOWARD RD
THORNTON RD
ARMOUR WAY
N
0 3,000 6,000
Scale in Feet

Notes:
1. Delta Water Treatment Plant pump station discharge pressure was set to 58 psi and Stockton East Water District pump station discharge pressure was set to 58 psi. Active wells were turned on as needed, based on local pressure/time of day.

Minimum System Pressure
- Less than 40 psi
- Between 40 and 45 psi
- Between 45 and 50 psi
- Between 50 and 55 psi
- Greater than 55 psi

- Water Treatment Plant
- Reservoir & Pump Station
- Well (Active)
- COSMUD Water Service Boundary

Maximum Velocity
- Equal to or Less than 5 ft/s
- Greater than 5 & Less than 7 ft/s
- Greater than 7 ft/s

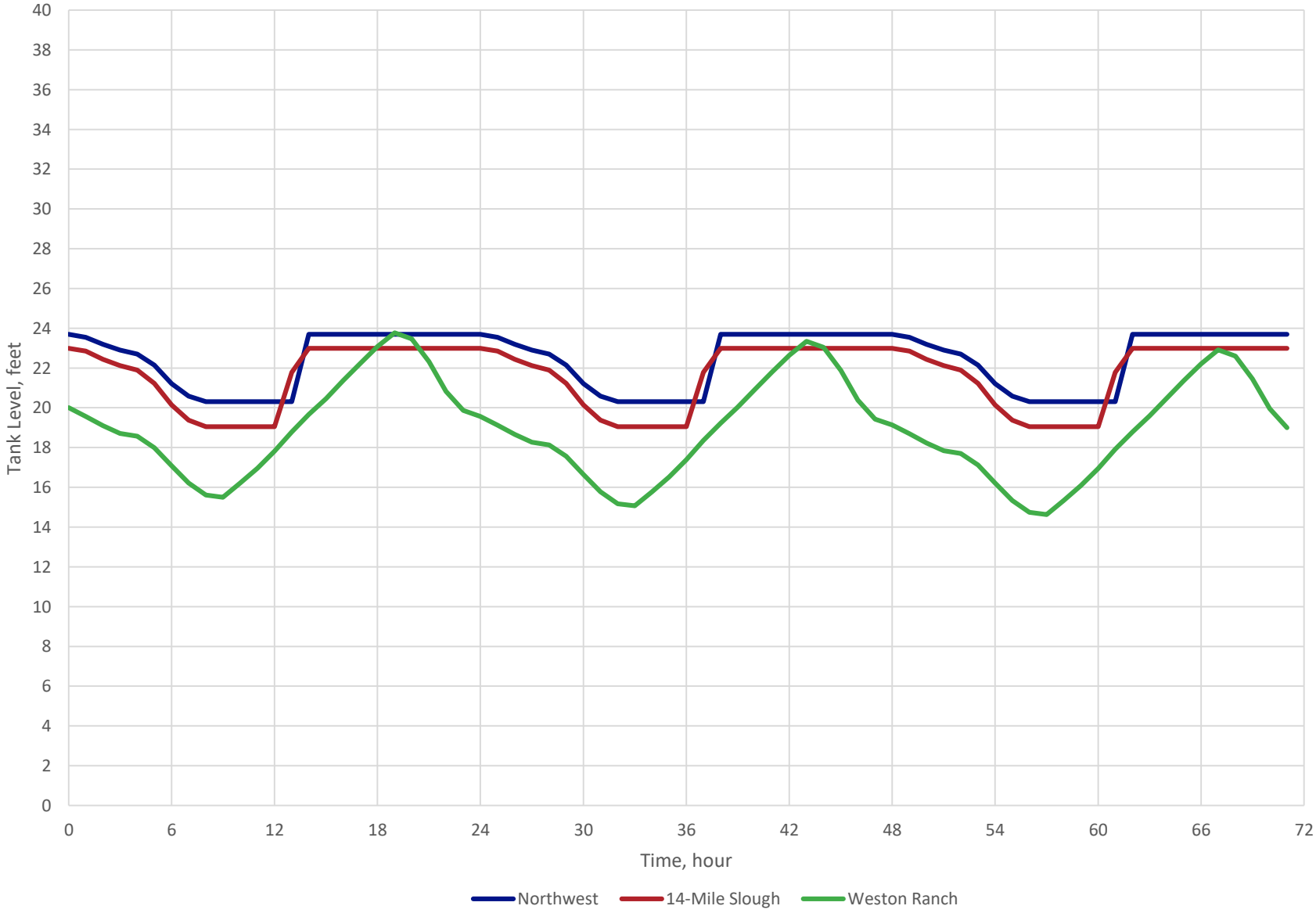
Figure 8-2

Near-Term (2030) System Maximum Day Demand Minimum System Pressure

City of Stockton
Water Master Plan Update

WEST YOST

Figure 8-3. Near Term (2030) Maximum Day Demand Reservoir Level Results



WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F8_4_MDDMinResults_BOSys.mxd - wjones - 1/26/2021

North Stockton

Delta Water Treatment Plant
WTP
Well #29
Well #30
Well #18
Northwest
Well #33
Well #31
Northeast
Well #19
Well #32
Well #10R
Well #21
Well #03R
Well #27
14 Mile Slough
Stockton East Water District
WTP
ARMSTRONG RD
LIVE OAK RD
EIGHT MILE RD
RINGE RD
ASHLEY LN
HILDRETH LN
ALPINE RD
CHEROKEE RD
WATERLOO RD
WAIN RD
DE RD
FREMONT ST
MINER AVE
HOLT RD
SAN JOAQUIN RIVER
CALAVERAS RIVER
WEST LN
EL DORADO ST
PACIFIC AVE
99
5
N
0 3,500 7,000
Scale in Feet

South Stockton

SAN JOAQUIN RIVER
NAVY DR
FREMONT ST
MINER AVE
CENTER ST
SUTTER ST
DR MARTIN LUTHER KING JR BLVD
EIGHTH ST
EL DORADO ST
POCKET RD
MARIPOSA RD
JACKTONE RD
NEWCASTLE RD
AUSTIN RD
HOWARD RD
THORNTON RD
ARPORT WAY
99
5
WTP
Stockton East Water District
Mariposa
Well SSS10
Well SSS9
Well SSS3
Weston Ranch
N
0 3,000 6,000
Scale in Feet

Notes:
1. Delta Water Treatment Plant pump station discharge pressure was set to 60 psi and Stockton East Water District pump station discharge pressure was set to 58 psi. Active and proposed wells were turned on as needed, based on local pressure/time of day.

Minimum System Pressure
- Less than 40 psi
- Between 40 and 45 psi
- Between 45 and 50 psi
- Between 50 and 55 psi
- Greater than 55 psi

- Water Treatment Plant
- Reservoir & Pump Station
- Well (Active)
- COSMUD Water Service Boundary

Maximum Velocity
- Equal to or Less than 5 ft/s
- Greater than 5 ft/s & Less than 7 ft/s
- Greater than 7 ft/s

Figure 8-4

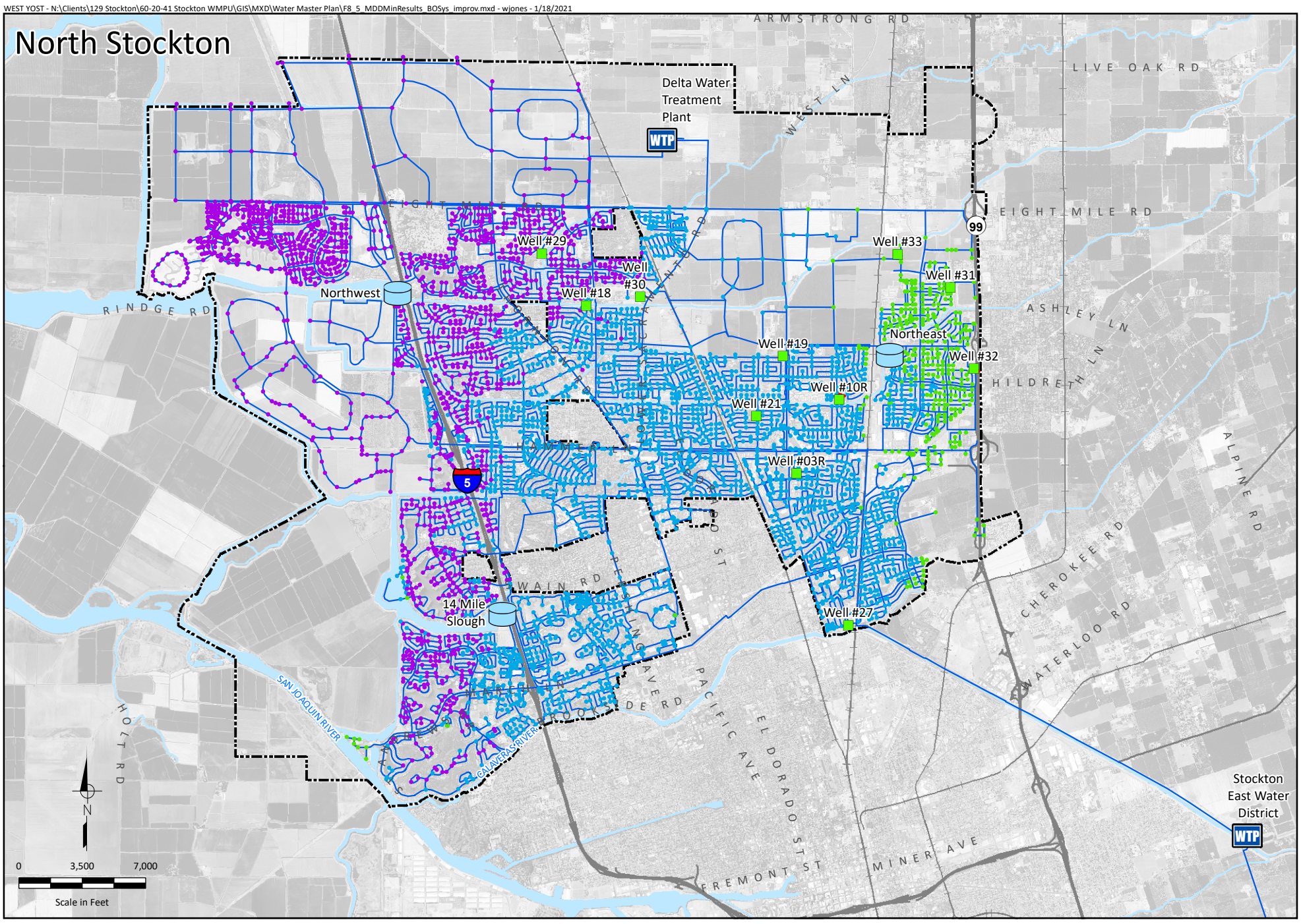
Buildout (2040) System
Maximum Day Demand
Minimum System Pressure

City of Stockton
Water Master Plan Update

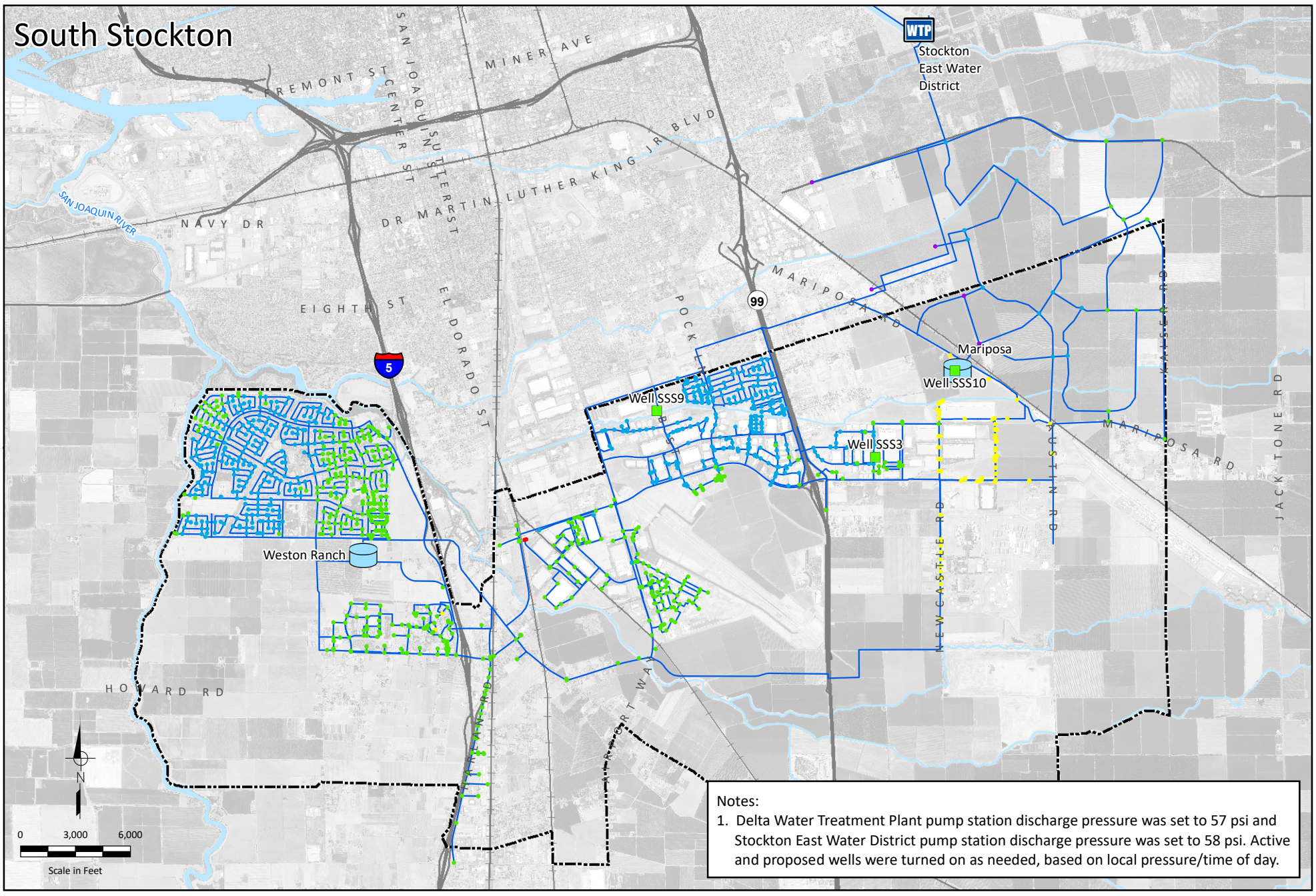
WEST YOST

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F8_5_MDDMinResults_BOSys_improv.mxd - wjones - 1/18/2021

North Stockton



South Stockton



Notes:
1. Delta Water Treatment Plant pump station discharge pressure was set to 57 psi and Stockton East Water District pump station discharge pressure was set to 58 psi. Active and proposed wells were turned on as needed, based on local pressure/time of day.

Minimum System Pressure
- Less than 40 psi
- Between 40 and 45 psi
- Between 45 and 50 psi
- Between 50 and 55 psi
- Greater than 44 psi

- Water Treatment Plant
- Reservoir & Pump Station
- Well (Active)
- COSMUD Water Service Boundary

Maximum Velocity
- Equal to or Less than 5 ft/s
- Greater than 5 & Less than 7 ft/s
- Greater than 7 ft/s

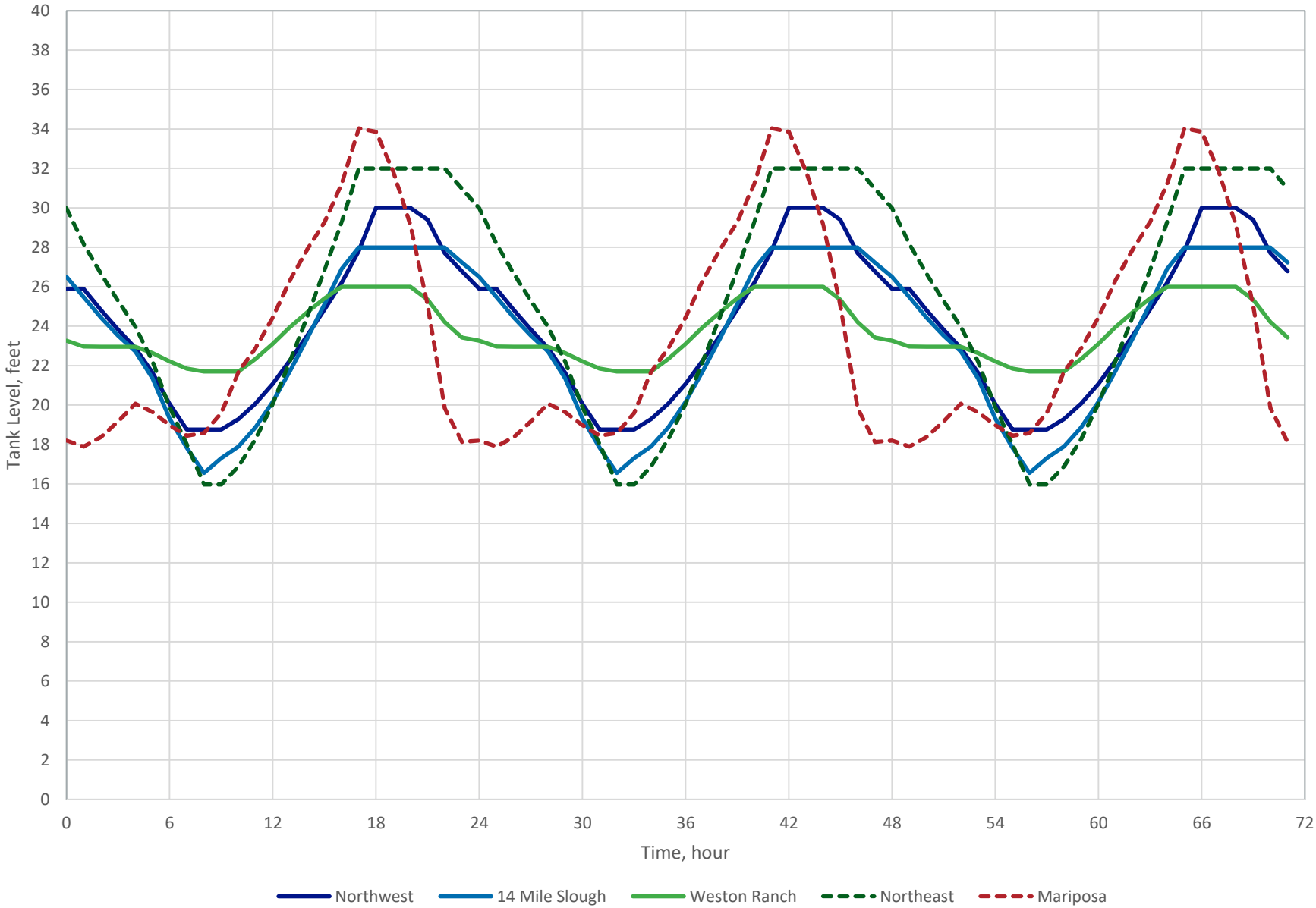
Figure 8-5

Buildout (2040) System
Maximum Day Demand
Minimum System Pressure
With Improvements

City of Stockton
Water Master Plan Update

WEST YOST

Figure 8-6. Future (2040) System Maximum Day Demand Reservoir Level Results



8.4.2 Emergency Operations – Maximum Day Demand Plus Fire Flow

The maximum day demand plus fire flow scenario evaluates the fire flow availability in the COSMUD distribution system under a maximum day demand condition, for both near-term (2030) and future (2040) time frames. An overview of the evaluation and a discussion of the results are presented in the sections below.

8.4.2.1 Evaluation Overview

To evaluate the near-term (2030) and future (2040) water system fire flow availability, InfoWater's fire flow module was used to determine the available fire flow at junctions that represent hydrant locations throughout the system, while maintaining a minimum residual system pressure of 20 psi at all customer service locations and in new development areas. The analysis assumed that reservoir pump stations are operating at their firm pumping capacity. Maximum velocity is only considered on pipelines within new developments to confirm sizing of new infrastructure. Pipelines in existing areas are evaluated without a maximum velocity constraint because these pipelines were sized to meet standards at the time of their construction.

As discussed in Chapter 5, recommended fire flow criteria presented in Table 5-2 are established for future development land use types. Much of the existing COSMUD water distribution system is older and designed to earlier fire standards in place at the time the pipelines were constructed. The fire flow evaluation presents the systemwide available fire flow compared to recommended fire flow criteria for existing water service areas for comparison purposes only. As previously mentioned in Chapter 7, because much of the COSMUD system is older, a R&R program is recommended to replace smaller diameter pipelines (which are typically older) over the next 40 years. As the COSMUD proceeds with the program, fire flow availability in these areas will improve. For new development areas, fire flow availability is evaluated to confirm sizing of recommended future system improvements for new developments. As development plans in future areas are refined, infrastructure is expected to change and the COSMUD should require project proponents to size infrastructure to meet all design criteria presented in Chapter 5.

8.4.2.2 Near-Term (2030) System Evaluation Results

Figure 8-7 presents available fire flow compared to adjacent land use at each tested hydrant location and along future development pipelines while meeting recommended criteria. Results presented on Figure 8-7 are representative of the system's capacity and do not represent available flow from a specific hydrant. Typically, fire flows exceeding 1,500 gpm are met by multiple hydrants.

As shown on Figure 8-7, with Priority 1 and 2 improvements, most existing tested locations meet or exceed the recommended fire flow criteria for that location, and a few locations meet at least 75 percent of the criteria. As the COSMUD implements Priority 3 improvements, the number of locations that were found to meet at least 75 percent of the criteria will further improve. All tested locations within future development areas meet the required fire flow.

In South Stockton, the long dead-end pipeline along South Harland Road does not meet the recommended fire flow. This pipeline is currently a 12-inch diameter pipeline, and the COSMUD is planning on replacing portions of this pipeline with 16-inch diameter pipelines. Even with these improvements, available fire flows still are not significantly improved. Further upsizing of this pipeline is not recommended as this would result in poor water quality in this area. As development within this area continues, potentially after 2040, the COSMUD should consider looping pipelines in this future development area to improve hydraulic capacity

and therefore fire flow. No additional infrastructure is recommended at this time to improve fire flow, aside from the previously recommended rehabilitation and replacement plan (Priorities 1 through 3).

8.4.2.3 Future (2040) System Evaluation Results

Figure 8-8 presents available fire flow compared to adjacent land use at each tested hydrant location and along future development pipelines while meeting recommended criteria. Results presented on Figure 8-8 are representative of the system's capacity and do not represent available flow from a specific hydrant. Typically, fire flows exceeding 1,500 gpm are met by multiple hydrants.

As shown on Figure 8-8, results are similar to near-term (2030) and most existing tested locations meet or exceed the recommended fire flow criteria for that location, and a few locations meet at least 75 percent of the criteria. As the COSMUD implements Priority 3 improvements, the number of locations that were found to meet at least 75 percent of the criteria will further improve. All tested locations within future development areas meet the required fire flow.

In South Stockton, the long dead-end pipeline along South Harland Road continues to not meet the recommended fire flow. As development within this area continues, potentially after 2040, the COSMUD should consider looping pipelines in this future development area to improve hydraulic capacity and therefore fire flow. No additional infrastructure is recommended at this time to improve fire flow, aside from the previously recommended rehabilitation and replacement plan (Priorities 1 through 3).

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F8_7_FFResults_NTSys.mxd - wjones - 1/26/2021

North Stockton

Delta Water Treatment Plant
WTP
Well #29
Well #30
Well #18
Northwest
Well #31
Well #19
Well #32
Well #10R
Well #21
Well #03R
14 Mile Slough
Well #27
Stockton East Water District
WTP
ARMSTRONG RD
LIVE OAK RD
WEST LN
EIGHT MILE RD
RINDGE RD
THORNTON RD
SACRAMENTO RD
ASHLEY LN
HILDRETH LN
HAMMETT LN
LOWER SACRAMENTO RD
EL DORADO ST
PACIFIC AVE
SWAIN RD
MARCH LN
BROOKSIDE RD
DREW SCHULTZ
HOLT RD
SAN JOAQUIN RIVER
CALAVERAS RIVER
CHEROKEE RD
WATERLOO RD
ALPINE RD
FREMONT ST
MINER AVE
99
5
N
0 3,500 7,000
Scale in Feet

South Stockton

WTP
Stockton East Water District
FREMONT ST
MINER AVE
SAN JOAQUIN RIVER
NAVY DR
DR MARTIN LUTHER KING JR BLVD
EIGHTH ST
EL DORADO ST
POCKET RD
MARIPOSA RD
Well SSS10
Well SSS9
Well SSS3
AUSTIN RD
NEWCASTLE RD
JACKSTONE RD
Weston Ranch
HOWARD RD
TRAINER RD
AIRPORT WAY
DEL WEBB BLVD
24"
99
5
N
0 3,000 6,000
Scale in Feet

Notes:
1. Delta Water Treatment Plant pump station discharge pressure was set to 58 psi and Stockton East Water District pump station discharge pressure was set to 58 psi. Active wells were turned on as needed, based on local pressure.
2. The available flow at each junction is the maximum flow available while maintaining 20 psi residual system pressure.
3. Approximate near-term (2030) development pipelines are in areas where the pipe layout and sizing will be determined by the developer at a later date.

- Available flow is ≥100% of criteria
- Available flow is ≥75% but <100% of criteria
- Available flow is ≥50% but <75% of criteria
- Available flow is <50% of criteria
- Water Treatment Plant
- Reservoir & Pump Station
- Well (Active)
- COSMUD Water Service Boundary

Pipelines
- Existing
- Existing System Improvements
- Near-Term (2030) Improvements
- Future Development Pipelines

Figure 8-7

Near-Term (2030) System Maximum Day Demand Fire Flow Results

City of Stockton
Water Master Plan Update

WEST YOST

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F8_8_FFResults_BOSys.mxd - wjones - 1/26/2021

North Stockton

Delta Water Treatment Plant
WTP
Well #29
Well #30
Well #18
Northwest
Well #33
Well #31
Well #19
Northeast
Well #32
Well #10R
Well #21
Well #03R
14 Mile Slough
Well #27
Stockton East Water District
WTP
ARMSTRONG RD
LIVE OAK RD
EIGHT MILE RD
RINGE RD
THORNTON RD
LOWER SACRAMENTO RD
WEST LN
ASHLEY LN
HILDRETH LN
HAMMETT
IWAIN RD
STING AVE
PACIFIC AVE
EL DORADO ST
ROOKSIDE RD
MARCH LN
SAN ANDREWS DR
SAN JOAQUIN RIVER
CALAVERAS RIVER
HOLT RD
CHEROKEE RD
WATERLOO RD
ALPINE RD
FREMONT ST
MINER AVE
99
5
N
0 3,500 7,000
Scale in Feet

South Stockton

WTP
Stockton East Water District
MINER AVE
FREMONT ST
SAN JOAQUIN ST
CENTER ST
DR MARTIN LUTHER KING JR BLVD
SAN JOAQUIN RIVER
NAVY DR
EIGHTH ST
EL DORADO ST
POCKET RD
MARIPOSA RD
99
5
Mariposa Lakes
Well SSS10
Well SSS9
Well SSS3
Weston Ranch
WESTLAND RD
AUSTIN RD
JACKSTONE RD
HOWARD RD
TARLAN RD
ARPORT WAY
N
0 3,000 6,000
Scale in Feet

Notes:
1. Delta Water Treatment Plant pump station discharge pressure was set to 58 psi and Stockton East Water District pump station discharge pressure was set at 60 psi. Active and proposed wells were turned on as needed, based on local pressure.
2. The available flow at each junction is the maximum flow available while maintaining 20 psi residual system pressure.
3. Near-term (2030) and future (2040) development pipelines are based on previous development plans. Pipe layout and sizing will be finalized by developers/project proponents as development plans are finalized.

Pipelines
- Existing
- Existing System Improvements
- Near-Term (2030) Improvements
- Future (2040) Improvements
- Future Development Pipelines

- Available flow is ≥100% of criteria
- Available flow is ≥75% but <100% of criteria
- Available flow is ≥50% but <75% of criteria
- Available flow is <50% of criteria
- Water Treatment Plant
- Reservoir & Pump Station
- Well (Active)
- COSMUD Water Service Boundary

Figure 8-8

Buildout (2040) System Maximum Day Demand Fire Flow Results

City of Stockton
Water Master Plan Update

WEST YOST

8.5 SUMMARY OF FINDINGS AND RECOMMENDATIONS FOR THE FUTURE WATER SYSTEM

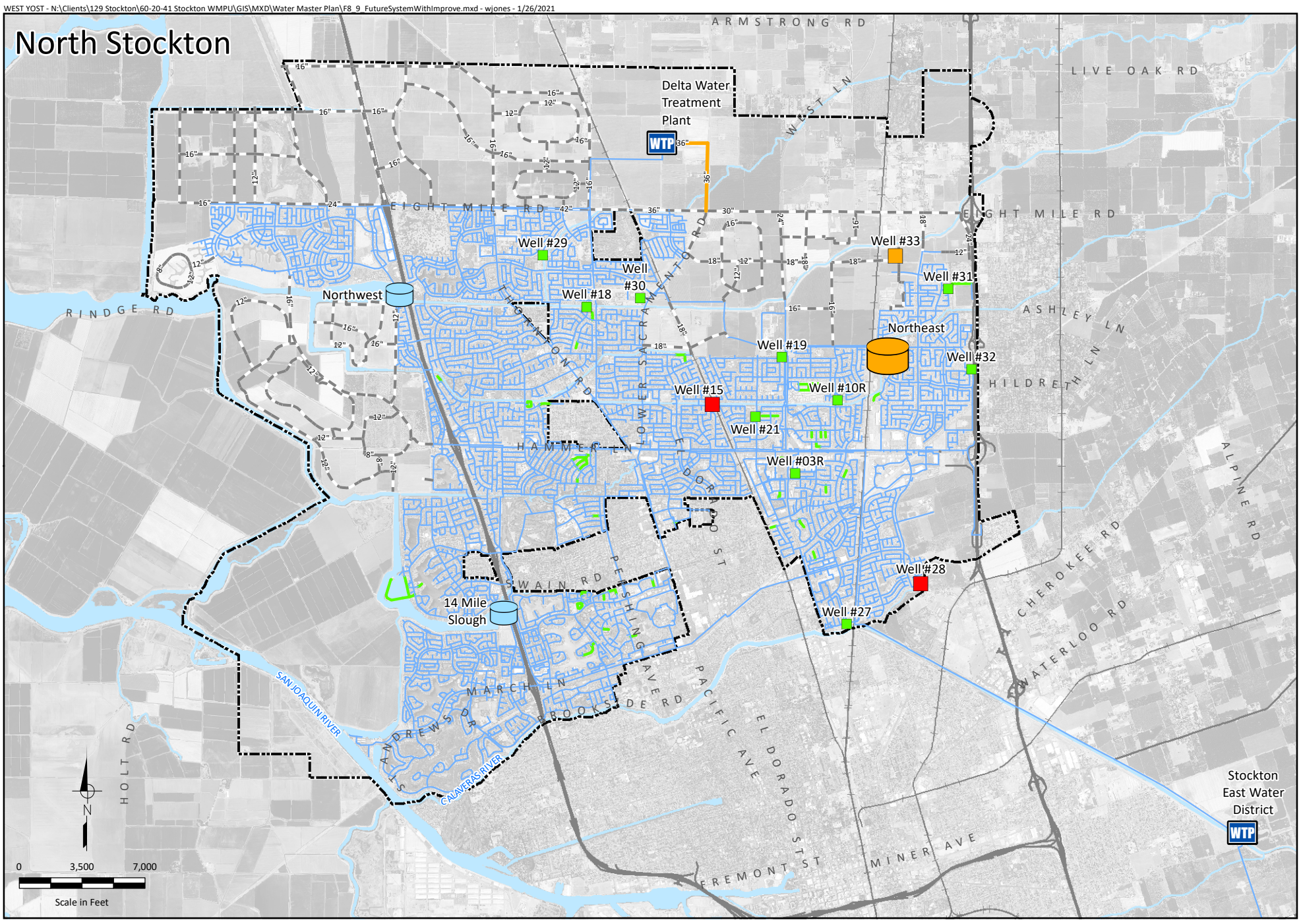
Table 8-9 provides a summary of findings and recommended improvements identified by evaluating the near-term (2030) and future (2040) water systems and is organized by improvement type and timeframe. These recommendations are used to develop a recommended CIP, which is further described in Chapter 9. Figure 8-9 presents the recommended improvements for the near-term (2030) and future (2040) timeframes.

Table 8-9. Summary of Recommended Near-Term (2030) and Future (2040) System Improvements

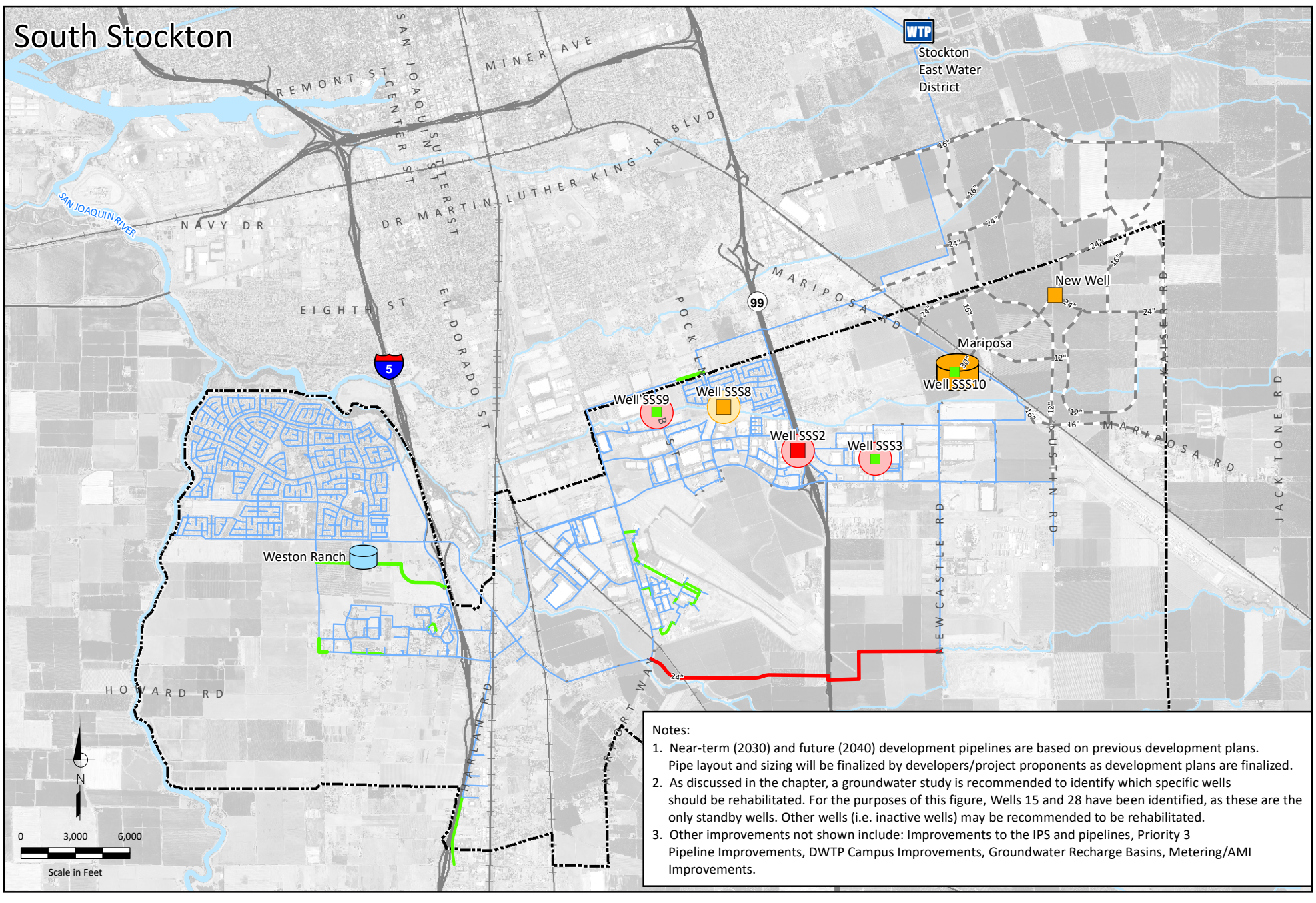
Improvement Type	Near-Term (2030)	Future (2040)
North Stockton		
Supply	• Rehabilitate two existing wells in North Stockton, to address aging wells (refer to Groundwater Study in Other Improvements)	• Construct the new Well 33 to mitigate the future storage deficit and improve supply reliability.
Pumping	• No pumping improvements recommended	• 12 mgd Northeast Reservoir pump station (firm) recommended
Storage	• No storage improvements recommended	• New 4 MG Northeast Reservoir
Pipelines	• By the Future (2040) timeframe, new 36-inch diameter pipelines downstream of the DWTP finished water pump station are recommended to maximize distribution capacity • The COSMUD should continue to rehabilitate and replace older and undersized mains, previously discussed in Chapter 7 as Priority 3 pipelines • Refer to Other Improvement section for raw water pipeline improvements	
South Stockton		
Supply	• No supply related improvements recommended (refer to Storage section)	• No supply related improvements recommended (refer to Storage section)
Pumping	• No pumping improvements recommended (refer to Storage Section)	• 12 mgd Mariposa Road Community Reservoir Pump Station (firm) recommended
Storage	• Equip existing Wells SSS3 and SSS9 with backup power • Rehabilitate existing Well SSS2, to bring well to active status, and equip with backup power (refer to Groundwater Study in Other Improvements)	• Rehabilitate existing Well SSS8, to bring well to active status, and equip with backup power (refer to Groundwater Study in Other Improvements) • Construct new well within the Mariposa Road Community area to offset Reservoir Sizing for Mariposa Road Community development • Construct new 3.5 MG reservoir for Mariposa Road Community
Pipelines	• City should continue to rehabilitate and replace older and undersized mains, previously discussed in Chapter 7 as Priority 3 pipelines.	

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F8_9_FutureSystemWithImprove.mxd - wjones - 1/26/2021

North Stockton



South Stockton



Notes:
1. Near-term (2030) and future (2040) development pipelines are based on previous development plans. Pipe layout and sizing will be finalized by developers/project proponents as development plans are finalized.
2. As discussed in the chapter, a groundwater study is recommended to identify which specific wells should be rehabilitated. For the purposes of this figure, Wells 15 and 28 have been identified, as these are the only standby wells. Other wells (i.e. inactive wells) may be recommended to be rehabilitated.
3. Other improvements not shown include: Improvements to the IPS and pipelines, Priority 3 Pipeline Improvements, DWTP Campus Improvements, Groundwater Recharge Basins, Metering/AMI Improvements.

Pipelines
- Existing
- Existing System Improvements
- Near-Term (2030) Improvements
- Future (2040) Improvements
- Future Development Pipelines

Wells
- New or Rehabilitated Near-Term (2030)
- New or Rehabilitated Future (2040)
- Active Existing
- Backup Power Near-Term (2030)
- Backup Power Future (2040)

- Existing Reservoir & Pump Station
- Future (2040) Reservoir & Pump Station
- Water Treatment Plant
- COSMUD Service Boundary

Figure 8-9

Future System With Improvements

City of Stockton
Water Master Plan Update

WEST YOST

It should be noted that these recommended water system improvements are significantly less extensive than those recommended in the 2008 Water Master Plan due to the following:

- Lower water demand projections associated with the reduced growth rate included in the Envision Stockton 2040 General Plan
- Lower existing demand conditions (and subsequent maximum day and peak hour demands) due to due to recent and continuing water use efficiencies
- The proposed rehabilitation of existing inactive wells instead of the construction of new wells in South Stockton
- The availability of the DWTP to supply treated surface water in North Stockton water service area as the primary water supply, supplemented by groundwater supplies
- The ability to maximize the use of SEWD supplies in both South Stockton and North Stockton with the construction of the North Stockton Pipeline Hypochlorite Facility

8.6 OTHER PLANNED OR RECOMMENDED IMPROVEMENTS

In addition to the improvements identified in the capacity and performance evaluations, other planned or recommended improvements were identified through discussions with COSMUD staff. These projects are included to improve system and/or water supply reliability and are summarized below. These improvements are recommended to be implemented by the near-term (2030) timeframe.

- **Groundwater Study.** A comprehensive groundwater supply study is recommended to investigate existing facility conditions, capacity and water quality/regulatory trends. The outcome of the study would identify recommendations for optimal rehabilitation of existing wells in North Stockton and South Stockton, including identifying appropriate wellhead treatment (at each location or centralized at a reservoir site).
- **Intake Pump Station and Pipeline Upgrade.** Ground settlement at the IPS site has required the interim repair and adjustment of station infrastructure and the 54-inch raw water pipeline that supplies the DWTP. It is recommended that the COSMUD perform additional studies to develop a long-term strategy including appropriate design features and construct improvements to station infrastructure and the raw water pipeline.
- **DWTP Campus Improvements.** COSMUD plans to develop an overall DWTP Campus to centralize treatment and distribution staff. These campus improvements would result in both management and operational efficiencies.
- **Groundwater Storage Bank Study.** A groundwater storage bank/recharge basins study is recommended to address future supply reliability by expanding/augmenting its conjunctive use portfolio, allowing for the flexibility of banking unused supply for use at a later time.
- **Advanced Metering Infrastructure (AMI) Study.** An AMI Study, design, and implementation project is recommended to improve metering technology to allow for enhanced demand tracking, management, and water loss identification.

This chapter presents the recommended capital improvement program (CIP) for the COSMUD existing, near-term (2030) and future (2040) water system, based on the evaluations described in Chapters 7 and 8. This chapter provides a summary of the recommended improvement projects, along with estimates of probable construction costs for each proposed improvement project. It also identifies which costs should be allocated to existing water customers and which costs should be allocated to future development. Discussion of the proposed financial plan to fund the recommended improvement projects is provided in Chapter 10.

It should be noted that the recommended CIP only identifies improvements at a master plan level and does not necessarily include all required on-site infrastructure or provide design of improvements. Subsequent detailed design is required to determine the exact sizes and locations of these proposed improvements.

The following sections of this chapter summarize the cost estimating methodology and present the capital improvement program of recommended upgrades to improve the existing system and support near-term (2030) and future (2040) demands:

- Cost Estimating Assumptions
- Summary of Recommended Capital Improvement Program
- Basis of Recommendations

9.1 COST ESTIMATING ASSUMPTIONS

Cost estimates prepared for this Water Master Plan Update are in accordance with the guidelines of the Association for the Advancement of Cost Engineering (AACE) International for a Class 5 Estimate. AACE International defines a Class 5 Estimate in the following manner:

> Class 5 Estimate: This estimate is prepared based on limited information, where little more than proposed plant type, its location, and the capacity are known. Strategic planning purposes include, but are not limited to, market studies, assessment of viability, evaluation of alternate schemes, project screening, location and evaluation of resource needs and budgeting, and long-range capital planning. Examples of estimating methods used would include cost/capacity curves and factors, scale-up factors, and parametric and modeling techniques. Typically, little time is expended in the development of this estimate. The expected accuracy ranges for this class estimate are -20 to -50 percent on the low side and +30 to +100 percent on the high side.

Construction and Capital Cost estimates are presented in August 2020 dollars based on an Engineering News Record Construction Cost Index (ENR CCI) of 12,921 (San Francisco). Construction costs were developed based on a combination of data supplied from manufacturers, bids on other water facilities design projects build by other public, construction costs previously estimated by West Yost, and from standard cost estimating guides. Total CIP costs include mark-ups equal to 80 percent of base construction costs, and are listed below:

- Design and Construction Contingency: 35 percent
- Project Cost Allowances: 45 percent
  - Engineering: 15 percent
  - Construction Management: 15 percent
  - Implementation: 15 percent

For this Water Master Plan Update, it is assumed that recommended distribution system facilities will be developed in public rights-of-way or on public property; therefore, land acquisition costs have not been included. Construction cost estimates do not include costs for annual O&M.

A complete description of the assumptions used in developing the estimates of probable construction cost is provided in Appendix D.

9.2 SUMMARY OF RECOMMENDED CAPITAL IMPROVEMENT PROGRAM

This section summarizes the overall recommended capital improvement program based on the evaluations described in Chapters 7 and 8. A high-level summary of the overall program is provided below, and subsequent sections describe the program in more detail. Figure 9-1 presents overall recommendations for existing, near-term (2030) and future (2040) for the COSMUD North Stockton and South Stockton water service areas. Pipelines intended to serve future development areas are included for reference only and are not included in the recommended CIP. These pipelines will be funded by project proponents in the future and are expected to change as future development plans are refined.

9.2.1 Summary of Estimated Capital Costs

Table 9-1 summarizes the total capital costs by timeframe, service area, and whether costs are to be allocated to existing water customers or are to be allocated to future development. As shown in Table 9-1 the overall capital improvement costs are estimated to be approximately $199 million (M). Approximately $52M, or approximately 26 percent of the overall program, is recommended to be allocated to future development and paid for through connection fees, as that infrastructure has been identified to be needed to support future demands. Approximately $100M, or 51 percent, of the overall program is attributed to improving aging pipeline infrastructure in both the North Stockton and South Stockton water service areas. These pipeline improvements are further prioritized into three priority levels, as discussed in Chapter 7, and are discussed in more detail in subsequent sections.

Table 9-1. Summary of Improvement Costs by Water Service Area and Time Frame, in millions ($)

Water Service Area	Existing	Near-Term (2030)	Future (2040)	Total
Allocated to Existing Water Customers				
North	87.5	16.5	-	104.0
South	12.4	-	-	12.4
North & South	-	30.8	-	30.8
Subtotal	$99.8	$47.3	-	$147.1
Allocated to Future Development				
North	-	-	25.8	25.8
South	-	3.1	23.0	26.0
North & South	-	-	-	-
Subtotal	-	$3.1	$48.8	$51.8
Total	**$99.8**	**$50.3**	**$48.8**	**$198.9**

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F9_1_RecSysImp.mxd - wjones - 1/26/2021

North Stockton

Delta Water Treatment Plant
WTP
Well #29
Well #30
Well #18
Well #33
Well #31
Northwest
Northeast
Well #19
Well #32
Well #10R
Well #15
Well #21
Well #03R
Well #28
Well #27
14 Mile Slough
Stockton East Water District
WTP
ARMSTRONG RD
LIVE OAK RD
EIGHT MILE RD
WEST LN
SACRAMENTO RD
THORNTON RD
LOWER SACRAMENTO RD
ELDORADO ST
PACIFIC AVE
EL DORADO ST
MINER AVE
FREMONT ST
RINGE RD
HAMMER LN
SWAIN RD
MARCH LN
ANDREWS DR
BROOKSIDE RD
HOLT RD
ASHLEY LN
HILDRETH LN
ALPINE RD
CHEROKEE RD
WATERLOO RD
SAN JOAQUIN RIVER
CALAVERAS RIVER
N
0 3,500 7,000
Scale in Feet

South Stockton

WTP
Stockton East Water District
New Well
Mariposa
Well SSS10
Well SSS9
Well SSS8
Well SSS2
Well SSS3
Weston Ranch
FREMONT ST
MINER AVE
SAN JOAQUIN ST
CENTER ST
SUTTER ST
DR MARTIN LUTHER KING JR BLVD
NAVY DR
EIGHTH ST
EL DORADO ST
POCKET RD
MARIPOSA RD
NEWCASTLE RD
AUSTIN RD
JACKSTONE RD
HOWARD RD
TARLTON RD
AIRPORT WAY
SAN JOAQUIN RIVER
5
99
N
0 3,000 6,000
Scale in Feet

Notes:
1. Near-term (2030) and future (2040) development pipelines are based on previous development plans. Pipe layout and sizing will be finalized by developers/project proponents as development plans are finalized.
2. As discussed in the chapter, a groundwater study is recommended to identify which specific wells should be rehabilitated. For the purposes of this figure, Wells 15 and 28 have been identified, as these are the only standby wells. Other wells (i.e. inactive wells) may be recommended to be rehabilitated.
3. Other improvements not shown include: Improvements to the IPS and pipelines, Priority 3 Pipeline Improvements, DWTP Campus Improvements, Groundwater Recharge Basins, Metering/AMI Improvements.

Pipelines
- Existing
- Existing System Improvements
- Near-Term (2030) Improvements
- Future (2040) Improvements
- Future Development Pipelines

Wells
- New or Rehabilitated Near-Term (2030)
- New or Rehabilitated Future (2040)
- Active Existing
- Backup Power Near-Term (2030)
- Backup Power Future (2040)

- Existing Reservoir & Pump Station
- Future (2040) Reservoir & Pump Station
- WTP Water Treatment Plant
- COSMUD Service Boundary

Figure 9-1

Recommended System Improvements

City of Stockton
Water Master Plan Update

WEST YOST

9.2.2 Recommended Existing System Improvements

Chapter 7 provided a summary of the evaluation of the existing COSMUD water system and its ability to meet recommended water system planning and design criteria described in Chapter 5. In general, the analysis recommended the following:

- **Pipelines.** Development of a Rehabilitation and Replacement (R&R) program is recommended for both the North Stockton and South Stockton water service areas. The intent of this program is to replace older and undersized pipelines on a proactive and programmatic basis before they fail and require more expensive emergency repair and replacement, as well as to improve flows throughout the system. This should also include mains running through private property or through levies, or those that have known tree root damage. Pipelines were generally prioritized into the following areas:
  - Priority 1: Pipelines in this category address areas where existing available fire flow capacity is less than 50 percent of the recommended criteria.
  - Priority 2: Pipelines in this category address areas where existing available fire flow capacity is between 50 and 75 percent of the recommended fire flow criteria.
  - Priority 3: This category contains the remaining smaller diameter (i.e., less than 8-inch diameter) pipelines.[28]

  An asset management plan should be developed so recommended pipeline improvements can be further refined by considering likelihood of failure (e.g., age, condition, leak history, etc.) and consequence of failure (e.g., disruption of water service to critical facilities, potential for damage to adjacent land use and facilities, etc.) to further refine and define program priorities and implementation.
- **Supply (Wells).** It is recommended that the COSMUD design and construct Well SSS10, as well as equip the well with backup power to address the existing storage capacity deficit.

As discussed in Chapter 7, much of the COSMUD water distribution system is older and was designed to earlier fire flow standards in place at the time the pipelines were constructed. Table 2-6 in Chapter 2 provides a summary of the COSMUD distribution system by age. Approximately 28 percent of the COSMUD system was installed in the 1970s or earlier, totaling approximately 164 miles of pipeline in the North Stockton and South Stockton water service areas. Due to the age of the pipelines, it is recommended that the COSMUD begin a comprehensive pipeline R&R program. As presented above, it is recommended that the program be prioritized to address areas where existing available fire flow is less than recommended criteria in place for future development. As mentioned previously, this program can be further refined by reviewing pipeline break and/or leak history.

Table 9-2 summarizes recommended improvements for the existing COSMUD water service areas. Approximately 7.3 miles of older, undersized pipelines are recommended to be replaced under Priority 1 and 2 programs. Since these pipelines address areas where there is a larger gap between recommended fire flow and available fire flow, it is recommended that these improvements be completed by 2030. There are approximately 69.2 miles of pipeline characterized as Priority 3 pipelines. These pipelines are shown on Figure 9-2 and are grouped by age. It is recommended that the COSMUD implement these improvements over 40 years, replacing approximately 2 miles of pipeline per year. The improvements listed above are recommended to increase the reliability of the existing water system, therefore costs are recommended to be allocated to existing water customers.

[28] In addition, as noted in Chapter 7, smaller diameter (less than 8-inch diameter) are allowed per COSMUD standard specifications provided that all capacity requirements are met. For the purposes of this Water Master Plan Update and for budgeting purposes, it is assumed that all small diameter pipelines are replaced with 8-inch diameter pipelines.

Table 9-2. Existing System Capital Improvements[a]

Improvement Area	Improvement Type	Justification	Improvement Description	Quantity and Unit	Construction Cost, dollars [b,c]	Capital Cost, dollars (includes markups)[b,d]
Pipelines (Renewal and Replacement)						
Priority 1						
North	Pipelines	Addresses areas where available fire flow is less than 50 percent of the recommended fire flow.	New 8-inch diameter pipelines	3,585 LF	$654,000	$872,000
North	Pipelines		New 12-inch diameter pipelines	4,364 LF	$1,090,000	$1,454,000
South	Pipelines		New 12-inch diameter pipelines	4,923 LF	$1,230,000	$1,640,000
				Subtotal - Priority 1	$2,974,000	$3,966,000
Priority 2						
North	Pipelines	Addresses areas where available fire flow is between 50 and 75 percent of the recommended fire flow.	New 8-inch diameter pipelines	14,846 LF	$2,706,000	$3,608,000
North	Pipelines		New 12-inch diameter pipelines	4,018 LF	$1,004,000	$1,338,000
South	Pipelines		New 8-inch diameter pipelines	1,249 LF	$228,000	$304,000
South	Pipelines		New 12-inch diameter pipelines	5,445 LF	$1,360,000	$1,814,000
				Subtotal - Priority 2	$5,298,000	$7,064,000
Priority 3 (Renewal and Replacement)[e]						
North	Pipelines	Addresses under sized and older mains (i.e., less than 8-inches in diameter)	New 8-inch diameter pipelines	330,008 LF	$60,144,000	$80,192,000
South	Pipelines		New 8-inch diameter pipelines	35,445 LF	$6,460,000	$8,614,000
				Subtotal - Priority 3 (Renewal and Replacement)(e)	$66,604,000	$88,806,000
Supply Improvements						
South	Supply (Wells)	Addresses supply reliability in South Stockton. Supplies from SEWD could be curtailed depending on the Water Year. SEWD is assumed to supply up to a maximum of 70 percent of the South Stockton demands. Additional wells bolster local supplies in the event of a supply curtailment from SEWD. This well will also satisfy local storage requirements.	One (1) additional well is recommended in the existing time frame. Well SSS10 is already in preliminary design stages and has already been funded; therefore no additional groundwater wells, aside from Well SSS10, are required.	0 wells	$0	$0
				Total North Stockton Improvements	**$65,598,000**	**$87,464,000**
				Total South Stockton Improvements	**$9,278,000**	**$12,372,000**
				Total Existing System Capital Improvements	**$74,876,000**	**$99,836,000**

(a) Costs shown are presented in August 2020 dollars (SF Construction Cost Index 12,921). Unless otherwise noted, improvements are anticipated to be completed by 2030.

(b) Costs rounded to the nearest $1,000.

(c) Estimated construction costs reflect typical conditions and do not account for construction uncertainties or reflect economic bidding climate. Costs include construction contingency of 35 percent from base construction costs.

(d) Costs include Other Project costs equal to 45 percent (Engineering: 15 percent; Construction Management: 15 percent; Program Implementation, CEQA, Legal: 15 percent).

(e) Renewal and Replacement Costs are intended to be completed over a 40-year timeline (i.e. starting 2021 through 2060). Costs presented include development of an asset management program.

WEST YOST - N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Water Master Plan\F9_2_RecExistSysImp.mxd - wjones - 1/6/2021

North Stockton

Delta Water Treatment Plant
WTP
Northwest
14 Mile Slough
Well #29
Well #18
Well #30
Well #16
Well #9
Well #7
Well #15
Well #1
Well #4
Well #11
Well #19
Well #24
Well #31
Well #32
Well #20
Well #10R
Well #21
Well #26
Well #03R
Well #25
Well #28
Well #27
Stockton East Water District
WTP
ARMSTRONG RD
LIVE OAK RD
EIGHT MILE RD
WEST LN
RINGE RD
THORNTON RD
HAMMER LN
SWAIN RD
MARCH LN
SAN JOAQUIN RIVER
CALAVERAS RIVER
HOLT RD
PACIFIC AVE
EL DORADO ST
FREMONT ST
MINER AVE
ASHLEY LN
HILDRETH LN
ALPINE RD
CHEROKEE RD
WATERLOO RD
N
0 3,500 7,000
Scale in Feet

South Stockton

Stockton East Water District
WTP
SUTTER ST
MINER AVE
FREMONT ST
SAN JOAQUIN RIVER
NAVY DR
DR MARTIN LUTHER KING JR BLVD
SAN JOAQUIN ST
EIGHTH ST
EL DORADO ST
POCKET LN
99
MARIPOSA RD
Well SSS9
Well SSS8
Well SSS2
Well SSS3
Well SSS1
BUST
AUSTIN RD
NEWCASTLE RD
JACKSTONE RD
Weston Ranch
HOWARD RD
TARLTAN RD
AIRPORT WAY
5
N
0 3,000 6,000
Scale in Feet

Notes:
1. Priority 1 and 2 pipelines are recommended to be completed by 2030.
2. Priority 3 pipelines are recommended to be completed over a 40 year replacement cycle. These pipelines can be further prioritized based on age (as shown) and/or leak history. Pipelines installed after the 1980s are recommended to be further evaluated by condition to determine if replacement is really needed. For the purposes of developing a CIP, these pipelines have been included in Priority 3 improvements.

- Priority 1 and 2 Pipelines

Priority 3 Pipelines by Decade of Installation

- 1950s or Earlier or Unknown
- 1960s - 1970s
- 1980s or Later
- Existing Pipelines
- COSMUD Service Boundary
- WTP Water Treatment Plant
- Existing Reservoir & Pump Station

Wells

- Active
- Inactive
- Standby

Figure 9-2

Recommended Pipeline Rehabilitation Program

City of Stockton
Water Master Plan Update

WEST YOST

9.2.3 Recommended Near-Term (2030) System Improvements

Chapter 8 provided a summary of the evaluation of the COSMUD water system and its ability to support near-term (2030) demands while meeting recommended water system planning and design criteria described in Chapter 5. In general, the analysis recommended the following:

- **Supply (Wells)**. To address storage needs resulting from projected near-term (2030) demands and to address existing aging groundwater supply facilities, improvements to the following well facilities are recommended:
  - In North Stockton, rehabilitate two existing wells to address older/aging well facilities and maintain groundwater supply reliability.
  - In South Stockton, equip existing Wells SSS3 and SSS9 with backup power to increase the emergency groundwater storage credit and mitigate the projected storage deficit.
  - In South Stockton, rehabilitate existing Well SSS2, and equip with backup power, to increase the emergency groundwater storage credit and mitigate the projected storage deficit.

Improvements and their associated costs are presented in Table 9-3. Locations/extent of the recommended improvements are shown on Figure 9-1. Improvements in North Stockton address older/aging infrastructure and should be allocated to existing water customers. Improvements in South Stockton are triggered by increased demands associated with future development and should be allocated to future development and paid through connection fees.

In addition to the above listed capacity-related improvements, other improvements were identified through discussions with COSMUD staff. These projects are included to improve system and/or water supply reliability and are summarized below. These improvements are also summarized in Table 9-2, along with their associated estimated costs. These improvements are assumed to be funded by existing water customers.

- **Groundwater Study.** A comprehensive groundwater supply study is 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).
- **Intake Pump Station and Pipeline Upgrade.** Ground settlement at the IPS site has required the interim repair and adjustment of station infrastructure and the 54-inch raw water pipeline that supplies the DWTP. It is recommended that the COSMUD perform additional studies to develop a long-term strategy including appropriate design features and construct improvements to station infrastructure and the raw water pipeline.
- **DWTP Campus Improvements.** COSMUD plans to develop an overall DWTP Campus to centralize treatment and distribution staff. These campus improvements would result in both management and operational efficiencies.
- **Groundwater Storage Bank Study.** A groundwater storage bank/recharge basins study is recommended to address future supply reliability by expanding/augmenting its conjunctive use portfolio, allowing for the flexibility of banking unused supply for use at a later time.
- **Advanced Metering Infrastructure (AMI) Study.** An AMI Study, design, and implementation project is recommended to improve metering technology to allow for enhanced demand tracking, management, and water loss identification.

Table 9-3. Near Term (2030) System Capital Improvements[a]

Improvement Area	Improvement Type	Justification	Improvement Description	Quantity and Unit	Construction Cost, dollars [b][c]	Capital Cost, dollars (includes markups)[b][d]
Supply Improvements						
North	Supply (Wells)	Addresses need to renew aging wells in North Stockton.	Construction of a new wells, equipped with backup power, or rehabilitation of an existing standby well	2 wells	$8,640,000	$11,520,000
South	Supply (Wells)	Addresses projected near-term storage deficit and improves supply reliability in South Stockton. Wells bolster local supplies in the event of a supply outage from SEWD and also contribute to storage requirements. Rehabilitation of Well SSS2 with treatment required due to the increase in demands from existing to 2030, therefore should be funded by future development. Assumes that TCP contamination at this well can be mitigated with GAC treatment.	Construction of a GAC Treatment system, and backup power	1 well	$1,755,000	$2,340,000
North & South	Supply (Study)	Study the existing condition, capacity and water quality trends of the City's wells in relation to pending and future regulatory requirements, and develop a comprehensive plan to renew and protect groundwater supplies	Study of existing well capacity, and quality to develop a comprehensive plan for the City's wells	1 lump sum	--	$250,000
				Subtotal - Supply Improvements	$10,395,000	$14,110,000
Storage Improvements						
South	Backup Power Improvements	Addresses projected near-term storage capacity deficit in South Stockton by maximizing the emergency groundwater credit. Currently Wells SSS3 and SSS9 do not have backup power, and therefore do not contribute to the emergency groundwater credit in South Stockton. Additional storage is needed due to increased demands, therefore these improvements should be funded by future development.	Installation of backup power generators at Wells SSS3 and SSS9	2 each	$540,000	$720,000
				Subtotal - Storage Improvements	$540,000	$720,000
Other Major Water System Improvements						
North	Intake Pump Station and Pipeline Upgrade	Ground settlement at the Intake Pump Station (IPS) site has required the interim repair and adjustment of station infrastructure and the 54-inch raw water pipeline that supplies the DWTP. It is recommended that the COSMUD perform additional studies to develop a long-term strategy including appropriate design features and construct improvements to station infrastructure and the raw water pipeline.	Perform an assessment, design and construction to the Intake Pump Station pipeline to mitigate settlement[e]	1 lump sum	$3,750,000	$5,000,000
North & South	DWTP Campus Improvements	Upon completion of the DWTP, Water Ops staff has been split up in terms of treatment and distribution. This project would improve/extend the campus at the DWTP so that all of Water Ops staff would be centrally located at the DWTP.	Planning, design and construction of a new Water Distribution Field Staff building and misc. campus improvements at the DWTP[f]	1 lump sum	$13,500,000	$18,000,000
North & South	Groundwater Storage Bank Study	Addresses future supply reliability by expanding/augmenting the City's conjunctive use portfolio and providing for the flexibility of banking unused supply for use at a later time (i.e., drought years).	Planning, design and construction of recharge basins[g]	1 lump sum	$6,000,000	$8,000,000
North & South	Metering/AMI Study	Improve metering technology to allow for enhanced demand tracking, management, and water loss identification	Study of an Advanced Metering Infrastructure (AMI) Program[h]	1 lump sum	--	$500,000
North & South			Feasibility and Pilot AMI Program Planning, Design and Implementation[i]	1 lump sum	$3,000,000	$4,000,000
				Subtotal - Other Major Water System Improvements	$26,250,000	$35,500,000
				Total Near Term System Capital Improvements	**$37,185,000**	**$50,330,000**
				Total City Funded Near Term System Capital Improvements (i.e., excludes Developer Funded projects)	**$34,890,000**	**$47,270,000**

(a) Costs shown are presented in August 2020 dollars (SF Construction Cost Index 12,921). Unless otherwise noted, improvements are anticipated to be complete by 2030.

(b) Costs rounded to the nearest $1,000.

(c) Estimated construction costs reflect typical conditions and do not account for construction uncertainties or reflect economic bidding climate. Costs include construction contingency of 35 percent from base construction costs.

(d) Costs include Other Project costs equal to 45 percent (Engineering: 15 percent; Construction Management: 15 percent; Program Implementation, CEQA, Legal: 15 percent).

(e) Costs associated with the IPS pipelines are anticipated to be incurred starting 2021 and 2022.

(f) Costs associated with the DWTP Ops Building are anticipated to be incurred starting 2022, and spread over 5 years.

(g) Costs associated with the recharge basins are anticipated to be incurred starting 2023, and spread over 5 years.

(h) Costs associated AMI Study are anticipated to be incurred 2022.

(i) Costs associated with the AMI Feasibility and Pilot are anticipated to be incurred 2023 and 2024.

9.2.4 Recommended Future (2040) System Improvements

Chapter 8 provided a summary of the evaluation of the COSMUD water distribution system and its ability to support future (2040) demands while meeting recommended water system planning and design criteria described in Chapter 5. In general, the analysis recommended the following:

- **Storage and Pumping.** To address future storage needs associated with future development, the following is recommended:
  - In North Stockton, a new 4.0 MG Northeast Reservoir and associated 12.0 mgd pump station
  - In South Stockton, a new 3.5 MG Mariposa Road Community Reservoir and associated 12.0 mgd pump station
- **Supply (Wells).** To offset storage reservoir size and/or address the projected storage deficit, via increased emergency groundwater storage credit, and improve water supply reliability, the following are recommended:
  - In North Stockton, construct and equip the planned Well 33 with backup power
  - In South Stockton, construct and equip a new well within the Mariposa Road Community development area, with backup power
  - In South Stockton, rehabilitate existing Well SSS8 and equip with backup power
- **Pipelines.** To address high velocities observed in transmission pipelines downstream of the DWTP, it is recommended that 5,800 linear feet (lf) of 36-inch diameter pipelines be constructed

Improvements and their associated costs are presented in Table 9-4. The location/extent of the recommended improvements is shown on Figure 9-1. Since the above listed recommendations are triggered by future demands, they should be allocated to future development and funded by connection fees.

9.3 BASIS OF RECOMMENDATIONS

The evaluations described in this Water Master Plan Update and the recommended capital improvement plan presented in this chapter are based on several key assumptions which are described throughout this report. These assumptions include the timing, type and extent of future development projects within the COSMUD North Stockton and South Stockton water service areas. The current assumptions for future planned development, used for this Water Master Plan Update, are described in Chapter 3. Should these assumptions change (e.g., development timing is expedited or delayed, future planned land uses are changed, or the extent of development is changed or does not occur at all) the timing, need and sizing for water system improvements may be affected. Before COSMUD proceeds with the design and construction of recommended water system improvements, future development plans and associated water system facility capacity needs should be reviewed and confirmed.

In particular, as described in this Water Master Plan Update, the Mariposa Road Community is a large potential future development area in South Stockton. The development area's previous entitlement has expired, and therefore it is not known if this project area will be developed or if it will be developed as previously planned. For the purposes of this Water Master Plan Update, it was assumed that the Mariposa Road Community will be developed by 2040, based on the most recent land use plan, and be served entirely by COSMUD. This future development area is one of the largest drivers for additional growth within the COSMUD South Stockton water service area. In addition, although this development area is

physically located within both the COSMUD water service area and the Cal Water service area, for the purposes of this Water Master Plan Update, it was conservatively assumed that the COSMUD would serve the entire Mariposa Road Community area. As described in Chapter 8, and as summarized above, future water system improvements have been identified to serve the future Mariposa Road Community area. However, before COSMUD proceeds with the design and construction of water system improvements for the Mariposa Road Community, actual development plans and associated facility capacity needs should be reviewed and confirmed.

Table 9-4. Future (2040) System Capital Improvements[a]

Improvement Area	Improvement Type	Justification	Improvement Description	Quantity and Unit	Construction Cost, dollars [b][c]	Capital Cost, dollars (includes markups)[b][d]
Supply Improvements						
South	Supply (Wells)	Addresses projected future storage deficit and improves supply reliability in South Stockton. Wells bolster local supplies in the event of a supply outage from SEWD and also contribute to storage requirements. Rehabilitation of Well SSS8 with treatment required due to the increase in demands at future (2040) Planning time frame, funding for these should be provided by new development. Assumed that PFOA/PFAS at this well is mitigated with GAC treatment.	Construction of a GAC Treatment system, and backup power	1 well	$1,755,000	$2,340,000
South	Supply (Wells)	Offsets the size of the Mariposa Road Community tank, and improves supply reliability in South Stockton. Since this well is equipped with backup power, it contributes to the EGWC in the Mariposa Road Community Development Area. Need for well is due to future development, and therefore should be funded by project proponents.	Construction of a new well, equipped with backup power	1 well	$4,320,000	$5,760,000
North	Supply (Wells)	Addresses projected future storage deficit and improves supply reliability in North Stockton. Wells bolster local supplies and also contribute/offset storage requirements via the emergency groundwater storage credit. Construction of Well 33 is recommended due to the increase in demands at future (2040) planning time frame, and therefore should be funded by future development.	Construction of new well, equipped with backup power	1 well	$4,320,000	$5,760,000
				Subtotal - Supply Improvements	$10,395,000	$13,860,000
Storage and Pumping Improvements						
South	Reservoir	Addresses projected future storage deficit as a result of future demands. Need for Reservoir and Pump Station is due to future development, and therefore should be funded by future development.	Construction of New Mariposa Road Community Reservoir Facility, 3.5 MG Reservoir and associated 12.0 mgd pump station, equipped with backup power.	3.5 MG	$6,278,000	$8,370,000
South	Reservoir Pump Station			12 mgd	$4,860,000	$6,480,000
North	Reservoir	Addresses projected future storage deficit as a result of future demands. Need for Northeast Reservoir and Pump Station is due to future development, and therefore should be funded by future development.	Construction of new Northeast Reservoir facility, 4.0 MG Reservoir and associated 12.0 mgd pump station, equipped with backup power.	4 MG	$6,885,000	$9,180,000
North	Reservoir Pump Station			12 mgd	$4,860,000	$6,480,000
				Subtotal - Storage and Pumping Improvements	$22,883,000	$30,510,000
Pipeline Improvements						
North	Pipelines	Addresses high velocities observed in existing pipelines downstream of DWTP finished water pump stations. These pipelines allow the COSMUD to maximize use of the DWTP to meet future demands and therefore should be funded by future development.	New 36-inch diameter transmission pipelines downstream of DWTP	5,800 LF	$3,289,000	$4,385,000
				Subtotal - Pipeline Improvements	$3,289,000	$4,385,000
				Total Future (2040) System Capital Improvements	**$36,567,000**	**$48,755,000**
				Total City Funded Future (2040) System Capital Improvements (i.e., excludes Developer Funded projects)	**$0**	**$0**

(a) Costs shown are presented in August 2020 dollars (SF Construction Cost Index 12,921). Unless otherwise noted, improvements are anticipated to be complete by 2040.

(b) Costs rounded to the nearest $1,000.

(c) Estimated construction costs reflect typical conditions and do not account for construction uncertainties or reflect economic bidding climate. Costs include construction contingency of 35 percent from base construction costs.

(d) Costs include Other Project costs equal to 45 percent (Engineering: 15 percent; Construction Management: 15 percent; Program Implementation, CEQA, Legal: 15 percent).

This chapter presents the multi-year financial plan, which provides a summary of the projected water revenues and annual water operating and capital expenses to reflect the recommendations of this COSMUD Water Master Plan Update. The capital costs contained within the financial plan are based on the CIP projects presented in Chapter 9. Currently, the COSMUD is working on a separate comprehensive water rate study update. To align the financial section of the Water Master Plan Update with the comprehensive water rate study, the operating expenses and assumptions for cost escalation as identified in the rate study were used as the basis for the development of this financial chapter. The water rate study will perform a more detailed analysis of the revenues and expenses of the water utility, which may result in minor differences from the information found in this financial chapter. Additionally, the rate transition plans developed in each may differ as assumptions and City Council direction may affect the results.

10.1 INTRODUCTION

The effective implementation of the Water Master Plan Update is dependent on development of a water rate revenue transition plan to support the operating and capital needs to maintain and expand the water system to meet demands, state and local regulatory requirements, and provide the flexibility for the COSMUD to deal with unforeseen changes. In general, the financial plan uses the annual operating expense and identified capital needs of the water utility to determine if the current water rate revenues are sufficient to fund annual operating and capital expenses. If necessary, the financial plan will also develop a rate transition plan to fully fund the utility.

10.2 KEY ASSUMPTIONS

The COSMUD adopted Fiscal Year (FY) 2021 budget was used as the basis for the development of the projection of O&M expenses. Escalation factors were developed which were based on historical inflationary factors for the COSMUD and the local area and are the same factors as those being applied in the comprehensive water rate study. These escalation factors were applied to the budgeted O&M expenses to project future annual O&M expenses over the projected time period.

The financial plan is predicated on the following:

- Projected rate revenue adjustments are implemented,
- The timing and magnitude of the capital improvements are maintained, and
- Customer characteristics remain similar for rate revenue generating purposes.

There is also no assumed additional staffing (i.e., full-time equivalents [FTEs]) needed and no new O&M expenses were added.

10.3 HISTORICAL REVIEW

The first step in reviewing the financial health of the COSMUD water utility is to gain an understanding from prior financial performance. To do this, the analysis starts with the previous 5-year period of FY 2015 to FY 2019. The COSMUD proforma which details historical costs by category as well as budget figures going forward was used as the basis for the analysis. Given this information, one can assess the water utility past financial health and gauge any trends that may be occurring. The information from the historical review helped in the development of the assumptions for the financial plan as well as in gaining

an understanding of the water utility's operations. A summary of the historical operating revenues and expenses is shown in Table 10-1.

Table 10-1. Historical Revenue Requirement, $000s

	Actual FY 2015	Actual FY 2016	Actual FY 2017	Actual FY 2018	Actual FY 2019
Revenues	35,318	33,743	42,377	51,103	50,445
Expenses					
O&M	22,134	21,555	21,301	22,333	24,361
Debt Services	17,660	13,329	12,169	17,437	18,740
Total Expenses	**$39,794**	**$34,884**	**$33,470**	**$39,769**	**$43,101**
Balance/(Deficit) of Funds	($4,476)	($1,141)	$8,908	$11,334	$7,344

As can be seen from the historical review, the COSMUD has - in general - maintained adequate funding for annual operation and maintenance as well as funding capital improvements during this historical time period. Given the balance of funds, it is assumed that the COSMUD uses those funds for funding current and future capital improvement needs. Capital funding could be accomplished through annual funding, often referred to as rate funded capital or pay as you go, or through funding reserves in initial years to fund large projects in the future. In years where the utility is deficient, it is likely indicating a use of reserve funds for capital improvement projects. It is important to note that additional expenses and revenues may not be shown in the available data derived from the COSMUD proforma. However, this table provides a comparison from year to year using available historical data.

10.4 DEVELOPMENT OF THE FINANCIAL PLAN

The financial plan was developed to determine the COSMUD ability to fund its water system capital improvements, as developed in this Water Master Plan Update, as well as the projected O&M needs over the review period. The analysis also took into consideration prudent financial management criteria such as adequate funding of capital through rates, maintaining required debt service coverage (DSC) ratios, and operating and capital fund balances (i.e., reserve levels). The financial plan developed the projected water utility revenues and expenses for FY 2021 through FY 2030. The development of the projection was based on the adopted FY 2021 budget provided by the COSMUD. The budget was then escalated through FY 2030, by applying previously mentioned escalation factors to reflect future cost inflation ranging from 2.0 percent to 6.5 percent, annually, depending on the expense category. The range in inflationary factors is based on historical trends in various costs.

The following sections describe the key components of the financial plan. Worksheets showing the financial analysis are provided in Appendix E.

10.4.1 Revenues

The first component in developing the financial plan is a review of the sources of revenue for the COSMUD water utility. The starting point was the calculated revenue for FY 2021 which was also utilized in the water rate study. The following revenues are received from the COSMUD water customers and operations:

- Rate revenues: annual rate revenues received based on current adopted rate levels
- Other revenues: permit fees, fines and penalties, interest income, rental income, and other miscellaneous sources

The COSMUD water rate revenues are projected to be approximately $51.1 million for FY 2021. Assumed customer growth is conservative at a rate of 0.5 percent per year. It is important to note that the rate revenues projected are prior to any rate adjustments either previously adopted or proposed. With the impact of assumed customer growth, water rate revenues are anticipated to increase to approximately $53.4 million by FY 2031. Other, or miscellaneous, revenues are projected to be approximately $7.0 million in FY 2021. These revenues are anticipated to increase slightly over the review period and total a little over $7.5 million by FY 2030. In total – including both rate and other revenues - the COSMUD is projected to receive $58.1 million in FY 2021, prior to any rate adjustments. Total revenues are projected to increase through FY 2030 to approximately $61.0 million. Provided in Table 10-2 is a summary of the current, and projected, rate and other revenues.

10.4.2 Operations and Maintenance

The next component of the financial plan for the COSMUD water utility was to project the O&M expenses incurred to provide service to its customers. As noted, the projection of future O&M expenses is based on the COSMUD FY 2021 water utility budget. The budgeted figures were then escalated annually through FY 2030 using the assumed inflationary factors described previously.

The O&M expenses in FY 2021 are budgeted at $35.0 million. Based on the increase in O&M over the period and the assumed inflationary factors, O&M expense levels are expected to increase to $54.6 million in FY 2030. This assumes no significant additions or changes made to the O&M practices during the projected period. The forecast of O&M expenses is shown in summary in Table 10-3.

10.4.3 Capital Funding Plan

A major component of the COSMUD planning process, and a focal point of this financial planning analysis, is the funding of the COSMUD CIP. For purposes of financial planning the CIP, as presented in detail in Chapter 9 of this Plan, which is shown in 2020 dollars, is increased annually by 2.7 percent to reflect the future escalation of costs due to inflationary impacts. For the COSMUD to maintain the existing system and level of service to its customers, it is important to reinvest in the system at a level at least equal to depreciation. It is prudent, therefore, to have a level of annual capital projects funded by rates greater than this target level. This is because the replacement cost of the system will continue to increase as a result of inflation and the annual depreciation may actually be the lower threshold of targeted funding. Depreciation expense for FY 2019 was reported at $8.1 million for the water utility. Following prudent financial practices of 1.5 to 2.0 times depreciation, this would result in the need for the COSMUD to invest at least $12.0 million annually to sustain its capital facilities. The financial plan projects that the rate-funded capital will increase over the review period from $9.0 million in FY 2021 and reach $11.0 million by FY 2030 averaging $9.7 million over the review period.

Table 10-2. Projected Water Revenues, $000s

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Revenue										
Rate Revenue[(a)]	$51,146	$51,402	$51,659	$51,917	$52,177	$52,438	$52,700	$52,963	$53,228	$53,494
Misc. Revenue	6,973	7,753	7,664	7,546	7,506	7,459	7,466	7,486	7,506	7,524
Total Revenue	**$58,119**	**$59,155**	**$59,323**	**$59,463**	**$59,683**	**$59,897**	**$60,166**	**$60,449**	**$60,734**	**$61,019**

(a) Rate revenue presented in this table does not include any proposed rate revenue adjustments.

Table 10-3. O&M Expenses, $000s

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Admin. & General	$2,400	$2,473	$2,548	$2,685	$2,782	$2,868	$3,023	$3,133	$3,229	$3,328
Total Op. and Maint.	4,874	5,032	5,192	5,451	5,652	5,835	6,128	6,354	6,561	6,774
Total Utility Billing	1,012	1,042	1,073	1,147	1,193	1,228	1,313	1,365	1,406	1,448
Total Other Support Services	625	644	664	702	729	752	795	826	852	879
Total Water Conservation	164	118	121	127	132	136	142	147	152	157
Total Water Purchase	16,011	17,051	18,160	19,340	20,597	21,936	23,362	24,880	26,497	28,220
Total Hydrant Maintenance	323	333	343	358	371	383	400	414	427	441
Total Delta Water Production	4,801	4,975	5,146	5,372	5,571	5,765	6,019	6,243	6,459	6,684
Total Well Production	1,654	1,713	1,774	1,855	1,927	1,996	2,088	2,169	2,247	2,327
Total DWSP Maint. & Repair	1,168	1,205	1,244	1,305	1,353	1,396	1,465	1,519	1,568	1,618
Total MUD Admin / Finance	730	753	776	818	849	876	924	958	989	1,020
Total Engineering Services	255	264	272	287	297	307	324	336	347	358
Total Lab Services	322	332	343	358	371	382	400	414	427	441
Total Safety	315	325	335	349	360	371	386	399	412	424
Total SCADA	252	260	269	282	292	302	317	329	340	351
Total Outreach & Training	118	121	125	128	132	135	139	143	147	151
Total Revenue	**$35,023**	**$36,641**	**$38,384**	**$40,564**	**$42,608**	**$44,668**	**$47,226**	**$49,630**	**$52,059**	**$54,621**

The CIP from FY 2021 through FY 2030 includes project funding totaling $11.8 million for FY 2021 and fluctuates from year to year to a maximum of $28.0 million in FY 2023. The total capital project funding from FY 2021 through FY 2030 is $133.3 million. The average annual capital funding is approximately $13.3 million over the time period. Funding for the capital projects comes from several sources:

- The first source of funding for capital projects is through the ***rate funded capital*** line item, which is set at $9.0 million in FY 2021 and increases, annually, to a maximum of $11.0 million in FY 2030 for a total funding of $96.7 million over the period or roughly 72.5 percent of the total 10-year CIP funding analysis. This funding source is critical funding component for the annual renewal and replacement of the system, which as mentioned, should be targeted at a level greater than annual depreciation. As mentioned previously, the annual depreciation for FY 2019, which is the target minimum funding, was approximately $8.1 million. During the projected period, the level of rate funded capital reaches approximately 1.2 times depreciation.
- The second source of funding is from available reserves. For purposes of capital funding, the COSMUD financial plan utilized three reserves: operating reserve, connection fee reserve, and Delta Water Supply Project Surface Water Supply Fee (DWSP SWSF) Fund. The COSMUD transfers funds in years of surplus – which can happen for a number of reasons - into the operating fund which can then be used for funding capital projects. Over the review period, it is assumed that the COSMUD will use approximately $24.3 million of operating reserves. The connection fee reserve – as the name implies – is a reserve designated to hold connection fee revenues and be used towards either growth related long-term debt service or growth related capital projects. In total, the CIP is projected to utilize $12.3 million in connection fee reserves. Lastly, the DWSP SWSF fund functions in a similar way as the connection fee reserve but is funded through the DWSP connection fee. There is no assumed use of the DWSP SWSF Fund for capital projects. In total, approximately 27.5 percent of the 10-year CIP funding requirement or $36.6 million comes from reserves over the review period to smooth out rate adjustments and limit long-term debt issuances. It is important to note that the use of reserves from year to year may fluctuate greatly depending on the actual level of capital projects for the COSMUD as well as what type of project is it. The financial model assumes that if there is more capital funding available in a given year then there are planned capital projects, the excess funds will be moved to the operating reserve in order to be saved and available to be used for future capital expenses.
- The final source of funding for capital projects is from long-term debt. This comes in the form of low-interest loans and/or revenue bonds. This source not only allows the COSMUD to secure funding for large one-time projects, but it also serves as a tool to equitably spread the costs of projects to the future beneficiaries, even though they are not connected to the system yet. For this review, it is assumed that the COSMUD will not be issuing any additional long-term debt to fund the capital projects.

Table 10-4 shows a summary of the capital projects by type and the various funding sources.

Table 10-4. Capital Improvement Plan, $000s										
	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Capital Projects	**$11,803**	**$12,235**	**$27,952**	**$11,484**	**$15,466**	**$12,299**	**$10,000**	**$10,400**	**$10,700**	**$11,000**
Less: Operating Reserves	0	588	15,949	2,114	2,848	2,799	0	0	0	0
Less: Connection Fee Reserves	2,803	2,973	3,053	119	3,367	0	0	0	0	0
Less: Developer Contributions	0	0	0	0	0	0	0	0	0	0
Less: Long-Term Borrowing	0	0	0	0	0	0	0	0	0	0
Less: Rate Funded Capital	9,000	8,675	8,950	9,250	9,250	9,500	10,000	10,400	10,700	11,000

10.4.4 Debt Service

The COSMUD water utility currently has several outstanding debt issuances with an annual debt service payment of approximately $14.3 million for FY 2021. The COSMUD water utility is not assumed to issue additional long-term debt over the next 10 years to fund capital projects.

An important metric used in the analysis of debt is the DSC ratio. The DSC ratio is a comparison of revenues available to fund annual debt service payments after deducting O&M expenses from the total available revenues. Generally, a DSC ratio of 1.5 is considered prudent and adequate for a utility. This number is often looked at by rating agencies and can affect the terms of financing for future long-term debt issuances. For the COSMUD water utility, the DSC ratio is calculated at 1.77 for FY 2021. The number increases slightly - with the help of proposed rate revenue adjustments - to 1.93 by FY 2030.

10.4.5 Reserve Funds

The COSMUD, as mentioned earlier, has an operating reserve which serves a variety of purposes, but the three primary purposes are one or all of the following:

- To supply adequate liquidity and cash flow to cover the operating costs of the utility until revenues are collected for services rendered
- To provide funds for a catastrophic event resulting in a large capital funds need or loss of revenue
- To maintain surplus revenues to disburse in a deficit year, thereby avoiding needed rate increase and decrease and smooth rates over time

The minimum target is set at 180 days of O&M expenses, which reflects general industry standard levels. The beginning balances, based on those provided by the COSMUD for the operating reserve, total $70.4 million in FY 2021. Over the review period, reserves are used for various reasons, such as to fund the CIP and annual debt service payments, thereby minimizing rate adjustments. In FY 2030 it is projected that the ending reserve balance will be approximately $39.5 million. This means that after the COSMUD has met the 180 days of O&M in the operating reserve, it will still have reserve funds available to meet other needs.

10.5 SUMMARY OF THE FINANCIAL PLAN

The individual components discussed above are used to develop the financial plan. The summation of the annual O&M expenses, rate funded capital, debt service payments, and reserve funding is generally known as a revenue requirement. This analysis is used to compare the COSMUD current water rate revenues and operating and capital expenses, to assess the sufficiency of the existing rates. If there is a deficiency, and depending on the magnitude, timing, etc., a rate revenue adjustment may be recommended to maintain adequate funding for the operational and capital needs of the utility. Shown in Table 10-5 is a summary of the water revenue requirement that was prepared for the COSMUD as part of this Water Master Plan Update.

Table 10-5. Revenue Requirement Summary, $000s

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Revenues										
Rate Revenue	$51,146	$51,402	$51,659	$51,917	$52,177	$52,438	$52,700	$52,963	$53,228	$53,494
Other Revenue	6,973	7,753	7,664	7,546	7,506	7,459	7,466	7,486	7,506	7,524
Add'l Rev from Rate Adj.	0	0	1,808	3,698	5,952	8,319	10,803	13,409	15,811	18,319
Total Revenue	**$58,119**	**$59,155**	**$61,131**	**$63,161**	**$65,635**	**$68,215**	**$70,968**	**$73,858**	**$76,545**	**$79,337**
Expenses										
O&M	$35,023	$36,641	$38,384	$40,564	$42,608	$44,668	$47,226	$49,630	$52,059	$54,621
Net Debt Service	13,785	13,793	13,801	13,522	13,528	13,189	13,207	13,222	13,233	13,234
Rate Funded Capital	9,000	8,675	8,950	9,250	9,250	9,500	10,000	10,400	10,700	11,000
Reserve Funding	310	46	(5)	(175)	249	858	536	606	553	483
Total Expenses	**$58,119**	**$59,155**	**$61,131**	**$63,161**	**$65,635**	**$68,215**	**$70,968**	**$73,858**	**$76,545**	**$79,337**
Balance/(Deficit) of Funds	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

As noted in Table 10-5, the COSMUD water utility would need to adjust overall water rate revenues over the time period in order to fully fund the operating and capital needs through FY 2030. Key drivers in the financial plan results are the projection of O&M costs and the funding of the proposed CIP from Chapter 9. Any future rate transition plan should aim to provide steady and predictable rate adjustments over time. The proposed rate adjustments should be designed to fund the water utility as identified in this financial plan and in doing this will help to maintain a strong financial position for the COSMUD to fully fund the operational and capital needs of the water utility. As mentioned previously, the COSMUD is currently undertaking a comprehensive water rate study, which will provide a more detailed analysis of the COSMUD water utility and proposed rate revenue adjustments.

10.6 CONNECTION FEES

The COSMUD has a number of funding sources available to offset capital costs of which many were discussed above. Another source which was not described in detail is from connection fees received from new water connections. New water connections are assessed a connection fee as a way to recover part or all of the cost of providing the infrastructure necessary to service the new connection (e.g., customer). The intent is that all new system customers will pay an equitable share of (or 'buy' into) the cost of the water system improvements needed to accommodate growth. The calculation typically includes a value of the existing water system assets and then adds in the anticipated future capital associated with providing capacity for new water customers. This total cost is then reviewed on an incremental approach, that is, a calculation is performed to look at what the costs related to adding an additional single family equivalent unit is. Given this calculation, the schedule of connection fees can be updated. The revenues from these fees can then be utilized to pay directly for capital projects or for long-term debt service related to growth or capacity expansion. Additionally, a portion of the revenue from connection fees may be eligible to offset existing long-term debt payments to the extent they funded growth and expansion related capital infrastructure.

The COSMUD currently has in place two fees that serve this purpose. The first is the water connection fee. This fee reflects the investment in infrastructure (capacity) for the distribution system. The second is the Delta Water Supply Fee which is in place to reflect the water treatment plant infrastructure (capacity) available to new customers. While the water connection fee has not been updated in some time, the Delta Water Supply Fee is updated annually based on the initial study schedule. In order to update the water connection fee, the starting point would be the capital improvements as outlined in this Water Master Plan Update, along with the existing distribution infrastructure. The available capacity in the existing system, plus the growth or expansion related capital projects, would be utilized in the analysis to develop an updated water connection fee. This would provide a fee that reflects the value of the capacity necessary to serve new customers connecting to the COSMUD water system.

10.7 SUMMARY

The financial plan presented in this chapter is based on several assumptions: the level of growth in the system, inflation amounts, and the level of debt financing at certain terms. Should these assumptions change (e.g., growth increases, slows down, or does not occur) the level of balance or deficiency and, therefore, rate adjustments required will be affected. Likewise, if costs escalate faster or slower than indicated in this plan, the projected balance or deficiency would also be affected.

Appendix A

Hydrant Testing and Hydrant Pressure Recorder Placement Plan for Model Calibration

(THIS PAGE LEFT BLANK INTENTIONALLY)

WEST YOST ASSOCIATES

MEMORANDUM

DATE: June 4, 2020

Project No.: 129-60-20-41
SENT VIA: EMAIL

TO: Gemma Biscocho, PE, City of Stockton

FROM: Roberto Vera, PE, RCE #83500
Megan McWilliams, EIT #164172

REVIEWED BY: Brenda Estrada, PE, RCE #67062

SUBJECT: City of Stockton – Water Master Plan Update
Hydrant Testing and HPR Placement Plan for Model Calibration

This memorandum summarizes West Yost Associates' (West Yost) recommended program for hydrant testing and collection of field system pressures using hydrant pressure recorders (HPR), both of which are required to calibrate the City of Stockton's (City) existing water system hydraulic model. The information provided in this memorandum presents the proposed hydrant test and pressure monitoring locations. The City should share this plan with the appropriate parties (e.g., Water Operations staff, Fire Department, etc.), so they are aware of the equipment being used or temporarily installed at the proposed testing/monitoring locations. Field monitoring with the HPRs is scheduled to occur Thursday, June 18 through Friday, June 26 (monitoring period) and hydrant testing is scheduled for Wednesday, June 24, and if needed, Thursday, June 25, 2020.

HYDRANT TESTING PROGRAM

The purpose of the hydrant testing program is to confirm and "spot-check" the roughness factors (C-factors) that are assigned to pipelines in the City's hydraulic model. West Yost will use data collected though hydrant testing to verify if current pipeline C-factors assigned in the City's hydraulic model are appropriate and representative of actual field conditions. Hydrant test locations were selected based on the combination of pipeline diameter, available material/age estimates, and discussions with City Operations Staff. Results from this testing program will determine C-factor adjustments needed in the hydraulic model to better reflect field conditions.

Details related to the hydrant testing program are presented in the following sections:

- Personnel and System Data Requirements
- Hydrant Testing Schedule
- Testing Requirements and Procedure
- City's Responsibilities

Personnel and System Data Requirements

West Yost requests the following City personnel, system data, and supporting documents to accomplish the recommended hydrant testing program:

- Three (3) to five (5) City staff members (with vehicles) that will be available during regular working hours to assist with, but not limited to, the following:
  - Closing and re-opening valves, as needed before and after hydrant testing
  - Reading and recording hydrant pressure data
  - Flowing the test hydrant
  - Directing and controlling traffic, and hydrant flows, as necessary, to ensure safety during these hydrant flow tests, dechlorination, and direct the discharged water into the nearest drainage system during each test
  - Public outreach and interface, as necessary
- System information during the hydrant testing days (June 24/25th) that includes the following:
  - City SCADA data from all water distribution system facilities, in 1-minute increments during hydrant testing for the following facilities[1]:
    - Reservoir levels (in feet) for all reservoirs, and altitude valve flowrate (gpm), if available
    - Pump Station information (pump operational status, speed settings, discharge pressures [psi], and flow rate [gpm]) for all booster pump stations
    - Groundwater well information (discharge pressure [psi], flow rate [gpm], and speed settings where/if applicable) for all wells
    - Water Treatment Plant information for the Delta Water Supply and Stockton East Water Treatment Plants (discharge pressure [psi], flow rate [gpm])
    - Distribution system pressure monitoring information at key City points, aside from the locations listed above, if available (pressure [psi])
- One copy of the City's Health and Safety Plan for testing hydrants

Hydrant Testing Schedule

West Yost requests that the hydrant testing be scheduled starting at approximately 7:30 AM on June 24, 2020. West Yost will meet with the City staff a half hour before hydrant testing (7:00 AM) to conduct a brief field coordination meeting to review hydrant testing procedures and protocols (i.e., where to go and what to do). West Yost will also use this coordination meeting to distribute pressure gauges (hydrant wrenches to be provided by City staff) necessary to complete the hydrant testing program. In addition, West Yost will also confirm with City staff what order they prefer to

[1] SCADA data from all water distribution system in 15-minute increments will also be requested for the entire HPR monitoring period (i.e., June 17 through June 25, 2020). Data in 15-increments is desired in order to develop a diurnal pattern.

conduct tests (i.e., avoid school traffic or commuter traffic, etc.) and to review hydrant tests that may present minor challenges. If hydrant tests are not completed on June 24, an additional day of hydrant testing for a half-day on June 25 may be required.

Testing Requirements and Procedure

West Yost plans to conduct up to seven (7) hydrant flow tests within the City's water system. Figure 1 shows the proposed hydrant test locations. In addition, one (1) alternative hydrant test has been identified. If any of the seven (7) test locations are unable to be flowed, the alternative location may be used. Table A-1, in Attachment A, lists the proposed test locations. Details regarding each of the proposed tests (e.g., flowing hydrant, observation hydrants, closed valves, etc.) are also provided in Attachment A (Figures A-1 through A-8). As shown in Attachment A, only one test is proposed for South Stockton. This is due to the fact that most of the pipelines in South Stockton are either new (PVC) and are expected to be smooth, or are located in industrial areas where pipeline diameters are large and thus discharges would be large, possibly encumbering nearby operations or traffic.

Each hydrant test will involve maintaining flow from a single hydrant, while monitoring the residual pressure at three (3) to four (4) observation hydrants located near the flowing hydrant. The field observed static and residual pressure readings will then be used to confirm or adjust pipeline C-factors used to calibrate the hydraulic model to more closely reflect observed conditions. Hydrant test locations have been selected to isolate pipelines of a particular material type, diameter, and age. Tests will require City staff to close one (1) or more isolation valves prior to the test and then re-open these isolation valves following the test.

The general testing procedure at each of the hydrant test locations is outlined below and illustrated on Figure 2.

- **Step 1.** Before the test, flush the test (flowing) hydrant and each observation hydrant before attaching the pressure gauge. This allows sediments, which might damage the gauge or cause faulty readings, to be flushed out from the hydrant.
- **Step 2.** Attach the pressure gauge to the hydrant with the gauge's test cock valve **open**. Slowly open the hydrant and bleed off the gauge with the gauge's test cock until the hydrant is fully pressurized.
- **Step 3.** Close the gauge test cock valve, and then measure the static pressures at the designated test hydrant and each observation hydrant.
- **Step 4.** Flow the designated test hydrant and measure the discharge flow and pressure.
- **Step 5.** Measure the residual pressures at the designated test hydrant and at each observation hydrant while the test hydrant is flowing.
- **Step 6.** Continue monitoring pressure until the "all clear" is given by a West Yost employee. Record the static pressure and then detach the pressure gauge.
  IMPORTANT: *Before closing the hydrant, be sure the gauge's test cock valve is open and bleeding while the hydrant is being closed.*

At least one (1) City staff member will be required at the flowing test hydrant and up to three (3) additional City personnel will be required in the field to assist with the opening and closing of valves (refer to Attachment A). West Yost will provide at least five (5) staff members to direct, oversee, and assist in the field data collection work effort. West Yost will staff observation hydrants, so City staff can participate at the flowing hydrant, opening/closing valves, and dechlorination efforts.

It is anticipated that each hydrant test will take no more than one (1) half hour and that each hydrant will be flowing for no more than 10 minutes during a test.

Testing Equipment

West Yost will provide 2.5-inch and 4.5-inch diameter Swivel Piezo Diffusers and pressure gauges during the hydrant testing program. It is our recommendation that the 4.5-inch diameter Swivel Piezo Diffusers be used for all proposed hydrant tests. For any hydrant test where is it not possible to use this type of diffuser due to drainage or traffic control issues, an alternative method will need to be further evaluated and confirmed before the day of field testing. The following equipment is typically used by West Yost during hydrant testing:

- Hydrant wrenches
- Diffusers
- Pressure Gauges
- Plumber's Tape
- Hydrant Pressure Recorder(s) with Data Transfer Unit
- Hydrant Test Memo
- Mobile device (with a data plan) and Survey123 app installed to collect field data
- Vehicles/trucks
- Equipment needed to close valves and for traffic control
- Dechlorination equipment
- Two-way portable communication for each of the testing personnel

City's Responsibilities

The City will be responsible for providing the following hydrant testing equipment:

1. Hydrant wrenches
2. Dechlorination equipment
3. Piece of Plywood

The City is also responsible for notifying other City staff and departments (i.e., Fire Department) about the scheduled hydrant testing, obtaining approvals that may be required, providing proper

drainage of the hydrant flow, and providing equipment for dechlorinating[2] test water and personnel for traffic control, if required.

West Yost requests that the City staff review and inspect each of the proposed hydrant test and HPR placement locations before the testing date to identify any potential problems or hazards with the selected locations. Of particular concern will be the potential for flooding landscaping, building basements, or creating hazardous traffic conditions. West Yost recommends that all drainage inlets/manholes be inspected near the testing site to confirm proper drainage. If possible, the City should also supply a piece of plywood in an effort to protect landscaping adjacent to the flowing hydrant. Additionally, location and status of valves that will be closed during the hydrant testing should be confirmed. Detailed figures, which illustrate the flowing hydrant, observation hydrants, valves to be closed, and adjacent drainage features are provided in Attachment A.

HYDRANT PRESSURE RECORDER PROGRAM

Placement of HPRs at key hydrants within the City's water system is required to collect data necessary to calibrate pressures for extended period calibration of the City's hydraulic model. West Yost has identified a total of sixteen (16) hydrants within the water system to monitor system pressures with the HPRs, with twelve (12) hydrants located in North Stockton and four (4) hydrants located in South Stockton. The selected HPR locations are based on locations in the City's water distribution system that are hydraulically distant from water facilities, thus representing the "boundary" of the water distribution system.

West Yost is proposing to install the sixteen (16) HPRs on June 18, 2020 to collect pressure information for a total of about one (1) week. West Yost plans to attach the HPRs to the 2.5-inch port on specified hydrants and lock them in place with a padlock. After the seven-day monitoring period is complete, West Yost will remove the HPRs from their locations on June 26, 2020, and then download and review the collected data. Figure 3 shows the general location of each HPR. Attachment B includes Table B-1, which provides the approximate location of each hydrant pressure recorder. Attachment B also includes detailed figures that illustrate the specific location of each hydrant selected for HPR placement (see Figures B-1 through B-16).

It is important for City staff to coordinate with local fire departments and any other appropriate parties regarding the locations and duration of monitoring. This will help reduce the chance of inadvertently shutting off a hydrant with an HPR installed and may also reduce the risk of an HPR being removed or tampered with, because the field pressure data required for the hydraulic model calibration cannot be collected once a hydrant is shut off or if the HPR is removed. To further reduce risk, each HPR is equipped with a padlock; a set of keys will be provided to the City staff. However, in case of an emergency, the fire department can break the lock to remove the HPR. In a non-emergency case, if an HPR is required to be removed, or if the associated hydrant needs to be shut off, West Yost requests that the fire department inform the City and the City then coordinate with West Yost staff.

[2] Handling of water released from each hydrant test will need to comply with City Operations procedures and be consistent with the City's NPDES permit for planned releases from hydrant tests.

SUMMARY OF HYDRANT TESTING AND PRESSURE MONITORING PROGRAM

Hydrant testing will be performed as described above beginning at 7:30 AM on June 24, 2020. West Yost proposes to perform the initial HPR installation on June 18, 2020. West Yost will remove the HPRs from their location on June 26, 2020 and download and review the field collected data. During the installation and removal of the HPRs, West Yost requests that City staff accompany West Yost staff. The location descriptions and associated detailed location maps of the designated hydrants are presented in Attachments A and B. After the completion of the hydrant testing (on June 24, 2020, or possibly June 25, 2020) and collection of system pressure via HPRs, West Yost will coordinate with the City to obtain the following SCADA system data:

- 1-minute increments for all facilities listed in the Personnel and System Data Requirements section for June 24, 2020 (and June 25, 2020 if hydrant testing is extended); and,
- 15-minute increments for all facilities listed in the Personnel and System Data Requirements section from June 17, 2020 to June 25, 2020.

Please feel free to contact Bobby Vera at (916) 306-2212 if you have any questions or comments.

Last Saved: 5/6/2020 1:30:20 PM N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Hydrant Test and HPR Plan\F1_HydrantTest_OverallMap.mxd : mmcwilliams

North Stockton

Delta Water Supply Project
WTP
Northwest
14 Mile Slough
Well #29
Well #30
Well #18
Well #16
Well #9
Well #7
Well #15
Well #21
Well #1
Well #11
Well #4
Well #03R
Well #19
Well #20
Well #10R
Well #24
Well #31
Well #32
Well #26
Well #25
Well #28
Well #27
1
2
3
4
5
6
8
ARMSTRONG RD
LIVE OAK RD
EIGHT MILE RD
WEST LN
RINDGE RD
ASHLEY LN
HILDRETH LN
ALPINE RD
CHEROKEE RD
WATERLOO RD
HOLT RD
SAN JOAQUIN RIVER
BROOKSIDE RD
PACIFIC AVE
EL DORADO ST
FREMONT ST
MINER AVE
Stockton East Water District
WTP
0 3,500 7,000
Scale in Feet

South Stockton

Stockton East Water District
WTP
SAN JOAQUIN RIVER
NAVY DR
FREMONT ST
MINER AVE
SUTTER ST
MARTIN LUTHER KING JR BLVD
TURNPIKE RD
EIGHTH ST
EL DORADO ST
POCKET RD
MARIPOSA RD
JACK TONE RD
NEWCASTLE RD
AIRPORT WAY
HOWARD RD
FRENCH CAMP RD
Well SSS9
Well SSS8
Well SSS2
Well SSS3
Well SSS1
7
Weston Ranch
0 3,000 6,000
Scale in Feet

- Hydrant Test Location
- Storage Tank & Booster Pump Station
- Water Treatment Plant
- COSMUD Water Service Boundary
- Well (Active)
- Well (Inactive)
- Well (Standby)
- Pipeline (Less Than 12-inch)
- Pipeline (12-inch or Greater)
- Railroad

CITY OF STOCKTON

WEST YOST ASSOCIATES

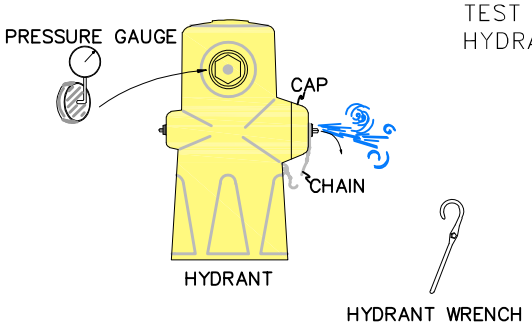
Figure 1

Hydrant Test Location Map

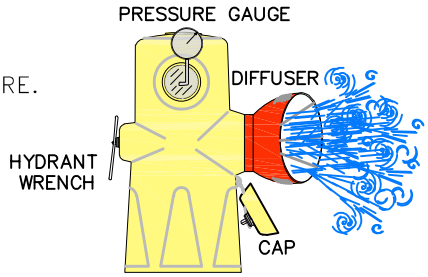
City of Stockton
Water Master Plan Update

(THIS PAGE LEFT BLANK INTENTIONALLY)

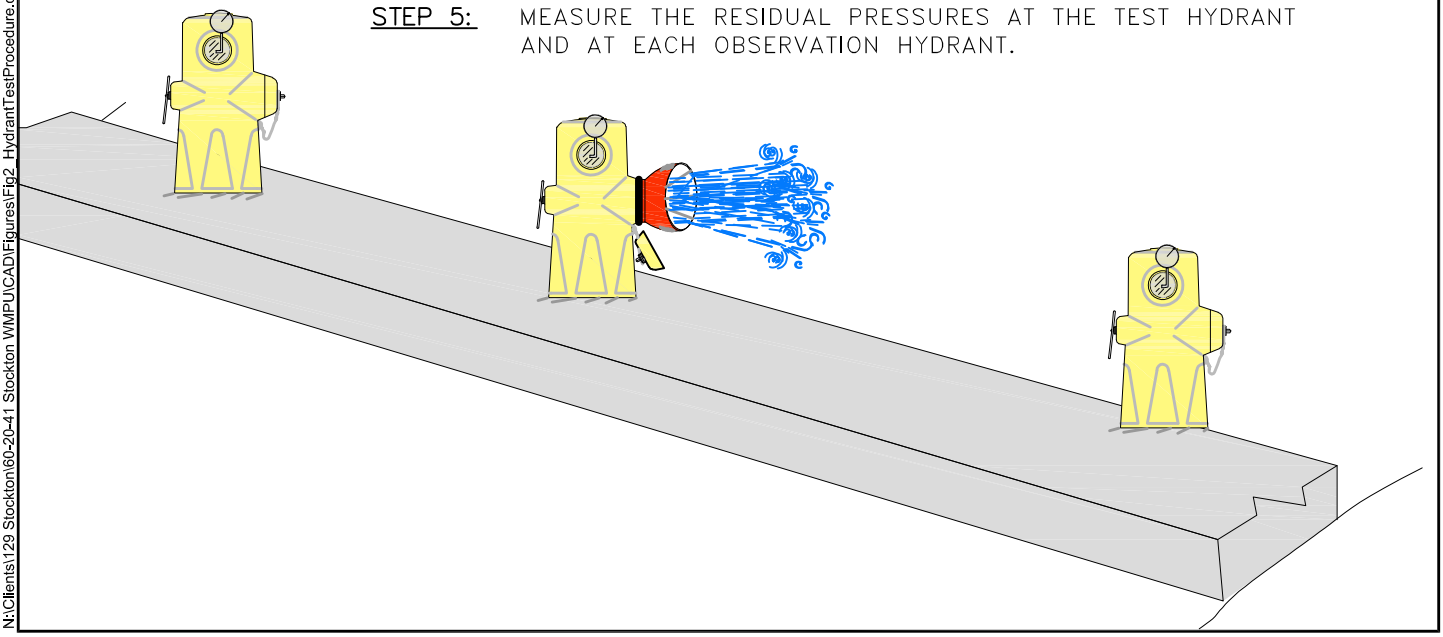
STEPS 1, 2 & 3: REMOVE HYDRANT CAP, FLUSH OUT HYDRANT AND MEASURE THE STATIC PRESSURES AT THE TEST HYDRANT AND AT EACH OBSERVATION HYDRANT.



STEP 4: FLOW THE DESIGNATED TEST HYDRANT AND MEASURE THE DISCHARGE FLOW AND PRESSURE.



STEP 5: MEASURE THE RESIDUAL PRESSURES AT THE TEST HYDRANT AND AT EACH OBSERVATION HYDRANT.



N:\Clients\129 Stockton\60-20-41 Stockton WMPU\CAD\Figures\Fig2_HydrantTestProcedure.dwg 5/7/2020 10:43 AM mmcwilliams

Note:
1. Figure is not to scale.

CITY OF STOCKTON

WEST YOST ASSOCIATES

Figure 2

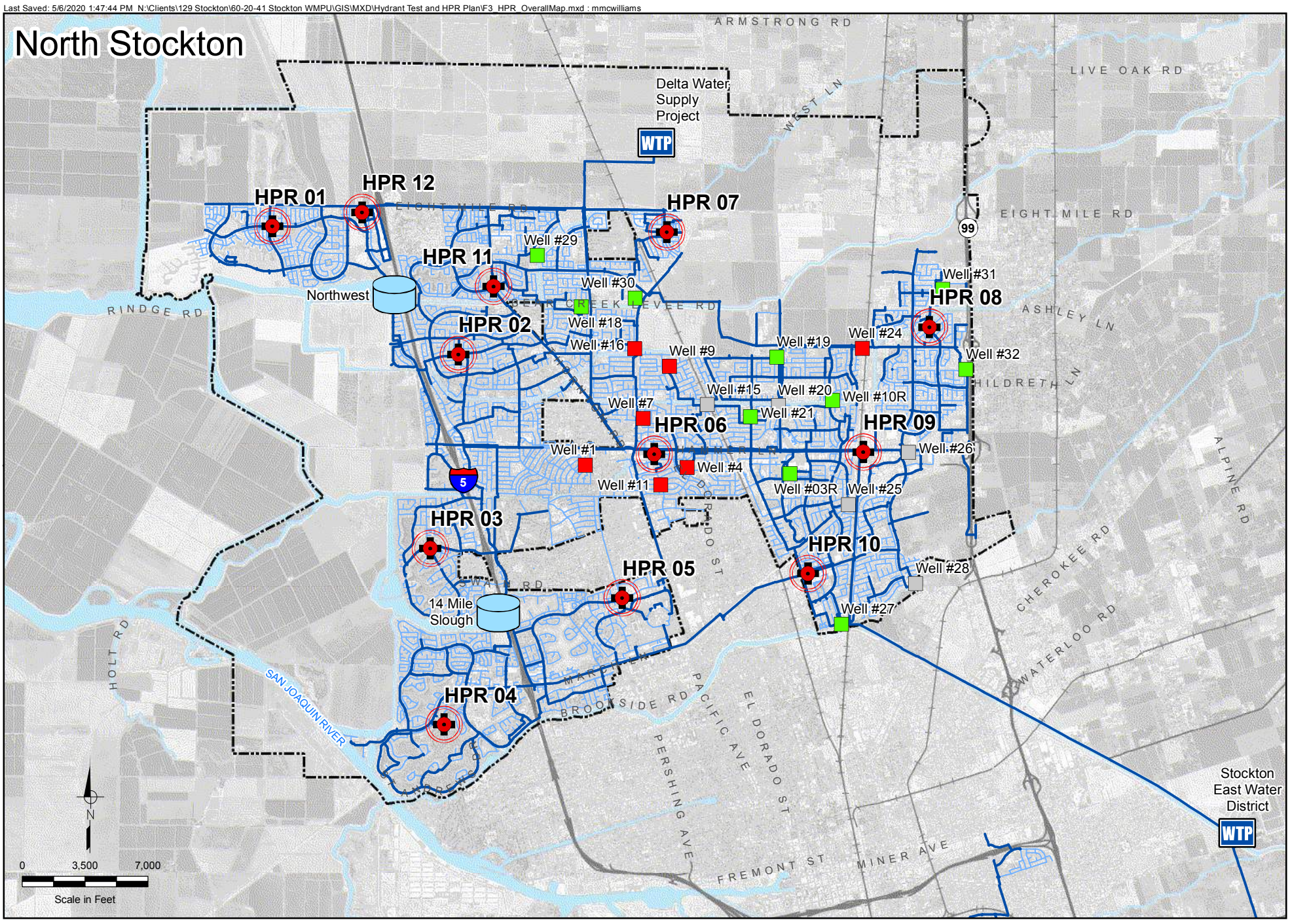
Hydrant Test Procedure

City of Stockton
Water Master Plan Update

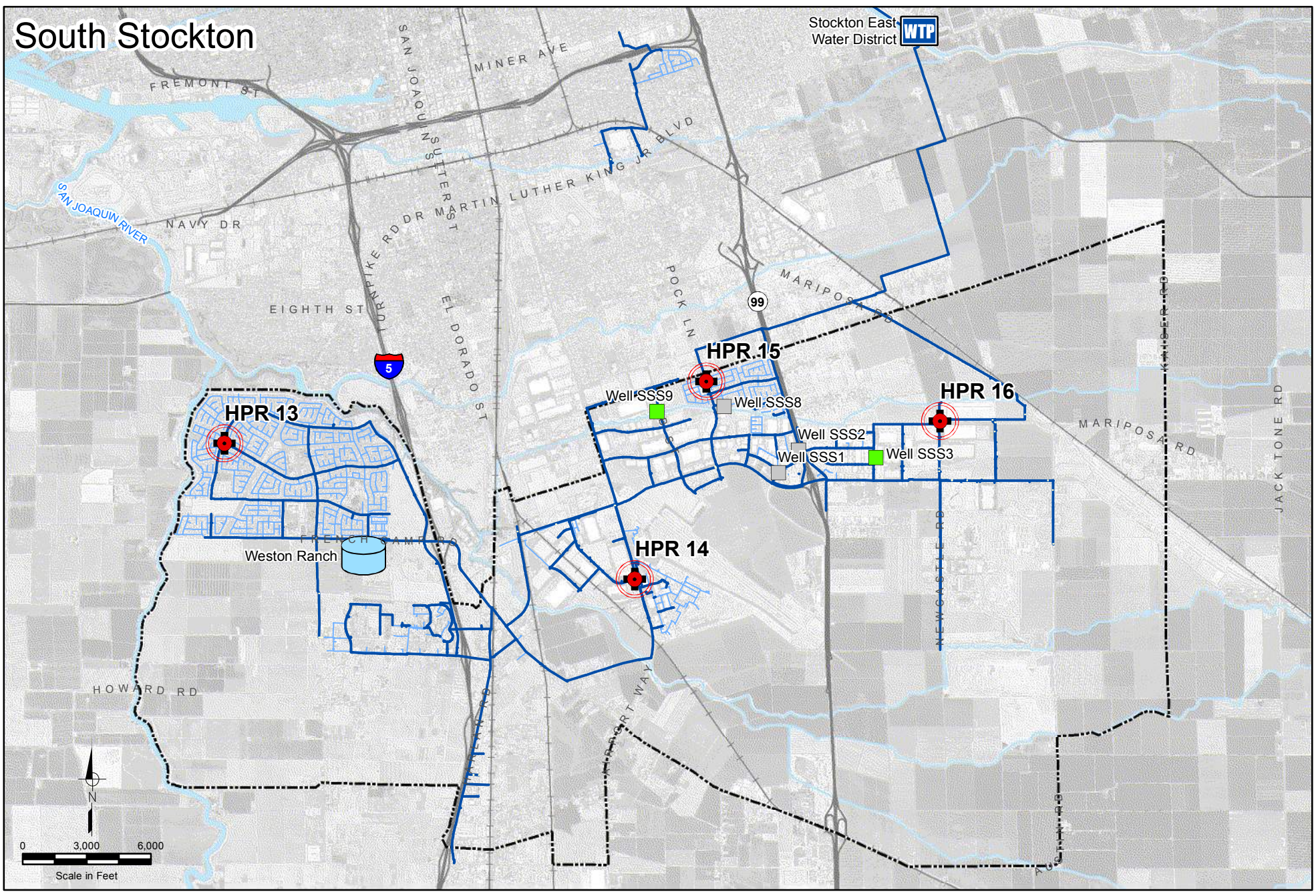
(THIS PAGE LEFT BLANK INTENTIONALLY)

Last Saved: 5/6/2020 1:47:44 PM N:\Clients\129 Stockton\60-20-41 Stockton WMPU\GIS\MXD\Hydrant Test and HPR Plan\F3_HPR_OverallMap.mxd : mmcwilliams

North Stockton



South Stockton



- Proposed HPR Location
- Storage Tank & Booster Pump Station
- Water Treatment Plant
- COSMUD Water Service Boundary
- Well (Active)
- Well (Inactive)
- Well (Standby)
- Pipeline (Less Than 12-inch)
- Pipeline (12-inch or Greater)
- Railroad

CITY OF STOCKTON

WEST YOST ASSOCIATES

Figure 3

Hydrant Pressure Recorder Map

City of Stockton
Water Master Plan Update

(THIS PAGE LEFT BLANK INTENTIONALLY)

ATTACHMENT A

Hydrant Test Detail Figures

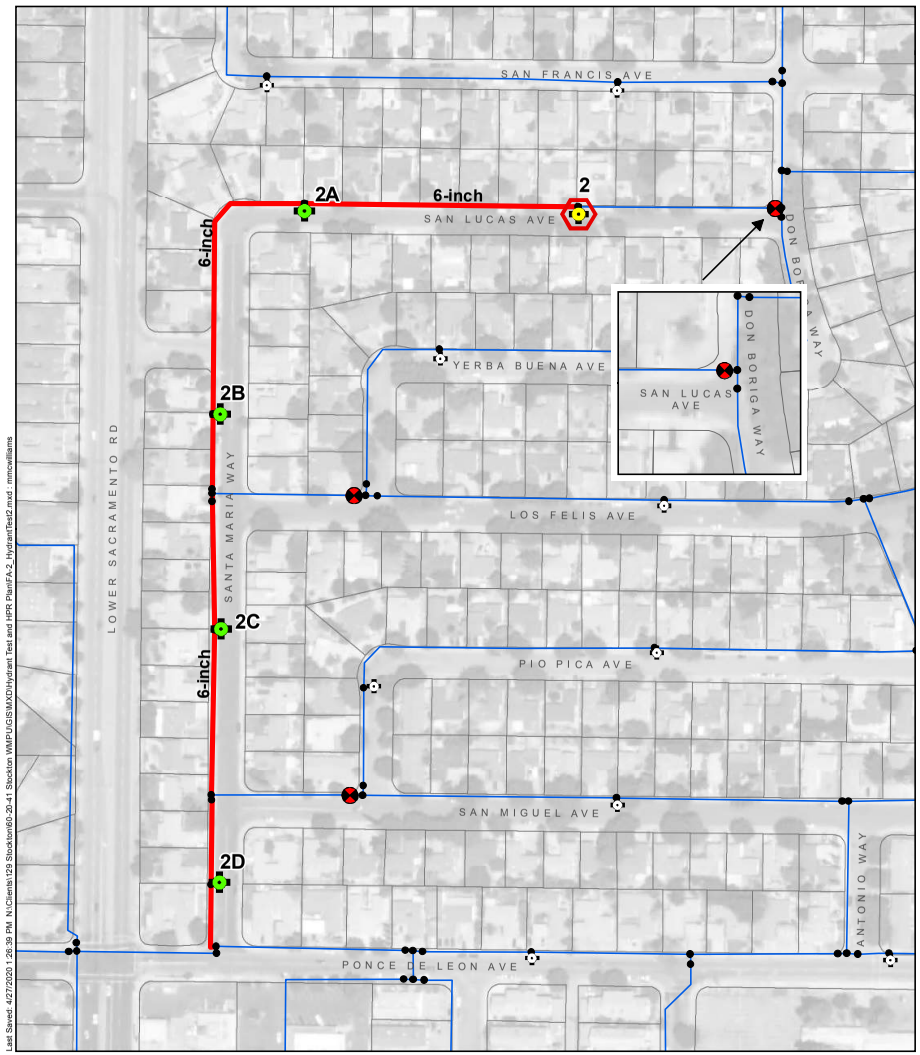
(THIS PAGE LEFT BLANK INTENTIONALLY)

Table A-1. Hydrant Test Locations[(a)]

Test No.	Pipeline Material	Approximate Installation Decade	Pipeline Diameter, Inches	Location	No. of Closed Valves	Service Area
1	Asbestos Concrete	1980s	8	Angel Drive, Between Sutton Way and Otto Drive	3	North Stockton
2	Asbestos Concrete	1960s	6	Santa Maria Way and San Lucas Avenue, Between Ponce De Leon Avenue and Don Borgia Way	3	North Stockton
3	Asbestos Concrete	1960s	6	Bonnie Brook Drive and Oak Creek Drive, Between Westland Avenue and Meadow Avenue	5	North Stockton
4	Asbestos Concrete	1970s	10	Knickerbocker Drive, Between New York Drive and Tam O Shanter Drive	2	North Stockton
5	Asbestos Concrete	1980s	8	Shameran Street and Sharkon Lane, Between Montauban Avenue and Hammertown Drive	1	North Stockton
6	Asbestos Concrete	1980s	6	Fort Donelson Drive, Between Five Mile Drive and Palmouth Court	1	North Stockton
7	PVC	1990s	8	Ishi Gotto Street, Between Ken Street and Brick and Tile Circle	5	South Stockton
8	PVC	1980s	8	Boulder Creek Circle	3	North Stockton; Alternate Test Location

(a) 7 test locations and 1 alternate test location if time permits.

(THIS PAGE LEFT BLANK INTENTIONALLY)



Hydrant Test Location
Observed Hydrant
Hydrant
Closed Valve (3 total)
Valve
Test Pipeline
Pipeline

N
0 100 200
Scale in Feet

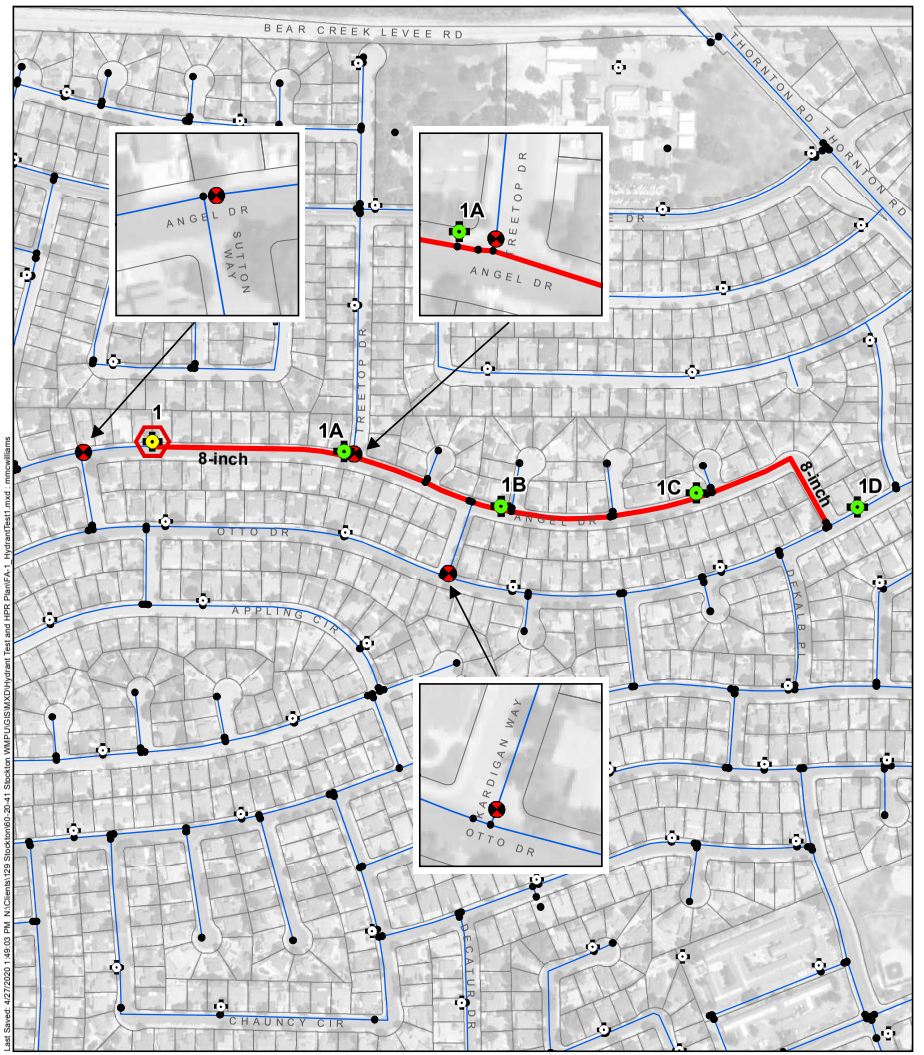
CITY OF STOCKTON
WEST YOST ASSOCIATES

Figure A-2

Test 2
(6-inch AC - 1960s)

City of Stockton
Water Master Plan Update

Last Saved: 4/27/2020 1:26:39 PM N:\Clients\129 Stockton\60-20-41 Stockton WMP\UG\GIS\MXD\Hydrant Test and HPR Plan\FA-2_HydrantTest2.mxd - mmcwilliams



Hydrant Test Location
Observed Hydrant
Hydrant
Closed Valve (3 total)
Valve
Test Pipeline
Pipeline

N
0 200 400
Scale in Feet

CITY OF STOCKTON
WEST YOST ASSOCIATES

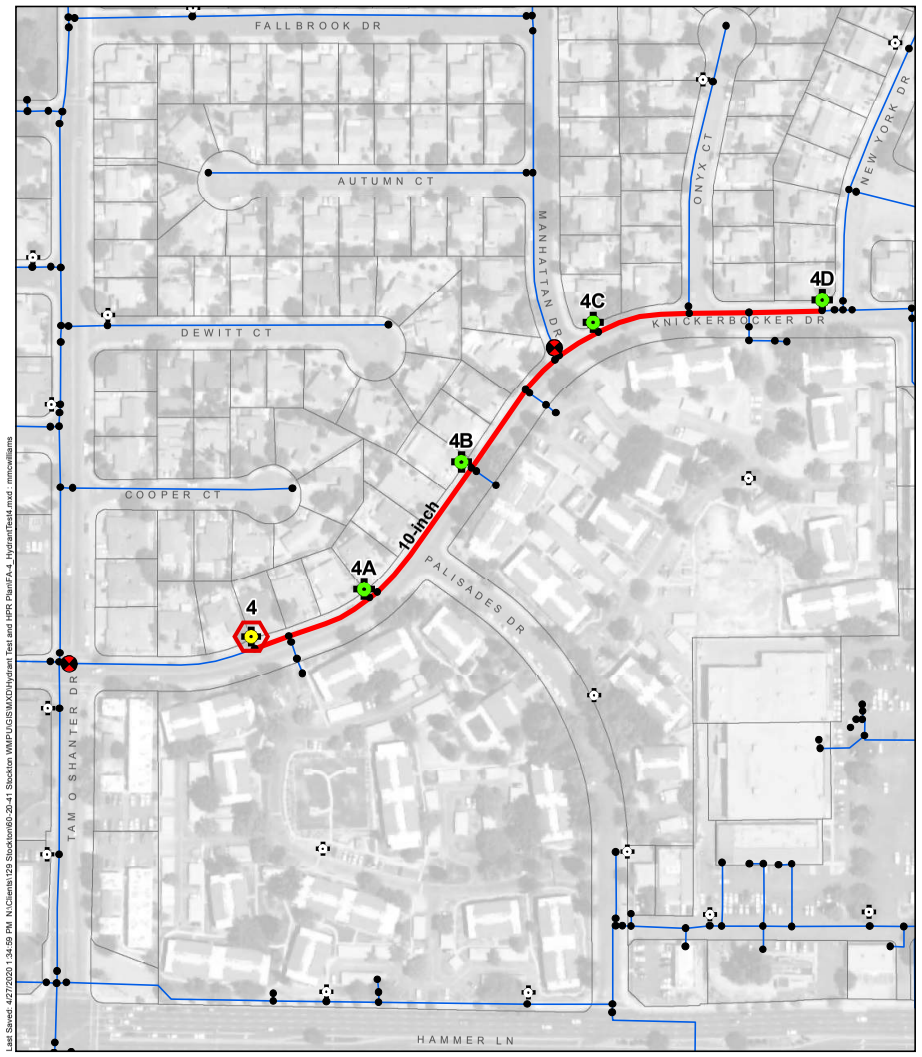
Figure A-1

Test 1
(8-inch AC - 1980s)

City of Stockton
Water Master Plan Update

Last Saved: 4/27/2020 1:49:03 PM N:\Clients\129 Stockton\60-20-41 Stockton WMP\UG\GIS\MXD\Hydrant Test and HPR Plan\FA-1_HydrantTest1.mxd - mmcwilliams

EXHIBIT 1



Hydrant Test Location
Observed Hydrant
Hydrant
Closed Valve (2 total)
Valve
Test Pipeline
Pipeline

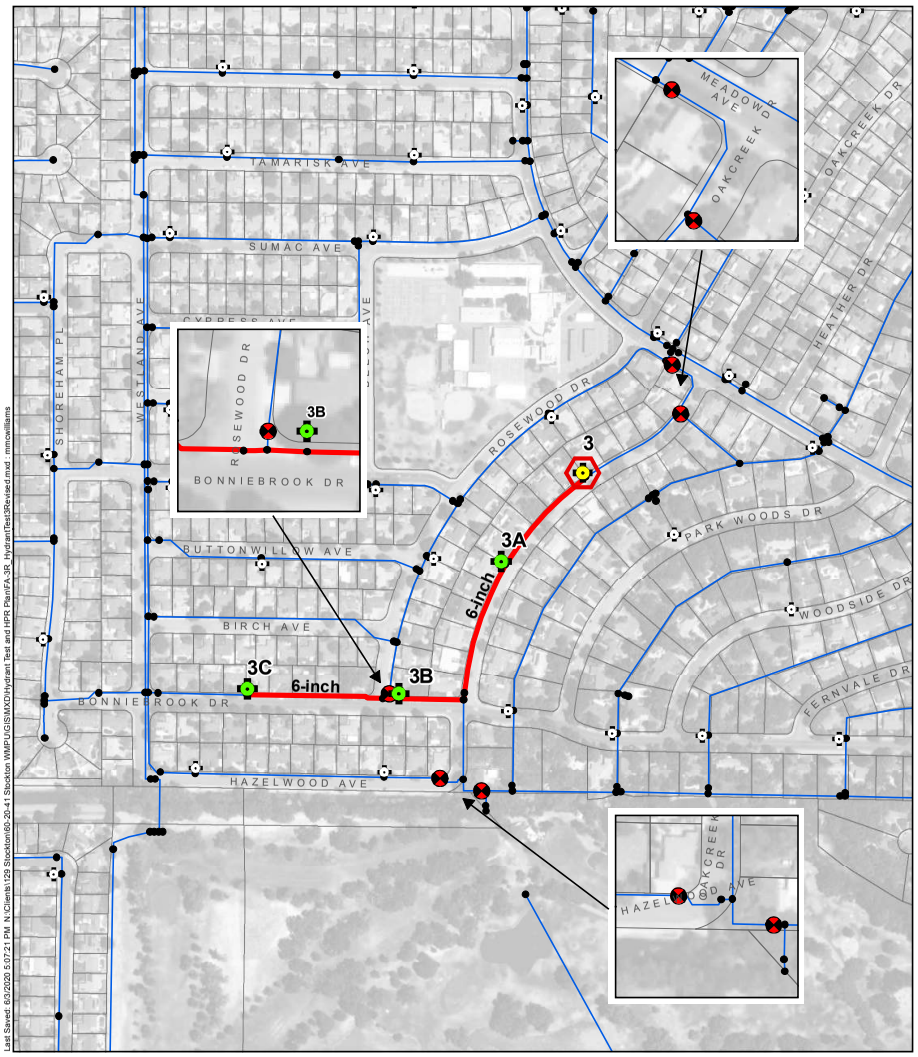
N
0 100 200
Scale in Feet

CITY OF STOCKTON
WEST YOST ASSOCIATES

Figure A-4

Test 4
(10-inch AC - 1970s)

City of Stockton
Water Master Plan Update



Hydrant Test Location
Observed Hydrant
Hydrant
Closed Valve (5 total)
Valve
Test Pipeline
Pipeline

N
0 200 400
Scale in Feet

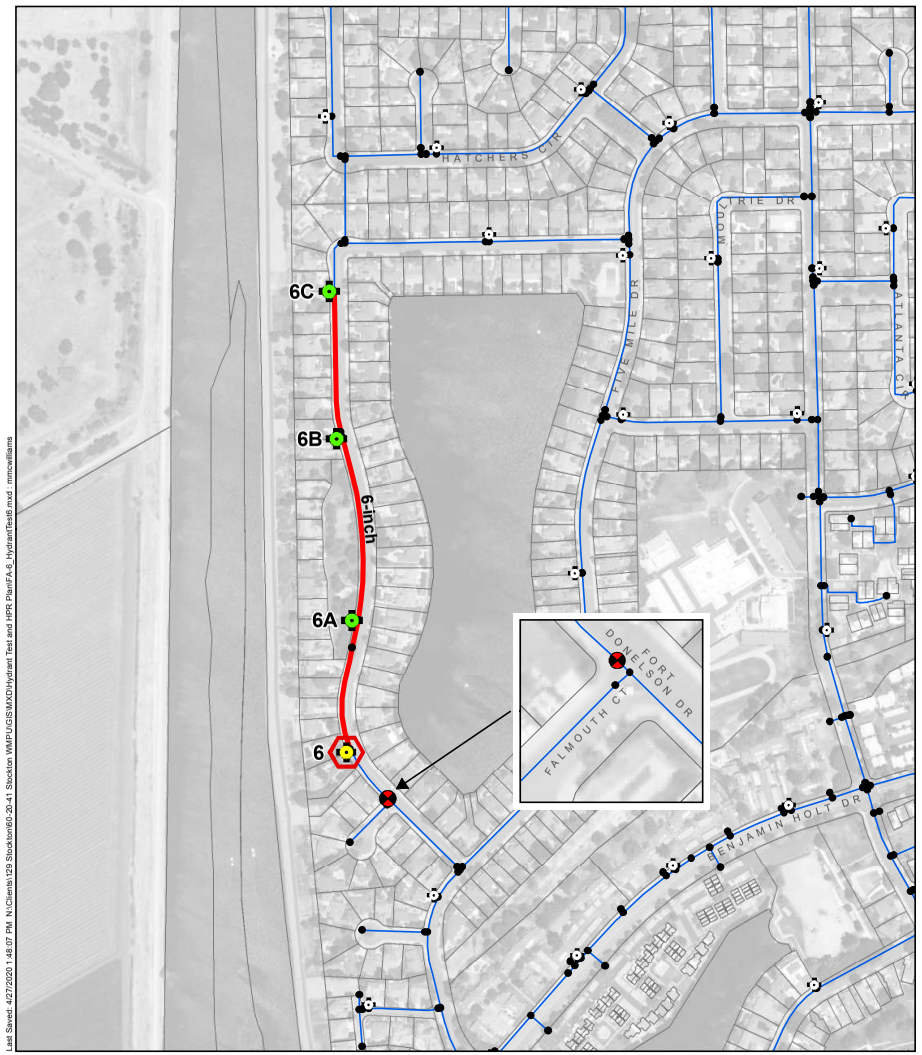
CITY OF STOCKTON
WEST YOST ASSOCIATES

Figure A-3

Test 3
(6-inch AC - 1960s)

City of Stockton
Water Master Plan Update

EXHIBIT 1



Hydrant Test Location
Observed Hydrant
Hydrant
Closed Valve (1 total)
Valve
Test Pipeline
Pipeline

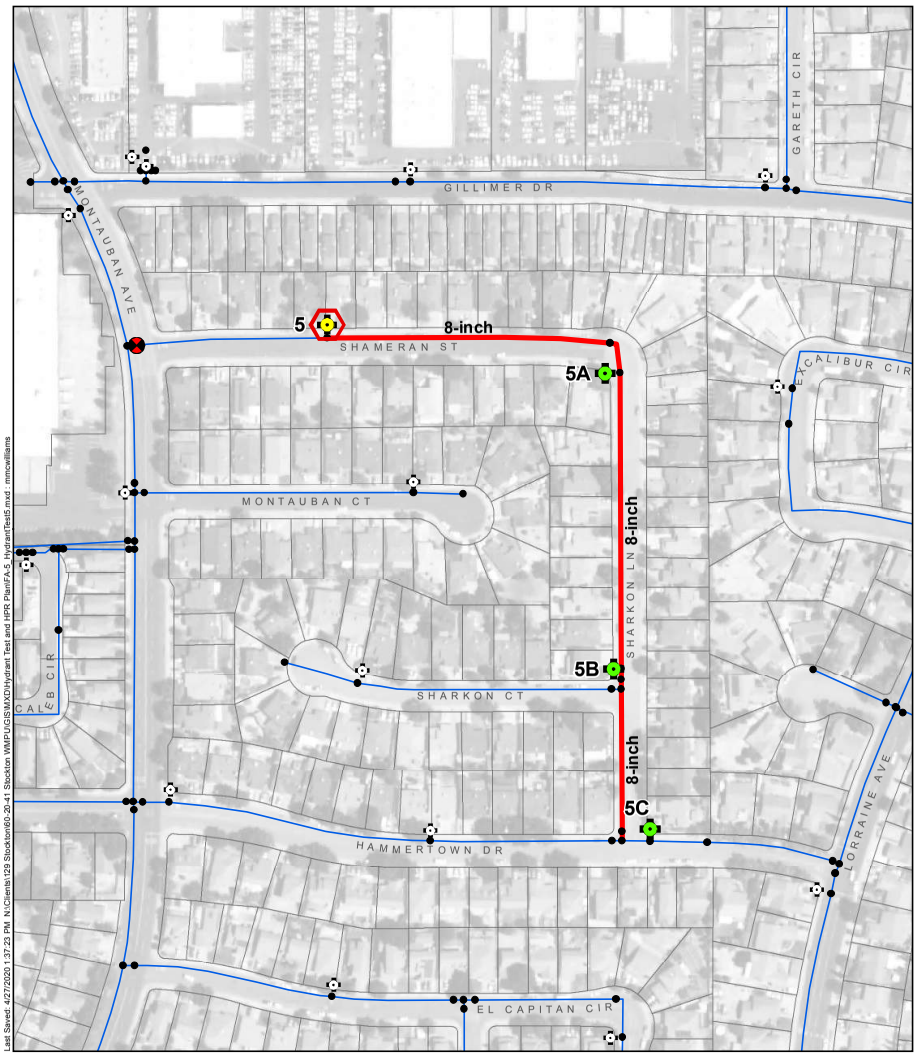
N
0 200 400
Scale in Feet

CITY OF STOCKTON
WEST YOST ASSOCIATES

Figure A-6

Test 6
(6-inch AC - 1980s)

City of Stockton
Water Master Plan Update



Hydrant Test Location
Observed Hydrant
Hydrant
Closed Valve (1 total)
Valve
Test Pipeline
Pipeline

N
0 100 200
Scale in Feet

CITY OF STOCKTON
WEST YOST ASSOCIATES

Figure A-5

Test 5
(8-inch AC - 1980s)

City of Stockton
Water Master Plan Update

EXHIBIT 1

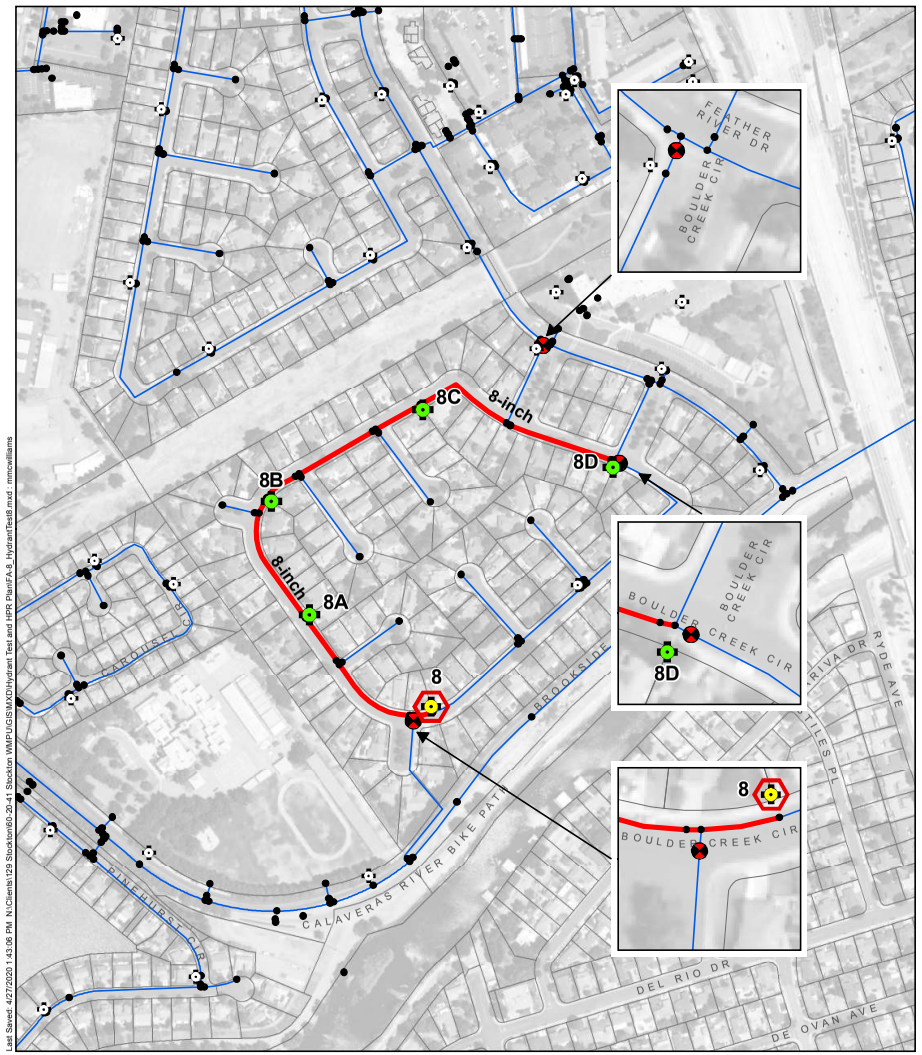


Figure A-8

Test 8
Alternate
(8-inch PVC - 1980s)

City of Stockton
Water Master Plan Update

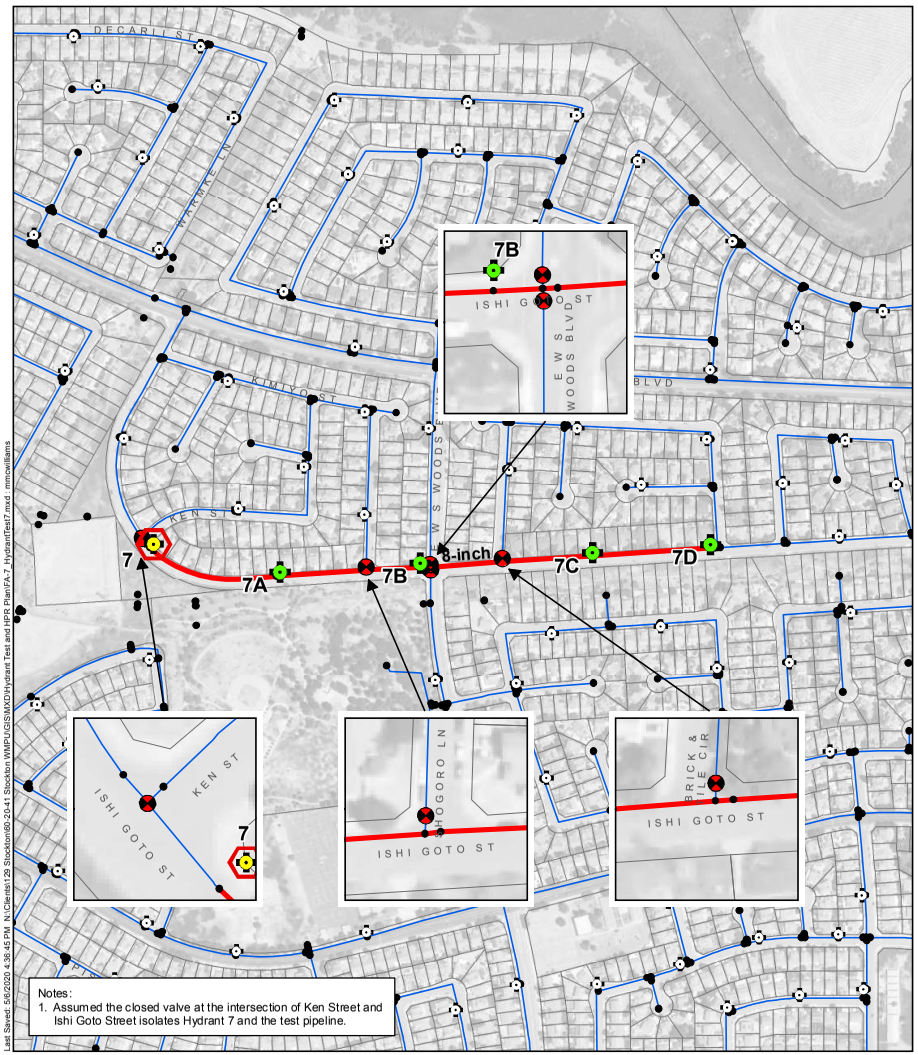


Figure A-7

Test 7
(8-inch PVC - 1990s)

City of Stockton
Water Master Plan Update

EXHIBIT 1

ATTACHMENT B

Hydrant Pressure Recorder Detail Figures

(THIS PAGE LEFT BLANK INTENTIONALLY)

Table B-1. Hydrant Pressure Recorder Locations

HPR No.	Location
1	Northeast corner of intersection of Scott Creek Drive and Regatta Lane
2	Intersection of Stanfield Drive and Colington Place
3	Intersection of Benjamin Holt Drive and Cumberland Place
4	Southeast of St. Andrews Drive
5	Intersection of Pershing Avenue and Robinhood Drive
6	Northeast corner of intersection of Etna Street and San Carlos Way
7	Intersection of Villa Point Drive and Marlette Road
8	Intersection of Genova Lane and Perino Drive
9	Hammer Lane, Between Railroad and Girardi Way
10	March Lane, Between West Lane and Weber Ranch Park
11	Northwest corner of intersection of AG Spanos Boulevard and Thornton Boulevard
12	South of intersection of Eight Mile Road and Trinity Park
13	Intersection of William Moss Boulevard and Carolyn Weston Boulevard
14	Intersection of Airport Way and Performance Drive
15	Pock Lane, north of Togninali Lane
16	North of intersection of Raymos Way and New Castle Road

(THIS PAGE LEFT BLANK INTENTIONALLY)

Proposed HPR Location

Hydrant

Pipeline

N

0 100 200

Scale in Feet

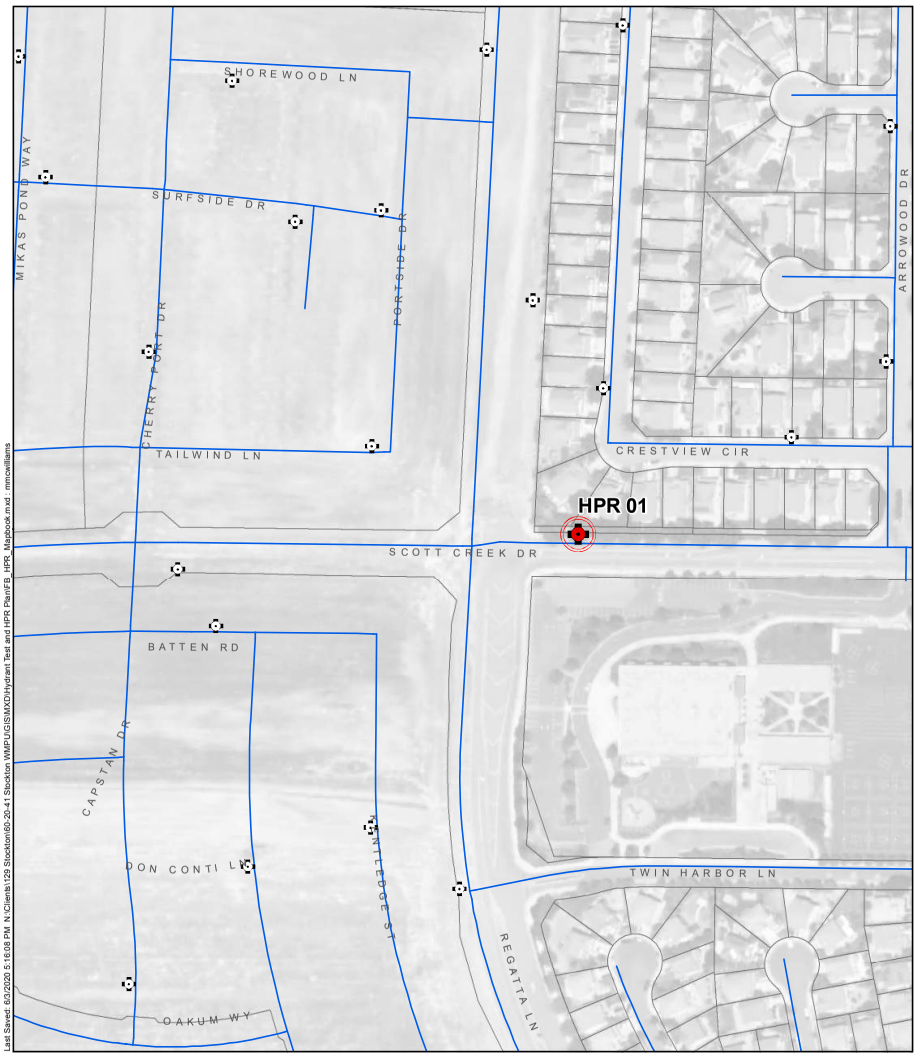
CITY OF STOCKTON

WEST YOST ASSOCIATES

Figure B-2

HPR 2

City of Stockton
Water Master Plan Update



Proposed HPR Location

Hydrant

Pipeline

N

0 100 200

Scale in Feet

CITY OF STOCKTON

WEST YOST ASSOCIATES

Figure B-1

HPR 1

City of Stockton
Water Master Plan Update

EXHIBIT 1

Proposed HPR Location

Hydrant

Pipeline

N

0 100 200

Scale in Feet

CITY OF STOCKTON

WEST YOST ASSOCIATES

Figure B-4

HPR 4

City of Stockton
Water Master Plan Update

Proposed HPR Location

Hydrant

Pipeline

N

0 100 200

Scale in Feet

CITY OF STOCKTON

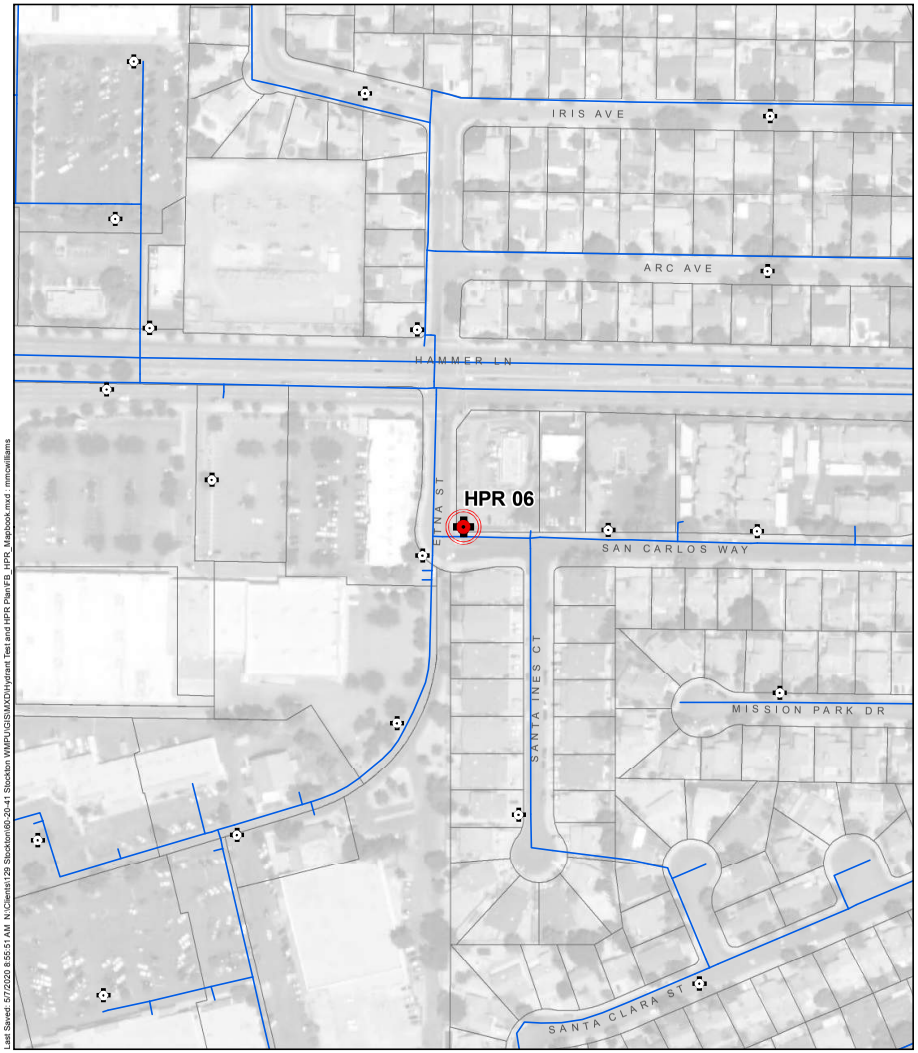
WEST YOST ASSOCIATES

Figure B-3

HPR 3

City of Stockton
Water Master Plan Update

EXHIBIT 1



Proposed HPR Location
Hydrant
Pipeline

N
0 100 200
Scale in Feet

CITY OF STOCKTON

WEST YOST ASSOCIATES

Figure B-6

HPR 6

City of Stockton
Water Master Plan Update

Proposed HPR Location
Hydrant
Pipeline

N
0 100 200
Scale in Feet

CITY OF STOCKTON

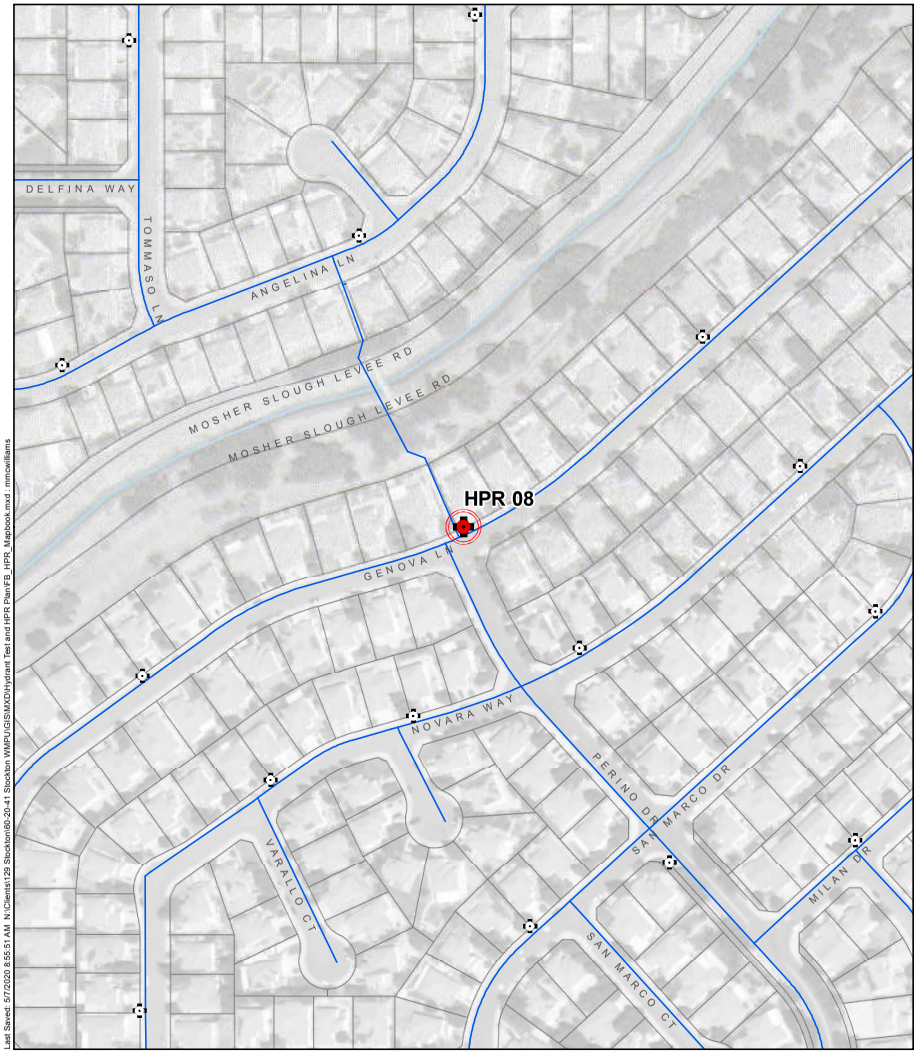
WEST YOST ASSOCIATES

Figure B-5

HPR 5

City of Stockton
Water Master Plan Update

EXHIBIT 1



Proposed HPR Location

Hydrant

Pipeline

N

0 100 200

Scale in Feet

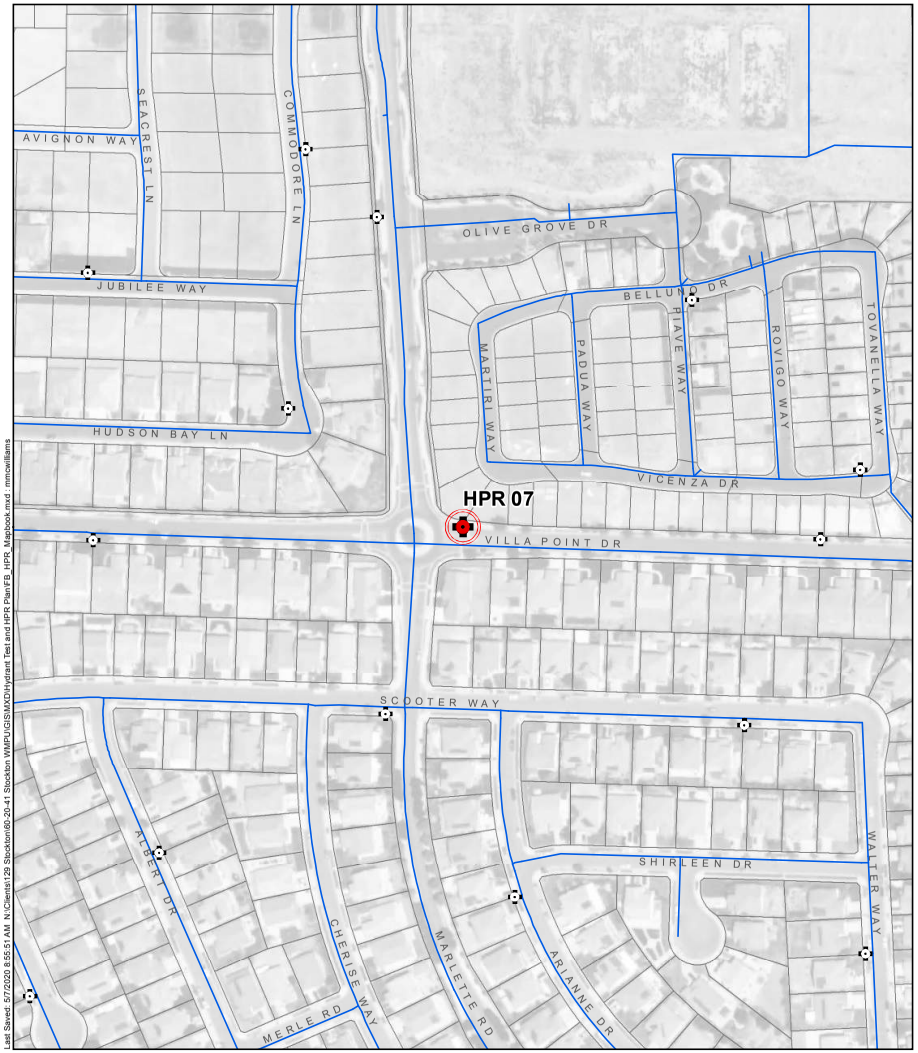
CITY OF STOCKTON

WEST YOST ASSOCIATES

Figure B-8

HPR 8

City of Stockton
Water Master Plan Update



Proposed HPR Location

Hydrant

Pipeline

N

0 100 200

Scale in Feet

CITY OF STOCKTON

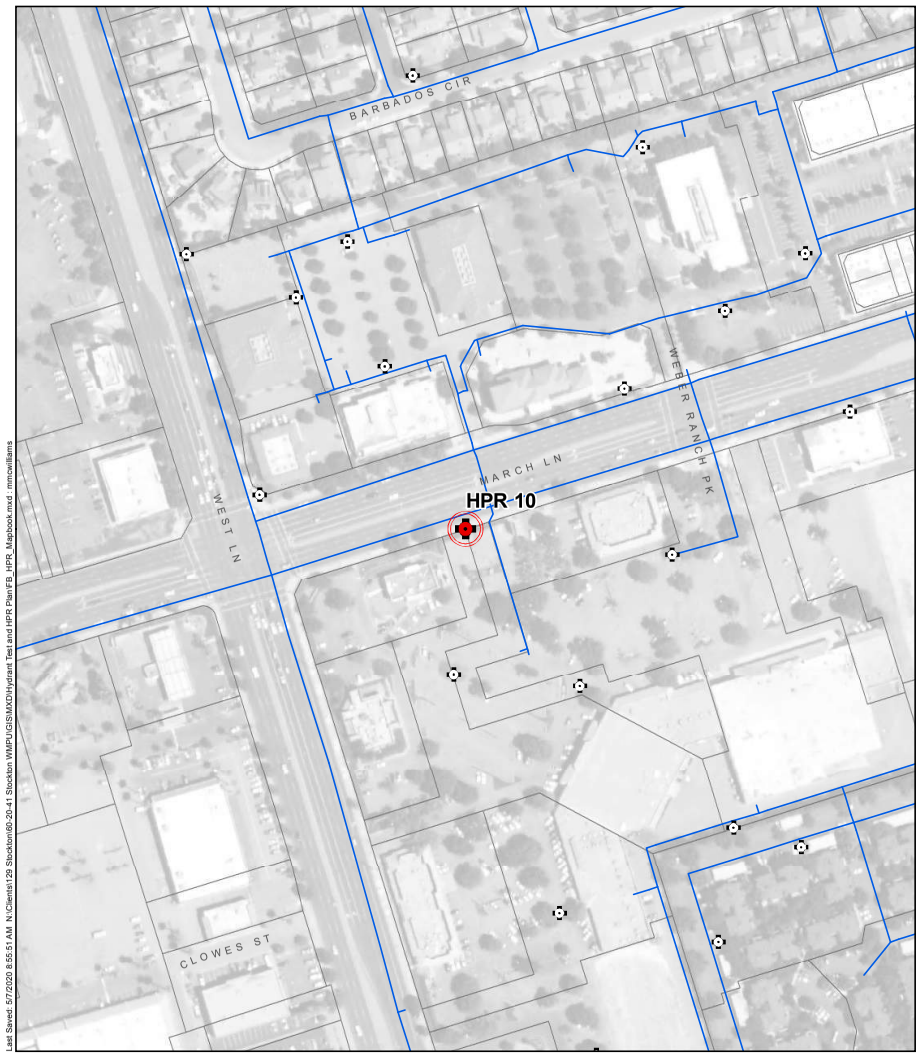
WEST YOST ASSOCIATES

Figure B-7

HPR 7

City of Stockton
Water Master Plan Update

EXHIBIT 1



Proposed HPR Location

Hydrant

Pipeline

N

0 100 200

Scale in Feet

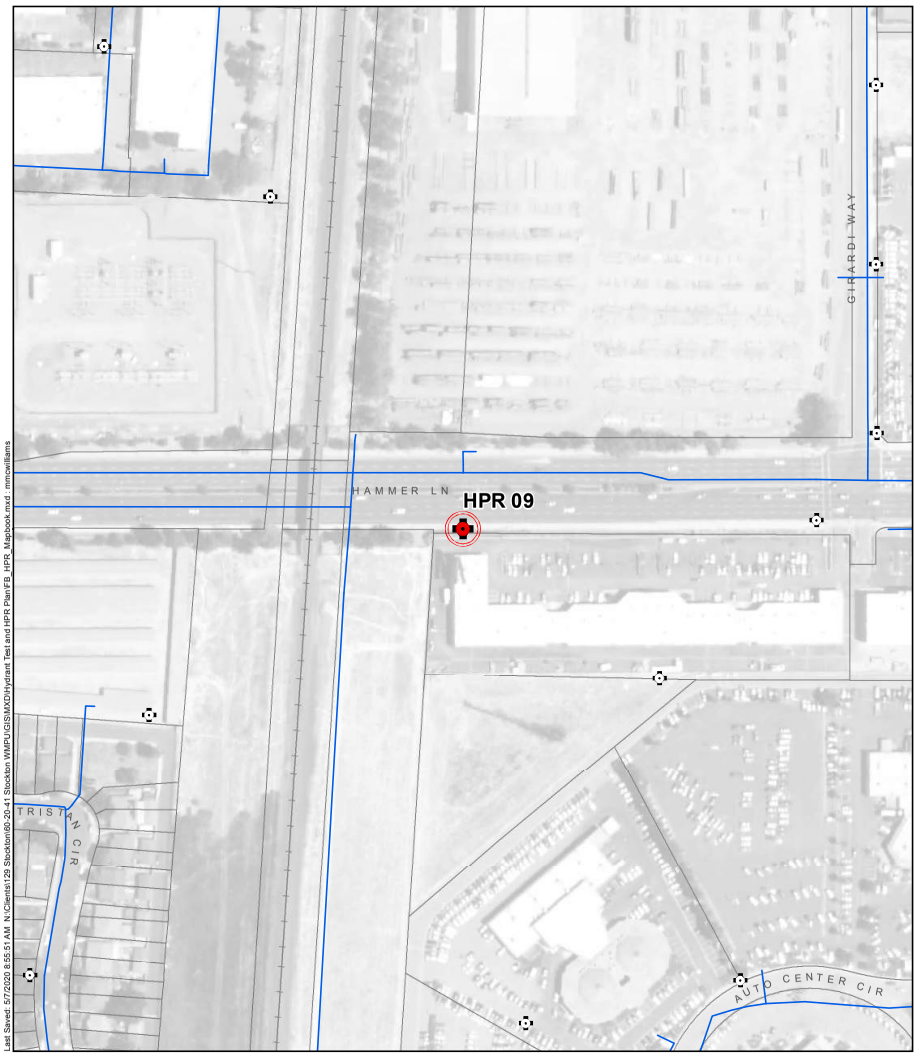
CITY OF STOCKTON

WEST YOST ASSOCIATES

Figure B-10

HPR 10

City of Stockton
Water Master Plan Update



Proposed HPR Location

Hydrant

Pipeline

N

0 100 200

Scale in Feet

CITY OF STOCKTON

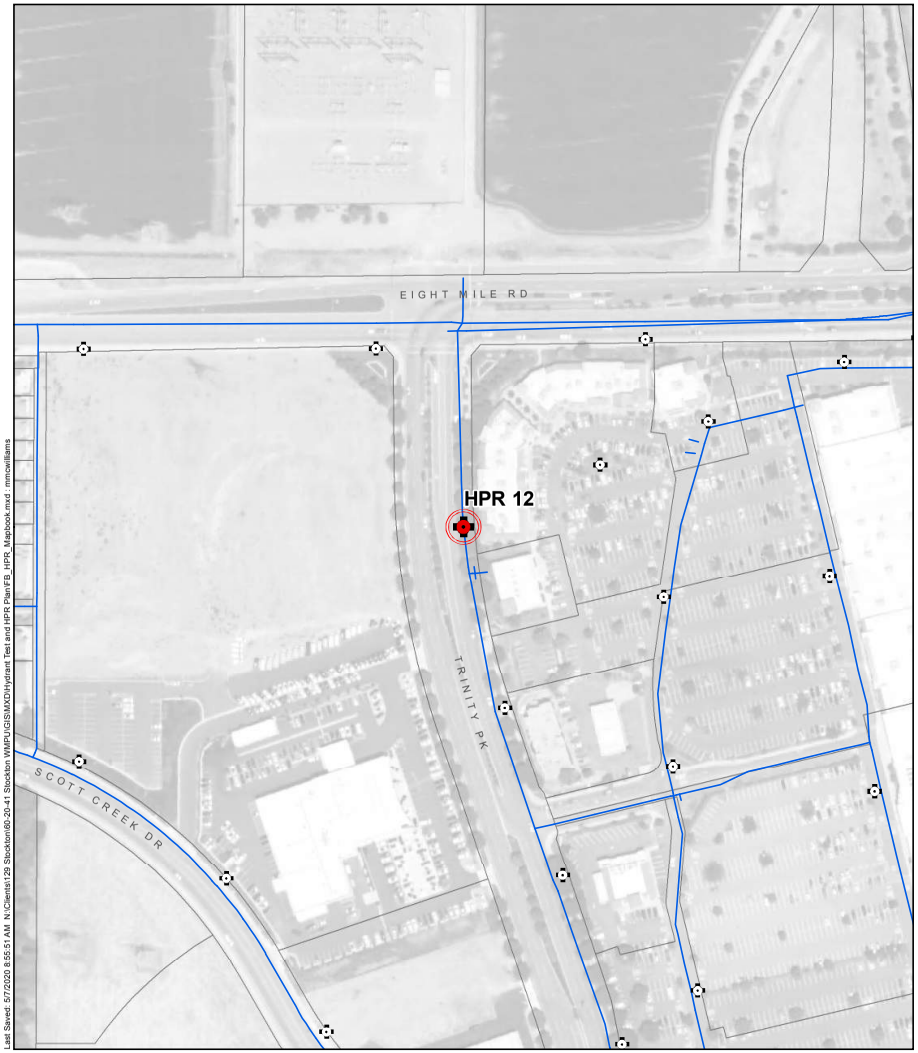
WEST YOST ASSOCIATES

Figure B-9

HPR 9

City of Stockton
Water Master Plan Update

EXHIBIT 1



Proposed HPR Location

Hydrant

Pipeline

N

0 100 200

Scale in Feet

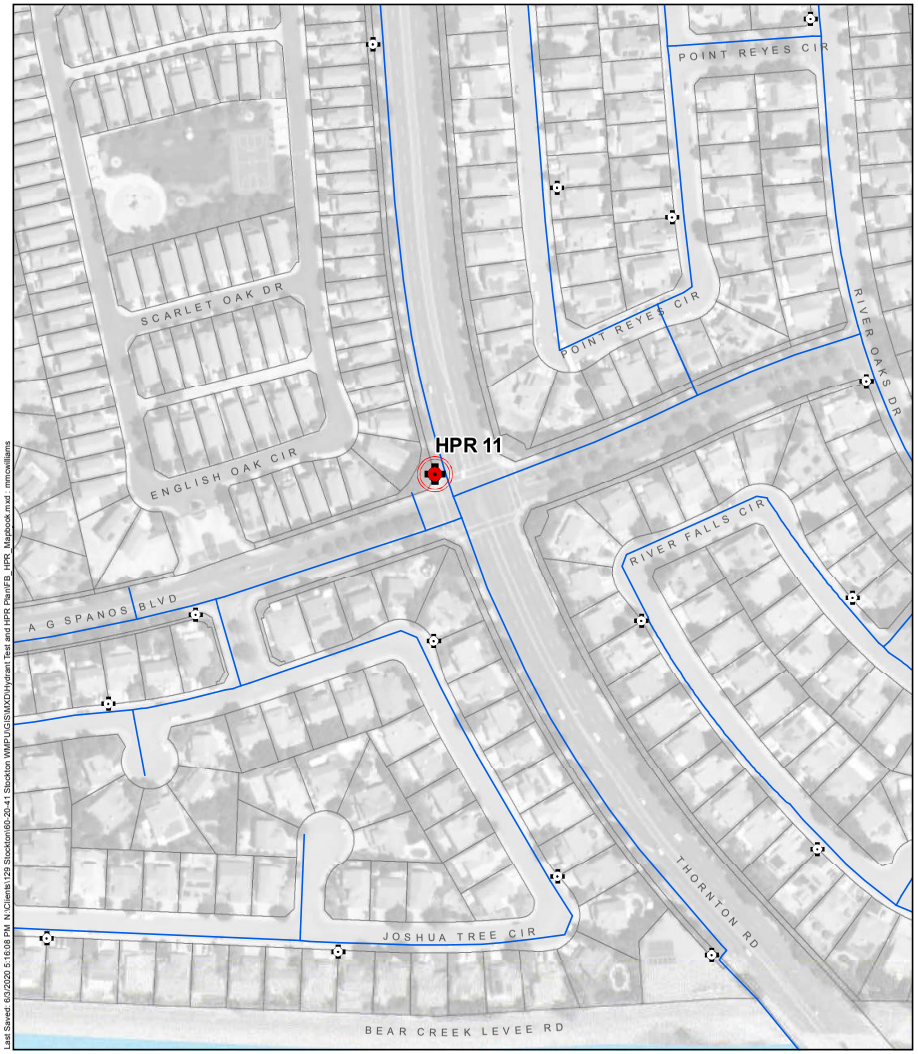
CITY OF STOCKTON

WEST YOST ASSOCIATES

Figure B-12

HPR 12

City of Stockton
Water Master Plan Update



Proposed HPR Location

Hydrant

Pipeline

N

0 100 200

Scale in Feet

CITY OF STOCKTON

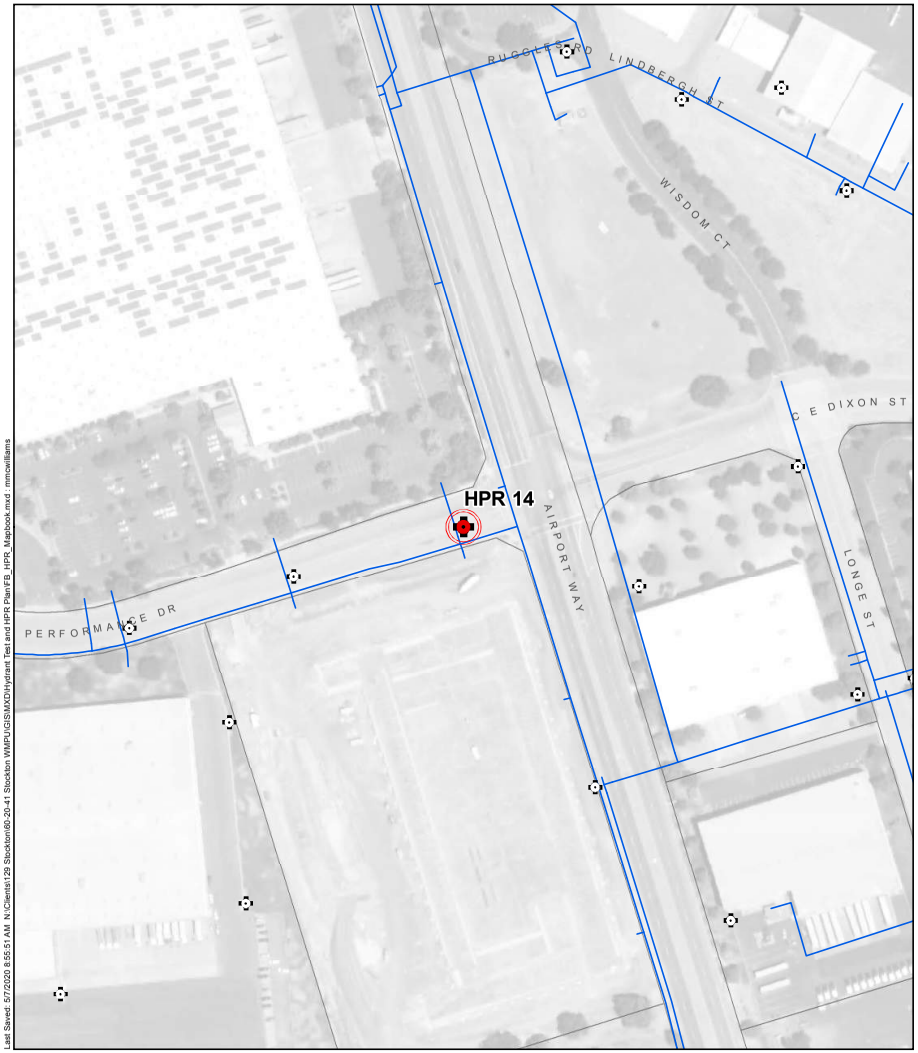
WEST YOST ASSOCIATES

Figure B-11

HPR 11

City of Stockton
Water Master Plan Update

EXHIBIT 1



Proposed HPR Location
Hydrant
Pipeline

N
0 100 200
Scale in Feet

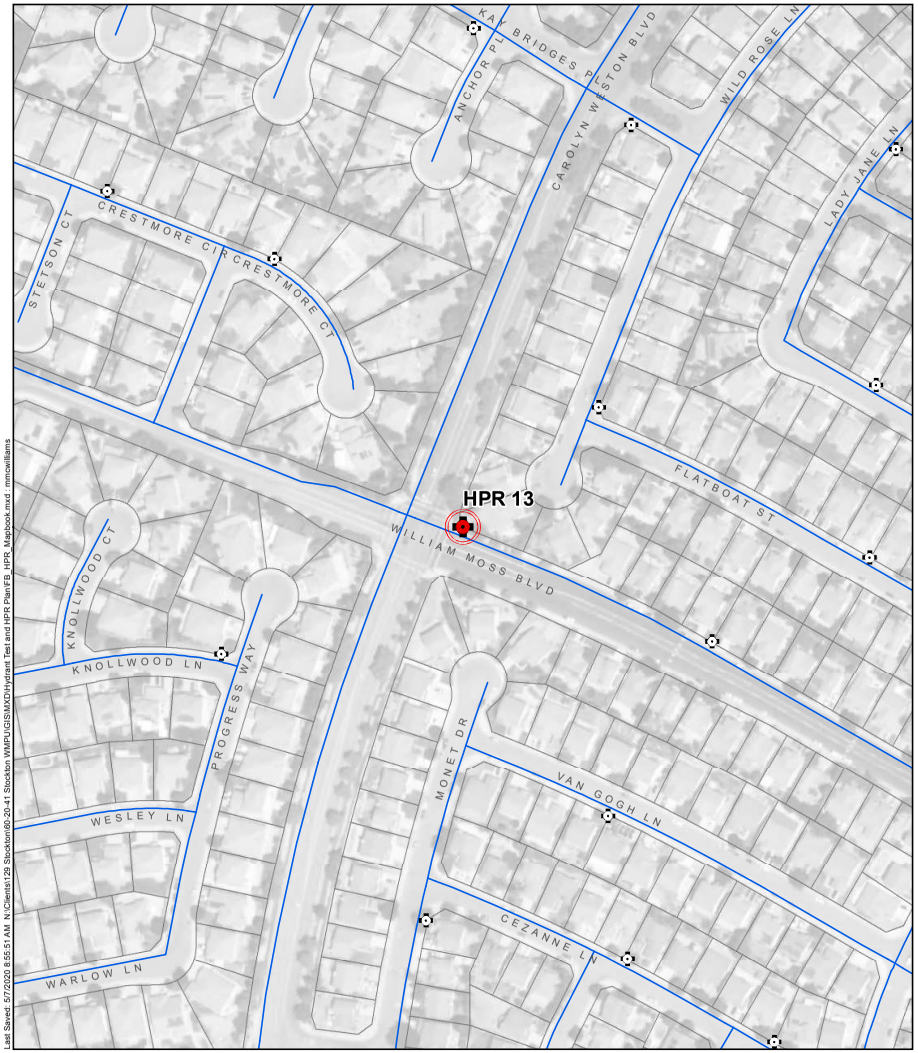
CITY OF STOCKTON

WEST YOST ASSOCIATES

Figure B-14

HPR 14

City of Stockton
Water Master Plan Update



Proposed HPR Location
Hydrant
Pipeline

N
0 100 200
Scale in Feet

CITY OF STOCKTON

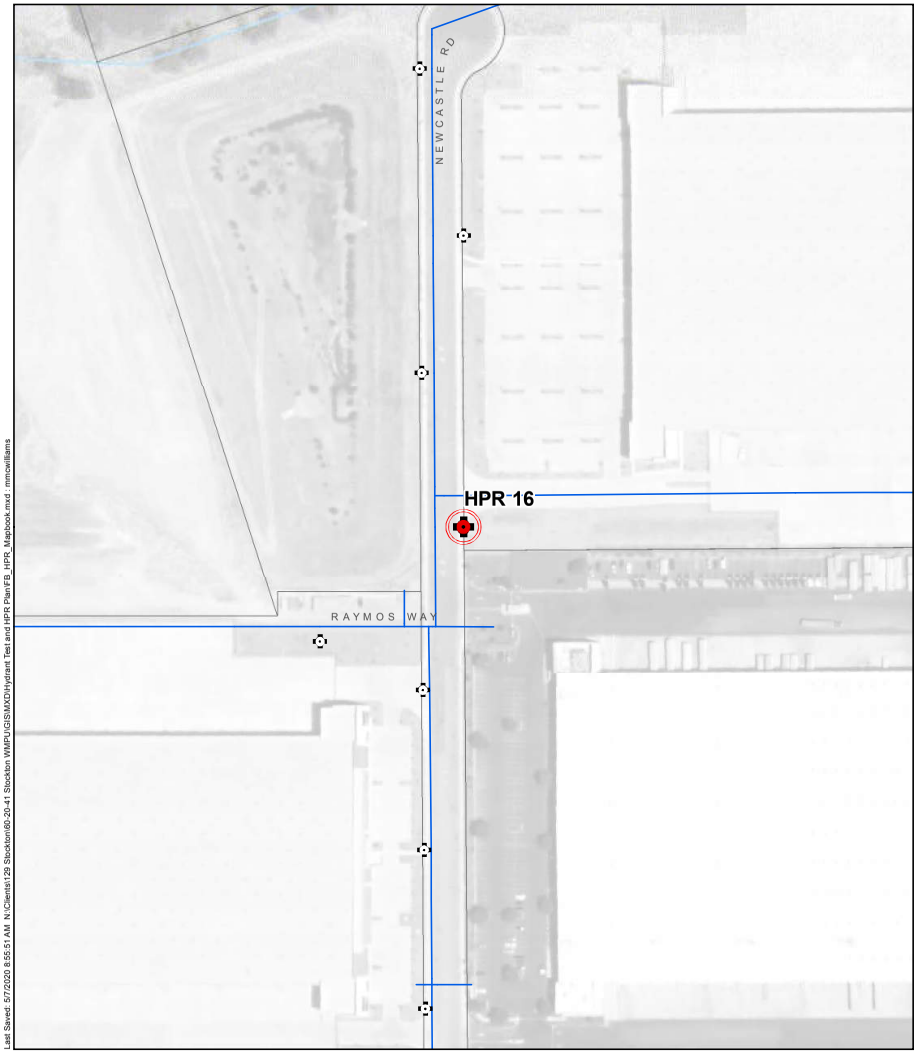
WEST YOST ASSOCIATES

Figure B-13

HPR 13

City of Stockton
Water Master Plan Update

EXHIBIT 1



Last Saved: 5/7/2020 8:55:51 AM N:\Clients\129 Stockton\60-20-41 Stockton WMP\UGIS\MXD\Hydrant Test and HPR Plan\FB_HPR_Mapbook.mxd : mmcwilliams

Proposed HPR Location

Hydrant

Pipeline

N

0 100 200

Scale in Feet

CITY OF STOCKTON

WEST YOST ASSOCIATES

Figure B-16

HPR 16

City of Stockton
Water Master Plan Update

Last Saved: 5/7/2020 8:55:51 AM N:\Clients\129 Stockton\60-20-41 Stockton WMP\UGIS\MXD\Hydrant Test and HPR Plan\FB_HPR_Mapbook.mxd : mmcwilliams

Proposed HPR Location

Hydrant

Pipeline

N

0 100 200

Scale in Feet

CITY OF STOCKTON

WEST YOST ASSOCIATES

Figure B-15

HPR 15

City of Stockton
Water Master Plan Update

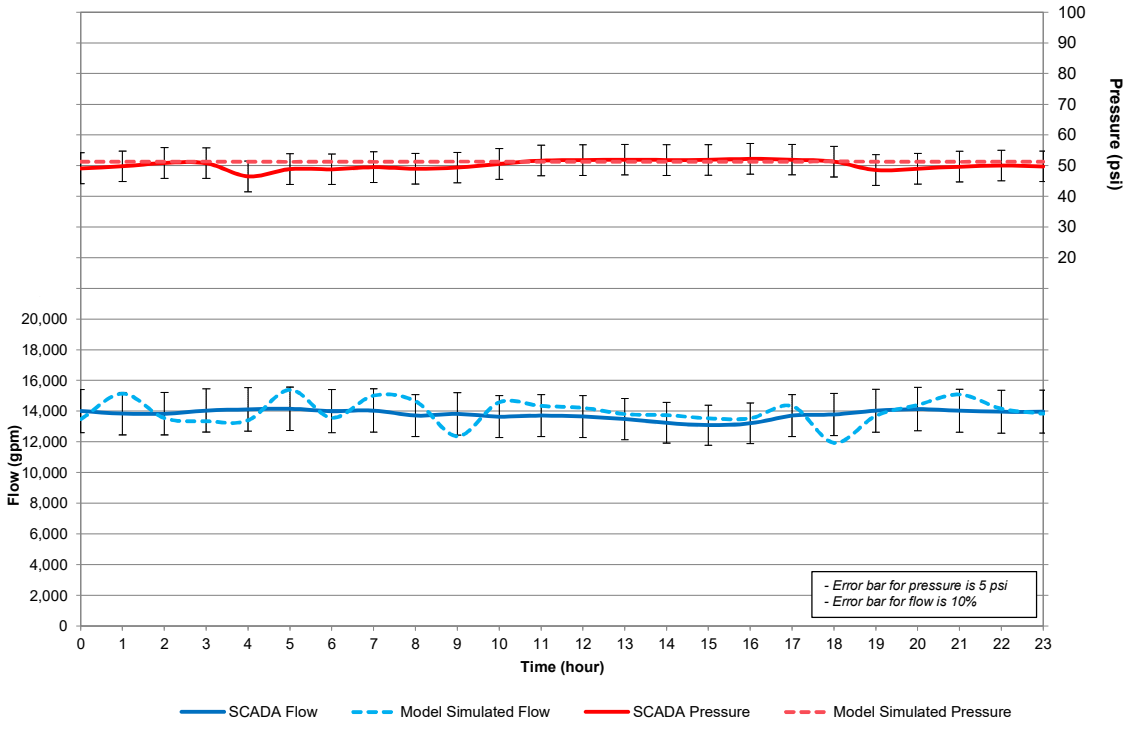
EXHIBIT 1

Appendix B

Hydraulic Model Calibration Results – North Stockton

(THIS PAGE LEFT BLANK INTENTIONALLY)

Figure B-1. Delta Water Treatment Plant - Flow and Pressure Comparison
June 23, 2020

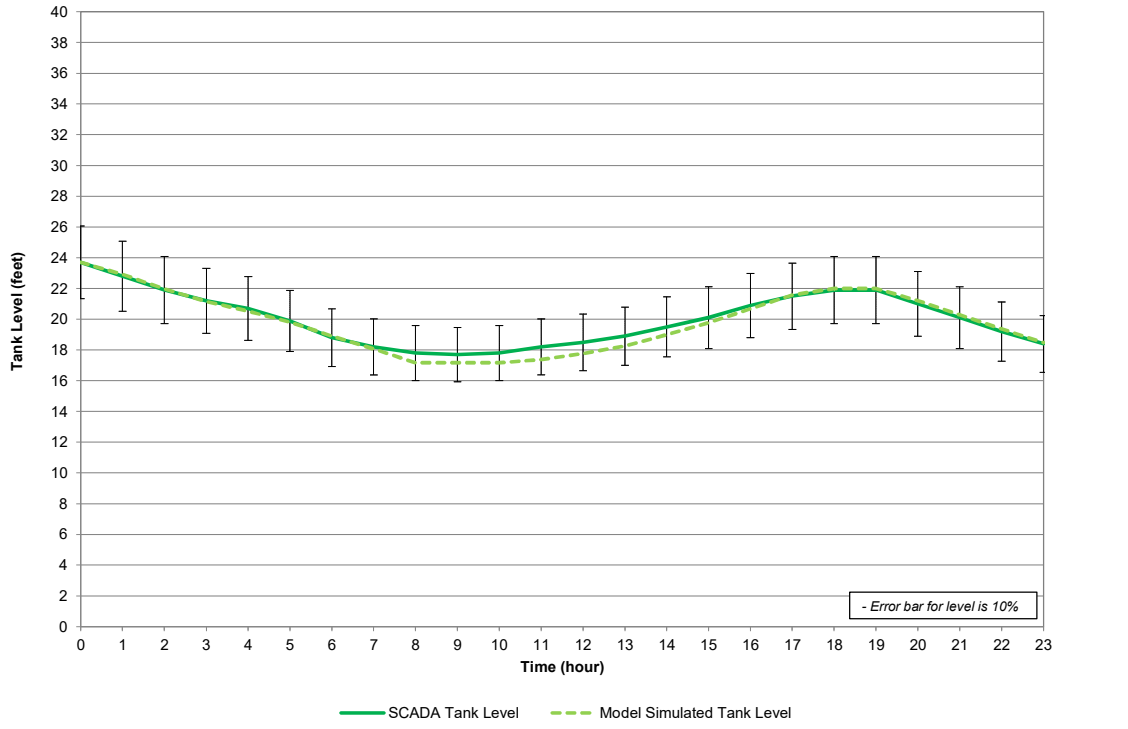


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\Facilities_Caliration

Figure B-2. Northwest Reservoir - Tank Level Comparison
June 23, 2020

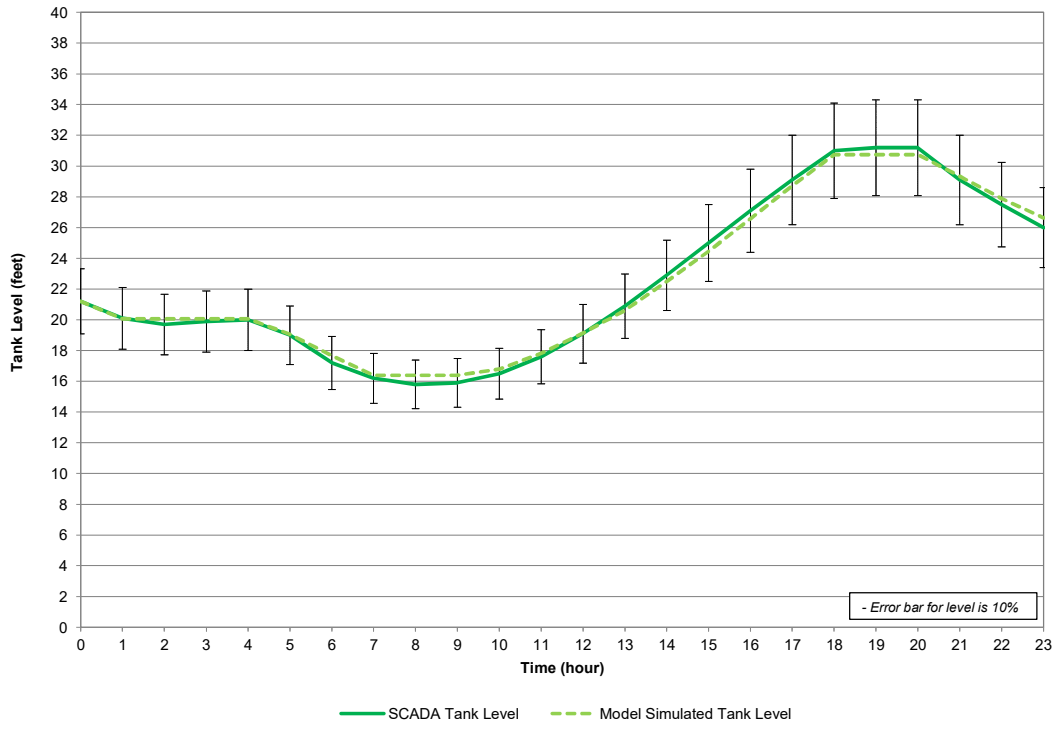


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\Facilities_Caliration

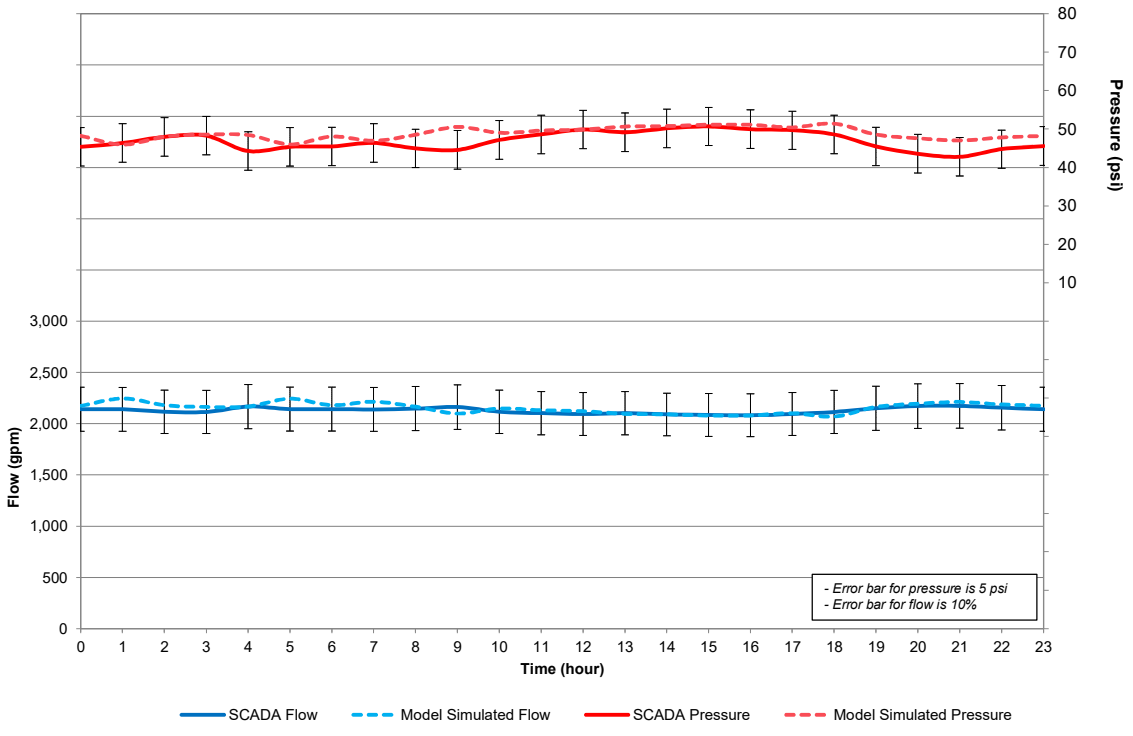
Figure B-3. 14-Mile Slough Reservoir - Tank Level Comparison
June 23, 2020



City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\Facilities_Caliration

Figure B-4. Well 3R - Flow and Pressure Comparison
June 23, 2020



City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\Facilities_Caliration

Figure B-5. Well 29 - Flow and Pressure Comparison
June 23, 2020

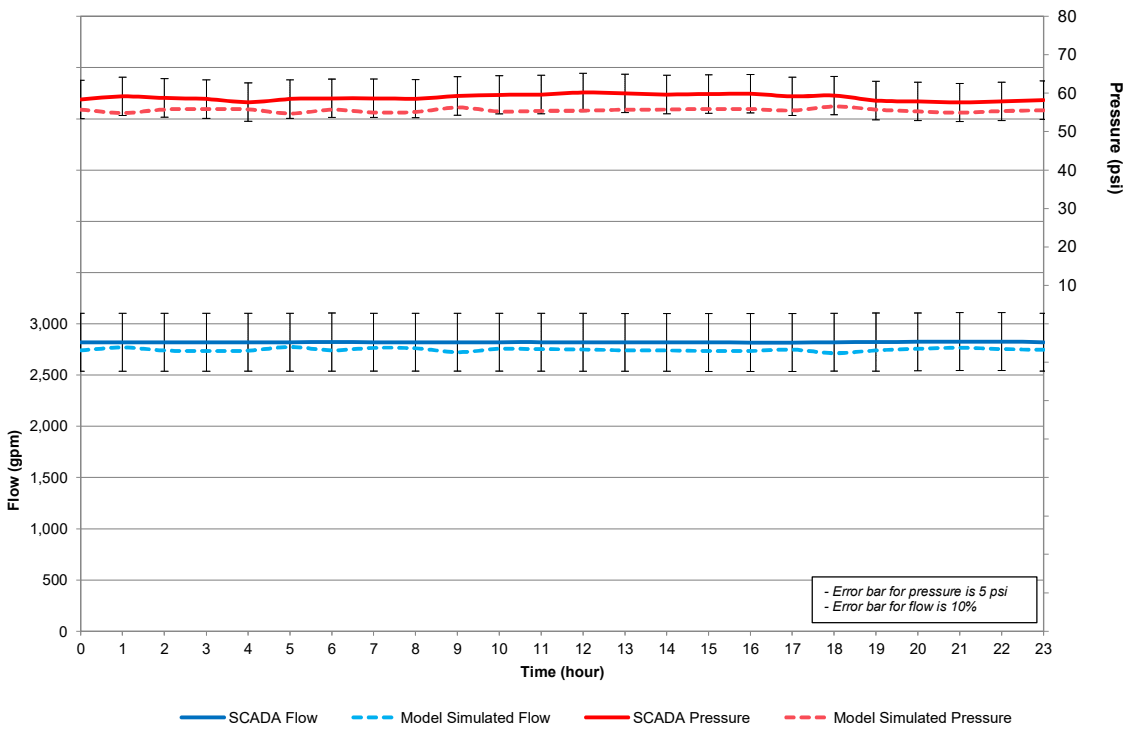


Figure B-6. Well 30 - Flow and Pressure Comparison
June 23, 2020

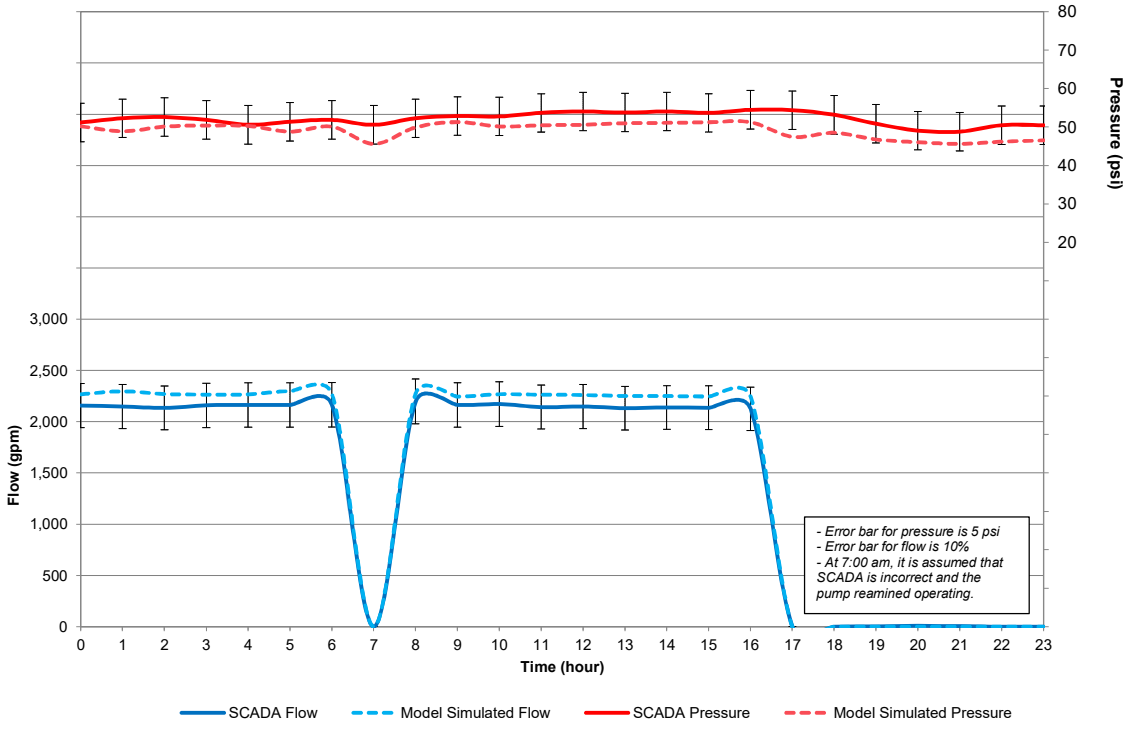


Figure B-7. Well 31 - Flow and Pressure Comparison
June 23, 2020

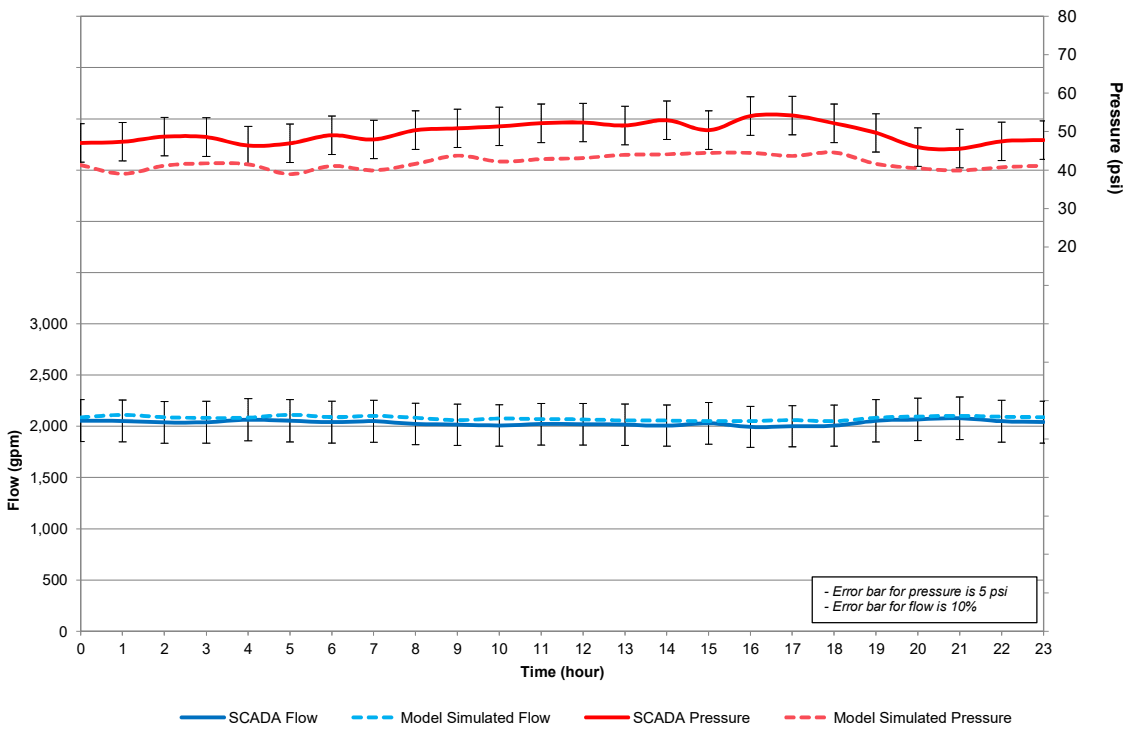


Figure B-8. Well 32 - Flow and Pressure Comparison
June 23, 2020

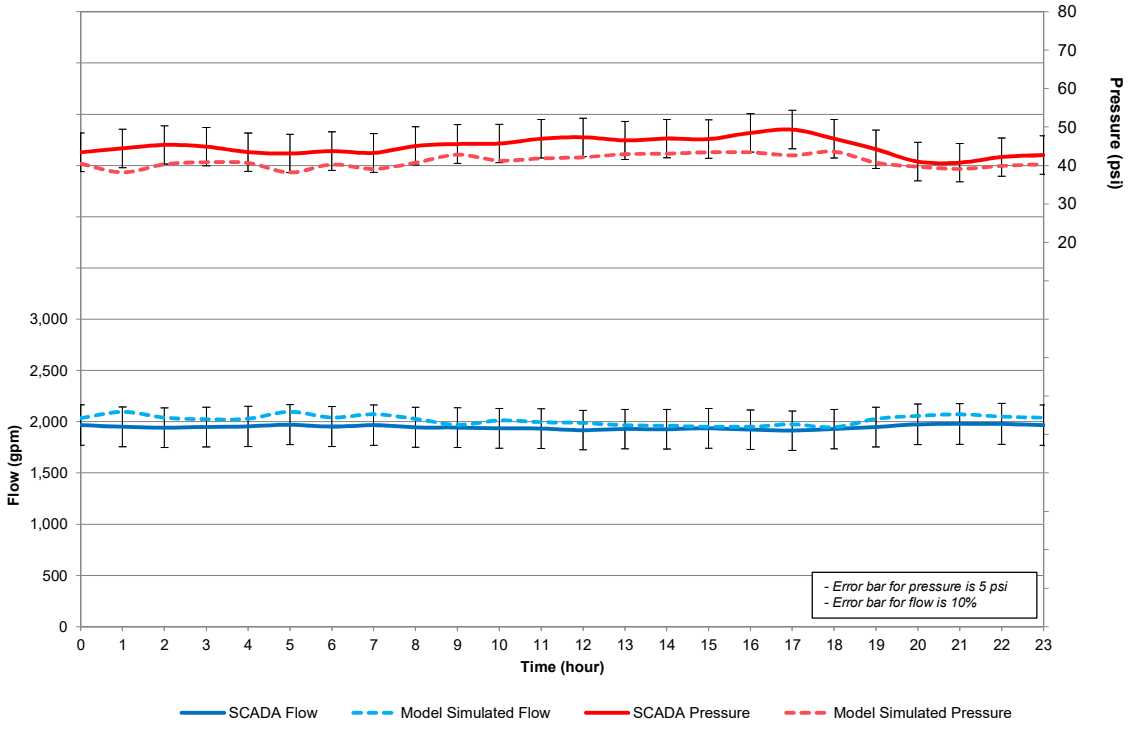
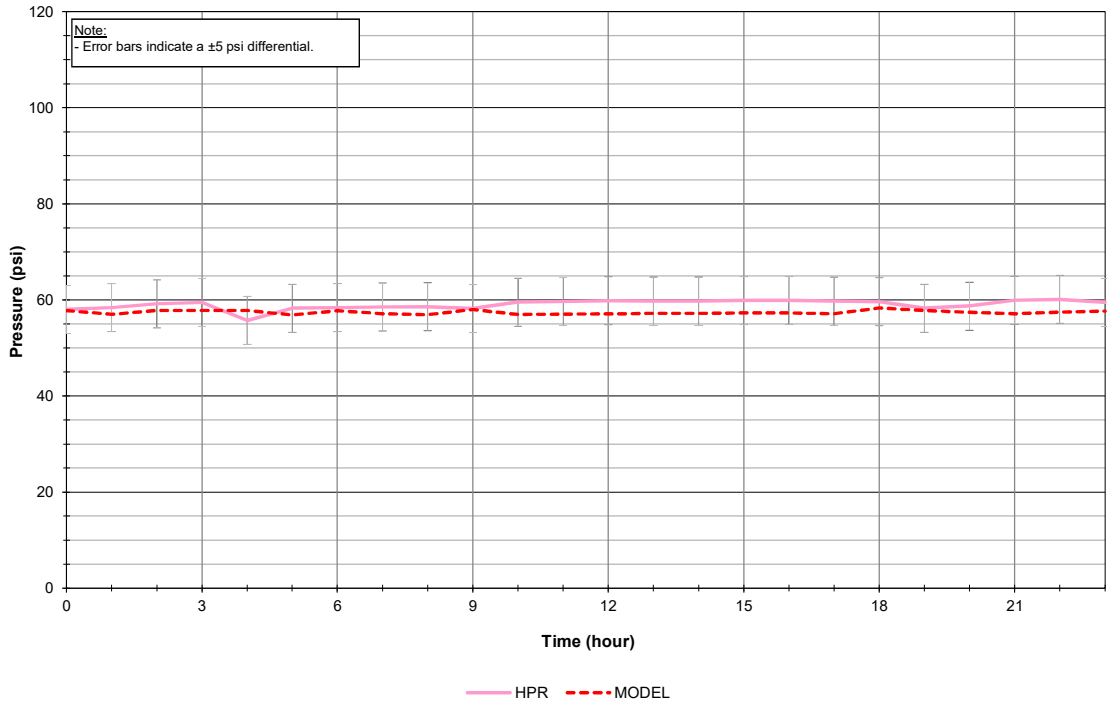


Figure B-9: HPR 1, Northeast corner of intersection of Scott Creek Drive and Regatta Lane
June 23, 2020

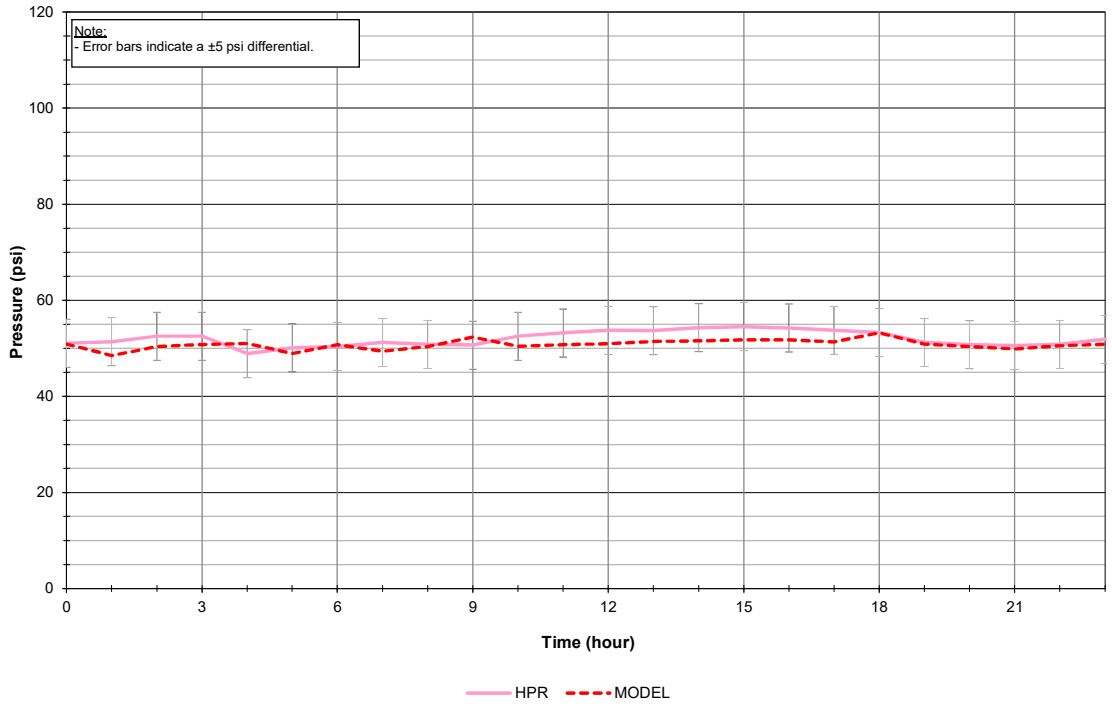


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure B-10: HPR 2, Intersection of Stanfield Drive and Colington Place
June 23, 2020

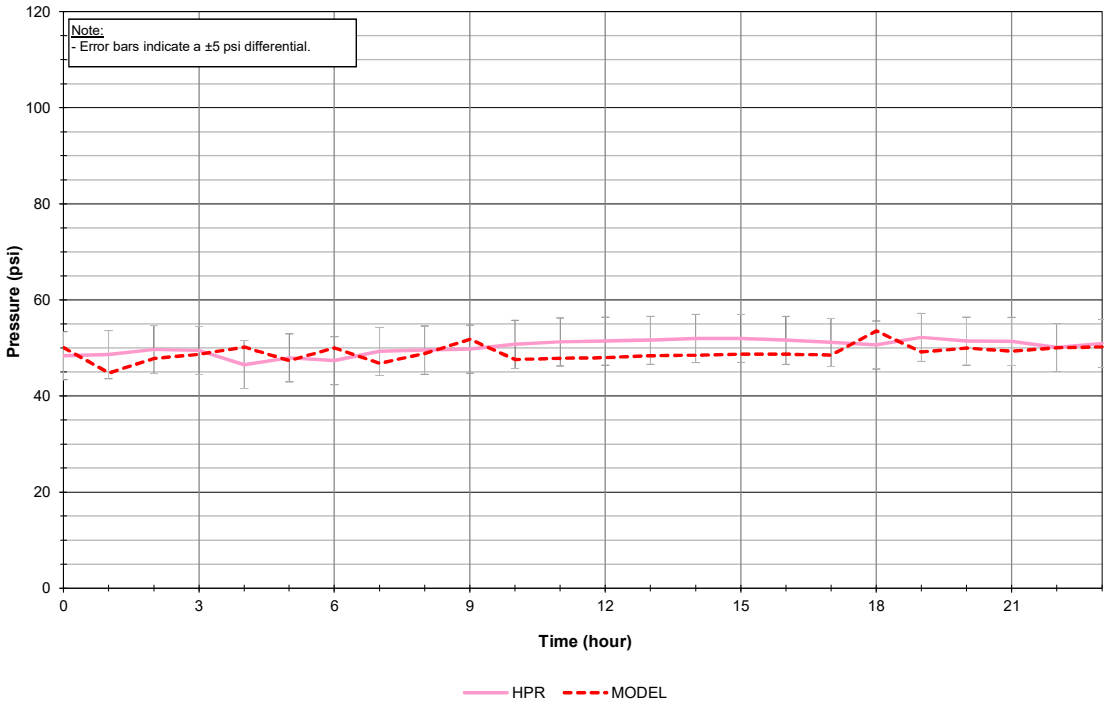


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure B-11: HPR 3, Intersection of Benjamin Holt Drive and Cumberland Place
June 23, 2020

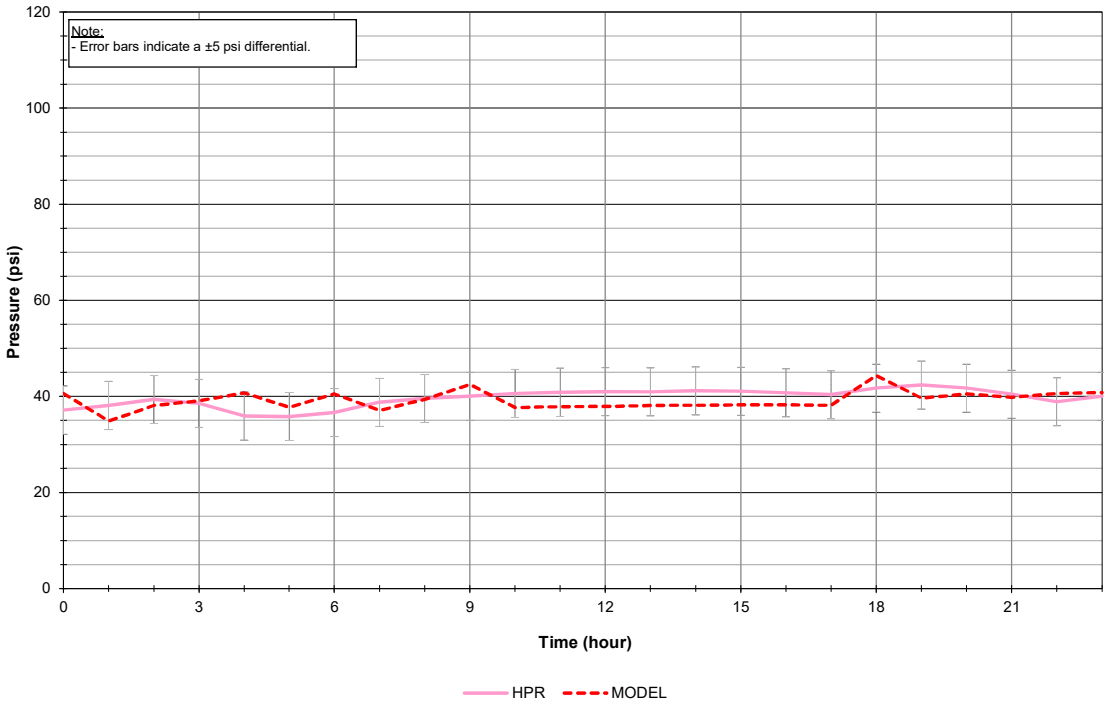


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure B-12: HPR 4, Southeast of St. Andrews Drive
June 23, 2020

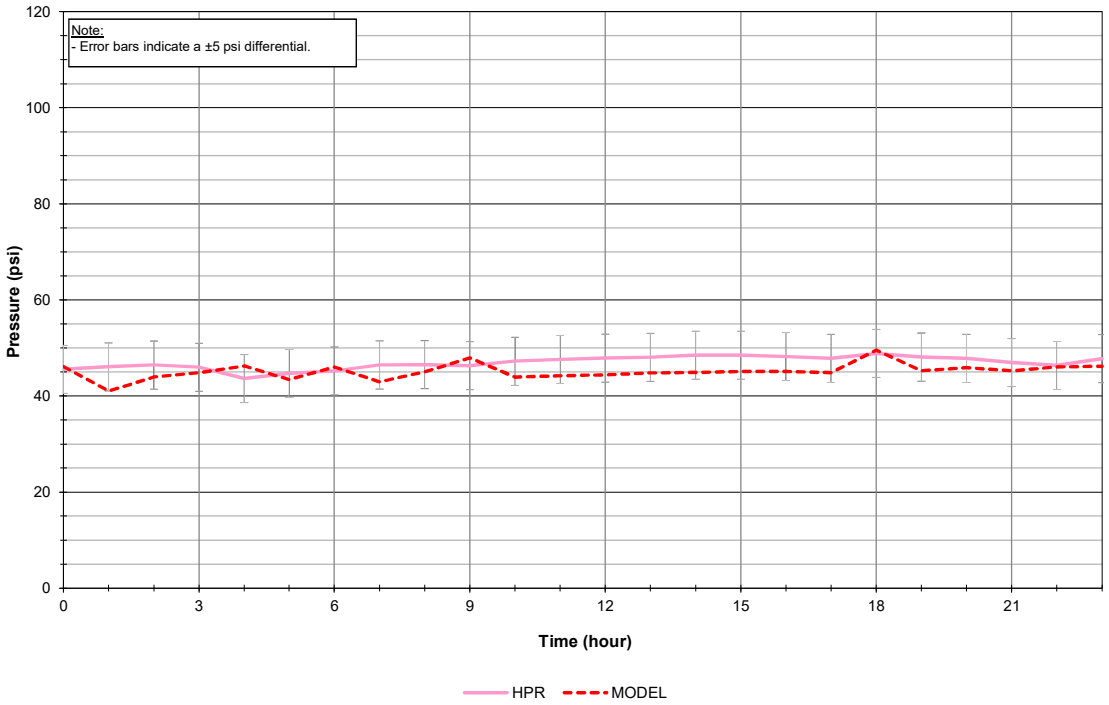


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure B-13: HPR 5, Intersection of Pershing Avenue and Robinhood Drive
June 23, 2020

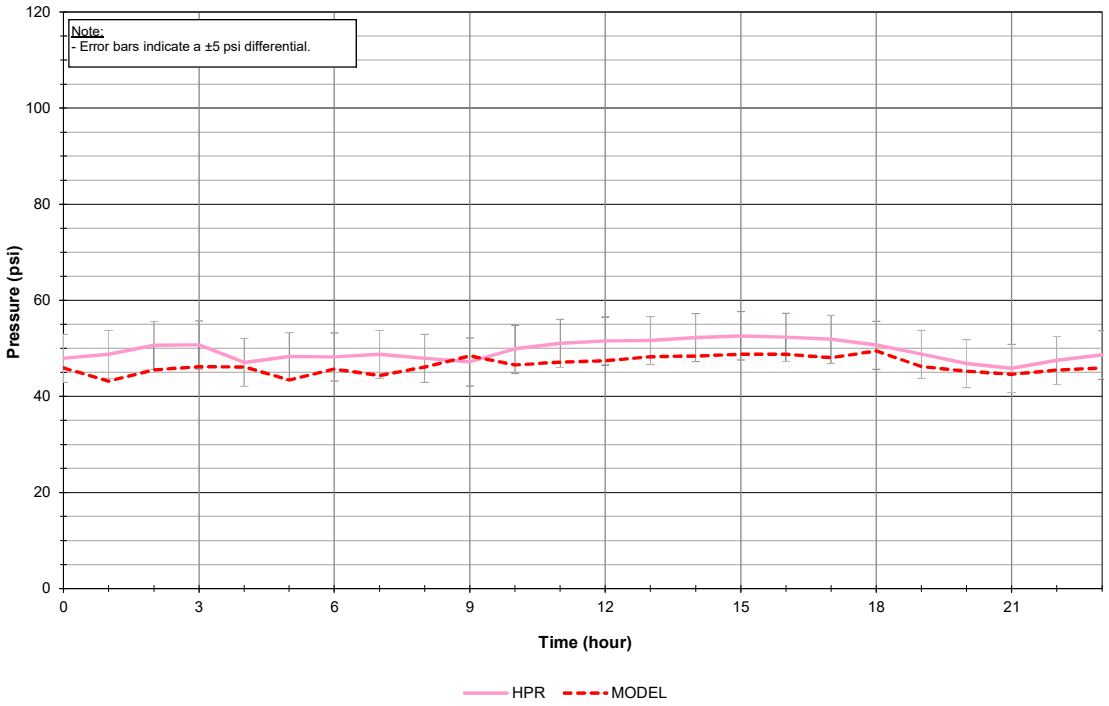


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure B-14: HPR 6, Northeast corner of intersection of Etna Street and San Carlos Way
June 23, 2020

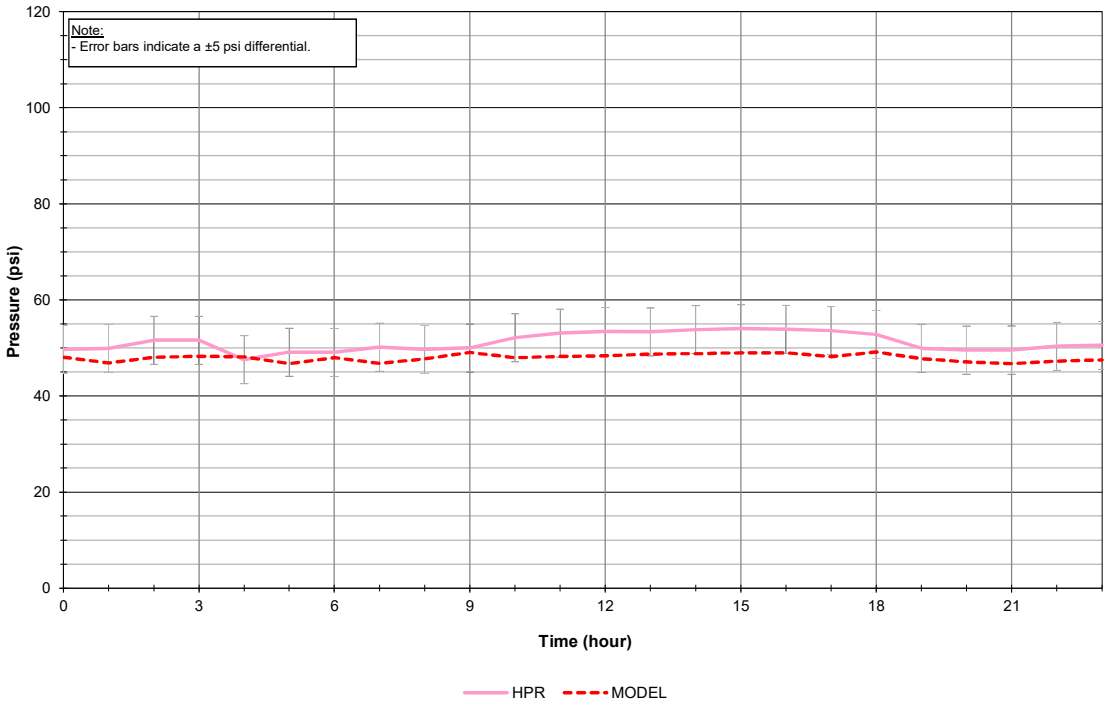


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure B-15: HPR 7, Intersection of Villa Point Drive and Marlette Road
June 23, 2020

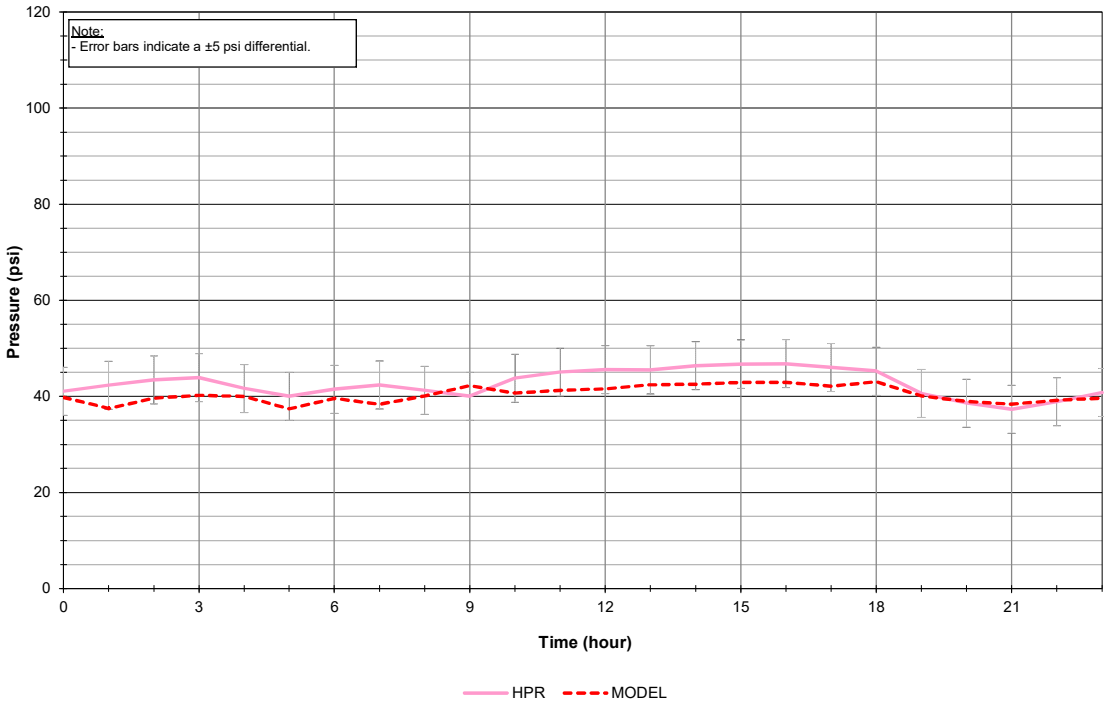


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure B-16: HPR 8, Intersection of Genova Lane and Perino Drive
June 23, 2020

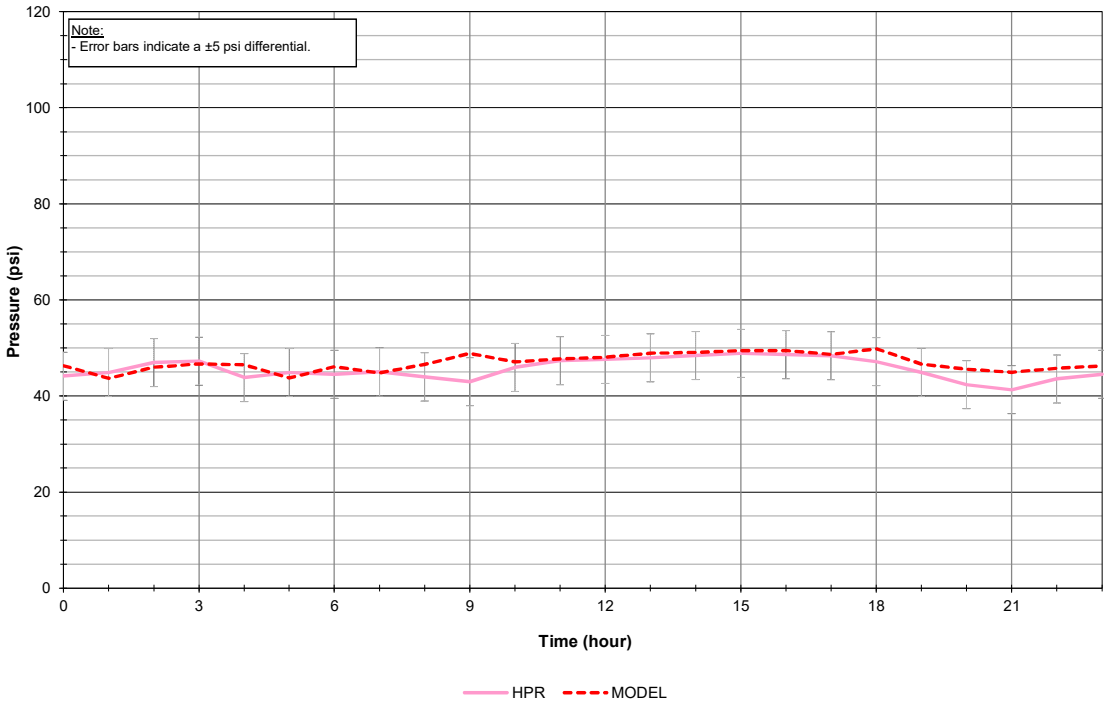


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure B-17: HPR 9, Hammer Lane, Between Railroad and Girardi Way
June 23, 2020

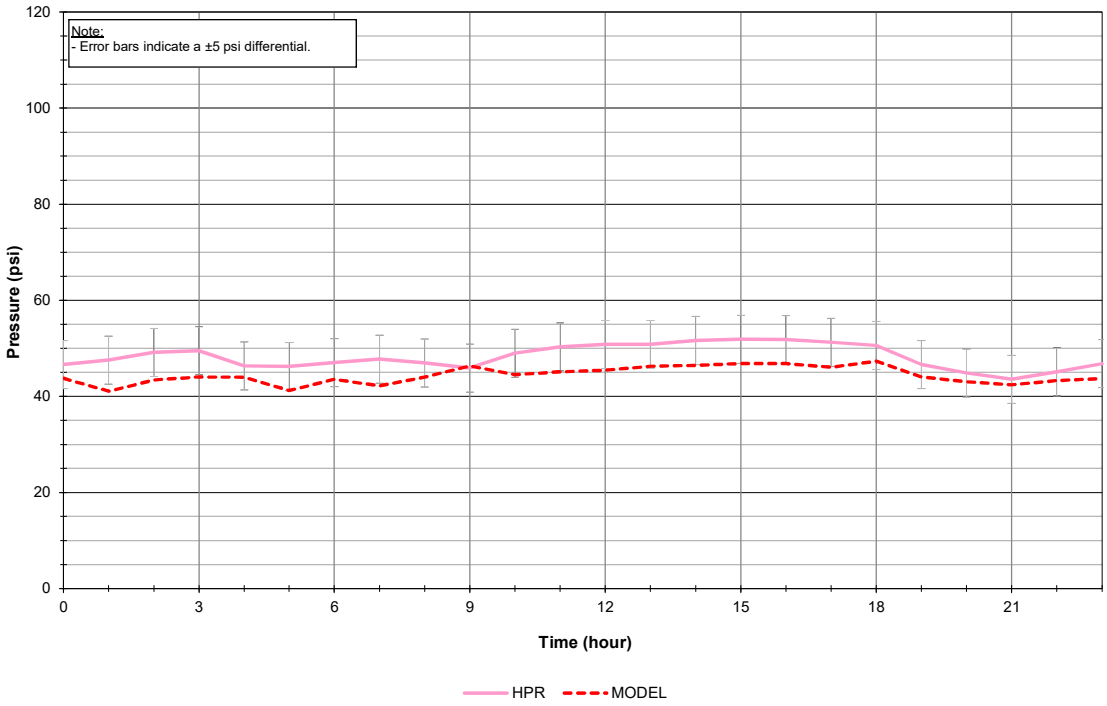


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure B-18: HPR 10, March Lane, Between West Lane and Weber Ranch Park
June 23, 2020

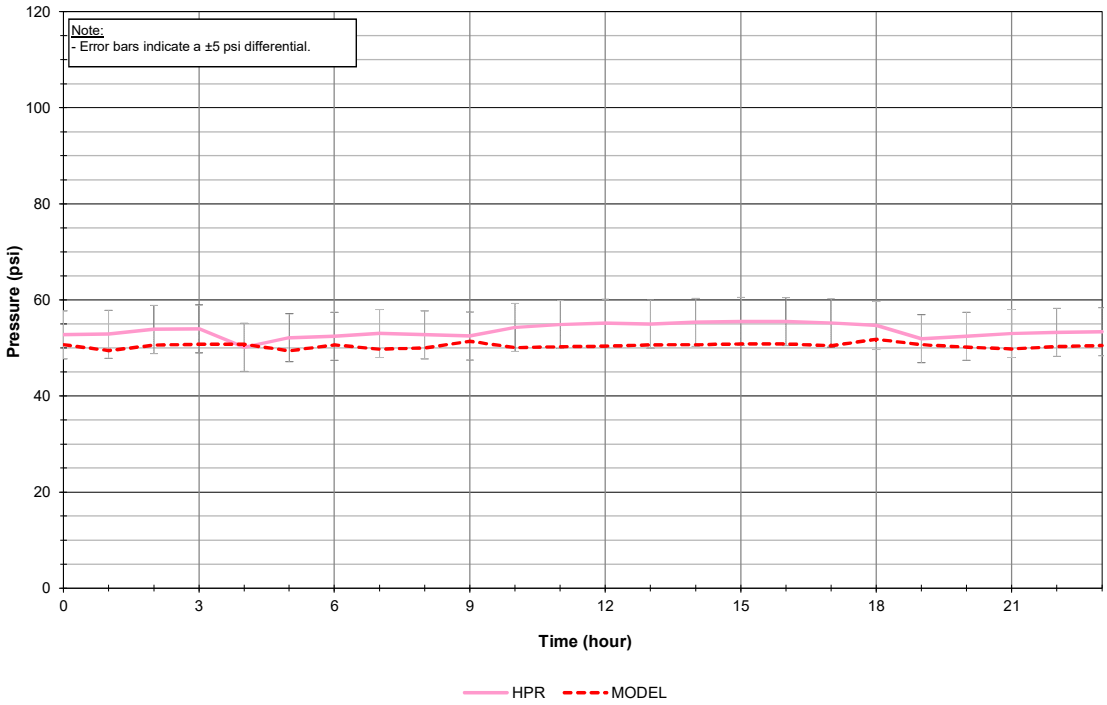


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure B-19: HPR 11, Northwest corner of intersection of AG Spanos Boulevard and Thornton Boulevard
June 23, 2020

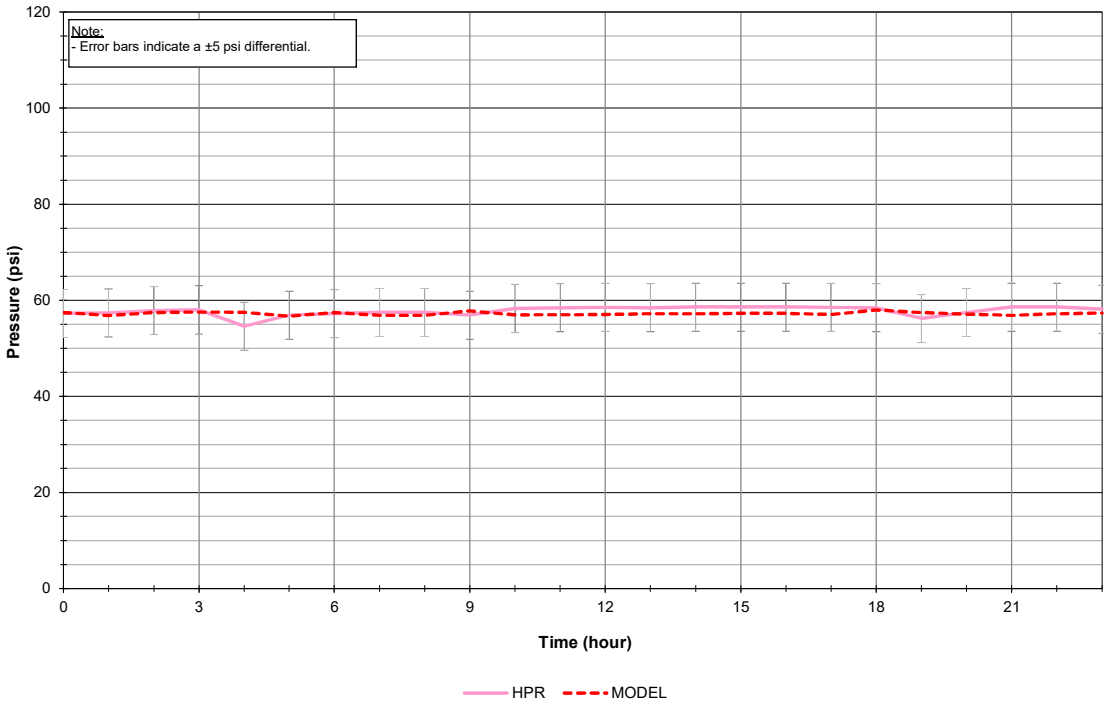


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n\c\129\60-20-41\e\6\3\HPR_Caliration

Figure B-20: HPR 12, South of intersection of Eight Mile Road and Trinity Park
June 23, 2020



WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n\c\129\60-20-41\e\6\3\HPR_Caliration

Appendix C

Hydraulic Model Calibration Results – South Stockton

(THIS PAGE LEFT BLANK INTENTIONALLY)

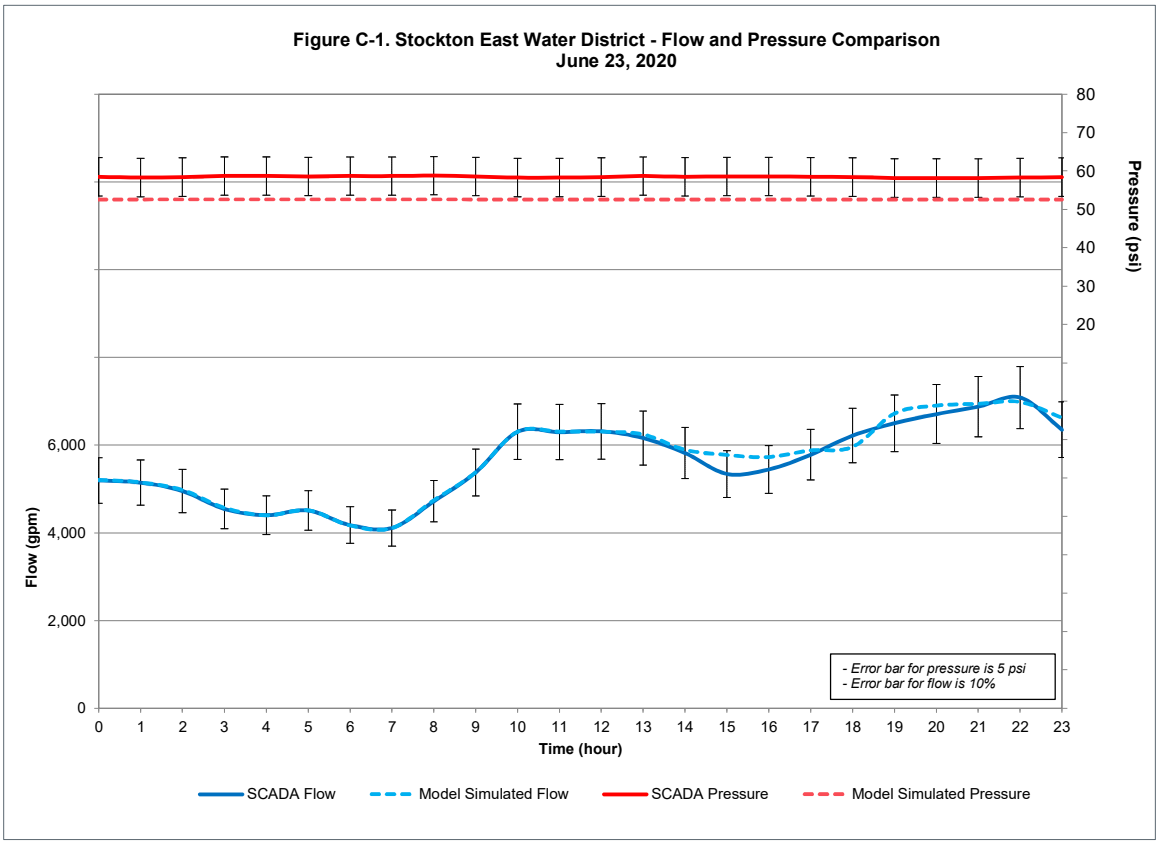


Figure C-1. Stockton East Water District - Flow and Pressure Comparison
June 23, 2020
Flow (gpm)
Pressure (psi)
Time (hour)
- Error bar for pressure is 5 psi
- Error bar for flow is 10%
SCADA Flow
Model Simulated Flow
SCADA Pressure
Model Simulated Pressure

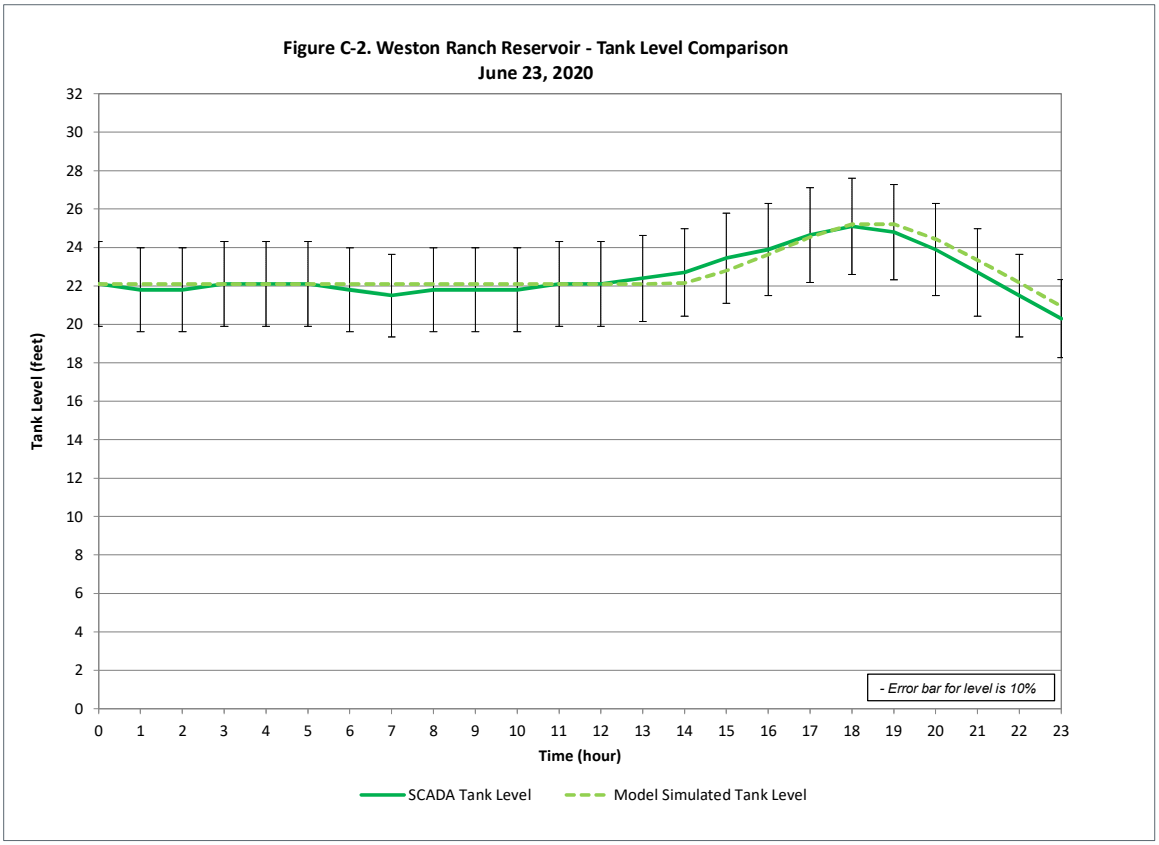
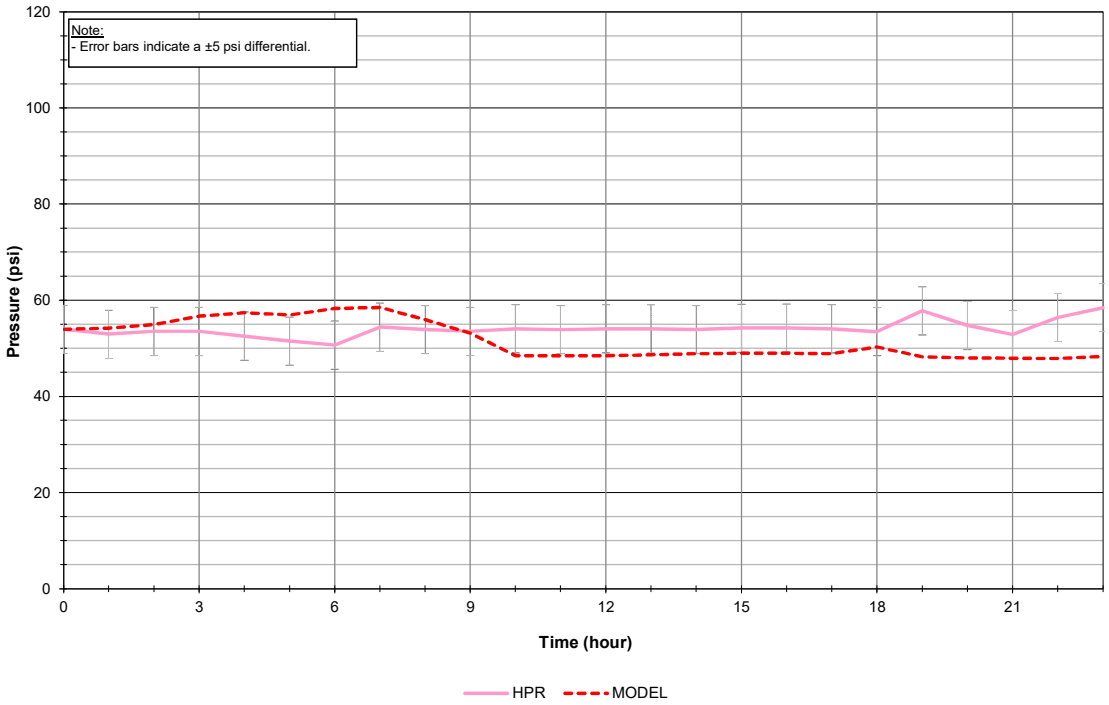


Figure C-2. Weston Ranch Reservoir - Tank Level Comparison
June 23, 2020
Tank Level (feet)
Time (hour)
- Error bar for level is 10%
SCADA Tank Level
Model Simulated Tank Level

Figure C-3: HPR 13, Intersection of William Moss Boulevard and Carolyn Weston Boulevard
June 23, 2020

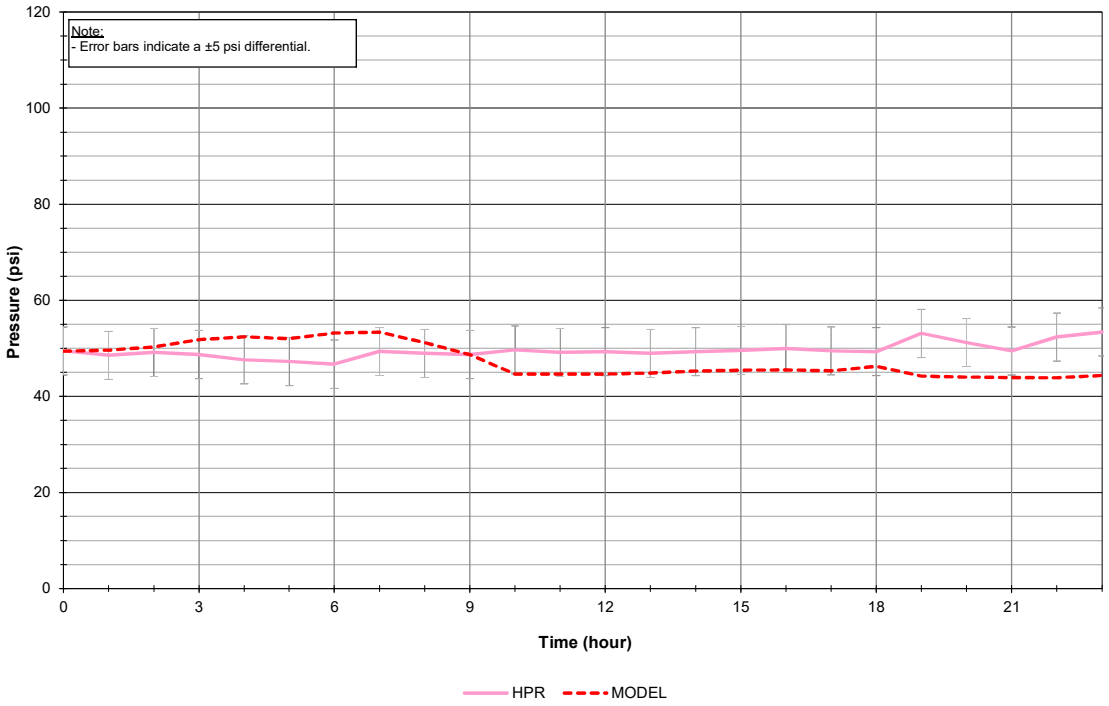


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure C-4: HPR 14, Intersection of Airport Way and Performance Drive
June 23, 2020

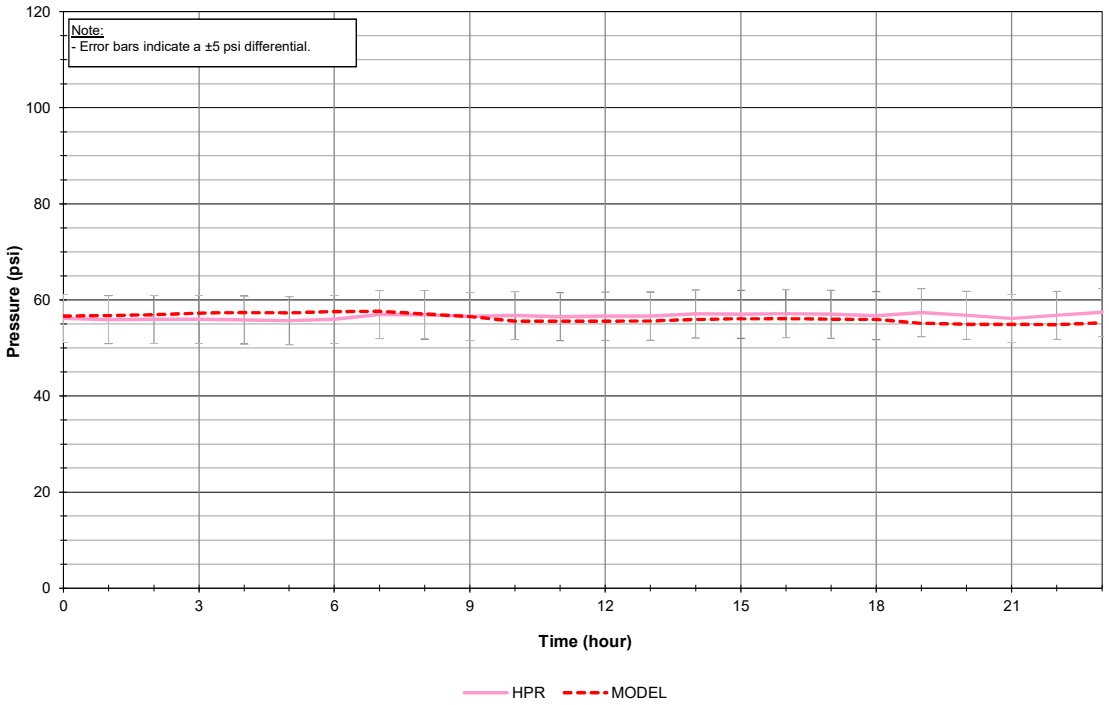


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure C-5: HPR 15, Pock Lane, north of Togninali Lane
June 23, 2020

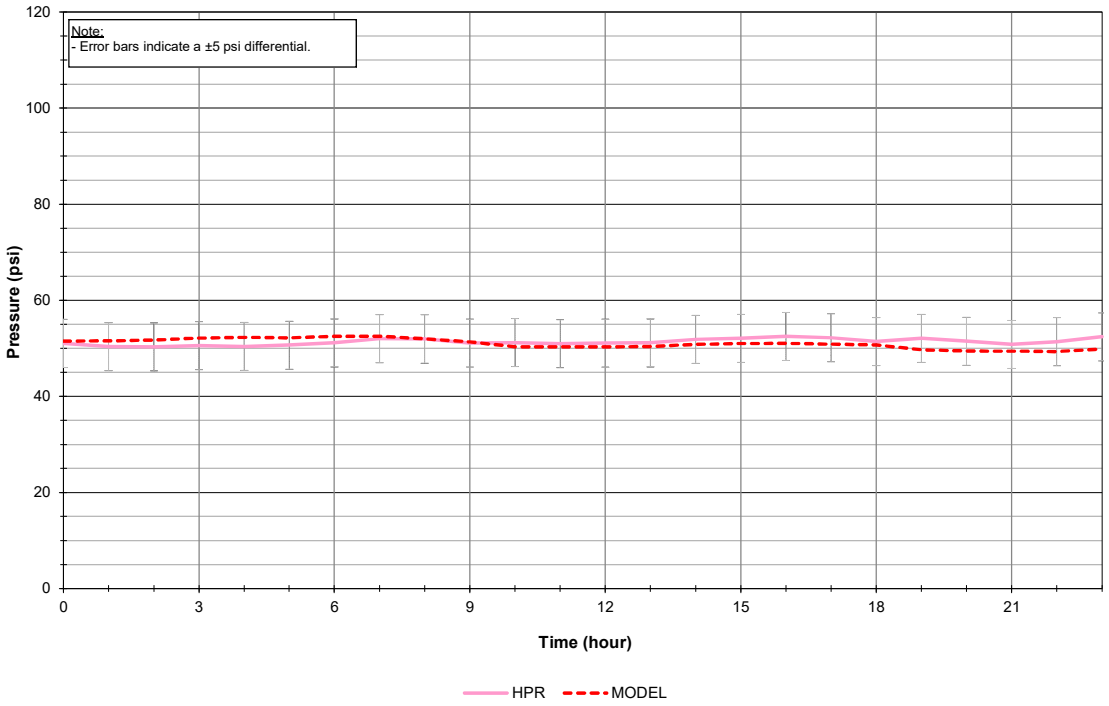


WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

Figure C-6: HPR 16, North of intersection of Raymos Way and New Castle Road
June 23, 2020



WEST YOST

City of Stockton
Water Master Plan Update
Last Revised: 08-11-20

n:\c\129\60-20-41\e\6\3\HPR_Caliration

(THIS PAGE LEFT BLANK INTENTIONALLY)

Appendix D

Cost Estimating Assumptions

(THIS PAGE LEFT BLANK INTENTIONALLY)

This appendix details West Yost's assumptions for estimating probable construction costs for the recommended water system facilities. Construction costs were developed based on a combination of data supplied by manufacturers, published industry standard cost data and curves, construction costs for similar facilities built by COSMUD and/or other public agencies, and construction costs previously estimated by West Yost for similar facilities with similar construction cost indexes.

The costs presented in this appendix are for construction only and do not include estimating or construction uncertainties (e.g., variations in final quantities) or cost estimates for engineering, legal services, environmental review, inspections, and/or contract administration. Some of these items are referred to as contingency costs and are addressed in the last section of this appendix. It should also be noted that the construction costs presented in this appendix represent capital infrastructure costs and do not include costs for purchase of additional surface water supplies, supply reliability, or operation and maintenance.

All estimated construction costs have been adjusted to reflect August 2020 dollars for San Francisco, California. These costs should be used for conceptual cost estimates only and should be updated regularly. Construction costs presented in this appendix are not intended to represent the lowest prices in the industry for each type of construction; rather they are representative of average or typical construction costs. These planning-level construction cost estimates have been prepared for guidance in evaluating various facility improvement options and are intended only for budgetary purposes within the context of this master planning effort.

The following sections of this appendix describe the assumptions used to estimate the probable construction costs for the planning and design of recommended water system facilities for the COSMUD water system:

- Water System Construction Costs
- Contingency Costs

D.1 WATER SYSTEM CONSTRUCTION COSTS

The following sections present the construction cost estimates used to project probable construction costs for recommended water system facilities in the COSMUD water system and are categorized by type of improvement, including the following:

- Treated Water Storage Reservoirs
- Municipal Groundwater Production Wells
- Reservoir Pump Stations
- Potable Water Pipelines
- Backup Power Generators

D.1.1 Treated Water Storage Reservoirs

Table 1 summarizes the estimated construction costs for treated water storage reservoirs between the size range of 1.0 to 6.0 MG. These costs generally include the installation of the storage reservoirs, site piping, earthwork, paving, instrumentation, and related sitework. These costs are representative of construction under normal excavation and foundation conditions and would be significantly higher for special or difficult foundation requirements. Because the existing COSMUD storage reservoirs are all steel aboveground reservoirs, West Yost estimated reservoir costs assuming future reservoirs will also be steel.

Table 1. Construction Costs for Treated Water Storage Reservoirs[a]

Capacity, MG	Estimated Construction Cost, million dollars[b] Aboveground Steel
1.0	2.4
2.0	3.3
3.0	4.2
4.0	5.1
5.0	6.0
6.0	6.9

(a) Based on August 2020 CCI for San Francisco (12,920.6).
(b) Estimated construction costs do not reflect an adjustment to account for the current economic bidding climate.

D.1.2 Municipal Groundwater Production Wells

Well construction consists of pilot hole drilling, water quality/soil sampling, pilot hole reaming, well construction, well development and providing the necessary housing, pump, motor, automatic control equipment, discharge piping, SCADA, and disinfection equipment. Costs also assume a backup power generator will be installed.

Construction costs for new groundwater wells are estimated to be approximately $3,200,000 per well (assuming a well capacity between 1,000 – 2,000 gpm). These estimates are based on recent bids for similarly sized wells and representative of construction under normal drilling conditions. Costs would be significantly higher for special or difficult locations, or if specialized wellhead treatment is required.

D.1.3 Wellhead Treatment

GAC wellhead treatment conceptual costs were developed based on the range of concentrations observed in the COSMUD municipal wells that are temporarily out of service for 1,2,3-TCP and PFOA/PFAS. Costs assume that there is sufficient space and electrical capacity on-site to accommodate the proposed treatment system, three to four 60,000 to 80,000-pound vessels, bitumen coal, for a maximum flow rate of 1,300 gpm. Costs include installation of equipment, onsite electrical (assuming electrical service does not need to be upgraded), and required permitting. Construction costs for the above described systems

are estimated to be approximately $1,300,000 per system, and are based on recent discussions with GAC treatment system vendors.

D.1.4 Reservoir Pump Stations

Pump stations will be required at ground-level and below-grade reservoirs to lift water to the hydraulic grade of the COSMUD water distribution system. Estimated construction costs for reservoir pump stations, as shown in Table 2, are based on enclosed stations with architectural and landscaping treatment suitable for residential areas. Pump station costs can vary considerably, depending on architectural design, pumping head, and pumping capacity. Therefore, these costs presented below are representative of construction under common or normal conditions and would be significantly higher for special or difficult conditions.

Pump station cost estimates include the installation of the pumps, site piping, earthwork, paving, a chemical feed system (hypochlorite), on-site backup/standby power generator, SCADA, and related sitework.

Table 2. Construction Costs for Reservoir Pump Stations[a]

Firm Capacity, mgd[b]	Estimated Construction Cost, million dollars[c]
0.5	1.5
1	1.5
2	1.7
3	1.9
5	2.3
10	3.2
15	4.2

(a) Based on August 2020 CCI for San Francisco (12,920.6).
(b) Equal to the total pumping capacity with the largest pump out of service or on standby.
(c) Estimated construction costs do not reflect an adjustment to account for the current economic bidding climate.

D.1.5 Potable Water Pipelines

Unit construction costs for potable water pipelines 8 through 36 inches in diameter are provided in Table 3. These unit costs are categorized by typical pipeline construction either in developed (e.g., in urban or suburban roads) or undeveloped (e.g., across open fields or in rural roads) areas and are representative of pipeline construction under common or normal conditions. Special or difficult conditions would increase costs significantly.

The unit construction costs presented below generally include pipeline materials, trenching, placing and jointing pipe, valves, fittings, hydrants, service connections, placing imported pipe bedding, native backfill material, and partial asphalt pavement replacement, if required. However, the costs presented in Table 3 do not include jacking and boring pipe or constructing boring and receiving pits. Jack and bore costs are shown in Table 4 and should be added where required.

Table 3. Unit Construction Costs for Pipelines[a]

Pipeline Diameter, inches	Unit Construction Cost, dollars/linear foot[b]	
	Developed Areas	Undeveloped Areas
8	135	90
10	165	110
12	185	130
14	200	145
16	220	165
18	240	185
20	265	190
24	290	225
30	365	315
36	470	420

(a) Based on August 2020 CCI for San Francisco (12,920.6).
(b) Estimated construction costs do not reflect an adjustment to account for the current economic bidding climate.

Table 4. Unit Construction Costs for Jack and Bore[a]

Pipeline Size	Unit Construction Cost, dollars/linear foot[b]
12-inch pipe (24-inch casing)	935
16-inch pipe (30-inch casing)	1,170
18-inch pipe (32-inch casing)	1,250
24-inch pipe (36-inch casing)	1,405

(a) Based on August 2020 CCI for San Francisco (12,920.6).
(b) Estimated construction costs do not reflect an adjustment to account for the current economic bidding climate.

D.1.6 Backup Power Generators

On-site backup power generators are recommended so pumps can continue delivering water to the distribution system in the event of a power outage. These generators should be sized to meet the power demands of the pumps. The construction cost for a new on-site backup power generator is estimated to be approximately $200,000. This cost is representative of construction under normal conditions and would be significantly higher for special or difficult conditions.

D.2 CONTINGENCY COSTS

Contingency costs must be reviewed on a case-by-case basis, because they will vary considerably with each construction project. However, to assist COSMUD staff with budgeting for these recommended water system facility improvements, standard contingencies have been added to the planning budget as percentages of the estimated base construction cost, divided into two categories: Construction Contingency Costs and Other Project Costs.

- **Construction Contingency Costs**: 35 percent
  The construction costs presented above are representative of the construction of water system facilities under normal construction conditions and schedules; consequently, it is appropriate to allow for estimating and construction uncertainties unavoidably associated with the conceptual planning of projects. Factors such as unexpected construction conditions, the need for unforeseen mechanical items, and variations in final quantities are only a few of the items that can increase project costs. An allowance of 35 percent of the base construction cost will be included to cover such project related construction contingencies.
- **Other Project Costs:** 45 percent
  Other project fees have been divided into three (3) subcategories, totaling 45 percent (15 percent engineering, 15 percent construction management, and 15 percent program implementation)
  - Engineering costs associated with new facilities include preliminary investigations and reports, right-of-way acquisition, foundation explorations, preparation of drawings and specifications during construction, surveying and staking, sampling of testing material, and start-up services. For this study, engineering costs are assumed to be 15 percent of the base construction cost estimate.
  - Construction management covers such items as contract management and inspection during construction. The cost of these items can also vary, but for the purpose of this study, it is assumed that construction management charges will equal approximately 15 percent of the base construction cost estimate.
  - Program implementation costs cover items such as legal fees, environmental/CEQA compliance requirements, financing expenses, administrative costs, and interest during construction. The cost of these items can also vary, but for the purpose of this study, it is assumed that program implementation costs will equal approximately 15 percent of the base construction cost estimate.

An example application of these standard mark-ups to a project with an assumed base construction cost of $1.0 million is shown in Table 5. As shown, the total cost of all project construction contingencies (construction contingency, engineering, construction management, and program implementation costs) is 80 percent of the base construction cost for each construction project.

Table 5. Example Application of Contingency Costs

Cost Component	Percent	Cost, dollars
Estimated Base Construction Cost before Mark-ups[(a)]	--	1,000,000
Construction Contingency Costs	35	350,000
Other Project Costs		
Engineering	15	150,000
Construction Management	15	150,000
Program Implementation	15	150,000
Estimated Total Project Cost		**$1,800,000**

(a) Assumed cost of an example project.

Appendix E

Financial Plan Worksheets

(THIS PAGE LEFT BLANK INTENTIONALLY)

City of Stockton MUD
Water Master Plan
Revenue Requirement Summary
Exhibit 1

	Proposed	*Projected*								
	FY 2021	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**
Revenue										
Rate Revenues	$51,146,122	$51,401,852	$51,658,862	$51,917,156	$52,176,742	$52,437,626	$52,699,814	$52,963,313	$53,228,129	$53,494,270
Non-Operating Revenues	6,972,507	7,753,152	7,663,842	7,545,867	7,506,406	7,459,254	7,465,916	7,485,776	7,505,559	7,524,476
Total Revenues	**$58,118,628**	**$59,155,004**	**$59,322,704**	**$59,463,023**	**$59,683,148**	**$59,896,880**	**$60,165,730**	**$60,449,089**	**$60,733,688**	**$61,018,745**
Expenses										
Total Administrative & General	$2,399,761	$2,472,731	$2,547,947	$2,684,563	$2,782,485	$2,867,767	$3,022,764	$3,133,362	$3,229,423	$3,328,458
Total Operations and Maintenance	4,874,311	5,032,055	5,192,345	5,450,930	5,651,904	5,835,383	6,128,017	6,354,495	6,560,792	6,773,906
Total Utility Billing	1,011,829	1,042,171	1,073,423	1,147,115	1,192,616	1,228,380	1,312,787	1,364,881	1,405,812	1,447,970
Total Other Support Services	624,904	644,251	664,213	702,074	728,874	752,056	795,149	825,553	851,800	878,894
Total Water Conservation	164,260	117,768	121,386	127,107	131,591	135,700	142,151	147,182	151,778	156,520
Total Water Purchase	16,010,550	17,051,236	18,159,566	19,339,938	20,597,034	21,935,841	23,361,671	24,880,179	26,497,391	28,219,721
Total Hydrant Maintenance	322,572	332,663	342,833	358,482	371,010	382,615	400,232	414,263	427,225	440,597
Total Delta Water Production	4,800,596	4,975,095	5,146,215	5,372,479	5,571,438	5,764,569	6,019,406	6,242,792	6,459,337	6,683,559
Total Well Production	1,653,512	1,712,618	1,773,644	1,855,171	1,926,632	1,995,956	2,088,065	2,168,588	2,246,609	2,327,489
Total DWSP Maintenance & Repair	1,168,355	1,205,452	1,243,512	1,304,919	1,352,536	1,395,945	1,465,394	1,519,008	1,567,766	1,618,114
Total MUD Admin / Finance	729,513	752,625	776,140	818,168	848,862	875,918	923,649	958,374	988,914	1,020,442
Total Engineering Services	255,477	263,554	271,754	286,662	297,426	306,850	323,789	335,974	346,617	357,603
Total Lab Services	322,363	332,435	342,646	358,371	370,906	382,490	400,199	414,240	427,182	440,534
Total Safety	315,301	325,166	335,056	348,605	360,197	371,282	386,424	399,312	411,606	424,281
Total SCADA	251,712	260,108	268,793	281,774	292,340	302,227	316,908	328,815	339,936	351,441
Total Outreach & Training	117,826	121,140	124,548	128,086	131,702	135,413	139,268	143,205	147,246	151,402
Total O&M Expenses	**$35,022,842**	**$36,641,066**	**$38,384,019**	**$40,564,443**	**$42,607,554**	**$44,668,391**	**$47,225,873**	**$49,630,222**	**$52,059,434**	**$54,620,932**
Net Debt Service	**$13,785,486**	**$13,793,287**	**$13,801,450**	**$13,521,588**	**$13,528,223**	**$13,188,633**	**$13,206,793**	**$13,221,724**	**$13,232,584**	**$13,233,693**
Rate Funded Capital	**$9,000,000**	**$8,675,000**	**$8,950,000**	**$9,250,000**	**$9,250,000**	**$9,500,000**	**$10,000,000**	**$10,400,000**	**$10,700,000**	**$11,000,000**
Reserve Funding	**$310,300**	**$45,651**	**($4,705)**	**($175,210)**	**$249,381**	**$858,402**	**$535,600**	**$606,486**	**$552,718**	**$482,677**
Total Revenue Requirement	**$58,118,628**	**$59,155,004**	**$61,130,764**	**$63,160,822**	**$65,635,157**	**$68,215,425**	**$70,968,266**	**$73,858,432**	**$76,544,737**	**$79,337,302**
Bal. / Def.) of Funds	$0	$0	($1,808,060)	($3,697,799)	($5,952,010)	($8,318,546)	($10,802,536)	($13,409,343)	($15,811,048)	($18,318,557)
Bal. / (Def.) as a % of Rate Rev.	0.0%	0.0%	3.5%	7.1%	11.4%	15.9%	20.5%	25.3%	29.7%	34.2%
Proposed Rate Adjustment	**0.0%**	**0.0%**	**3.5%**	**3.5%**	**4.0%**	**4.0%**	**4.0%**	**4.0%**	**3.5%**	**3.5%**
Add'l Revenue from Adj.	$0	$0	$1,808,060	$3,697,799	$5,952,010	$8,318,546	$10,802,536	$13,409,343	$15,811,048	$18,318,557
Total Bal/(Def.) of Funds	$0	$0	$0	($0)	$0	($0)	$0	$0	$0	($0)
Additional Rate Increase Needed	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
Avg Res Monthly Bill (5/8" Meter + 15CCF)	**$70.95**	**$70.95**	**$73.43**	**$76.00**	**$79.04**	**$82.21**	**$85.49**	**$88.91**	**$92.03**	**$95.25**
Ending Balance (not including 421 or 425)	**$68,307,112**	**$65,234,166**	**$46,679,585**	**$44,389,884**	**$39,225,611**	**$37,284,789**	**$37,820,390**	**$38,426,876**	**$38,979,594**	**$39,462,270**
Total Target	*$17,271,539*	*$18,069,567*	*$18,929,105*	*$20,004,383*	*$21,011,944*	*$22,028,247*	*$23,289,472*	*$24,475,178*	*$25,673,146*	*$26,936,350*

City of Stockton MUD
Water Master Plan
Exhibit 2
Escalation Factors

	Proposed	*Projected*								
	FY 2021	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**
Revenues										
Customer Growth	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
SF Cust Growth	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
SF Consump Growth	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MF Cust Growth	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
MF Consump Growth	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NonRes Cust Growth	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
NonRes Consump Growth	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Irr Cust Growth	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Irr Consump Growth	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc Revenues	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Expenses										
Labor	Proposed	3.0%	3.0%	7.0%	4.0%	3.0%	7.0%	4.0%	3.0%	3.0%
Benefits - Medical	Proposed	2.0%	2.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Benefits - Other	Proposed	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Professional / Special Srvcs	Proposed	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Materials & Supplies	Proposed	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Equipment	Proposed	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Radio Equipment	Proposed	50.0%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Miscellaneous	Proposed	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Utilities	Proposed	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Insurance	Proposed	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Flat	Proposed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Purchased Water	Proposed	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Interest	0.8%	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
New Debt Service:										
Low Interest Loans										
Term in Years	20	20	20	20	20	20	20	20	20	20
Rate	1.8%	2.0%	2.2%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Revenue Bond										
Term in Years	20	20	20	20	20	20	20	20	20	20
Rate	3.5%	3.8%	4.0%	4.2%	4.5%	5.0%	5.0%	5.0%	5.0%	5.0%

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		Proposed FY 2021	Projected FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Notes
	Revenues											
	Rate Revenues											
	Single Family	$34,105,115	$34,275,641	$34,447,019	$34,619,254	$34,792,350	$34,966,312	$35,141,144	$35,316,850	$35,493,434	$35,670,901	As Customer Growth
	Multi-Family	5,081,480	5,106,888	5,132,422	5,158,084	5,183,875	5,209,794	5,235,843	5,262,022	5,288,332	5,314,774	As Customer Growth
	Non-Residential	7,336,179	7,372,860	7,409,724	7,446,773	7,484,007	7,521,427	7,559,034	7,596,829	7,634,813	7,672,987	As Customer Growth
	Irrigation	4,623,347	4,646,464	4,669,696	4,693,045	4,716,510	4,740,092	4,763,793	4,787,612	4,811,550	4,835,608	As Customer Growth
	Total Rate Revenues	**$51,146,122**	**$51,401,852**	**$51,658,862**	**$51,917,156**	**$52,176,742**	**$52,437,626**	**$52,699,814**	**$52,963,313**	**$53,228,129**	**$53,494,270**	
	Non-Operating Revenues											
	Interest	$712,171	$905,879	$805,969	$677,297	$627,032	$568,976	$564,628	$573,371	$581,930	$589,521	Calculated
	Private Fire	175,396	176,281	177,171	178,062	178,961	179,861	180,767	181,679	182,594	183,510	Exhibit 7
	Linc Vill Maint	50,858	51,367	51,880	52,399	52,923	53,452	53,987	54,527	55,072	55,623	As Misc Revenues
	Service Penalties	0	582,202	588,024	593,904	599,843	605,842	611,900	618,019	624,199	630,441	As Misc Revenues
	Reconnection Admin Fees	324,082	327,323	330,596	333,902	337,241	340,613	344,020	347,460	350,934	354,444	As Misc Revenues
	Repayment of In-Lieu Transfers	0	0	0	0	0	0	0	0	0	0	City Provided
	Miscellaneous Other Revenues	10,000	10,100	10,201	10,303	10,406	10,510	10,615	10,721	10,829	10,937	As Misc Revenues
	Allocation Trueup - Cal Water	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	As Flat
	Total Non-Operating Revenues	**$6,972,507**	**$7,753,152**	**$7,663,842**	**$7,545,867**	**$7,506,406**	**$7,459,254**	**$7,465,916**	**$7,485,776**	**$7,505,559**	**$7,524,476**	
	Total Revenues	**$58,118,628**	**$59,155,004**	**$59,322,704**	**$59,463,023**	**$59,683,148**	**$59,896,880**	**$60,165,730**	**$60,449,089**	**$60,733,688**	**$61,018,745**	
	Administrative & General											
	Employee Services											
10-10	Salaries - Regular	$571,632	$588,781	$606,444	$648,895	$674,851	$695,097	$743,754	$773,504	$796,709	$820,610	As Labor
10-13	Regular Overtime	500	515	530	568	590	608	651	677	697	718	As Labor
10-20	Employee Separation Pay	4,213	4,382	4,557	4,739	4,929	5,126	5,331	5,544	5,766	5,996	As Benefits - Other
10-25	Retirement	167,088	173,772	180,722	187,951	195,469	203,288	211,420	219,876	228,671	237,818	As Benefits - Other
10-27	Medicare	8,158	8,403	8,655	9,261	9,631	9,920	10,614	11,039	11,370	11,711	As Labor
10-29	Health/Dental/Vision	54,036	55,117	56,219	57,906	59,643	61,432	63,275	65,173	67,128	69,142	As Benefits - Medical
10-31	L/T Disability Insurance	3,601	3,709	3,820	3,935	4,053	4,175	4,300	4,429	4,562	4,698	As Insurance
10-32	Life Insurance	454	468	482	496	511	526	542	558	575	592	As Insurance
10-33	Workers Compensation	12,484	12,983	13,503	14,043	14,605	15,189	15,796	16,428	17,085	17,769	As Benefits - Other
10-34	Unemployment Insurance	285	294	302	311	321	330	340	351	361	372	As Insurance
10-45	Cell Phone Allowance	3,030	3,151	3,277	3,408	3,545	3,686	3,834	3,987	4,147	4,313	As Benefits - Other
10-46	Retirement Pension Bond	19,656	20,246	20,853	22,313	23,205	23,901	25,575	26,598	27,395	28,217	As Labor
	Total Employee Services	**$845,137**	**$871,819**	**$899,365**	**$953,826**	**$991,353**	**$1,023,279**	**$1,085,431**	**$1,128,164**	**$1,164,467**	**$1,201,958**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		Proposed FY 2021	Projected FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Notes
	Other Services											
20-15	Telephone	$800	$832	$865	$900	$936	$973	$1,012	$1,053	$1,095	$1,139	As Utilities
20-25	Maint. & Repair Services	15,000	15,450	15,914	16,391	16,883	17,389	17,911	18,448	19,002	19,572	As Materials & Supplies
20-34	Duplication/Copy Costs	1,500	1,545	1,591	1,639	1,688	1,739	1,791	1,845	1,900	1,957	As Materials & Supplies
20-37	Insurance Premiums	37,899	39,036	40,207	41,413	42,656	43,935	45,253	46,611	48,009	49,450	As Insurance
20-41	Automotive Equip Rental	7,692	8,000	8,320	8,652	8,999	9,358	9,733	10,122	10,527	10,948	As Equipment
20-43	Computer/Tech/Oper Supprt	49,336	50,816	52,341	53,911	55,528	57,194	58,910	60,677	62,497	64,372	As Materials & Supplies
20-47	Telephone Rental	6,363	6,618	6,882	7,158	7,444	7,742	8,051	8,373	8,708	9,057	As Equipment
20-52	Publicity & Advertising	5,000	5,125	5,253	5,384	5,519	5,657	5,798	5,943	6,092	6,244	As Miscellaneous
20-53	Printing & Mapping	2,500	2,575	2,652	2,732	2,814	2,898	2,985	3,075	3,167	3,262	As Materials & Supplies
20-54	Postage/Mailing Services	9,500	9,785	10,079	10,381	10,692	11,013	11,343	11,684	12,034	12,395	As Materials & Supplies
20-58	Legal Services	400,000	412,000	424,360	437,091	450,204	463,710	477,621	491,950	506,708	521,909	As Professional / Special Srvcs
20-63	Testing & Analysis Servcs	3,000	3,075	3,152	3,231	3,311	3,394	3,479	3,566	3,655	3,747	As Miscellaneous
20-65	Prof & Special Services	50,000	51,500	53,045	54,636	56,275	57,964	59,703	61,494	63,339	65,239	As Professional / Special Srvcs
20-66	Other Services	85,000	87,550	90,177	92,882	95,668	98,538	101,494	104,539	107,675	110,906	As Professional / Special Srvcs
	Total Other Services	**$673,590**	**$693,906**	**$714,837**	**$736,401**	**$758,617**	**$781,505**	**$805,085**	**$829,380**	**$854,409**	**$880,196**	
	Materials and Supplies											
30-50	Materials & Supplies	$7,700	$7,931	$8,169	$8,414	$8,666	$8,926	$9,194	$9,470	$9,754	$10,047	As Materials & Supplies
30-51	Computer Software	900	927	955	983	1,013	1,043	1,075	1,107	1,140	1,174	As Materials & Supplies
30-53	Fuel - Gas/Oil/Propane	139	143	147	152	156	161	166	171	176	181	As Materials & Supplies
30-55	Library Materials	1,300	1,339	1,379	1,421	1,463	1,507	1,552	1,599	1,647	1,696	As Materials & Supplies
	Total Materials and Supplies	**$10,039**	**$10,340**	**$10,650**	**$10,970**	**$11,299**	**$11,638**	**$11,987**	**$12,347**	**$12,717**	**$13,099**	
	Other Expenses											
40-10	Training	$8,400	$8,610	$8,825	$9,046	$9,272	$9,504	$9,741	$9,985	$10,235	$10,490	As Miscellaneous
40-12	Meetings & Travel	1,000	1,025	1,051	1,077	1,104	1,131	1,160	1,189	1,218	1,249	As Miscellaneous
40-14	Memberships	74,500	76,363	78,272	80,228	82,234	84,290	86,397	88,557	90,771	93,040	As Miscellaneous
40-22	Taxes	8,000	8,200	8,405	8,615	8,831	9,051	9,278	9,509	9,747	9,991	As Miscellaneous
40-25	Indirect Cost Allocation	779,095	802,468	826,542	884,400	919,776	947,369	1,013,685	1,054,232	1,085,859	1,118,435	As Labor
	Total Other Expenses	**$870,995**	**$896,665**	**$923,094**	**$983,366**	**$1,021,216**	**$1,051,345**	**$1,120,261**	**$1,163,473**	**$1,197,831**	**$1,233,206**	
	Total Administrative & General	**$2,399,761**	**$2,472,731**	**$2,547,947**	**$2,684,563**	**$2,782,485**	**$2,867,767**	**$3,022,764**	**$3,133,362**	**$3,229,423**	**$3,328,458**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		Proposed FY 2021	Projected FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Notes
	Operations and Maintenance											
	Employee Services											
10-10	Salaries - Regular	$1,771,933	$1,825,091	$1,879,844	$2,011,433	$2,091,890	$2,154,647	$2,305,472	$2,397,691	$2,469,622	$2,543,710	As Labor
10-11	Salaries Part Time - Temp	25,000	25,750	26,523	28,379	29,514	30,400	32,528	33,829	34,844	35,889	As Labor
10-13	Regular Overtime	50,000	51,500	53,045	56,758	59,028	60,799	65,055	67,657	69,687	71,778	As Labor
10-17	Stand By Time (Call Back)	20,822	21,447	22,090	23,636	24,582	25,319	27,092	28,175	29,021	29,891	As Labor
10-18	Holiday Pay	2,800	2,884	2,971	3,178	3,306	3,405	3,643	3,789	3,902	4,020	As Labor
10-20	Separation Pay	13,830	14,383	14,959	15,557	16,179	16,826	17,499	18,199	18,927	19,684	As Benefits - Other
10-21	Additional Pay	64,001	65,921	67,899	72,652	75,558	77,824	83,272	86,603	89,201	91,877	As Labor
10-25	Retirement	533,021	554,342	576,516	599,576	623,559	648,502	674,442	701,419	729,476	758,655	As Benefits - Other
10-26	Deferred Compensation	95,455	98,319	101,268	108,357	112,691	116,072	124,197	129,165	133,040	137,031	As Labor
10-27	Medicare	27,724	28,556	29,412	31,471	32,730	33,712	36,072	37,515	38,640	39,799	As Labor
10-29	Health/Dental/Vision	298,620	304,592	310,684	320,005	329,605	339,493	349,678	360,168	370,973	382,102	As Benefits - Medical
10-31	L-T Disability Insurance	11,158	11,493	11,838	12,193	12,558	12,935	13,323	13,723	14,135	14,559	As Insurance
10-32	Life Insurance	2,591	2,669	2,749	2,831	2,916	3,004	3,094	3,187	3,282	3,381	As Insurance
10-33	Workers' Compensation	177,733	184,842	192,236	199,925	207,922	216,239	224,889	233,885	243,240	252,969	As Benefits - Other
10-34	Unemployment Insurance	1,575	1,622	1,671	1,721	1,773	1,826	1,881	1,937	1,995	2,055	As Insurance
10-45	Cell Phone Allowance	600	624	649	675	702	730	759	790	821	854	As Benefits - Other
10-46	Retirement Pension Bond	61,808	63,662	65,572	70,162	72,969	75,158	80,419	83,635	86,145	88,729	As Labor
	Total Employee Services	**$3,158,671**	**$3,257,697**	**$3,359,924**	**$3,558,510**	**$3,697,483**	**$3,816,891**	**$4,043,314**	**$4,201,367**	**$4,336,951**	**$4,476,984**	
	Other Services & Charges											
20-11	Electricity	$14,500	$15,080	$15,683	$16,311	$16,963	$17,641	$18,347	$19,081	$19,844	$20,638	As Utilities
20-12	Gas	1,500	1,560	1,622	1,687	1,755	1,825	1,898	1,974	2,053	2,135	As Utilities
20-15	Telephone	23,100	24,024	24,985	25,984	27,024	28,105	29,229	30,398	31,614	32,879	As Utilities
20-25	Maint. & Repair Services	287,796	296,430	305,323	314,482	323,917	333,634	343,643	353,953	364,571	375,509	As Materials & Supplies
20-27	Uniform/Laundry Services	8,500	8,755	9,018	9,288	9,567	9,854	10,149	10,454	10,768	11,091	As Professional / Special Srvcs
20-34	Duplication/Copy Costs	1,200	1,236	1,273	1,311	1,351	1,391	1,433	1,476	1,520	1,566	As Materials & Supplies
20-37	Insurance Premiums	127,779	131,612	135,561	139,628	143,816	148,131	152,575	157,152	161,867	166,723	As Insurance
20-41	Automotive Equip Rental	143,443	149,181	155,148	161,354	167,808	174,520	181,501	188,761	196,312	204,164	As Equipment
20-43	Computer/Tech/Oper Supprt	90,752	94,382	98,157	102,084	106,167	110,414	114,830	119,423	124,200	129,168	As Equipment
20-44	Radio Equipment Rental	5,625	8,438	8,733	9,038	9,355	9,682	10,021	10,372	10,735	11,111	As Radio Equipment
20-45	Other Rentals	5,000	5,200	5,408	5,624	5,849	6,083	6,327	6,580	6,843	7,117	As Equipment
20-47	Telephone Rental	3,636	3,781	3,933	4,090	4,254	4,424	4,601	4,785	4,976	5,175	As Equipment
20-54	Postage/Mailing Services	1,800	1,854	1,910	1,967	2,026	2,087	2,149	2,214	2,280	2,349	As Professional / Special Srvcs
20-57	Processing Fees	65,000	66,950	68,959	71,027	73,158	75,353	77,613	79,942	82,340	84,810	As Professional / Special Srvcs
20-63	Testing & Analysis Servcs	1,300	1,333	1,366	1,400	1,435	1,471	1,508	1,545	1,584	1,624	As Miscellaneous
20-65	Prof & Special Services	52,900	54,487	56,122	57,805	59,539	61,326	63,165	65,060	67,012	69,023	As Professional / Special Srvcs
20-66	Other Services	96,241	99,128	102,102	105,165	108,320	111,570	114,917	118,364	121,915	125,573	As Professional / Special Srvcs
	Total Other Services & Charges	**$930,072**	**$963,431**	**$995,301**	**$1,028,246**	**$1,062,303**	**$1,097,510**	**$1,133,907**	**$1,171,534**	**$1,210,434**	**$1,250,651**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		Proposed FY 2021	Projected FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Notes
	Materials and Supplies											
30-50	Materials & Supplies	$505,000	$520,150	$535,755	$551,827	$568,382	$585,433	$602,996	$621,086	$639,719	$658,910	As Materials & Supplies
30-51	Computer Software	500	515	530	546	563	580	597	615	633	652	As Materials & Supplies
30-53	Fuel - Gas/Oil/Propane	82,839	85,324	87,884	90,520	93,236	96,033	98,914	101,882	104,938	108,086	As Materials & Supplies
30-55	Library Materials	1,500	1,545	1,591	1,639	1,688	1,739	1,791	1,845	1,900	1,957	As Materials & Supplies
	Total Materials and Supplies	**$589,839**	**$607,534**	**$625,760**	**$644,533**	**$663,869**	**$683,785**	**$704,299**	**$725,428**	**$747,190**	**$769,606**	
	Other Expenses											
40-10	Training	$8,000	$8,200	$8,405	$8,615	$8,831	$9,051	$9,278	$9,509	$9,747	$9,991	As Miscellaneous
40-12	Meetings & Travel	500	513	525	538	552	566	580	594	609	624	As Miscellaneous
40-22	Taxes	2,500	2,563	2,627	2,692	2,760	2,829	2,899	2,972	3,046	3,122	As Miscellaneous
40-68	Retirement Expense	184,729	192,118	199,803	207,795	216,107	224,751	233,741	243,091	252,814	262,927	As Benefits - Other
	Total Other Expenses	**$195,729**	**$203,393**	**$211,360**	**$219,641**	**$228,249**	**$237,197**	**$246,498**	**$256,166**	**$266,217**	**$276,664**	
	Total Operations and Maintenance	**$4,874,311**	**$5,032,055**	**$5,192,345**	**$5,450,930**	**$5,651,904**	**$5,835,383**	**$6,128,017**	**$6,354,495**	**$6,560,792**	**$6,773,906**	
	Utility Billing											
10-97	Employee Services Summary	$519,433	$535,016	$551,066	$589,641	$613,227	$631,624	$675,837	$702,871	$723,957	$745,676	As Labor
20-97	Other Services Summary	458,587	472,345	486,515	520,571	541,394	557,636	596,670	620,537	639,153	658,328	As Labor
30-97	Materials & Supplies Summary	31,199	32,135	33,099	34,092	35,115	36,168	37,253	38,371	39,522	40,708	As Materials & Supplies
40-97	Other Expenses Summary	2,610	2,675	2,742	2,811	2,881	2,953	3,027	3,102	3,180	3,260	As Miscellaneous
	Total Utility Billing	**$1,011,829**	**$1,042,171**	**$1,073,423**	**$1,147,115**	**$1,192,616**	**$1,228,380**	**$1,312,787**	**$1,364,881**	**$1,405,812**	**$1,447,970**	
	Total Utility Billing	**$1,011,829**	**$1,042,171**	**$1,073,423**	**$1,147,115**	**$1,192,616**	**$1,228,380**	**$1,312,787**	**$1,364,881**	**$1,405,812**	**$1,447,970**	
	Other Support Services											
	Employee Services											
10-10	Salaries - Regular	$366,128	$377,112	$388,425	$415,615	$432,240	$445,207	$476,371	$495,426	$510,289	$525,598	As Labor
10-13	Regular Overtime	2,000	2,060	2,122	2,270	2,361	2,432	2,602	2,706	2,787	2,871	As Labor
10-20	Employee Separation Pay	3,146	3,272	3,403	3,539	3,680	3,828	3,981	4,140	4,306	4,478	As Benefits - Other
10-21	Additional Pay	393	405	417	446	464	478	511	532	548	564	As Labor
10-25	Retirement	107,153	111,439	115,897	120,533	125,354	130,368	135,583	141,006	146,646	152,512	As Benefits - Other
10-26	Deferred Compensation	4,020	4,141	4,265	4,563	4,746	4,888	5,230	5,440	5,603	5,771	As Labor
10-27	Medicare	5,225	5,382	5,543	5,931	6,168	6,354	6,798	7,070	7,282	7,501	As Labor
10-29	Health/Dental/Vision	42,888	43,746	44,621	45,959	47,338	48,758	50,221	51,728	53,279	54,878	As Benefits - Medical
10-31	L/T Disability Insurance	2,307	2,376	2,447	2,521	2,597	2,674	2,755	2,837	2,922	3,010	As Insurance
10-32	Life Insurance	353	364	374	386	397	409	422	434	447	461	As Insurance
10-33	Workers Compensation	9,649	9,842	10,039	10,340	10,650	10,970	11,299	11,638	11,987	12,346	As Benefits - Medical
10-34	Unemployment Insurance	226	233	240	247	254	262	270	278	286	295	As Insurance
10-45	Cell Phone Allowance	2,208	2,296	2,388	2,484	2,583	2,686	2,794	2,906	3,022	3,143	As Benefits - Other
10-46	Retirement Pension Bond	16,197	16,683	17,183	18,386	19,122	19,695	21,074	21,917	22,574	23,252	As Labor
	Total Employee Services	**$561,893**	**$579,349**	**$597,364**	**$633,220**	**$657,954**	**$679,009**	**$719,911**	**$748,057**	**$771,980**	**$796,679**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		Proposed FY 2021	Projected FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Notes
	Other Services											
20-22	Contractual Employees	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	As Labor
20-37	Insurance Premiums	24,320	25,050	25,801	26,575	27,372	28,194	29,039	29,911	30,808	31,732	As Insurance
20-65	Prof & Special Services	38,691	39,852	41,047	42,279	43,547	44,853	46,199	47,585	49,013	50,483	As Professional / Special Srvcs
	Total Other Services	**$63,011**	**$64,901**	**$66,848**	**$68,854**	**$70,919**	**$73,047**	**$75,238**	**$77,496**	**$79,820**	**$82,215**	
	Materials and Supplies											
30-50	Materials and Supplies	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	As Materials & Supplies
	Total Materials and Supplies	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
	Other Expenses											
40-10	Training	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	As Labor
40-12	Meetings & Travel	0	0	0	0	0	0	0	0	0	0	As Materials & Supplies
40-14	Memberships	0	0	0	0	0	0	0	0	0	0	As Materials & Supplies
	Total Other Expenses	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
	Total Other Support Services	**$624,904**	**$644,251**	**$664,213**	**$702,074**	**$728,874**	**$752,056**	**$795,149**	**$825,553**	**$851,800**	**$878,894**	
	Water Conservation											
	Employee Services											
10-10	Salaries - Regular	$44,544	$45,880	$47,257	$50,565	$52,587	$54,165	$57,956	$60,275	$62,083	$63,945	As Labor
10-20	Employee Separation Pay	73	76	79	82	85	89	92	96	100	104	As Benefits - Other
10-25	Retirement	13,020	13,541	14,082	14,646	15,232	15,841	16,474	17,133	17,819	18,532	As Benefits - Other
10-27	Medicare	643	662	682	730	759	782	837	870	896	923	As Labor
10-29	Health/Dental/Vision	5,688	5,802	5,918	6,095	6,278	6,467	6,661	6,860	7,066	7,278	As Benefits - Medical
10-31	L/T Disability Insurance	281	289	298	307	316	326	336	346	356	367	As Insurance
10-32	Life Insurance	49	50	52	54	55	57	59	60	62	64	As Insurance
10-33	Workers Compensation	896	932	969	1,008	1,048	1,090	1,134	1,179	1,226	1,275	As Benefits - Other
10-34	Unemployment Insurance	30	31	32	33	34	35	36	37	38	39	As Insurance
10-45	Cell Phone Allowance	270	281	292	304	316	328	342	355	370	384	As Benefits - Other
10-46	Retirement Pension Bond	320	330	339	363	378	389	416	433	446	459	As Labor
	Total Employee Services	**$65,814**	**$67,874**	**$70,001**	**$74,186**	**$77,089**	**$79,568**	**$84,342**	**$87,645**	**$90,462**	**$93,371**	
	Other Services											
20-15	Telephone	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	As Utilities
20-37	Insurance Premiums	2,940	3,028	3,119	3,213	3,309	3,408	3,511	3,616	3,724	3,836	As Insurance
20-51	Community/Program	41,000	42,230	43,497	44,802	46,146	47,530	48,956	50,425	51,938	53,496	As Materials & Supplies
20-65	Prof & Special Services	50,000	0	0	0	0	0	0	0	0	0	As Professional / Special Srvcs
	Total Other Services	**$93,940**	**$45,258**	**$46,616**	**$48,014**	**$49,455**	**$50,939**	**$52,467**	**$54,041**	**$55,662**	**$57,332**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		*Proposed* FY 2021	*Projected* FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	*Notes*
	Materials and Supplies											
30-50	Materials & Supplies	$1,800	$1,854	$1,910	$1,967	$2,026	$2,087	$2,149	$2,214	$2,280	$2,349	As Materials & Supplies
	Total Materials and Supplies	**$1,800**	**$1,854**	**$1,910**	**$1,967**	**$2,026**	**$2,087**	**$2,149**	**$2,214**	**$2,280**	**$2,349**	
	Other Expenses											
40-10	Training	$1,100	$1,128	$1,156	$1,185	$1,214	$1,245	$1,276	$1,308	$1,340	$1,374	As Miscellaneous
40-68	Retirement Expense	1,606	1,654	1,704	1,755	1,808	1,862	1,918	1,975	2,034	2,095	As Materials & Supplies
	Total Other Expenses	**$2,706**	**$2,782**	**$2,859**	**$2,939**	**$3,022**	**$3,106**	**$3,193**	**$3,283**	**$3,375**	**$3,469**	
	Total Water Conservation	**$164,260**	**$117,768**	**$121,386**	**$127,107**	**$131,591**	**$135,700**	**$142,151**	**$147,182**	**$151,778**	**$156,520**	
	Water Purchase											
	Materials and Supplies											
30-56	Merchandise For Resale	$14,210,550	$15,134,236	$16,117,961	$17,165,629	$18,281,394	$19,469,685	$20,735,215	$22,083,004	$23,518,399	$25,047,095	As Purchased Water
	Total Materials and Supplies	**$14,210,550**	**$15,134,236**	**$16,117,961**	**$17,165,629**	**$18,281,394**	**$19,469,685**	**$20,735,215**	**$22,083,004**	**$23,518,399**	**$25,047,095**	
	Other Expenses											
40-22	Groundwater Pumping Tax	$1,800,000	$1,917,000	$2,041,605	$2,174,309	$2,315,639	$2,466,156	$2,626,456	$2,797,176	$2,978,992	$3,172,627	As Purchased Water
	Total Other Expenses	**$1,800,000**	**$1,917,000**	**$2,041,605**	**$2,174,309**	**$2,315,639**	**$2,466,156**	**$2,626,456**	**$2,797,176**	**$2,978,992**	**$3,172,627**	
	Total Water Purchase	**$16,010,550**	**$17,051,236**	**$18,159,566**	**$19,339,938**	**$20,597,034**	**$21,935,841**	**$23,361,671**	**$24,880,179**	**$26,497,391**	**$28,219,721**	
	Hydrant Maintenance											
	Employee Services											
10-10	Salaries - Regular	$100,339	$103,349	$106,450	$113,901	$118,457	$122,011	$130,552	$135,774	$139,847	$144,042	As Labor
10-13	Regular Overtime	5,000	5,150	5,305	5,676	5,903	6,080	6,506	6,766	6,969	7,178	As Labor
10-20	Separation Pay	856	890	926	963	1,001	1,041	1,083	1,126	1,171	1,218	As Benefits - Other
10-25	Retirement	29,455	30,633	31,859	33,133	34,458	35,837	37,270	38,761	40,311	41,924	As Benefits - Other
10-26	Deferred Compensation	5,519	5,685	5,855	6,265	6,516	6,711	7,181	7,468	7,692	7,923	As Labor
10-27	Medicare	1,407	1,449	1,493	1,597	1,661	1,711	1,831	1,904	1,961	2,020	As Labor
10-29	Health/Dental/Vision	22,752	23,207	23,671	24,381	25,113	25,866	26,642	27,441	28,265	29,113	As Benefits - Medical
10-31	L-T Disability Insurance	632	651	670	691	711	733	755	777	801	825	As Insurance
10-32	Life Insurance	198	204	210	216	223	230	236	244	251	258	As Insurance
10-33	Workers' Compensation	9,733	10,122	10,527	10,948	11,386	11,842	12,315	12,808	13,320	13,853	As Benefits - Other
10-34	Unemployment Insurance	120	124	127	131	135	139	143	148	152	157	As Insurance
10-46	Retirement Pension Bond	3,777	3,890	4,007	4,288	4,459	4,593	4,914	5,111	5,264	5,422	As Labor
	Total Employee Services	**$179,788**	**$185,355**	**$191,100**	**$202,190**	**$210,023**	**$216,793**	**$229,428**	**$238,327**	**$246,004**	**$253,932**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		*Proposed* FY 2021	*Projected* FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	*Notes*
	Other Services											
20-11	Electricity	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	As Utilities
20-15	Telephone	200	208	216	225	234	243	253	263	274	285	As Utilities
20-25	Maint. & Repair Services	80,000	82,400	84,872	87,418	90,041	92,742	95,524	98,390	101,342	104,382	As Materials & Supplies
20-27	Uniform/Laundry Services	500	515	530	546	563	580	597	615	633	652	As Professional / Special Srvcs
20-37	Insurance Premiums	6,622	6,821	7,025	7,236	7,453	7,677	7,907	8,144	8,389	8,640	As Insurance
20-44	Radio Equipment Rental	508	762	789	816	845	874	905	937	969	1,003	As Radio Equipment
20-57	Processing Fees	2,000	2,060	2,122	2,185	2,251	2,319	2,388	2,460	2,534	2,610	As Professional / Special Srvcs
20-66	Other Services	1,500	1,545	1,591	1,639	1,688	1,739	1,791	1,845	1,900	1,957	As Professional / Special Srvcs
	Total Other Services	**$91,330**	**$94,311**	**$97,146**	**$100,066**	**$103,075**	**$106,173**	**$109,365**	**$112,654**	**$116,040**	**$119,529**	
	Materials and Supplies											
30-50	Materials & Supplies	$50,000	$51,500	$53,045	$54,636	$56,275	$57,964	$59,703	$61,494	$63,339	$65,239	As Materials & Supplies
30-53	Fuels - Gas/Oil/Propane	1,454	1,498	1,543	1,589	1,636	1,686	1,736	1,788	1,842	1,897	As Materials & Supplies
	Total Materials and Supplies	**$51,454**	**$52,998**	**$54,588**	**$56,225**	**$57,912**	**$59,649**	**$61,439**	**$63,282**	**$65,180**	**$67,136**	
	Other Expenses											
40-12	Meetings/Travel	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	As Miscellaneous
40-14	Memberships	0	0	0	0	0	0	0	0	0	0	As Miscellaneous
40-60	Miscellaneous Refunds	0	0	0	0	0	0	0	0	0	0	As Miscellaneous
	Total Other Expenses	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
	Total Hydrant Maintenance	**$322,572**	**$332,663**	**$342,833**	**$358,482**	**$371,010**	**$382,615**	**$400,232**	**$414,263**	**$427,225**	**$440,597**	
	Delta Water Production											
	Employee Services											
10-10	Salaries - Regular	$904,253	$931,381	$959,322	$1,026,475	$1,067,534	$1,099,560	$1,176,529	$1,223,590	$1,260,298	$1,298,106	As Labor
10-13	Regular Overtime	120,000	123,600	127,308	136,220	141,668	145,918	156,133	162,378	167,249	172,267	As Labor
10-17	Stand By Time (Call Back)	12,000	12,360	12,731	13,622	14,167	14,592	15,613	16,238	16,725	17,227	As Labor
10-18	Holiday Pay	25,000	26,000	27,040	28,122	29,246	30,416	31,633	32,898	34,214	35,583	As Benefits - Other
10-20	Separation Pay	7,625	7,930	8,247	8,577	8,920	9,277	9,648	10,034	10,435	10,853	As Benefits - Other
10-21	Additional Pay	1,218	1,255	1,292	1,383	1,438	1,481	1,585	1,648	1,698	1,749	As Labor
10-25	Retirement	271,957	282,835	294,149	305,915	318,151	330,877	344,112	357,877	372,192	387,080	As Benefits - Other
10-26	Deferred Compensation	41,233	42,470	43,744	46,806	48,678	50,139	53,648	55,794	57,468	59,192	As Labor
10-27	Medicare	14,889	15,336	15,796	16,901	17,577	18,105	19,372	20,147	20,751	21,374	As Labor
10-29	Health/Dental/Vision	118,879	121,257	123,682	127,392	131,214	135,150	139,205	143,381	147,682	152,113	As Benefits - Medical
10-31	L-T Disability Insurance	5,696	5,867	6,043	6,224	6,411	6,603	6,801	7,005	7,216	7,432	As Insurance
10-32	Life Insurance	1,029	1,060	1,092	1,124	1,158	1,193	1,229	1,266	1,304	1,343	As Insurance
10-33	Workers' Compensation	91,997	95,677	99,504	103,484	107,623	111,928	116,406	121,062	125,904	130,940	As Benefits - Other
10-34	Unemployment Insurance	627	646	665	685	706	727	749	771	794	818	As Insurance
10-45	Cell Phone Allowance	1,200	1,248	1,298	1,350	1,404	1,460	1,518	1,579	1,642	1,708	As Benefits - Other
10-46	Retirement Pension Bond	34,381	35,412	36,475	39,028	40,589	41,807	44,733	46,523	47,918	49,356	As Labor
	Total Employee Services	**$1,651,984**	**$1,704,333**	**$1,758,387**	**$1,863,308**	**$1,936,486**	**$1,999,234**	**$2,118,914**	**$2,202,191**	**$2,273,491**	**$2,347,140**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		Proposed FY 2021	Projected FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Notes
	Other Services											
20-11	Electricity	$1,750,000	$1,820,000	$1,892,800	$1,968,512	$2,047,252	$2,129,143	$2,214,308	$2,302,881	$2,394,996	$2,490,796	As Utilities
20-15	Telephone	19,000	19,760	20,550	21,372	22,227	23,116	24,041	25,003	26,003	27,043	As Utilities
20-25	Maint. & Repair Services	3,800	3,914	4,031	4,152	4,277	4,405	4,537	4,674	4,814	4,958	As Materials & Supplies
20-27	Uniform/Laundry Services	9,100	9,373	9,654	9,944	10,242	10,549	10,866	11,192	11,528	11,873	As Professional / Special Srvcs
20-37	Insurance Premiums	70,180	72,285	74,454	76,688	78,988	81,358	83,799	86,313	88,902	91,569	As Materials & Supplies
20-41	Automotive Equip Rental	49,097	51,061	53,103	55,227	57,437	59,734	62,123	64,608	67,193	69,880	As Equipment
20-43	Computer/Tech/Oper Supprt	32,382	33,677	35,024	36,425	37,882	39,398	40,974	42,613	44,317	46,090	As Equipment
20-44	Radio Equipment Rental	20,498	30,747	31,823	32,937	34,090	35,283	36,518	37,796	39,119	40,488	As Radio Equipment
20-45	Other Rentals	10,000	10,400	10,816	11,249	11,699	12,167	12,653	13,159	13,686	14,233	As Equipment
20-47	Telephone Rental	4,545	4,727	4,916	5,113	5,317	5,530	5,751	5,981	6,220	6,469	As Equipment
20-57	Processing Fees	100,000	103,000	106,090	109,273	112,551	115,927	119,405	122,987	126,677	130,477	As Professional / Special Srvcs
20-63	Testing & Analysis Servcs	2,000	2,050	2,101	2,154	2,208	2,263	2,319	2,377	2,437	2,498	As Miscellaneous
20-64	Training Services	7,500	7,725	7,957	8,195	8,441	8,695	8,955	9,224	9,501	9,786	As Professional / Special Srvcs
20-65	Prof & Special Services	40,000	41,200	42,436	43,709	45,020	46,371	47,762	49,195	50,671	52,191	As Professional / Special Srvcs
20-66	Other Services	222,230	228,897	235,764	242,837	250,122	257,625	265,354	273,315	281,514	289,960	As Professional / Special Srvcs
	Total Other Services	**$2,340,332**	**$2,438,816**	**$2,531,520**	**$2,627,787**	**$2,727,753**	**$2,831,563**	**$2,939,366**	**$3,051,317**	**$3,167,576**	**$3,288,311**	
	Materials and Supplies											
30-50	Materials And Supplies	$105,000	$108,150	$111,395	$114,736	$118,178	$121,724	$125,375	$129,137	$133,011	$137,001	As Materials & Supplies
30-53	Fuels-Gas/Oil/Propane	21,480	22,124	22,788	23,472	24,176	24,901	25,648	26,418	27,210	28,027	As Materials & Supplies
30-54	Chemicals	565,300	582,259	599,727	617,719	636,250	655,338	674,998	695,248	716,105	737,588	As Materials & Supplies
	Total Materials and Supplies	**$691,780**	**$712,533**	**$733,909**	**$755,927**	**$778,604**	**$801,963**	**$826,021**	**$850,802**	**$876,326**	**$902,616**	
	Other Expenses											
40-10	Training	$5,000	$5,125	$5,253	$5,384	$5,519	$5,657	$5,798	$5,943	$6,092	$6,244	As Miscellaneous
40-12	Meetings & Travel	1,500	1,538	1,576	1,615	1,656	1,697	1,740	1,783	1,828	1,873	As Miscellaneous
40-22	Taxes	110,000	112,750	115,569	118,458	121,419	124,455	127,566	130,755	134,024	137,375	As Miscellaneous
	Total Other Expenses	**$116,500**	**$119,413**	**$122,398**	**$125,458**	**$128,594**	**$131,809**	**$135,104**	**$138,482**	**$141,944**	**$145,493**	
	Total Delta Water Production	**$4,800,596**	**$4,975,095**	**$5,146,215**	**$5,372,479**	**$5,571,438**	**$5,764,569**	**$6,019,406**	**$6,242,792**	**$6,459,337**	**$6,683,559**	
	Well Production											
	Employee Services											
10-10	Salaries - Regular	$338,600	$348,758	$359,221	$384,366	$399,741	$411,733	$440,554	$458,177	$471,922	$486,080	As Labor
10-13	Regular Overtime	5,300	5,459	5,623	6,016	6,257	6,445	6,896	7,172	7,387	7,608	As Labor
10-17	Stand By Time (Call Back)	21,000	21,630	22,279	23,838	24,792	25,536	27,323	28,416	29,269	30,147	As Labor
10-18	Holiday Pay	3,200	3,296	3,395	3,633	3,778	3,891	4,164	4,330	4,460	4,594	As Labor
10-20	Separation Pay	2,161	2,226	2,293	2,453	2,551	2,628	2,812	2,924	3,012	3,102	As Labor
10-21	Additional Pay	10,302	10,611	10,929	11,694	12,162	12,527	13,404	13,940	14,358	14,789	As Labor
10-25	Retirement	101,702	105,770	110,001	114,401	118,977	123,736	128,685	133,833	139,186	144,754	As Benefits - Other
10-26	Deferred Compensation	18,623	19,182	19,757	21,140	21,986	22,645	24,230	25,200	25,956	26,734	As Labor
10-27	Medicare	5,408	5,570	5,737	6,139	6,385	6,576	7,036	7,318	7,537	7,763	As Labor
10-29	Health/Dental/Vision	56,425	57,554	58,705	60,466	62,280	64,148	66,073	68,055	70,096	72,199	As Benefits - Medical
10-31	L-T Disability Insurance	2,133	2,176	2,219	2,286	2,354	2,425	2,498	2,573	2,650	2,729	As Benefits - Medical
10-32	Life Insurance	492	507	522	538	554	570	587	605	623	642	As Insurance
10-33	Workers' Compensation	36,762	38,232	39,762	41,352	43,006	44,727	46,516	48,376	50,311	52,324	As Benefits - Other
10-34	Unemployment Insurance	298	307	316	326	335	345	356	367	377	389	As Insurance
10-45	Cell Phone Allowance	576	599	623	648	674	701	729	758	788	820	As Benefits - Other
10-46	Retirement Pension Bond	11,630	11,979	12,338	13,202	13,730	14,142	15,132	15,737	16,209	16,696	As Labor
	Total Employee Services	**$614,612**	**$633,855**	**$653,720**	**$692,498**	**$719,562**	**$742,775**	**$786,995**	**$817,780**	**$844,143**	**$871,370**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		*Proposed* FY 2021	*Projected* FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	*Notes*
	Other Services											
20-11	Electricity	$800,000	$832,000	$865,280	$899,891	$935,887	$973,322	$1,012,255	$1,052,745	$1,094,855	$1,138,649	As Utilities
20-15	Telephone	5,500	5,720	5,949	6,187	6,434	6,692	6,959	7,238	7,527	7,828	As Utilities
20-17	Storm Water	3,000	3,120	3,245	3,375	3,510	3,650	3,796	3,948	4,106	4,270	As Utilities
20-25	Maint. & Repair Services	4,500	4,635	4,774	4,917	5,065	5,217	5,373	5,534	5,700	5,871	As Materials & Supplies
20-37	Insurance Premiums	24,994	25,744	26,516	27,312	28,131	28,975	29,844	30,739	31,662	32,612	As Insurance
20-41	Automotive Equip Rental	14,458	15,036	15,638	16,263	16,914	17,590	18,294	19,026	19,787	20,578	As Equipment
20-43	Computer/Tech/Oper Supprt	22,324	23,217	24,146	25,111	26,116	27,161	28,247	29,377	30,552	31,774	As Equipment
20-44	Radio Equipment Rental	508	762	789	816	845	874	905	937	969	1,003	As Radio Equipment
20-47	Telephone Rental	908	944	982	1,021	1,062	1,105	1,149	1,195	1,243	1,292	As Equipment
20-57	Processing Fees	500	515	530	546	563	580	597	615	633	652	As Professional / Special Srvcs
20-65	Prof & Special Services	15,000	15,450	15,914	16,391	16,883	17,389	17,911	18,448	19,002	19,572	As Professional / Special Srvcs
20-66	Other Services	27,000	27,810	28,644	29,504	30,389	31,300	32,239	33,207	34,203	35,229	As Professional / Special Srvcs
	Total Other Services	**$918,692**	**$954,953**	**$992,406**	**$1,031,335**	**$1,071,797**	**$1,113,855**	**$1,157,570**	**$1,203,009**	**$1,250,239**	**$1,299,331**	
	Materials and Supplies											
30-50	Materials And Supplies	$50,000	$51,500	$53,045	$54,636	$56,275	$57,964	$59,703	$61,494	$63,339	$65,239	As Materials & Supplies
30-53	Fuels-Gas/Oil/Propane	9,208	9,484	9,769	10,062	10,364	10,675	10,995	11,325	11,664	12,014	As Materials & Supplies
30-54	Chemicals	60,000	61,800	63,654	65,564	67,531	69,556	71,643	73,792	76,006	78,286	As Materials & Supplies
	Total Materials and Supplies	**$119,208**	**$122,784**	**$126,468**	**$130,262**	**$134,170**	**$138,195**	**$142,341**	**$146,611**	**$151,009**	**$155,539**	
	Other Expenses											
40-10	Training	$1,000	$1,025	$1,051	$1,077	$1,104	$1,131	$1,160	$1,189	$1,218	$1,249	As Miscellaneous
	Total Other Expenses	**$1,000**	**$1,025**	**$1,051**	**$1,077**	**$1,104**	**$1,131**	**$1,160**	**$1,189**	**$1,218**	**$1,249**	
	Total Well Production	**$1,653,512**	**$1,712,618**	**$1,773,644**	**$1,855,171**	**$1,926,632**	**$1,995,956**	**$2,088,065**	**$2,168,588**	**$2,246,609**	**$2,327,489**	
	DWSP Maintenance & Repair											
	Employee Services											
10-10	Salaries - Regular	$425,489	$438,254	$451,401	$482,999	$502,319	$517,389	$553,606	$575,750	$593,023	$610,814	As Labor
10-13	Regular Overtime	10,000	10,300	10,609	11,352	11,806	12,160	13,011	13,531	13,937	14,356	As Labor
10-17	Stand By Time (Call Back)	17,500	18,025	18,566	19,865	20,660	21,280	22,769	23,680	24,391	25,122	As Labor
10-18	Holiday Pay	500	515	530	568	590	608	651	677	697	718	As Labor
10-20	Separation Pay	3,803	3,917	4,035	4,317	4,490	4,624	4,948	5,146	5,300	5,459	As Labor
10-21	Additional Pay	4,626	4,765	4,908	5,251	5,461	5,625	6,019	6,260	6,447	6,641	As Labor
10-25	Retirement	125,160	130,166	135,373	140,788	146,419	152,276	158,367	164,702	171,290	178,142	As Benefits - Other
10-26	Deferred Compensation	23,066	23,758	24,471	26,184	27,231	28,048	30,011	31,212	32,148	33,113	As Labor
10-27	Medicare	6,494	6,689	6,889	7,372	7,667	7,897	8,449	8,787	9,051	9,323	As Labor
10-29	Health/Dental/Vision	60,748	61,963	63,202	65,098	67,051	69,063	71,135	73,269	75,467	77,731	As Benefits - Medical
10-31	L-T Disability Insurance	2,680	2,787	2,899	3,015	3,135	3,261	3,391	3,527	3,668	3,814	As Benefits - Other
10-32	Life Insurance	528	544	560	577	594	612	630	649	669	689	As Insurance
10-33	Workers' Compensation	44,273	46,044	47,886	49,801	51,793	53,865	56,019	58,260	60,591	63,014	As Benefits - Other
10-34	Unemployment Insurance	320	330	339	350	360	371	382	394	405	418	As Insurance
10-45	Cell Phone Allowance	3,144	3,270	3,401	3,537	3,678	3,825	3,978	4,137	4,303	4,475	As Benefits - Other
10-46	Retirement Pension Bond	14,805	15,249	15,707	16,806	17,478	18,003	19,263	20,033	20,634	21,253	As Labor
	Total Employee Services	**$743,136**	**$766,575**	**$790,775**	**$837,879**	**$870,734**	**$898,906**	**$952,631**	**$990,015**	**$1,022,021**	**$1,055,081**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		*Proposed* FY 2021	*Projected* FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	*Notes*
	Other Services											
20-15	Telephone	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	As Utilities
20-25	Maint. & Repair Services	100,000	103,000	106,090	109,273	112,551	115,927	119,405	122,987	126,677	130,477	As Materials & Supplies
20-27	Uniform/Laundry Services	2,400	2,472	2,546	2,623	2,701	2,782	2,866	2,952	3,040	3,131	As Professional / Special Srvcs
20-37	Insurance Premiums	30,206	31,112	32,046	33,007	33,997	35,017	36,068	37,150	38,264	39,412	As Insurance
20-41	Automotive Equip Rental	36,761	38,231	39,761	41,351	43,005	44,725	46,514	48,375	50,310	52,322	As Equipment
20-43	Computer/Tech/Oper Supprt	31,974	33,253	34,583	35,966	37,405	38,901	40,457	42,076	43,759	45,509	As Equipment
20-44	Radio Equipment Rental	508	762	789	816	845	874	905	937	969	1,003	As Radio Equipment
20-47	Telephone Rental	1,363	1,418	1,474	1,533	1,595	1,658	1,725	1,794	1,865	1,940	As Equipment
20-52	Publicity & Advertising	1,200	1,230	1,261	1,292	1,325	1,358	1,392	1,426	1,462	1,499	As Miscellaneous
20-61	Engineering Services	5,000	5,150	5,305	5,464	5,628	5,796	5,970	6,149	6,334	6,524	As Professional / Special Srvcs
20-63	Testing & Analysis Servcs	500	513	525	538	552	566	580	594	609	624	As Miscellaneous
20-65	Prof & Special Services	5,000	5,150	5,305	5,464	5,628	5,796	5,970	6,149	6,334	6,524	As Professional / Special Srvcs
20-66	Other Services	0	0	0	0	0	0	0	0	0	0	As Professional / Special Srvcs
	Total Other Services	**$214,912**	**$222,291**	**$229,683**	**$237,327**	**$245,230**	**$253,402**	**$261,852**	**$270,589**	**$279,624**	**$288,966**	
	Materials and Supplies											
30-50	Materials And Supplies	$201,000	$207,030	$213,241	$219,638	$226,227	$233,014	$240,005	$247,205	$254,621	$262,259	As Materials & Supplies
30-53	Fuels-Gas/Oil/Propane	3,307	3,406	3,508	3,614	3,722	3,834	3,949	4,067	4,189	4,315	As Materials & Supplies
	Total Materials and Supplies	**$204,307**	**$210,436**	**$216,749**	**$223,252**	**$229,949**	**$236,848**	**$243,953**	**$251,272**	**$258,810**	**$266,574**	
	Other Expenses											
40-10	Training	$6,000	$6,150	$6,304	$6,461	$6,623	$6,788	$6,958	$7,132	$7,310	$7,493	As Miscellaneous
	Total Other Expenses	**$6,000**	**$6,150**	**$6,304**	**$6,461**	**$6,623**	**$6,788**	**$6,958**	**$7,132**	**$7,310**	**$7,493**	
	Total DWSP Maintenance & Repair	**$1,168,355**	**$1,205,452**	**$1,243,512**	**$1,304,919**	**$1,352,536**	**$1,395,945**	**$1,465,394**	**$1,519,008**	**$1,567,766**	**$1,618,114**	
	MUD Admin / Finance											
	Employee Services											
10-10	Salaries - Regular	$381,672	$393,122	$404,916	$433,260	$450,590	$464,108	$496,596	$516,459	$531,953	$547,912	As Labor
10-13	Regular Overtime	2,100	2,163	2,228	2,384	2,479	2,554	2,732	2,842	2,927	3,015	As Labor
10-20	Separation Pay	3,231	3,328	3,428	3,668	3,814	3,929	4,204	4,372	4,503	4,638	As Labor
10-21	Additional Pay	644	663	683	731	760	783	838	871	898	924	As Labor
10-25	Retirement	111,751	116,221	120,870	125,705	130,733	135,962	141,401	147,057	152,939	159,057	As Benefits - Other
10-27	Medicare	5,090	5,243	5,400	5,778	6,009	6,189	6,623	6,888	7,094	7,307	As Labor
10-29	Health/Dental/Vision	46,642	47,575	48,526	49,982	51,482	53,026	54,617	56,255	57,943	59,681	As Benefits - Medical
10-31	L-T Disability Insurance	2,405	2,501	2,601	2,705	2,814	2,926	3,043	3,165	3,291	3,423	As Benefits - Other
10-32	Life Insurance	381	392	404	416	429	442	455	469	483	497	As Insurance
10-33	Workers' Compensation	7,719	8,028	8,349	8,683	9,030	9,391	9,767	10,158	10,564	10,987	As Benefits - Other
10-34	Unemployment Insurance	246	253	261	269	277	285	294	303	312	321	As Insurance
10-45	Cell Phone Allowance	1,560	1,622	1,687	1,755	1,825	1,898	1,974	2,053	2,135	2,220	As Benefits - Other
10-46	Retirement Pension Bond	14,344	14,774	15,218	16,283	16,934	17,442	18,663	19,410	19,992	20,592	As Labor
	Total Employee Services	**$577,785**	**$595,886**	**$614,571**	**$651,618**	**$677,176**	**$698,935**	**$741,206**	**$770,300**	**$795,033**	**$820,574**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		Proposed FY 2021	Projected FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Notes
	Other Services											
20-14	Water	$158	$164	$171	$178	$185	$192	$200	$208	$216	$225	As Utilities
20-15	Telephone	0	0	0	0	0	0	0	0	0	0	As Utilities
20-17	Stormwater	480	499	519	540	562	584	607	632	657	683	As Utilities
20-25	Maint. & Repair Services	3,300	3,399	3,501	3,606	3,714	3,826	3,940	4,059	4,180	4,306	As Materials & Supplies
20-27	Uniform/Laundry Services	780	803	828	852	878	904	931	959	988	1,018	As Professional / Special Srvcs
20-34	Duplication/Copy Costs	900	927	955	983	1,013	1,043	1,075	1,107	1,140	1,174	As Materials & Supplies
20-37	Insurance Premiums	25,431	26,194	26,980	27,789	28,623	29,481	30,366	31,277	32,215	33,182	As Materials & Supplies
20-41	Automotive Equip Rental	9,718	10,107	10,511	10,931	11,369	11,823	12,296	12,788	13,300	13,832	As Equipment
20-44	Radio Equipment Rental	724	1,086	1,124	1,163	1,204	1,246	1,290	1,335	1,382	1,430	As Radio Equipment
20-47	Telephone Rental	3,136	3,261	3,392	3,528	3,669	3,815	3,968	4,127	4,292	4,464	As Equipment
20-52	Publicity & Advertising	450	461	473	485	497	509	522	535	548	562	As Miscellaneous
20-54	Postage/Mailing Services	330	340	350	361	371	383	394	406	418	431	As Professional / Special Srvcs
20-57	Processing Fees	150	155	159	164	169	174	179	184	190	196	As Professional / Special Srvcs
20-58	Legal Services	3,000	3,090	3,183	3,278	3,377	3,478	3,582	3,690	3,800	3,914	As Professional / Special Srvcs
20-63	Testing & Analysis Servcs	60	62	63	65	66	68	70	71	73	75	As Miscellaneous
20-64	Training Services	3,000	3,090	3,183	3,278	3,377	3,478	3,582	3,690	3,800	3,914	As Professional / Special Srvcs
20-65	Prof & Special Services	15,000	15,450	15,914	16,391	16,883	17,389	17,911	18,448	19,002	19,572	As Professional / Special Srvcs
20-66	Other Services	26,400	27,192	28,008	28,848	29,713	30,605	31,523	32,469	33,443	34,446	As Professional / Special Srvcs
	Total Other Services	**$93,017**	**$96,280**	**$99,312**	**$102,440**	**$105,668**	**$108,999**	**$112,437**	**$115,984**	**$119,645**	**$123,422**	
	Materials and Supplies											
30-50	Materials And Supplies	$54,900	$56,547	$58,243	$59,991	$61,790	$63,644	$65,553	$67,520	$69,546	$71,632	As Materials & Supplies
30-51	Computer Software	150	156	162	169	175	182	190	197	205	213	As Equipment
30-53	Fuels-Gas/Oil/Propane	353	364	374	386	397	409	422	434	447	461	As Materials & Supplies
	Total Materials and Supplies	**$55,403**	**$57,067**	**$58,780**	**$60,545**	**$62,363**	**$64,236**	**$66,165**	**$68,152**	**$70,198**	**$72,306**	
	Other Expenses											
40-10	Training	$3,000	$3,075	$3,152	$3,231	$3,311	$3,394	$3,479	$3,566	$3,655	$3,747	As Miscellaneous
40-12	Meetings & Travel	150	154	158	162	166	170	174	178	183	187	As Miscellaneous
40-14	Memberships	158	163	168	173	178	183	189	194	200	206	As Materials & Supplies
	Total Other Expenses	**$3,308**	**$3,391**	**$3,477**	**$3,565**	**$3,655**	**$3,747**	**$3,842**	**$3,939**	**$4,038**	**$4,140**	
	Total MUD Admin / Finance	**$729,513**	**$752,625**	**$776,140**	**$818,168**	**$848,862**	**$875,918**	**$923,649**	**$958,374**	**$988,914**	**$1,020,442**	
	Engineering Services											
	Employee Services											
10-10	Salaries - Regular	$123,841	$127,556	$131,383	$140,580	$146,203	$150,589	$161,130	$167,575	$172,603	$177,781	As Labor
10-13	Regular Overtime	300	309	318	341	354	365	390	406	418	431	As Labor
10-20	Separation Pay	3,987	4,107	4,230	4,526	4,707	4,848	5,188	5,395	5,557	5,724	As Labor
10-21	Additional Pay	947	975	1,005	1,075	1,118	1,152	1,232	1,281	1,320	1,359	As Labor
10-25	Retirement	36,475	37,934	39,451	41,029	42,671	44,377	46,153	47,999	49,919	51,915	As Benefits - Other
10-27	Medicare	1,776	1,829	1,884	2,016	2,097	2,160	2,311	2,403	2,475	2,550	As Labor
10-29	Health/Dental/Vision	13,992	14,272	14,557	14,994	15,444	15,907	16,384	16,876	17,382	17,904	As Benefits - Medical
10-31	L-T Disability Insurance	780	796	812	836	861	887	913	941	969	998	As Benefits - Medical
10-32	Life Insurance	113	116	120	123	127	131	135	139	143	147	As Insurance
10-33	Workers' Compensation	3,182	3,309	3,442	3,579	3,722	3,871	4,026	4,187	4,355	4,529	As Benefits - Other
10-34	Unemployment Insurance	74	76	79	81	83	86	88	91	94	97	As Insurance
10-45	Cell Phone Allowance	194	202	210	218	227	236	245	255	266	276	As Benefits - Other
10-46	Retirement Pension Bond	17,419	17,942	18,480	19,773	20,564	21,181	22,664	23,571	24,278	25,006	As Labor
	Total Employee Services	**$203,080**	**$209,423**	**$215,970**	**$229,172**	**$238,178**	**$245,790**	**$260,860**	**$271,119**	**$279,777**	**$288,716**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		Proposed FY 2021	Projected FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Notes
	Other Services											
20-15	Telephone	210	218	227	236	246	255	266	276	287	299	As Utilities
20-25	Maint. & Repair Services	900	927	955	983	1,013	1,043	1,075	1,107	1,140	1,174	As Materials & Supplies
20-27	Uniform/Laundry Services	83	85	88	91	93	96	99	102	105	108	As Professional / Special Srvcs
20-34	Duplication/Copy Costs	300	309	318	328	338	348	358	369	380	391	As Materials & Supplies
20-37	Insurance Premiums	8,260	8,508	8,763	9,026	9,297	9,576	9,863	10,159	10,464	10,777	As Insurance
20-41	Automotive Equip Rental	430	447	465	484	503	523	544	566	588	612	As Equipment
20-44	Radio Equipment Rental	286	429	444	460	476	492	510	527	546	565	As Radio Equipment
20-47	Telephone Rental	1,159	1,205	1,254	1,304	1,356	1,410	1,467	1,525	1,586	1,650	As Equipment
20-52	Publicity & Advertising	750	769	788	808	828	849	870	892	914	937	As Miscellaneous
20-53	Printing & Mapping	75	77	80	82	84	87	90	92	95	98	As Materials & Supplies
20-54	Postage/Mailing Services	75	77	80	82	84	87	90	92	95	98	As Professional / Special Srvcs
20-57	Processing Fees	138	142	146	151	155	160	165	170	175	180	As Professional / Special Srvcs
20-63	Testing & Analysis Servcs	75	77	79	81	83	85	87	89	91	94	As Miscellaneous
20-65	Prof & Special Services	11,250	11,588	11,935	12,293	12,662	13,042	13,433	13,836	14,251	14,679	As Professional / Special Srvcs
20-66	Other Services	90	93	95	98	101	104	107	111	114	117	As Professional / Special Srvcs
	Total Other Services	**$24,081**	**$24,952**	**$25,717**	**$26,506**	**$27,319**	**$28,157**	**$29,022**	**$29,913**	**$30,832**	**$31,779**	
	Materials and Supplies											
30-50	Materials And Supplies	$23,750	$24,463	$25,196	$25,952	$26,731	$27,533	$28,359	$29,210	$30,086	$30,988	As Materials & Supplies
30-51	Computer Software	2,250	2,340	2,434	2,531	2,632	2,737	2,847	2,961	3,079	3,202	As Equipment
30-52	Subscription-Periodical	8	8	8	9	9	9	10	10	10	10	As Materials & Supplies
30-53	Fuels-Gas/Oil/Propane	140	144	149	153	158	162	167	172	177	183	As Materials & Supplies
	Total Materials and Supplies	**$26,148**	**$26,955**	**$27,787**	**$28,645**	**$29,530**	**$30,442**	**$31,382**	**$32,352**	**$33,353**	**$34,384**	
	Other Expenses											
40-10	Training	$1,800	$1,845	$1,891	$1,938	$1,987	$2,037	$2,087	$2,140	$2,193	$2,248	As Miscellaneous
40-12	Meetings & Travel	75	77	79	81	83	85	87	89	91	94	As Miscellaneous
40-14	Memberships	270	278	286	295	304	313	322	332	342	352	As Materials & Supplies
40-15	Car Mileage Reimbursement	23	24	24	25	26	27	27	28	29	30	As Materials & Supplies
	Total Other Expenses	**$2,168**	**$2,224**	**$2,281**	**$2,339**	**$2,399**	**$2,461**	**$2,524**	**$2,589**	**$2,656**	**$2,724**	
	Total Engineering Services	**$255,477**	**$263,554**	**$271,754**	**$286,662**	**$297,426**	**$306,850**	**$323,789**	**$335,974**	**$346,617**	**$357,603**	
	Lab Services											
	Employee Services											
10-10	Salaries - Regular	$101,859	$104,915	$108,062	$115,627	$120,252	$123,859	$132,529	$137,830	$141,965	$146,224	As Labor
10-11	Salaries Part Time - Temp	8,000	8,240	8,487	9,081	9,445	9,728	10,409	10,825	11,150	11,484	As Labor
10-13	Regular Overtime	860	886	912	976	1,015	1,046	1,119	1,164	1,199	1,235	As Labor
10-18	Holiday Pay	560	577	594	636	661	681	729	758	780	804	As Labor
10-21	Additional Pay	209	215	222	237	247	254	272	283	291	300	As Labor
10-25	Retirement	30,030	31,231	32,480	33,780	35,131	36,536	37,998	39,517	41,098	42,742	As Benefits - Other
10-26	Deferred Compensation	5,304	5,463	5,627	6,021	6,262	6,450	6,901	7,177	7,392	7,614	As Labor
10-27	Medicare	1,582	1,629	1,678	1,796	1,868	1,924	2,058	2,141	2,205	2,271	As Labor
10-29	Health/Dental/Vision	16,495	16,825	17,161	17,676	18,207	18,753	19,315	19,895	20,492	21,106	As Benefits - Medical
10-31	L-T Disability Insurance	642	668	694	722	751	781	812	845	879	914	As Benefits - Other
10-32	Life Insurance	144	148	153	157	162	167	172	177	182	188	As Insurance
10-33	Workers' Compensation	2,823	2,936	3,053	3,175	3,303	3,435	3,572	3,715	3,863	4,018	As Benefits - Other
10-34	Unemployment Insurance	87	90	92	95	98	101	104	107	110	114	As Insurance
10-45	Cell Phone Allowance	210	218	227	236	246	255	266	276	287	299	As Benefits - Other
10-46	Retirement Pension Bond	21	22	22	24	25	26	27	28	29	30	As Labor
	Total Employee Services	**$168,826**	**$174,063**	**$179,467**	**$190,240**	**$197,670**	**$203,995**	**$216,283**	**$224,739**	**$231,924**	**$239,343**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		Proposed FY 2021	Projected FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Notes
	Other Services											
20-15	Telephone	$540	$562	$584	$607	$632	$657	$683	$711	$739	$769	As Utilities
20-25	Maint. & Repair Services	18,100	18,643	19,202	19,778	20,372	20,983	21,612	22,261	22,929	23,616	As Materials & Supplies
20-27	Uniform/Laundry Services	480	494	509	525	540	556	573	590	608	626	As Professional / Special Srvcs
20-34	Duplication/Copy Costs	100	103	106	109	113	116	119	123	127	130	As Materials & Supplies
20-37	Insurance Premiums	7,368	7,589	7,817	8,051	8,293	8,542	8,798	9,062	9,334	9,614	As Materials & Supplies
20-41	Automotive Equip Rental	3,698	3,846	4,000	4,160	4,326	4,499	4,679	4,866	5,061	5,263	As Equipment
20-44	Radio Equipment Rental	381	572	592	612	634	656	679	703	727	753	As Radio Equipment
20-47	Telephone Rental	636	661	688	715	744	774	805	837	870	905	As Equipment
20-52	Publicity & Advertising	200	205	210	215	221	226	232	238	244	250	As Miscellaneous
20-54	Postage/Mailing Services	50	52	53	55	56	58	60	61	63	65	As Professional / Special Srvcs
20-57	Processing Fees	5,840	6,015	6,196	6,382	6,573	6,770	6,973	7,182	7,398	7,620	As Professional / Special Srvcs
20-63	Testing & Analysis Servcs	120	123	126	129	132	136	139	143	146	150	As Miscellaneous
20-64	Training Service	150	155	159	164	169	174	179	184	190	196	As Professional / Special Srvcs
20-65	Prof & Special Services	12,000	12,360	12,731	13,113	13,506	13,911	14,329	14,758	15,201	15,657	As Professional / Special Srvcs
20-66	Other Services	30	31	32	33	34	35	36	37	38	39	As Professional / Special Srvcs
20-68	Laboratory Service	54,280	55,908	57,586	59,313	61,093	62,925	64,813	66,758	68,760	70,823	As Professional / Special Srvcs
	Total Other Services	**$103,973**	**$107,318**	**$110,590**	**$113,962**	**$117,437**	**$121,018**	**$124,709**	**$128,514**	**$132,435**	**$136,476**	
	Materials and Supplies											
30-50	Materials And Supplies	$31,750	$32,703	$33,684	$34,694	$35,735	$36,807	$37,911	$39,048	$40,220	$41,427	As Materials & Supplies
30-51	Computer Software	1,700	1,768	1,839	1,912	1,989	2,068	2,151	2,237	2,327	2,420	As Equipment
30-53	Fuels-Gas/Oil/Propane	602	620	639	658	678	698	719	740	763	785	As Materials & Supplies
30-54	Chemicals	12,200	12,566	12,943	13,331	13,731	14,143	14,567	15,004	15,455	15,918	As Materials & Supplies
30-55	Library Materials	120	124	127	131	135	139	143	148	152	157	As Materials & Supplies
	Total Materials and Supplies	**$46,372**	**$47,780**	**$49,231**	**$50,727**	**$52,267**	**$53,855**	**$55,492**	**$57,178**	**$58,916**	**$60,706**	
	Other Expenses											
40-10	Training	$2,400	$2,460	$2,522	$2,585	$2,649	$2,715	$2,783	$2,853	$2,924	$2,997	As Miscellaneous
40-12	Meetings & Travel	416	426	437	448	459	471	482	494	507	520	As Miscellaneous
40-14	Memberships	376	387	399	411	423	436	449	462	476	491	As Materials & Supplies
	Total Other Expenses	**$3,192**	**$3,274**	**$3,357**	**$3,443**	**$3,532**	**$3,622**	**$3,715**	**$3,810**	**$3,907**	**$4,007**	
	Total Lab Services	**$322,363**	**$332,435**	**$342,646**	**$358,371**	**$370,906**	**$382,490**	**$400,199**	**$414,240**	**$427,182**	**$440,534**	
	Safety											
	Employee Services											
10-10	Salaries - Regular	$73,191	$75,387	$77,648	$83,084	$86,407	$88,999	$95,229	$99,038	$102,010	$105,070	As Labor
10-13	Regular Overtime	750	773	796	851	885	912	976	1,015	1,045	1,077	As Labor
10-25	Retirement	21,414	22,271	23,161	24,088	25,051	26,053	27,096	28,179	29,307	30,479	As Benefits - Other
10-26	Deferred Compensation	1,404	1,446	1,490	1,594	1,658	1,707	1,827	1,900	1,957	2,016	As Labor
10-27	Medicare	1,009	1,039	1,070	1,145	1,191	1,227	1,313	1,365	1,406	1,448	As Labor
10-29	Health/Dental/Vision	10,921	11,139	11,362	11,703	12,054	12,416	12,788	13,172	13,567	13,974	As Benefits - Medical
10-31	L-T Disability Insurance	461	479	499	519	539	561	583	607	631	656	As Benefits - Other
10-32	Life Insurance	91	94	97	99	102	105	109	112	115	119	As Insurance
10-33	Workers' Compensation	1,486	1,545	1,607	1,672	1,738	1,808	1,880	1,955	2,034	2,115	As Benefits - Other
10-34	Unemployment Insurance	58	60	62	63	65	67	69	71	73	76	As Insurance
10-45	Cell Phone Allowance	384	399	415	432	449	467	486	505	526	547	As Benefits - Other
	Total Employee Services	**$111,169**	**$114,632**	**$118,207**	**$125,250**	**$130,141**	**$134,323**	**$142,356**	**$147,920**	**$152,670**	**$157,576**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		Proposed FY 2021	Projected FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Notes
	Other Services											
20-25	Maint. & Repair Services	$600	$618	$637	$656	$675	$696	$716	$738	$760	$783	As Materials & Supplies
20-27	Uniform/Laundry Services	250	258	265	273	281	290	299	307	317	326	As Professional / Special Srvcs
20-34	Duplication/Copy Costs	1,250	1,288	1,326	1,366	1,407	1,449	1,493	1,537	1,583	1,631	As Materials & Supplies
20-37	Insurance Premiums	4,881	5,027	5,178	5,334	5,494	5,658	5,828	6,003	6,183	6,369	As Insurance
20-44	Radio Equipment Rental	603	905	936	969	1,003	1,038	1,074	1,112	1,151	1,191	As Radio Equipment
20-47	Telephone Rental	227	236	246	255	266	276	287	299	311	323	As Equipment
20-54	Postage/Mailing Services	63	65	67	69	71	73	75	77	80	82	As Professional / Special Srvcs
20-64	Training Service	50,000	51,500	53,045	54,636	56,275	57,964	59,703	61,494	63,339	65,239	As Professional / Special Srvcs
20-65	Prof & Special Services	25,000	25,750	26,523	27,318	28,138	28,982	29,851	30,747	31,669	32,619	As Professional / Special Srvcs
20-66	Other Services	87,652	90,282	92,990	95,780	98,653	101,613	104,661	107,801	111,035	114,366	As Professional / Special Srvcs
	Total Other Services	**$170,526**	**$175,927**	**$181,212**	**$186,656**	**$192,263**	**$198,038**	**$203,987**	**$210,115**	**$216,427**	**$222,929**	
	Materials and Supplies											
30-50	Materials And Supplies	$24,788	$25,532	$26,298	$27,087	$27,899	$28,736	$29,598	$30,486	$31,401	$32,343	As Materials & Supplies
30-51	Computer Software	1,875	1,950	2,028	2,109	2,193	2,281	2,372	2,467	2,566	2,669	As Equipment
30-52	Subscription-Periodicals	750	773	796	820	844	869	896	922	950	979	As Materials & Supplies
30-55	Library Materials	625	644	663	683	703	725	746	769	792	815	As Materials & Supplies
	Total Materials and Supplies	**$28,038**	**$28,898**	**$29,784**	**$30,698**	**$31,640**	**$32,611**	**$33,612**	**$34,645**	**$35,709**	**$36,805**	
	Other Expenses											
40-10	Training	$5,250	$5,381	$5,516	$5,654	$5,795	$5,940	$6,088	$6,241	$6,397	$6,557	As Miscellaneous
40-14	Memberships	318	328	337	347	358	369	380	391	403	415	As Materials & Supplies
	Total Other Expenses	**$5,568**	**$5,709**	**$5,853**	**$6,001**	**$6,153**	**$6,309**	**$6,468**	**$6,632**	**$6,799**	**$6,971**	
	Total Safety	**$315,301**	**$325,166**	**$335,056**	**$348,605**	**$360,197**	**$371,282**	**$386,424**	**$399,312**	**$411,606**	**$424,281**	
	SCADA											
	Employee Services											
10-10	Salaries - Regular	$89,616	$92,304	$95,074	$101,729	$105,798	$108,972	$116,600	$121,264	$124,902	$128,649	As Labor
10-13	Regular Overtime	640	659	679	727	756	778	833	866	892	919	As Labor
10-25	Retirement	26,195	27,243	28,333	29,466	30,644	31,870	33,145	34,471	35,850	37,284	As Benefits - Other
10-27	Medicare	1,287	1,326	1,365	1,461	1,519	1,565	1,675	1,742	1,794	1,848	As Labor
10-29	Health/Dental/Vision	10,921	11,139	11,362	11,703	12,054	12,416	12,788	13,172	13,567	13,974	As Benefits - Medical
10-31	L-T Disability Insurance	565	582	599	617	636	655	675	695	716	737	As Insurance
10-32	Life Insurance	86	89	91	94	97	100	103	106	109	112	As Insurance
10-33	Workers' Compensation	1,813	1,886	1,961	2,039	2,121	2,206	2,294	2,386	2,481	2,580	As Benefits - Other
10-34	Unemployment Insurance	58	60	62	63	65	67	69	71	73	76	As Insurance
10-45	Cell Phone Allowance	384	399	415	432	449	467	486	505	526	547	As Benefits - Other
	Total Employee Services	**$131,565**	**$135,687**	**$139,941**	**$148,331**	**$154,140**	**$159,096**	**$168,667**	**$175,277**	**$180,909**	**$186,725**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		*Proposed* FY 2021	*Projected* FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	*Notes*
	Other Services											
20-15	Telephone	$11,200	$11,648	$12,114	$12,598	$13,102	$13,627	$14,172	$14,738	$15,328	$15,941	As Utilities
20-37	Insurance Premiums	5,957	6,136	6,320	6,509	6,705	6,906	7,113	7,326	7,546	7,773	As Materials & Supplies
20-47	Telephone Rental	582	605	629	655	681	708	736	766	797	828	As Equipment
20-65	Prof & Special Services	27,200	28,016	28,856	29,722	30,614	31,532	32,478	33,453	34,456	35,490	As Professional / Special Srvcs
	Total Other Services	**$44,939**	**$46,405**	**$47,920**	**$49,485**	**$51,102**	**$52,773**	**$54,499**	**$56,283**	**$58,127**	**$60,032**	
	Materials and Supplies											
30-50	Materials And Supplies	$17,000	$17,510	$18,035	$18,576	$19,134	$19,708	$20,299	$20,908	$21,535	$22,181	As Materials & Supplies
30-51	Computer Software	56,128	58,373	60,708	63,136	65,662	68,288	71,020	73,861	76,815	79,888	As Equipment
	Total Materials and Supplies	**$73,128**	**$75,883**	**$78,743**	**$81,713**	**$84,795**	**$87,996**	**$91,319**	**$94,768**	**$98,350**	**$102,069**	
	Other Expenses											
40-10	Training	$480	$492	$504	$517	$530	$543	$557	$571	$585	$599	As Miscellaneous
40-12	Meeting & Travel	1,280	1,312	1,345	1,378	1,413	1,448	1,484	1,522	1,560	1,599	As Miscellaneous
40-15	Car Mileage Reimbursement	320	330	339	350	360	371	382	394	405	418	As Materials & Supplies
	Total Other Expenses	**$2,080**	**$2,134**	**$2,189**	**$2,245**	**$2,303**	**$2,362**	**$2,423**	**$2,486**	**$2,550**	**$2,616**	
	Total SCADA	**$251,712**	**$260,108**	**$268,793**	**$281,774**	**$292,340**	**$302,227**	**$316,908**	**$328,815**	**$339,936**	**$351,441**	
	Outreach & Training											
	Employee Services											
10-13	Regular Overtime	$750	$773	$796	$851	$885	$912	$976	$1,015	$1,045	$1,077	As Labor
10-27	Medicare	11	11	12	12	13	13	14	15	15	16	As Labor
10-33	Workers Compensation	15	15	16	17	18	18	20	20	21	22	As Labor
10-97	Summary Account	0	0	0	0	0	0	0	0	0	0	As Labor
	Total Employee Services	**$776**	**$799**	**$823**	**$881**	**$916**	**$944**	**$1,010**	**$1,050**	**$1,082**	**$1,114**	
	Other Services											
20-34	Duplication/Copy Costs	$5,000	$5,200	$5,408	$5,624	$5,849	$6,083	$6,327	$6,580	$6,843	$7,117	As Utilities
20-37	Insurance Premiums	50	52	53	55	56	58	60	61	63	65	As Insurance
20-52	Publicity & Advertising	55,000	56,375	57,784	59,229	60,710	62,227	63,783	65,378	67,012	68,687	As Miscellaneous
20-53	Printing & Mapping	250	260	270	281	292	304	316	329	342	356	As Equipment
20-54	Postage/Mailing Services	20,000	20,600	21,218	21,855	22,510	23,185	23,881	24,597	25,335	26,095	As Professional / Special Srvcs
20-64	Training Services	1,500	1,545	1,591	1,639	1,688	1,739	1,791	1,845	1,900	1,957	As Professional / Special Srvcs
20-65	Prof & Special Services	18,000	18,540	19,096	19,669	20,259	20,867	21,493	22,138	22,802	23,486	As Professional / Special Srvcs
20-97	Summary Account	0	0	0	0	0	0	0	0	0	0	
	Total Other Services	**$99,800**	**$102,572**	**$105,421**	**$108,352**	**$111,365**	**$114,464**	**$117,651**	**$120,928**	**$124,298**	**$127,764**	
	Materials and Supplies											
30-50	Materials & Supplies	$15,500	$15,965	$16,444	$16,937	$17,445	$17,969	$18,508	$19,063	$19,635	$20,224	As Materials & Supplies
30-51	Computer Software	500	520	541	562	585	608	633	658	684	712	As Equipment
30-52	Subscription-Periodical	250	258	265	273	281	290	299	307	317	326	As Materials & Supplies
30-97	Summary Account (2)	0	0	0	0	0	0	0	0	0	0	As Materials & Supplies
	Total Materials and Supplies	**$16,250**	**$16,743**	**$17,250**	**$17,773**	**$18,312**	**$18,867**	**$19,439**	**$20,028**	**$20,636**	**$21,262**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		Proposed FY 2021	Projected FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Notes
	Other Expenses											
40-10	Training	$500	$513	$525	$538	$552	$566	$580	$594	$609	$624	As Miscellaneous
40-12	Meetings & Travel	250	256	263	269	276	283	290	297	305	312	As Miscellaneous
40-14	Memberships	250	258	265	273	281	290	299	307	317	326	As Materials & Supplies
40-97	Summary Account (3)	0	0	0	0	0	0	0	0	0	0	As Materials & Supplies
	Total Other Expenses	**$1,000**	**$1,026**	**$1,053**	**$1,081**	**$1,109**	**$1,138**	**$1,168**	**$1,199**	**$1,230**	**$1,263**	
	Total Outreach & Training	**$117,826**	**$121,140**	**$124,548**	**$128,086**	**$131,702**	**$135,413**	**$139,268**	**$143,205**	**$147,246**	**$151,402**	
	Total Operations & Maintenance	**$35,022,842**	**$36,641,066**	**$38,384,019**	**$40,564,443**	**$42,607,554**	**$44,668,391**	**$47,225,873**	**$49,630,222**	**$52,059,434**	**$54,620,932**	
	Debt Service											
	2002 A Revenue Bond	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	Ref - 2018 A
	2005 A Revenue Bond	0	0	0	0	0	0	0	0	0	0	Ref - 2018 A
	2009 A Revenue Bond	0	0	0	0	0	0	0	0	0	0	Ref - 2018 A
	2009 B Revenue Bond	0	0	0	0	0	0	0	0	0	0	Ref - 2018 A
	Less BAB Interest Rebate	0	0	0	0	0	0	0	0	0	0	
	2010 A Revenue Bond	0	0	0	0	0	0	0	0	0	0	Ref - 2019 A
	2017 A Revenue Bond	0	0	0	0	0	0	0	0	0	0	Ref - 2018 A
	Drought Relief Loan	0	0	0	0	0	0	0	0	0	0	Exhibit 5
	2018 A Revenue Bond	11,860,050	11,873,675	11,878,425	11,601,050	11,611,050	11,620,675	11,634,050	11,650,175	11,663,175	11,662,550	Exhibit 5
	2019 A Revenue Bond	2,425,436	2,419,612	2,423,025	2,420,538	2,417,173	2,417,958	2,422,743	2,421,549	2,419,409	2,421,143	Exhibit 6
	New SRF Loans	0	0	0	0	0	0	0	0	0	0	Calc @ 2.4% for 20 Yrs
	New Revenue Bonds	0	0	0	0	0	0	0	0	0	0	Calc @ 4.6% for 20 Yrs
	Balance to Debt Paid	0	0	0	0	0	0	0	0	0	0	
	Total Debt Service	**$14,285,486**	**$14,293,287**	**$14,301,450**	**$14,021,588**	**$14,028,223**	**$14,038,633**	**$14,056,793**	**$14,071,724**	**$14,082,584**	**$14,083,693**	
	Less Connection Fees	$0	$0	$0	$0	$0	$350,000	$350,000	$350,000	$350,000	$350,000	
	Less DWSP Fees	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	
	Net Debt Service	**$13,785,486**	**$13,793,287**	**$13,801,450**	**$13,521,588**	**$13,528,223**	**$13,188,633**	**$13,206,793**	**$13,221,724**	**$13,232,584**	**$13,233,693**	
	Rate Funded Capital	**$9,000,000**	**$8,675,000**	**$8,950,000**	**$9,250,000**	**$9,250,000**	**$9,500,000**	**$10,000,000**	**$10,400,000**	**$10,700,000**	**$11,000,000**	$8,071,035 FY 2019 Dep. Exp.
	Reserve Funding											
	To/(From) Operating Cash	$310,300	$45,651	($4,705)	($175,210)	$249,381	$858,402	$535,600	$606,486	$552,718	$482,677	
	To/(From) Capital Reserve	0	0	0	0	0	0	0	0	0	0	
	To/(From) Rate Stabilization	0	0	0	0	0	0	0	0	0	0	
	Total Reserve Funding	**$310,300**	**$45,651**	**($4,705)**	**($175,210)**	**$249,381**	**$858,402**	**$535,600**	**$606,486**	**$552,718**	**$482,677**	
	Total Revenue Requirement	**$58,118,628**	**$59,155,004**	**$61,130,764**	**$63,160,822**	**$65,635,157**	**$68,215,425**	**$70,968,266**	**$73,858,432**	**$76,544,737**	**$79,337,302**	
	Bal/(Def.) of Funds	$0	$0	($1,808,060)	($3,697,799)	($5,952,010)	($8,318,546)	($10,802,536)	($13,409,343)	($15,811,048)	($18,318,557)	
	Rate Adj. as a % of Rate Rev.	0.0%	0.0%	3.5%	7.1%	11.4%	15.9%	20.5%	25.3%	29.7%	34.2%	
	Proposed Rate Adjustment	**0.0%**	**0.0%**	**3.5%**	**3.5%**	**4.0%**	**4.0%**	**4.0%**	**4.0%**	**3.5%**	**3.5%**	
	Effective Months	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	
	Add'l Revenue from Adj.	$0	$0	$1,808,060	$3,697,799	$5,952,010	$8,318,546	$10,802,536	$13,409,343	$15,811,048	$18,318,557	
	Total Bal/(Def.) of Funds	$0	$0	$0	($0)	$0	($0)	$0	$0	$0	($0)	
	Additional Rate Increase Needed	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	

City of Stockton MUD
Water Master Plan
Exhibit 3
Revenue Requirement

Acct. #		*Proposed* FY 2021	*Projected* FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	*Notes*
	Avg Res Monthly Bill (5/8" Meter + 15CCF)											
	After Proposed Rate Adjustment	$70.95	$70.95	$73.43	$76.00	$79.04	$82.21	$85.49	$88.91	$92.03	$95.25	
	Annual $ Change	0.00	0.00	2.48	2.57	3.04	3.16	3.29	3.42	3.11	3.22	
	Cumulative Change	0.00	0.00	2.48	5.05	8.09	11.26	14.54	17.96	21.08	24.30	
	Reserve Funds											
	Beginning Balance *(not including 421 or 425)*	**$70,368,596**	**$68,307,112**	**$65,234,166**	**$46,679,585**	**$44,389,884**	**$39,225,611**	**$37,284,789**	**$37,820,390**	**$38,426,876**	**$38,979,594**	
421	***Operating Cash***											
	Beginning Balance	**$70,368,596**	**$68,307,112**	**$65,234,166**	**$46,679,585**	**$44,389,884**	**$39,225,611**	**$37,284,789**	**$37,820,390**	**$38,426,876**	**$38,979,594**	
	Plus: To Operating Reserves	310,300	45,651	0	0	249,381	858,402	535,600	606,486	552,718	482,677	
	From: Rate Stabilization Fund	0	0	0	0	0	0	0	0	0	0	
	Less: Transfer to 425	(2,371,784)	(2,530,939)	(2,600,529)	0	(2,565,202)	0	0	0	0	0	
	Less: Defeasance	0	0	0	0	0	0	0	0	0	0	
	Less: Uses of Funds	0	(587,658)	(15,954,051)	(2,289,702)	(2,848,452)	(2,799,223)	0	0	0	0	
	Ending Balance	**$68,307,112**	**$65,234,166**	**$46,679,585**	**$44,389,884**	**$39,225,611**	**$37,284,789**	**$37,820,390**	**$38,426,876**	**$38,979,594**	**$39,462,270**	
	Target: 180 days of O&M	*$17,271,539*	*$18,069,567*	*$18,929,105*	*$20,004,383*	*$21,011,944*	*$22,028,247*	*$23,289,472*	*$24,475,178*	*$25,673,146*	*$26,936,350*	
	days of O&M	*712*	*650*	*444*	*399*	*336*	*305*	*292*	*283*	*273*	*264*	
424	***Connection Fee Reserve***											
	Beginning Balance	**($0)**	**$0**	**$0**	**$0**	**$327,305**	**$0**	**$115,625**	**$241,684**	**$378,466**	**$526,268**	
	Plus: Connection Fees	418,055	426,416	434,945	443,644	452,517	461,567	470,798	480,214	489,819	499,615	
	Plus: Transfer from 421	2,371,784	2,530,939	2,600,529	0	2,565,202	0	0	0	0	0	
	Plus: Interest	12,883	15,296	17,439	2,814	22,373	4,058	5,260	6,568	7,984	9,511	
	Less: Uses of Funds	(2,802,722)	(2,972,652)	(3,052,913)	(119,153)	(3,367,396)	(350,000)	(350,000)	(350,000)	(350,000)	(350,000)	
	Ending Balance	**$0**	**$0**	**$0**	**$327,305**	**$0**	**$115,625**	**$241,684**	**$378,466**	**$526,268**	**$685,394**	
425	***DWSP SWSF Fund***											
	Beginning Balance	**$3,295,762**	**$3,546,595**	**$3,817,630**	**$4,109,875**	**$4,420,175**	**$4,749,011**	**$5,096,879**	**$5,464,282**	**$5,851,739**	**$6,259,776**	
	Plus: Connection Fees	723,573	738,044	752,805	767,861	783,219	798,883	814,861	831,158	847,781	864,737	
	Plus: Interest	27,260	32,991	39,440	42,438	45,618	48,985	52,543	56,299	60,256	64,421	
	Less: Uses of Funds	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	
	Ending Balance	**$3,546,595**	**$3,817,630**	**$4,109,875**	**$4,420,175**	**$4,749,011**	**$5,096,879**	**$5,464,282**	**$5,851,739**	**$6,259,776**	**$6,688,934**	
	Ending Balance *(not including 421 or 425)*	**$68,307,112**	**$65,234,166**	**$46,679,585**	**$44,389,884**	**$39,225,611**	**$37,284,789**	**$37,820,390**	**$38,426,876**	**$38,979,594**	**$39,462,270**	
	Total Target	*$17,271,539*	*$18,069,567*	*$18,929,105*	*$20,004,383*	*$21,011,944*	*$22,028,247*	*$23,289,472*	*$24,475,178*	*$25,673,146*	*$26,936,350*	

City of Stockton MUD
Water Master Plan
Exhibit 4
Capital Improvement Plan

Inflation	**2.7%**

Fund		FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	*Total*
	Water Connection Fee												
424	Henry Long Loop Reimbursement	$0	$0	$0	$0	$0	$149,069	$0	$0	$0	$0	$0	$149,069
424	Holman Rd / Hendrix Dr to Eight Mile Oversizing	0	0	0	0	0	240,290	0	0	0	0	0	240,290
424	Lower Sac Rd Water Main (Marlette and 8 Mile Rd)	0	0	0	0	0	229,165	0	0	0	0	0	229,165
424	Northest Reservoir No. 1 and Pump Station	0	0	0	0	0	0	0	0	0	0	0	0
424	Origone Ranch Oversizing Reimbursment	0	0	0	0	0	291,463	0	0	0	0	0	291,463
424	Preserve / Atlas Tract Oversizing	0	0	0	0	0	537,315	0	0	0	0	0	537,315
424	Sactury / Shima Tract Oversizing Reimbursement	0	0	0	0	0	1,920,094	0	0	0	0	0	1,920,094
424	Tam O'Shanter Dr and Knickerbocker Dr Roundabout	0	0	0	0	0	0	0	0	0	0	0	0
424	Veteran Affairs Medical Center Off-Site Improv.	0	0	0	0	0	0	0	0	0	0	0	0
424	Waterline Extension for VA Medical Facility	0	1,757,722	0	0	0	0	0	0	0	0	0	1,757,722
424	West, East, and South Bear Creek Oversizing Reimb.	0	1,045,000	2,972,652	3,052,913	0	0	0	0	0	0	0	7,070,565
424	Westlake Village Oversizing Reimb.	0	0	0	0	119,153	0	0	0	0	0	0	119,153
	Total Water Connection Fee	**$0**	**$2,802,722**	**$2,972,652**	**$3,052,913**	**$119,153**	**$3,367,396**	**$0**	**$0**	**$0**	**$0**	**$0**	**$12,314,835**
	Water												
423/427	16" Water Line Along I-5 North of East Roth Rd	$0	$0	$0	$0	$94,759	$708,099	$0	$0	$0	$0	$0	$802,858
423/427	Cathodic Protection (Bear Creek & Trinity Pkwy)	0	121,000	0	0	0	0	0	0	0	0	0	121,000
423/427	Left Turn Lane Additions at Various Locations	0	0	0	0	0	0	0	0	0	0	0	0
423/427	Lincoln St and 8th St Roundabout	0	0	0	0	0	0	0	0	0	0	0	0
423/427	Groundwater Recharge Basin	0	329,000	0	0	0	0	0	0	0	0	0	329,000
423/427	Water Main Relocation - Bonniebrook Dr	0	281,000	0	0	0	0	0	0	0	0	0	281,000
423/427	Water Service Line Replacement	0	195,400	513,500	527,365	541,603	556,227	571,245	586,668	0	0	0	3,492,008
423/427	Water System Street Improvements	0	77,000	77,025	79,105	81,241	83,434	85,687	88,000	0	0	0	571,491
423/427	Water System Street Improvements (PW)	0	140,000	154,050	158,209	162,481	166,868	171,373	176,001	0	0	0	1,128,982
423/427	Water Well South Stockton System #10	0	1,750,000	0	0	0	0	0	0	0	0	0	1,750,000
423/427	Abandonment of Wells 1, 9, 11, & 16	0	0	0	0	0	0	0	0	0	0	0	0
423/427	Master Plan Update	0	0	0	0	0	0	0	0	0	0	0	0
423/427	West Lane Pedestrian Access, Improv	0	0	0	0	0	0	0	0	0	0	0	0
423/427	Well/Reservoir Site Improv Ph 2	0	0	77,025	79,105	81,241	83,434	0	0	0	0	0	320,804
423/427	Zephyr Rd Water Main Connection	0	548,000	0	0	0	0	0	0	0	0	0	548,000
423/427	Condition Assessment (Pipelines)	0	0	256,750	263,682	0	0	0	0	0	0	0	520,432
423/427	North & South Well Capacity Study	0	0	256,750	0	0	0	0	0	0	0	0	256,750
423/427	Water Supply - Well #33	0	0	459,069	0	0	0	0	0	0	0	0	459,069
	Total Water	**$0**	**$3,441,400**	**$1,794,169**	**$1,107,465**	**$961,324**	**$1,598,061**	**$828,305**	**$850,669**	**$0**	**$0**	**$0**	**$10,581,394**

City of Stockton MUD
Water Master Plan
Exhibit 4
Capital Improvement Plan

Inflation	**2.7%**

Fund		FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	*Total*
	Water Master Plan												
423/427	Pipeline Improvements Priority 1	$0	$0	$934,022	$959,241	$985,140	$688,386	$706,973	$0	$0	$0	$0	$4,273,762
423/427	Pipeline Improvements Priority 2	0	0	156,104	160,319	0	0	687,017	1,445,238	0	0	0	2,448,678
423/427	Replace Undersized and/or Old Mains	0	0	0	2,114,521	2,404,881	2,469,813	2,536,498	0	0	0	0	9,525,713
423/427	South Wells - SEWD Reliability (0 Wells)	0	0	0	0	0	0	0	0	0	0	0	0
423/427	North Well - Aging Infras. Replac. (2 Well)	0	0	0	0	0	0	0	6,758,419	6,940,897	0	0	13,699,316
424	South Wells - SEWD Reliability (1 Well)	0	0	0	0	0	0	0	0	2,819,739	0	0	2,819,739
423/427	DWTP - Raw Water Pipeline Improvements	0	150,000	2,567,500	2,636,823	0	0	0	0	0	0	0	5,354,323
423/427	DWTP - Campus Improvements	0	0	924,300	12,014,495	5,280,015	0	0	0	0	0	0	18,218,810
423/427	Groundwater Supply Management	0	0	1,643,200	1,687,566	1,733,131	1,779,925	1,827,983	0	0	0	0	8,671,806
423/427	Advanced Metering Infrastructure (Pilot)	0	0	503,923	4,218,916	0	5,562,266	5,712,448	0	0	0	0	15,997,553
423/427	Backup Power Improvements	0	0	739,440	0	0	0	0	0	0	0	0	739,440
	Total Water Master Plan	**$0**	**$150,000**	**$7,468,489**	**$23,791,880**	**$10,403,168**	**$10,500,391**	**$11,470,918**	**$8,203,657**	**$9,760,636**	**$0**	**$0**	**$81,749,140**
Summary by Fund													
423/427	Total Capital Projects	$4,790,000	$3,591,400	$9,262,658	$24,899,346	$11,364,492	$12,098,452	$12,299,223	$9,054,327	$6,940,897	$0	$0	$94,300,795
424	Total Capital Projects	0	2,802,722	2,972,652	3,052,913	119,153	3,367,396	0	0	2,819,739	0	0	15,134,575
	Total	**$4,790,000**	**$6,394,122**	**$12,235,310**	**$27,952,259**	**$11,483,645**	**$15,465,848**	**$12,299,223**	**$9,054,327**	**$9,760,636**	**$0**	**$0**	**$109,435,369**
	Future Unidentified Projects	$0	$5,408,600	$0	$0	$0	$0	$0	$945,673	$639,364	$10,700,000	$11,000,000	$37,693,637
	To Capital Reserves	$4,210,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,210,000
Total Capital Improvement Projects		**$9,000,000**	**$11,802,722**	**$12,235,310**	**$27,952,259**	**$11,483,645**	**$15,465,848**	**$12,299,223**	**$10,000,000**	**$10,400,000**	**$10,700,000**	**$11,000,000**	**$151,339,006**
Less: Outside Funding Sources													
	Operating Cash	$0	$0	$587,658	$15,949,346	$2,114,492	$2,848,452	$2,799,223	$0	$0	$0	$0	$24,299,171
	DWSP SWSF Fund	0	0	0	0	0	0	0	0	0	0	0	0
	Connection Fee Reserve	0	2,802,722	2,972,652	3,052,913	119,153	3,367,396	0	0	0	0	0	12,314,835
	Developer Funded	0	0	0	0	0	0	0	0	0	0	0	0
	New SRF Loans	0	0	0	0	0	0	0	0	0	0	0	0
	New Revenue Bonds	0	0	0	0	0	0	0	0	0	0	0	0
	Total Outside Funding Sources	**$0**	**$2,802,722**	**$3,560,310**	**$19,002,259**	**$2,233,645**	**$6,215,848**	**$2,799,223**	**$0**	**$0**	**$0**	**$0**	**$36,614,006**
Rate Funded Capital		**$9,000,000**	**$9,000,000**	**$8,675,000**	**$8,950,000**	**$9,250,000**	**$9,250,000**	**$9,500,000**	**$10,000,000**	**$10,400,000**	**$10,700,000**	**$11,000,000**	**$114,725,000**

(THIS PAGE LEFT BLANK INTENTIONALLY)

WE SUPPORT OUR COMMUNITIES

WE ARE WATER FOCUSED

WE TAKE PRIDE IN WHAT WE DO

WE STRIVE TO BECOME OUR BEST

WE DO WHAT'S RIGHT

WE BELIEVE IN QUALITY

WE LISTEN

WE SOLVE CHALLENGING PROBLEMS

WE SEE THE BIGGER PICTURE

WE TAKE OWNERSHIP

WE COLLABORATE

WE HAVE FUN

WE ARE WEST YOST

WEST YOST

Water. Engineered.

ATTACHMENT J: CITY OF STOCKTON 2020 SPHERE OF INFLUENCE

EXHIBIT 1

CITY OF STOCKTON
SPHERE OF INFLUENCE PLAN/ MUNICIPAL SERVICE REVIEW

San Joaquin Local Agency Formation Commission

submitted by

City of Stockton

PlaceWorks

Final Draft

April 23, 2020

This page is intentionally left blank

TABLE OF CONTENTS

Executive Summary 1

A. ISSUES ADDRESSED 1

B. DETERMINATIONS 2

Chapter 1. Introduction 1-1

A. STATUTORY REQUIREMENT 1-1

B. ORGANIZATION OF THIS REPORT 1-3

C. LAFCO AND THE SPHERE OF INFLUENCE 1-3

D. SPHERE OF INFLUENCE 1-4

E. 2040 GENERAL PLAN UPDATE (2018) 1-5

F. CITY/COUNTY CONSULTATION 1-6

G. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) 1-6

Chapter 2. Sphere of Influence and Sphere Plan 2-1

A. PRESENT AND PLANNED LAND USES 2-2

B. PRESENT AND PROBABLE NEED FOR PUBLIC FACILITIES AND SERVICES 2-5

C. PRESENT CAPACITY AND ADEQUACY OF PUBLIC FACILITIES AND SERVICES 2-5

D. SOCIAL OR ECONOMIC COMMUNITIES OF INTEREST 2-6

E. POPULATION AND ECONOMIC TRENDS 2-6

F. DEVELOPMENT OPPORTUNITIES AND DEMAND 2-20

G. 10- AND 20-YEAR PLANNING HORIZONS 2-24

Chapter 3. Population and Employment Projections 3-1

A. POPULATION 3-1

B. EMPLOYMENT 3-2

C. 2040 GENERAL PLAN GROWTH POLICIES 3-2

D. DETERMINATIONS 3-5

Chapter 4. Disadvantaged Unincorporated Communities and Unincorporated County Islands 4-1

A. SB 244 REQUIREMENTS: CITY, COUNTY, LAFCO 4-2

B. DUC IDENTIFICATION 4-3

C. INFRASTRUCTURE ANALYSIS 4-7

D. POTENTIAL FUNDING SOURCES 4-18

E. DETERMINATIONS 4-20

F. UNINCORPORATED COUNTY ISLANDS 4-20

Chapter 5. Capacity of Facilities and Adequacy of Services 5-1

A. FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES 5-1

B. LAW ENFORCEMENT 5-16

C. WATER SUPPLY AND TREATMENT 5-23

D. WASTEWATER COLLECTION AND TREATMENT .. 5-41

E. STORMWATER DRAINAGE/FLOOD PROTECTION .. 5-48

Chapter 6. Financial Ability of Agencies to Provide Services 6-1

A. DEVELOPMENT AND MAINTENANCE FEES 6-1

B. CITY/COUNTY PROPERTY TAX AGREEMENT 6-2

C. 2040 GENERAL PLAN POLICIES 6-3

D. CITY OF STOCKTON PLAN OF ADJUSTMENT 6-4

E. CITY OF STOCKTON LONG RANGE FINANCIAL PLAN 6-5

EXHIBIT 1

F. DETERMINATIONS 6-7

Chapter 7. Status of, and Opportunities for, Shared Facilities 7-1

A. BACKGROUND 7-1

B. DETERMINATIONS 7-2

Chapter 8. Accountability for Community Service Needs Including Government Structure and Operational Efficiencies 8-1

A. GOVERNMENT MANAGEMENT AND STRUCTURE 8-2

B. MANAGEMENT EFFICIENCIES 8-5

C. GOVERNMENT ACCOUNTABILITY 8-7

Chapter 9. Glossary of Acronyms 9-1

LIST OF TABLES

Table 2-1: City Of Stockton Population And Housing Units Changes From 2000 To 2019 2-8
Table 2-2: San Joaquin County Population And Housing Units Changes From 2000 To 2019 2-13
Table 2-3: California Population And Housing Units Changes From 2000 To 2019 2-14
Table 2-4: Historic Population And Household Change: Downtown Stockton, Stockton & San Joaquin County, 2000 To 2014 2-17
Table 2-5: 2040 Development By Study Area 2-23
Table 2-6: Net New Approved And Pending Development 2-24
Table 2-7: Development Demand Forecast 10-Year and 20-Year Planning Horizons 2-25
Table 3-1: Population Projections City of Stockton 2020-2040 3-1
Table 3-2: Employment Projections City of Stockton 2020-2040 3-2
Table 4-1: City of Stockton DUCs 4-5
Table 5-1: Rural Fire Districts in Stockton SOI 5-2
Table 5-2: Fire Stations, Equipment, and Services (2015-16) 5-5
Table 5-3: Fire Department Staffing (2019) 5-6
Table 5-4: Emergency Calls by Type (2018) 5-8
Table 5-5: Stockton Fire Department Call Assignments 5-9
Table 5-6: Response Times: All Call Types, Citywide 5-11
Table 5-7: Response Times: Fires by Engine Unit 5-11
Table 5-8: Response Times: Fire Alarms by Engine Unit 5-12
Table 5-9: Response Times: Grass Fires by Engine Unit 5-12
Table 5-10: Response Times: Medical Calls by Engine Unit 5-13
Table 5-11: Response Times: Vehicle Accident Calls by Engine Unit 5-13
Table 5-12: Stockton Fire Department Budget (FY 2019-20) 5-15
Table 5-13: Stockton Police Department Staff 5-16
Table 5-14: Stockton Police Transportation Equipment 5-17
Table 5-15: Stockton Police Department Budget FY 2019-20 5-22
Table 5-16: Urban Water Management Plan Population Assumptions 5-33
Table 5-17: Urban Water Management Plan Existing and Projected Demand 5-35
Table 5-18: Urban Water Management Plan Reasonably Available Supply 5-37

Table 5-19: Urban Water Management Supply/Demand Comparison.....5-38
Table 8-1: San Joaquin County Districts.....8-4
Table 8-2: Fiscal Year 2019-20 Budget Summary.....8-6

LIST OF FIGURES

Figure 1-1: Sphere of Influence 1-7
Figure 2-1: 2040 General Plan Land Use Map 2-3
Figure 2-2: City of Stockton Population by Year 2-9
Figure 2-3: City of Stockton Rate of Population Growth by Year 2-10
Figure 2-4: City of Stockton Rate of Housing Growth by Housing Type by Year 2-11
Figure 2-5: City of Stockton, San Joaquin County, and California Rates of Population Growth by Year 2-15
Figure 2-6: City of Stockton, San Joaquin County, and California Rates of Housing Units Growth by Year 2-16
Figure 2-7: 10-year Planning Horizon Annexation Areas 2-29
Figure 4-1: Disadvantaged Unincorporated Communities 4-6
Figure 4-2: Unincorporated County Islands 4-21
Figure 5-1: Fire Districts and Stations 5-4
Figure 5-2: Fire Department Organization 5-7
Figure 5-3: Police Department Organization 5-18
Figure 5-4: Police Districts 5-19
Figure 5-5: City of Stockton Crime Rate 5-20
Figure 5-6: Water Service Areas 5-26
Figure 5-7: North Stockton Near Term Improvements 5-27
Figure 5-8: Central Stockton System 5-28
Figure 5-9: Walnut Plant System 5-29
Figure 5-10: South Stockton Near Term Improvements 5-30
Figure 5-11: Existing and Projected Water Demand by Use Type 5-36
Figure 5-12: Existing and Projected Water Demand by Water Supplier 5-36
Figure 5-13: Sewer System Boundaries 5-44
Figure 5-14: Sewer System Facilities 5-45
Figure 5-15: Watersheds 5-55
Figure 5-16: Storm System Facilities 5-56
Figure 5-17: 200-Year Floodplain Depth 5-60
Figure 6-1: Projected Expenditure Cuts and Revenue Increases to Close Financial Gaps, Initial L-RFP, 2013 6-5
Figure 6-2: General Fund Balance with Revenue Growth as Forecasted, Initial L-RFP, 2013 6-6
Figure 6-3: Current L-RFP Projection 6-7

EXECUTIVE SUMMARY

One of the primary responsibilities of a Local Agency Formation Commission (LAFCo) is to determine the sphere of influence of local governmental agencies. A sphere of influence (SOI) designates the probable physical boundary and service area of a local agency. The Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (CKH Act) requires that a Municipal Service Review (MSR) be prepared prior to or concurrent with an update of an SOI. The MSR evaluates existing and future service conditions and reviews the advantages and disadvantages of various government service structure options. An MSR provides information upon which the LAFCO can base its action on an SOI.

Concurrent with approval of this MSR, San Joaquin LAFCo is validating Stockton's SOI consistency with the requirements of the CKH Act and San Joaquin LAFCo Policies and Procedures through an SOI Plan. The MSR determinations address the City's ability to provide adequate services to existing and future residents within the proposed SOI.

A. *ISSUES ADDRESSED*

In accordance with the CKH Act, MSRs are required to address the following categories for which LAFCo must render written determinations pursuant to Government Code 56430. The CKH Act requires determinations for the following subjects:

- Growth and Population Projections for the Affected Area;
- Disadvantaged Unincorporated Communities;
- Present and Planned Capacity of Public Facilities and Adequacy of Public Services, including Infrastructure Needs or Deficiencies;
- Financial Ability of Agencies to Provide Services;
- Status of, and Opportunities for, Shared Facilities;
- Accountability for Community Service Needs, including Governmental Structure and Operational Efficiencies; and
- Any other matter related to effective or efficient service delivery, as required by commission policy.

Written determinations are included for these areas in accordance with the San Joaquin County LAFCo Policies and Procedures (as amended through December

14, 2012) and the LAFCo Municipal Service Review Guidelines (August 2003) prepared by the Governor's Office of Planning and Research.

On October 12, 2016, the City of Stockton staff meet with San Joaquin County officials to discuss potential impacts on land use regulations and development potential within the SOI as result of the proposed City of Stockton's 2040 General Plan Update. At the conclusion of the meeting, the County and the City of Stockton agreed to an extension of their current agreement on allowed growth within the SOI. This extension resulted in the Interim MSR presented to LAFCo in early 2019. As this Sphere Plan and MSR does not propose a change to the SOI or land use included within the adopted 2040 General Plan, the City did not formally consult with San Joaquin County as part of this process.

B. *DETERMINATIONS*

An explanation of the specific operational and management aspects of each service provider considered in each of these topic areas is provided below. Based on the information contained in the MSR, the determinations listed by general topic areas covered in this MSR are as follows:

1. Growth and Population Projections for the Affected Area

The 2040 General Plan Land Use map depicts proposed land use for Stockton within the SOI that can accommodate the growth projected by the San Joaquin Council of Governments (SJCOG). Between 2020 and 2040, SJCOG projects that Stockton's population will grow by 102,898 and its employment by 29,540. Tables 2-5 and 2-6 in Chapter 2 show the capacity for development in study areas and pending/approved projects within Stockton's SOI by 2040. In total, development in these areas is projected to accommodate 132,200 new residents and 63,300 jobs.

As described in Section G of Chapter 2, over the 10- and 20-year horizons, the supply of residential units, commercial and office space, and industrial space would exceed both the low- and high-growth demands identified in a market study that forecast the demands for new residential, retail, office, and industrial space in Stockton by 2040. Demand would be accommodated by a combination of development within the City limit and in the SOI. For the 10-year horizon, demand can mostly be accommodated through development potential in the City limit that does not rely on pending or approved projects, coupled with development potential within the 10-year horizon areas. The one exception is for the high-growth scenario's residential demand, which may need to rely on pending or approved projects within the City limit. For the 20-year horizon, demand can be accommodated through development potential in the City limit,

including pending and approved projects, coupled with development potential within the SOI.

The City of Stockton has and will continue to review future growth and population patterns to project growth within its SOI. The 2040 General Plan and 2016 Housing Element include policies that direct the City to ensure adequate land served by public facilities is available to meet projected population growth. Other policies require the City to consider the funding necessary to adequately provide facilities and services to development anticipated in any area proposed for expansion and ensure that infrastructure improvements and service coincide with new development.

2. Disadvantaged Unincorporated Communities

In 2011, Senate Bill 244 (SB 244) amended Government Code Section 56430 to require MSRs to identify and describe all "disadvantaged unincorporated communities" (DUCs) located within or contiguous to the existing sphere of influence of cities and special districts that provide fire protection, sewer, and/or water services. SB 244 further requires that MSRs identify infrastructure needs or deficiencies within these communities. SB 244 also requires that each city and county in California review and update the land use element of its general plan to include similar findings concerning facilities and services. These requirements and definitions are independent of SB 244 LAFCo requirements and definitions and are being addressed by the City of Stockton separately.

Chapter 4 of this report summarizes the analysis conducted for the 2040 General Plan following adoption of the Housing Element in 2016. It identifies 20 DUCs within or partially within the City's sphere of influence, including fringe and island communities as defined by SB 244. The DUCs in the Stockton Metropolitan Area are generally well-served by current fire protection, water, and storm drainage providers and facilities. Public wastewater collection and storm drain systems are currently unavailable in many areas. These areas rely on on-site wastewater treatment (septic systems) and roadside ditches for stormwater collection. While these services are not necessarily deficient, these areas could benefit from connection to public sewer systems and extension of storm drainage systems, as anticipated by the City's Wastewater Master Plan and Stormwater Management Plan in several areas. Also, in some DUCs, as with other areas within the City's SOI, fire protection services are provided by independent fire protection districts.

Consistent with State Law, San Joaquin LAFCo has adopted a policy that calls for disapproval of annexations of 10 acres or more that are contiguous to existing DUCs unless a concurrent application for annexation of all or part of the DUC has also been filed (except under certain circumstances).

3. Capacity of Facilities and Adequacy of Services

Fire Protection Determinations

The Stockton Fire Department is providing adequate services to its current customers (including both within most of the city limits and in contracted service areas). Continued growth within the SOI will increase the overall demand on fire protection services, including the typical range of service calls (e.g., structure fires, car fires, electrical fires, emergency medical response). The Department has the staffing and equipment to meet current service demands and response time standards. Future obligations for service delivery will be analyzed on an individual basis to determine the potential impact on service delivery and the potential need for additional facilities, vehicles, equipment, and personnel to maintain adequate response times consistent with the City's General Plan fire response times standards.

City growth will also impact the rural fire districts providing services in city expansion areas, including Montezuma, French Camp, Waterloo-Morada, and Woodbridge. In October 2011, LAFCo adopted a service review for the rural fire districts in San Joaquin County, including those providing services in the Stockton Metropolitan Area. That report recommended that districts with contractual arrangements with Stockton for areas in the City's 10-year planning horizon for annexations be annexed (Final Municipal Service Review, Rural Fire Protection Districts, San Joaquin County, "Stockton Contract District Alternatives," p. 64, October 21, 2011). As part of the annexation process, the City will have to demonstrate that it has the capacity to provide services. In cases where the City annexes these areas, the boundaries of the rural fire districts currently providing services will be reduced in territory, which may have a long-term financial impact on those districts. San Joaquin LAFCo has adopted a policy that requires the Commission to consider the adverse impact of annexation on the other agencies and requires mitigation through the payment of fees.

Additional facilities, personnel, equipment, and materials costs will be offset through the increased revenue and fees generated by new development as well as other funding sources. In addition, the City will review future projects on an individual basis and will require compliance with City requirements (e.g., impact fees) in effect.

Law Enforcement Determinations

Stockton has a long history of high crime rates, including particularly high violent crime rates. According to FBI reporting, as of 2017, Stockton's violent crime rate was the 10th highest in the United States and the highest in California among cities with over 100,000 residents. For property crime, Stockton was 105th nationally and 11th in California. While the overall crime rate is trending down according to

the FBI, crime prevention and law enforcement remain high priorities in Stockton. The passage of Measure A in November 2014 and enactment of the City's Marshall Plan on crime responded to these priorities. Measure A instituted a three-quarters cent sales tax to provide funding for law enforcement, crime prevention services and other essential city services. Measure A and the Marshall Plan are focused on improving public safety within Stockton's existing neighborhoods. The City has also taken measures to improve Stockton's competitiveness with respect to recruitment and retention of law enforcement officers. Between 2014 and 2017 the City saw unprecedented hiring of Police Officers, meeting the goal of 80 each year. At the same time, however, about half of those officers were lost through attrition, retirement, and to other agencies. The City has achieved a net gain of 120 officers since the passage of Measure A, including attaining its highest staffing levels in Department history during 2018, and currently maintains a 3- to 5-percent vacancy rate. In 2016, the Department reached its lowest crime rate in 16 years and continues to maintain a downward trend in violent crime.

Continued growth within the currently undeveloped areas of the SOI will likely increase the overall demand for law enforcement services beyond what Measure A was intended to support. New police facilities, vehicles, equipment, and personnel will be required in order to provide adequate response times to serve future growth, which is expected to be concentrated in the northern areas within which the city is expected to grow. The City's costs to maintain existing equipment and facilities and to train and equip personnel will also increase. Additional personnel and materials needs resulting from new development demands will be offset through the increased revenue and fees generated by new development, as well as the funding sources mentioned above. In addition, the City will review future projects on an individual basis and will require City compliance with requirements (e.g., impact fees) in effect. The rapid hiring achieved through Measure A and in accordance with the Marshall Plan on Crime provides a replicable framework which can be used to guide further hiring required as a result of the new development.

Water Supply and Treatment Determinations

The City of Stockton Metropolitan Area has met and expects to be able to continue to meet annual water demands within the SOI during differing hydrologic periods with surface water, groundwater, water conservation, and other potential water supplies such as non-potable supplies from local communities, raw surface water from local irrigation districts, and water from active groundwater storage projects. According to the 2015 Urban Water Management Plans prepared for the City of Stockton, Cal Water, and the Stockton East Water District, there is more than sufficient water available to support projected development within the SOI.

Wastewater Collection and Treatment Determinations

The City of Stockton Regional Wastewater Control Facility (RWCF) has met and expects to continue to meet annual wastewater collection and treatment demands within the SOI in compliance with the Central Valley Regional Water Quality Control Board and NPDES permit. Growth in the SOI will increase the overall demand on the wastewater collection and treatment facilities in the city. Future growth in accordance with buildout of the SOI is expected to generate the typical amount of treatment needs associated with the type of urban development that has occurred in the past. According to the Regional Wastewater Control Facility Master Plan, the City's wastewater treatment facilities can support a population of about 380,000 within the SOI, which is within the 10-year sphere horizon of the SOI. The City anticipates that existing treatment facilities will continue to be in service until such time as upgrades and new facilities are needed to ensure that wastewater collection and treatment match urban growth.

Phasing and timing of additional facilities to accommodate additional growth has not been determined, and timing of additional facilities to accommodate additional growth has not been determined. The City's 2035 Wastewater Master Plan and its 2018 Supplement do, however, specify improvement requirements for expansion into currently unserved areas. These facilities will provide higher levels of treatment, which will also meet anticipated discharge requirements. Facility expansions are planned to accommodate the projected needs at buildout of the SOI.

Stormwater Drainage and Flood Protection Determinations

A significant portion of the western side of Stockton near Interstate 5 and some isolated areas in the central and eastern parts of the city are subject to inundation during a 200-year flood event. This includes areas that have been annexed to the city with the expectation of development. In June 2015, the Stockton City Council adopted amendments to the City's General Plan to address requirements established by 2007 State legislation, including SB 5 and AB 162. This included modifications of existing and incorporation of new goals, policies, and implementation measures to strengthen the relationship between land use planning decisions and consideration of potential floodplain hazards. In May 2016 and July 2017, the Council followed up with amendments to the City's Zoning Code to establish consistency with the General Plan, in compliance with SB 5 and AB 162 requirements.

Based on SB 5 and the City's actions to comply, the City must make specific flood findings on certain development projects located within a flood hazard zone. Developers will be required to provide substantial evidence to address 200-year protection for the record for the City to review prior to making a finding determination on certain development projects. Development methods for

addressing 200-year protection may consist of one or a combination of measures, including raising the site elevation with fill material, increasing building pad height, flood-proofing, elevating habitable space with parking and storage below, making improvements to the flood protection system, or re-designating land in the flood hazard areas to avoid flooding problems. In some instances, where infill opportunities exist, the necessary flood protection improvements may not be feasible or easily achieved. Through enforcement of SB 5 requirements and implementation of these newly-enacted provisions, the City of Stockton expects to continue to meet stormwater flood control needs within the existing SOI in cooperation with San Joaquin County and the San Joaquin Area Flood Control Agency. For instance, the City's 2040 General Plan Update changed the land use designations in some flood-prone areas in southwestern Stockton to prohibit urban development.

Buildout of the existing SOI will continue to require the capture and removal of stormwater in a safe manner. This will include flood control improvements to enable land that has already been annexed for development, including several major projects in the northwestern part of the city.

Drainage problems do occur in the SOI, although they are localized within certain areas, and the quality of stormwater discharges from the city and SOI are considered to be significant sources of pollutants.

As development occurs within the SOI, creeks, rivers, and sloughs will continue to collect and convey storm runoff to the San Joaquin River and the Delta. The City will continue to require new development in growth areas in the SOI to develop storm drains to collect and convey runoff to pumps that will lift the runoff into one of the creeks, sloughs, or rivers. The City expects to continue to work with the San Joaquin Area Flood Control Agency to address areas within the SOI that experience flooding issues or where storm drain problems exist. In addition, the quality of runoff water is expected to be emphasized in future stormwater management activities to address stormwater pollution.

As required by SB 5 and AB 162, the City's 2040 General Plan commits the City to maintain existing storm drain and flood management facilities and includes goals, policies, and implementation measures to strengthen the relationship between land use planning decisions and consideration of potential floodplain hazards. In combination with the City's Zoning Code, the General Plan requires developers to provide substantial evidence of 200-year protection for the record for the City to review prior to making a finding determination on development projects.

4. Financial Ability of Agencies to Provide Services

The City of Stockton's 2040 General Plan requires new development to pay its fair share of the costs of public facilities and utilities needed to support additional growth. Stockton receives funds for the provision of public services through State sources, development fees, property taxes, and connection and usage fees. The City reviews its fee structures on an annual basis to ensure that they provide adequate funding to cover the provision of City services. As noted above, the City would also require supplemental funding, such as a CFD, if necessary, to extend an adequate level of service to any new annexation areas.

The City's General Plan requires preparation of an infrastructure analysis for specific plans and master plans. The City of Stockton generally charges development impact fees on a per-dwelling unit basis for residential uses. Non-residential uses are generally collected on a per-square foot or per-acre basis, depending on the type of fee and impact the fee is intended to offset.

Cal Water does not charge fees for connections or meters for smaller developments and infill projects provided an adequate water main is available. For larger projects, Cal Water charges a fee or requires dedication of property for water facilities and service (Special Utility Fee) to provide water service. All fees charged through Cal Water are subject to the operating rules and regulations of the California Public Utilities Commission.

Water connection fees in San Joaquin County water districts are not charged if the parcel is currently within a district boundary. The water districts do charge an annual fee for water use and consumption fees based on water meters.

Through the bankruptcy process, the City developed and the courts approved a Plan of Adjustment to resolve the City's debt and other financial issues. A number of actions were required to achieve a successful Plan of Adjustment, including restructuring of City debt, renegotiation of labor agreements, a settlement eliminating the City's obligation for retiree medical benefits, and voter approval of Measure A, a sales tax measure that helps to fund both the bankruptcy recovery and increased police services (The Marshall Plan). In order to demonstrate the long-term viability of the Plan of Adjustment, the City developed a Long Range Financial Plan (L-RFP). The L-RFP extends 30 years and serves to inform the City's decision-making to enable the City to achieve and maintain a healthy General Fund reserve balance, which will allow it to weather future adverse economic conditions and build its capacity to increase the level of service the City provides.

The L-RFP demonstrates that the City meets three critical tests of solvency: cash solvency, budget solvency, and service solvency. In fact, both property and sales

tax revenues have recovered better than originally projected and the current L-RFP projection shows a much healthier General Fund Balance and Reserve. As noted in the discussions above, the City intends to limit the cost of service extensions to any new annexation areas to the amount of General Fund revenue that would be generated from those areas, as well as supplemental funding, such as a CFD, as necessary to provide adequate service levels.

5. Status of, and Opportunities for, Shared Facilities

The City of Stockton has a long history of working with other public service providers to share facilities and resources. This includes a variety of special districts and San Joaquin County departments that provide services to the residents within the city and the unincorporated area (including the county islands within the city limits). The City also participates actively in planning for and implementing regional water supply and flood control programs. The City of Stockton acknowledges that regional cooperation and the operation of jointly developed and maintained facilities is in the interest of its residents and its own efficient provision of public facilities and services.

6. Accountability for Community Service Needs

Government Management and Structure Determinations

The City of Stockton, San Joaquin County, and several other special districts and private utility companies (e.g., CAL Water) provide services and infrastructure within the incorporated and unincorporated areas of the SOI. Expansion of urban development within the SOI is dependent upon the extension of infrastructure and provision of services from the City of Stockton. The Stockton City Council establishes fee structures and directs the provision of police, fire, water, wastewater, and stormwater drainage services based on service level goals and standards.

The City intends to work in good faith with all stakeholders, including property owners, members of the public, and other government agencies, to annex unincorporated island areas within its SOI (see Chapter 4 Section F) and to consolidate services and increase efficiencies and infrastructure and service deliveries. As planned development occurs within the undeveloped areas of the SOI, the City will extend and expand infrastructure and services logically and efficiently pursuant to the City's 2040 General Plan and supporting master plans. Provision of infrastructure and services by the City within the SOI will not duplicate or conflict with the provision of infrastructure or services by other providers. The City is also committed to putting in place financial mechanisms (e.g., CFDs) to ensure that annexations do not adversely affect provision of services elsewhere.

Infrastructure and services that will be provided with annexation will, in most cases, enhance those services currently available; however, there may also be a corresponding increase in service fees. The City's 2040 General Plan goals and policies support the City's intention to annex and provide services within the SOI and provide services in a cost-effective manner. The City is committed to provide City services and facilities within the SOI upon annexation in conformance with City Council adopted policies and master plans.

Management Efficiencies Determinations

The 2015 Plan of Adjustment allowed the City to restructure its obligations while the Long-Range Financial Plan (L-RFP) proved the long-term viability of the Plan. The L-RFP informs the City's decision-making and helps the City to manage its resources more efficiently and effectively and in a sustainable manner. The City also undertakes long-range planning programs to better plan and budget for needed improvements to services and facilities, including a visioning process that focuses on savings and efficiency.

Government Accountability Determinations

The City of Stockton is responsible for governance within its incorporated boundaries. Actions of the City Council, including opportunities for public involvement and public hearing, are governed by the Brown Act (California Government Code Section 54950 et seq.), other applicable statutes and regulations, and City procedures.

The residents of Stockton have a range of opportunities to oversee the activities of elected, appointed, and paid representatives responsible for the provision of public services to the community through elections, publicized meetings and hearings, as well as through the reports completed in compliance with State and federal reporting requirements.

CHAPTER 1. INTRODUCTION

The City of Stockton prepared this Municipal Service Review (MSR) for the San Joaquin County Local Agency Formation Commission (LAFCo) in compliance with the 2000 Cortese-Knox-Hertzberg Act (CKH Act), which requires each LAFCo to prepare an MSR for each service provider with a Sphere of Influence (SOI).

A. *STATUTORY REQUIREMENT*

Consistent with State Law, San Joaquin LAFCo's Service Review Policies (December 2012) require the MSR to make written determinations for six categories, as described below.

Determination 1: Growth and population projections for the affected area.

The need for, and patterns of, service provision should be determined by existing and anticipated growth patterns and population projections. The MSR must evaluate whether projections for future growth and population patterns are integrated into an agency's planning function. This analysis provides the basis for determining whether the sphere of influence boundaries reflect expected growth boundaries. Consideration should be given to the impact on growth/land use patterns for adjacent areas, on mutual or regional social and economic interests, on open space and agricultural land, and on the government structure of the county. Growth and population projections should correspond to the sphere horizon and phasing plan depicted in the sphere of influence.

Determination 2: The location and characteristics of any disadvantaged unincorporated communities within or contiguous to the sphere of influence.

Cities or special districts that provide sewer, municipal and industrial water, and structural fire services must identify any disadvantaged unincorporated communities (DUCs) within or contiguous to the sphere of influence of cities or special districts, and must make a determination on infrastructure needs or efficiencies for those public facilities and services within any identified DUCs.

Determination 3: Present and planned capacity of public facilities and adequacy of public services, including infrastructure needs or deficiencies related to sewers, municipal and industrial water, and structural fire

protection in any disadvantaged, unincorporated communities within or contiguous to the sphere of influence.

The MSR must describe the status of existing and planned public facilities and its relationship to the quality and levels of service that are, can, and need to be provided. Infrastructure needs and deficiencies can be evaluated in terms of supply, capacity, condition of facilities, and service quality with correlations to operational, capital improvement, and finance plans. Maps and explanatory text that clearly indicate the location of existing facilities and proposed facilities, including a plan for the timing and location of new or expanded facilities, need to be included. The identification of the anticipated service level needs to be tailored to the 5–10, and 30-year sphere horizons.

Determination 4: Financial ability of agencies to provide service.

A community's public service needs should be viewed in light of the resources available to fund the services. The MSR must evaluate factors that affect the financing of necessary improvements and whether agencies are capitalizing on financing opportunities and collaborative strategies to deal with financial constraints.

Determination 5: Status of, and opportunities for, shared facilities.

The MSR must identify opportunities for jurisdictions to share facilities and resources creating a more efficient service delivery system. Sharing facilities and using excess capacity in another agency's service system works to avoid service duplications, reduces costs, and minimizes unnecessary resource consumption. The MSR must inventory facilities within the study area to determine if facilities are being used to capacity and whether efficiencies can be achieved by accommodating the facility needs of adjacent agencies. Options for planning for future shared facilities and services must also be considered.

Determination 6: Accountability for community service needs, including governmental structure and operational efficiencies.

The MSR will consider the advantages and disadvantages of various government structures that could provide public services. San Joaquin LAFCo encourages local agencies to use service reviews to determine whether initiation of proceedings for changes of organization and reorganization, including spheres of influence, would be in order and in the best interests of the agency and the community it serves. LAFCo will examine efficiencies that could be gained through: (1) functional reorganizations within existing agencies; (2) amending or updating spheres of influence; (3) annexations or detachments from cities or special districts; (4) formation of new special districts; (5) special district

dissolutions; (6) mergers or special districts with cities; (7) establishment of subsidiary districts; or (8) any additional reorganization options found in the LAFCo statute.

Operational efficiency refers to the quality of public services and the agency's ability to provide services. Efficiently managed entities consistently implement plans to improve service delivery, reduce waste, eliminate duplications of effort, contain costs, build and maintain adequate contingency reserves, and encourage open dialogues with the public and other public and private agencies. The MSR will evaluate operational efficiency by analyzing agency functions, operations, and practices as well as the agency's ability to meet current and future service demands.

B. *ORGANIZATION OF THIS REPORT*

This MSR is organized into chapters that cover the topics and requirements of the CKH and San Joaquin LAFCo policies and procedures as follows:

Executive Summary
Chapter 1: Introduction
Chapter 2: Sphere of Influence and Sphere Plan
Chapter 3: Population and Employment Projections
Chapter 4: Disadvantaged Unincorporated Communities
Chapter 5: Capacity of Facilities and Adequacy of Services
Chapter 6: Financial Ability of Agencies to Provide Services
Chapter 7: Status of, and Opportunities for, Shared Facilities
Chapter 8: Accountability for Community Service Needs Including Government Structure and Operational Efficiencies
Chapter 9: Glossary of Acronyms

C. *LAFCO AND THE SPHERE OF INFLUENCE*

According to the CKH Act (Government Code 56000 et seq.), the purposes of LAFCo include the following:

- Promote orderly growth and urban development;
- Promote cooperative planning efforts among cities, the county, and special districts to address concerns regarding land use and development standards, premature conversion of agriculture and open space lands, efficient provision of services, and discouragement of urban sprawl;

- Serve as a master plan for future local government reorganization by providing long-range guidelines for efficient provision of public services; and
- Guide consideration of proposals and studies for changes of organization or reorganization.

To carry out State policy, LAFCo has the power to conduct studies, approve and disapprove proposals, modify proposal boundaries, and impose reasonable terms and conditions on approval of proposals. San Joaquin LAFCo has adopted policies and procedures for determining Spheres of Influence consistent with the CKH Act.

San Joaquin LAFCo policies state that it must adopt an SOI for all cities in San Joaquin County and all LAFCo actions must be consistent with the SOI. An SOI is defined in Section 56425 of the Government Code as "a plan for the probable physical boundary and service area of a local agency or municipality." The SOI is the area around the city where LAFCo expects development could occur and require services. The CKH Act requires that a municipal service review be conducted prior to or, in conjunction with, the update of an SOI.

The adoption of an SOI is the most important planning function assigned to LAFCos by the State Legislature. Spheres of Influence are described by the CKH Act as an important tool for "planning and shaping the logical and orderly development and coordination of local governmental agencies so as to advantageously provide for the present and future needs of the county and its communities." Spheres serve a similar function in LAFCO determinations as general plans do for cities and counties. Consistency with the adopted sphere plan is mandatory, and changes to the plan require careful review. Written determinations adopted by LAFCO and the Sphere map guide the provision of municipal services for areas within the SOI.

San Joaquin LAFCo's procedural guidelines for determining the SOI requires documentation of the City's ability to meet the requirements of the CKH. The Sphere Plan, along with the Municipal Service Review, and the 2035 General Plan, provide the basis for adopting the City's SOI.

D. *SPHERE OF INFLUENCE*

The City of Stockton adopted its 2040 General Plan in December 2018. The 2040 General Plan Land Use map designates planned land use for potential growth. The City adopted an updated Housing Element on April 12, 2016, to address State requirements for periodic updates. On April 25, 2016, the California Department of Housing and Community Development (HCD) certified that the

updated Housing Element is in compliance with State law. The Housing Element addresses Stockton's future housing needs through 2023 and identifies areas within the city limits where the city's housing needs can be accommodated.

The City's existing Sphere of Influence (SOI) encompasses approximately 115 square miles (see Figure 1-1; no change to the SOI is proposed as part of this MSR.

E. *2040 General Plan Update (2018)*

In March 2016, the City commenced an update of the 2035 General Plan, and the updated plan, the 2040 General Plan, was adopted in December 2018. The 2040 General Plan process included a comprehensive evaluation of the City's planning boundaries, including the SOI. A key objective of the update was the establishment of a strategy for urban growth that both reflected the community's vision and supported the City's Climate Action Plan. This objective was achieved through extensive community outreach and engagement, resulting in a land use plan that emphasizes infill development in the City's core and supports employment and economic development citywide. Highlights of the Plan are summarized below:

- The Plan increases allowable residential densities and intensity of development downtown and in the surrounding greater downtown area. Infill policies are prevalent, particularly for downtown and South Stockton.
- Compared to the previous general plan, the land use plan reduces by almost 8,000 acres the amount of agricultural land that could be developed with urban land uses – that's more than 12 square miles; the city is about 65 square miles.
- The Plan features a new policy to create an Ag Belt between Stockton and Lodi in collaboration with Lodi, the County, and property owners.
- The Plan provides guidance for reevaluating the City's public infrastructure, such as roadways and water and sewer distribution systems, which will help the City to determine whether the capital and ongoing maintenance cost of infrastructure can be supported by development projects.

In addition, through the 2040 General Plan Update process, the City evaluated infrastructure capacity in light of land use alternatives considered, and developed recommendations for updating backbone infrastructure plans to reflect the adopted land use plan. The 2040 General Plan Update also included the

preparation of an Infrastructure Financing Strategy to address these infrastructure needs.

F. *CITY/COUNTY CONSULTATION*

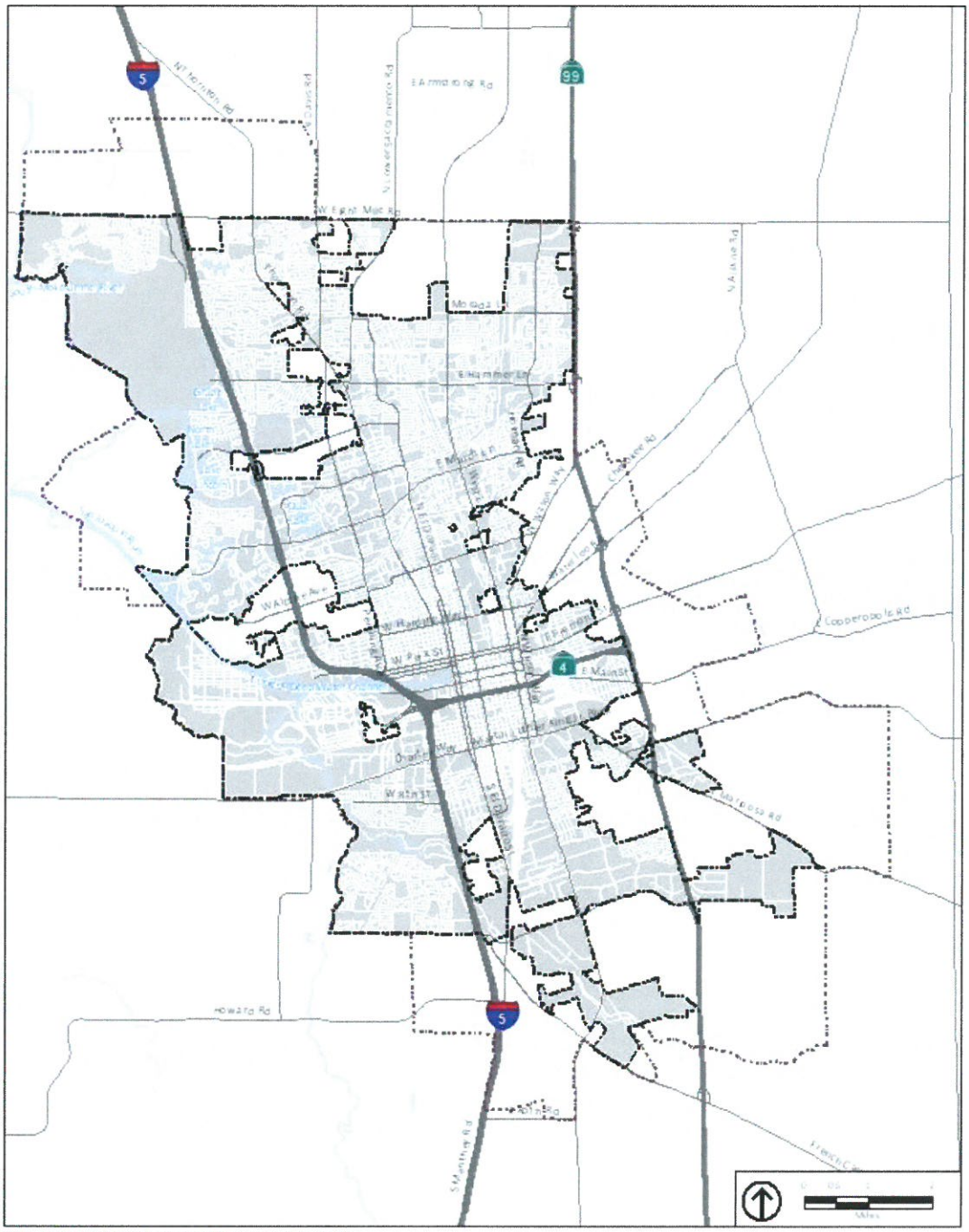
State law requires that a city and county meet prior to the city applying to the local agency formation commission for a new or updated SOI. This meeting requirement promotes dialogue between a city and county, offers the opportunity for a more collaborative approach to future growth, and fosters a less contentious environment for future annexations.

This Sphere Plan and MSR does not propose a change to the SOI; therefore, the City did not formally consult with San Joaquin County as part of this process. However, as part of the prior Interim MSR process, City staff and officials met with San Joaquin County staff and officials on October 12, 2016, to discuss the MSR and the implications for the City's SOI. At the conclusion of the meeting, the County and the City of Stockton agreed that no new agreements were needed since no change to the SOI is being proposed. The City and County agreed to continue to coordinate during the City's 2040 General Plan Update process.

G. *CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)*

According to the San Joaquin LAFCo's Policies and Procedures, an MSR is not defined as a "Project" under CEQA. Furthermore, no change in Stockton's SOI is being proposed. The SOI Update/MSR, therefore, is exempt from CEQA. The City of Stockton intends to file a Notice of Exemption pursuant to Section 15262 "Feasibility and Planning Studies" for the updated analysis contained in this report.

FIGURE 1-1: SPHERE OF INFLUENCE



Source: City of Stockton, 2016; Placeworks, 2017.

City Limit
Sphere of Influence

This page is intentionally left blank

CHAPTER 2. SPHERE OF INFLUENCE AND SPHERE PLAN

This chapter analyzes the City's ability to serve existing and future residents within the SOI. While LAFCo encourages the participation and cooperation of the subject agency, LAFCo alone is responsible for adopting the SOI and is the sole authority as to the sufficiency of the documentation and the Sphere Plan's consistency with law and LAFCo policy. In adopting the SOI for Stockton, LAFCo must consider and prepare a written statement of its determinations with respect to the following five factors as stated in Section 56425 (e) of the Cortese-Knox-Hertzberg Act:

1. The present and planned land uses in the area, including agricultural and open-space lands;
2. The present and probable need for public facilities and services in the area;
3. The present capacity of public facilities and adequacy of public services that the agency provides or is authorized to provide;
4. The existence of any social or economic communities of interest in the area if the commission determines that they are relevant to the agency; and
5. For an update of a sphere of influence of a city or special district that provides public facilities or services related to sewers, municipal and industrial water, or structural fire protection, that occurs pursuant to subdivision (g) on or after July 1, 2012, the present and probable need for those public facilities and services of any disadvantaged unincorporated communities within the existing sphere of influence.

In order to adopt Stockton's SOI, the State requires LAFCo to conduct a review of the municipal services provided in the city and SOI. The standards, procedures, and policies for service reviews are contained in San Joaquin LAFCo's Policies and Procedures. The SOI must be consistent with the determinations of the Municipal Service Review (MSR). San Joaquin LAFCo requires the Sphere Plan to include maps and explanatory text that describe the probable boundary of the service area and the city's sphere of influence.

As noted in Section E of Chapter 1 of this report, the City adopted its 2040 General Plan Update in December 2018. The Update included an evaluation of the City's planning boundaries, including the SOI. The City also evaluated and updated the General Plan Land Use map to ensure that it reflects the community's values and provides the appropriate balance of uses given the current real estate market.

Detailed determinations as to the ability of the City to provide adequate services to existing and future residents within the SOI are contained in the subsequent chapters of this MSR.

A. *Present and Planned Land Uses*

With the exception of the Downtown area, Stockton can be characterized as a low-rise community (one- or two-story buildings) dominated by low-density, single-family housing along with some multi-family housing, low-intensity commercial, and a large industrial base. Most of the city's development lies between Interstate 5 on the west and State Route (SR) 99 on the east. Historically, the city has grown out from its center, which is located just north of SR 4 at the eastern end of the Stockton Channel. This growth followed highway connectors leading to communities to the east. With the construction of Interstate 5, development began to move northward at an accelerated pace. Using SR 4 as a dividing line between northern and southern areas of the city, land uses north of SR 4 can be characterized as low-density residential and commercial uses and uses south of SR 4 can be characterized as low-density residential and industrial uses. High-rise office buildings and higher-density residential uses are common in the Central Downtown area. Lands to the north and west of the city limits are primarily in active agriculture production or open space. To the east, land uses transition from unincorporated urban development along the city's edge to rural and very-low-density development and agriculture.

The City of Stockton 2040 General Plan contains goals, policies, and actions that govern growth, development, and conservation of open space throughout the city. Figure 2-1 shows the 2040 General Plan Land Use map. Within the SOI, planned land use designations include Residential Estate; Low, Medium, and High Density Residential; Mixed Use; Commercial; Administrative Professional; Industrial; Economic and Education Enterprise; Institutional; Parks and Recreation; and Open Space/Agriculture.

FIGURE 2-1: 2040 GENERAL PLAN LAND USE MAP

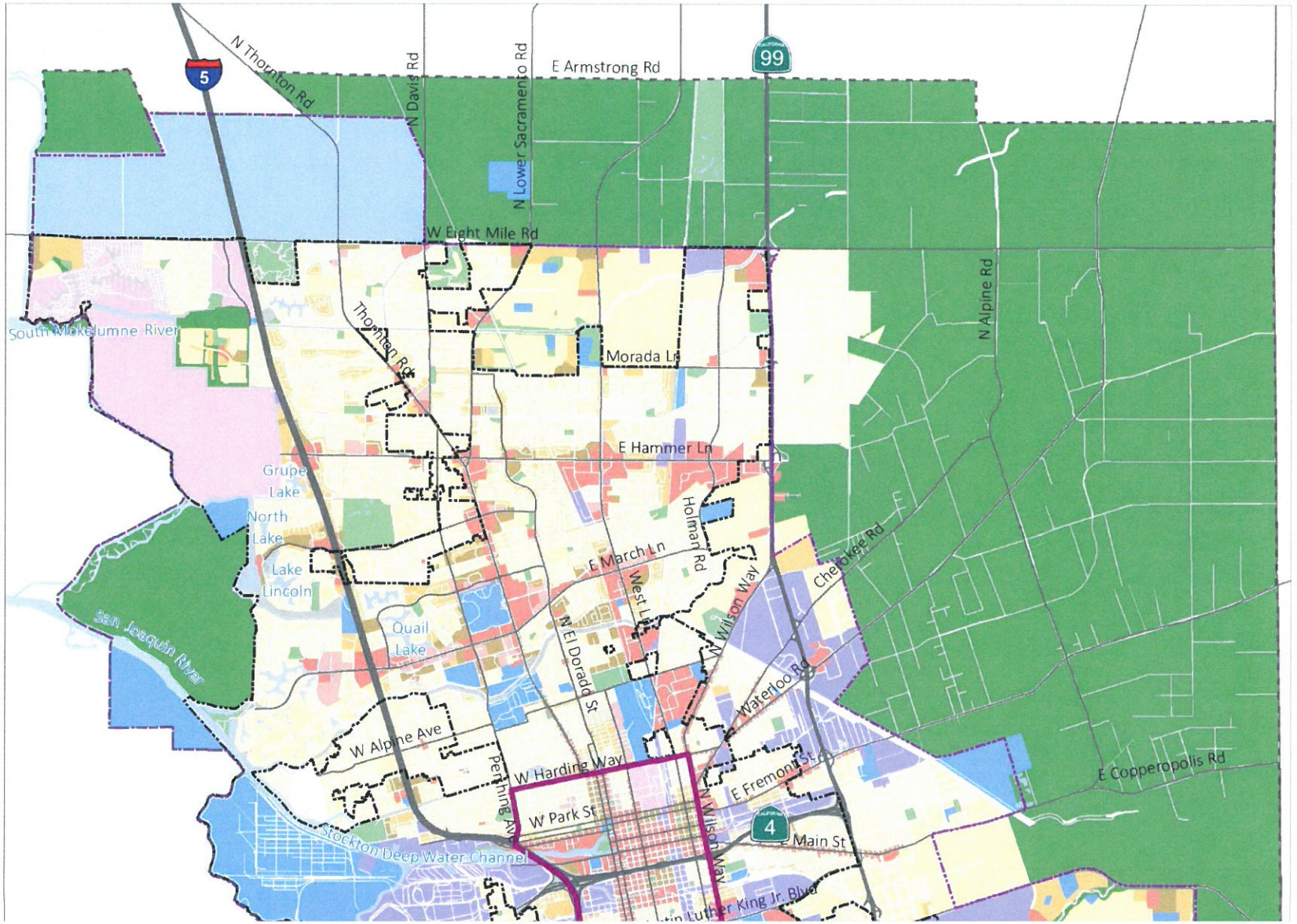


EXHIBIT 1

April 23, 2020

B. *Present and Probable Need for Public Facilities and Services*

Stockton's facilities and service levels are adequate to meet the present needs of the existing population within the city limits and in unincorporated areas within the SOI where the City currently provides services.

For public safety services, expansion into currently unincorporated areas will require demonstration that the services will be maintained or improved prior to annexation to the City and detachment from current services providers. Future obligations for fire protection, emergency medical, and police service delivery will be analyzed on an individual basis to determine the potential impact on service delivery and the potential need for additional facilities, vehicles, equipment, and personnel to maintain adequate response times; such obligations will also be required to comply with City impact fees that are in effect.

Future growth and development within the SOI will require continued improvements and upgrades to infrastructure and services as described in the City's infrastructure master plans. The City has policies and procedures in place that ensure the proper timing and adequate funding of needed infrastructure and services.

C. *Present Capacity and Adequacy of Public Facilities and Services*

Existing infrastructure and services are adequate to meet the needs of the existing population within the incorporated city and in parts of the SOI where the City currently provides services. Stockton's Fire Department is adequately staffed and equipped to meet the needs of its current service area. The City has taken steps to improve crime prevention and law enforcement in the current city limits (e.g., Measure A, Marshall Plan, renegotiated labor agreement). The City's water supply and delivery and wastewater treatment and disposal facilities are also adequate to meet the needs of the existing population. Drainage and flood control facilities in the city are adequate to provide flood protection to most areas within the SOI, although some areas are at risk. Efforts by the City as well as State and federal agencies will continue to address problem areas in the SOI that are susceptible to flooding from both local and regional sources. Review of the City's municipal services shows that the capacity of public facilities and services is sufficient to serve the current needs within the city limits. There are, however, several areas within the unincorporated SOI where stormwater drainage systems are deficient due to the absence of formal storm drainage facilities. In addition, there are unincorporated areas within the SOI that currently rely on on-site sewage disposal (septic systems). While these systems are not necessarily deficient for providing

service to current users in these areas, further development could require the extension of municipal services if these areas were to annex to the city. The City has infrastructure and service plans and policies that address the facilities necessary to provide services within the current city limits, as well as to unincorporated areas of the SOI that are covered by the City's 2040 General Plan. Facilities and services would need to meet City standards as a condition of annexation of unincorporated areas. This could include construction of new water and sewer lines consistent with the City's infrastructure and service plans.

D. *Social or Economic Communities of Interest*

Communities of interest may be defined by a variety of different and potentially overlapping characteristics and geographies. The city of Stockton as a whole may be considered a community of interest, but there are also geographically and socioeconomically finer-grained social and economic communities of interest that make up, border, and at times straddle the boundaries of Stockton. To a large degree, the consideration of unincorporated islands, fringe communities, and disadvantaged unincorporated communities (see Chapter 4) serves to address impacts to communities of interest. Additionally, the maintained SOI would not impinge on the boundaries or territory of any abutting or nearby communities. Since no changes are proposed to the SOI, there would no new impacts to communities of interest, within or outside of Stockton.

E. *Population and Economic Trends*

1. Population and Households

Summary

Overall, Stockton appears to be experiencing a "new normal" of slower growth, relative to its past growth as well as the growth of San Joaquin County and the State of California overall. These lower rates of growth apply to both population and number of housing units, with the growth rate in housing units generally lower than that for population growth. This trend is reflected in increasing numbers of persons per household, though it is uncertain whether decreased housing production is driving this trend or being driven by it. These trends, coupled with lower or even negative rates of growth for Stockton's Downtown, suggest that housing and population growth in Stockton may remain well below levels seen prior to the "Great Recession"; however, the most recent data show that growth rates may be rising, albeit slowly. Recent housing, population, and demographic trends may indicate a higher need for multi-family units in Stockton relative to the early 2000s.

Quantitative Trends

Table 2-1 and Figures 2-2, 2-3, and 2-4 show Stockton's population, rate of population growth, and rate of housing growth by housing type over time, respectively. All four graphs show that Stockton experienced a brief period of very rapid growth in population and housing in the early to mid-2000s, with a precipitous decrease in growth during the run up to and onset of the great recession. Since 2008, Stockton's population growth rate has fluctuated around 1 percent, while housing growth continued to fall until around 2016, before showing a slight uptick in 2017 and 2018. Growth rates for single-family units have been more stable and remained positive over this time, while growth rates for multi-family units have been more unstable and even negative at times. It is worth noting that since around 2008, multi-family housing has made up a larger proportion of Stockton's housing growth than it did in preceding years.

TABLE 2-1: CITY OF STOCKTON POPULATION AND HOUSING UNITS CHANGES FROM 2000 TO 2019

Year	Total Population	Total Housing Units	Single-Family Units	Multi-Family Units	Mobile Homes	Persons Per Household	Pop Growth Rate	Housing Growth Rate	Single-Family Growth Rate	Multi-Family Growth Rate
2000	243,771	82,042	55,680	25,074	1,288	3.04	1.95%	1.15%	1.56%	0.35%
2001	248,520	82,985	56,548	25,162	1,275	3.07	2.39%	2.11%	2.99%	0.34%
2002	254,469	84,740	58,236	25,247	1,257	3.10	2.85%	2.28%	3.13%	0.51%
2003	261,710	86,675	60,059	25,377	1,239	3.14	3.22%	3.56%	4.52%	1.55%
2004	270,136	89,762	62,771	25,770	1,221	3.15	2.72%	3.51%	4.43%	1.5%
2005	277,485	92,911	65,551	26,157	1,203	3.14	1.94%	3.16%	4.15%	0.88%
2006	282,869	95,845	68,273	26,387	1,185	3.12	1.02%	1.78%	2.22%	0.78%
2007	285,750	97,549	69,790	26,592	1,167	3.11	0.47%	0.96%	1.23%	0.38%
2008	287,093	98,488	70,647	26,692	1,149	3.11	0.52%	0.56%	0.64%	0.44%
2009	288,591	99,039	71,099	26,809	1,131	3.12	0.93%	0.49%	0.49%	0.56%
2010	291,275	99,520	71,448	26,959	1,113	3.15	1.19%	0.2%	0.27%	0.03%
2011	294,729	99,715	71,641	26,966	1,108	3.18	1.15%	0.21%	0.16%	0.35%
2012	298,126	99,925	71,756	27,061	1,108	3.20	0.87%	0.08%	0.11%	0%
2013	300,734	100,003	71,834	27,061	1,108	3.19	0.6%	0.02%	0.09%	-0.16%
2014	302,532	100,025	71,899	27,018	1,108	3.22	1.35%	0.07%	0.09%	0.02%
2015	306,602	100,097	71,965	27,024	1,108	3.27	1.14%	0.05%	0.13%	-0.16%
2016	310,108	100,146	72,056	26,982	1,108	3.28	0.7%	0.11%	0.12%	0.07%
2017	312,289	100,254	72,146	27,000	1,108	3.35	0.49%	0.34%	0.31%	0.43%
2018	313,822	100,593	72,370	27,115	1,108	3.38	0.82%	0.28%	0.4%	-0.02%
2019	316,410	100,877	72,660	27,109	1,108	3.39	–	–	–	–

Source: California Department of Finance E-5 County/State Population and Housing Estimates, 1/1/2019, California Department of Finance E-8 City/County/State Population and Housing Estimates, 4/1/2000 to 4/1/2010.
Note: Persons per household calculated by DOF based on the population living in housing units that are not group quarters, divided by the number of occupied housing units.

EXHIBIT 1

FIGURE 2-2: CITY OF STOCKTON POPULATION BY YEAR

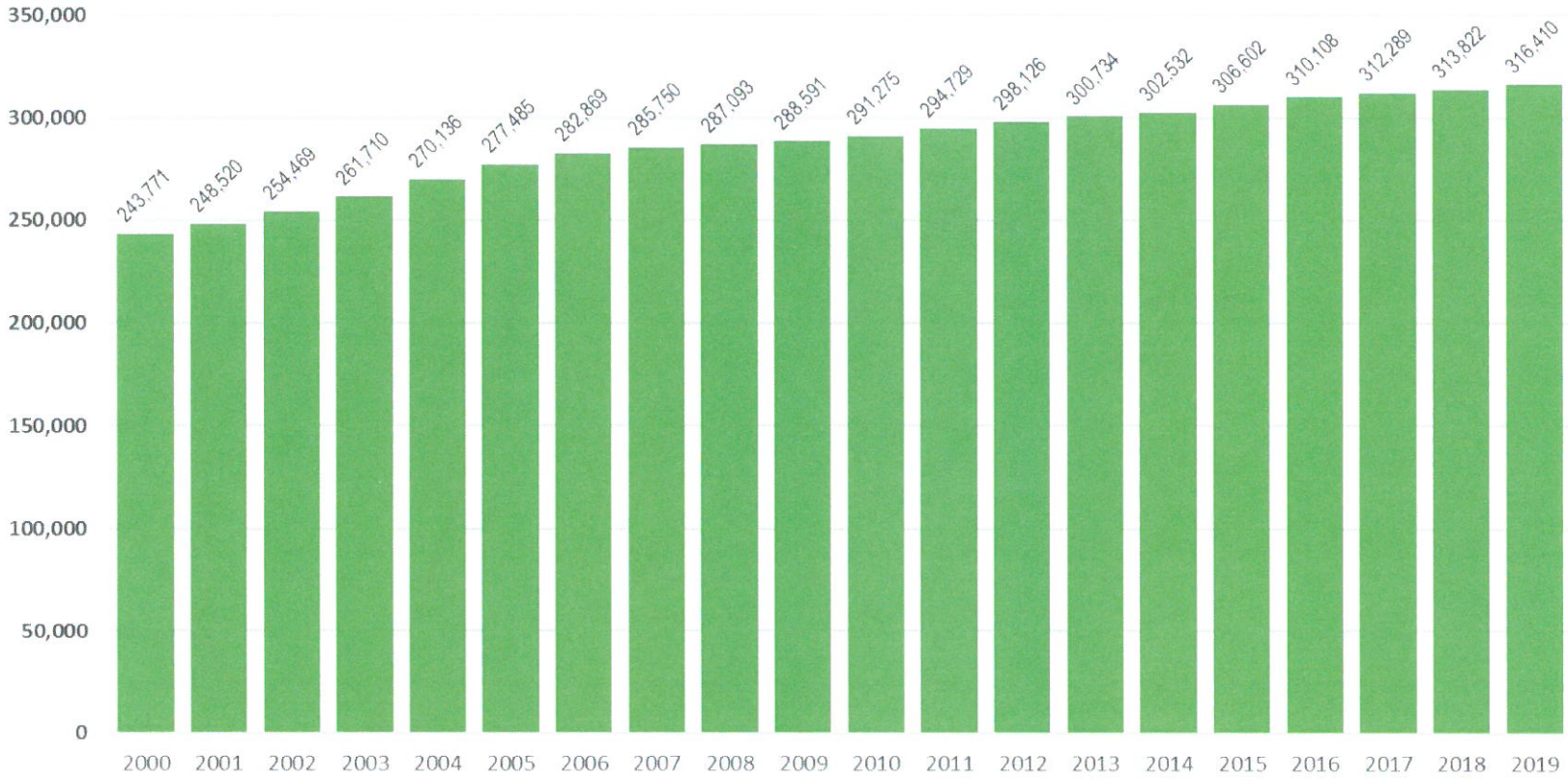


EXHIBIT 1

FIGURE 2-3: CITY OF STOCKTON RATE OF POPULATION GROWTH BY YEAR

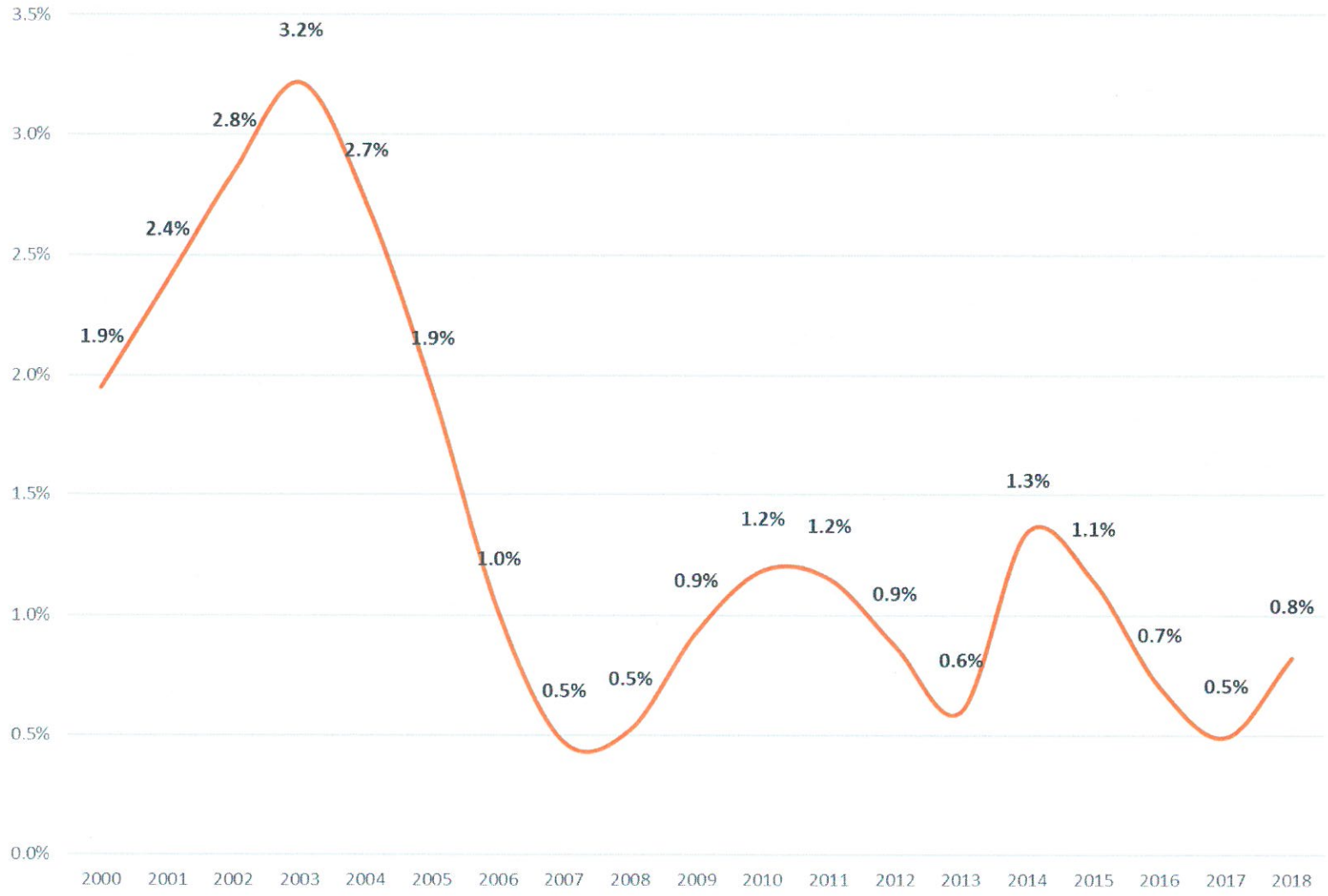


EXHIBIT 1

FIGURE 2-4: CITY OF STOCKTON RATE OF HOUSING GROWTH BY HOUSING TYPE BY YEAR

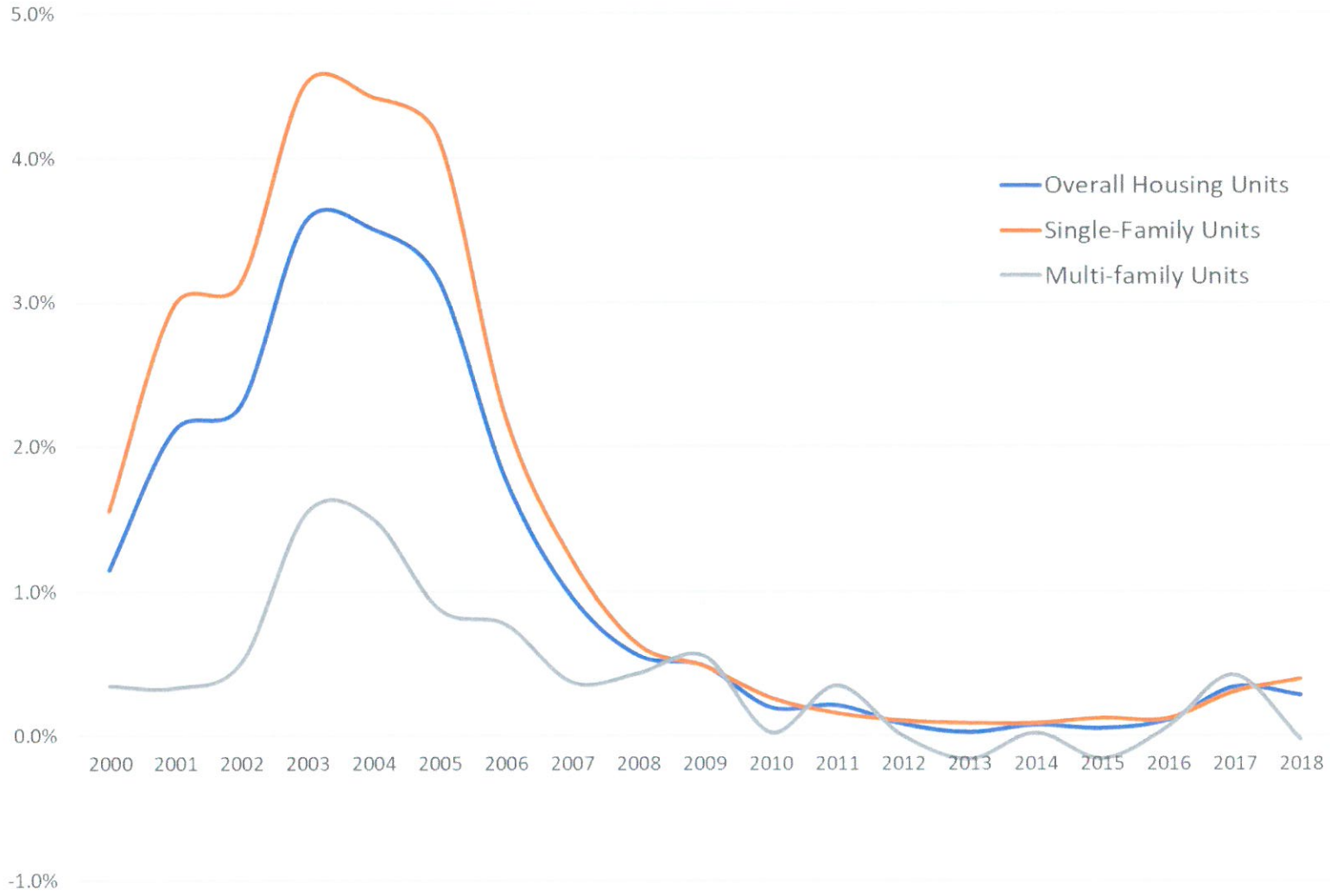


EXHIBIT 1

Tables 2-2 and 2-3, respectively, show population and housing levels and growth rates for San Joaquin County and California overall; Figures 2-5 and 2-6 show Stockton's population and housing growth rates compared to San Joaquin County overall and California as a whole. Since Stockton is the largest city in San Joaquin County, the rates of population and housing growth for these two geographies closely track one another. After a period in the early 2000s of growing faster in housing and population than both San Joaquin County and the state overall, Stockton is now generally growing at a rate similar to or somewhat below both San Joaquin County and California overall. Since roughly 2007, Stockton's population growth rate has generally been slightly less than San Joaquin County's and has fluctuated above and below California's population growth rate. With respect to housing units, Stockton's growth rates since 2012 have been consistently below both San Joaquin County and California overall.

As shown in Table 2-4, contrary to population and household trends within the broader Stockton community, the population residing in the Greater Downtown Area contracted by around 8 percent, or 2,100 residents, between 2000 and 2010. Corresponding with broad population loss, the number of households in the Greater Downtown Area contracted by around 4.5 percent between 2000 and 2010, representing a loss of around 400 households. Data from the U.S. Census Bureau's American Community Survey (ACS) indicate that between 2010 and 2014 this trend continued, with the average resident population decreasing to around 22,300, which is 15 percent below the 2000 Census estimate. At the same time, the number of households in the Downtown decreased to around 7,825, which, as of 2014, represented a loss of around 1,000 households since 2000, or around 11.7 percent.

Discussion

The above trends suggest that slowing population and household growth may signal a "new normal" that may translate into less robust demand for new housing and related services. If current growth trends continue through the end of the decade, Stockton will have experienced the most prolonged period of slower growth in its history, with the 2010s representing the slowest rate of any decade over the past 100 years—based on historical census data.

Lower population growth has been coupled with even slower growth in housing units and larger household sizes. It is not clear whether decreased housing growth is a result of larger household sizes, or whether decreased housing growth is driving more people to share housing units; however, home price data offer indications it may be the latter. Inflation-adjusted home price data for Stockton from the Federal Reserve Bank of St. Louis indicate that after bottoming out around 2011, home prices in Stockton have rapidly rebounded and are now not far below their pre-recession highs.

TABLE 2-2: SAN JOAQUIN COUNTY POPULATION AND HOUSING UNITS CHANGES FROM 2000 TO 2019

Year	Total Population	Total Housing Units	Single-Family Units	Multi-Family Units	Mobile Homes	Persons Per Household	Pop Growth Rate	Housing Growth Rate	Single-Family Growth Rate	Multi-Family Growth Rate
2000	563,598	189,160	140,524	39,445	9,191	3.000	2.6%	1.8%	2.3%	0.4%
2001	578,121	192,546	143,792	39,619	9,135	3.038	3.1%	2.8%	3.7%	0.6%
2002	596,039	197,966	149,061	39,841	9,064	3.066	2.7%	2.2%	2.7%	1.1%
2003	612,295	202,396	153,091	40,289	9,016	3.100	2.9%	3.2%	3.9%	1.5%
2004	629,787	208,841	158,999	40,907	8,935	3.114	2.4%	3.2%	3.9%	1.2%
2005	645,059	215,531	165,229	41,407	8,895	3.106	1.7%	2.9%	3.5%	1.4%
2006	656,247	221,852	170,979	42,005	8,868	3.084	1.4%	2.2%	2.5%	1.4%
2007	665,304	226,690	175,257	42,586	8,847	3.075	1.1%	1.6%	1.8%	1.1%
2008	672,492	230,216	178,397	43,038	8,781	3.076	0.8%	0.9%	0.9%	1.0%
2009	677,833	232,230	180,061	43,465	8,704	3.089	0.9%	0.5%	0.6%	0.6%
2010	684,057	233,449	181,110	43,734	8,605	3.116	1.3%	0.4%	0.5%	0.1%
2011	693,114	234,343	182,002	43,765	8,576	3.15	1.1%	0.3%	0.3%	0.3%
2012	700,519	234,992	182,522	43,910	8,560	3.16	0.8%	0.4%	0.4%	0.3%
2013	706,418	235,906	183,276	44,063	8,567	3.16	1.0%	0.4%	0.6%	-0.1%
2014	713,315	236,943	184,338	44,020	8,585	3.19	1.6%	0.4%	0.5%	0.0%
2015	724,859	237,905	185,279	44,026	8,600	3.23	1.5%	0.6%	0.8%	0.1%
2016	736,027	239,405	186,689	44,064	8,652	3.24	1.6%	0.7%	0.8%	0.3%
2017	747,579	241,021	188,131	44,203	8,687	3.31	1.3%	1.0%	1.0%	1.0%
2018	757,279	243,420	190,027	44,666	8,727	3.34	1.7%	1.3%	1.3%	1.3%
2019	770,385	246,521	192,517	45,243	8,761	3.35	–	–	–	–

Source: California Department of Finance E-5 County/State Population and Housing Estimates, 1/1/2019, California Department of Finance E-8 City/County/State Population and Housing Estimates, 4/1/2000 to 4/1/2010.

Note: Persons per household calculated by DOF based on the population living in housing units that are not group quarters, divided by the number of occupied housing units.

EXHIBIT 1

TABLE 2-3: CALIFORNIA POPULATION AND HOUSING UNITS CHANGES FROM 2000 TO 2019

Year	Total Population	Total Housing Units	Single-Family Units	Multi-Family Units	Mobile Homes	Persons Per Household	Pop Growth Rate	Housing Growth Rate	Single-Family Growth Rate	Multi-Family Growth Rate
2000	33,873,086	12,214,550	7,815,035	3,829,827	569,688	2.87	1.1%	0.8%	1.1%	0.4%
2001	34,256,789	12,313,566	7,898,689	3,846,896	567,981	2.89	1.4%	1.2%	1.5%	0.7%
2002	34,725,516	12,461,342	8,020,637	3,874,858	565,847	2.90	1.3%	1.3%	1.5%	0.9%
2003	35,163,609	12,619,213	8,144,276	3,910,898	564,039	2.91	1.2%	1.3%	1.7%	0.8%
2004	35,570,847	12,785,664	8,280,537	3,942,250	562,877	2.91	0.8%	1.5%	1.8%	1.2%
2005	35,869,173	12,978,524	8,426,623	3,989,428	562,473	2.90	0.7%	1.6%	1.8%	1.2%
2006	36,116,202	13,183,852	8,581,465	4,038,183	564,204	2.88	0.8%	1.4%	1.6%	1.0%
2007	36,399,676	13,364,160	8,719,186	4,080,078	564,896	2.87	0.8%	1.0%	1.1%	1.2%
2008	36,704,375	13,503,834	8,811,100	4,128,536	564,198	2.87	0.7%	0.7%	0.7%	0.9%
2009	36,966,713	13,598,801	8,872,801	4,164,554	561,446	2.88	0.8%	0.5%	0.6%	0.5%
2010	37,253,956	13,670,304	8,925,518	4,187,139	557,647	2.90	0.9%	0.3%	0.2%	0.4%
2011	37,594,781	13,704,840	8,944,011	4,202,699	558,130	2.92	1.0%	0.3%	0.2%	0.4%
2012	37,971,427	13,740,505	8,962,362	4,219,380	558,763	2.93	0.9%	0.3%	0.2%	0.6%
2013	38,321,459	13,786,000	8,983,413	4,243,199	559,388	2.94	0.8%	0.4%	0.3%	0.7%
2014	38,622,301	13,845,509	9,011,324	4,274,188	559,997	2.96	0.9%	0.5%	0.3%	0.9%
2015	38,952,462	13,915,037	9,041,909	4,312,722	560,406	2.97	0.7%	0.5%	0.3%	0.9%
2016	39,214,803	13,982,851	9,072,538	4,349,458	560,855	2.97	0.7%	0.6%	0.4%	1.2%
2017	39,504,609	14,072,308	9,110,492	4,400,229	561,587	2.99	0.6%	0.6%	0.4%	1.1%
2018	39,740,508	14,157,605	9,146,788	4,448,812	562,005	2.99	0.5%	0.5%	0.4%	0.9%
2019	39,927,315	14,235,093	9,185,660	4,489,613	559,820	2.99	–	–	–	–

Source: California Department of Finance E-5 County/State Population and Housing Estimates, 1/1/2019, California Department of Finance E-8 City/County/State Population and Housing Estimates, 4/1/2000 to 4/1/2010.

Note: Persons per household calculated by DOF based on the population living in housing units that are not group quarters, divided by the number of occupied housing units.

EXHIBIT 1

FIGURE 2-5: CITY OF STOCKTON, SAN JOAQUIN COUNTY, AND CALIFORNIA RATES OF POPULATION GROWTH BY YEAR

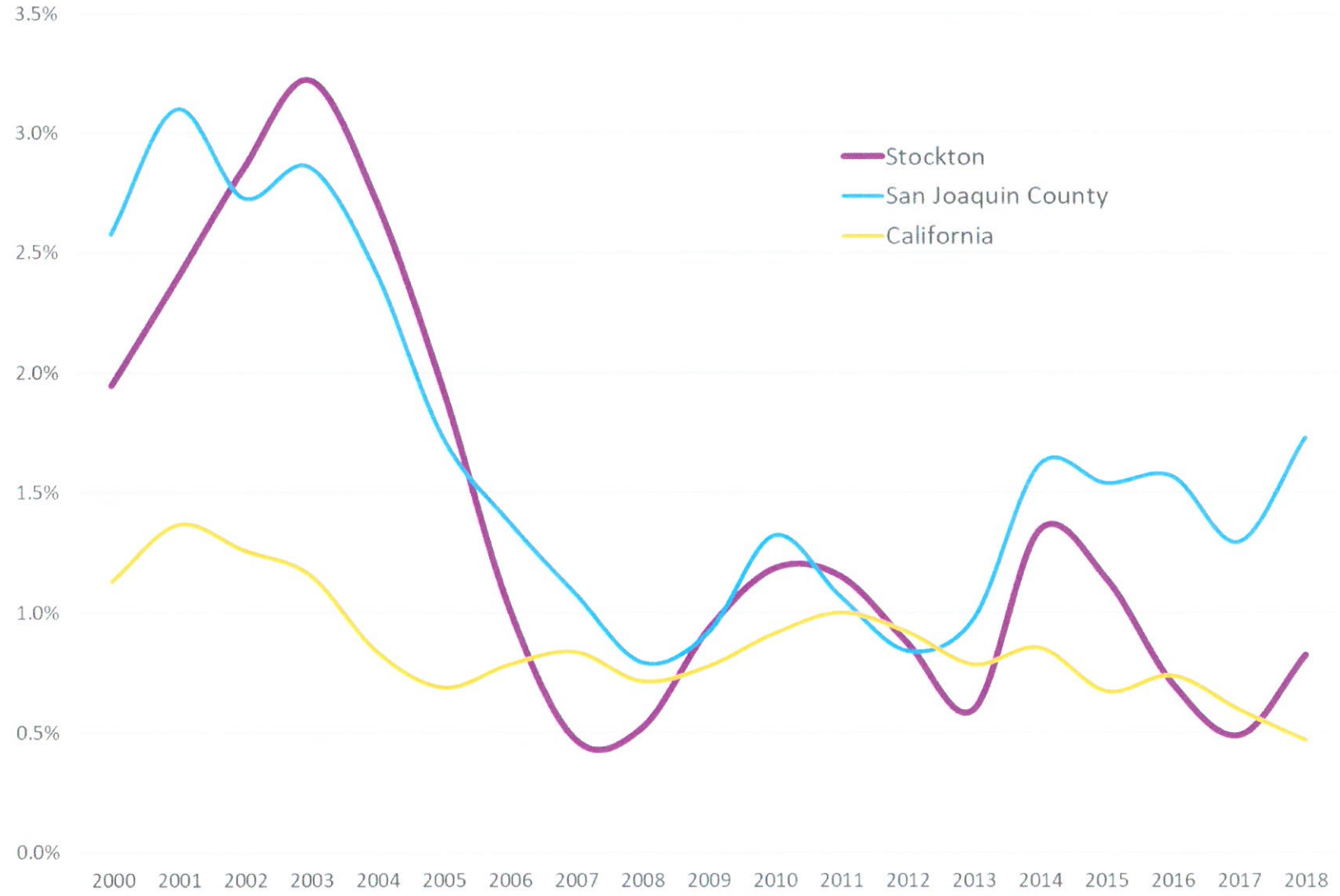


EXHIBIT 1

FIGURE 2-6: CITY OF STOCKTON, SAN JOAQUIN COUNTY, AND CALIFORNIA RATES OF HOUSING UNITS GROWTH BY YEAR

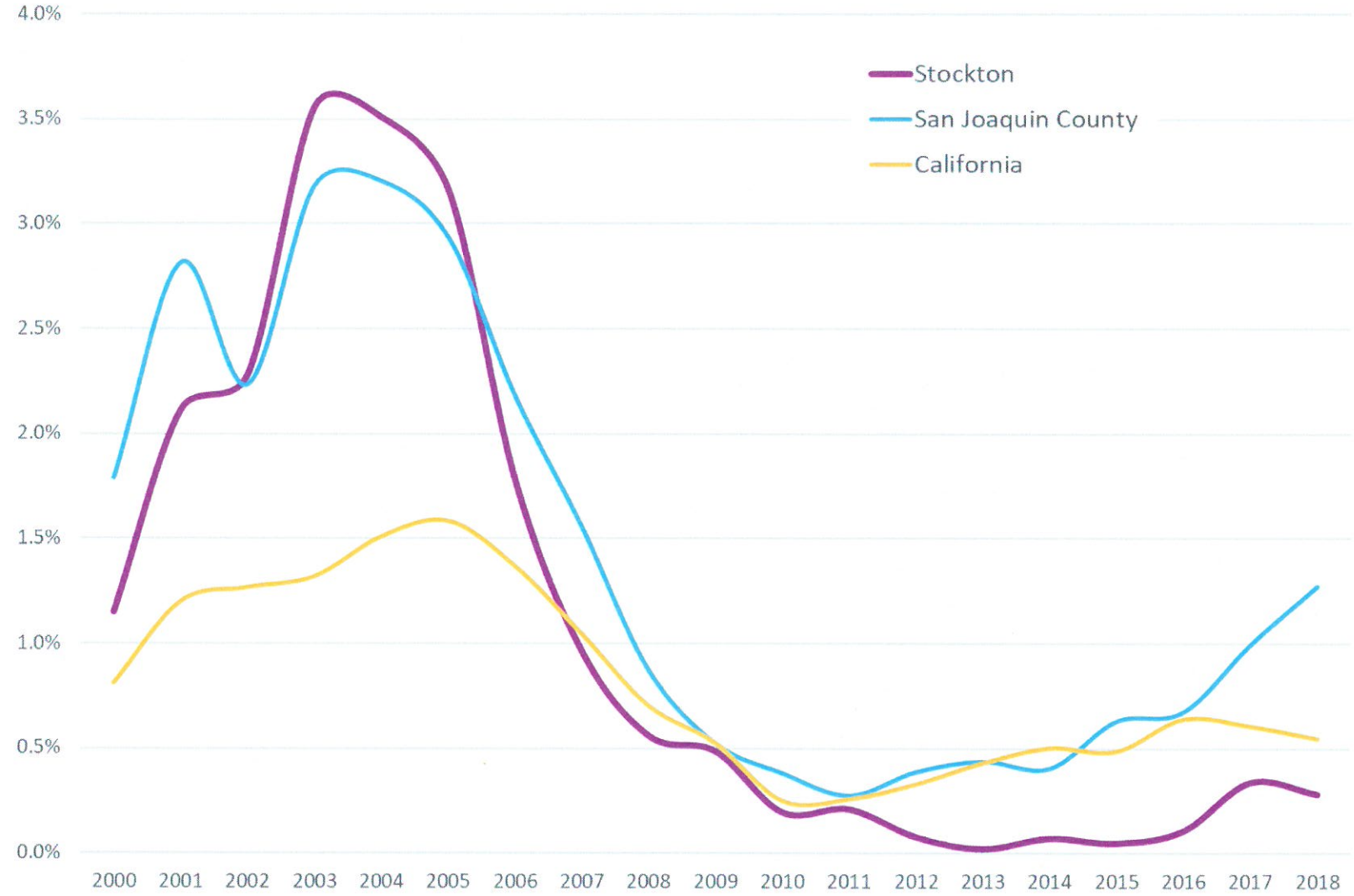


EXHIBIT 1

TABLE 2-4: HISTORIC POPULATION AND HOUSEHOLD CHANGE: DOWNTOWN STOCKTON, STOCKTON & SAN JOAQUIN COUNTY, 2000 TO 2014

Population/ Household Characteristic	Greater Downtown Area					Stockton					San Joaquin County				
	2000	2010	Avg Annual Change	2014	Avg Annual Change	2000	2010	Avg Annual Change	2014	Avg Annual Change	2000	2010	Avg Annual Change	2014	Avg Annual Change
Population	26,283	24,181	-0.83%	22,317	-1.99%	243,771	291,707	1.81%	302,405	0.90%	563,598	685,306	1.97%	715,597	1.09%
Households	8,865	8,462	-0.46%	7,825	-1.94%	78,556	90,605	1.44%	95,166	1.24%	181,629	215,007	1.70%	221,874	0.79%
Average HH Size	2.86	2.73		2.74		3.04	3.16		3.11		3	3.12		3.16	
Household Type															
Families	59.0%	55.2%		57.9%		71.5%	72.6%		70.1%		74.2%	74.9%		72.8%	
Non-Families	41.0%	44.8%		42.1%		28.5%	27.4%		29.9%		25.8%	25.1%		27.2%	
Household Tenure															
Owner	24.5%	22.5%		22.1%		51.6%	51.6%		45.1%		60.4%	59.2%		53.5%	
Renter	75.5%	77.5%		77.9%		48.4%	48.4%		54.9%		39.6%	40.8%		46.5%	

Source: U.S. Census Bureau, Census 2000, Summary File 1, 2016; U.S. Census Bureau, Census 2010, Summary File 1, 2016; U.S. Census Bureau, 2010-2014 American Community Survey, 2016; U.S. Census Bureau, 2014 American Community Survey, 2016; BAE, 2016.

EXHIBIT 1

Increasing household sizes exhibited throughout Stockton and San Joaquin County could signal a continuing unmet need for larger housing units, a trend toward unrelated people sharing housing, and/or pent-up demand from young adults who are sharing housing with unrelated individuals or living in larger, multigenerational households. Given that housing costs are rising quickly in Stockton, and that national, state, and local trends are toward fewer households with children, it seems likely that these trends are driven by multigenerational households and unrelated people living together. If true, this would indicate that there may be an unmet demand for housing suited to singles, childless couples, empty nesters, and others not living with a nuclear family. This hypothesis would be consistent with Stockton's trend toward multi-family housing starts making up a larger proportion of housing growth than in the past. Additionally, the average number of people per household in Stockton is both higher and rising more quickly than the state average, especially over the past decade. This may be reflective of the broader housing crisis in the Bay Area, with housing demand and cost increases spilling over into Stockton.

Local real estate brokers and economic developers indicate that the significant decline in the Downtown resident population was at least partially driven by issues associated with safety and security, and that addressing those issues may be important to increasing the demand for housing in that area, along with addressing the feasibility of building new housing, at least in the near term.

Despite Downtown's population and housing losses during the 2000s and early 2010s, a shift away from detached single-family homes geared toward nuclear families offers opportunities for recovering population and housing growth Downtown. Additionally, a shift toward housing types other than detached single-family homes would tend to promote infill development and may improve efficiency for providing municipal services by focusing growth in already-served areas with existing infrastructure and facilities.

In any event, it seems likely that growth rates in Stockton are likely to remain below both what occurred in the early 2000s and what was anticipated by the previous 2035 General Plan. Impacts to municipal services are therefore likely to be less than was previously expected. For additional discussion of these issues, please see the following sections.

2. Economic Conditions

This section summarizes recent economic conditions in Stockton and San Joaquin County. The analysis uses a number of sources, including data published by the California Employment Development Department (EDD), the California State Board of Equalization (BOE), the U.S. Census Bureau, and Nielsen, a private data vendor, as well as interviews with local economic development

professionals, including the City of Stockton Economic Development Department, the Downtown Stockton Alliance, the San Joaquin Valley Partnership, the San Joaquin Hispanic Chamber of Commerce, and the Stockton Visitors Bureau.

Retail Sales and Leakage

As the second largest employment sector in Stockton, retail trade represents an important component of the local economy. According to the BOE, the City of Stockton captured a total of $3.4 billion in taxable sales in 2013. By comparison, San Joaquin County overall saw around $9.4 billion. When combined with population estimates from the DOF for a comparable time period, these figures equate to per capita taxable sales of $11,403 in Stockton and $13,492 countywide. By comparison, 2013 per capita taxable sales statewide were equal to $15,431. This indicates that both Stockton and San Joaquin County generally underperform in the retail sector compared to other parts of California. This was true across all retail categories. Despite this, countywide per capita sales were generally on par with those of other San Joaquin Valley counties. Thus, it is likely that on a countywide basis, the lower level of per capita retail sales is attributable to generally lower incomes and other factors influencing demand, rather than leakage of resident expenditures to shopping destinations outside the county. On a per capita basis, the city of Stockton outperformed the county in a number of key categories, including Motor Vehicles and Parts Dealers, Food and Beverage Stores, Clothing and Clothing Accessories Stores, Food Service and Drinking Places, and Other Retail.

City of Stockton residents spent approximately $4.02 billion on retail purchases in 2015. This corresponded with approximately $3.94 billion in retail sales within the city limit, resulting in an estimated leakage of approximately $76.6 million in retail sales. However, after accounting for the presence of the unincorporated pockets and retail development adjacent to the city limits, which adds a substantial amount of retail activity, the data indicate that the broader Stockton community experienced a net injection of approximately $207.0 million in annual retail sales. This trend also extended to San Joaquin County as a whole, where there is a net injection of $869.7 million in retail sales.

By applying sales per square foot estimates published by the Urban Land Institute (ULI), local retail leakage could potentially support up to 1.08 million square feet of additional retail floor area. This would include up to 537,000 square feet in the Food Service and Beverage Places category, as well as 220,000 square feet in Furniture and Home Furnishing Stores, 165,000 square feet in Sporting Goods, Hobby, Book, and Music Stores, and 113,000 square feet in Electronics and Appliance Stores. By comparison, countywide retail leakage could likely support up to 2.46 million square feet of additional retail floor area, which would be

distributed similarly to that described above. In addition, both areas show significant leakage in the Motor Vehicle and Parts Dealers category. In the Greater Stockton Area, that leakage would be sufficient to support up to approximately 17 acres of new auto dealership development, or approximately three to four dealerships, while countywide leakage could support up to 58 additional acres, or up to 10 average sized dealerships.

F. *DEVELOPMENT OPPORTUNITIES AND DEMAND*

The Environmental Impact Report (EIR) for the 2040 General Plan projects the amount of development that is anticipated to occur within the SOI by 2040 as a result of implementing the General Plan (i.e., the "2040 horizon-year growth projection"). This projection is based on the anticipated demand coupled with the opportunities for development provided by the General Plan land use map.

The horizon-year development projection for the 2040 General Plan, including approved and pending development projects, includes the following:

- 40,900 new dwelling units, including:
  - 26,300 new single-family units
  - 14,600 new multi-family units
- 132,200 new residents[1]
- 63,300 new jobs[2]
- 13.8 million square feet of new commercial and office space
- 35.6 million square feet of new industrial space

To project the horizon-year development, the EIR first determined the full buildout potential, which would be the development of every parcel with the maximum amount of development allowed under the General Plan.

Next, the EIR determined the probable amount of development during the planning period (i.e, by 2040) based on a market study that forecasts the future

[1] Based on an assumption of 3.23 persons per household, as reported in: State of California, Department of Finance, 2017. E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2011- 2017.

[2] Based on an assumption of 500 square feet per employee for commercial/office and 1,000 square feet per employee for industrial uses.

demands for new residential, retail, office, and industrial space in Stockton. The study found that the land use demand forecast for Stockton in 2040 is as follows:

- **Residential:** Between 19,800 and 41,000 new housing units, including between 13,800 and 28,700 new single-family units and between 5,900 and 12,300 new multi-family units. The low-growth scenario is based on Caltrans data and the high-growth scenario is based on data from the San Joaquin Council of Governments (SJCOG) and the Center for Business Policy Research (CBPR) at the University of the Pacific.
- **Retail:** Between 3.3 and 4.8 million square feet of new retail development. These estimates are based in part on the residential forecast, so the low- and high-growth numbers are affected by the Caltrans, SJCOG, and CBPR data described for the residential forecast above.
- **Office:** Approximately 7.1 million square feet of new office development. This estimate is based on an employment forecast from SJCOG and CBPR.
- **Industrial:** Approximately 6.2 million square feet of new industrial development. This estimate is based on an employment forecast from SJCOG and CBPR.

Next, the EIR distributed the potential development throughout the SOI. The planning period development was primarily distributed in two types of locations:[3]

- **Land Use Alternatives Study Areas:** During the land use alternatives phase of the 2040 General Plan Update, the community identified areas in need of a positive change. Based on that input, City staff and the consultant team mapped 16 study areas. As shown in Table 2-5, for each study area, it was assumed that a certain percentage of the full development potential would occur by 2040 for each land use type. This assumption was based on community input from the General Plan Update process, proximity to other uses, proposed General Plan policies, and consultation among City staff and the consultant team.
- **Approved and Pending Development Projects.** There is significant development potential available in approved development projects that have not yet been constructed. The development allowed in those

[3] Land Use Alternatives Study Areas and Approved and Pending Development Projects are mapped on Figure 3-5, Study Areas and Approved/Pending Projects, which is on page 3-24 of the June 2018 *Envision Stockton 2040 General Plan Update and Utility Master Plan Supplements Draft EIR*, available here: http://www.stocktongov.com/files/EnvisionStockton2040GP_DEIR.pdf

approved projects, as well as development proposed in pending development projects, is included in the horizon-year projection, and was considered as part of the process to distribute the planning period development. Given the significant amount of development potential in those projects, the horizon-year projection includes more non-residential development than forecasted by the market study described above. The approved and pending development that was included in the horizon-year projection is shown in Table 2-6.

TABLE 2-5: 2040 DEVELOPMENT BY STUDY AREA

Study Area #/Name	*Net New Single-Family Units (Full Buildout)*	*Percent Applied to 2040*	**Net New Single-Family Units (2040)**	*Net New Multi-Family Units (Full Buildout)*	*Percent Applied to 2040*	**Net New Multi-Family Units (2040)**	*Net New Commercial Square Feet (Full Buildout)*	*Percent Applied to 2040*	**Net New Commercial Square Feet (2040)**	*Net New Industrial Square Feet (Full Buildout)*	*Percent Applied to 2040*	**Net New Industrial Square Feet (2040)**
1. Eight Mile Rd	*3,940*	*35%*	1,380	*25,350*	*5%*	1,200	*197,000*	*20%*	39,000	*74,095,000*	*0%*	0
2. Pacific Ave Corridor	*0*	*0%*	0	*440*	*25%*	110	*188,000*	*50%*	94,000	*0*	*0%*	0
3. West Ln and Alpine Rd	*80*	*100%*	80	*2,720*	*25%*	680	*1,294,000*	*25%*	323,000	*0*	*0%*	0
4. Port/Waterfront	*20*	*100%*	20	*2,210*	*80%*	1,770	*6,800,000*	*30%*	2,040,000	*2,323,000*	*25%*	581,000
5. El Dorado/Center Corridors	*0*	*0%*	0	*1,500*	*80%*	1,200	*4,367,000*	*30%*	1,310,000	*0*	*0%*	0
6. Miner/Weber Corridors[a]	*0*	*0%*	0	*1,560*	*80%*	1,250	*2,926,000*	*50%*	1,463,000	*0*	*0%*	0
7. Wilson Way Corridor	*0*	*0%*	0	*940*	*25%*	230	*1,213,000*	*50%*	607,000	*0*	*0%*	0
8. I-5/Highway 4 Interchange	*0*	*0%*	0	*820*	*80%*	660	*777,000*	*50%*	389,000	*0*	*0%*	0
9. Railroad Corridor at California St	*0*	*0%*	0	*1,680*	*80%*	1,340	*5,197,000*	*25%*	1,299,000	*0*	*0%*	0
10. I-5 and Charter Way	*90*	*100%*	90	*980*	*10%*	100	*535,000*	*25%*	134,000	*98,000*	*85%*	84,000
11. Charter Wy/MLK Jr Blvd Corridor	*0*	*0%*	0	*790*	*50%*	400	*1,619,000*	*20%*	324,000	*0*	*0%*	0
12. Airport Way Corridor	*0*	*0%*	0	*430*	*25%*	110	*274,000*	*75%*	205,000	*5,475,000*	*25%*	1,369,000
13. Mariposa and Charter	*0*	*0%*	0	*570*	*0%*	0	*324,000*	*25%*	81,000	*0*	*0%*	0
14. East Weston Ranch[b]	*0*	*0%*	0	*610*	*0%*	0	*574,000*	*75%*	431,000	*0*	*0%*	0
15. South of French Camp Rd	*0*	*0%*	0	*0*	*0%*	0	*0*	*0%*	0	*0*	*0%*	0
16. E French Camp Rd	*0*	*0%*	0	*0*	*0%*	0	*0*	*0%*	0	*0*	*0%*	0
Outside of Study Areas[c]	*16,360*	*9%*	1,500	*29,810*	*0%*	0	*19,487,000*	*0%*	0	*126,805,000*	*0%*	0
Grand Total[d]			**3,060**			**9,040**			**8,739,000**			**2,033,000**

Notes: To estimate the 2040 development, a percentage of the full theoretical buildout potential was assumed for each study area, as shown in the gray, italicized columns. Study Areas are mapped on Figure 3-5, Study Areas and Approved/Pending Projects, which is on page 3-24 of the June 2018 *Envision Stockton 2040 General Plan Update and Utility Master Plan Supplements Draft EIR*, available here: http://www.stocktongov.com/files/EnvisionStockton2040GP_DEIR.pdf.

a. Excludes Open Window approved project.

b. Excludes Weston Ranch Town Center approved project.

c. Excludes approved/pending projects.

d. Numbers do not always add up due to rounding.

EXHIBIT 1

TABLE 2-6: NET NEW APPROVED AND PENDING DEVELOPMENT

	Single-Family Units	Multi-Family Units	Commercial Square Feet	Industrial Square Feet
Approved Within City Limit				
Westlake Villages	2,600	0	0	0
Delta Cove	1,200	400	31,000	0
North Stockton Projects III	2,200	0	0	0
Cannery Park	1,000	200	1,079,000	1,442,000
Nor Cal Logistics Center	0	0	0	6,280,000
Crystal Bay	1,000	400	0	0
Sanctuary	5,500	1,600	692,000	0
Tidewater Crossing	0	0	186,000	11,625,000
Open Window	0	1,400	0	57,000
Weston Ranch Town Center	0	0	481,000	0
Approved/Pending Outside City Limit, Inside SOI				
Mariposa Lakes	9,000	1,600	1,010,000	11,980,000
Airpark 599	0	0	1,679,000	2,200,000
Tra Vigne[a]	1,200	0	0	0

Note: Approved and pending development projects are mapped on Figure 3-5, Study Areas and Approved/Pending Projects, which is on page 3-24 of the June 2018 *Envision Stockton 2040 General Plan Update and Utility Master Plan Supplements Draft EIR*, available here: http://www.stocktongov.com/files/EnvisionStockton2040GP_DEIR.pdf
a. Pending; not approved.
Source: City of Stockton and PlaceWorks, 2017.

G. *10- AND 20-YEAR PLANNING HORIZONS*

San Joaquin LAFCo's Policies and Procedures call for municipal service reviews and SOI plans to present information on future projections and plans tied to 5- to 10-year and 30-year horizons. LAFCo provides for shorter time frames where applicable general plans have shorter planning periods remaining when the service review is prepared. The City has divided the buildout period into two time frames: 0 to 10 years (2020 to 2030) and 11 to 20 years (2021 to 2040). For each time frame, the City has projected the amount of residential and non-residential development that is expected to occur within the SOI. As discussed above, the City's current SOI has the capacity to accommodate the projected residential, retail, office, and industrial demand in 2040.

Table 2-7 shows the projected development demand according to the 10-year horizon (2020 to 2030) and the balance of the 20-year horizon (2030 to 2040).

TABLE 2-7: DEVELOPMENT DEMAND FORECAST 10-YEAR AND 20-YEAR PLANNING HORIZONS

	2020-2030	2030-2040	Total
Low Growth			
Housing Units	9,876	9,876	19,752
Retail Square Feet (Non-Automotive)	1,650,000	1,650,000	3,300,000
Office Square Feet	3,550,000	3,550,000	7,100,000
Industrial Square Feet	3,100,000	3,100,000	6,200,000
High Growth			
Housing Units	20,515	20,515	41,030
Retail Square Feet (Non-Automotive)	2,450,000	2,450,000	4,900,000
Office Square Feet	3,550,000	3,550,000	7,100,000
Industrial Square Feet	3,100,000	3,100,000	6,200,000

Source: 2040 General Plan, Market Analysis Technical Memorandum, July 20, 2016.

Figure 2-7 shows where annexations within the City's current SOI would contribute to addressing demand over the 10-year horizon (i.e., prior to 2030). These areas are labeled "2030 planning horizon areas" and include the areas listed below. Any areas that aren't completely developed by 2030 are assumed to be built out by the end of the 20-year horizon.

- **Airpark 599 (southeast of City limit):** As indicated in Table 2-6: Net New Approved And Pending Development, this is an approved development project that includes 1.7 million square feet of commercial and office uses and 2.2 million square feet of industrial uses.
- **Tra Vigne (north of City limit, south of Eight Mile Road):** As indicated in Table 2-6, this is an approved development project that includes 1,200 single-family homes.
- **Balance of area north of City limit, south of Eight Mile Road:** According to the 2040 General Plan EIR, this area is expected to accommodate up to 1,380 new single-family homes, 1,200 new multi-family homes, and 39,000 square feet of new commercial and office development.
- **Sanchez annexation project:** This is a pending annexation project that is expected to include approximately 3.1 million square feet of new industrial development.
- **Archtown annexation projects:** These pending annexation projects include the Archtown Industrial Project, for which a tentative subdivision map has expired, but the applicant intends on submitting a

new map in the near future, and the Arch Road Annexation, which would include approximately 9,100 square feet of new commercial development.

- **Hammer Lane annexation projects:** These are pending annexation projects that include approximately 12,000 square feet of new commercial development, plus a 144-room hotel.
- **Unincorporated islands:**[4] Unincorporated islands included in the 10-year horizon are listed below. Although they lack significant development potential, they are included in the 10-year horizon to facilitate improved service delivery and efficiency.
    - *Rancho San Joaquin:* There are 32 existing housing units in this island.
    - *Wagner Heights North and South:* There are 79 existing housing units and various commercial and office uses in this island.
    - *Weber Grant:* There are 7 existing housing units and various commercial and office uses in this island.
    - *Sperry Tract:* There are 12 existing housing units in this island.
    - *Rose Terrace:* There are 83 existing housing units and a portion of a food processing facility in this island.
    - *Mosswood Park:* There are 439 existing housing units in this island.
    - *El Dorado-Airport:* There are only industrial uses existing in this island.

In total, the areas described above and included in the 10-year horizon can accommodate the following development:

- 3,780 housing units
    - 2,580 single-family
    - 1,200 multi-family
- 1.7 million square feet of commercial and office uses

[4] Information about unincorporated islands is from the December 18, 2018 Executive Officer's Report to the San Joaquin LAFCO, available at https://www.sjgov.org/uploadedfiles/sjc/departments/lafco/content/december%20agenda%20item%20no.%205%20san%20joaquin%20unincorporated%20islands.pdf

- 5.3 million square feet of industrial uses

As Table 2-7 shows, the 10-year demand for residential units ranges from 9,880 units (low-growth) to 20,520 units (high-growth). Although the capacity for development within the 10-year horizon areas outside the City limit would not accommodate that demand, there is capacity within the existing City limit to accommodate the balance. The study areas identified in Table 2-5 are primarily within the city limit; the only study area with residential capacity that is not within the City limit is Study Area 1, Eight Mile Road. In total, the remaining study areas are expected to accommodate 8,020 housing units, which, when combined with the 10-year horizon areas (totaling 11,800 units), can accommodate housing demand in the low-growth scenario. As shown in Table 2-6, there is additional residential development capacity within the approved and pending projects within the City limit to accommodate the remaining demand in the high growth scenario.

For commercial and office space, as shown in Table 2-7, the 10-year demand ranges from 5.2 million square feet (low-growth, combined) to 6 million square feet (high-growth, combined). Although the capacity for development within the 10-year horizon areas outside the City limit would not accommodate that demand, there is capacity within the existing City limit to accommodate the balance. When combined with the study areas within the city limit from Table 2-5, the commercial and office capacity increases to 10.4 million square feet, which can accommodate both demand scenarios.

For industrial space, as shown in Table 2-7, the 10-year demand is 3.1 million square feet. The capacity for development within the 10-year horizon areas outside the City limit would accommodate that anticipated demand.

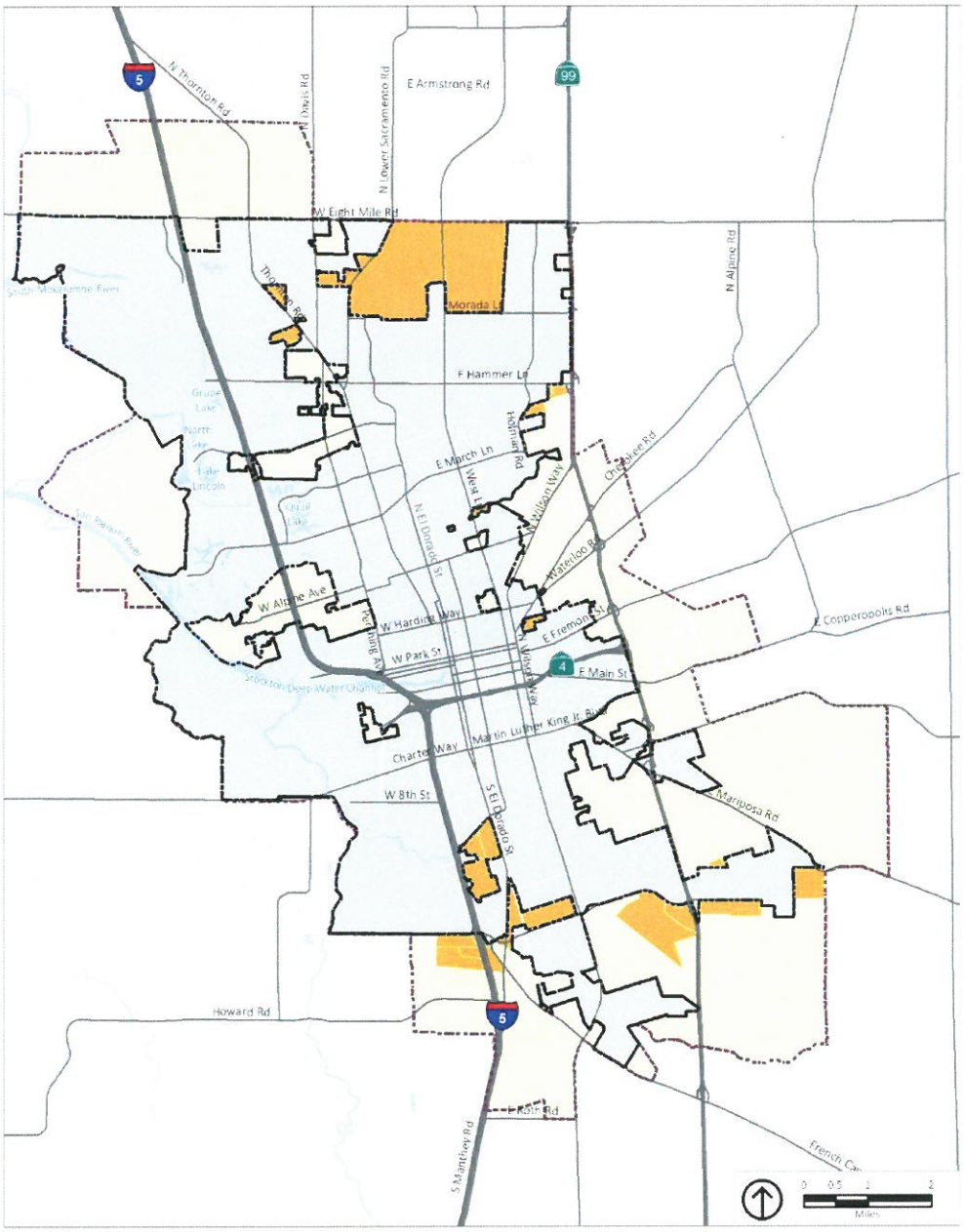
In addition to annexation of the areas shown in Figure 2-7, the City is committed to working in good faith with all stakeholders, including property owners, members of the public, and other government agencies, to prepare feasibility studies regarding the annexation of other unincorporated islands within the SOI.

For demand beyond the 10-year planning horizon, the City assumes areas within the unincorporated SOI that are not shown on Figure 2-7 as partially developed by 2030 will be annexed as necessary after 2030. As described in Section F of Chapter 2, in total, the anticipated development in the City limit and SOI includes:

- 40,900 new dwelling units
- 13.8 million square feet of new commercial and office space
- 35.6 million square feet of new industrial space

This 2040 development projection would accommodate anticipated demand. In the high-growth scenario, the residential demand is expected to be slightly higher than the 2040 development projection (41,030 units, or a difference of 130 units from the 2040 projection). If the high-growth scenario were to occur, there is additional residential development capacity beyond the 2040 development projection for the General Plan, as shown in Table 2-5, which also shows the full buildout potential of the General Plan (i.e., the development of every parcel with the maximum amount of development allowed under the General Plan).

FIGURE 2-7: 10-YEAR PLANNING HORIZON ANNEXATION AREAS



Source: City of Stockton, 2016; Placeworks, 2019; ESRI, 2019.

2030 Planning Horizon Areas
City Limit
Sphere of Influence

This page is intentionally left blank

CHAPTER 3. POPULATION AND EMPLOYMENT PROJECTIONS

This chapter discusses existing population and growth projections for Stockton and its SOI that drive the development demand discussed in Chapter 2 and the associated demand for services. Chapter 5 discusses the present and planned capacity of municipal service providers to meet the demand for services associated with the growth described in this chapter.

A. *POPULATION*

In May 2016, the San Joaquin Council of Governments (SJCOG) published draft population and employment projections for use in regional transportation planning. Table 3-1 summarizes SJCOG's population projections for Stockton from 2020 through 2040. As the table shows, Stockton is projected to grow to a total population of 432,627 by 2040, an overall increase of 102,898, which equates to an annualized growth rate of 1.44 percent.

TABLE 3-1: POPULATION PROJECTIONS CITY OF STOCKTON 2020-2040

Year	Estimated Population	Net New Population	Compound Growth	Average Annual Growth Rate
2020	329,729			
2025	352,239	22,510	42,320	1.33%
2030	374,939	22,700	65,020	1.26%
2035	401,961	27,022	92,042	1.40%
2040	432,627	30,666	122,708	1.48%
2020-2040				1.44%

Source: San Joaquin Council of Governments, 2016.

The 2040 General Plan Land Use map depicts proposed land use for Stockton within the SOI. The 2040 General Plan identifies enough land for development to accommodate growth through 2040 or beyond based on projections of population prepared by SJCOG described above. As Table 3-1 shows, SJCOG projects that Stockton's population will continue to grow to 432,627 by 2040, an increase of 102,898 over the 2020 population. Tables 2-5 and 2-6 in Chapter 2 show the capacity for development in study areas and pending/approved projects within Stockton's SOI by 2040. In total, development in these areas is projected

to add 40,900 new dwelling units, which would increase the population by 132,200 new residents.

B. *EMPLOYMENT*

Table 3-2 summarizes SJCOG's employment projections for Stockton from 2020 through 2040. Employment in Stockton is projected to grow to 149,924 by 2040, an overall increase of 29,540, which equates to an annualized growth rate of 1.16 percent.

TABLE 3-2: EMPLOYMENT PROJECTIONS CITY OF STOCKTON 2020-2040

Year	Estimated Employment	Net New Employment	Compound Growth	Average Annual Growth Rate
2020	120,084			
2025	127,095	7,011	15,412	1.14%
2030	134,288	7,193	22,605	1.11%
2035	142,011	7,723	30,328	1.12%
2040	149,624	7,613	37,941	1.05%
2020- 2040				1.16%

Source: San Joaquin Council of Governments, 2016.

The 2040 General Plan Land Use map depicts proposed land use for Stockton within the SOI. The 2040 General Plan identifies enough land for development to accommodate growth through 2040 or beyond based on projections of employment prepared by SJCOG described above. As Table 3-2 shows, SJCOG projects that employment in Stockton will grow to 149,624 by 2040, an increase of 29,540 over the 2020 employment. Tables 2-5 and 2-6 in Chapter 2 show the capacity for development in study areas and pending/approved projects within Stockton's SOI by 2040. In total, development in these areas is projected to add 13.8 million square feet of new commercial and office space and 35.6 million square feet of new industrial space, which would increase employment by 63,300 jobs.

C. *2040 GENERAL PLAN GROWTH POLICIES*

The City's 2040 General Plan and 2016 Housing Element provide the framework for future growth within Stockton and its SOI. The General Plan includes policies

and actions for the provision of services to accommodate anticipated growth. These policies and actions include the following:

- **Policy LU-6.1** Carefully plan for future development and proactively mitigate potential impacts.
- **Action LU-6.1A** …When approved development within the city reaches the maximum number of residential units or any of the non-residential square footages projected in the General Plan EIR, require that environmental review conducted for any subsequent development project address growth impacts that would occur due to development exceeding the General Plan EIR's projections…
- **Action LU-6.1B** Monitor the rate of growth to ensure that it does not overburden the City's infrastructure and services and does not exceed the amounts analyzed in the General Plan EIR.
- **Action LU-6.1C** Require that vacant unincorporated properties be annexed into the city prior to the provision of any City services, or that a conditional service agreement be executed agreeing to annex when deemed appropriate by the City.
- **Action LU-6.1D** Require that all utility connections outside the city limit be for land uses that are consistent with the General Plan.
- **Action LU-6.1E** Do not approve new development unless there is infrastructure in place or planned and funded to support the growth.
- **Action LU-6.1F** Evaluate and implement adjustments to the Public Facilities Fee structure to encourage development in areas where infrastructure is already present and ensure that non-infill development pays its fair share of anticipated citywide capital facilities and operational costs.
- **Action LU-6.1G** Maintain adequate staffing levels to support achieving the City's service level goals for police and fire protection.
- **Action LU-6.2B** Do not approve future annexations or City utility connections unless they are consistent with the overall goals and policies of the General Plan and do not adversely impact the City's fiscal viability, environmental resources, infrastructure and services, and quality of life.
- **Action LU-6.3A** Require development to mitigate any impacts to existing sewer, water, stormwater, street, fire station, park, or library infrastructure that would reduce service levels.
- **Action LU-6.3B** Ensure that public facilities, infrastructure, and related land area and other elements are designed and right-of-way is acquired

to meet 2040 planned development requirements to avoid the need for future upsizing or expansion, unless planned as phased construction.

- **Action LU-6.5A** Require preparation of a fiscal impact analysis for large development projects and proposed annexations to ensure a full accounting of infrastructure and public service costs and to confirm whether revenue enhancement mechanisms are necessary to ensure net fiscal balance or better, and require appropriate fiscal mitigations, when necessary, to ensure the City's ongoing fiscal health and continued viability of the City's General Fund.
- **Action LU-6.5B** Utilize development agreements as a tool to implement public facilities financing plans and to secure fiscal mitigations and various public benefits from new development projects.
- **Action LU-6.5D** Continue to utilize developer fees, the City's public facilities fees, and other methods (e.g., grant funding and assessment districts) to finance public facility design, construction, operation, and maintenance.
- **Policy SAF-3.1** Secure long-term renewable contracts and related agreements to ensure that surface water rights will be available to meet projected demand.
- **Policy SAF-3.4** Ensure adequate collection, treatment, and safe disposal of wastewater.
- **Action SAF-3.4A** Require all new urban development to be served by an adequate wastewater collection system to avoid possible contamination of groundwater from onsite wastewater disposal systems.
- **Policy HE-1.1: Availability of Land.** The City shall maintain sufficient designated and zoned vacant and underutilized sites for housing to achieve a mix of single-family and multi-family development that will accommodate anticipated population growth and the housing needs established in the City's regional housing needs allocation of 11,824 units (1,675 extremely low, 1,482 very low, 2,004 low, 2,103 moderate, 4,560 above moderate).
- **Policy HE-1.4: Infrastructure and Public Facilities to Support Residential Development.** The City shall take into consideration where housing is planned or likely to be built when preparing plans for capital improvements to expand or improve infrastructure and public facilities that supports new residential development and ensure adequate services.

D. *DETERMINATIONS*

The 2040 General Plan Land Use map depicts proposed land use for Stockton within the SOI that can accommodate the growth projected by SJCOG. Between 2020 and 2040, SJCOG projects that Stockton's population will grow by 102,898 and its employment by 29,540. Tables 2-5 and 2-6 in Chapter 2 show the capacity for development in study areas and pending/approved projects within Stockton's SOI by 2040. In total, development in these areas is projected to accommodate 132,200 new residents and 63,300 jobs.

As described in Section G of Chapter 2, over the 10- and 20-year horizons, the supply of residential units, commercial and office space, and industrial space would exceed both the low- and high-growth demands identified in a market study that forecast the demands for new residential, retail, office, and industrial space in Stockton by 2040. Demand would be accommodated by a combination of development within the City limit and in the SOI. For the 10-year horizon, demand can mostly be accommodated through development potential in the City limit that does not rely on pending or approved projects, coupled with development potential within the 10-year horizon areas. The one exception is for the high-growth scenario's residential demand, which may need to rely on pending or approved projects within the City limit. For the 20-year horizon, demand can be accommodated through development potential in the City limit, including pending and approved projects, coupled with development potential within the SOI.

The City of Stockton has and will continue to review future growth and population patterns to project growth within its SOI. The 2040 General Plan and 2016 Housing Element include policies that direct the City to ensure adequate land served by public facilities is available to meet projected population growth. Other policies require the City to consider the funding necessary to adequately provide facilities and services to development anticipated in any area proposed for expansion and ensure that infrastructure improvements and service coincide with new development.

This page is intentionally left blank

CHAPTER 4. DISADVANTAGED UNINCORPORATED COMMUNITIES AND UNINCORPORATED COUNTY ISLANDS

There are hundreds of disadvantaged unincorporated communities (DUCs) throughout California, including more than 200 in the San Joaquin Valley alone. Many of these communities are geographically isolated islands. The living conditions in many of these communities suggest a distinct lack of public and private investment that threatens the health and safety of the residents and fosters economic, social, and educational inequality. Many of these communities lack basic infrastructure, including streets, sidewalks, storm drainage, clean drinking water, and adequate sewer service. In response to these conditions, the State Legislature passed Senate Bill 244 (SB 244) in 2011 with the intent of addressing the legal, financial, and political barriers that contribute to inequality and infrastructure deficits in DUCs. Accounting for these communities in the long-range planning process, as required by SB 244, is one way to ensure a more efficient system for delivery of services and infrastructure, including water, wastewater, storm drainage, and structural fire protection. Furthermore, investment in these services and infrastructure will result in the enhancement and protection of public health and safety for residents of these communities.

Several of the DUCs in the Stockton area are surrounded by the existing city limits and are entirely enveloped by incorporated areas. These unincorporated county "islands" or "pockets" present unique challenges since they are often largely or entirely built-out. Many of these areas are also served by special districts created for the express purpose of serving their limited geography. Furthermore, there are several county islands in Stockton that are not defined as disadvantaged communities. For these reasons, annexation of such islands can be complicated, depending on a variety of factors, including the status of transient occupancy tax or sales tax revenues generated in the island area and the size of the area. Most of the unincorporated islands in the Stockton area, however, fall below the tax generation or size thresholds that would trigger complex negotiations. Following the discussion of DUCs per the requirements of SB 244, this chapter includes a brief description of the unincorporated islands in Stockton.

The analysis contained in this chapter is included as an Appendix in the 2040 General Plan. Analysis of the DUCs in and near Stockton's SOI demonstrated that services were sufficient, except for wastewater and stormwater systems. The General Plan thus addresses this issue through Action CH-2.3E, stating, "Work with wastewater, water, and stormwater utilities to seek funding to complete sewer, water, and stormwater systems in areas within the SOI where parcels still rely on septic systems, wells, and roadside ditches." Finally, the City, in coordination with

LAFCO, is currently investigating the feasibility of annexing some unincorporated islands.

A. *SB 244 Requirements: City, County, LAFCo*

The requirements of SB 244 apply differently to cities, counties, and local agency formation commissions (LAFCos). These differences reflect the distinct physical and social settings of cities and counties and the different institutional authorities and responsibilities of cities, counties, and LAFCos.

1. Cities and Counties

The requirements for cities and counties focus on their compliance with State Planning and Zoning Law, and particularly on general plans. SB 244 added the following requirements to Government Code Section 65588 concerning general plan land use elements:

- In the case of a city, an identification of each unincorporated island or fringe community within the City's sphere of influence. In the case of a county, an identification of each legacy community within the boundaries of the county, but not including any area within the sphere of influence of any city. This identification shall include a description of the community and a map designating its location.
- For each identified community, an analysis of water, wastewater, stormwater drainage, and structural fire protection needs or deficiencies.
- An analysis, based on then existing available data, of benefit assessment districts or other financing alternatives that could make the extension of services to identified communities financially feasible.

SB 244 also added Section 65302.10 to the Government Code to define the terms used in the legislation as they relate to cities and counties. According to the legislation, the key terms are defined as follows:

- "Community" means an inhabited area within a city or county that is comprised of no less than 10 dwellings adjacent or in close proximity to one another.
- "Disadvantaged unincorporated community" means a fringe, island, or legacy community in which the median household income is 80 percent or less than the statewide median household income.
- "Unincorporated fringe community" means any inhabited and unincorporated territory that is within a city's sphere of influence.

- "Unincorporated island community" means any inhabited and unincorporated territory that is surrounded or substantially surrounded by one or more cities or by one or more cities and a county boundary or the Pacific Ocean.
- "Unincorporated legacy community" means a geographically isolated community that is inhabited and has existed for at least 50 years.

2. Local Agency Formation Commissions

SB 244 defines DUCs slightly differently for LAFCos than it does for cities and counties. SB 244 identifies a DUC for LAFCo purposes as an inhabited territory, as defined by Section 56046 of the Government Code (i.e., 12 or more registered voters), that constitutes all or a portion of a "disadvantaged community" as defined by Section 79505.5 of the Water Code (i.e., a community with an annual median household income that is less than 80 percent of the statewide annual median household income). SB 244 requires that, in conjunction with sphere of influence reviews or updates occurring after July 1, 2012, LAFCos include determinations concerning the present and planned capacity of public facilities and adequacy of public services for DUCs within or adjacent to the sphere of influence of any city or special district. This includes evaluation of sewer, water, and structural fire protection needs or deficiencies; it does not explicitly include drainage. SB 244 also includes procedural requirements related to approval of proposed annexations contiguous with DUCs.

B. *DUC IDENTIFICATION*

SB 244 outlines the general characteristics of DUCs but does not provide guidance on how to identify them. To assist local governments in addressing the requirements of SB 244, the Governor's Office of Planning and Research (OPR) published a technical advisory memo in February 2013. The memo recommends data sources for identifying the income status of communities and mapping sources for identifying "communities" as defined by SB 244. It also referenced methodological guidance prepared by PolicyLink in collaboration with California Rural Legal Assistance. Based on the guidance provided by OPR and Policy, the City of Stockton identified DUCs in the Stockton area by focusing on a combination of income status and parcel density. Following are brief descriptions of the steps the City followed to identify these communities.

1. Income Status

To identify communities that meet the income status defined by SB 244, the City relied on the 2000 Census for income data because it disaggregated data to the Census block group level. The City also reviewed the 2010 Census and more

recent American Community Survey (ACS) data, but the 2010 Census did not include income data and the ACS sample sizes were too small to produce reliable data for unincorporated areas. In 2000, the median household income of California was $47,493, so the City included in its analysis any census block group with a median income of less than $37,994 (i.e., 80 percent of the statewide median). In doing so, the City isolated census blocks in unincorporated areas within the City's sphere of influence.

2. Parcel Density

After isolating the census blocks that met the income threshold, the City proceeded with a parcel density analysis to identify "communities" as defined by SB 244. This analysis focused on identifying closely settled places, rather than spread-out rural or semi-rural communities. The City identified areas with a density of at least 250 parcels per square mile, which is comparable to the density of Census Designated Places (unincorporated communities tracked by the Census Bureau). Within these areas, the City then screened to areas with at least 10 dwellings "adjacent or in close proximity to one another" as described by SB 244. In doing so, the City eliminated non-residential areas; areas less than three-quarters of an acre with only one or two houses; and any obvious narrow "slivers" that were a result of GIS layer overlap (e.g., along city limits and census tract overlaps).

3. Communities Identified

The City identified 3 types of DUCs in its analysis: Census Designated Places (CDPs), Island, and Fringe Communities.

- The CDPs that the City identified are derived from San Joaquin LAFCo's DUC analysis.
- The Island Communities are located within the city boundaries and SOI.
- The Fringe Communities are located outside of city boundaries, but within the SOI.

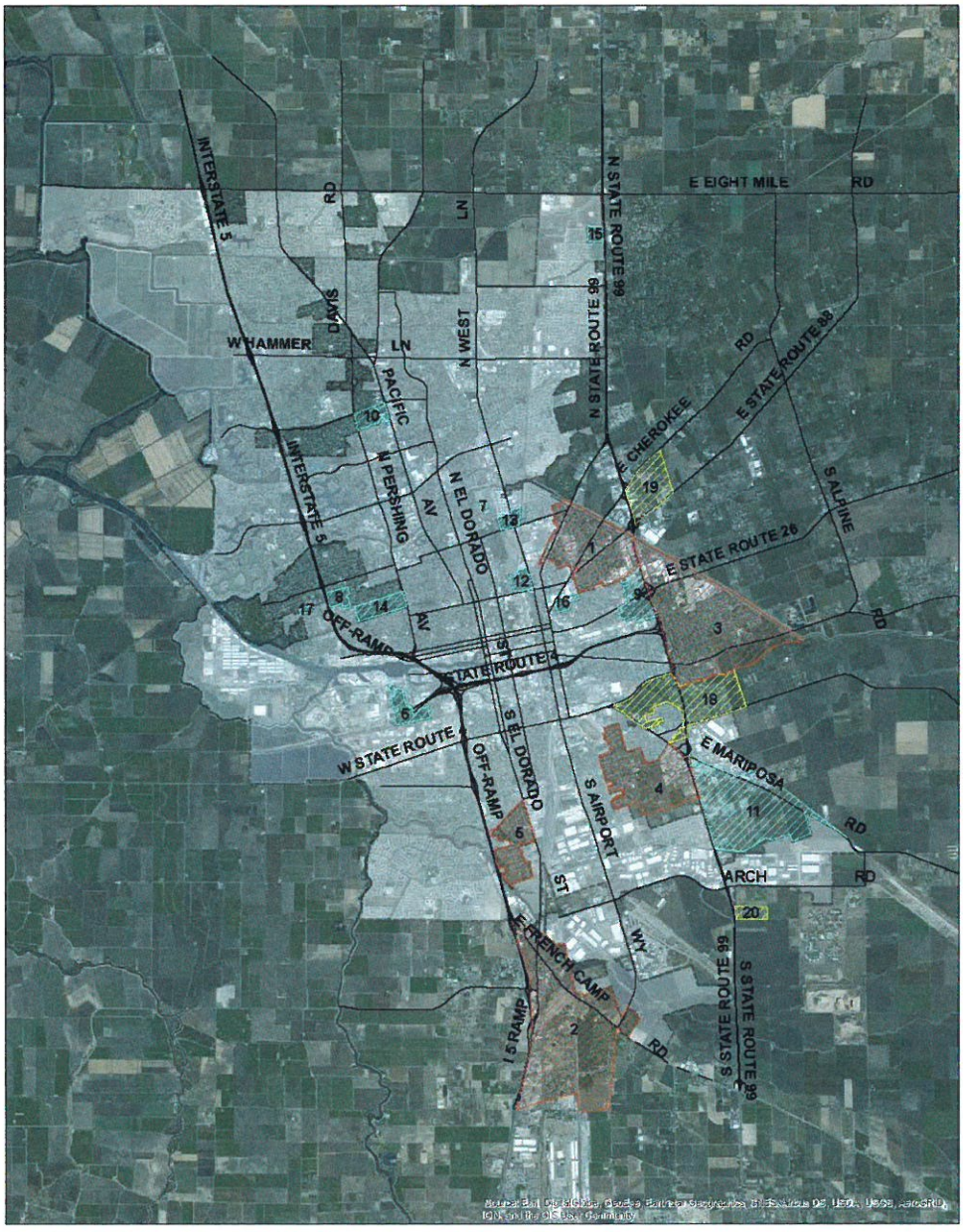
Table 4-1 lists the DUCs in the Stockton area by type, size (in acres), and the number of parcels in each community and Figure 4-1 shows their locations.

TABLE 4-1: CITY OF STOCKTON DUCS

Name	Type	Size (acres)	Parcels
1. August CDP	CDP	805	2,137
2. French Camp CDP	CDP	2,006	606
3. Garden Acres CDP	CDP	1,652	2, 901
4. Kennedy CDP	CDP	774	888
5. Taft Mosswood CDP	CDP	310	493
6. Boggs Tract	Island	100	325
7. Sperry Tract	Island	4	10
8. East Interstate 5 Community	Island	51	212
9. Fremont St Community	Island	194	221
10. Holt Ave/Pershing Ave Community	Island	79	252
11. Mariposa Road Community	Island	1,112	223
12. North Oaks Community	Island	52	232
13. West Lane Community	Island	45	195
14. Pershing Ave Community	Island	110	473
15. Waller-Childress Community	Island	35	34
16. Rose Terrace	Island	33	106
17. West Interstate 5 Community	Island	85	22
18. Charter Way Community	Fringe	654	775
19. State Route 88 Community	Fringe	281	143
20. Sunny Road Community	Fringe	59	47

Source: Mintier Harnish, September 2017.

FIGURE 4-1: DISADVANTAGED UNINCORPORATED COMMUNITIES



C. *INFRASTRUCTURE ANALYSIS*

Once DUCs have been identified, SB 244 requires an analysis of infrastructure services for each DUC. The City's overall service structure is described in Chapter 5 of this report. This section describes public services within each of the DUCs in the Stockton area consistent with the requirements of SB244.

1. August CDP

The August Community is made up of 2,137 parcels totaling approximately 805 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – This area is covered by the East Stockton Sanitary Sewer Project and is served by the City of Stockton Collection System 4, as defined in the City's Wastewater Master Plan. Service is provided to unincorporated area properties according to out-of-agency agreements. Additional sewer lines and connections consistent with the Wastewater Master Plan would have to be constructed to accommodate growth upon annexation. Thus, in terms of the capacity to serve new development, there are deficiencies in sewer services.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – Fire services for this area are provided by Eastside Rural County Fire Protection District which contracts with the City of Stockton Fire Department. The area has access to fire hydrants. There are no fire service deficiencies in this area.

2. French Camp CDP

The French Camp Community is made up of 606 parcels totaling approximately 2,006 acres.

Water – Although this area is covered by the City of Stockton Water Master Plan, it is not currently served by a public water system. Instead, existing development relies on individual wells, many of which have experienced contamination problems over the years (e.g., coliform bacteria, high salt concentration). Through

its Water Master Plan CIP, the City of Stockton has identified the need for water tanks and a network of 12-inch water lines to serve the area. Thus, in terms of the capacity to serve new development, there are deficiencies in water service.

Sewer – Sewer system services in the French Camp area within the Stockton SOI are currently provided by individual septic systems. While there are no reported problems associated with sufficiency of these systems to serve existing development, new wastewater infrastructure will be required to serve additional development. So, there are deficiencies in terms of the capacity to serve new development. The City's 2035 Wastewater Master Plan outlines a variety of improvements (e.g., gravity sewers, force mains, pump stations) for future services in the area. These are part of the proposed Collection System 13 facilities, which will serve French Camp and other annexation areas south of the city within Stockton's SOI.

Drainage – Roadside ditches and on-site private drainage ponds are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – Fire services for this area are provided by the French Camp-McKinley Fire District. French Camp Proper has access to fire hydrants and water on the fire trucks and the French Camp Rural has access to fire tenders and water on the fire trucks. There are no fire service deficiencies in this area.

3. Garden Acres CDP

The Garden Acres Community is made up of 2,901 parcels totaling approximately 1,652 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer facilities in part of this area are provided by the East Stockton Sanitary Sewer Project, while the rest of the area relies on septic systems. The City of Stockton Wastewater Management Plan addresses improvement needs in this area (in existing Collection Systems 4 and 6 and a small part of the proposed new Collection System 12). There are only limited connections, therefore theree are deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by San Joaquin County through a combination of an underground storm main and roadside ditches. While these

facilities are adequate to serve existing development, they are not sufficient to serve new development, so there are storm drain deficiencies in this area.

Fire – Fire services for this area are provided by Eastside Rural County Fire Protection District which contracts with the City of Stockton Fire Department. The area has access to fire hydrants. There are no fire service deficiencies in this area.

4. Kennedy CDP

The Kennedy Community is made up of 888 parcels totaling approximately 774 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer system services to this area are provided by the City of Stockton through Morrison Gardens Sanitary District facilities. The City's 2035 Wastewater Master Plan outlines a variety of improvements (e.g., gravity sewers, force mains, pump stations) for potential future services in the area. These are part of the proposed Collection System 6 and 7 facilities. Because connections to the public treatment system are limited, there are deficiencies in sewer services in this area. New service lines would need to be constructed to accommodate new development.

Drainage – Storm drain services are provided by San Joaquin County through an underground storm main. There are no storm drain deficiencies in this area.

Fire – Fire services for this area are provided by the Montezuma Fire Protection District. The area includes Montezuma Fire Station #1 and has access to fire hydrants. There are no fire service deficiencies in this area.

5. Taft Mosswood CDP

The Taft Mosswood Community is made up of 493 parcels totaling approximately 310 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address

current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer services are provided to this area by San Joaquin County Public Works through Taft Improvement District No. 52 (south of Walker Slough) and Mosswood Sewer Project facilities (north of Walker Slough), but connections are limited. Thus, there are deficiencies in sewer services in this area with respect to accommodation of new development.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – Fire services for this area are provided by the French Camp-McKinley Fire District. The area has access to fire hydrants and all the fire trucks carry water on board. There are no fire service deficiencies in this area.

6. Boggs Tract

Boggs Tract is made up of 325 parcels totaling approximately 100 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – There are no sewers serving Boggs Tract in the southern and eastern parts of the area. The sewer service is deficient and in need of improvement.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – Boggs Tract Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #2, located in Stockton. There are no fire service deficiencies in this area.

7. East Alpine Community

The East Alpine Community is made up of 10 parcels fronting Wright Avenue totaling approximately 4 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer system services are provided to this area by the City of Stockton's Sewer Collection System 2. There are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by the City of Stockton through an underground storm main. There are no storm drain deficiencies in this area.

Fire – Eastside Rural County Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #9, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

8. East Interstate 5 Community

The East Interstate 5 Community is made up of 212 parcels totaling approximately 51 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer system services are provided to this area by Pacific Gardens Sanitary District which contracts for treatment by the City of Stockton. There are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by San Joaquin County through an underground storm main. There are no storm drain deficiencies in this area.

Fire – The Tuxedo-County Club Rural County Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #6, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

9. Fremont Street Community

The Fremont Street Community is made up of 221 parcels totaling approximately 194 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plans prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – This area is covered by the East Stockton Sanitary Sewer Project and is served by the City of Stockton Collection System 4, as defined in the City's Wastewater Master Plan. Service is provided to unincorporated area properties according to out-of-agency agreements. Additional sewer lines and connections consistent with the Wastewater Master Plan would have to be constructed to accommodate growth upon annexation. Since there are only limited connections, the sewer system is deficient with respect to accommodation of new development.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – Eastside Rural County Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #12, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

10. Holt Avenue/Pershing Avenue Community

The Holt Ave/Pershing Ave Community is made up of 252 parcels totaling approximately 79 acres.

Water – Water is provided to this area by the City of Stockton from groundwater wells and surface water. As documented in the 2015 Urban Water Management Plan prepared for the City of Stockton, the facilities serving the DUCs have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Lincoln Village Maintenance District sewer system services are provided to this area by the City of Stockton Sewer System 2. According to the 2035 Stockton General Plan Infrastructure Evaluation, there is a sewer line that needs improvement in the southern part of the community. Otherwise, there are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by San Joaquin County through an underground storm main. There are no storm drain deficiencies in this area.

Fire – Lincoln Rural County Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #4, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

11. Mariposa Road Community

The Mariposa Road Community is made up of 223 parcels totaling approximately 1,112 acres.

Water – Water is provided to this area by California Water Service and the City of Stockton. As documented in the 2015 Urban Water Management Plans prepared for the City of Stockton and Cal Water, the facilities serving the DUCs have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer system services to this area are provided by the City of Stockton through Morrison Gardens Sanitary District facilities. The City's 2035 Wastewater Master Plan outlines a variety of improvements (e.g., gravity sewers, force mains, pump stations) for potential future services in the area. These are part of the proposed Collection System 7 and 8 facilities. Because connections to the public treatment system are limited, there are deficiencies in sewer services in this area.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – The Montezuma Fire Protection District provides fire protection services to this area, which has access to fire hydrants. There are no fire service deficiencies in this area.

12. North Oaks Community

The North Oaks Community is made up of 232 parcels totaling approximately 52 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer system services are provided to this area through a City of Stockton Assessment District via Collection System 3. There are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by the City of Stockton through an underground storm main. There are no storm drain deficiencies in this area.

Fire – Lincoln Rural Fire District contracts or services with the City of Stockton Fire Department to providefire protection with the operation of Station #11, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

13. West Lane Community

The West Lane Community is made up of 195 parcels totaling approximately 45 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer system services are provided to this area through a City of Stockton Assessment District via Collection System 3. There are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by the City of Stockton through an underground storm main. There are no storm drain deficiencies in this area.

Fire – The Eastside and Lincoln Fire Protection Districts contract with the City of Stockton Fire Department to provide fire protection with the operation of Station #9, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

14. Pershing Avenue Community

The Pershing Avenue Community consists of 473 parcels totaling approximately 110 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plans prepared for Cal Water, the facilities serving the DUCs have sufficient capacity and access to high-quality water supplies to

address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer system services are provided to this area by Pacific Gardens Sanitary District which contracts for treatment by the City of Stockton. There are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by San Joaquin County through an underground storm main. There are no storm drain deficiencies in this area.

Fire – The Tuxedo-County Club Rural County Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #6, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

15. Waller-Childress Community

The Waller-Childress Community is made up of 34 parcels totaling approximately 35 acres. It surrounded on the north, south, and west by incorporated areas of Stockton and on the east by Highway 99.

Water – Water is provided to this area by groundwater wells, and the City's Water Master Plan does not show any plans for extension of public water service to the area. While there are no known deficiencies in water services in this area, annexation or further subdivision of the area would likely require new facilities.

Sewer – Sewer system services in the Waller-Childress area are currently provided by individual septic systems. While there are no known failures with these systems, annexation or further subdivision of the area would require extension and connection with the public sewer system in the adjacent area. Therefore, there are sewer deficiencies in this area with respect to accommodation of new development.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – Fire services for this area are provided by the Waterloo Morada Fire District. The area does not have access to fire hydrants, but has access to fire tenders and water on the fire trucks. There are fire service deficiencies in this area for urban uses since there are no fire hydrants.

16. Rose Terrace Community

The Rose Terrace Community is made up of 106 parcels totaling approximately 33 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer facilities in this area are provided by the East Stockton Sanitary Sewer Project to a limited number of properties Thus, there are deficiencies in sewer services in this area with respect to accommodation of new urban development.

Drainage – Storm drain services are provided by San Joaquin County through an underground storm main. There are no storm drain deficiencies in this area.

Fire – The Eastside Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #9, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

17. West Interstate 5 Community

The West Interstate 5 Community is made up of 22 parcels totaling approximately 10 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer system services are provided to this area by Pacific Gardens Sanitary District which contracts for treatment with the City of Stockton. There are no deficiencies in sewer services in this area.

Drainage –Given the absence of storm drainage infrastructure, there are storm drain deficiencies in this area.

Fire – The Tuxedo-County Club Rural County Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #6, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

18. Charter Way Community

The Charter Way Community is made up of 775 parcels totaling approximately 650 acres. It is bisected by Highway 99 and the AT&SF railroad tracks.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer facilities in the area east of Highway 99 are provided by the East Stockton Sanitary Sewer Project. The City of Stockton Wastewater Master Plan anticipates the provision of force main and gravity trunk improvements planned between State Route 4 and Charter Way to accommodate growth in the area. Since much of this area is not connected to a public sewer system, there are deficiencies in sewer services in this area.

Drainage – In the area east of Highway 99, storm drain services are provided by San Joaquin County through an underground storm main. The area west of Highway 99 relies on roadside ditches, so there are storm drain deficiencies in this area.

Fire – The Eastside Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #12, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

19. State Route 88 Fringe Community

The State Route 88 Fringe Community is made up of 143 parcels totaling approximately 281 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – County Service Area 15 (Waterloo-99) provides sewer system services to part of this area. According to the City of Stockton Wastewater Master Plan, there are planned node and gravity trunk improvements throughout most of the area. While there are currently no deficiencies in sewer services in this area, new sewer lines would need to be constructed to accommodate growth in demand.

Drainage – Storm drain services are provided by San Joaquin County through an underground storm main. There are no storm drain deficiencies in this area.

Fire – Fire services for this area are provided by the Waterloo Morada Fire District. The area has access to fire hydrants. There are no fire service deficiencies in this area.

20. Sunny Road Community

The Sunny Road Fringe Community is made up of 47 parcels totaling approximately 59 acres.

Water – Water is provided to this area by groundwater wells, and the City's Water Master Plan does not show any plans for extension of public water service to the area. While there are no known deficiencies in water services in this area, annexation or further subdivision of the area would likely require new facilities.

Sewer – Sewer system services are provided to this area by the City of Stockton's Collection System 8, although the homes along Sunny Road rely on septic systems. The City's 2035 Wastewater Master Plan identifies Sunny Road as a candidate for a new gravity sewer line. Thus, until new this improvement is made, there are sewer deficiencies in this area with respect to accommodation of new urban development.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – Fire services for this area are provided by the Montezuma Fire Protection District. The area does not have access to fire hydrants, but has access to fire tenders and water on fire trucks. There are no fire service deficiencies in this area.

D. *POTENTIAL FUNDING SOURCES*

As summarized above, there are several communities that have stormwater deficiencies and all areas outside of Colonial Heights Maintenance District, Lincoln Village Maintenance District, Pacific Gardens Sanitary District, Country Club Sanitary District, and the City of Stockton Assessment District in the vicinity

of Alpine would need new sewer lines to accommodate growth in demand. There are several ways that services to these areas could be improved, including annexation to the City of Stockton and connection to the City's existing and planned infrastructure. For most of these areas, the City has provided a backbone sanitary sewer system, so connection to public treatment systems is a viable option. Generally, funding sources for other needed system improvements include CFDs, taxes, bonds, grants, and exactions. Some financing mechanisms may, however, be difficult to use because they require voter approval. For this reason, grants are often used for infrastructure improvements to reduce the cost burden for taxpayers, although grant programs can be very competitive and, thus, not a reliable source of funding. Given the City Council's July 2018 decision, the establishment of CFDs may be the most promising way to ensure necessary improvements can be funded and maintained.

In addition to local infrastructure funding mechanisms, there are also funding sources offered by the federal and State government that address existing deficiencies and/or expansion of infrastructure for new development. A summary of each program is provided below:

- **Community Development Block Grants (CDBG) –** The Community Development Block Grant program is an annual funding mechanism offered by the United States Housing and Urban Development Department. These versatile grants often fund the construction of projects such as water and sewer facilities, recreation facilities, street maintenance, as well as other public work projects.

- **Integrated Regional Water Management (grants)** – This funding program is offered by the California Department of Water Resources. DWR's IRWM Grant Programs are managed within the Division of IRWM, Financial Assistance Branch, with assistance from DWR's regional offices. The IRWM Grant Programs include IRWM funding for planning, disadvantaged community involvement, implementation, and companion grant programs that support sustainable groundwater planning and water-energy programs and projects.

- **Proposition 84** – The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act provides funding from the State Water Resources Control Board. Proposition 84 allows the funding to be used for capital costs on projects that pertain to protecting river, lakes, and streams from excessive stormwater runoff. Such projects that can be funded could be related to the collection of stormwater, and treatment of water to reduce the likelihood of ground contamination.

E. *DETERMINATIONS*

The DUCs in the Stockton Metropolitan Area are generally well-served by current fire protection and water services providers, but public wastewater collection and storm drain systems are unavailable in many areas. This includes where storm drainage is provided via roadside ditches, with no connections to storm drain systems, as well as several areas where sewer lines would need to be constructed to accommodate growth in demand. In areas where services are deficient, new development, with or without annexation, would require improvements to bring them up to contemporary standards and to accommodate new development. This would include connection to public sewer systems and extension of storm drainage systems, as anticipated by the City's Wastewater Master Plan and Stormwater Management Plan in several areas. Also, in some DUCs, as with other areas within the City's SOI, fire protection services are provided by independent fire protection districts.

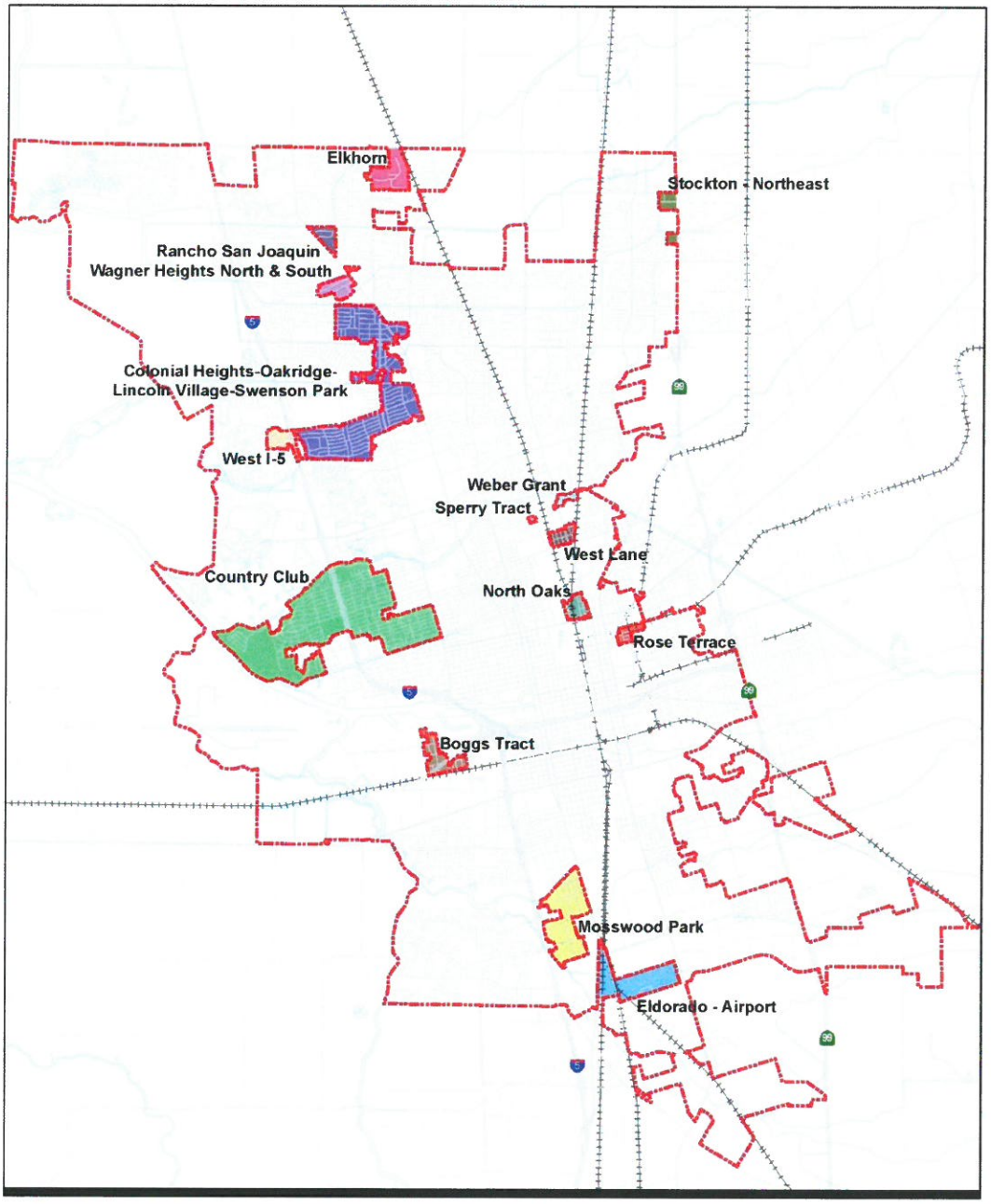
F. *UNINCORPORATED COUNTY ISLANDS*

As described at the beginning of this chapter, Stockton has many unincorporated islands, some of which are described above as DUCs, but many of which do not meet the criteria to be classified as DUCs. Annexation of these islands would establish a more seamless urban fabric that could enable a less fragmented system of service delivery. Additionally, incorporating these islands into the surrounding city allows residents to have a voice in the decision-making process for Stockton.

Following is a list of the 15 unincorporated islands surrounded by the City of Stockton's current city limits (see Figure 4-2), including notations concerning their relationships, if any, to the DUCs described above.

- Stockton Northeast
- Elkhorn
- Rancho San Joaquin
- Wagner Heights North and South
- Colonial Heights-Oakridge-Lincoln Village-Swenson Park (includes Holt Ave/Pershing Ave DUC)
- West I-5
- Weber-Grant
- Sperry Tract (coterminous with Sperry Tract DUC)
- West Lane (coterminous with West Lane DUC)
- Country Club (includes East I-5, Pershing Ave, and West I-5 DUCs)
- North Oaks (coterminous with North Oaks DUC)
- Rose Terrace (coterminous with Rose Terrace DUC)
- Boggs Tract (coterminous with Boggs Tract DUC)
- Mosswood Park (coterminous with Taft Mosswood DUC)
- El Dorado-Airport

FIGURE 4-2: UNINCORPORATED COUNTY ISLANDS



contiguous to the city of Stockton, bringing the total area served to about 86 square miles.

Within San Joaquin County, 19 fire districts, one community facility district (i.e., Mountain House), and four city fire departments participate in a non-fee-based General Mutual Aid Contract. This contract, which is typical for countywide fire departments, mandates that participating departments provide services to each other as needed without cost or fee. The locations of the fire districts are shown on Figure 5-1.

Ten rural fire districts have at least part of their service areas within the city of Stockton SOI. Table 5-1 lists these districts and shows how much of their services areas (in percentage and acreage) are within Stockton's SOI.

TABLE 5-1: RURAL FIRE DISTRICTS IN STOCKTON SOI

Fire District	Current Service Area (Acres)	% of Area within the SOI	Area within SOI (Acres)
Boggs Tract	99	100%	99
Collegeville	18,185	19%	3,455
Country Club	1,314	100%	1,314
Eastside	7,451	49%	3,651
French Camp-McKinley	8,419	52%	4,378
Lathrop-Manteca	54,248	2%	1,085
Lincoln	8,084	68%	5,497
Montezuma	5,796	100%	5,796
Waterloo-Morada	24,818	12%	2,978
Woodbridge	101,364	5%	5,068

Source: San Joaquin County LAFCo, Final Municipal Service Review, Rural Fire Protection Districts, October 21, 2011.

As noted above, the City of Stockton provides contractual fire services to the Boggs Tract, Eastside, Lincoln, and Tuxedo-Country Club Fire Protection Districts (FPDs). These districts cover unincorporated areas in Stockton's SOI, and Boggs Tract and Country Club are entirely within Stockton's SOI. These districts pay for services based on the proportion of the cost for fire service as calculated by the ratio of assessed property value in the districts to the total assessed property value in the city. This contractual arrangement has worked well in that these areas receive a high level of service with some of the lowest per capita cost for the delivery of any of the fire districts in San Joaquin County. The MSR for Rural Fire Protection Districts in San Joaquin County (October 2011) recommends that those areas within the City's ten-year planning horizon of the sphere of influence plan should be annexed to the city of Stockton. At this time, the City does not have a definitive program or timeline to annex these properties.

Waterloo-Morada, Montezuma, and French Camp-McKinley share some similar characteristics with the contract districts in that they are adjacent to the city of Stockton and are partially or totally within the City's SOI. In the case of the Montezuma FPD, the entire district is within the City's SOI and would be a candidate for contractual consideration, with the cost to provide service to the airport being a key determinant. In the case of French Camp-McKinley and Waterloo-Morada, their long-standing separate community identity may prevent any successful arrangement with the City of Stockton.

2. Stations and Equipment

The Stockton Fire Department has 12 fire stations located throughout the city and relies on approximately 7,000 hydrants in key locations to provide adequate water for the surrounding development. Table 5-2 lists the location of and company/division for each fire station. The locations of the stations are shown in Figure 5-1.

Necessary relocation and reconstruction of deteriorating firehouses such as Fire Company No. 6 and Fire Company No. 3 have been deferred due to lack of funds for capital improvements. Fire Company No. 6 was temporarily closed for approximately eight months to complete emergency health and safety maintenance and repair work. The Station has returned to normal operations. Various station repairs and improvements are incorporated with the 2019-2024 Capital Improvement Plan. The Department's FY 2019-20 Annual Budget includes funding for the replacement of aging equipment and maintenance that are critical in fire operations.

FIGURE 5-1: FIRE DISTRICTS AND STATIONS

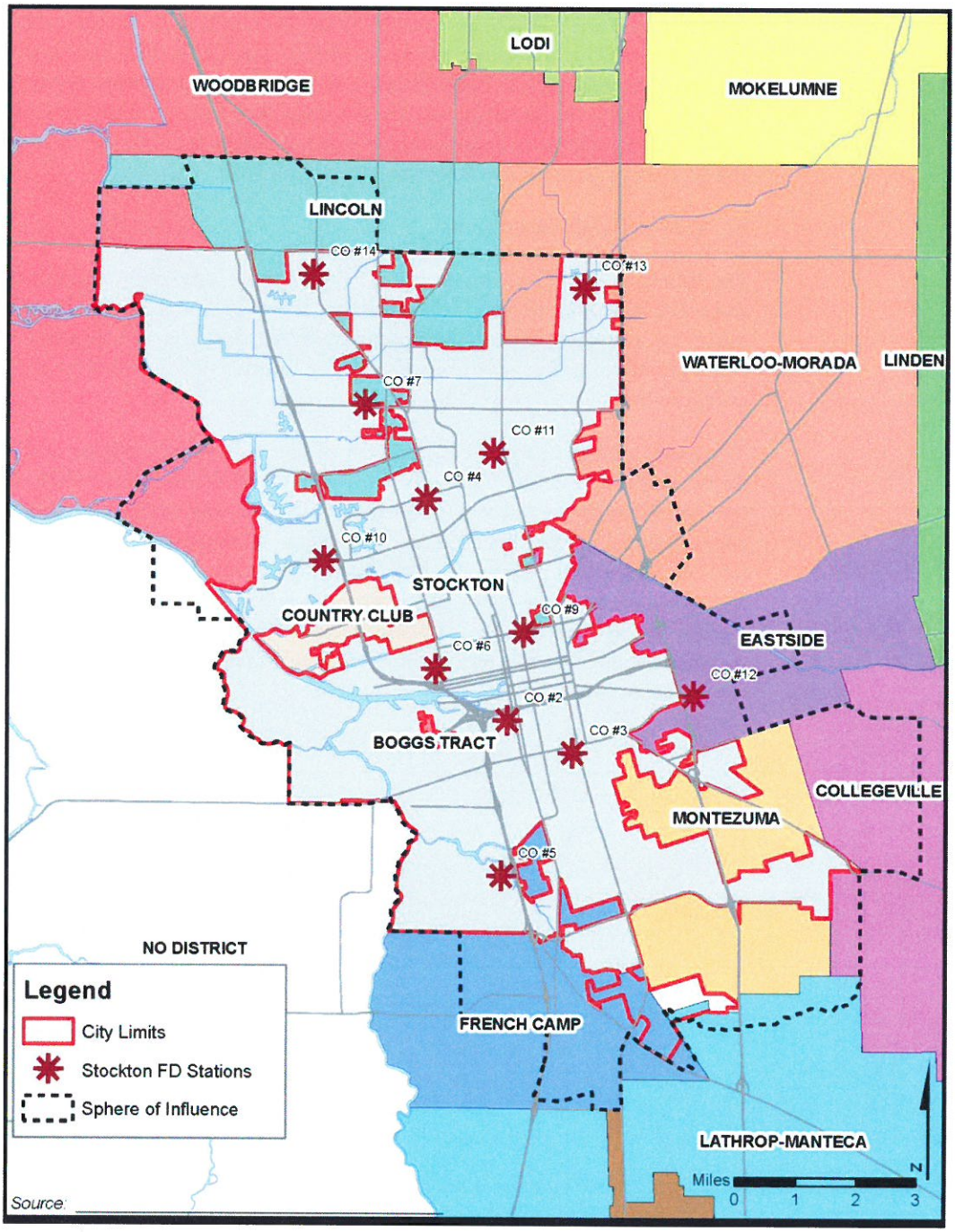


TABLE 5-2: FIRE STATIONS, EQUIPMENT, AND SERVICES (2015-16)

Station	Location	Companies/Divisions
2	110 West Sonora Street	1 Engine; 1 Truck; Technical Rescue Unit; USAR; Training; Communications; Battalion Chief; Chief's Operator
3	1116 East First Street	1 Engine; 1 Truck; Hazardous Materials Response Unit; 1 Grass Rig
4	5525 Pacific Avenue	1 Engine; 1 Truck; Battalion Chief
5	3499 Manthey Road	1 Engine; 1 Grass Rig
6	1501 Picardy Lane	1 Engine; Water Rescue Unit; Swift Water & Dive Rescue Team
7	1767 West Hammer Lane	1 Engine
9	550 East Harding Way	1 Engine; 1 Grass Rig
10	2903 West March Lane	1 Engine; 1 Grass Rig
11	1211 East Swain Road	1 Engine
12	4010 East Main Street	1 Engine; 1 Grass Rig
13	8891 Bergamo Circle	1 Engine; 1 Grass Rig; 1 EMS Rescue
14	3019 McNabb Place	1 Engine; 1 Grass Rig

Source: City of Stockton Fire Department, November 2016.

The Stockton Fire Department maintains one engine company at each fire station and a truck company at Stations 2, 3, and 4. Training and communication services are quartered at Station 2, which serves as the central fire station. Other specialized services are staffed as follows:

- Hazardous Materials Unit – Station 3
- Swift Water and Dive Rescue Team – Station 6
- Urban Search and Rescue Team – Station 2

The stations also use the following special equipment:

- Mobile Command Unit
- HazMat Response Van
- HazMat Decon Unit
- 2 Metropolitan Medical Response Trailers
- Medical Reserve Corps Trailer
- Technical Rescue Unit
- Foam Trailer
- 2 Foam Trailers with eight 275-gallon totes of AFFF-ATC (foam)
- Trailer with twelve 55-gallon drums of AFFF (foam)
- 2 Fire Hydrant Repair/Maintenance Trucks
- 2 Fire Apparatus Mechanic Vans
- 7 Off-road Grass Rigs
- Type 1 USAR Trailer

5. Emergency Response

The Stockton Fire Department provides emergency response services within the city limits and to four adjoining county fire districts (Boggs Tract, Tuxedo-Country Club, Eastside and Lincoln FPDs). In 2018, the Stockton Fire Department responded to more than 48,000 emergencies. This averaged approximately 130 calls per day and covered a wide range of services to the community. Table 5-4 shows a breakout of the type of calls and the number of calls for the year.

TABLE 5-4: EMERGENCY CALLS BY TYPE (2018)

General Property Use	Number of Calls	Percent
Fire	3,479	7
EMS/Rescue	26,724	55
Hazardous Condition	683	1
Other	18,000	37
Total	**48,886**	**100**

Source: City of Stockton, 2019-2020 Annual Budget, June 2019.

The Stockton Fire Department uses call assignments to respond to emergency calls. Table 5-5 lists the types of emergencies, such as standard fires and auto accidents, and the type of response team typically sent to the scene. This table also indicates the average response times for these calls, which depend on numerous factors such as circulation, development, population growth, and geographic distance to outlying rural acres.

TABLE 5-5: STOCKTON FIRE DEPARTMENT CALL ASSIGNMENTS

Emergency	Typical Response Team	Average Response Time
Standard Structure Fire	4 Engines, 2 Trucks, 2 Battalion Chiefs, 1 Chief's Operator (One of the responding engines serves as a Rapid Intervention Team)	3-4 minutes
Still Alarms: vehicles, dumpsters, off-season grass fire, etc.	1 Engine	3-4 minutes
Fire Season Grass Fires	2 Engines, 1 Off-road Grass Rig	3-4 minutes
Hazardous Materials Incidences	1 Engine, Engine 3, Truck 3, 1 Battalion Chief, 1 Chief's Operator	4-10 minutes
Emergency Medical Service	Typically, 1 Engine or 1 Truck, 1 Ambulance	4 minutes
Urban Search and Rescue	1 Engine, Engine 2, Truck 2, 1 Battalion Chief, 1 Chief's Operator	4-6 minutes
Urban Search and Rescue (Confined Space)	1 Engine, Engine 2, Truck 2, Rescue 2, 1 Battalion Chief, 1 Chief's Operator, 1 Ambulance, Hazmat Team	4-6 minutes
Water Rescue	1 Engine, Water Rescue 6, 1 Battalion Chief, Truck 2, 1 Ambulance, 1 Emergency Medical Service Unit	5-10 minutes local; 10-20 outer districts.
Auto accidents on high-speed streets & freeways	2 Engines, 1 Truck, 1 Battalion Chief, 1 Ambulance, 1 Emergency Medical Service Unit	6 minutes

Source: City of Stockton Fire Department, August 2018.

6. Fire Department Response Times

The Stockton Fire Department maintains response time information for all units that are dispatched (i.e., engines, trucks, grass rigs) in response to all types of calls (i.e., fire, fire alarm, grass fire, medical, vehicle). Response times are disaggregated into the following components:

- Received to Dispatch Time: The time it takes dispatch center staff to determine the nature of the emergency and alert appropriate emergency responders. The Stockton Fire Department dispatch center receives 911 calls from a number of different sources. The dispatch processing time reported begins when the call is answered in the fire dispatch center.
- Turn Out Time: The time between the initial notification to emergency responders and the time they begin traveling to the emergency incident location.
- Travel Time: The time an emergency resource is driving to the location of the emergency.
- Total Time to Arrival: The time from receipt of the 911 call until the emergency response resource arrives at the incident location.

The National Fire Protection Association (NFPA) publishes guidelines "to improve the methods of fire protection and prevention" and to establish "proper safeguards against loss of life and property" due to fire. This includes the NFPA 1710 Guidelines, which established "a comprehensive, uniform and practical standard governing fire and rescue service deployment by career fire departments throughout North America." According to NFPA 1710, fire departments should establish a "time objective of four minutes or less for the arrival of the first arriving engine company at a fire suppression incident and/or eight minutes or less for the deployment of full first alarm assignment at a fire suppression incident." The Stockton General Plan (see fire response times under Goal SAF-1) reflects this standard, with criteria for station needs keyed to the four-minute objective for the first engine company's travel time and the eight-minute objective for the full alarm assignment's travel time.

Table 5-6 summarizes the citywide response times for engines responding to calls during fiscal year 2015-16. Response times are tracked for both average and the 90th percentile.

TABLE 5-6: RESPONSE TIMES: ALL CALL TYPES, CITYWIDE JULY 2015 THROUGH JUNE 2016

	Received to Dispatch		Turn out Time		Travel Time		Total Time to Arrival	
Call Type	Average	90th Percentile	Average	90th Percentile	Average	90th Percentile	Average	90th Percentile
Fire	0:00:56	0:01:36	0:01:16	0:02:00	0:04:14	0:07:01	0:06:38	0:08:26
Fire Alarm	0:00:37	0:01:03	0:01:07	0:01:48	0:04:09	0:07:01	0:06:02	0:08:16
Grass Fire	0:00:58	0:01:48	0:01:06	0:01:54	0:04:45	0:08:18	0:07:04	0:09:28
Medical	0:00:20	0:00:35	0:01:10	0:01:53	0:04:00	0:06:01	0:05:34	0:07:22
Other	0:00:47	0:01:16	0:01:10	0:01:45	0:03:46	0:07:06	0:05:51	0:08:02
Vehicle	0:00:35	0:01:01	0:01:06	0:01:49	0:03:45	0:06:15	0:05:23	0:07:34
Grand Total	**0:00:30**	**0:01:03**	**0:01:11**	**0:01:54**	**0:04:03**	**0:06:17**	**0:05:47**	**0:07:37**

Source: City of Stockton Fire Department, August 2018.

As Table 5-6 shows, the average total response time for all types of calls was 5:47. The shortest average response times were for vehicle accidents, which happen on roadways, where emergency access is the most convenient. The longest average response times were for grass fires, where emergency access is least convenient. The average travel time for fire incidents was 4:14, which exceeds the General Plan standard for the first engine company's travel time to be four minutes or less.

Table 5-7 through Table 5-11 summarize the response times for all engine units operated by the Department (one per station) for each type of call that is tracked. This information provides a station-by-station comparative frame of reference.

TABLE 5-7: RESPONSE TIMES: FIRES BY ENGINE UNIT JULY 2015 THROUGH JUNE 2016

	Received to Dispatch		Turn out Time		Travel Time		Total Time to Arrival	
Engine #	Average	90th Percentile	Average	90th Percentile	Average	90th Percentile	Average	90th Percentile
E2	0:00:54	0:01:33	0:01:06	0:01:51	0:03:29	0:05:38	0:04:37	0:08:23
E3	0:00:55	0:01:39	0:01:11	0:01:51	0:03:49	0:06:11	0:04:59	0:08:28
E4	0:00:55	0:01:35	0:01:09	0:01:46	0:03:59	0:06:10	0:05:15	0:08:42
E5	0:01:01	0:01:46	0:01:22	0:02:08	0:04:49	0:07:01	0:06:30	0:11:01
E6	0:00:56	0:01:36	0:01:10	0:01:46	0:04:17	0:06:52	0:05:42	0:09:26
E7	0:00:56	0:01:39	0:01:03	0:01:44	0:04:05	0:06:20	0:05:05	0:09:12
E9	0:00:55	0:01:38	0:01:06	0:01:51	0:03:43	0:05:58	0:04:54	0:08:55
E10	0:00:59	0:01:43	0:01:19	0:01:59	0:04:54	0:07:34	0:06:10	0:10:24
E11	0:00:57	0:01:37	0:01:13	0:01:53	0:03:50	0:06:05	0:05:03	0:08:43
E12	0:00:57	0:01:37	0:01:19	0:02:01	0:04:38	0:07:27	0:05:57	0:10:56
E13	0:01:02	0:01:50	0:01:12	0:02:00	0:04:52	0:08:36	0:06:05	0:11:12
E14	0:01:05	0:01:57	0:01:12	0:01:54	0:04:44	0:07:20	0:05:57	0:10:48
Grand Total	**0:00:56**	**0:01:41**	**0:01:11**	**0:01:54**	**0:04:02**	**0:06:46**	**0:05:16**	**0:09:41**

Source: City of Stockton Fire Department, August 2018.

TABLE 5-8: RESPONSE TIMES: FIRE ALARMS BY ENGINE UNIT JULY 2015 THROUGH JUNE 2016

	Received to Dispatch		Turn out Time		Travel Time		Total Time to Arrival	
Engine #	Average	90th Percentile	Average	90th Percentile	Average	90th Percentile	Average	90th Percentile
E2	0:00:36	0:01:01	0:01:07	0:01:46	0:03:41	0:06:27	0:04:51	0:08:18
E3	0:00:41	0:01:14	0:01:09	0:01:48	0:05:03	0:08:07	0:06:19	0:10:23
E4	0:00:36	0:01:02	0:01:02	0:01:44	0:03:43	0:05:58	0:04:43	0:07:25
E5	0:00:37	0:01:02	0:01:10	0:01:48	0:04:37	0:06:43	0:05:49	0:09:23
E6	0:00:35	0:00:58	0:01:05	0:01:41	0:04:13	0:06:19	0:05:20	0:08:27
E7	0:00:37	0:01:05	0:01:02	0:01:45	0:03:33	0:05:16	0:04:38	0:07:17
E9	0:00:38	0:01:04	0:00:59	0:01:38	0:03:15	0:05:28	0:04:15	0:07:01
E10	0:00:35	0:01:02	0:01:07	0:01:46	0:03:57	0:06:28	0:05:10	0:09:13
E11	0:00:36	0:00:57	0:01:09	0:01:46	0:03:43	0:05:51	0:04:54	0:08:01
E12	0:00:34	0:00:58	0:01:15	0:01:59	0:04:43	0:09:01	0:06:04	0:11:27
E13	0:00:36	0:00:59	0:00:59	0:01:33	0:05:14	0:08:01	0:06:06	0:10:15
E14	0:00:36	0:01:00	0:01:08	0:01:48	0:04:31	0:06:59	0:05:40	0:08:56
Grand Total	**0:00:36**	**0:01:02**	**0:01:06**	**0:01:45**	**0:03:58**	**0:06:43**	**0:05:07**	**0:08:50**

Source: City of Stockton Fire Department, August 2018.

TABLE 5-9: RESPONSE TIMES: GRASS FIRES BY ENGINE UNIT JULY 2015 THROUGH JUNE 2016

	Received to Dispatch		Turn out Time		Travel Time		Total Time to Arrival	
Engine #	Average	90th Percentile	Average	90th Percentile	Average	90th Percentile	Average	90th Percentile
E2	0:00:50	0:01:31	0:01:06	0:01:54	0:03:31	0:06:10	0:04:44	0:08:44
E3	0:00:50	0:01:36	0:01:03	0:01:53	0:04:15	0:07:14	0:05:13	0:11:50
E4	0:01:10	0:01:43	0:01:11	0:01:45	0:05:07	0:07:41	0:06:09	0:09:34
E5	0:01:03	0:01:56	0:01:10	0:02:08	0:04:56	0:07:57	0:07:55	0:11:50
E6	0:00:59	0:01:49	0:01:08	0:01:34	0:04:53	0:06:49	0:05:58	0:10:37
E7	0:01:07	0:01:56	0:01:08	0:02:01	0:06:30	0:13:50	0:07:38	0:18:57
E9	0:01:05	0:01:57	0:01:09	0:01:58	0:04:52	0:06:53	0:06:01	0:09:52
E10	0:01:08	0:02:04	0:01:08	0:02:06	0:05:09	0:09:13	0:06:20	0:12:19
E11	0:01:02	0:01:48	0:01:04	0:01:53	0:04:44	0:07:34	0:06:51	0:11:06
E12	0:01:02	0:01:53	0:01:14	0:01:58	0:05:55	0:10:19	0:09:01	0:13:20
E13	0:01:29	0:03:24	0:00:58	0:01:30	0:05:31	0:07:57	0:06:27	0:11:35
E14	0:01:08	0:02:30	0:01:06	0:01:36	0:06:14	0:08:34	0:06:59	0:11:07
Grand Total	**0:00:58**	**0:02:01**	**0:01:07**	**0:01:51**	**0:04:34**	**0:08:21**	**0:06:03**	**0:11:44**

Source: City of Stockton Fire Department, August 2018.

TABLE 5-10: RESPONSE TIMES: MEDICAL CALLS BY ENGINE UNIT JULY 2015 THROUGH JUNE 2016

	Received to Dispatch		Turn out Time		Travel Time		Total Time to Arrival	
Engine #	Average	90th Percentile	Average	90th Percentile	Average	90th Percentile	Average	90th Percentile
E2	0:00:21	0:00:36	0:01:09	0:01:51	0:03:15	0:04:52	0:04:25	0:06:36
E3	0:00:20	0:00:35	0:01:08	0:01:46	0:03:56	0:06:00	0:05:06	0:07:36
E4	0:00:20	0:00:36	0:01:07	0:01:49	0:03:44	0:05:23	0:05:28	0:07:05
E5	0:00:17	0:00:28	0:01:17	0:02:01	0:04:27	0:06:21	0:05:48	0:08:10
E6	0:00:21	0:00:37	0:01:09	0:01:48	0:04:13	0:06:04	0:05:26	0:07:48
E7	0:00:19	0:00:33	0:01:06	0:01:48	0:03:55	0:05:37	0:05:06	0:07:19
E9	0:00:19	0:00:34	0:01:03	0:01:48	0:03:25	0:05:11	0:04:32	0:06:47
E10	0:00:20	0:00:36	0:01:16	0:01:57	0:04:21	0:06:13	0:05:41	0:08:05
E11	0:00:18	0:00:31	0:01:14	0:01:57	0:03:51	0:05:34	0:05:08	0:07:21
E12	0:00:19	0:00:32	0:01:16	0:02:06	0:04:06	0:06:29	0:05:22	0:08:17
E13	0:00:19	0:00:31	0:01:11	0:01:56	0:04:37	0:06:36	0:05:49	0:08:19
E14	0:00:19	0:00:35	0:01:14	0:01:52	0:04:54	0:06:55	0:06:13	0:08:45
Grand Total	**0:00:19**	**0:00:34**	**0:01:10**	**0:01:53**	**0:03:55**	**0:05:56**	**0:05:12**	**0:07:41**

Source: City of Stockton Fire Department, August 2018.

TABLE 5-11: RESPONSE TIMES: VEHICLE ACCIDENT CALLS BY ENGINE UNIT JULY 2015 THROUGH JUNE 2016

	Received to Dispatch		Turn out Time		Travel Time		Total Time to Arrival	
Engine #	Average	90th Percentile	Average	90th Percentile	Average	90th Percentile	Average	90th Percentile
E2	0:00:34	0:01:02	0:01:02	0:01:38	0:03:32	0:05:37	0:04:44	0:07:30
E3	0:00:33	0:01:01	0:01:04	0:01:39	0:03:40	0:05:59	0:04:35	0:08:07
E4	0:00:26	0:00:47	0:00:55	0:01:31	0:02:53	0:04:09	0:03:43	0:05:34
E5	0:00:39	0:01:09	0:01:11	0:01:49	0:04:08	0:06:49	0:05:19	0:08:51
E6	0:00:34	0:00:59	0:01:04	0:01:39	0:03:51	0:05:36	0:04:50	0:07:29
E7	0:00:29	0:00:52	0:01:02	0:01:41	0:03:29	0:05:47	0:04:26	0:07:48
E9	0:00:28	0:00:52	0:00:52	0:01:30	0:03:11	0:04:52	0:04:01	0:06:20
E10	0:00:33	0:00:53	0:01:12	0:01:50	0:03:43	0:05:30	0:04:47	0:07:36
E11	0:00:25	0:00:49	0:01:02	0:01:37	0:03:16	0:05:13	0:04:07	0:06:55
E12	0:00:39	0:01:09	0:01:11	0:01:57	0:04:25	0:07:17	0:05:41	0:09:28
E13	0:00:29	0:00:50	0:01:02	0:01:42	0:03:48	0:06:13	0:04:33	0:07:29
E14	0:00:36	0:01:00	0:01:07	0:01:50	0:04:16	0:06:43	0:05:17	0:08:31
Grand Total	**0:00:32**	**0:00:57**	**0:01:03**	**0:01:42**	**0:03:35**	**0:05:49**	**0:04:35**	**0:07:39**

Source: City of Stockton Fire Department, August 2018.

As these tables show, the more centrally-located, urban stations in the city (e.g., 2, 3, 4, 9, 11) tend to have the shortest average response times for most types of calls, and they are meeting the General Plan fire response time standard of four minutes or less travel time for the first arriving engine. Conversely, the stations

on the city's periphery (e.g., 5, 12, 13, 14) tend to have the longest average response times, and they are not meeting the General Plan fire response time standard. This pattern is typical of response times in the fire protection field, with urban stations having faster response times than suburban or rural stations. The response time by call type is also typical, with most stations experiencing the shortest response times for vehicle accidents (with the most convenient access) and the longest response times for grass fires (with the least convenient access). While there are some departures from these patterns, there do not appear to be any significant disparities from station to station or by type of call.

Note that the above tables address only the response times for calls to the City of Stockton Fire Department, including calls for service within unincorporated county islands that the Fire Department serves through contract services. They do not cover response times to areas within the SOI that are currently served by rural fire protection districts (e.g., Waterloo-Morada, Eastside, Montezuma). Response times for these districts were addressed in an MSR prepared by San Joaquin LAFCo in 2011. That MSR concluded that response times for the rural fire protection districts serving the Stockton SOI were generally greater than the Stockton Fire Department's for areas within the city limits. The report did not, however, distinguish between calls for service in the more urban areas on the periphery of Stockton and the rural parts of their service areas. It is likely that response times by the rural fire protection districts to calls within the SOI were considerable shorter than their overall response times.

7. Fire Department ISO Rating

The Insurance Service Office (ISO) is an organization that provides statistical information on risk for use by the insurance industry. ISO periodically publishes an "ISO Rating" or "Public Protection Classification (PPC)" for fire departments based on a 1-to-10 scale, with 1 being the best. The rating is derived from an in-depth evaluation of the city's fire department, emergency communications, water supply, and community risk reduction (fire prevention). ISO ratings have an effect on insurance rates, but the differences at the higher end of the scale are relatively minor (e.g., moving from a rating of 2 to a rating of 1 results in little or no difference in homeowner rates).

The Stockton Fire Department had previously achieved an ISO rating of 1. Following the Great Recession and the City's subsequent financial crisis, the Fire Department was no longer able to maintain its level 1 rating, and its rating dropped to level 3. The last survey brought it to a level 2, which is where it stands currently (2019). After the rating was reduced to level 3, the Fire Department bolstered its emergency response capabilities by establishing a mutual aid agreement with the Woodbridge Fire District and an automatic aid agreement with the Waterloo Morada Fire District.

8. Fire Department Funding

The Stockton Fire Department receives funding from various revenue sources including the City's General Fund, Fire Prevention, Measure W, Emergency Communications, Emergency Medical Transport, and County Fire District Contracts. Table 5-12 provides a breakout for Stockton's FY 2019-20 Budget.

TABLE 5-12: STOCKTON FIRE DEPARTMENT BUDGET (FY 2019-20)

Fund	Budget
General Fund	$45,767,332
Emergency Communication	$3,389,147
Development Services	$2,811,686
Measure W	$5,435,747
Special Revenue	$49,259
Total	**$57,453,171**

Source: City of Stockton Annual Budget: Fiscal Year 2019-20; June 2019.

9. Fire Protection Determinations

The Stockton Fire Department is providing adequate services to its current customers (including both within most of the city limits and in contracted service areas). Continued growth within the SOI will increase the overall demand on fire protection services, including the typical range of service calls (e.g., structure fires, car fires, electrical fires, emergency medical response). The Department has the staffing and equipment to meet current service demands and response time standards. Future obligations for service delivery will be analyzed on an individual basis to determine the potential impact on service delivery and the potential need for additional facilities, vehicles, equipment, and personnel to maintain adequate response times consistent with the City's General Plan fire response times standards.

City growth will also impact the rural fire districts providing services in city expansion areas, including Montezuma, French Camp, Waterloo-Morada, and Woodbridge. In October 2011, LAFCo adopted a service review for the rural fire districts in San Joaquin County, including those providing services in the Stockton Metropolitan Area. That report recommended that districts with contractual arrangements with Stockton for areas in the City's 10-year planning horizon for annexations be annexed (Final Municipal Service Review, Rural Fire Protection Districts, San Joaquin County, "Stockton Contract District Alternatives," p. 64, October 21, 2011). As part of the annexation process, the City will have to demonstrate that it has the capacity to provide services. In cases where the City annexes these areas, the boundaries of the rural fire districts currently providing services will be reduced in territory, which may have a long-term financial impact on those districts. San Joaquin LAFCo has adopted a policy

that requires the Commission to consider the adverse impact of annexation on the other agencies and requires mitigation through the payment of fees.

Additional facilities, personnel, equipment, and materials costs will be offset through the increased revenue and fees generated by new development as well as other funding sources. In addition, the City will review future projects on an individual basis and will require compliance with City requirements (e.g., impact fees) in effect.

B. *LAW ENFORCEMENT*

Law enforcement services in Stockton's SOI are provided by the Stockton Police Department and the San Joaquin County Sheriff's Department. Numerous other public and private agencies such as school districts, colleges, and large private employers employ security personnel. The Stockton Police Department currently serves the area within city limits, covering over 65 square miles, while the San Joaquin County Sheriff's Department serves all adjacent unincorporated areas within the SOI.

1. Stockton Police Department Staffing/Equipment

The staffing level for the Police Department is determined each year by the Stockton City Council and is subject to change as the Council, City Manager, and Chief of Police determine the needs of the city. As Table 5-13 shows, in 2019, Stockton's Police Department consisted of 485 sworn police officers, 45 police telecommunicators, and 181 civilian staff. Stockton's 2019 population was approximately 316,400, which resulted in a ratio of 1.533 sworn staff per 1,000 residents.

TABLE 5-13: STOCKTON POLICE DEPARTMENT STAFF 2019

Position	Employed	Sworn Staff per 1,000 Population
Chief of Police	1	0.003
Deputy Chiefs	2	0.006
Captains	5	0.016
Lieutenants	17	0.054
Sergeants	58	0.183
Police Officers	402	1.271
Sworn Positions	485	1.533
Police Telecommunicators	45	
Civilian Positions	181	-
Total Police Department Staff	**711**	**-**

Source: City of Stockton Police Department, 2019.

The Police Department has both traditional and specialized transportation equipment that it uses to conduct patrols, respond to emergencies, and provide programs. Table 5-14 provides a breakdown of the transportation equipment used by the Stockton Police Department.

TABLE 5-14: STOCKTON POLICE TRANSPORTATION EQUIPMENT

Type of Transportation	Number of Units
Evidence Vans	7
Bicycle	16
Marked Vehicles	217
Unmarked Vehicles	208
Motorcycles	27
Animal Control	8
Miscellaneous	9
Total	**492**

Source: City of Stockton Police Department, 2019.

2. Stockton Police Department Organization

The Stockton Police Department is managed by one Chief of Police and two Deputy Chiefs, one leading the Logistics Bureau and one leading the Operations Bureau. The Department is further organized into five divisions, Field Operations, Special Operations, Investigations, Administrative Services, and Technical Services, each commanded by a Captain. Figure 5-3 shows the overall organization of the Police Department. Divisions are coordinated out of two facilities: the Operations Building at 22 East Market Street and the Headquarters (Stewart/Eberhardt) Building at 22 East Weber Avenue. Figure 5-4 shows these locations. As shown in Figure 5-4, the service area is organized into six Community Policing Districts: Bear Creek, Civic Center, Lakeview, Park, Seaport, and Valley Oak.

FIGURE 5-3: POLICE DEPARTMENT ORGANIZATION

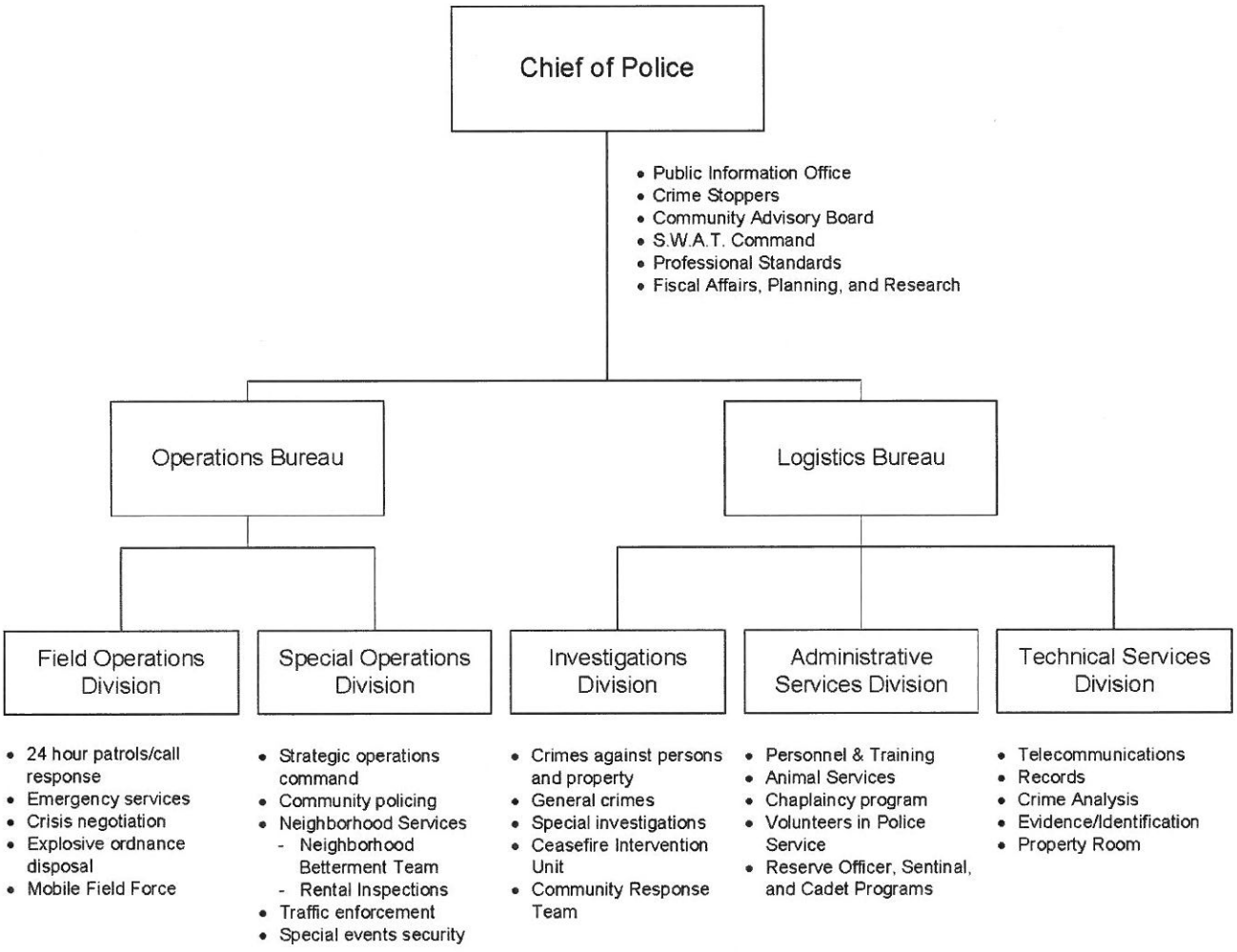
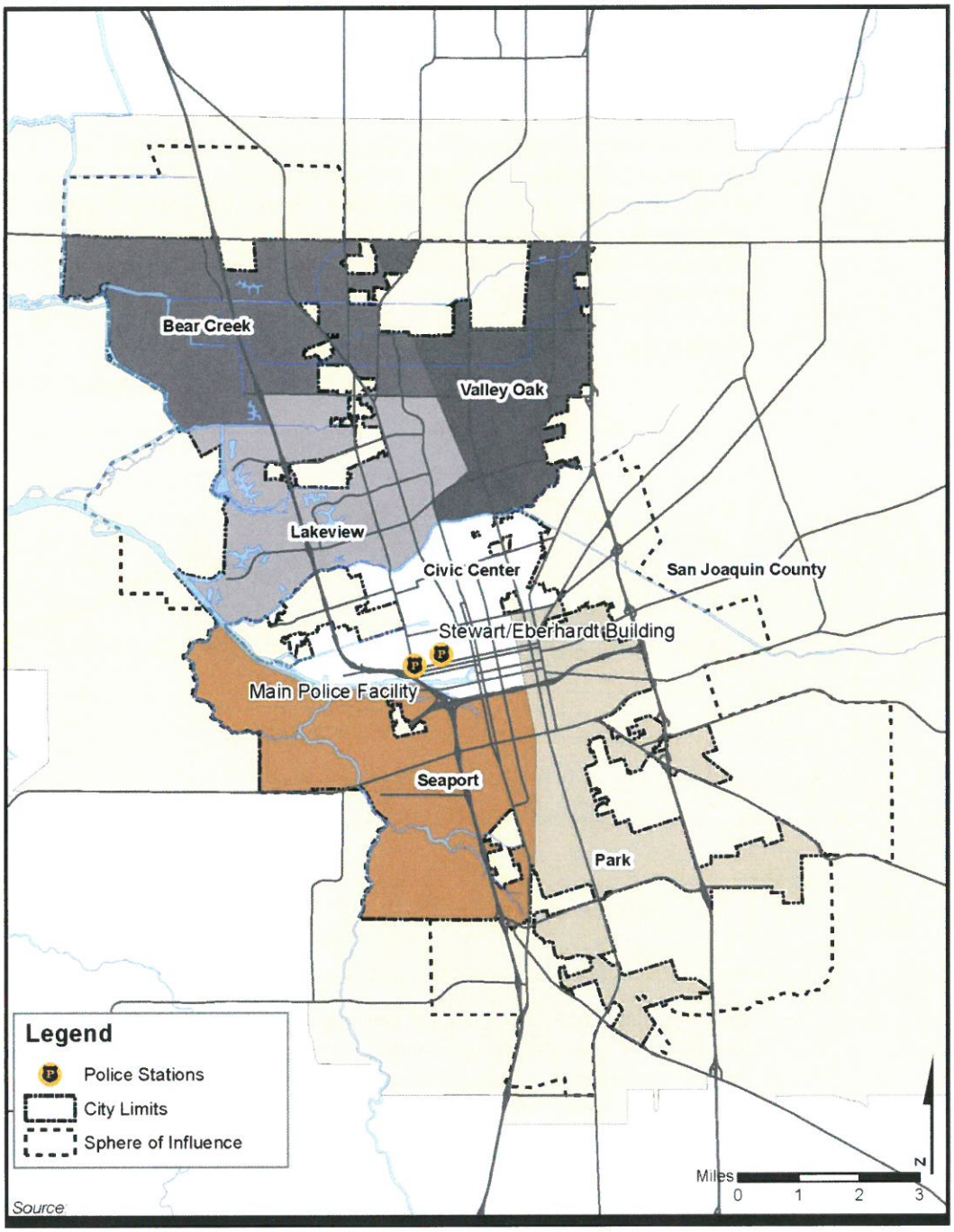


FIGURE 5-4: POLICE DISTRICTS

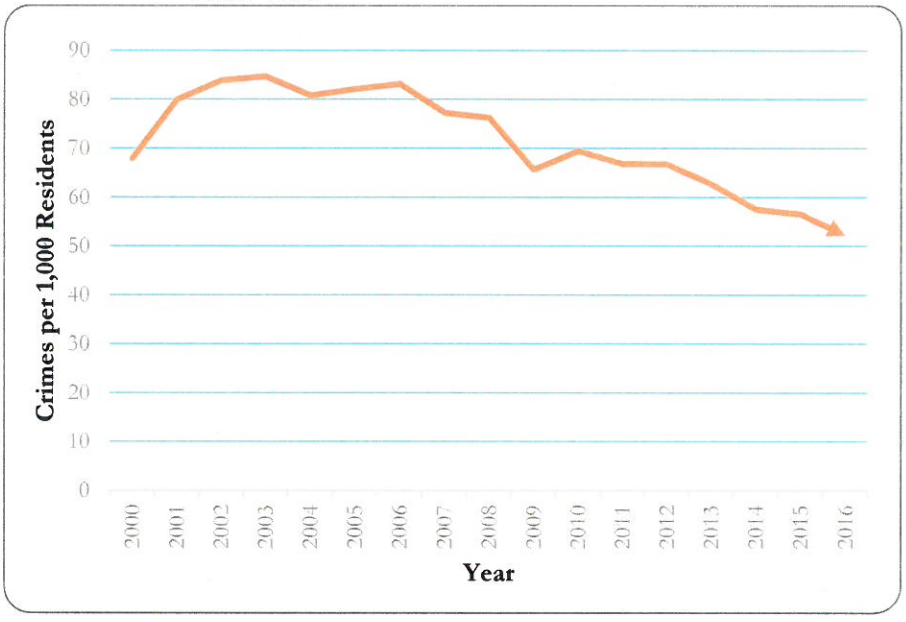


3. Measure A/Marshall Plan

Law Enforcement Determinations

Stockton has a long history of high crime rates, including particularly high violent crime rates. According to FBI reporting, as of 2017, Stockton's violent crime rate was the 10th highest in the United States and the highest in California among cities with over 100,000 residents. For property crime, Stockton was 105th nationally and 11th in California. As Figure 5-5 shows, the overall crime rate is trending down according to the FBI's Uniform Crime Reporting Program (UCR). Nonetheless, crime prevention and law enforcement remain high priorities in Stockton as evidenced by the passage of Measure A and enactment of the City's Marshall Plan on crime.

FIGURE 5-5: CITY OF STOCKTON CRIME RATE FBI UNIFORM CRIME REPORTING PROGRAM (UCR) 2000 - 2016



In November 2014, Stockton's voters approved Measure A, which instituted a three-quarter cent (0.75%) transaction and use tax (sales tax) to provide funding for law enforcement, crime prevention services and other essential city services, including the City's Marshall Plan on Crime. The revenue generated from the Measure A tax is intended to support the hiring of 120 additional sworn officers and 33 civilian support positions. Measure A also funds the Office of Violence Prevention that works to significantly reduce violence in the City through data-

driven, partnership-based violence prevention and reduction programs, and strategies rooted in best practices. The Marshall Plan is an approach to addressing Stockton's crime problems by reducing peaks of violence and overall crime. It focuses on violence reduction strategies based on local data and what works to address and prevent crime. It is a collaboration between the City of Stockton, the criminal justice system, faith-based and nonprofits, business, and neighborhoods.

The passage of Measure A afforded a significant increase in the number of authorized sworn police positions, slightly surpassing pre-bankruptcy levels of 2008. Between 2014 and 2017 the City saw unprecedented hiring of Police Officers, meeting the goal of 80 each year. At the same time, however, about half of those offers were lost through attrition, retirement, and to other agencies. The City achieved a net gain of 120 offers since the passage of Measure A, including attaining its highest staffing levels in Department history during 2018, and currently maintains a 3- to 5-percent vacancy rate. In 2016, the Department reached its lowest crime rate in 16 years and continues to maintain a downward trend in violent crime. Recruitment and retention continue to be important priorities as well as increased and expanded training to counteract the loss of tenured experience through attrition. The Department released its Three-Year Strategic Plan in January 2017 highlighting recruitment, hiring, and training as goals, along with specific objectives on how they will be achieved.

4. Stockton Police Department Response Time

The average response time to in-progress, life-threatening emergencies is between 3 and 5 minutes. Depending on the nature of the call, the time of day, the location, and the number of on-duty personnel, response times to non-emergency calls can exceed 25 minutes.

5. San Joaquin County Sheriff's Department

The San Joaquin Sheriff's Department provides law enforcement services to the unincorporated areas within Stockton's SOI. The primary divisions and services within the Sheriff's Department include the following:

- Custody Division
- Patrol Division
- Investigation Division
- Unified Court Services Division
- Professional Standards Division

6. Stockton Police Department Funding

As Table 5-15 shows, the City's General Fund is the primary source for Police Department funding. It supplies the department with over 90 percent of its total funding for operations. The remaining budget is derived from various sources, including fines, forfeitures, and other revenues.

TABLE 5-15: STOCKTON POLICE DEPARTMENT BUDGET FY 2019-20

Fund	Budget
General Fund	$129,061,956
Measure W	$5,457,134
State COPS	$622,500
Asset Seizure	$299,008
Special Revenue	$248,857
Total	**$135,469,455**

Source: City of Stockton Annual Budget: Fiscal Year 2019-20; June 2019.

7. Law Enforcement Determinations

Stockton has a long history of high crime rates, including particularly high violent crime rates. According to FBI reporting, as of 2017, Stockton's violent crime rate was the 10th highest in the United States and the highest in California among cities with over 100,000 residents. For property crime, Stockton was 105th nationally and 11th in California. While the overall crime rate is trending down according to the FBI, crime prevention and law enforcement remain high priorities in Stockton. The passage of Measure A in November 2014 and enactment of the City's Marshall Plan on crime responded to these priorities. Measure A instituted a three-quarters cent sales tax to provide funding for law enforcement, crime prevention services and other essential city services. Measure A and the Marshall Plan are focused on improving public safety within Stockton's existing neighborhoods. The City has also taken measures to improve Stockton's competitiveness with respect to recruitment and retention of law enforcement officers. Between 2014 and 2017 the City saw unprecedented hiring of Police Officers, meeting the goal of 80 each year. At the same time, however, about half of those officers were lost through attrition, retirement, and to other agencies. The City has achieved a net gain of 120 officers since the passage of Measure A, including attaining its highest staffing levels in Department history during 2018, and currently maintains a 3- to 5-percent vacancy rate. In 2016, the Department reached its lowest crime rate in 16 years and continues to maintain a downward trend in violent crime.

Continued growth within the currently undeveloped areas of the SOI will likely increase the overall demand for law enforcement services beyond what Measure

A was intended to support. New police facilities, vehicles, equipment, and personnel will be required in order to provide adequate response times to serve future growth, which is expected to be concentrated in the northern areas within which the city is expected to grow. The City's costs to maintain existing equipment and facilities and to train and equip personnel will also increase. Additional personnel and materials needs resulting from new development demands will be offset through the increased revenue and fees generated by new development, as well as the funding sources mentioned above. In addition, the City will review future projects on an individual basis and will require City compliance with requirements (e.g., impact fees) in effect. The rapid hiring achieved through Measure A and in accordance with the Marshall Plan on Crime provides a replicable framework which can be used to guide further hiring required as a result of the new development.

C. *WATER SUPPLY AND TREATMENT*

Water systems in the City of Stockton Metropolitan Area (COSMA) use a combination of treated surface water provided by the Stockton East Water District (SEWD), Delta Water Supply Project (DWSP) water from the San Joaquin River, and pumped groundwater to supply water within the SOI. Stockton water purveyors include the City of Stockton Municipal Utilities Department (COSMUD), California Water Service Company (Cal Water), and San Joaquin County Maintenance Districts (SJMCDs) covering Lincoln Village and Colonial Heights, which are unincorporated pockets within the SOI. The existing COSMA service area boundary is shown on Figure 5-6.

1. Existing Surface Water Supply

Surface water supply in COSMA is provided by three sources, the DWP, SEWD, and the Woodbridge Irrigation District (WID). The DWSP draws water from the San Joaquin River Delta via intakes at the Delta Water Treatment Plant (DWTP), which is operated by COSMUD. The DWTP, which has the capacity to treat 30 million gallons per day (mgd) and produces an average of 15 mgd of treated surface water, provides the majority of the City's water service areas' potable supply. SEWD's surface water comes from New Melones Reservoir and New Hogan Reservoir. COSMUD, Cal Water, and San Joaquin County each purchase surface water from SEWD to serve customers within the SOI. WID-provided water comes from the Mokelumne River. While agricultural users within the COSMA rely primarily on groundwater, they do divert minor amounts of surface water.

2. Existing Groundwater Supply

Groundwater is used conjunctively with the City's surface water supplies. With the DWTP now online, the City uses less groundwater in wet and average years and increases groundwater use in dry years to make up for reductions in surface water deliveries. Groundwater is managed for long-term sustainability and supply through conjunctive use with surface water supplies. The City has determined that the sustainable groundwater yield is 0.75 acre-feet per year, equivalent to a groundwater yield of approximately 50,000 acre-feet per year. To establish the projected groundwater supply that is reasonably available, COSMUD assumes that the reasonably available groundwater for the current water service area (38,524 acres) is pumped at 0.6 acre-feet per year, equivalent to an annual groundwater supply of 23,100 acre-feet per year.

During dry years when surface water availability is limited, groundwater pumping increases to meet municipal demands. In water year 2014-2015, 2,010.81 mgd of groundwater were pumped from wells in the north and south systems, and 7,529 mgd of surface water were used to meet municipal demands totaling 9539.81 mgd within the COSMA. More surface water use and less groundwater use have shown an overall benefit to the groundwater basin. Based on available monitoring data, extraction rates appear to be below the sustainable yield of the groundwater basin. (Stockton Municipal Utilities Department, Monthly Operations and Maintenance Report, January 2016, Table 2-3).

3. Existing Water Transmission and Distribution System and Short-term Improvements

There are five water service areas in the COSMA, with service provided by three water purveyors. The five service areas and the corresponding water purveyor serving each are illustrated on Figure 5-6. COSMUD serves the North Stockton, South Stockton, and Walnut Plant Area (WPA) service areas, which includes land designated for residential, commercial, industrial, public, agricultural, and native or idle (i.e., natural open space) uses. The SJCMDs serve the Lincoln Village and Colonial Heights unincorporated pockets, which are designated for residential and commercial uses. Cal Water serves Central Stockton, which includes land designated for residential, commercial, industrial, public, agricultural, and native or idle.

COSMA is also divided into four separate water storage and distribution systems: North Stockton, Central Stockton, WPA, and South Stockton. The North Stockton, South Stockton, and WPA systems are operated by COSMUD and SJCMDs. The Central Stockton system is operated by Cal Water. These system areas are illustrated in Figure 5-7, Figure 5-8, Figure 5-9, and Figure 5-10.

a. *San Joaquin County Maintenance Districts*

The SJCMDs are County water districts responsible for providing water service to small areas within the North Stockton service area. The Lincoln Village Maintenance District (LVMD) area is bounded by Ben Holt Drive and Lincoln Road on the north, Pacific Avenue on the east, Herndon Plaza on the west, and Fourteen Mile Slough and Douglas Road on the south. The Colonial Heights Maintenance District (CHMD) area is bounded by Portola Avenue and Encino Avenue on the north and east, Arroyo Way on the west, and El Camino Avenue on the south. The maintenance districts include mainly low-density residential uses.

b. *North Stockton Storage & Distribution*

The North Stockton water system distributes water from the DWTP, groundwater wells, and the SEWD WTP. Treated drinking water from the DWTP and groundwater wells is delivered from Stockton East Water District to the North, South, and Walnut Plant service areas. The DWTP provides the majority of the City's water service area's drinking water. There are 23 groundwater wells in service with pump design flows ranging from 550 to 2,800 gallons per minute (gpm). The entire system is one pressure zone with the lowest ground surface elevation (5 feet above mean sea level) on the western side of the system and the highest elevation (35 feet above mean sea level) on the eastern side of the system. Additionally, there are two 3-million-gallon (MG) storage tanks near 14-Mile Slough and three 3.43 MG storage tanks near the Northwest Reservoir. These tanks deliver water through 18-, 24-, and 30-inch diameter mains. Additionally, a 48-inch diameter pipeline connects the system to the SEWD. The remainder of the distribution system consists primarily of mains of 12 inches or less. In January 2016, the North system was converted to using chloramines as the primary disinfectant.

FIGURE 5-6: WATER SERVICE AREAS

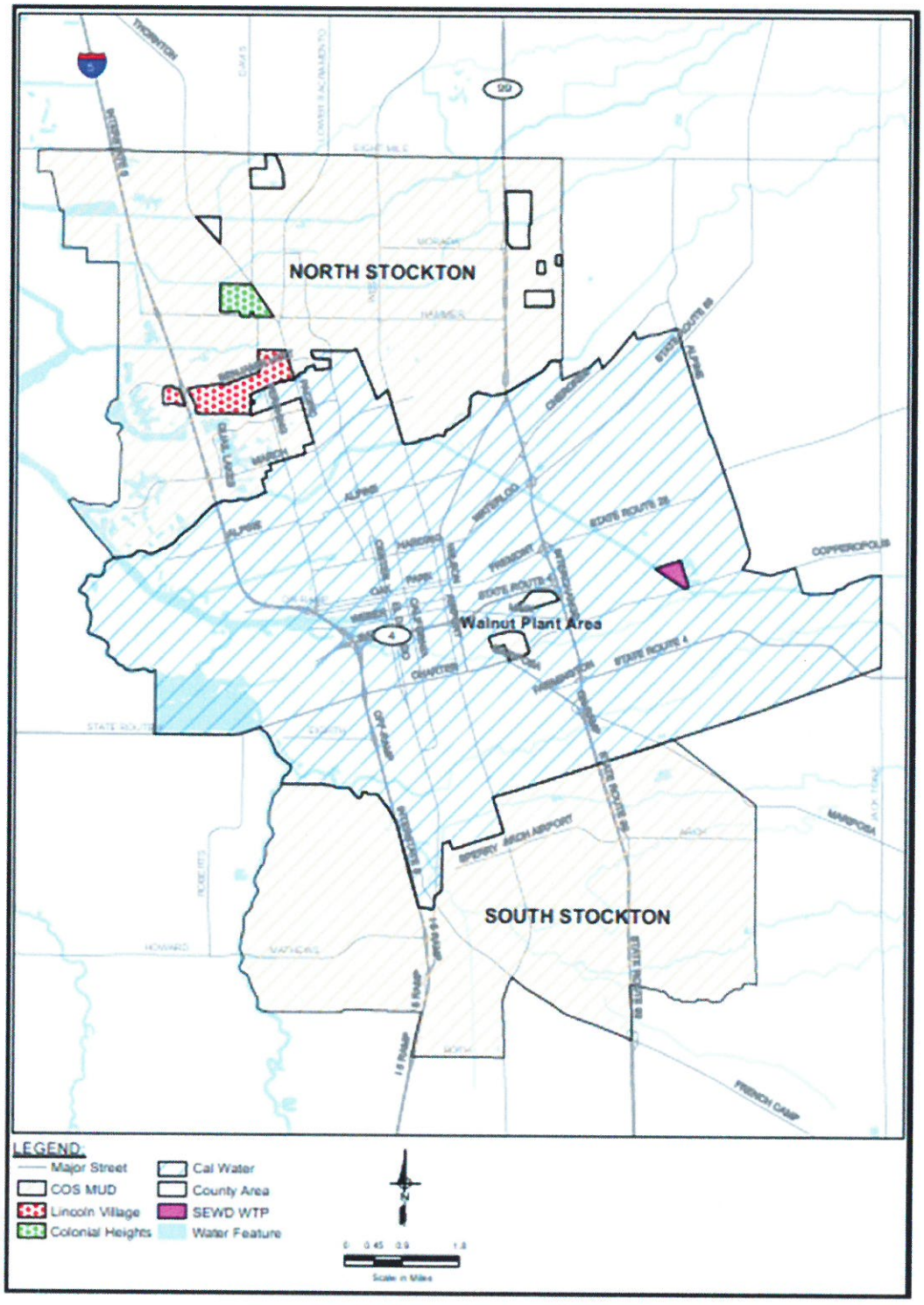


FIGURE 5-7: NORTH STOCKTON NEAR TERM IMPROVEMENTS

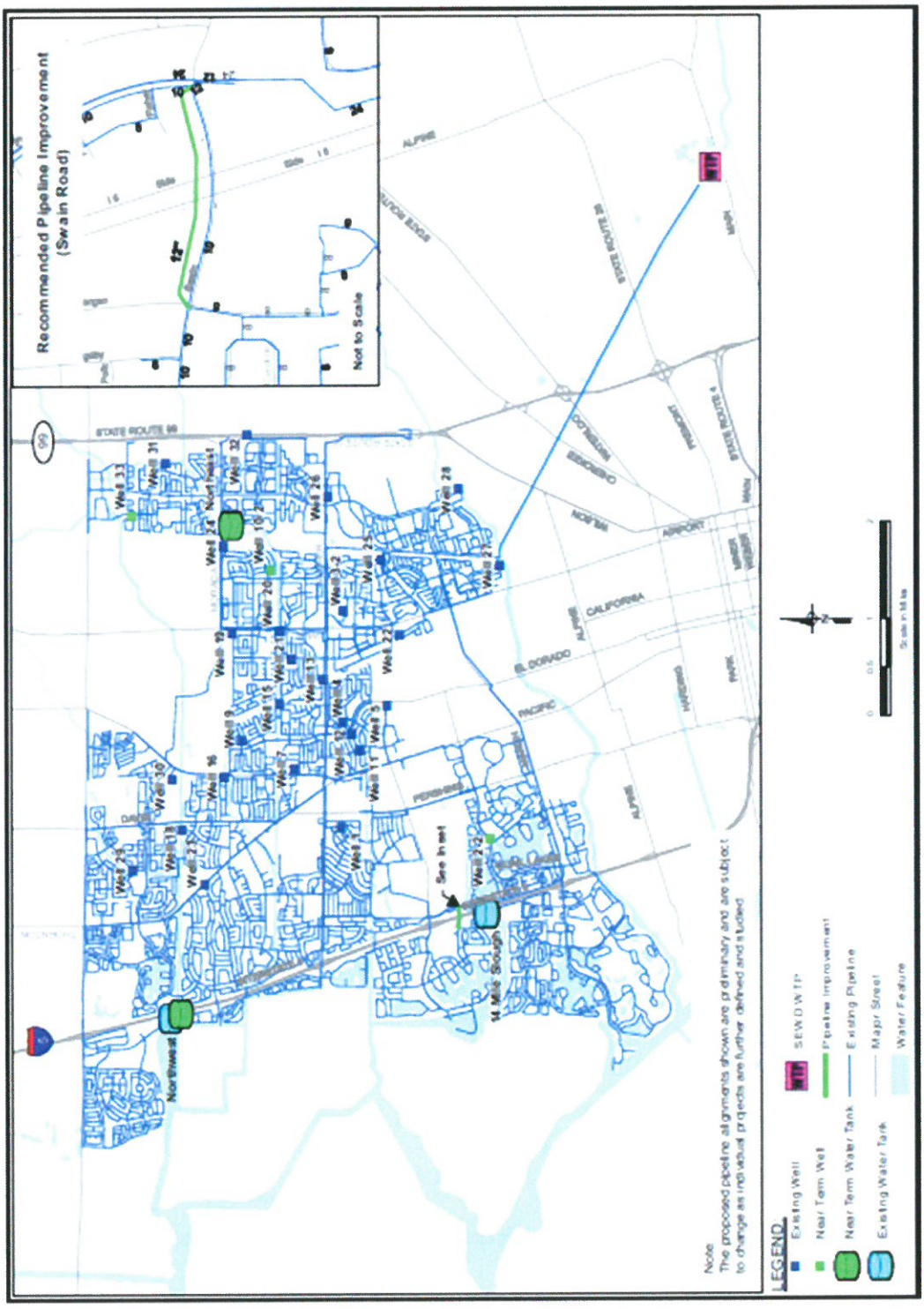


FIGURE 5-8: CENTRAL STOCKTON SYSTEM

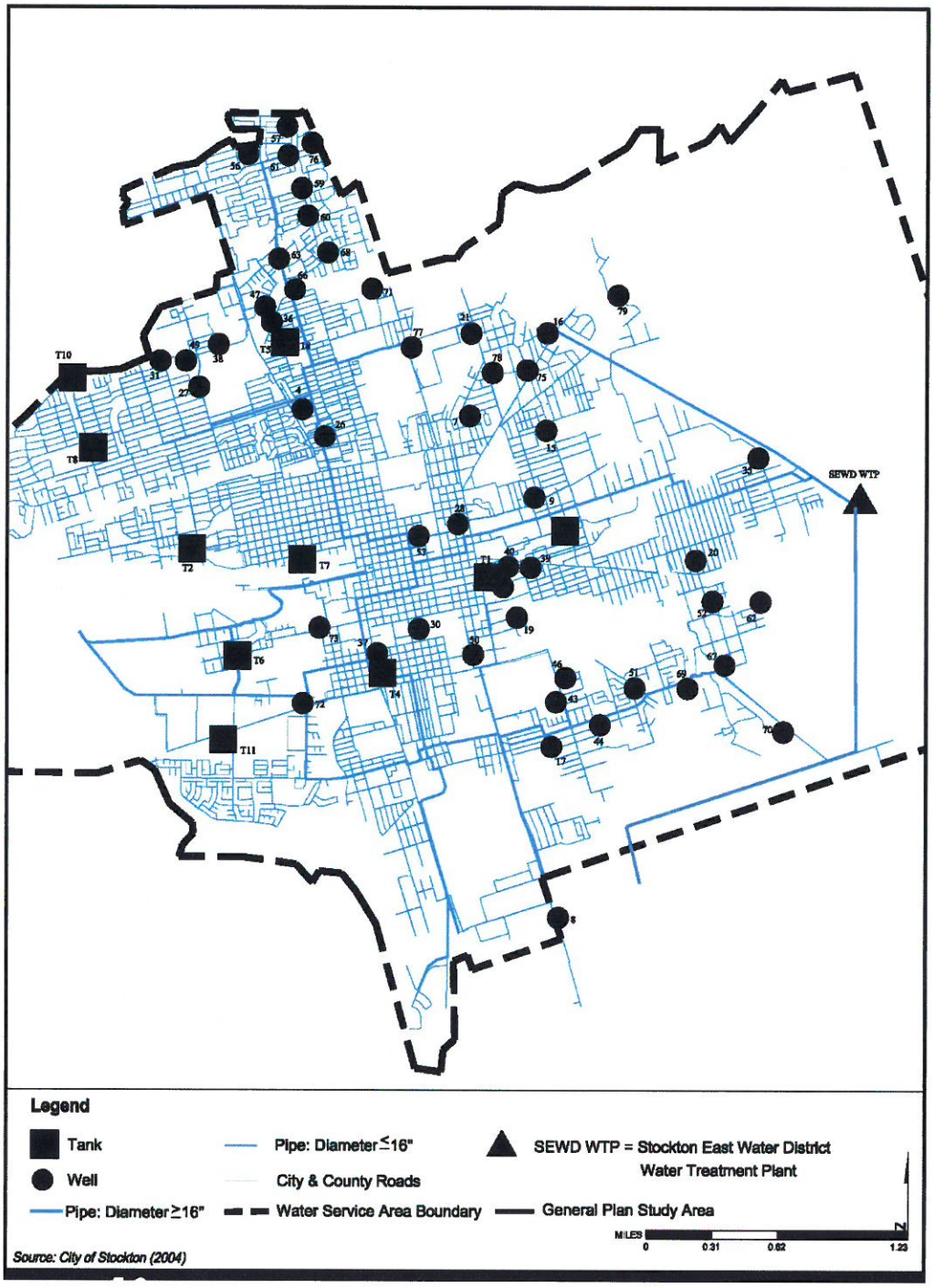


FIGURE 5-9: WALNUT PLANT SYSTEM

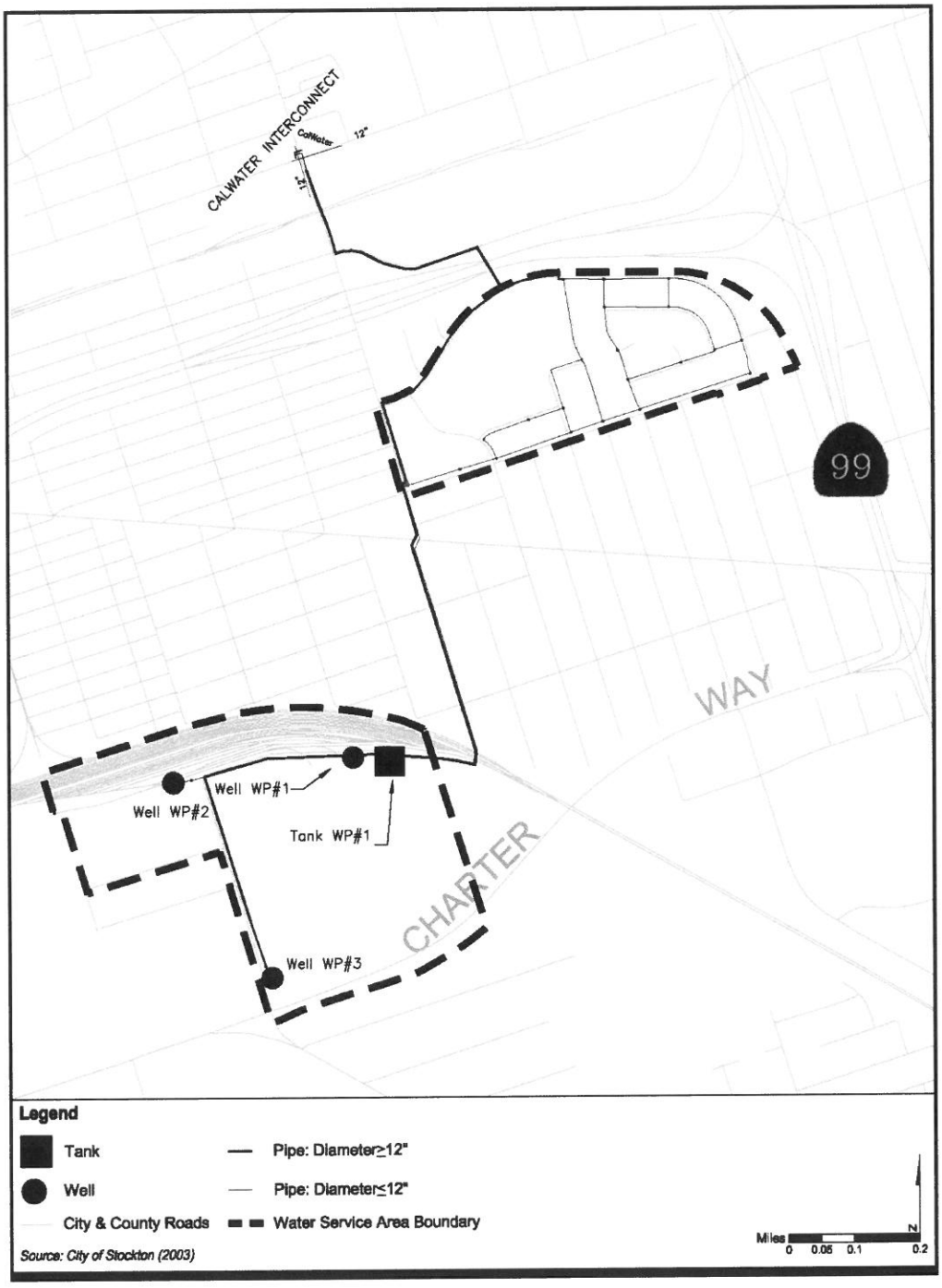
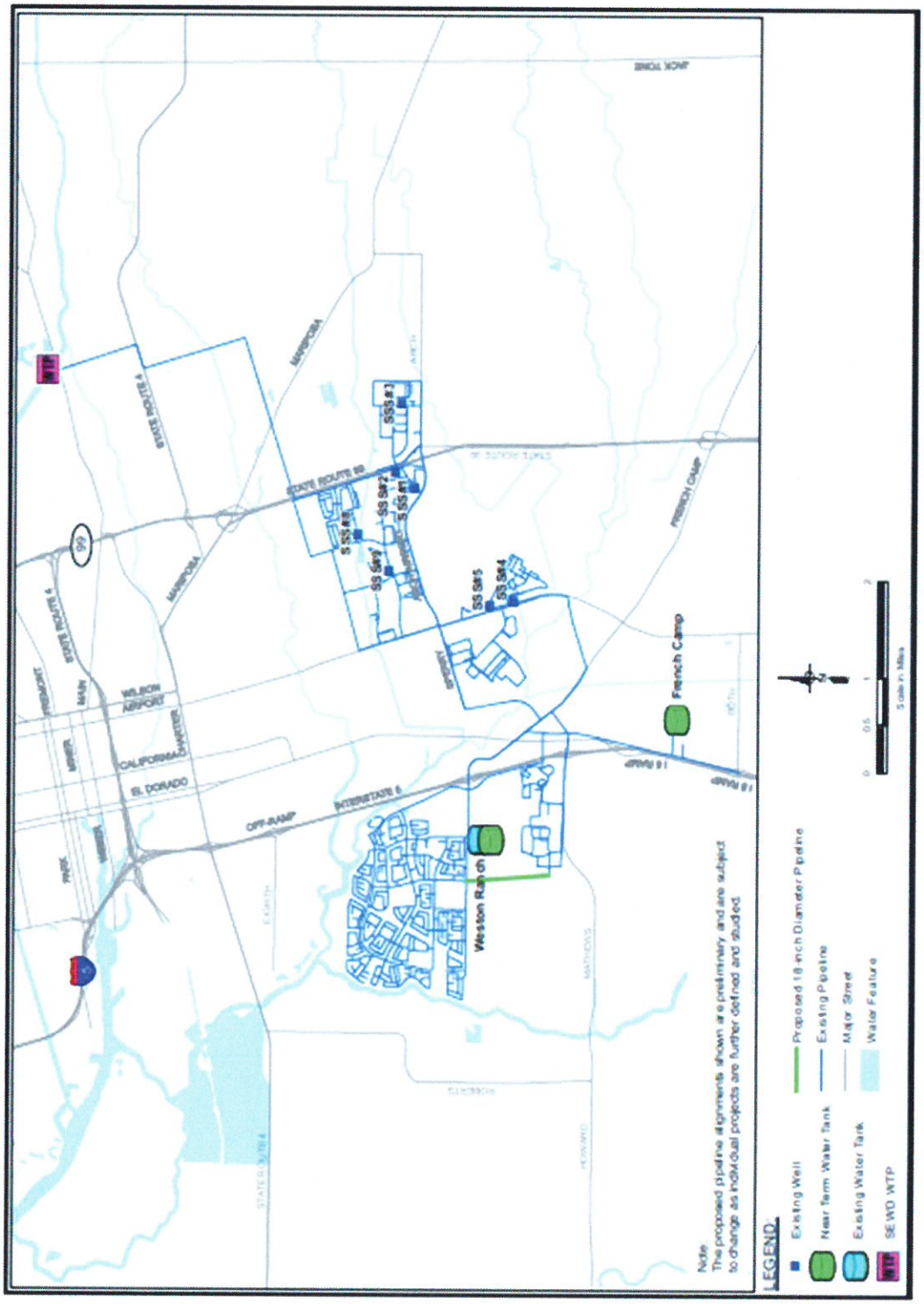


FIGURE 5-10: SOUTH STOCKTON NEAR TERM IMPROVEMENTS



c. *Walnut Plant Area Storage and Distribution System*

The WPA water system distributes water from the SEWD WTP, supplied in large part by the DWTP. The entire system is one pressure zone, with the lowest elevation (20 feet above mean sea level) on the southwestern side of the system and the highest elevation (25 feet above mean sea level) on the northeastern side of the system. The system is connected to the CWSC system and receives surface water. The distribution system consists primarily of lines with diameters ranging from 6 to 10 inches.

d. *Central Stockton Storage and Distribution System*

As noted above, Cal Water operates the Central Stockton water system. The Stockton District of Cal Water was formed in 1927 with the purchase of the water system from Pacific Gas and Electric Company. Cal Water delivers a combination of local groundwater and surface water purchased from the SEWD, which is imported from the New Melones and New Hogan Reservoirs. Cal Water operates 23 groundwater wells, 17 booster pumps, 12 storage tanks, and hundreds of miles of pipeline. It delivers up to 55 million gallons of water per day to more than 42,000 service connections. The entire system is one pressure zone with the lowest elevation (0 feet above mean sea level) on the western side of the system and the highest elevation (25 feet above mean sea level) on the eastern side of the system. Cal Water's 12 storage tanks range in size from around 0.74 MG to 3.8 MG. The system is connected to the SEWD water treatment plant via a 42-inch diameter transmission main. Water is distributed through 18-, 20-, and 24-inch diameter transmission mains running east-west and 14-, 20-, and 27-inch diameter mains running north-south. The remainder of the system consists primarily of lines with diameters of 12 inches or less.

e. *South Stockton Storage and Distribution System*

The South Stockton water system pumps from groundwater wells and receives surface water from the SEWD WTP, supplied in large part by the DWTP. There are seven active groundwater wells with pump design flows ranging from 900 to 2,500 gpm, and the South Stockton Aqueduct which can supply surface water from the Stockton East Water District Water Treatment Plant (SEWD WTP). The entire system is one pressure zone with the lowest elevation (5 feet above mean sea level) on the western side of the system and the highest elevation (30 feet above mean sea level) on the eastern side of the system. Additionally, there are two 3 MG tanks located near the Weston Ranch Subdivision.

4. Water Quality

The Delta Water Supply Project (DWSP) receives water from the San Joaquin River and provides a supplemental water supply to meet present and future water

needs. The initial phase of the project is complete and includes a 30 mgd water treatment plant that uses ozone and pressure-membrane filtration processes to provide the COSMA with high-quality drinking water.

The Stockton East Water District (SEWD) receives water from three sources: Calaveras River via the New Hogan Reservoir, Stanislaus River via the New Melones Reservoir, and Oakdale Irrigation District (OID)/South San Joaquin Irrigation District (SSJID) water via the New Melones Reservoir. The treatment plant uses coagulation, flocculation, sedimentation, filtration, and disinfection processes. Granular activated carbon is used to remove organic contaminants and control taste and odor problems, and chlorine gas is used for disinfection.

SEWD conveys surface water diverted from the Calaveras and Stanislaus Rivers for treatment and distribution to the three water purveyors within COSMA. Groundwater withdrawn by area purveyors is of relatively good quality. Data available indicate the following:

- Hardness as calcium bicarbonate (CaCO3) ranges from 120 to 350 milligrams per liter (mg/L)
- Turbidity ranges from <0.5 to 1.8 nephelometric turbidity unit (NTU)
- Chloride ranges from 6.2 to 120 mg/L
- Arsenic ranges from <2.0 to 7.4 micrograms per liter (µg/L)
- All metal concentrations are at or below the maximum contaminant level (MCL) or the secondary MCL.

Arsenic is a naturally occurring element and its presence can be traced back to geologic deposits. These natural deposits of arsenic can be found throughout the United States and are common in New England and the southwest. Groundwater that flows over these deposits may become contaminated with arsenic, which then makes its way into public and private drinking water wells. The DPH adopted a new maximum contaminant level (MCL) standard of 10 micrograms per liter (µg/L) in 2008. On July 1, 2014, DPH transferred drinking water programs to the responsibility of the State Water Resources Control Board (SWRCB), including the regulation of contaminant levels. According to the most recent Drinking Water Quality Report (December 2014), average arsenic levels ranged from <2.0 µg/L to 7.4 µg/L, well below the State MCL.

5. Urban Water Management Planning

California's Urban Water Management Planning Act was adopted in 1983 and has been modified over the years in response to the State's water shortages, droughts, and other factors. The Act became part of the California Water Code (Division 6, Part 2.6, Sections 10610 through 10656) with the passage of Assembly Bill 797 during the 1983-1984 regular session of the California legislature. The Act was amended in November 2009 with the adoption of the Water Conservation Act

or SBX 7-7 and was most recently amended in 2014. The Act requires every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to adopt and submit an Urban Water Management Plan (UWMP) every five years to the California Department of Water Resources (DWR). The Act calls for all affected suppliers to submit a 2015 UWMP update to DWR by July 1, 2016, to maintain eligibility for State-administered water grants or loans.

Within the Stockton Metropolitan Area, three water suppliers have developed 2015 UWMP updates: COSMUD and Cal Water as retail suppliers and SEWD as a wholesale supplier. San Joaquin County Maintenance Districts supply water for two unincorporated pockets, Lincoln Village and Colonial Heights; but the County has not completed a 2015 UWMP update for these areas.

As part of the UWMP update process, suppliers must include forecasts of population growth within their service areas. Table 5-16 show the population growth assumptions used in the COSMUD and Cal Water UMWDs (population in the SJCMDs is assumed to remain static). As Table 5-16 shows, COSMUD and Cal Water account for the vast majority of the COSMA population. The COSMUD growth assumption equates to an annual growth rate of 1.3 percent through 2040, which is consistent with SJCOG's forecast for Stockton. The Cal Water estimate assumes an annual increase of 0.4 percent through 2040 and no population increase is expected for the SJCMD service areas. The Cal Water assumption reflects the limited opportunities for new development in its service area, while the SJCMD estimate recognizes that the Lincoln Village and Colonial Heights neighborhoods are built out. The combined 2040 service area population of 431,800 is essentially the same as the SJCOG forecast for Stockton.

TABLE 5-16: URBAN WATER MANAGEMENT PLAN POPULATION ASSUMPTIONS 2015 - 2040

Retail Suppliers	2015	2020	2025	2030	2035	2040
COSMUD	170,417	181,862	194,076	207,110	221,019	235,862
Cal Water	170,414	173,676	177,038	180,504	184,079	187,766
SJCMDs	8,184	8,184	8,184	8,184	8,184	8,184
Total Population	**349,015**	**363,722**	**379,298**	**395,798**	**413,282**	**431,812**

Source: City of Stockton, Urban Water Management Plan, July 2016.

a. Water Use and Future Demand

An essential function of the UWMPs for suppliers in COSMA is the estimation of potential water demand for urban uses. Table 5-17 summarizes the demand assumptions by use type as included in the COSMUD and Cal Water 2015 UWMPs. Generally, the demand trends mirror the population growth assumptions shown in Table 5-16. In addition, the projected demand is similar to the demand projected within Stockton's SOI based on the General Plan land use map: a total demand of 66.3 mgd, or about 74,315 acre-feet per year (City of

Stockton 2040 General Plan Update and Utility Master Plan Supplements Draft EIR, 2018).

As Table 5-17 shows, approximately half of the overall demand for water is projected to be generated by single-family residential development (also see Figure 5-11). Table 5-17 also shows that the COSMUD demand will expand at a higher rate than Cal Water demand, with SJCMD demand remaining static. Figure 5-12 shows the relative share of growth by supplier.

TABLE 5-17: URBAN WATER MANAGEMENT PLAN EXISTING AND PROJECTED DEMAND
ACRE FEET PER YEAR
2015-2040

Supplier / Use Type	2015	2020	2025	2030	2035	2040
COSMUD						
Single-Family	13,764	16,818	17,948	19,162	20,468	21,871
Multi-Family	2,854	1,614	1,716	1,826	1,944	2,071
Commercial	2,553	2,869	3,043	3,230	3,430	3,645
Industrial	723	683	729	777	830	885
Institutional/Governmental	1,099	5,328	5,686	6,067	6,475	6,910
Landscape	2,152	3,611	3,853	4,112	4,388	4,683
Other	1,476	1,476	1,476	1,476	1,476	1,476
Losses	1,699	2,256	2,406	2,566	2,739	2,923
Subtotal	**26,320**	**34,655**	**36,857**	**39,216**	**41,750**	**44,464**
Cal Water						
Single-Family	10,127	15,124	15,107	15,167	15,266	15,396
Multi-Family	1,491	1,901	1,898	1,929	1,973	2,032
Commercial	4,993	5,861	5,934	6,031	6,123	6,225
Industrial	2,358	2,442	2,442	2,442	2,442	2,442
Institutional/Governmental	1,507	2,653	2,689	2,727	2,767	2,809
Other	33	66	76	87	99	113
Losses	66	1,595	1,626	1,658	1,690	1,723
Subtotal	**20,575**	**29,642**	**29,772**	**30,041**	**30,360**	**30,740**
SJCMDs						
Single-Family	1,476	1,476	1,476	1,476	1,476	1,476
Subtotal	**1,476**	**1,476**	**1,476**	**1,476**	**1,476**	**1,476**
Total						
Single-Family	25,367	33,418	34,531	35,805	37,210	38,743
Multi-Family	4,345	3,515	3,614	3,755	3,917	4,103
Commercial	7,546	8,730	8,977	9,261	9,553	9,870
Industrial	3,081	3,125	3,171	3,219	3,272	3,327
Institutional/Governmental	2,606	7,981	8,375	8,794	9,242	9,719
Landscape	2,152	3,611	3,853	4,112	4,388	4,683
Other	1,509	1,542	1,552	1,563	1,575	1,589
Losses	1,765	3,851	4,032	4,224	4,429	4,646
Grand Total	**48,371**	**65,773**	**68,105**	**70,733**	**73,586**	**76,680**

Source: City of Stockton, Urban Water Management Plan, July 2016.

FIGURE 5-11: EXISTING AND PROJECTED WATER DEMAND BY USE TYPE
2015 - 2040

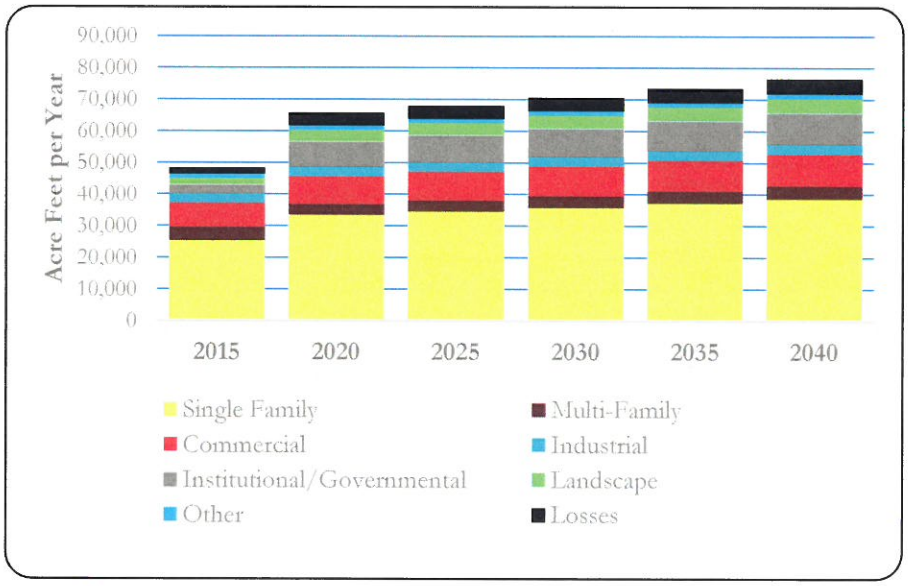
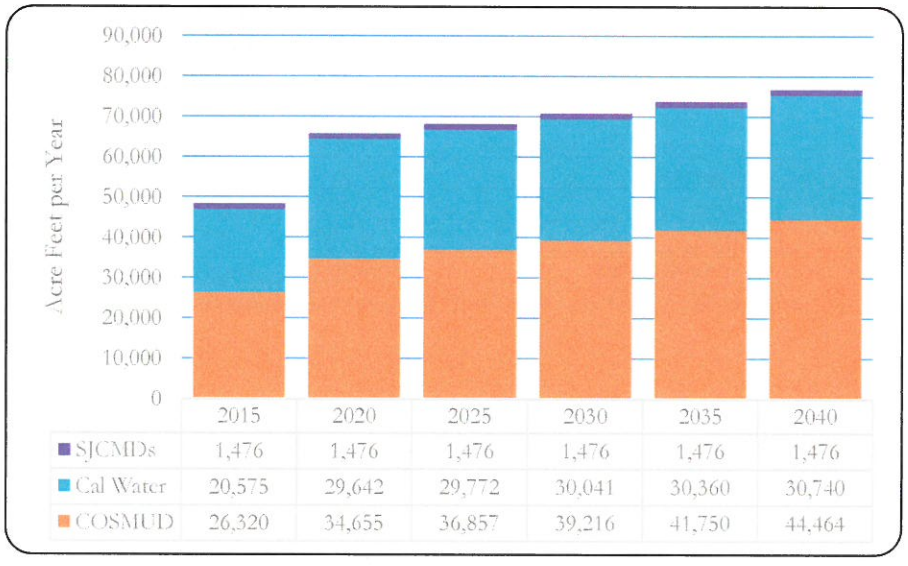


FIGURE 5-12: EXISTING AND PROJECTED WATER DEMAND BY WATER SUPPLIER
2015 – 2040



	2015	2020	2025	2030	2035	2040
SJCMDs	1,476	1,476	1,476	1,476	1,476	1,476
Cal Water	20,575	29,642	29,772	30,041	30,360	30,740
COSMUD	26,320	34,655	36,857	39,216	41,750	44,464

b. Water Supply

The 2015 UWMPs for COSMUD, Cal Water, and SEWD include assessments of the sources of water that each supplier is expected to rely on through 2040. The UWMPs categorize the supplies as either purchased water, surface water, or groundwater. In the case of local suppliers, the purchased water is from either SEWD, which relies primarily on surface supplies, or the DWSP. Table 5-18 summarizes the reasonably available supply by type for each supplier in the SOI through 2040.

TABLE 5-18: URBAN WATER MANAGEMENT PLAN REASONABLY AVAILABLE SUPPLY
ACRE FEET PER YEAR
2020-2040

Water Supplier	2020	2025	2030	2035	2040
COSMUD					
Purchased water (from SEWD)	6,000	6,000	6,000	6,000	6,000
Purchased water (DWSP intake)	6,500	13,000	13,000	13,000	13,000
Groundwater (Eastern SJ Subbasin)	23,100	23,100	23,100	23,100	23,100
Surface water (DWSP Intake)	33,600	33,600	33,600	50,000	50,000
Subtotal	**69,200**	**75,700**	**75,700**	**92,100**	**92,100**
Cal Water					
Purchased water (from SEWD)	24,000	24,000	24,000	24,000	24,000
Groundwater	5,642	5,772	6,040	6,361	6,740
Subtotal	**29,642**	**29,772**	**30,040**	**30,361**	**30,740**
SJCMDs					
Purchased water (from SEWD)	1,476	1,476	1,476	1,476	1,476
Subtotal	**1,476**	**1,476**	**1,476**	**1,476**	**1,476**
Total					
Purchased water	36,500	43,000	43,000	43,000	43,000
Groundwater	28,742	28,872	29,140	29,461	29,840
Surface water	33,600	33,600	33,600	50,000	50,000
Total	**98,842**	**105,472**	**105,740**	**122,461**	**122,840**

Source: City of Stockton, Urban Water Management Plan, July 2016.

c. Other Water Supply Sources (Treated Water and Water Transfers)

In January 2008, the City executed a 40-year contract with the Woodbridge Irrigation District (WID) for 6,500 acre feet per year initially and up to 13,000 acre feet per year. The WID supply will become available to the City as WID-served agricultural lands in the northern part of the SOI are annexed to Stockton. This water will be treated at the DWSP Water Treatment Plant (WTP). Additional potable surface water transfer supplies would be diverted for treatment at the SEWD WTP or the DWSP WTP. Water transfers would require mutually agreeable contract terms between the City and another entity transferring water and would require approval from DWR. Water purchases, treatment facilities,

and conveyance infrastructure would be funded locally through a combination of rates and fees. Timing of water transfers would coincide with water demands such that they do not outpace current supplies through SEWD or the City's water rights.

Supply-Demand Comparison

Table 5-19 shows the relationship between the demand totals described in Table 5-17 and the supply totals described in Table 5-18. As it demonstrates, according to the UWMPs prepared for COSMUD, Cal Water, and SEWD, the identified supplies far exceed demand associated with projected growth in the SOI. This is attributable to the fact that the City of Stockton has secured water supply rights, largely through the DWSP, that address the potential for development beyond the current SOI.

As indicated above, the projected demand within Stockton's SOI based on the General Plan land use map is lower than projected in the UWMPs; therefore, the General Plan land use map, which was updated after the UWMPs were prepared, would not change this outcome. (City of Stockton 2040 General Plan Update and Utility Master Plan Supplements Draft EIR, 2018)

TABLE 5-19: URBAN WATER MANAGEMENT SUPPLY/DEMAND COMPARISON
ACRE FEET PER YEAR
2020-2040

		Water Supplier			
Year	Supply/Demand	COSMUD	Cal Water	SJCMDs	Total
2020	Supply	69,200	29,642	1,476	100,318
	Demand	34,655	29,642	1,476	65,773
2025	Supply	75,700	29,772	1,476	106,948
	Demand	36,857	29,772	1,476	68,105
2030	Supply	75,700	30,040	1,476	107,216
	Demand	39,216	30,041	1,476	70,733
2035	Supply	92,100	30,361	1,476	123,937
	Demand	41,750	30,360	1,476	73,586
2040	Supply	92,100	30,740	1,476	124,316
	Demand	44,464	30,740	1,476	76,680

Sources: City of Stockton Draft 2015 UWMP, May 2016; Cal Water Draft 2015 UWMP, April 2016; SEWD Draft 2015 UWMP, June 2016.

6. Groundwater Management

The City is a member of the Eastern San Joaquin County Groundwater Basin Authority (GBA), which was established in 2001 as a joint powers authority to collectively develop locally supported projects to strengthen water supply

Stockton East Water District, there is more than sufficient water available to support projected development within the SOI.

D. *WASTEWATER COLLECTION AND TREATMENT*

The City's wastewater collection and treatment facilities consist of the Stockton Regional Wastewater Control Facility (RWCF) and the City of Stockton Wastewater Collection System Facilities. The RWCF provides primary, secondary, and tertiary treatment of municipal wastewater from throughout the city. The RWCF has a designed flow capacity of 55 mgd and average daily flow rate of 27 mgd in 2017. Treated effluent from the RWCF is dechlorinated and discharged to the San Joaquin River. (NPDES Permit).

The City's sanitary sewer collection system is divided into 14 designated sub-areas or "systems." Pump stations are located throughout the city and are integral to the wastewater collection system. Most of the pump stations discharge to pressure sewers that convey flow under pressure either directly to the RWCF or to a downstream gravity sewer.

1. Wastewater Treatment Plant Permitting

The Stockton RWCF effluent is currently regulated by Central Valley Regional Water Quality Control Board (CVRWQCB) Order No. R5-2015-0142, NPDES CA0079138. The primary regulating document for the operation of the City wastewater collection and treatment facilities is the National Pollutant Discharge Elimination System (NPDES) permit for the RWCF. The NPDES permit incorporates a wide range of regulatory requirements, including federal and State wastewater discharge permitting requirements, water quality standards and effluent limits, collection and treatment facility operational requirements, and treatment facility monitoring requirements.

The Stockton RWCF is currently operating under a NPDES permit that contains strict discharge requirements. These requirements are part of a regional and statewide trend toward much more restrictive effluent discharge limitations. Major elements of the tentative order not found in the previous order include, but are not necessarily limited to, the following:

- Stringent, Title 22-based effluent limits for total suspended solids (TSS), turbidity, and total coliform.
- Stringent effluent limits for trihalomethanes (THMS), including chloroform, bromodichloromethane (BDCM), and dibromochloromethane (DBCM).
- Stringent effluent limits for numerous trace toxics, including copper, cyanide, and numerous trace organics and pesticides.
- A stringent total annual mass discharge limitation for mercury.

- Year-round ammonia limits that previously only applied to the dry season months of April through October.
- Significantly expanded effluent, receiving water, and groundwater monitoring requirements.
- Extensive requirements for studies examining the presence and possible control options for various trace toxic constituents and total dissolved solids (TDS) in the RWCF effluent.

Several new permit limits may present significant compliance issues for the RWCF. However, the City will operate the RWCF to achieve compliance with all applicable NPDES limits. The City is currently underway with a project to modify the RWCF to meet the permit requirements, including:

- Demolition of certain treatment process components and buildings.
- Rehabilitation and repurposing of some existing components and buildings.
- Construction of new treatment process components and buildings.

Existing RWCF facilities will remain in operation during construction of new and rehabilitated facilities to ensure continual wastewater treatment services. The City will continue to comply with federal and State water quality, waste discharge, and total maximum daily load standards defined under the California Water Act (CWA). Buildout of the SOI would potentially affect the quantity of pollutant loadings to receiving waters. However, the City is served by a comprehensive sanitary sewer system, and no untreated wastewater would be discharged to surface water or groundwater resources. Therefore, no exceedance of CVRWQCB wastewater treatment requirements are anticipated.

2. Existing Wastewater Treatment Plant Treatment Operations

The Stockton RWCF is located north of Highway 4 on both sides of the San Joaquin River. The primary and secondary treatment facilities are located on the east side of the river, while secondary polishing facilities (consisting of 630 acres of oxidation ponds plus dissolved air flotation facilities), filtration facilities, and disinfection facilities are located on the west side of the river. The RWCF includes filtration facilities to meet Title 22-based requirements, including addition of nitrifying biotowers to the tertiary treatment facilities and an effluent polishing wetland.

The City of Stockton sanitary sewer collection system is divided into 14 designated sub-areas or "systems," as shown on Figure 5-13. Systems 1 through 7 have existed for at least 15 years, and encompass the majority of the city. Systems 8 through 10 and 12 through 15 are less than 15 years old. These newer systems serve the southern and northern areas of the city and include lands outside the city boundary.

Wastewater pumping stations are located throughout the city and are integral to the wastewater collection system (see Figure 5-14). Most of the pump stations discharge to pressure sewers (force mains) that convey flow under pressure either directly to the RWCF or to a downstream gravity sewer.

3. Wastewater Quality

Primary and secondary solids are treated by anaerobic digestion, dewatered, and disposed of off site. Effluent is discharged into the San Joaquin River adjacent to the Stockton RWCF. The City plans to continue discharging to the San Joaquin River to offset withdrawal of raw water from the Delta for treatment and potable use as permitted through the Delta Water Supply Project (DWSP). The California Water Code (Section 1485) allows any municipality disposing of treated wastewater into the San Joaquin River to seek a water right to divert a like amount of water, less losses, from the river or Delta downstream of the point of the wastewater discharge. Treated Delta water will be used in place of the City's existing water rights permit (SWRCB permit #21176).

Ambient water quality in the San Joaquin River (within the Delta) is formally designated under the Clean Water Act's (Section 303[d]) list of water quality limited segments as being impaired for agricultural pollutants/stressors/ indicators. In the future, the effluent limits for various pollutants from the RWCF could change based on TMDL studies. These pollutants include carbonaceous biochemical oxygen demand, mercury, DDT, endrin aldehyde, lindane, diazinon, and chlorpyrifos. The RWCF will be required to remain in compliance with the CVRWQCB's limits for the San Joaquin River.

FIGURE 5-13: SEWER SYSTEM BOUNDARIES

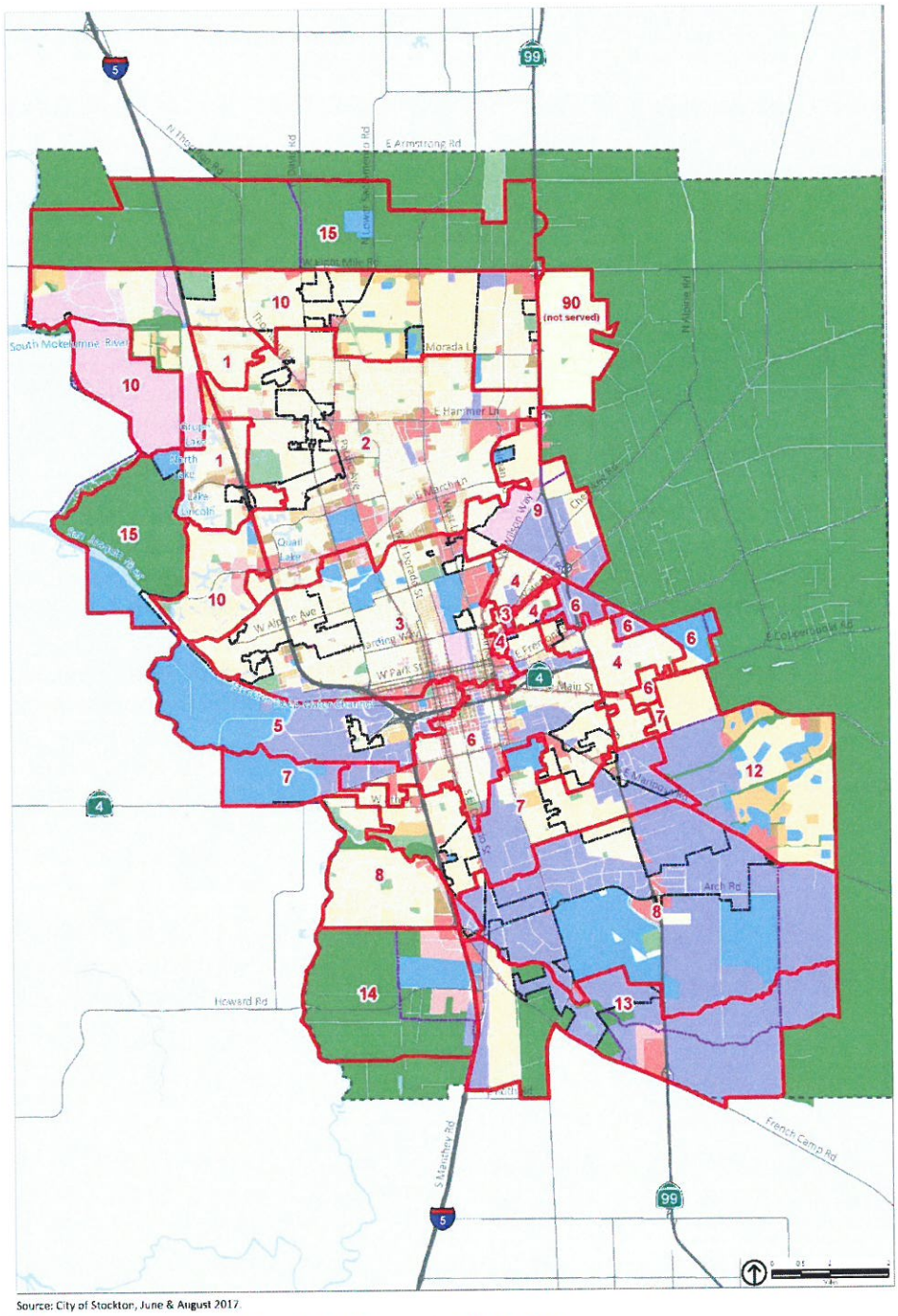
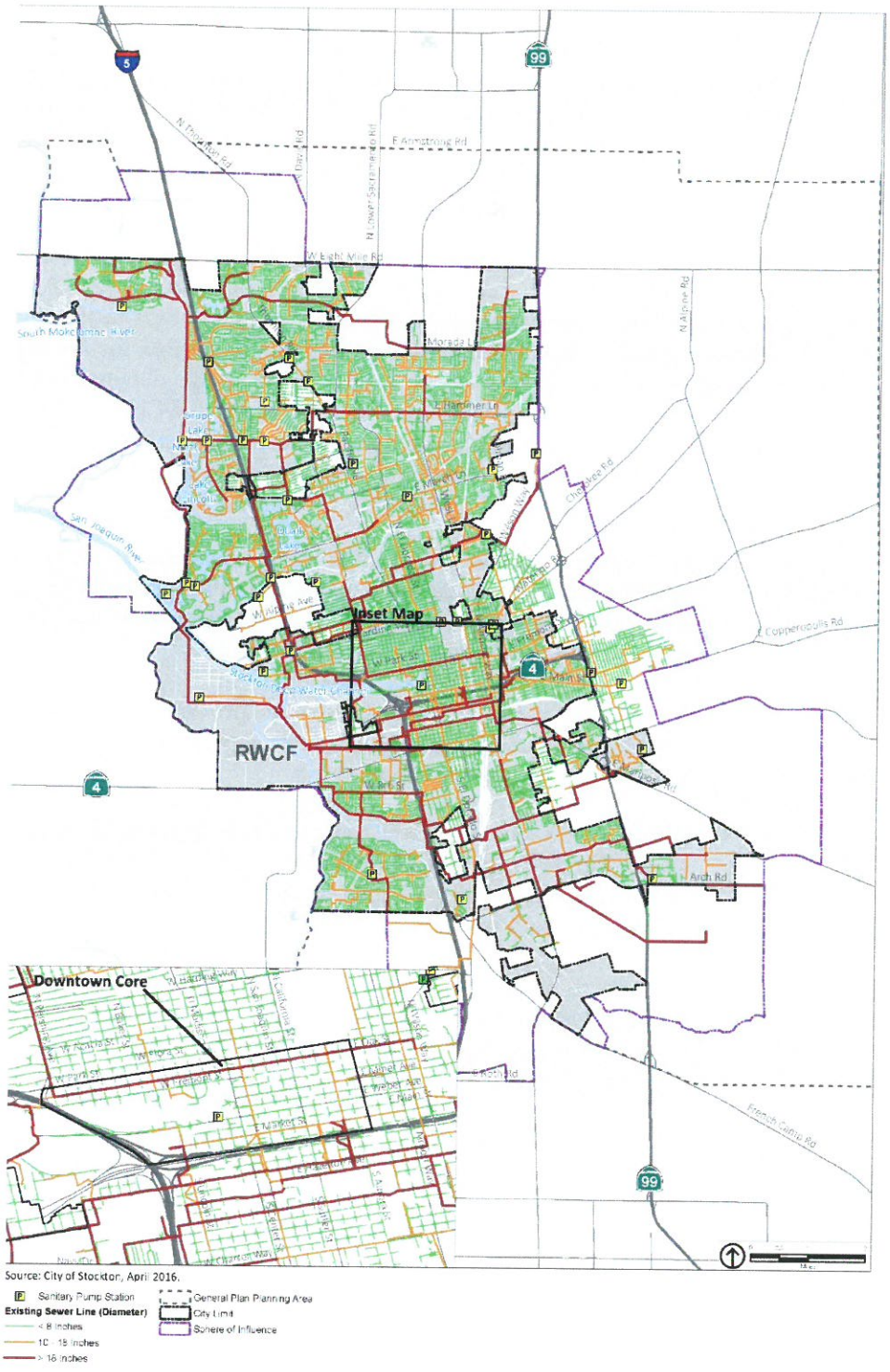


FIGURE 5-14: SEWER SYSTEM FACILITIES



4. Future Wastewater Treatment Needs

The August 2011 RWCF CIEMP is the most recent wastewater planning document that evaluated future flow and loading conditions, regulatory requirements, and treatment plant expansion alternatives. The CIEMP states that wastewater flows dropped between 2006 and 2010 and provides a new projected flow of 49.3 mgd in 2035. The current permitted capacity of the RWCF is 55 mgd. Upon completion, CIEMP projects will increase the reliable capacity of the liquid and solid treatment process close to the permitted RWCF capacity.

The projected growth needs for wastewater collection and treatment within the SOI can be met with the same technologies currently used at the RWCF. The anticipated improvements needed beyond growth in the SOI in the future are briefly described below. Additional land area will be needed for the expanded treatment works; however, it is possible this land could be obtained in whole or in part by converting a relatively small portion of the RWCF's existing ponds. Expansion and rehabilitation of pumping, preliminary, primary, secondary, and tertiary treatment facilities will be required to accommodate projected peak hour wet weather flow conditions. The CIEMP outlines the following:

- Headworks facilities will need to be rehabilitated and expanded to provide additional space for redundant equipment, eliminate flooding issues, improve worker health and safety conditions, and address septage issues in the pipeline leading to the Headworks.

- An auxiliary pump station is needed to provide a temporary bypass during Headworks improvements and a permanent overflow pump station during peak wet weather flows.

- Although the 45.4 mgd firm capacity of the primary clarifiers is well above the 34 mgd maximum month loading, additional year-round clarifier capacity must be added to reach the projected average daily maximum month flow of 52 mgd in 2030.

- In order to meet projected maximum flow capacity, biotowers require rehabilitation, additional clarifier capacity is needed, an obsolete pump station should be replaced, and one additional pump station should be constructed.

- The following tertiary treatment facilities additions and expansions will be needed to meet currently anticipated permit requirements: reconfigured wetlands and nitrifying biotower (NBT) feed to allow for denitrification in the wetlands, replacement of the existing chlorine gas system with a safer bulk hypochlorite system, and the construction of a

pump station, pipeline, and a third NBT in order to meet the ammonia discharge limit during periods of extremely cold weather.

- A new effluent disinfection system will be needed if the dilution credit is discontinued.

- Expansion of the plant's existing solids handling facilities will be required to accommodate the larger quantities of solids that will be produced by the liquid stream processes.

Advanced treatment facilities may be required for all or part of the plant's effluent. Central Valley Regional Water Quality Control Board (CVRWQCB) discharge requirements for TDS and/or priority pollutants may be imposed that cannot be met with the existing treatment facilities or through a program of source control. The CIEMP outlines a number of strategies to address TDS limits, including working with regulatory agencies to find regional solutions and to adopt reasonable limits; increasing the usage of surface water to reduce salinity in the raw wastewater entering the plant; developing a source control plan for industries and households that may include a ban on water softeners; or the future installation of a membrane filtration and reverse osmosis system. A reverse osmosis system is capable of removing a number of toxic compounds and reducing the TDS of the effluent. The membrane filtration system serves as a pretreatment system to reverse osmosis to remove larger particles and reduce the costs of the reverse osmosis step. The City will continue to plan for expansion of the RWCF as required to meet the needs of additional planned growth and discharge requirements.

5. Planned Wastewater Treatment Expansion

In 2010, the City Council approved a five-year tiered wastewater rate increase that would provide funding to ensure compliance with bond covenants and support scheduled capital improvement projects in the Wastewater Utility. These rate adjustments began in 2015 with a 1.8 percent increase. In 2012, the Capital Improvement and Energy Management Plan (CIEMP) was approved and staff began a phased upgrade plan for the Regional Wastewater Control Facility.

In 2014, the Central Valley Regional Water Quality Control Board issued a new permit for the plant with stringent new regulations for nitrate. This standard of treatment was not envisioned as part of the currently approved CIEMP, but nitrate removal is being addressed as part of the upgrade to the RWCF

The current treatment facilities will remain in service until such time as additional facilities are needed to accommodate the projected wastewater flows and loads. These facilities will also be required to provide higher levels of treatment that will

be needed to meet anticipated discharge requirements. Constituents that may trigger additional treatment requirements include nitrogen, THMs (chlorine disinfection byproducts), and total dissolved solids, chlorides and sulfates that contribute to salinity. (CIEMP, 2011). The City's facility improvements and expansions (Headworks, pump stations, NBTs, and wetlands) will be required to increase reliable capacity to the permitted RWCF capacity of 55 mgd and accommodate the projected BOD loading conditions in 2035.

6. Wastewater Collection and Treatment Determinations

The City of Stockton RWCF has met and expects to continue to meet annual wastewater collection and treatment demands within the SOI in compliance with the Central Valley Regional Water Quality Control Board and NPDES permit. Growth in the SOI will increase the overall demand on the wastewater collection and treatment facilities in the city. Future growth in accordance with buildout of the SOI is expected to generate the typical amount of treatment needs associated with the type of urban development that has occurred in the past. According to the Regional Wastewater Control Facility Master Plan, the City's wastewater treatment facilities can support a population of about 380,000 within the SOI, which is within the 10-year sphere horizon of the SOI. The City anticipates that existing treatment facilities will continue to be in service until such time as upgrades and new facilities are needed to ensure that wastewater collection and treatment match urban growth.

Phasing and timing of additional facilities to accommodate additional growth has not been finalized. The City's 2035 Wastewater Master Plan and its 2018 Supplement do, however, specify improvement requirements for expansion into currently unserved areas. These facilities will provide higher levels of treatment, which will also meet anticipated discharge requirements. Facility expansions are planned to accommodate the projected needs at buildout of the SOI.

E. *STORMWATER DRAINAGE/FLOOD PROTECTION*

The City of Stockton SOI is situated just east of the Sacramento-San Joaquin Delta, a low-lying region of sloughs and channels connecting local waterways with the Suisan Bay and the San Francisco Bay. The city and surrounding areas with the SOI depend on creeks, rivers, and sloughs to collect and convey storm runoff to the San Joaquin River and the Delta. The primary watercourses that drain the SOI include: San Joaquin River, Bear Creek, Mosher Slough, Five Mile Slough, Fourteen Mile Slough, Calaveras River and Stockton Diverting Canal, Smith Canal, and French Camp and Walker Sloughs. Most storm drains and pump stations within the service area have adequate capacity to collect stormwater drainage.

1. Levees

Flood potential in the city and SOI prior to 1988 was considered significant and identified in the 100-year floodplain. The Locally Constructed Flood Control Project of the San Joaquin Area Flood Control Agency (SJAFCA) sponsored the construction of flood protection facilities on Bear Creek, Pixley Slough, Upper Mosher Creek, the Mosher Diversion, Little Bear Creek, Mosher Slough, the Calaveras River, Stockton Diverting Canal and Mormon Slough. These projects provided FEMA 100-year protection to large parts of the city and SOI. As a result of the SJAFCA work, FEMA reissued the flood maps for the city and SOI showing that the land had been removed from the floodplain. Flooding still remains an issue in floodplain areas in the SOI that include Delta tracts, land along French Camp, Walker Sloughs, Duck Creek, North Little Johns Creek, and Smith Canal. These areas are subject to ongoing review.

Periodic levee reconstruction and active levee maintenance programs help to control flood risks. However, potential levee failure is considered an ongoing threat within the SOI. Levees are subject to a variety of factors that contribute to site-specific structural failure, including seismic activity, erosion, damage from vegetation, and rodents. FEMA has certified and accepted the levees within the city as meeting minimum standards for flood control. Through its remapping program, FEMA requires local agencies to collect technical data to continue levee certification. To assist local agencies in documenting compliance with current federal standards, FEMA established Provisionally Accredited Levee (PAL) agreements. FEMA designates a levee as a PAL when there is sufficient evidence to conditionally show that a levee will provide a 100-year level of flood protection. SJAFCA has prepared and submitted PAL compliance documentation in the form of Letters of Map Revision (LOMR) to satisfy FEMA's levee accreditation. Below is the list of levees for which LOMRs were submitted to FEMA:

- Levees east of Shima Tract (P375, P378 and P379): Submitted to FEMA April 28, 2009, and accredited by FEMA December 30, 2009.
- Fourteen Mile Slough Levee, north bank, east of I-5 (P124): Submitted to FEMA August 20, 2009, and accredited by FEMA June 2, 2010.
- Lower Calaveras River (P454, P356, P357, P140, P1401): Submitted to FEMA March 26, 2010, and accredited by FEMA January 21, 2011.
- Reclamation District 1614 (P359): Accredited by FEMA January 21, 2011.
- Walker Slough: Submitted to FEMA March 26, 2010, and accredited by FEMA January 21, 2011.

The State has imposed new regulatory requirements for 200-year flood protection.

2. Dams

New Hogan Dam on the Calaveras River upstream of the city is an earth and rockfill dam owned by the Corps of Engineers. The reservoir behind the dam holds 325,000 AF of water that could cause five to ten feet of flooding in large portions of the SOI in the event of a catastrophic dam failure. New Melones Dam on the Stanislaus River and Camanche Dam on the Mokelumne River, also of earth and rock fill, would flood the SOI to significant depths if either of these dams were to fail. The Office of Emergency Services maintains inundation maps for each of these dams and others in the San Joaquin River watershed, and a dam failure plan is included in the City's Emergency Operations Plan.

3. Stormwater Management

In 2009, the City of Stockton adopted a Stormwater Management Plan (SWMP) that covers the jurisdictional limits of the City of Stockton and the urbanized areas of San Joaquin County. The SWMP, which includes existing and enhanced program control measures, is the City's strategy for controlling the discharge of pollutants from the municipal storm drain system to the maximum extent practicable. An increasingly important element to consider is the protection of the Delta through the development and implementation of Total Maximum Daily Loads (TMDLs). The SWMP includes relevant TMDL needs/requirements. As such, the SWMP addresses specific pollutants of concern that have been identified as impacting or potentially impacting local receiving water quality, including that of the Delta in the Stockton Urbanized Area (SUA). The pollutants/conditions of concern that are being addressed through the implementation of special studies include pesticides, pathogens, mercury, and low dissolved oxygen. The special studies are designed to characterize the fate and transport of these pollutants and to assist with source identification and identification of control measures. To address the core objectives and pollutants of concern, the SWMP incorporates a series of commitments and performance standards and, as a result, provides for a long-term, comprehensive, and multidisciplinary effort by the City to achieve water quality standards and protect beneficial uses.

Stormwater capture is regulated by standards and criteria related to the computation of runoff, facility design, and quality of runoff entering streams. Maintenance and construction within streams requires a Streambed Alteration Agreement with the California Department of Fish & Game (Sections 1601-1603 of the California Fish & Game Code). If implementation of a drainage plan affects wetlands or waters of the United States, a Corps of Engineers Section 404 permit

under the Clean Water Act may be required. Other regulatory agencies may have jurisdiction if drainage facility construction and operation impact the habitat of endangered species, such as the U.S. Fish & Wildlife Service. Requirements include establishing TMDL standards, the Endangered Species Act, and Section 401 Water Quality Certification.

The city and surrounding areas within the SOI depend on creeks, rivers, and sloughs to collect and convey storm runoff to the San Joaquin River and the Delta. Typically, these streams originally had wide floodplains that stored large volumes of runoff. Over time, most streams have been confined by levees and their floodplains developed, limiting both the stream's capacity and the floodplain benefits associated with periodic flooding. The streams do, however, remain the backbone of the storm drain system and runoff collected within the city is, for the most part, pumped into one of these receiving waters.

Storm drains collect and convey runoff to the pumps that lift the runoff into one of the creeks, sloughs or rivers. Anecdotal information and City records indicate that most storm drains and pump stations have adequate capacity. Most storm drains have been constructed in accordance with the 2009 SWMP. The storm drain problems that do occur are often localized and frequently result from expanding a drainage area beyond its original design. In other cases, drains or pumps may be undersized due to inadequacies in the original design criteria. Several of these localized problem areas have been identified for more detailed study. One area with known drainage deficiencies is the unincorporated area of Boggs Tract, adjacent to the city limits near the Port.

Creek and slough watersheds are shown on Figure 5-15. Creeks, major storm drains (pipes) and storm drain pump stations are shown on Figure 5-16. The primary channels that drain the city include the following:

a. San Joaquin River

The existing 100-year flow within the San Joaquin River ranges from 16,500 cfs to 21,100 cfs. Because the watershed is so large, the local runoff generally occurs well before the peak flow arrives in the river. This provides an opportunity for the local flows to be evacuated prior to the arrival of the peak flood wave from upstream. However, according to FEMA, the Wright-Elmwood Tract, Shima Tract, and Atlas Tract are completely inundated during a 100-year storm due to lack of sufficient levee protection. No other areas within this watershed are within the current FEMA floodplain boundaries.

b. Bear Creek

Runoff collected in three major storm drains within the Bear Creek watershed, with diameters of 36, 42, and 84 inches, is pumped into Bear Creek at Interstate

5, Iron Canyon Court, and Thornton Road, respectively. Within the city, the Bear Creek channel is up to 175 feet wide and has a capacity of 7,600 cfs. Bear Creek has capacity to carry the 100-year peak runoff from city lands within its banks and has the additional capacity to carry runoff from developing lands south of Eight Mile Road. This capacity is provided by the SJAFCA Locally-Constructed Flood Control Project that increased flood protection in the Stockton Metropolitan Area. As a result of this project, FEMA mapping issued in 2002 shows that the 100-year flow is contained within the creek banks. The flood control project also included capacity for lands north to Eight Mile Road.

c. Mosher Slough

Stormwater enters Mosher Slough and Little Bear Creek through 27 pump stations located along its length. Of these, nine are major pumping facilities pumping flow from storm drains from 54 to 66 inches in diameter. There is one major pump station on Little Bear Creek. The Mosher Slough drainage basin has two regional detention basins that attenuate peak flows and are located between Highway 99 and the Union Pacific Railroad. At its outfall to Disappointment Slough (west of the city) the peak 100-year discharge is 1,140 cfs and at Thornton Road it is 780 cfs. Throughout its length, runoff is confined to the channel within the banks.

d. Five Mile Slough, Fourteen Mile Slough and Smith Canal

Five Mile Slough has nine pump stations lifting runoff from surrounding land to the slough. Four of these are considered to be major pumping facilities. Fourteen Mile Slough has nine pump stations with five of them classified as major facilities. Ten pump stations discharge to Smith Canal; three of these are major pumping facilities. Five Mile Slough, Fourteen Mile Slough and the Smith Canal carry drainage from the central part of the city. Each channel contains the 100-year runoff within its banks. Water levels in these channels are controlled by Delta water levels. The three channels serve established neighborhoods of the city and are not expected to serve any newly developing areas.

e. Calaveras River and the Stockton Diverting Canal

Sixteen storm drain pump stations discharge into the Calaveras River and the Diverting Canal. Of these, nine are considered major facilities pumping runoff from storm drains 36 to 72 inches in diameter. Most flow in the Calaveras River comes from the Stockton Diverting Canal, which discharges into the river upstream of the Union Pacific Railroad. Within the city, the Diverting Canal contains the predicted 100-year discharge of 15,000 cfs. Flood flows are contained within the channel banks along the Calaveras River and the Diverting Canal. The SJAFCA Locally-Constructed Flood Control Project included levee modifications and some limited floodwall construction to ensure that 100-year

flows would be contained. This work also extended into Mormon Slough upstream of the Diverting Canal.

f. French Camp and Walker Sloughs

French Camp Slough and Walker Slough together with their tributaries, North Littlejohn Creek, Duck Creek, and Weber Slough, drain large areas of southern Stockton including both city and county lands. Flood flows have overtopped the banks of both Walker Slough and French Camp Slough within the city. North Littlejohn Creek drains several hundred acres of city land as well as significant portions of county land. Much of the drainage is from industrial areas and the airport area. Littlejohn Creek produces flooding through most of its length in the city and in some reaches has a capacity only 40 percent of the present predicted 100-year flow. Numerous studies and analyses over the years have identified potential solutions to flooding problems, and significant stormwater drainage infrastructure has been developed to serve industrial development in the area (e.g., the NorCal Logistics Center project). This includes two on-site detention areas with pump stations and trunk lines. Further development in the Littlejohn Creek and Duck Creek drainage sheds would require similar infrastructure to protect against flooding.

g. Mormon Slough and the Stockton Deep Water Channel

Most flow from Mormon Slough is diverted to the Stockton Diverting Canal. The 100-year flow in Mormon Slough downstream of the diversion is limited to 520 cfs at the point where Mormon Slough enters the Deep Water Channel. Flow within the slough in the city is contained within the Mormon Slough banks as is flow in the Deep Water Channel.

4. Anticipated Demand and Planned Service

The City anticipates that as growth within the SOI occurs, the creeks, rivers, and sloughs mentioned above will continue to collect and convey storm runoff to the San Joaquin River and the Delta. These will remain the backbone of the storm drain system and runoff collected within the city will be, for the most part, pumped into one of these receiving waters. The City will continue to require new development in the SOI to develop storm drains to collect and convey runoff to pumps that will lift the runoff into one of the creeks, sloughs, or rivers. Outside of major development projects shown in Table 2-6, which will prepare their own separate stormwater plans, infill development under the 2040 General Plan is anticipated to require, in total, approximately 100 acre-feet of storage capacity and 88 cubic feet per second pumping capacity (City of Stockton 2040 General Plan Update and Utility Master Plan Supplements Draft EIR, 2018). New development will be required to mitigate all flood issues prior to developing, including contribution to regional flood control solutions.

5. Water Quality

Discharge water quality is governed by CVRWQCB Order No. R5-2015-0024, NPDES No. CA083470. Stormwater discharges from the Stockton urbanized area are considered significant sources of pollutants. Five Mile Slough, Mosher Slough, the Stockton Deep Water Channel, and the San Joaquin River are listed as "water quality impaired." (Central Valley Regional Water Quality Control Board, 2008-2010 303(d) List of Water Quality Limited Segments, August 4, 2010). The City adopted a Stormwater Management Plan (SWMP) in 2009. The plan includes monitoring programs, water quality programs that address pesticides, pathogens, and mercury, and outlines Best Management Practices. The design of drainage facilities is regulated by the City. Section 71 of the Department of Public Works Improvement Standards, Sanitary Sewers and Storm Sewers, and Section 77, Stormwater Basins, cover much of the design criteria with references to the County Hydrology Manual.

The current NPDES Permit (NPDES Permit Number CAS083470) was issued and adopted by the Regional Water Quality Control Board, Central Valley on April 17, 2015. All actions related to stormwater ranging from policy to construction of drainage facilities are governed by this permit. Permit requirements include controlling impacts of construction on runoff, directing material storage practices, conducting operation and maintenance activities, handling wastes and hazardous materials, controlling impacts of stormwater discharge into streams and rivers, and reducing impacts from erosion.

FIGURE 5-15: WATERSHEDS

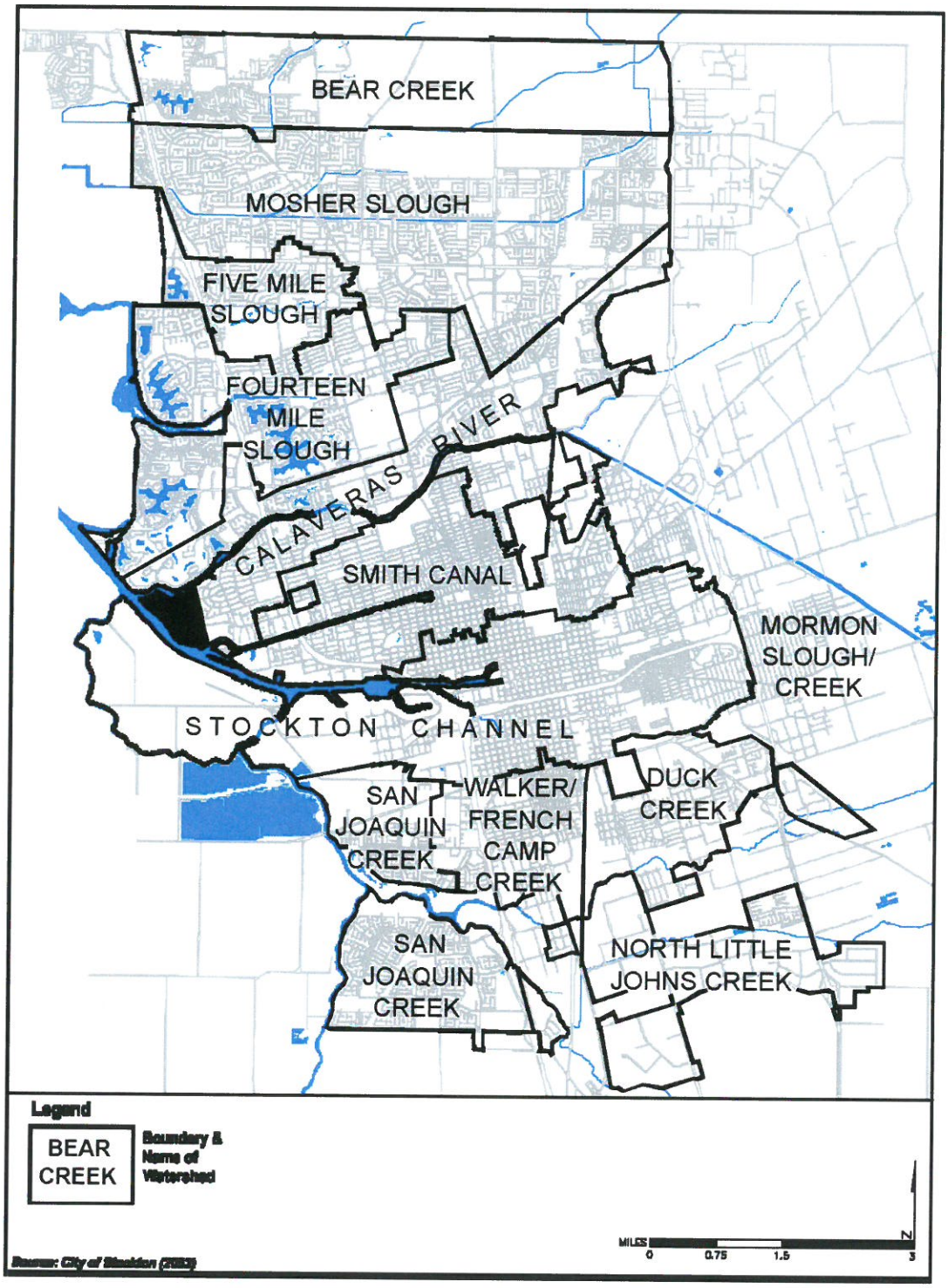
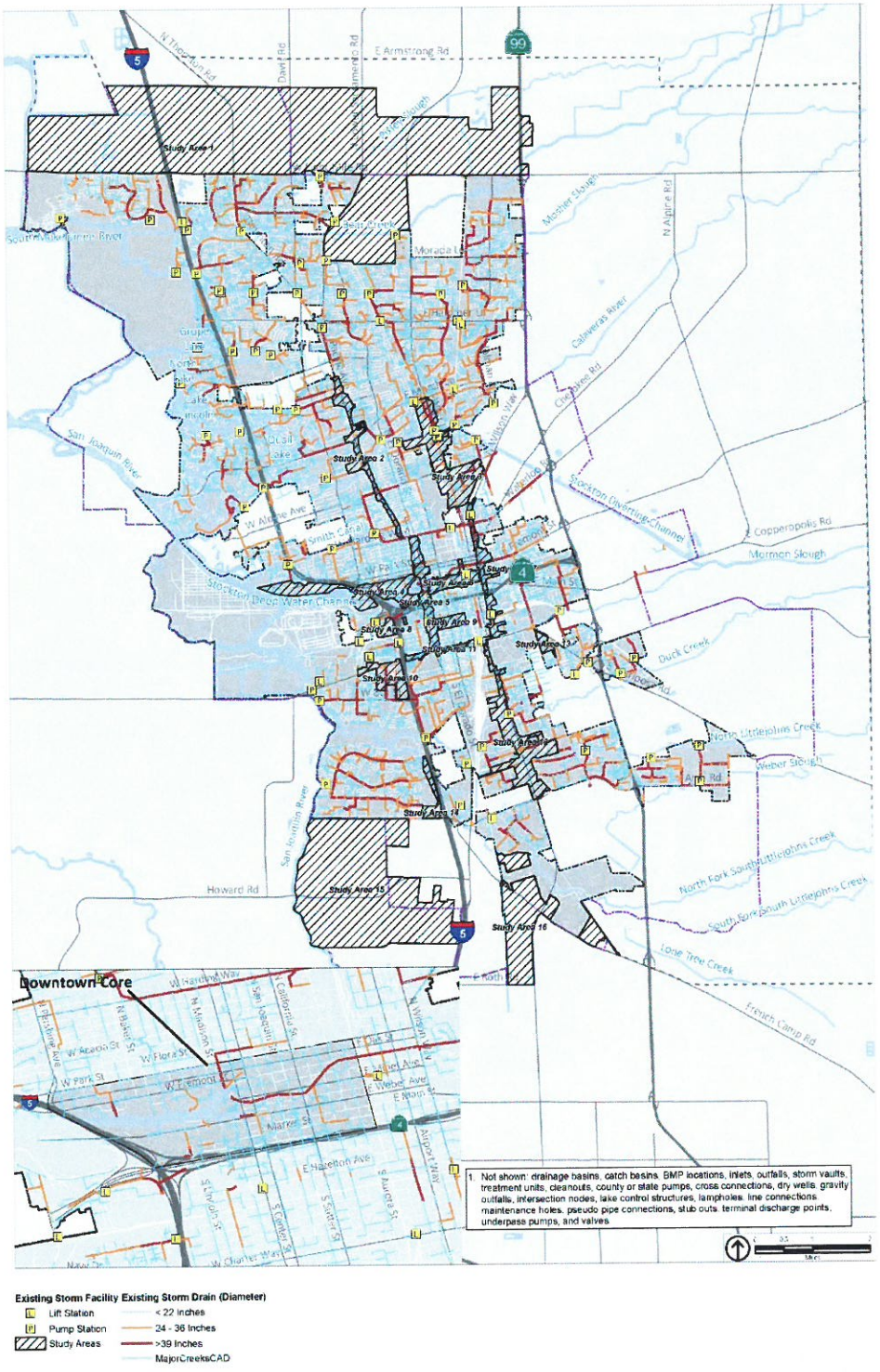


FIGURE 5-16: STORM SYSTEM FACILITIES



6. Flood Protection and Senate Bill 5

In 2007, five interrelated pieces of legislation were enacted to address the problem of flood protection and liability. The legislative package also made $5 billion in State bonds available for flood protection improvements. The Central Valley Flood Protection Act of 2008, commonly referred to as SB 5 (Senate Bill 5), contained provisions for local agencies to incorporate flood risk considerations into land use planning. This legislation primarily focused on flood requirements for the Sacramento-San Joaquin Valley within an area defined as the Sacramento-San Joaquin Hydrologic Regions, which includes the City of Stockton.

SB 5 identified the California Department of Water Resources (DWR) as the agency responsible for preparing a strategic Central Valley Flood Protection Plan by July 1, 2012. The Flood Protection Plan was primarily intended to identify necessary improvements to State flood control facilities and establish flood protection building standards where flood levels are anticipated to exceed three feet for a 200-year flood event. A 200-year flood event is generally considered a flood of a magnitude that statistically occurs once every 200 years, or has a 0.5% likelihood of occurring in any given year. SB 5 defines this as the "urban level of flood protection." The Central Valley Flood Protection Board adopted the Flood Protection Plan by the July 1, 2012 deadline. The Central Valley Flood Protection Board is a State regulatory agency charged with overseeing the flood management system in California's Central Valley.

SB 5 requires each city and county within the Sacramento-San Joaquin Valley to amend its general plan to include data and analysis from the Flood Protection Plan and goals and policies for the protection of lives and property that will reduce the risk of flood damage from a 200-year flood event. SB 5 also requires that the general plan amendment take place within 24 months of the adoption of the Flood Protection Plan. Additionally, SB 5 requires each local city and county to amend its zoning ordinance to be consistent with its general plan within 12 months of the amendment to the general plan. On the effective date of SB 5 compliance, cities and counties are required to make findings related to urban level of flood protection before taking the following actions:

- Entering into a development agreement for all types of property development
- Approving a discretionary permit or other discretionary entitlement that would result in the construction of a new building or that would result in an increase in allowed occupancy for an existing building.
- Approving a ministerial permit for all projects that would result in the construction of a new residence.

- Approving a tentative map consistent with the Subdivision Map Act for all subdivisions.
- Approving a parcel map for which a tentative parcel map is not required, consistent with the Subdivision Map Act for all subdivisions.

Before approving any of the above affected land use decisions, cities and counties shall make a finding related to urban level of flood protection based on substantial evidence in the record for one of the following:

1. That flood management facilities protect the property to the 200-year flood event standard; or
2. That the imposed conditions by a city or county on a property, development project, or subdivision are sufficient to provide the required level of flood protection; or
3. That the local flood management agency has made adequate progress on the construction of a flood protection system that will result in the required level of flood protection. Construction of the flood protection system for areas protected by State and federal levees shall be achieved by 2025; or
4. That for urban and urbanizing areas, the property in an undetermined risk area has met the urban level of flood protection based on substantial evidence in the record.

To address the requirements of SB 5, the City of Stockton prepared a 200-year floodplain map for the Stockton area from data provided by DWR (see Figure 5-17). It shows areas where flooding in excess of three feet in depth during a 200-year flood event is anticipated. The map identifies a significant portion of the western side of the city near Interstate 5 and some isolated areas in the central and eastern areas of the city as subject to inundation during a 200-year event. This includes areas that have been annexed to the city with the expectation of development. In particular, the Crystal Bay, Westlake Villages, Delta Cove, and Sanctuary projects would all require significant flood protection improvements to achieve the 200-year level of protection required by SB 5. Collectively, these projects account for over 12,000 units of residential development potential.

The western side of the city near Interstate 5 is predominantly divided into separate hydraulically controlled areas with independent levees providing flood protection. These areas are generally managed by individual reclamation districts (RDs). The 200-year flood depths in these areas generally range between 5 and 20 feet. In areas of 5 feet or less of flood depth, development compliance with SB 5 can be achieved by one or a combination of measures, including raising the site elevation with fill material, increasing building pad height, and using flood-

CHAPTER 6. FINANCIAL ABILITY OF AGENCIES TO PROVIDE SERVICES

This section of the MSR summarizes the funding mechanisms available for the provision of expanded services in Stockton to meet future needs for fire, police, water, wastewater, and stormwater infrastructure. It also provides a general overview of the City's budgetary capacity, particularly addressing its recent experience with municipal bankruptcy.

A. *DEVELOPMENT AND MAINTENANCE FEES*

The City of Stockton, Cal Water, and San Joaquin County are the primary service providers within the SOI and the responsible agencies for ensuring that funding is adequate to provide for infrastructure and services. Evaluating these issues as part of the MSR process is important to ensure new development does not overburden existing infrastructure and the ability of the City to fund services and improvements.

1. City of Stockton

The City of Stockton's 2040 General Plan requires new development to pay its fair share of the costs of public facilities and utilities needed to support additional growth. New development is also required to provide the individual connections from private uses to the City's utility system, including water, sewer, and storm drainage. The City's General Plan requires preparation of infrastructure analyses for specific plans and master development plans.

City of Stockton development impact fees are charged to fund facilities and services for police, fire, water, wastewater, and drainage systems. Other fees needed to offset impacts identified during the development application/environmental review process, such as transportation, groundwater or habitat mitigations, may also be charged to a proposed project. Stockton typically collects development impact fees on a per-dwelling-unit basis for residential uses. Fees for non-residential uses are typically collected on a per-square-foot or per-acre basis, depending on the type of fee and impact the fee is intended to offset. For example, a storm drainage fee may be based on an adjusted acreage since the impact affects the entire project site, whereas a water usage impact fee is based on built square footage. The City's Annual Fee Schedule provides a detailed summary of Stockton's development and service fee schedules for the provision of policy and fire services and water, wastewater, and drainage facilities and services.

In addition to impact fees and property taxes, Stockton receives funds for the ongoing provision of water and sewer service through connection fees and usage

fees. These fees are charged to residents and businesses throughout the city depending on the service provider. All service providers review their fees on an annual basis to ensure that they are sufficient to provide adequate levels of water, sewer, and solid waste disposal.

2. Cal Water

Cal Water charges water connection fees based on the size of development. For smaller developments and infill projects, Cal Water does not charge fees for connections or meters, provided an adequate water main is available. Where a water main is not available, Cal Water charges the development the cost of a water main extension. For larger projects, Cal Water requires a fee or dedication of property (Special Utility Fee) to provide water service. All fees charged through Cal Water are subject to the operating rules and regulations set forth by the California Public Utilities Commission.

3. San Joaquin County

San Joaquin County water districts (Colonial Heights and Lincoln Village Service Maintenance Districts) do not charge water connection fees if the parcel is currently within a district boundary. The water districts do charge an annual fee for water use as well as a consumption fee using water meters.

B. *CITY/COUNTY PROPERTY TAX AGREEMENT*

Stockton also receives revenue from property taxes from land within the city limits. Stockton has a Tax Sharing Agreement with San Joaquin County that addresses the adjustment of the allocation of property tax revenue among affected governmental agencies when a jurisdictional change occurs, such as annexation of unincorporated property into the city limits. The Agreement, which originally became effective in June 2005, specifies different tax agreements in annexation areas depending on whether or not an annexation involves detachment from a fire district. The Agreement was updated in July 2015 to include provisions that reflect specific annexations, including the Deferred Annexation Agreement for Airpark 599 project in Stockton. That agreement specifies that property taxes in the project area will be shared between the City (40 percent) and the County (60 percent).

The Annexation Agreement also includes the following exclusions:

- Annexation areas where the County receives transient occupancy tax revenues. Agreements in these areas will be individually negotiated between the County and City to address the potential TOT loss to the County;

- Areas where taxes exceed $1 million dollars. Agreements for these areas will be individually negotiated between the County and City to address the potential sales and use tax loss to the County; and
- Areas where the County owns in excess of 50 acres of land, except for Airpark 599. Annexations under these circumstances will be considered according to separately negotiated and mutually beneficial annexation and development agreements.

C. *2040 General Plan Policies*

The 2040 General Plan includes several policies related to the financing of infrastructure. These are as follows:

- **Action LU-6.1F:** Evaluate and implement adjustments to the Public Facilities Fee structure to encourage development in areas where infrastructure is already present and ensure that non-infill development pays its fair share of anticipated citywide capital facilities and operational costs.
- **Action LU-6.2B** Do not approve future annexations or City utility connections unless they are consistent with the overall goals and policies of the General Plan and do not adversely impact the City's fiscal viability, environmental resources, infrastructure and services, and quality of life.
- **Action LU-6.3A** Require development to mitigate any impacts to existing sewer, water, stormwater, street, fire station, park, or library infrastructure that would reduce service levels.
- **Action LU-6.3B** Ensure that public facilities, infrastructure, and related land area and other elements are designed and right-of-way is acquired to meet 2040 planned development requirements to avoid the need for future upsizing or expansion, unless planned as phased construction.
- **Action LU-6.3C** Coordinate, to the extent possible, upgrades and repairs to roadways with utility needs, infrastructure upgrades, and bicycle and pedestrian improvements (i.e., 'dig once').
- **Policy LU-6.5** Improve and maintain the City's fiscal health.
- **Action LU-6.5A** Require preparation of a fiscal impact analysis for large development projects and proposed annexations to ensure a full accounting of infrastructure and public service costs and to confirm whether revenue enhancement mechanisms are necessary to ensure net fiscal balance or better, and require appropriate fiscal mitigations, when

necessary, to ensure the City's ongoing fiscal health and continued viability of the City's General Fund.

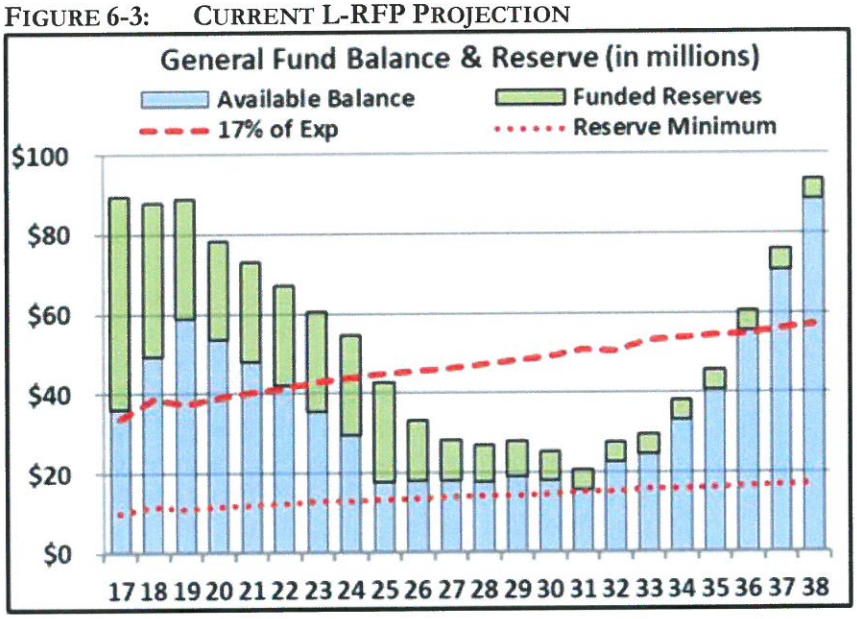
- **Action LU-6.5B** Utilize development agreements as a tool to implement public facilities financing plans and to secure fiscal mitigations and various public benefits from new development projects.
- **Action LU-6.5C** Evaluate and update all development impact fees to be consistent with the 2040 General Plan.
- **Action LU-6.5D** Continue to utilize developer fees, the City's public facilities fees, and other methods (e.g., grant funding and assessment districts) to finance public facility design, construction, operation, and maintenance.

D. *CITY OF STOCKTON PLAN OF ADJUSTMENT*

On June 28, 2012, the City of Stockton filed a petition for protection under Chapter 9 of the United States Bankruptcy Code. Through the bankruptcy process, the City developed a Plan of Adjustment to resolve its debt and other financial issues and on February 25, 2015, this plan, as approved by the courts, became effective. A number of actions were required to achieve a successful Plan of Adjustment, including restructuring of City debt, renegotiation of labor agreements, a settlement eliminating the City's obligation to provide contracted lifetime retiree medical benefits, and voter approval of Measure A, a sales tax measure that helps to fund both the bankruptcy recovery and increased police services (The Marshall Plan).

Figure 6-1 shows how the combination of these measures closed the projected gap between City revenues and expenditures over the long term. Among other adjustments, between FY 2008-09 and FY 2011-12, the City reduced total staffing levels by 30 percent. The City also projected that staffing levels, with the exception of sworn police personnel funded by Measure A, would stay level. The Marshal Plan increased police service levels from 1.16 sworn officers to 1.6 sworn officers per 1,000 residents.

FIGURE 6-3: CURRENT L-RFP PROJECTION



Source: City of Stockton, FY 2018-19 Adopted Budget:, accessed on http://www.stocktongov.com/government/departments/adminservices/budLrfp.html.

F. *DETERMINATIONS*

The City of Stockton's 2040 General Plan requires new development to pay its fair share of the costs of public facilities and utilities needed to support additional growth. Stockton receives funds for the provision of public services through State sources, development fees, property taxes, and connection and usage fees. The City reviews its fee structures on an annual basis to ensure that they provide adequate funding to cover the provision of City services. As noted above, the City would also require supplemental funding, such as a CFD, if necessary, to extend an adequate level of service to any new annexation areas.

The City's General Plan requires preparation of an infrastructure analysis for specific plans and master plans. The City of Stockton generally charges development impact fees on a per-dwelling unit basis for residential uses. Non-residential uses are generally collected on a per-square foot or per-acre basis, depending on the type of fee and impact the fee is intended to offset.

Cal Water does not charge fees for connections or meters for smaller developments and infill projects provided an adequate water main is available. For larger projects, Cal Water charges a fee or requires dedication of property for water facilities and service (Special Utility Fee) to provide water service. All fees

charged through Cal Water are subject to the operating rules and regulations of the California Public Utilities Commission.

Water connection fees in San Joaquin County water districts are not charged if the parcel is currently within a district boundary. The water districts do charge an annual fee for water use and consumption fees based on water meters.

Through the bankruptcy process, the City developed and the courts approved a Plan of Adjustment to resolve the City's debt and other financial issues. A number of actions were required to achieve a successful Plan of Adjustment, including restructuring of City debt, renegotiation of labor agreements, a settlement eliminating the City's obligation for retiree medical benefits, and voter approval of Measure A, a sales tax measure that helps to fund both the bankruptcy recovery and increased police services (The Marshall Plan). In order to demonstrate the long-term viability of the Plan of Adjustment, the City developed a Long Range Financial Plan (L-RFP). The L-RFP extends 30 years and serves to inform the City's decision-making to enable the City to achieve and maintain a healthy General Fund reserve balance, which will allow it to weather future adverse economic conditions and build its capacity to increase the level of service the City provides.

The L-RFP demonstrates that the City meets three critical tests of solvency: cash solvency, budget solvency, and service solvency. In fact, both property and sales tax revenues have recovered better than originally projected and the current L-RFP projection shows a much healthier General Fund Balance and Reserve. As noted in the discussions above, the City intends to limit the cost of service extensions to any new annexation areas to the amount of General Fund revenue that would be generated from those areas, as well as supplemental funding, such as a CFD, as necessary to provide adequate service levels.

CHAPTER 7. STATUS OF, AND OPPORTUNITIES FOR, SHARED FACILITIES

This section of the MSR evaluates opportunities for shared facilities. Shared facilities may exist in the SOI and public service costs can be reduced as a result of sharing facilities and resources. As part of the MSR process, LAFCo must evaluate opportunities for sharing facilities and resources between jurisdictions and districts.

Sharing facilities can reduce costs and allow jurisdictions to achieve a level of service that may not otherwise be possible under normal funding or facility constraints. Liabilities of such facility-sharing opportunities are not to be forgotten, however. When a municipality enters into a facility sharing agreement it generally relinquishes a portion of its control over the facilities. Additionally, the facilities may not be entirely suited to what the jurisdiction's needs are (e.g., facilities may be at an inconvenient locale, be under-sized or over-sized to suit needs, have limited facility availability).

The focus of this section is on identifying opportunities for reducing overall costs and improving services by sharing facilities and resources. The following outlines existing and potential opportunities for Stockton to share facilities and resources.

A. *BACKGROUND*

The City of Stockton is bordered to the north and south by other municipalities. The cities of Lodi, located to the north, and Lathrop and Manteca, to the south, are Stockton's nearest neighbors. Lodi is the nearest of these three cities and, as a result, offers the greatest opportunities for shared facilities other than those with San Joaquin County and other local service districts.

The City and County acknowledge that regional cooperation and the operation of jointly-developed and maintained facilities to offer the best available services to their residents. The City's tax sharing agreement with the County, specifies that the City and County will work together to provide regional capital facilities through funding programs, planning, and the siting, construction, and maintenance of public and community service facilities.

The City has already identified opportunities for reducing overall costs and maintaining quality services through sharing facilities with other agencies and sharing or reducing use of resources. As described in Chapter 5, Stockton's water service purveyors work together to provide water throughout the city and SOI. These three water purveyors already share surface water treatment through

Stockton East Water District. There are opportunities for additional shared facilities as new water sources are identified.

B. *DETERMINATIONS*

The City of Stockton has a long history of working with other public service providers to share facilities and resources. This includes a variety of special districts and San Joaquin County departments that provide services to the residents within the city and the unincorporated area (including the county islands within the city limits). The City also participates actively in planning for and implementing regional water supply and flood control programs. The City of Stockton acknowledges that regional cooperation and the operation of jointly-developed and maintained facilities is in the interest of its residents and its own efficient provision of public facilities and services.

CHAPTER 8. ACCOUNTABILITY FOR COMMUNITY SERVICE NEEDS INCLUDING GOVERNMENT STRUCTURE AND OPERATIONAL EFFICIENCIES

This section of the MSR assesses the level of accountability of the City of Stockton to those it serves, focusing on the public accessibility opportunities for public participation.

In June 2012, the City of Stockton filed a petition for protection under Chapter 9 of the United States Bankruptcy Code. At the time, the City was facing over $2 billion in labor agreements, long-term debt, and other obligations that it could not manage outside of bankruptcy. In February 2015, a Plan of Adjustment, or "bankruptcy exit plan" became effective, and the City officially emerged from bankruptcy. In agreeing to the provisions of the Plan, the City Council adopted the following guiding principles concerning the plan:

- Sustainable and provides for the health, safety, and welfare of the community;
- Balanced among interested parties, while allowing for basic services;
- Results in fiscal stability and solvency, demonstrated by our Long-Range Financial Plan; and
- Protects essential City assets.

The Plan reflects new labor agreements with employees, a settlement with retirees to eliminate retiree healthcare benefits, and agreements with the City's largest creditors on terms that eliminate reliance on the City's General Fund as a backstop for long-term debt. In turn, the City committed to a Long-Range Financial Plan that allows it to continue to provide basic services, increase public safety through the Marshall Plan on Crime, and maintain amenities to ensure continued economic development. The restoration of services cut as a result of bankruptcy could occur with economic recovery and associated increases in City revenues.

LAFCo is not required to enact changes in government structure as part of an MSR, although proposals may be initiated concurrently or subsequently. LAFCo is, however, required to consider the advantages and disadvantages of any options that might be available to provide the services. In reviewing potential government structure options, consideration may be given to financial feasibility, service delivery quality and cost, regulatory or government frameworks, operational practicality, and public reference.

This page is intentionally left blank

CHAPTER 9. GLOSSARY OF ACRONYMS

AF.....Acre Feet

ASR.....Aquifer Storage and Recovery

BDCM.....Bromodichloromethane

BMPs.....Best Management Practices

BOD.....Biological Oxygen Demand

CEQA.....California Environmental Quality Act

CHMD.....Colonial Heights Maintenance District

COS MUD.....City of Stockton Municipal Utilities Department

COSMA.....City of Stockton Metropolitan Area

CUWCC).....California Urban Water Conservation Council

CVRWQCB.....Central Valley Regional Water Quality Control Board

CWA.....California Water Act

DBCM.....Dibromochloromethane

DHS.....California Department of Health Services

DWSP.....Delta Water Supply Project

DWSP WTP.....Delta Water Supply Project Water Treatment Plant

EIR.....Environmental Impact Report

LVMD.....Lincoln Village Maintenance District

MOU.....Memorandum of Understanding

NPDES.....National Pollutant Discharge Elimination System

OID.....Oakdale Irrigation District

OMI.....OMI/Thames Water Stockton

PHG.....Public Health Goal

Ppb.....Parts per Billion

RWCF.....Stockton Wastewater Control Facility

SEWD.....Stockton East Water District

SEWD WTP.....Stockton East Water District Water Treatment Plant

SJCMDs.....San Joaquin County Maintenance Districts

SOI.....Sphere of Influence

SSJID.....South San Joaquin Irrigation District

SWRCB.....State Water Resources Control Board

TDS.....Total Dissolved Solids

THMS.....Trihalomethanes

TSS.....Total Suspended Solids

U.S. EPA.....United States Environmental Protection Agency

USA.....Urban Service Area

UV.....Ultraviolet

WSE.....Water Supply Evaluation

WPA.....Walnut Plant Area

ATTACHMENT K: 2040 GENERAL PLAN - ENVISION STOCKTON

EXHIBIT 1

Envision Stockton 2040 General Plan

DECEMBER 4, 2018 | ADOPTED

**Safety and Housing Elements Updated July 9, 2024*

City of Stockton, California

ENVISION STOCKTON
2040 GENERAL PLAN UPDATE

EXHIBIT 1

CITY OF STOCKTON

ENVISION STOCKTON
2040 GENERAL PLAN UPDATE

Envision Stockton 2040 General Plan

DECEMBER 4, 2018 | ADOPTED

**Safety and Housing Elements Updated July 9, 2024*

Prepared By:

PLACEWORKS

1625 Shattuck Avenue, Suite 300
Berkeley, California 94709
510.848.3815

In Association With:

Fehr & Peers Transportation Consultants
BAE Urban Economics
West Yost Associates
Tom Origer & Associates

ACKNOWLEDGEMENTS

The City of Stockton would like to thank and recognize the efforts of those involved in the development of the Envision Stockton 2040 General Plan adopted by the City Council on December 4, 2018.

Citizens of Stockton

The Citizens of Stockton that participated in the Envision Stockton 2040 General Plan process

City Council

Mayor Michael D. Tubbs

District 1 - Vice Mayor and Councilmember Elbert H. Holman Jr.

District 2 - Councilmember Daniel R. Wright

District 3 - Councilmember Susan Lofthus

District 4 - Councilmember Susan Lenz

District 5 - Councilmember Christina Fugazi

District 6 - Councilmember Jesus M. Andrade

Planning Commission

Chair - Don M. Aguillard*

Vice Chair - Kimberly A. Warmsley

Commissioner Sol Jobrack

Commissioner Waqar Rizvi*

Commissioner Elizabeth Mowry Hull

Commissioner Anne N. Mallett

Commissioner D'Adrea Davie*

Former Commissioners

* Served as General Plan Subcommittee members.

City Staff

- Office of the City Manager
  - Kurt O. Wilson, City Manager
  - Scott Carney, Deputy City Manager
  - Connie Cochran, Community Relations Officer
- Public Works Department, Gordon MacKay, Director
- Municipal Utilities Department, John Abrew, Director
- Community Services and Library, John Alita, Director
- Office of the City Attorney
  - John Luebberke, City Attorney
  - Lori Asuncion, Assistant City Attorney
- Economic Development, Micah Runner, Director
- Police Department, Eric Jones, Chief of Police
- Fire Department, Erik Newman, Fire Chief
- Information Technology, Norbert Ruijling, Director
- Office of the City Clerk, Christian Clegg, Deputy City Manager/Interim City Clerk
- Administrative Services, Matt Paulin, CFO

Community Development Department

David Kwong, Director

Stephanie Ocasio, Assistant Director

Michael McDowell, Deputy Director, Planning & Engineering

David Stagnaro, AICP, Planning Manager

Jenny Liaw, Senior Planner

Former City Staff

Thomas Pace, Deputy Director, Planning & Engineering

Megan Meier, Assistant Planner

Kanoa Kelley, Associate Planner

Nicholaos Zois, Assistant Planner

Addie Suguitan, Planning Technician

General Plan Consultants

PlaceWorks

Charlie Knox, AICP, Principal in Charge

Tanya Sundberg, Project Manager

Claudia Garcia, Associate

Abe Sheppard, Associate

Jessica Setiawan, Associate

Pranjali Deokule, Planner

Brendan Hurley, Planner

BAE Urban Economics

Matt Kowta, Principal

Aaron Nousaine, Vice Principal

Matt Fairris, Associate

Amanda Wallace, Associate

Fehr & Peers Transportation Consultants

Kathrin Tellez, Principal

Patrick Gilster, Senior Transportation Planner

Mackenzie Watten, Travel Behavior Forecaster

Tom Origer & Associates

Janine Origer, Senior Associate

West Yost Associates

Jeffrey D. Pelz, Vice President

Douglas T. Moore, Engineering Manager

Patrick A. Johnston, Senior Engineer

Natalie K. Muradian, Associate Engineer

TABLE OF CONTENTS

1. INTRODUCTION 1-1

2. PLANNING FRAMEWORK 2-1

3. LAND USE 3-1

4. TRANSPORTATION 4-1

5. SAFETY 5-1

6. COMMUNITY HEALTH 6-1

APPENDICES

Appendix A: Summary of Policies and Actions By Topic
Appendix B: SB244 Analysis
Appendix C: Resolutions

2018-12-04-1503-01: Resolution Certifying the Environmental Impact Report for the Envision Stockton 2040 General Plan Update (General Plan) and Utility Master Plan Supplements (UMPS), adopting the Findings of Fact, adopting a Mitigation Monitoring and Reporting Program, Rejecting Land Use Alternatives, and Adopting a Statement of Overriding Considerations

2018-12-04-1503-02: Resolution Adopting the Envision Stockton 2040 General Plan Update (General Plan) and Adopting the Utility Master Plan Supplements (UMPS)

2018-12-04-1503-03: Resolution Adopting Written Findings of Consistency with the Delta Plan with Supporting Documentation

FIGURES

Figure 1-1 General Plan Chapters and State Mandated Elements 1-3

Figure 2-1 Location and Planning Boundaries 2-3
Figure 2-2 Land Use Distribution 2-4
Figure 2-3 Existing Land Use 2-5
Figure 2-4 Vacant and Underutilized Land 2-6
Figure 2-5 Preferred Scenario 2-11
Figure 2-6 Visual Simulations 2-12
Figure 2-7 Visual Simulation Locations 2-12
Figure 2-8 General Plan Land Use Map 2-15

Figure 3-1 Stockton Neighborhoods 3-2
Figure 3-2 Downtown Redevelopment Projects 3-5
Figure 3-3 Historic Resources 3-9
Figure 3-4 Existing and Planned Parks 3-11
Figure 3-5 Employment Forecast by Industry 3-16
Figure 3-6 Sacramento San Joaquin Delta 3-18
Figure 3-7 2017 City Revenue Sources 3-23
Figure 3-8 2017 City Service Costs from General Fund 3-23

Figure 4-1 Circulation Map 4-3
Figure 4-2 Stockton Metropolitan Airport Safety Zones 4-6
Figure 4-3 Existing and Planned Bicycle Network 4-8
Figure 4-4 Bikeway Types 4-9

Figure 5-1 Police and Fire Stations 5-3
Figure 5-2 Levee Flood Protection Zones 5-7
Figure 5-3 Dam Inundation Areas 5-8
Figure 5-4 Levees and Reclamation Districts 5-10
Figure 5-5 FEMA Flood Zones 5-11
Figure 5-6 Planned Land Uses in Flood Hazard Zones 5-13
Figure 5-7 200-Year Storm Flood Depths 5-15
Figure 5-8 State Plan of Flood Control Facilities in the Stockton Area 5-16
Figure 5-9 Areas Protected by State Plan of Flood Control Facilities 5-17
Figure 5-10 Floodwater Accommodations 5-18
Figure 5-11 2040 Roadway Noise Contours 5-21

Figure 6-1 Disadvantaged Communities 6-5
Figure 6-2 School Districts 6-9
Figure 6-3 Median Home Prices Compared to Median Income 6-11

TABLES

Table 2-1 General Plan Relationship to Development Code 2-18
Table 3-1 City Parks by Type 3-12
Table 5-1 Maximum Allowable Noise Exposure by Land Use 5-20

This page intentionally blank

1 INTRODUCTION

WHAT IS A GENERAL PLAN?

Every municipality in California is required by the State to adopt and periodically update a general plan that provides a comprehensive, long-range statement of the jurisdiction's land use policies for the coming decades. The Envision Stockton 2040 General Plan is the City government's primary tool to guide physical change within the city limit and, in some cases beyond it in a Sphere of Influence (SOI) where City services may someday be provided. The SOI includes unincorporated islands in the community and areas adjacent to the city where land use decisions in areas governed by San Joaquin County might affect quality of life for Stockton residents.

A general plan is broad in scope, addressing all geographic areas within the city limit, and all issues relating to the physical character of the city. In addition, general plans are visionary—Envision Stockton 2040 looks almost 25 years into the future and focuses on broad, emerging trends that will shape the Stockton of tomorrow. Finally, the plan must be internally consistent: its policies and actions are vital to carrying out goals and must complement one another across topic areas without conflicting.

The Stockton General Plan is the community's overarching policy document that defines a vision for future change and guides the location and character of development, with the intent of enhancing the local economy, conserving resources, improving public services and safety, and fostering community well-being. The General Plan is the City's primary land use regulatory tool and describes the means necessary to achieve the community's goals. Together with the Development Code and other related sections of the Municipal Code, Envision Stockton 2040 will serve as the basis for planning-related decisions made by City staff, the City Council, the Planning Commission, and other City boards and commissions.

GENERAL PLAN REQUIREMENTS

A city's zoning regulations and subdivision approvals must be consistent with an adopted general plan. Once a general plan is adopted, updated, or amended, the zoning, subdivision, and other land use regulation ordinances must be amended to be consistent with the plan, as needed. State law requires that a general plan contain eight "elements": land use, circulation, housing, conservation, open space/parks and recreation, safety, noise, and environmental justice. In addition, for cities located within the San Joaquin Valley Air Pollution Control District, State law also requires that a general plan include an air quality element. Optional elements can also be included at a city's discretion.

The Envision Stockton General Plan uses a streamlined approach, consolidating the mandated elements into four chapters, plus the Housing Element, which is updated on a separate schedule. The prior 2035 Stockton General Plan had included additional optional elements, which are also incorporated into the four chapters of Envision Stockton 2040. Figure 1-1 compares the State-mandated elements and optional elements of the prior 2035 Stockton General Plan to the structure of the Envision Stockton 2040 General Plan.

State law requires an update to the Housing Element every eight years; the City last updated the Housing Element in April 2016 to cover the planning period between 2015 and 2023. The Envision Stockton 2040 General Plan does not involve any amendments to the Housing Element.

The General Plan is to be considered and used as a whole. Case law and accepted land use practice stress the equality of the elements in a general plan. Since all General Plan elements carry equal weight, no single section, chapter, or subject should be emphasized over others, though of course only certain sections may apply to specific subjects of interest to the community, City staff, and decision makers.

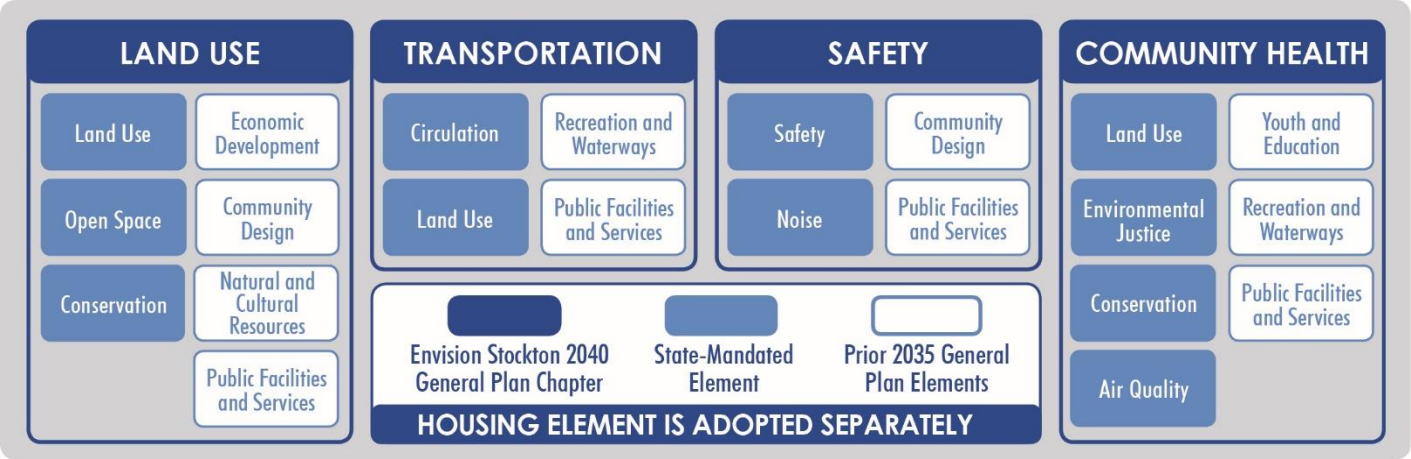
PLANNING CONTEXT

Following the 2007 approval of the prior 2035 Stockton General Plan and its Environmental Impact Report (EIR), the City of Stockton was brought into litigation with the Sierra Club and the State Attorney General regarding the EIR, in particular regarding concerns about greenhouse gas (GHG) emissions. In October 2008, the City entered into a Settlement Agreement with the State and the Sierra Club that requires the City to address GHG reductions in a variety of ways, including through preparation of a Climate Action Plan, which was completed in 2014, and through some specific requirements for the Envision Stockton 2040 General Plan, including policies and programs to support the development of 18,400 new housing units within the city limit as it existed in 2008, with at least 4,400 of those units located in the Greater Downtown Area (see Chapter 2, Planning Framework, for a description of planning boundaries).

In response to this direction, the 2040 General Plan represents a substantial change in the policy framework for future development in Stockton compared to the prior 2035 General Plan. The fundamental shift is from emphasizing growth in "outfill" areas at the periphery of the city to focusing new construction and redevelopment in existing "infill" neighborhoods. This change is reflected in the land use map and the associated map depicting the transportation network required to serve future development, and in the goals, policies, and actions throughout the General Plan.

Specifically, the Envision Stockton 2040 General Plan land use map concentrates higher-intensity mixed uses and high-density residential uses in the Downtown and shrinks the future footprint of the city by changing areas previously designated Village to Open Space/Agriculture. Along the waterfront, future uses would promote a live/work/play environment to further boost the Downtown's vitality. Outside of the Downtown, industrial designations along major corridors would shift to the outer parts of the city to promote more walkable, bikeable, and connected commercial and mixed-use corridors. In South Stockton, the Commercial and Administrative Professional designations would be expanded along S. Airport Way and near Weston Ranch to provide more opportunities for the development of grocery stores and medical clinics, which are needed in these areas.

Figure 1-1: General Plan Chapters and State Mandated Elements



GOALS, POLICIES, AND ACTIONS

Envision Stockton 2040 is built around a series of goals, policies, and actions that describe what needs to be done to achieve the community's vision for the future. "Goals" are end-states; they describe what the community wants to accomplish to resolve a particular issue or problem. Policies and actions guide day-to-day decision-making so that there will be continuing progress toward the attainment of goals. The goal, policy, and action terms are further defined as follows:

GOAL

A general, overall, and ultimate desired outcome toward which the City will direct effort during the 23-year timeframe of the General Plan.

POLICY

A specific statement that regulates activities in the city, guides decision-making, and directs implementing actions to achieve a goal. General Plan policies guide City staff, the Planning Commission, and City Council in their review of land development projects and in decision-making about City actions.

ACTION

A measure, procedure, or technique intended to implement one or more policies to help reach a specified goal. An action may be ongoing or something that can be completed in a targeted timeframe.

The goals, policies, and actions are a critical component of the General Plan. Goals determine what should be done and where. Policies and actions together establish who will do the work and how and when the goals will be carried out. Taken together, they describe the steps the City and the community must take to make the vision of the General Plan a reality. The General Plan is meant to be a useful, everyday guide for what to do. Explanatory text is provided where needed, and every action is listed and numbered under a specific policy. As with other City policy documents, implementation of the goals, policies, and actions are subject to the resources that the City and its partners have to carry them out, and need to remain consistent with the City's Long-Range Financial Plan.

This General Plan also calls out goals, policies, and actions that address specific topics of concern raised by the community. For the reader's ease, goals, policies, and actions related to these topics of concern are identified throughout the General Plan using the following icons, and summarized in Appendix A:

Downtown

Public Health

Environmental Justice

Air Quality

Climate Change

STRUCTURE

The Envision Stockton 2040 General Plan includes this introduction, a description of the City's land use planning framework, and the four separate chapters that establish goals, policies, and actions for each given set of topics. The chapters cover all of the topics required by California State Government Code Section 65302 as well as topics of particular interest to Stockton. The General Plan structure is summarized as follows:

- Introduction: Describes the required elements of the General Plan and its planning context, and provides an overview of the Plan's organization.
- Planning Framework: Covers existing land use conditions and the policy framework, describes the Envision Stockton 2040 General Plan Update process, and presents the location, intensity, and type of future growth and development in the city and its SOI.
- Land Use: Provides overall land use policies for the City, including the connection between land use and transportation and utilities and other infrastructure. This chapter also incorporates the State-required Open Space and Conservation Element topics, as well as other topics important to the community, including economic development and community design.
- Transportation: Satisfies the State law requirement that the Transportation Element specify the general location and extent of existing and proposed major streets and other transportation facilities. This chapter is correlated with the Land Use chapter to provide adequate pedestrian, bicycle, motor vehicle, transit, air, and water transportation to serve both new and existing land uses.
- Safety: Serves as the State-required Safety Element. It provides information about risks in Stockton due to natural and human-made hazards, and contains goals, policies, and actions designed to protect the community and property from hazards. It specifically addresses risks associated with geologic and seismic hazards, flooding and storm drainage, wildland fires, and hazardous materials and waste. Based on clear community input to prioritize public safety from criminal activity, this chapter also includes policies and actions to deter crime and support law enforcement and community protection efforts.
- Community Health: Addresses the State-required Environmental Justice and Noise Element topics, as well as Air Quality, which is a required general plan topic regionally per the San Joaquin Valley Air Pollution Control District. This chapter also addresses public services and utilities, as well as the community-identified priorities of public health, recreation, youth and education, the local economy, and climate change and adaptation.

HOW TO USE THIS PLAN

The General Plan is used as a point of reference for a variety of interested parties. Some of the key groups that will use the General Plan include elected and appointed City officials, City staff, city residents and business owners, and individuals proposing new development projects when making decisions regarding such topics as subdivisions, capital improvements, and neighborhood rehabilitation. For all of these and the many other community members, the policies in this General Plan

are intended to provide clear guidance and explanation of the City land use decision-making processes and about how Stockton may grow, change, or stay the same.

In general, actions that use the words "require," "prohibit," or "shall" are mandatory. Policies that use the words "encourage," "promote," "discourage," "consider," or "should" are not mandatory, and the City may choose to modify its course of action in cases where a policy may not prove appropriate for a particular situation or if extenuating factors, such as competing priorities or budget limitations, would make it difficult to follow a policy direction verbatim.

As described in Chapter 2, Planning Framework, the Envision Stockton 2040 General Plan Update process involved a wide variety of stakeholders and interests. As a result, this General Plan is intended to address multiple, and sometimes competing, policy objectives, and the City may not be able to strictly adhere to every policy in every decision that it makes to implement the overall goals of this General Plan. The City Council will continue to have discretion over prioritizing overall policy objectives to implement this General Plan in instances in which multiple policy objectives may affect a single decision.

Finally, the Plan is intended to be understandable and easily available to the public, in part because policies will be carried out only if they continue to merit community support. If and as conditions in Stockton change, the Plan can and should be interpreted, and modified as necessary, to reflect and remain consistent with the City's and community's desires and priorities.

AMENDING THE PLAN

The General Plan is intended to be as dynamic as needed by the Stockton community. Per the Stockton Municipal Code, the General Plan may only be amended by the City Council four or fewer times in a single calendar year—during the months of January, April, July, and October. Requested amendments in California tend to be proposed by land owners seeking to change the land use designation for specific properties. In addition, the City could amend the General Plan in response to changes in growth and market demand or for other policy reasons.

Although much of the General Plan represents regulatory guidance and is subject to this limitation, many items in the General Plan are provided for informational purposes only. Items included for illustrative purposes, such as photographs, figures, and background maps, do not establish General Plan policy and do not require a formal General Plan amendment to be updated or revised; their purpose is to help make the plan more user-friendly. Similarly, typographical corrections and parcel boundary changes may be made without a formal General Plan amendment. However, modifications to figures that reflect State or City regulation, such as the General Plan land use map or circulation map, could require a General Plan amendment.

As time passes, the City may find it desirable to revise portions of the General Plan to reflect land use map changes or other changing circumstances. It generally is recommended that the City comprehensively review the Plan every five years to determine whether it still reflects the community's values, as well as the city's physical and economic conditions. State law requires California's Office of Planning Research to publish the names of jurisdictions with general plans older than 10 years and to notify the respective decision-making bodies of these jurisdictions.

This page intentionally blank

PLANNING FRAMEWORK 2

Stockton is a dynamic and diverse community located east of the San Francisco Bay near the center of the northern San Joaquin Valley. Stockton began and is rooted in the Downtown, which is oriented around the waterfront. Over the past 160 years, each historic era has shaped Stockton into what it is today. Historic resources and districts, like Magnolia and Doctors' Row, offer a unique glimpse into Stockton's early beginnings. Situated around the head of the San Joaquin River, there are abundant scenic views of riparian areas, open spaces, and agricultural fields. Recreational opportunities abound in Stockton, from neighborhood parks to the Weber Point Events Center, with endless opportunities for outdoor recreation.

Stockton's bustling economy is anchored by 10 of the top 25 major employers in San Joaquin County, including the University of the Pacific. The inland sea port, one of two in the state, provides an important commerce gateway to the Central Valley, and the Stockton Municipal Airport, located just south of the city limit, offers commercial passenger service to key destinations. This chapter presents the planning context for the Envision Stockton 2040 General Plan, summarizing local history, existing land use, and the process for developing the plan. It also outlines the vision for Stockton in 2040, encapsulated in the General Plan land use map.

PLANNING AREA

The city encompasses an area of approximately 65 square miles and serves as the County seat; nearby cities include Manteca, Lathrop, Tracy, and Lodi. The General Plan considers land within the city limit, Sphere of Influence (SOI), Urban Service Area Boundary (USAB), and General Plan Planning Area. Determined in conjunction with the San Joaquin County Local Agency Formation Commission (LAFCO), the SOI is an area of approximately 115 square miles that could be considered as a potential future boundary of Stockton. The USAB includes areas where City services and facilities will be available for extension upon annexation and where future urban development must conform with City Council-adopted master utility and circulation plans.

The USAB is approximately 120 square miles and follows the SOI boundary in many locations, but extends into areas southeast of the SOI. The General Plan Planning Area is larger than the SOI and USAB and encompasses approximately 191 square miles. While the Planning Area does not give the City any regulatory power over the land, it signals to the County and to other local and regional authorities that Stockton recognizes that development within this area may have an impact on the future of the city. The planning boundaries are shown on Figure 2-1.

This General Plan also delineates some key planning boundaries in the Downtown where higher intensities of development are planned. The Downtown Core area, located at the center of Stockton and bounded by Park Street, the railroad tracks, Highway 4/Crosstown Freeway, and Interstate 5, totals about 1 square mile and is characterized by compact urban development within a traditional street grid network and historic buildings. The Greater Downtown is bounded by Harding Way, Charter Way/Martin Luther King Jr. Boulevard, Pershing Avenue, and Wilson Way; it totals almost 4 square miles and extends beyond the Downtown Core area.

HISTORY AND SETTING

While some of the earliest residents of the area were the Native American Yokuts, the town of Stockton is considered to have been "settled" in 1845 by Charles Weber, who named the city in honor of Commodore Robert Stockton for his actions during the 1846 Mexican-American War. The settlement quickly transformed into a growing commercial empire after the 1848 discovery of gold near the American River, east of Sacramento, and the City of Stockton was officially incorporated in 1850. As gold mining waned in the latter half of the 19th century, miners took to agriculture. The agricultural economy catalyzed growth in other related industries such as flourmills, shipyards, agricultural machinery, financial institutions, and tanneries. Due to its location within the San Joaquin Delta, shipping became an important aspect of the local economy that has endured throughout the city's history.

With Stockton's thriving economy came residential development. Many of the neighborhoods in the central part of the city were developed by the owners of businesses and industries in the city. These homes, dating to the late 1800s, reflect the high Victorian style.

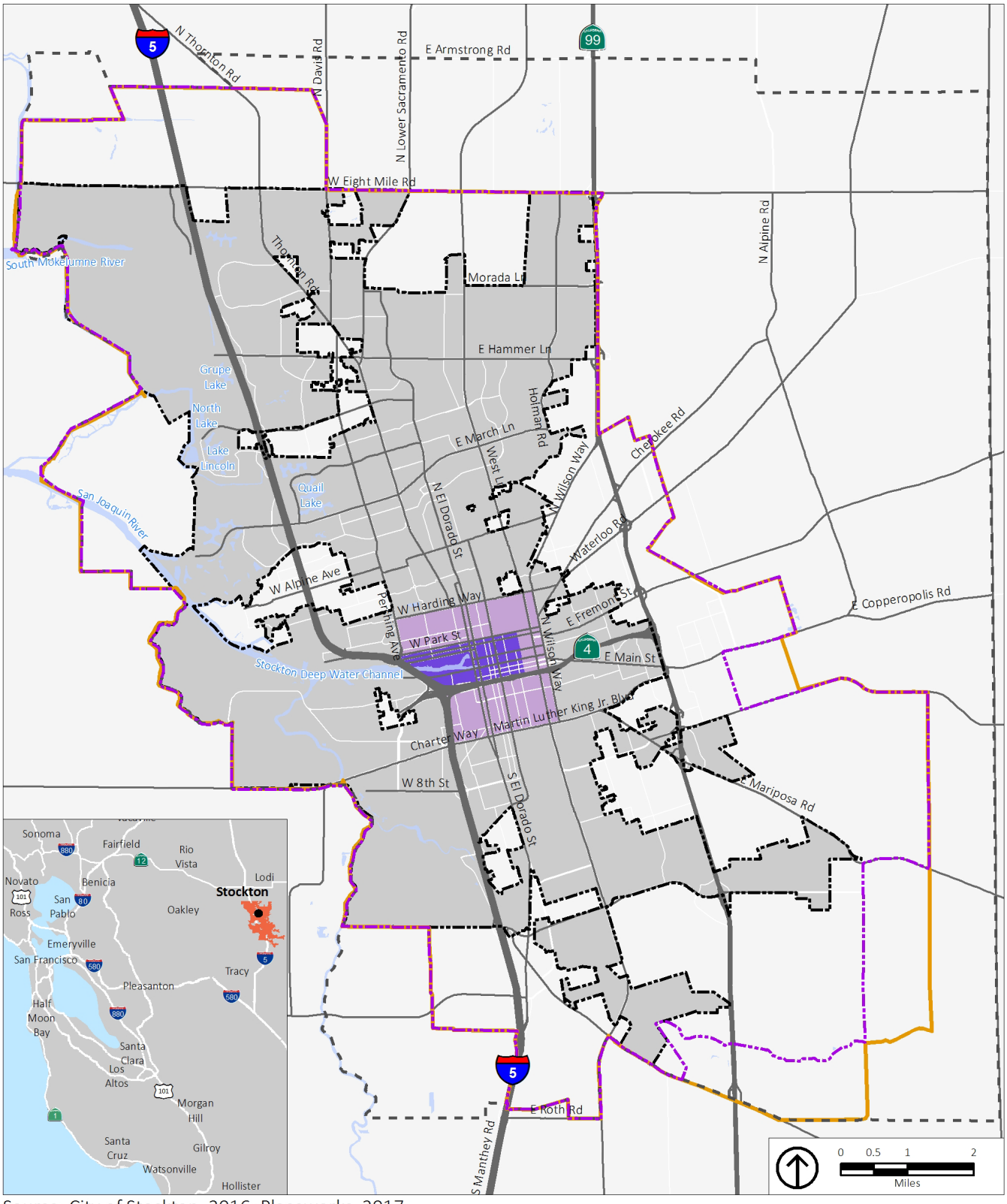
During the early to mid- 20th century, war efforts brought military construction to the shipyards and revitalized the Downtown area. The development of the suburbs during the latter part of the 20th century drew businesses and residential growth to outlying areas. In September 1996, Stockton's Naval Reserve Center on Rough and Ready Island closed and was subsequently transferred to the Port of Stockton, signaling a major shift in the economy of the city. The facility had served as a major communications outpost for Pacific submarine activities during the Cold War.

As of 2017, the population of Stockton is approximately 320,600 people; there are about 100,300 homes, and the average household size is 3.23 people per household.[1] The median age of Stockton residents in 2015 was 31 years, which is younger than the overall statewide median average of 36 years.[2]

[1] State of California, Department of Finance, 2017. *E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2011- 2017.*

[2] US Census Bureau. *2011-2015 American Community Survey 5-Year Estimates.*

Figure 2-1
Location and Planning Boundaries



Source: City of Stockton, 2016; Placeworks, 2017.

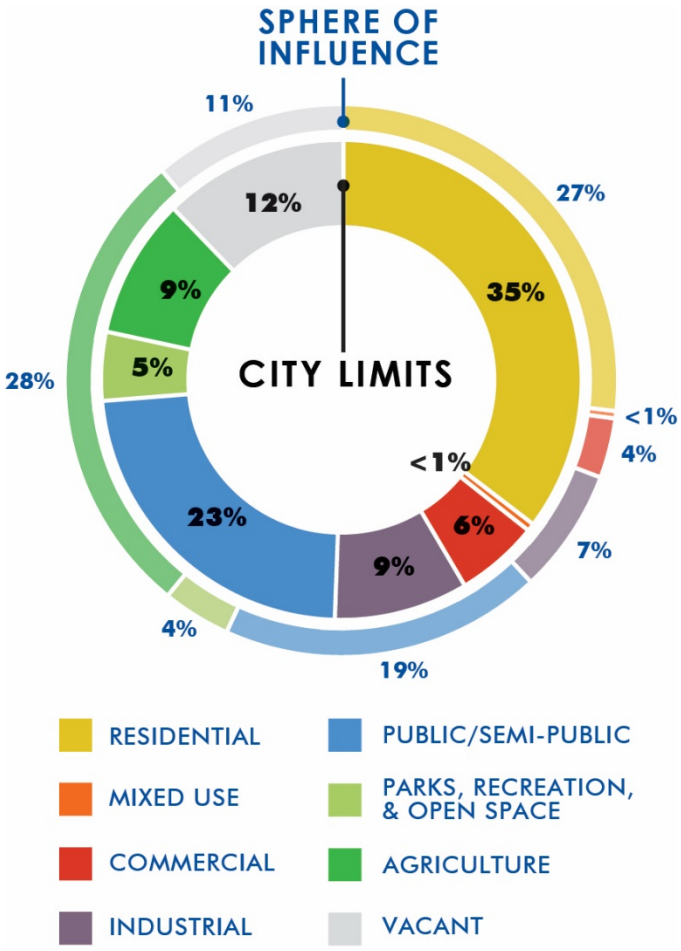
City Limit
Downtown Core
Greater Downtown
Urban Service Area Boundary
General Plan Planning Area
Sphere of Influence

EXISTING LAND USE

How people use land in Stockton helps to define the city's character and that of its individual neighborhoods. The General Plan land use map establishes a plan for future land uses in Stockton, which may differ in some places from how the land is used today, in order to achieve community goals, such as a balance between jobs and housing. In addition to land uses that are planned in the General Plan land use map, it's also important to consider the land uses that exist on the ground today. Those existing land uses are tracked by the County Assessor for all of San Joaquin County, including Stockton, and are summarized on Figure 2-2 and mapped on Figure 2-3. Land uses mapped within the city limit cover 33,600 acres (roughly 52.5 of Stockton's 65 square miles), more than a third of which is used for housing. Of the 11,900 acres devoted to residential use, more than 85 percent contains single-family homes. Given Stockton's role as the County seat, it's not surprising that public/semi-public uses take up almost a quarter of the city; these uses include government buildings, public and private schools, the airport, hospitals, and religious institutions. Industrial and commercial uses combined represent about 15 percent of the city's land, and parks, recreation, open space, and agricultural uses account for about 14 percent. Mapped land uses within Stockton's SOI add over 29,000 acres, including more than 14,000 acres of agricultural land, which accounts for almost 30 percent of the total area of the SOI, including the city limit.

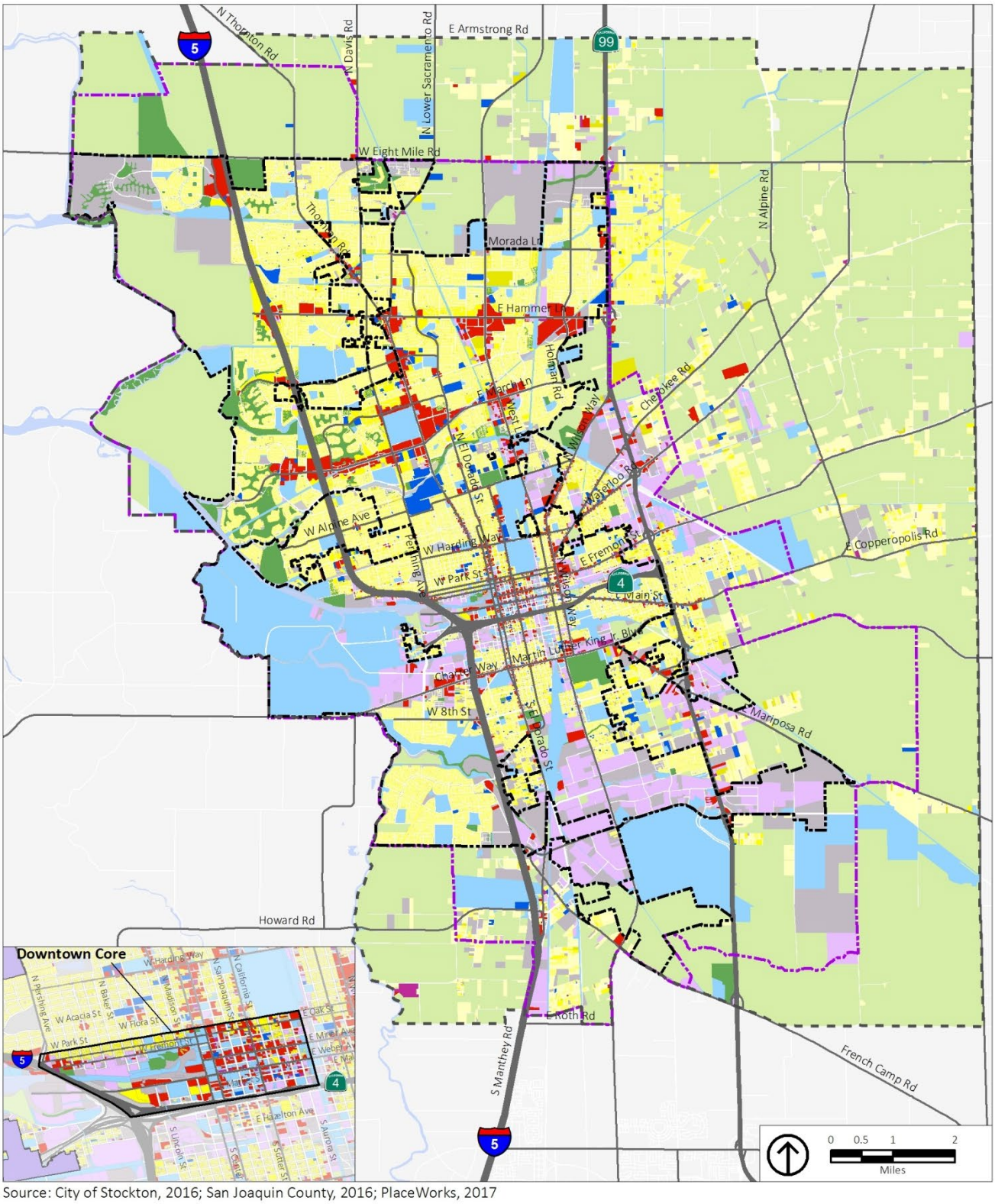
There are over 4,000 acres of vacant land within the city limit, which accounts for 12 percent of the mapped land uses. Much of this acreage is located at the edge of the city, where large development projects have been approved but not yet constructed. There are also areas interior to the city that remain vacant or that haven't been developed to their full potential, and are therefore considered "underutilized." These vacant and underutilized areas represent opportunities for infill development that can strengthen and enhance the city's core and interior neighborhoods, and are shown on Figure 2-4. To identify the underutilized properties shown in the figure, the improvement-to-land (I/L) ratio for each parcel was calculated based on County Assessor data. The I/L ratio is the relationship of a property's improvement value to its land value. For example, a lot worth $100,000 that is improved with a building worth $40,000 would have an I/L ratio of 0.4. In this analysis, properties with an I/L ratio below 1.0 were considered underutilized.

Figure 2-2: Land Use Distribution



Source: San Joaquin County, 2016.

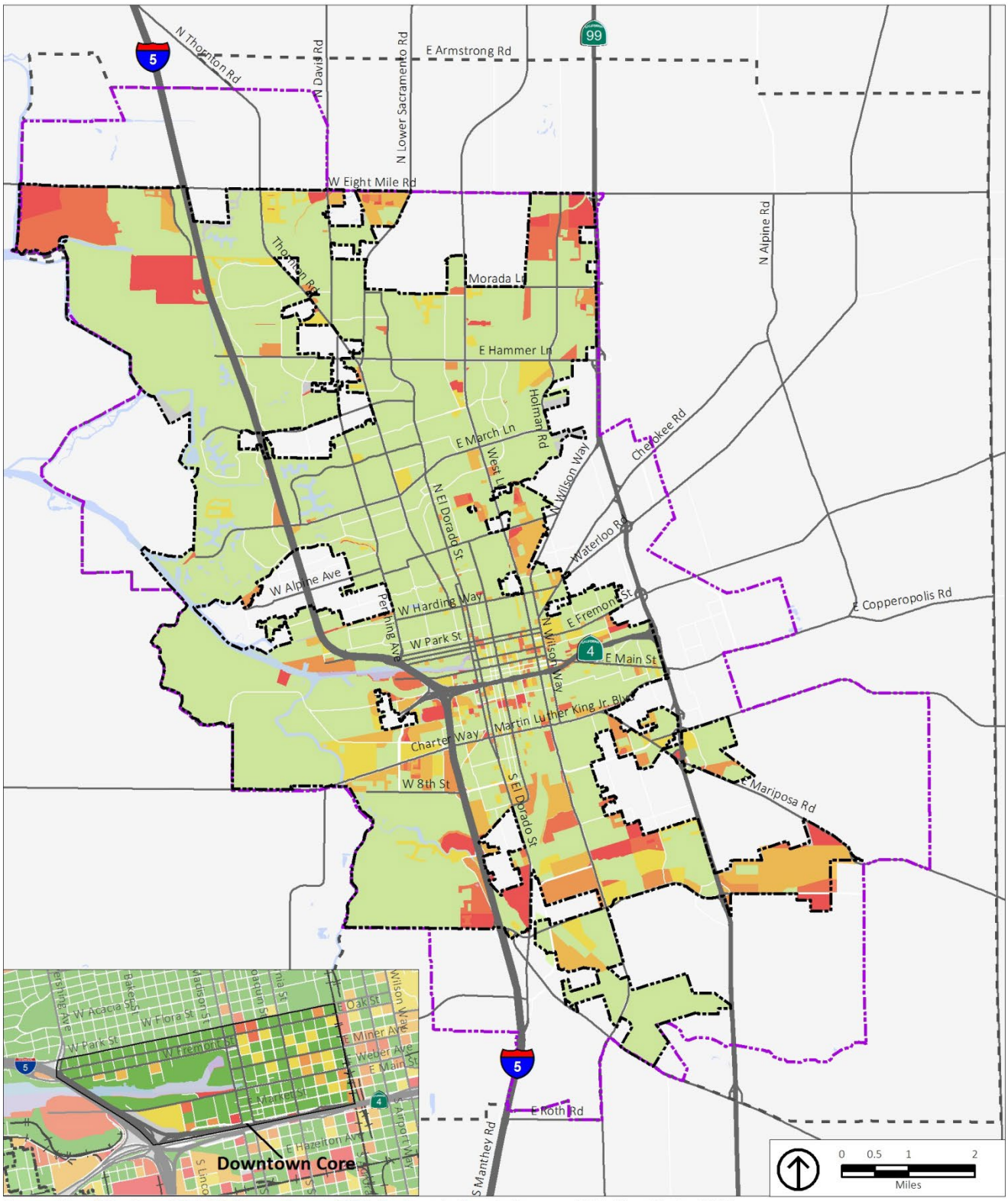
Figure 2-3
Existing Land Use



Source: City of Stockton, 2016; San Joaquin County, 2016; PlaceWorks, 2017

- Residential - Rural
- Residential - Single Family
- Residential - Multi-Family
- Residential - Mobile Home
- Mixed Use
- Commercial
- Industrial
- Institutional
- Public and Quasi Public
- Parks, Recreation, and Open Space
- Agriculture
- Vacant
- City Limit
- Sphere of Influence
- General Plan Planning Area

Figure 2-4
Vacant and Underutilized Land



Source: City of Stockton, 2016; US Census Bureau, 2010; San Joaquin County Assessor, 2016; PlaceWorks, 2017

Percent of Vacant and Underutilized Land By Census Block

- < 24%
- 25 - 34%
- 35 - 45%
- 46 - 62%
- 63 - 84%
- > 84%

- City Limit
- Sphere of Influence
- General Plan Planning Area

GENERAL PLAN UPDATE PROCESS

The process to update the prior 2035 General Plan and envision the future of Stockton began in March 2016. Widely-publicized community workshops were held to inform community members about the update and to invite feedback on the process. In addition, the City formed a General Plan Subcommittee composed of three members of the Stockton Planning Commission to help guide the planning process. Three City Council study sessions, four Planning Commission study sessions, ten community workshops, and numerous other meetings targeting various stakeholders were held during the planning process, all of which were open to the public and included extensive public comment periods. The City also hosted a number of other outreach events with community groups throughout the General Plan Update process. In addition, the City created the Envision Stockton 2040 General Plan Update website to share information about upcoming meetings and draft documents throughout the process; this website also included an online tool that community members used to provide input on each workshop topic without having to attend the workshop in person. Input and direction from the public and City officials was incorporated into each component of the General Plan.

The first phase of the General Plan Update process was devoted to researching and documenting baseline conditions in Stockton. This effort resulted in a series of technical memoranda that informed the subsequent visioning phase and the development of land use alternatives. The visioning phase included three community workshops, one of which was focused on youth and young adults in Stockton, as well as a Planning Commission study session. At these meetings, participants shared and discussed issues and opportunities in Stockton that ultimately formed the framework for the vision statement.

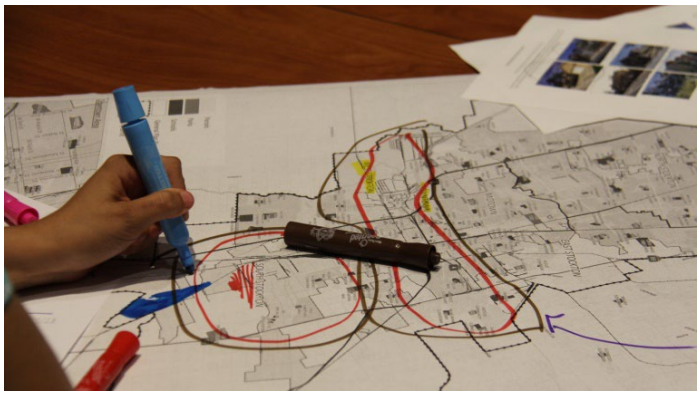
To solicit public input on the future land use alternatives, the City hosted a mobile workshop on a double-decker bus. Participants toured various parts of Stockton where previous input had suggested the need for change, with the upper level affording a unique view to gain a different perspective than is typically seen via car, bicycle, or walking. Based on the suggestions from the mobile workshop, combined with the input from the visioning phase, three distinct scenarios were crafted - each of which described a different way that Stockton could evolve over the next 20+ years. The land use scenarios were then compared to each other to help the community decide which scenario, or combination of components from the scenarios, offers the most benefit. Over the course of two community workshops, a Planning Commission study session, and a City Council study session, a "preferred scenario" was selected, which became the land use map that is the basis for the Envision Stockton 2040 General Plan.

Following the selection of the preferred land use alternative, draft goals that parallel the vision statement and support the concepts in the preferred land use scenario were developed. These draft goals were presented to the community at two open house events, where community members suggested specific policies to carry out those goals. Planning Commissioners and City Councilmembers then reviewed and added to the community's policy direction during one study session for each entity. Draft actions to implement the goals and policies were then developed based on a combination of policies and implementation measures from the existing General Plan, input from the community and decision-makers throughout the process, consideration of relevant State and local laws, and best practices in the planning profession.

Once the complete General Plan was drafted, the community and decision-makers provided feedback on needed changes over the course of two workshops and one study session each with the Planning Commission and City Council, followed by adoption hearings with the Planning Commission and City Council.

COMMUNITY VISION

The Envision Stockton 2040 General Plan, crafted through a community-based participatory effort, is founded on a vision to promote investment in the Downtown and historically underserved areas, preserve and enhance neighborhood character, and improve community health and safety. Stockton's vision for the future serves as the basis for the General Plan land use map that will guide the evolution of the city for the next 20+ years. Stockton's vision for the future is as follows:



The Stockton community celebrates the city's cultural, lifestyle, and ethnic diversity and is proud of our tradition of looking out for each other in Stockton's many distinct neighborhoods. The community's vision for the future of Stockton is rooted in the people – honoring our history, strengthening the sense of belonging we enjoy today, and improving the safety and prosperity of all who live, work, and spend time in our city.

To that end, the General Plan envisions Stockton in 2040 as a regional destination attracting residents and visitors to cultural events, arts, entertainment, well-maintained parks, and a variety of dining options covering a wide range of ethnic cuisines. Residents and visitors alike will feel safe enjoying these attractions at all times of day and night throughout the city. Historic buildings and architecture will inspire artists, makers, and entrepreneurs that live and work in the Downtown, drawing people from near and far who seek this vibrant and creative energy. Places like the arena, ballpark, marina, Hotel Stockton, Waterfront Hotel, and Weber Point Events Center will be hubs of bustling activity that infuse the surrounding area with restaurant and shop patrons.

The entire Stockton community, including South Stockton, will have opportunities to maintain active and healthy lifestyles, and all areas of the city will provide easy access to medical facilities and fresh, affordable, and healthy food, including from grocery stores, community gardens, and farmers markets. Safe and interconnected bicycle and pedestrian facilities will provide real alternatives to car commutes along beautiful complete streets and access to active recreation throughout the city and beyond. Stockton's urban forest will continue to expand and thrive, inspiring residents to enjoy outdoor activities and integrating nature into the urban fabric.

Residents of all backgrounds will have access to housing at all affordability levels and job opportunities with wages that are competitive with the rest of the region and state. Small businesses serving individual neighborhoods and places like the Downtown and Miracle Mile will thrive, while large-scale retail will continue to generate sales from the surrounding region. Major employers will locate in Stockton, attracted to its central location, pleasant climate, and airport, port, freeway, and transit access. Expanded flight service at the airport will fuel business and employment growth in South Stockton in particular, leading to public investments and new job opportunities that infuse the surrounding neighborhoods with positive change.

Stockton will be a leader in sustainability, with City incentives for energy conservation and green building. Stockton will also foster innovation by continuing to host colleges and universities—including a new California State University (CSU) Stockton campus—that cultivate an inquisitive and youthful energy that permeates the city. Students will find quality jobs in their career paths without having to leave Stockton, choosing to stay because of the affordable cost of living, range of housing options, convenient services, and wide variety of things to do outside of work.

The edges of Stockton will be discrete and clear, agriculture will continue to thrive outside the urbanized city, and Stockton residents will enjoy scenic views of agricultural land. Development and redevelopment of vacant, underutilized, and blighted areas will be prioritized over development that extends into agricultural areas, strengthening the city's core and preserving the open space that surrounds it.

FROM VISION TO LAND USE MAP

Described above, the community's vision is the basis for the City's official land use map. The land use map is the backbone of the General Plan, guiding future growth, change, and preservation to achieve the community's vision of Stockton as a regional destination with thriving neighborhoods, a healthy economy, and leadership in sustainability.

The preferred scenario developed during the land use alternatives phase, which is shown on Figure 2-5, focuses development within the city core, leaving land in the periphery as undeveloped open space and agriculture. Existing commercial corridors will be enhanced and more continuous. Vital commercial corridors will include a focus on infill development with new higher-density residential buildings and mixed-use shopping centers, providing current and new residents with convenient access to retail and services. This land use vision is illustrated on Figure 2-6, which spotlights three different locations in Stockton, visually depicting what the preferred scenario could mean at a particular site. For each location, there is a photo showing how the site looked in 2017, followed by a simulation of possible future development based on the land use designation for the site under the preferred scenario.

The three sites that are spotlighted are all vacant, and the simulations are meant to be illustrative of what the scenarios could mean for these or other similar sites. These locations are shown on Figure 2-7, and exemplify sites in need of investment to fuel positive change along the waterfront, in the eastern part of Downtown, and in South Stockton.

LAND USE DESIGNATIONS

The General Plan land use designations translate the preferred scenario into a detailed map that expresses the community's vision for future conservation and development on public and private land in Stockton through the year 2040. Each designation includes standards for development density or intensity of use. Residential densities are expressed in terms of dwelling units per gross or net acre. Based on the gross acre calculation, the number of allowable units on a parcel can be calculated by multiplying the total number of acres by the allowable gross density. The net acre calculation uses a parcel acreage that excludes land devoted to road and infrastructure rights-of-way (ROW). The assumed percentages of land devoted to ROW varies based on the land use designation:

- Residential Estate: 10 percent
- Low Density Residential: 30 percent
- Medium Density Residential: 25 percent
- High Density Residential: 20 percent

Development intensities for non-residential uses are expressed in terms of floor area ratio (FAR), which is the ratio of gross building floor area (excluding areas designated for parking, etc.) to net lot area, both expressed in square feet, as shown below. FAR compares the building square footage permitted on a lot to the net square footage of the lot. For example, on a site with 10,000 square feet of net land area, a FAR of 1.0 will allow 10,000 square feet of building floor area to be built. On the same site, a FAR of 2.0 would allow 20,000 square feet of floor area. This could take the form of a two-story building with 100 percent lot coverage, or a four-story building with 50 percent lot coverage. A FAR of 0.4 would allow 4,000 square feet of floor area.

Possible configurations for Floor Area Ratio, which describes how large buildings can be compared to lot size

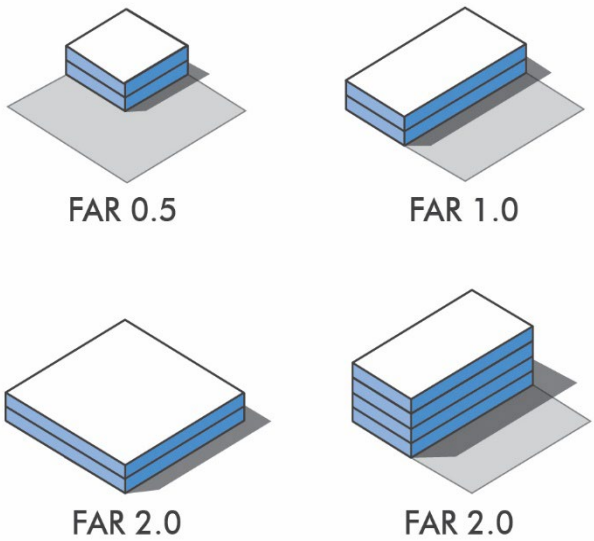
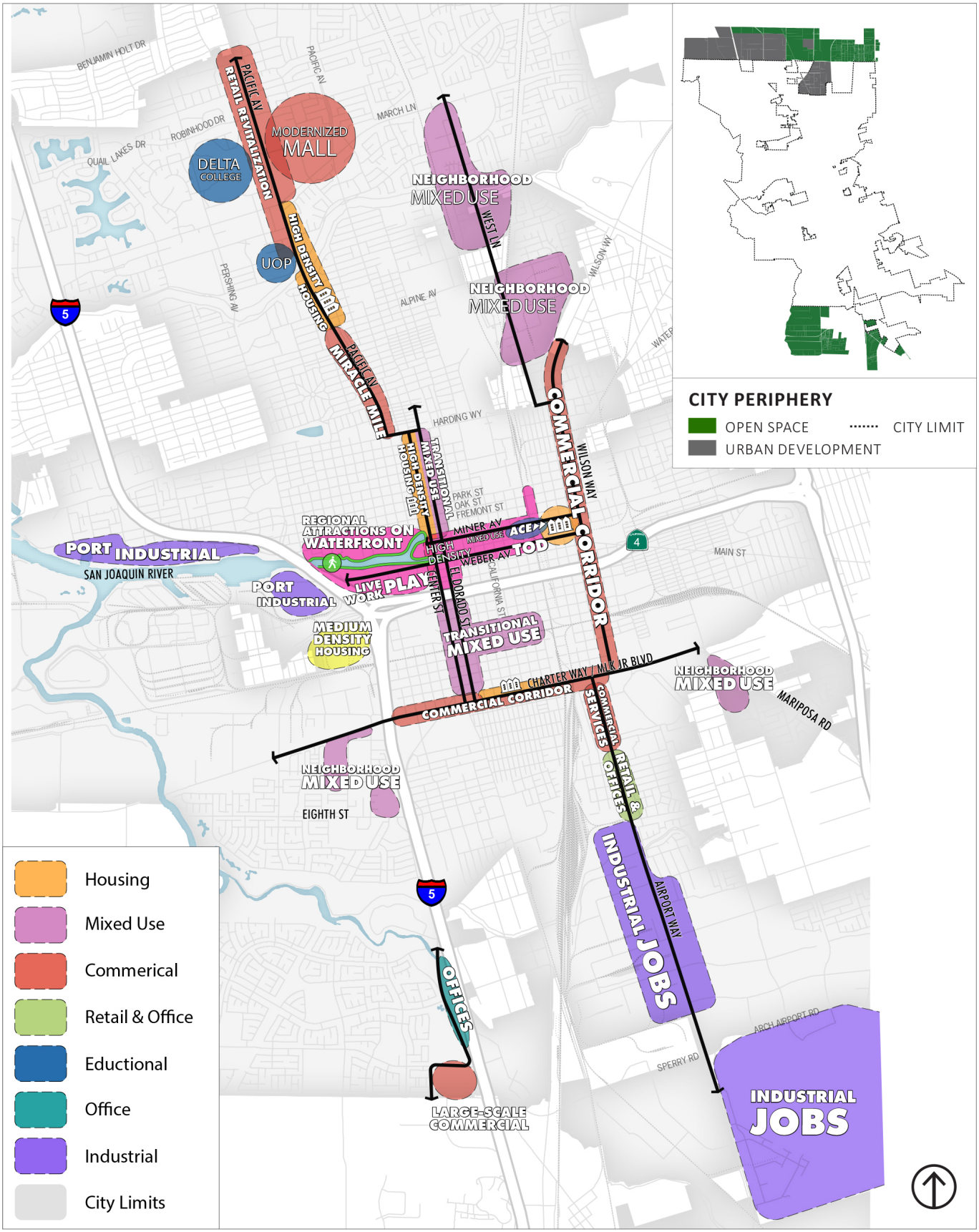


Figure 2-5
Preferred Scenario



Source: PlaceWorks, 2017.

Figure 2-6: Visual Simulations

Figure 2-7: Visual Simulation Locations

The General Plan land use map is shown on Figure 2-8; the land use designations used in the map are described below.

- **Residential Estate.** This designation allows for single-family residential units, public and quasi-public uses, second units, and other similar and compatible uses. The maximum density is 0.9 unit per acre based on gross acreage and 1 unit per acre based on net acreage.

- **Low Density Residential.** This designation allows for single-family residential units, duplexes, triplexes, semi-detached patio homes, town homes, public and quasi-public uses, second units, and other similar and compatible uses. The maximum density is 6.1 units per acre based on gross acreage and 8.7 units per acre based on net acreage.

- **Medium Density Residential.** This designation allows for single-family residential units, duplexes, triplexes, semi-detached patio homes, town homes, public and quasi-public uses, second units, and other similar and compatible uses. Based on gross acreage, this designation allows densities ranging from 6.2 to 13.1 units per acre; based on net acreage, it allows 8.8 to 17.4 units per acre. This designation also allows neighborhood-serving retail, commercial service, and mixed uses in appropriate locations that provide residents with easy access to daily services and necessities within their neighborhood, provided that they are compatible with surrounding uses, at a maximum FAR of 0.3.

- **High Density Residential.** This designation allows for multi-family residential units, apartments, dormitories, group homes, guest homes, public and quasi-public uses, and other similar and compatible uses. This designation also allows neighborhood-serving retail, commercial service, and mixed uses in appropriate locations that provide residents with easy access to daily services and necessities within their neighborhood, provided that they are compatible with surrounding uses. The allowable density and intensity ranges differ based on the geographic area, as follows:

  - *Outside the Greater Downtown:* Based on gross acreage, this designation allows 13.2 to 24 units per acre; based on net acreage, it allows 17.5 to 30 units per acre. The maximum FAR for neighborhood-serving retail uses is 0.3.
  - *Inside the Greater Downtown:* Based on gross acreage, this designation allows 16 to 72 units per acre; based on net acreage, it allows 20 to 90 units per acre. The maximum FAR for neighborhood-serving retail uses is 3.0.
  - *Inside the Downtown Core:* Based on gross acreage, this designation allows 16 to 108.8 units per acre; based on net acreage, it allows 20 to 136 units per acre. The maximum FAR for neighborhood-serving retail uses is 5.0.

- **Mixed Use.** This designation allows for a mixture of compatible land uses including residential, administrative and professional offices, retail and service uses, industrial, and public and quasi-public facilities to be determined through a master development plan adopted concurrently with the designation of the property as Mixed Use. The master development plan will determine development standards in accordance with the requirements of the Stockton Development Code. The minimum development size is 100 acres, and the maximum FAR is 0.5. Based on gross acreage, this designation allows 13.2 to 24 units per acre; based on net acreage, it allows 17.5 to 30 units per acre.

- **Administrative Professional.** This designation allows for business, medical, and professional offices; residential uses; public and quasi-public uses; and other similar and compatible uses. This designation also allows ancillary retail uses that provide office workers and residents in the immediate area with convenient access to daily services and necessities near their work, provided those retail and service uses can operate compatibly with surrounding uses. This designation is appropriate on the borders of residential areas. The maximum FAR and allowable residential density ranges differ based on the geographic area, as follows:

- *Outside the Greater Downtown:* The maximum FAR is 0.5. Based on gross acreage, this designation allows 13.2 to 24 units per acre; based on net acreage, it allows 17.5 to 30 units per acre.
- *Inside the Greater Downtown:* The maximum FAR is 3.0. Based on gross acreage, this designation allows 16 to 72 units per acre; based on net acreage, it allows 20 to 90 units per acre.
- *Inside the Downtown Core:* The maximum FAR is 5.0. Based on gross acreage, this designation allows 16 to 108.8 units per acre; based on net acreage, it allows 20 to 136 units per acre.

- **Commercial.** This designation allows for a wide variety of retail, service, and commercial recreational uses; business, medical, and professional offices; residential uses; public and quasi-public uses; and other similar and compatible uses. Community or regional commercial centers as well as freestanding commercial establishments are permitted. In addition, limited industrial uses are allowed, provided that they are indoors and compatible with surrounding uses. The maximum FAR and allowable residential density ranges differ based on the geographic area, as follows:
  - *Outside the Greater Downtown:* The maximum FAR is 0.3. Based on gross acreage, this designation allows 13.2 to 24 units per acre; based on net acreage, it allows 17.5 to 30 units per acre.
  - *Inside the Greater Downtown:* The maximum FAR is 3.0. Based on gross acreage, this designation allows 16 to 72 units per acre; based on net acreage, it allows 20 to 90 units per acre.

  - *Inside the Downtown Core:* The maximum FAR is 5.0. Based on gross acreage, this designation allows 16 to 108.8 units per acre; based on net acreage, it allows 20 to 136 units per acre.

- **Industrial.** This designation allows for a wide variety of industrial uses, including uses with nuisance or hazardous characteristics, warehousing, construction contractors, light manufacturing, offices, Retail Sales, service businesses, public and quasi-public uses, and other similar and compatible uses. Residential uses are prohibited. The maximum FAR for industrial uses is 0.6.

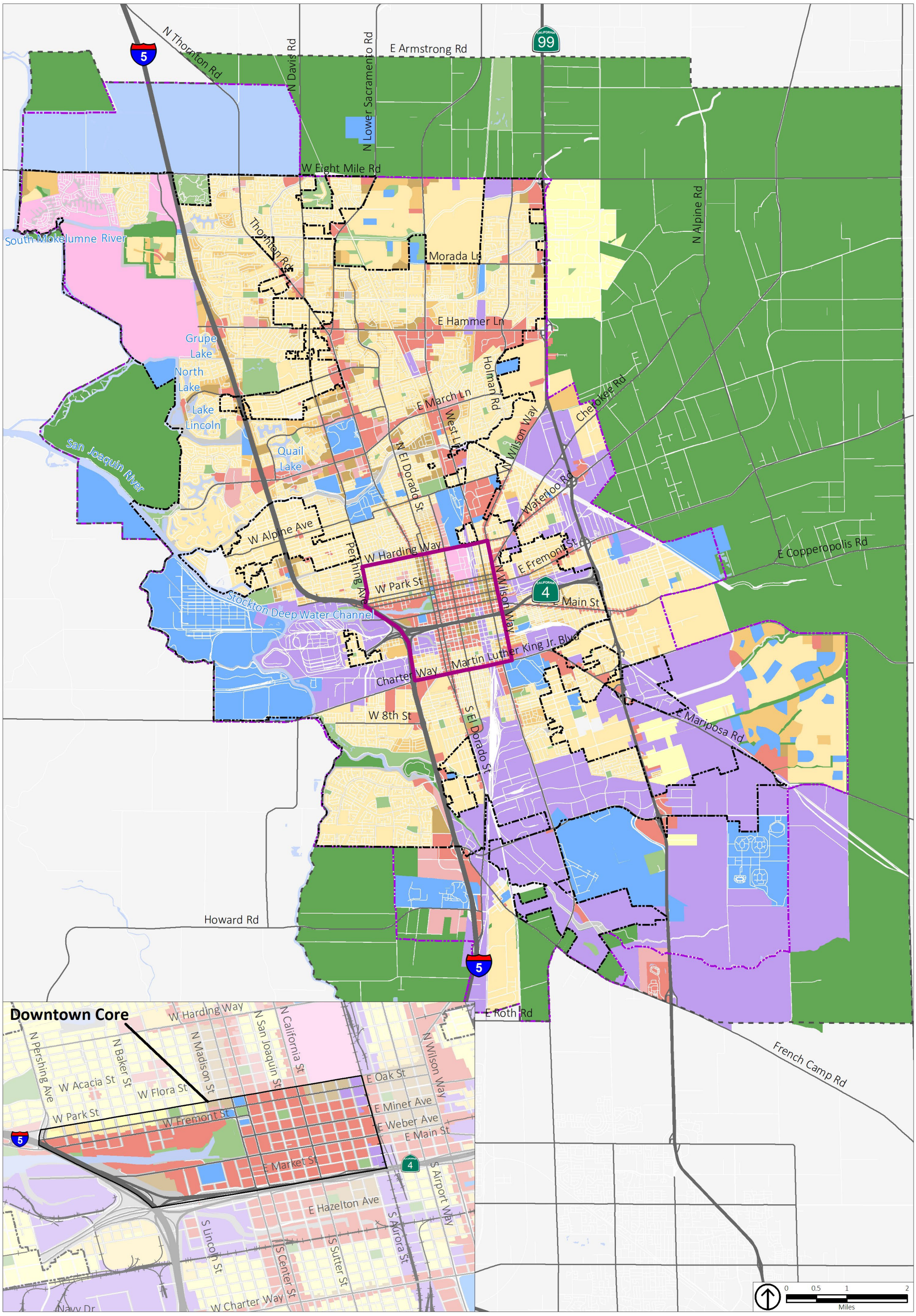
- **Economic and Education Enterprise.** Development in this designation is intended to support the City's economic development goals by attracting new businesses, industries, and/or educational institutions that provide high-quality jobs to the local workforce. By bringing major job-generators to Stockton, this designation supports the City's Economic Development Strategic Plan and State Executive Orders regarding greenhouse gas (GHG) reduction, Senate Bill (SB) 32, and the San Joaquin Sustainable Communities Strategy.

  It is not the intent of this policy to discourage development in other areas of the city. The Economic and Education Enterprise designation is specifically intended to accommodate exceptional job-producing developments and only permit housing and other facilities that are supportive to the job-producing effort.

  Businesses envisioned for this designation include:

  - Those that provide a significant number of jobs offering wages averaging above Area Median Income, as supported by a comprehensive economic impact analysis, and that cannot be reasonably accommodated elsewhere within the city limit.
  - In the following industries:
    - Education
    - Healthcare and Medical Facilities
    - High-Tech Manufacturing
    - Agricultural Technologies
    - Energy Resources and Technologies
    - Professional and Information Technology

Figure 2-8
General Plan Land Use Map



Source: City of Stockton, 2017; PlaceWorks, 2017.

- City Limit
- Sphere of Influence
- General Plan Planning Area
- Greater Downtown Boundary
- Residential Estate
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Mixed Use
- Commercial
- Administrative Professional
- Industrial
- Economic and Education Enterprise
- Institutional
- Parks and Recreation
- Open Space/Agriculture

EXHIBIT 1

General Plan - 2040 update

Land Use Designations

- Administrative Professional
- Commercial
- High Density Residential
- Industrial
- Institutional
- Low Density Residential
- Medium Density Residential
- Mixed Use
- Open Space/Agriculture
- Parks and Recreation
- Residential Estate
- Economic and Education Enterprise

CITY OF STOCKTON

GENERAL PLAN 2040 MAP

CITY OF STOCKTON

The information on this map is based on the most current information available to the City of Stockton Geographic Information System Division. The information on this map is not intended to replace engineering, financial or primary records research.

0 0.45 0.9 1.8 2.7 3.6 Miles

north

LAST REVISION: 5/12/2023

This page intentionally blank

In support of a major job-generator, this designation promotes:

- Linked transportation and housing options so that future employees can live close to their jobs and commute using transportation modes that support the City's vehicle miles traveled (VMT) reduction goals;
- Businesses that reduce VMT by providing vanpool programs, car share services, and active transportation alternatives;
- Proximate housing stock that supports the job-generator, including single-family, multi-family, and/or mixed-use dwellings at various levels of affordability, with housing costs that generally correspond to the income levels of the jobs generated by the project.

Projects proposed in the Economic and Education Enterprise designation will be required to:

- Adhere to the City's existing development review process including consideration by the Planning Commission and City Council of a General Plan Amendment.
- The City will negotiate with applicants to develop community benefit through development agreements that identify desired community amenities in the area of development.
- The City as Lead Agency will ensure that development mitigates its environmental impacts as feasible, pursuant to the California Environmental Quality Act (CEQA).

The maximum anticipated FAR is 0.6 and the maximum anticipated density is 24 dwelling units per gross acre; however, the designation allows variation from these standards with City approval to achieve the economic development goals and complete communities described above. Development proponents are encouraged to propose creative and innovative master plans to further the City's economic development goals consistent with the policies outlined above.

- **Institutional.** This designation allows for public and quasi-public uses such as schools, libraries, colleges, water treatment facilities, airports, some governmental offices, federal installations, and other similar and compatible uses. The maximum FAR for institutional uses is 0.5 outside the Downtown area and 5.0 within the Downtown area.

- **Parks and Recreation.** This designation allows for City and County parks, golf courses, marinas, community centers, public and quasi-public uses, and other similar and compatible uses. The maximum FAR for parks and recreation uses is 0.2.
- **Open Space/Agriculture.** This designation allows for agriculture, parks, single-family residential units, farm worker housing, wetlands, wildlife reserves, and other similar and compatible uses and structures related to the primary use of the property for preservation of natural resources or agriculture. Lands under this designation are intended to remain unincorporated and under the jurisdiction of San Joaquin County. The minimum parcel size is 40 acres, maximum density is 1 dwelling unit per parcel, and maximum FAR is 0.01.

THE GENERAL PLAN AND DEVELOPMENT CODE

Table 2-1 describes the overall relationship between the General Plan and the Development Code (Title 16 of the Stockton Municipal Code).

Table 2-1: General Plan Relationship to Development Code

GENERAL PLAN	DEVELOPMENT CODE
Objectives and Content	
■ Identifies the community's land use, circulation, environmental, economic, and social goals and policies as they relate to the future growth and development. ■ Defines and locates general land use throughout the city. ■ Describes the intent and direction of Stockton's growth. ■ Informs citizens, developers, decision-makers, and other cities and counties of the City's vision that guides development and provides a basis for decision making in Stockton. ■ Provides citizens with an opportunity to participate in the planning process.	■ Specifies permitted and conditionally permitted uses within the zoning districts. ■ Establishes development standards for land use throughout the city. ■ Regulates density (dwelling units per acre) and intensity (floor area ratio) of development. ■ Specifies standards for site design including setbacks, landscaping, and parking requirements. ■ Provides incentives for affordable housing, infill, and other types of development.
General Plan Land Use and Zoning Designation Correspondence	
Residential Estate	Residential, Estate
Low Density Residential	Residential, Low Density
Medium Density Residential	Residential, Medium Density
High Density Residential	Residential, High Density
Mixed Use	Mixed Use
Administrative Professional	Commercial Office; University/College; Residential, High Density
Commercial	Commercial Neighborhood; Commercial General; Commercial Downtown; Commercial Large-Scale; Commercial Auto; Residential, High Density
Industrial	Industrial Limited; Industrial General; Port
Economic and Education Enterprise	Any zoning district that allows uses that are consistent with the intended uses of this designation and the project
Institutional	Public Facilities; Port; University/College
Parks and Recreation; Institutional	Public Facilities
Open Space/Agriculture	Open Space

3 LAND USE

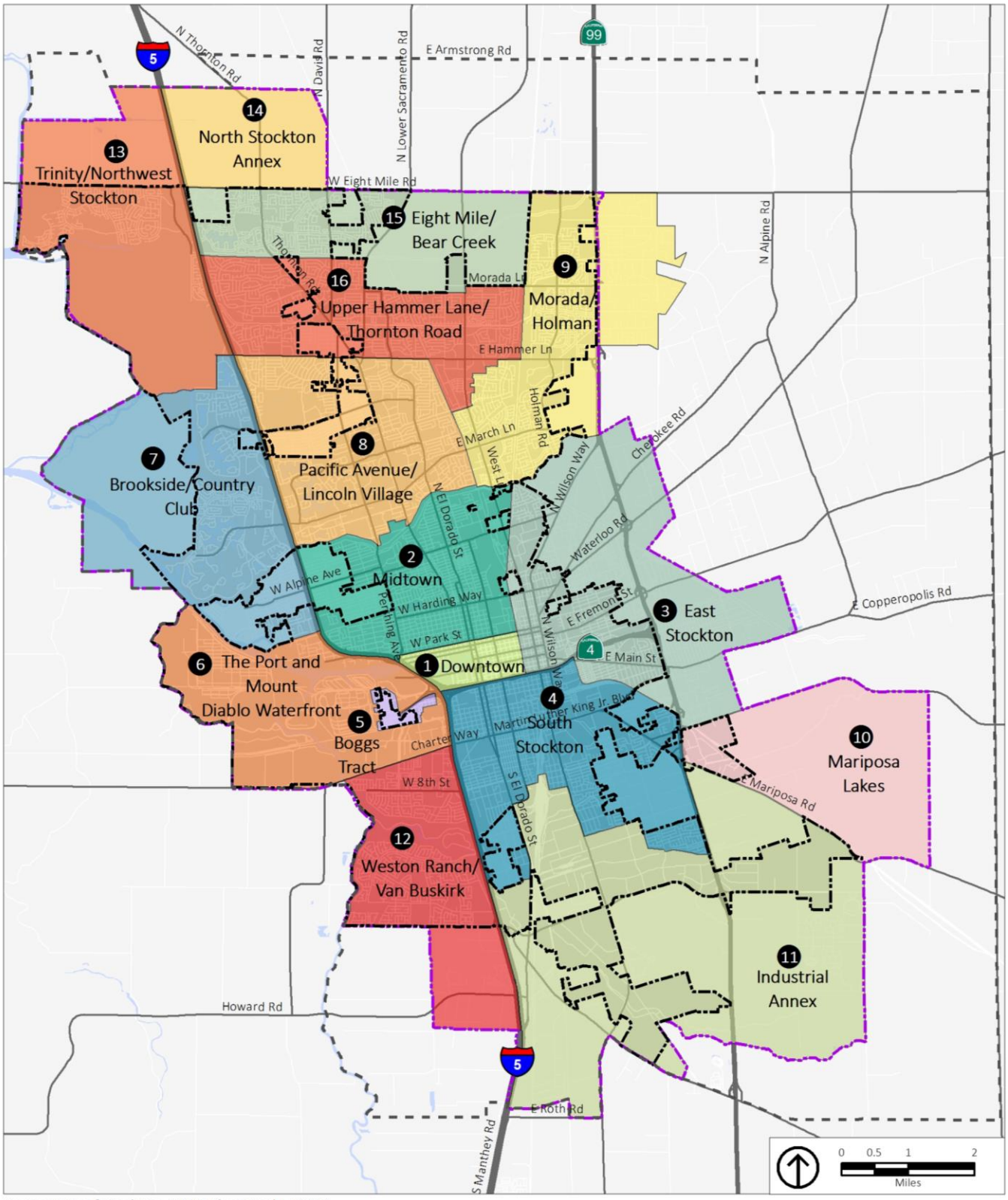
Stockton grew outward from and remains rooted in the Downtown and waterfront, which continue to anchor the city's role as a major California hub for commerce and transportation. The physical form and character of Stockton has evolved over more than a century-and-a-half, and the city currently encompasses 65 square miles. Social, cultural, economic, and historical events have helped shape Stockton into many distinct and diverse neighborhoods (shown on Figure 3-1), each with distinguishing characteristics such as prominent landmarks, gateways, building types, street patterns, and land uses.

How land is used in Stockton can make a big difference in how people feel about their neighborhoods. Just one new successful business where there once was a vacant lot with weeds can begin the transformation of a whole neighborhood, improving everything from the safety of kids going to school, to new landscaping along streets that symbolizes local pride and revitalization. Identifying feasible locations for expanded and new educational, vocational, and employment opportunities can help local youth and adults create meaningful careers close to home, increasing the odds that they'll contribute to the sense of community and be able to afford better housing. Design of buildings matters too, as it can improve community safety and spur additional investment in Stockton.

The goals, policies, and actions in this chapter are intended to apply thoughtful land use planning to enhance and build upon neighborhood assets, address current challenges, and improve quality of life for everyone in Stockton. This chapter is organized around six key goals that reflect the priorities of the Stockton community:

- Regional Destination
- Strong Downtown
- Authentic Neighborhoods
- High Quality Jobs
- Protected Resources
- Effective Planning

Figure 3-1
Stockton Neighborhoods



Source: City of Stockton, 2014; PlaceWorks, 2017

City Limit
Sphere of Influence
General Plan Planning Area

GOALS, POLICIES, AND ACTIONS

GOAL LU-1: REGIONAL DESTINATION

Become more of a regional destination that attracts visitors and invites residents to enjoy a diverse array of events and arts, entertainment, and dining options.

STOCKTON IS A MAJOR CALIFORNIA HUB

From its earliest years, Stockton has always enjoyed a definitive advantage due to its accessibility by water, rail, and road, and it has built upon that position with numerous regional attractions, recently including the Stockton Arena, Banner Island Ballpark, Stockton Marina, and Weber Point Events Center. In addition, a vibrant local arts scene and growing cultural offerings provide momentum for positive change in Downtown Stockton and throughout the community while supporting a lively urban environment.

POLICY LU-1.1

Encourage retail businesses and housing development in mixed-use developments along regional transportation routes and in areas that serve local residents.

Action LU-1.1A

Require renovated and new mixed-use projects to be planned and designed to contribute to the corridor's identity through appropriate public spaces, gateways, streetscapes, pedestrian walkways, setbacks, edge treatments, and other design features.

Action LU-1.1B

Evaluate the City's parking policies, and amend the Development Code to provide more flexibility as appropriate to facilitate mixed-use redevelopment.

Action LU-1.1C

Continue to study and consider repealing the "Big Box Ordinance" that was adopted in 2007, and if big-box stores are allowed in the future, require applicants to fund an analysis of economic and blight-inducement impacts of the proposed development on retail businesses in the market area, employment, City revenues and services, and any other relevant economic considerations. Prohibit the siting of any additional big-box "power centers" at the edges of the city to limit growth-inducing impacts to adjacent farmlands.

Action LU-1.1D

Encourage the redevelopment of struggling underutilized commercial strips into multi-family housing opportunities.

POLICY LU-1.2

Support expansion and improvement throughout the city of art, cultural, and educational facilities.

Action LU-1.2A

Advertise opportunities for the private sector to invest in public art throughout the city, and include public art in City roadway, building, and community parks projects.

Action LU-1.2B

Provide funding mechanisms for the administration, development, and long term maintenance of public art on a citywide basis.

POLICY LU-1.3

Improve the visual quality of the urban environment to be more welcoming and inviting at key gateways and travel corridors into the city.

Action LU-1.3A

Create a "gateway district" program for major corridor entries to the city, in which the design of public and private investment is coordinated to provide a cohesive and attractive welcome into Stockton.

Action LU-1.3B

Work with transportation agency partners and private property owners to improve maintenance, code enforcement, screening, and landscaping of viewsheds along major transportation routes into Stockton, including rail corridors, Highway 99, Highway 4, and Interstate 5.

Action LU-1.3C

Require the incorporation of scenic views, including open space features like waterways, wetlands, natural landscapes, and parks, into design of the built environment.

GOAL LU-2: STRONG DOWNTOWN

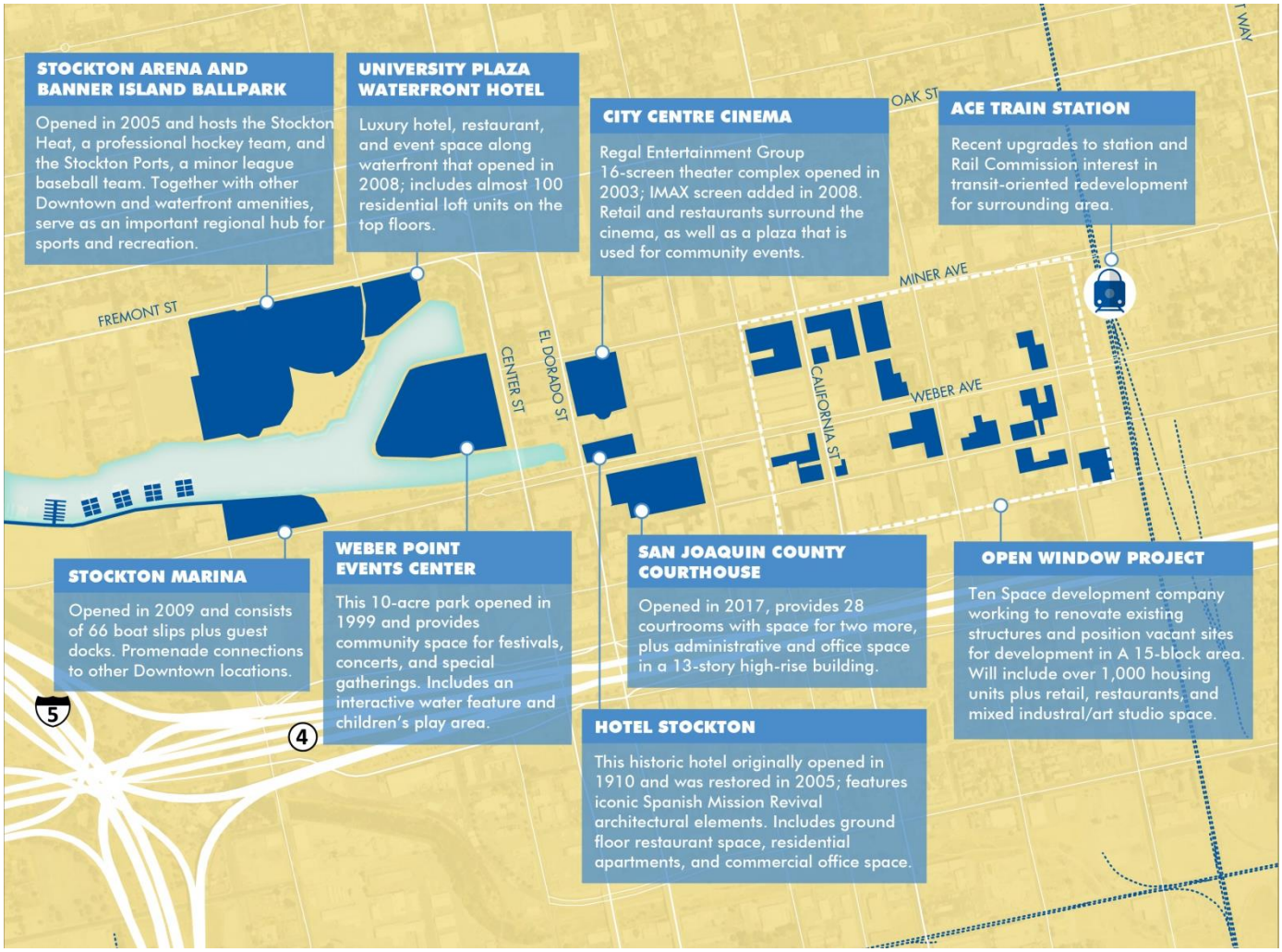
Strengthen the Downtown to reinforce it as the region's center for government, business, finance, arts, entertainment, and dining.

THE CITY'S LIFEBLOOD FLOWS FROM THE DOWNTOWN

The Downtown is the heart of Stockton. Much of Stockton's earliest development, including many historic buildings, is located in the Downtown, which is characterized by a compact urban form within a traditional street grid network. There are significant opportunities for both employment growth and higher density housing in the Downtown that can build upon previous redevelopment projects that have created infrastructure and amenities. These projects are shown on Figure 3-2 and include:

- **Robert J. Cabral Train Station.** This station is the eastern terminus of the Altamont Corridor Express (ACE), which ferries commuters to and from the southern San Francisco Bay Area.
- **Waterfront Amenities.** The Stockton Arena, which opened in 2005, seats up to 12,000 people and hosts the professional hockey team, the Stockton Heat. The Banner Island Ballpark, which also opened in 2005, can accommodate up to 5,200 people and is the home field of the Stockton Ports minor league baseball team. Together with other Downtown and waterfront amenities, these facilities represent an important regional hub for sports and recreation activities.

Figure 3-2
Downtown Redevelopment Projects



- **Open Window Project Master Development Plan.** In March 2015, the City entered into an agreement with Ten Space, a development company, for the exclusive right to negotiate to buy City-owned properties within a 15-acre area of Downtown Stockton. The project area extends from Main Street in the south to Miner Street in the north and from Aurora Avenue in the east to Sutter Street in the west. Formally called the Open Window Project, the Ten Space development company is working to renovate an assortment of existing structures and to reposition vacant opportunity sites for future development. The project's goal is to provide opportunities for new retail, restaurants, and mixed industrial/art studio space, as well as to incorporate up to 1,400 new market rate housing units in the Downtown area. The structure of the project area is well suited to a dense and pedestrian-friendly environment with good access to public transportation, including the ACE train at Cabral Station.

As the City's heart, the Downtown also can catalyze positive change spreading out through Stockton in all directions along the major transportation and commercial thoroughfares. Goals, policies, and actions that support Downtown revitalization are indicated with .

POLICY LU-2.1

Promote the Downtown and waterfront as a hub for regional commerce and entertainment, with high-quality housing to complement commercial activity and to infuse the area with daytime, evening, and weekend activity.

Action LU-2.1A

Work with other public agencies and organizations to develop and utilize all available financing tools and incentives to stimulate investment in the Downtown.

Action LU-2.1B

Amend the Development Code to provide flexibility for redevelopment of historic structures in the Downtown to meet the needs of modern users while maintaining the overall historic value.

Action LU-2.1C

Improve Downtown wayfinding for vehicles and pedestrians to direct visitors to key destinations throughout the Downtown.

Action LU-2.1D

Improve sidewalk maintenance in the Downtown, and widen key sidewalks to provide space for outdoor seating and tree plantings.

Action LU-2.1E

Develop and implement a public/private strategy for mixed-use high-end development along both sides of the Stockton Channel/San Joaquin River Corridor, including the following:

- A public promenade along the North Channel to Louis Park and the South Channel to Mormon Slough.
- Mixed-use development and re-use of historic structures.

POLICY LU-2.2

Facilitate the development of at least 4,400 new housing units in the Greater Downtown by 2040.

Action LU-2.2A

Amend the Development Code to provide more flexibility for residential development to be feasible, including through a streamlined residential development permit process, and to contribute to the "charm" of the Downtown.

Action LU-2.2B

Establish Transit Oriented Development (TOD) Overlay Zones around the Robert J. Cabral ACE Train Station and the San Joaquin Street Amtrak Station to promote high-density residential, including affordable and mixed-income housing, and other TOD.

Action LU-2.2C

Evaluate and implement adjustments to the Public Facilities Fee structure to promote development in the Downtown.

Action LU-2.2D

Discourage urban development at the edges of the city that would detract from or compete with the housing goals of the Greater Downtown.

POLICY LU-2.3

Encourage more Downtown community and regional entertainment venues.

Action LU-2.3A

Establish an entertainment district in the Downtown with a discrete boundary and strategies to promote entertainment uses, such as:

- Reducing permit requirements;
- Eliminating the requirement to sell food at bars;
- Providing incentives for clubs and restaurants;
- Allowing for reduced or shared parking; and
- Delineating an area in which to facilitate food trucks and pop-up businesses.

Action LU-2.3B

Partner with ride-sharing companies to facilitate safe nightlife in the Downtown.

Action LU-2.3C

Develop curbside management policies that are flexible to accommodate the evolving nature of ride-sharing programs and future reliance on autonomous vehicles in the Downtown.

Action LU-2.3D

Promote events that bring residents and visitors to the Downtown.

POLICY LU-2.4

Encourage more resident- and visitor-serving restaurants, retail, and consumer services to locate in the Downtown.

Action LU-2.4A

Implement strategies to promote new Downtown restaurant, retail, and consumer service businesses that primarily serve the needs of Downtown residents, but also add value for visitors, such as by:

- Reducing permit requirements;
- Allowing for reduced or shared parking;
- Providing incentives; and
- Facilitating planning and permitting for building renovations.

Action LU-2.4B

Partner with the Downtown Stockton Alliance to market the Downtown to existing Stockton businesses that would benefit from relocating to a centralized location.

Action LU-2.4C

Partner with the Downtown Stockton Alliance to market the Downtown to attract businesses that complement the Downtown's multi-modal connectivity by appealing to the needs of travelers and providing shopping and recreation opportunities for visitors and commuters alike.

POLICY LU-2.5

Promote Downtown Stockton as a primary transit node that provides multi-modal connections throughout the city and region.

Action LU-2.5A

Improve transit, bicycle, and pedestrian connectivity between the Downtown and local colleges and universities.

Action LU-2.5B

Study the possible one-way to two-way conversions of streets in the Downtown (e.g., El Dorado/Center, Park/Oak, and Main/Market) in order to improve pedestrian and bicycle safety, slow traffic speeds, and support local businesses.

Action LU-2.5C

Continue to develop an active transportation plan for Downtown Stockton, and implement complete streets projects to improve bicycle and pedestrian safety that are identified in the plan.

GOAL LU-3: AUTHENTIC NEIGHBORHOODS

Protect and preserve the authentic qualities of Stockton's neighborhoods and historic districts.

STOCKTON HAS A RICH HISTORY AND MODERN-DAY CHARM

Local history and culture contribute significantly to Stockton's sense of identity and pride. Stockton has a rich history, evident in numerous historic districts, landmarks, sites, and structures. Many of these are clustered in and around Downtown, but the city offers a great deal of charm in many other neighborhoods, with regional attractions like the University of the Pacific, Haggin Museum, and the County Fairgrounds. Many areas of Stockton feature avenues lined with mature trees that are a hallmark of the city's old-California charm.

In the 1980s, the City designated two historic districts in the Midtown neighborhood, just north of Downtown: the Magnolia Historic Preservation District, bounded by Harding Way, California Street, Flora Street, and El Dorado Street, and the Doctors' Row Historic Preservation District, bounded by California Street, Acacia Street, Poplar Street, and American Street on the former Stockton Development Center grounds, now the site of the California State University Stanislaus-Stockton Center, which is part of University Park. The City has also designated four historic sites, 13 structures of merit, and 52 historic landmarks. Of the City-designated historic landmarks, 17 are listed in the National Register of Historic Places and two are identified as California Historic Landmarks. Beyond the City-identified resources, the National Register also lists the Elks Building and Cole's Five Cypress Farm, and the California Register lists the Oak Lawn Ranch and Western Pacific railway depot. Stockton's historic resources are shown on Figure 3-3.

POLICY LU-3.1

Ensure that exterior remodels and the siting, scale, and design of new development are compatible with surrounding and adjacent buildings, public spaces, and cultural and historic resources.

Action LU-3.1A

Implement local and State incentives for the preservation and reuse of historic buildings and heritage housing in Downtown and other key areas.

Action LU-3.1B

If development has the potential to adversely affect buildings 50 years old or older, require a historical resources survey to be completed by a professional consistent with the Secretary of the Interior's Standards for Architectural History.

Action LU-3.1C

Require historic structures, along with landscape, original roadways, sidewalks, and other public realm features in historic neighborhoods, to be maintained, restored, or repaired where ever possible. If alterations are proposed to historical buildings, require those changes to meet the Secretary of the Interior's Standards for Treatment of Historic Properties.

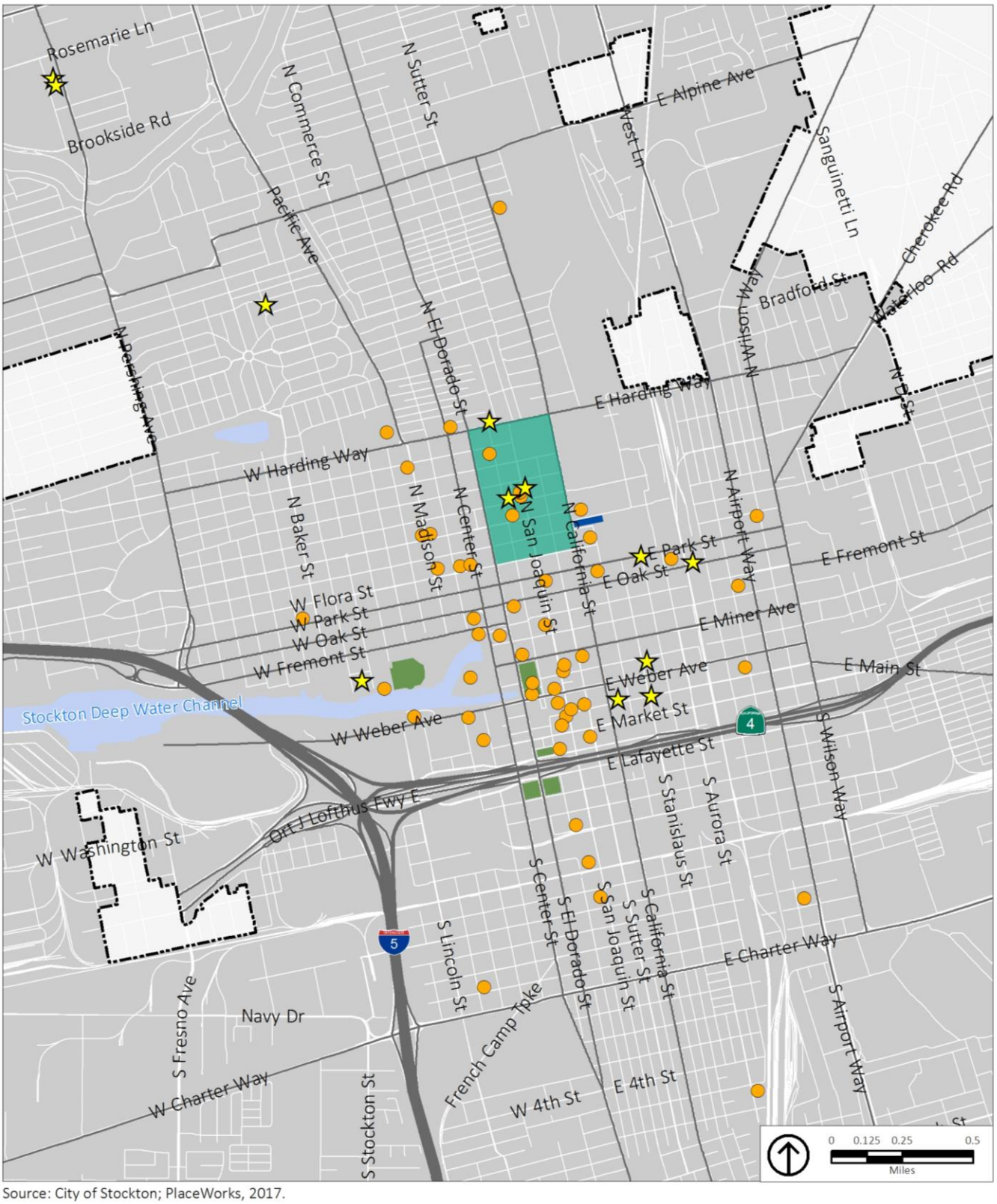
Action LU-3.1D

Review the boundaries of the Magnolia Historic District, and consider land use and zoning changes to reflect current uses and help facilitate access to grant funding for historic preservation.

Action LU-3.1E

Maintain and periodically update the City's historical resources inventory and adopt a priority list to protect the most important resources.

Figure 3-3
Historic Resources



Source: City of Stockton; PlaceWorks, 2017.

Structures of Merit
Historic Landmarks
Historic Sites
Doctors Row Historic Preservation District
Magnolia Historic Preservation District
City Limit
General Plan Planning Area

Action LU-3.1F

Maintain and periodically update Citywide Design Guidelines.

POLICY LU-3.2

Retain narrower roadways and reallocate right-of-way space to preserve street trees and mature landscaping and enhance the pedestrian and bicycle network within and adjacent to residential neighborhoods.

Action LU-3.2A

Implement the "road diet" recommendations from the City's Bicycle Master Plan that reduce roadway widths to provide space for bike lanes and other amenities that improve safety and ease of the streetscape for all modes.

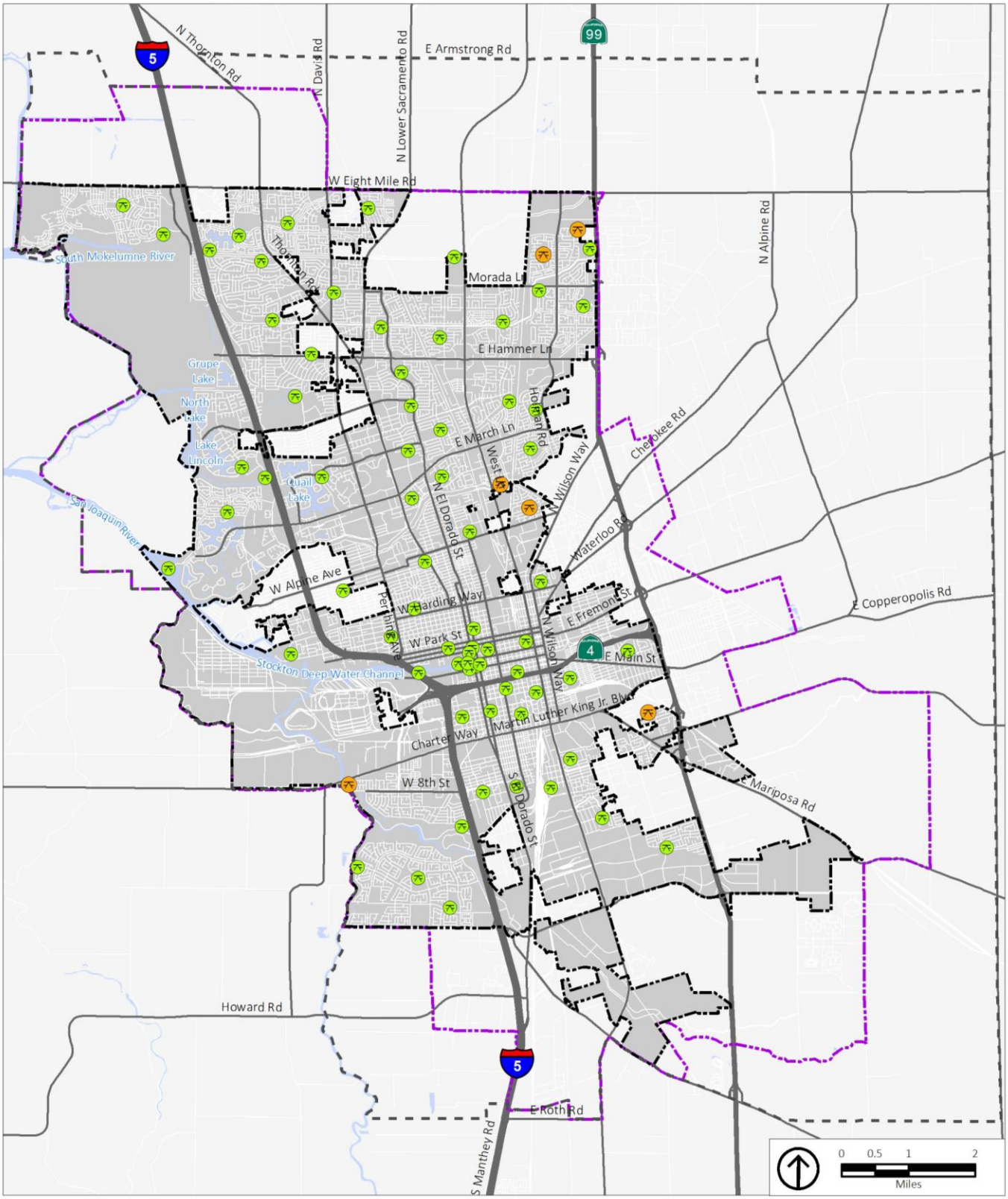
GOOD PARKS ARE KEY TO QUALITY OF LIFE

Public parks and community centers provide a wide variety of spaces for gathering and recreation throughout Stockton. Opportunities for exercise and social activities are usually free and valuable for everyone, including children and seniors. Public parks and community centers also offer places where people interact and build bonds—parents meet as their kids play, and kids make new friends. Parks can also be a rallying place for the community, where people come together on a range of projects, from picking up trash, to planting flowers, to building play structures, and even to raising funds for new amenities.

Stockton residents have access to several dozen neighborhood, community, and specialty parks (listed in Table 3-1 and shown on Figure 3-4). The City has established the following design standards for new neighborhood and community parks:

- Neighborhood Parks: Neighborhood parks shall be designed to serve as both the recreational and social focus of the neighborhood. Neighborhood parks shall be bounded on all sides by public streets, unless adjacent to a public school, and accessible to the surrounding neighborhood through the use of bikeways, trails, sidewalks, or local residential streets. Neighborhood parks shall be a minimum of 5 acres in size and serve up to a ½-mile radius. Neighborhood parks may include, but are not limited to the following features:
  - Open grassy area for informal sports activities (e.g., soccer)
  - Basketball court(s)
  - Tennis court(s)
  - Playground and tot lot
  - Picnic tables and small group picnic shelter
  - Walking/jogging paths
  - Ornamental security lighting
- Community Parks: Community parks shall be designed to meet the recreational needs of large sections of the community. These parks should allow for larger group activities and recreational activities not suited for neighborhood parks. Community parks shall be bounded on all sides by public streets, unless adjacent to a public school. Community parks shall be a minimum of 15 acres in size and serve up to a 1-mile radius. Community parks may include, but are not limited to the following features:
  - Sports fields (baseball/softball and soccer) for practice and league activities
  - Tennis court(s)
  - Basketball court(s)
  - Handball court(s)
  - Playground and tot lot
  - Group picnic area
  - Walking/jogging paths
  - Restroom facilities
  - Sports lighting
  - Ornamental security lighting

Figure 3-4
Existing and Planned Parks



Source: City of Stockton; San Joaquin County; PlaceWorks, 2017.

Existing Parks
Planned Parks
City Limit
Sphere of Influence
General Plan Planning Area

Table 3-1: City Parks by Type

NAME	LOCATION	ACRES
NEIGHBORHOOD PARKS		
Atherton Park	1978 Quail Lakes Drive	10
Baxter Park	10410 Muir Woods Avenue	9
Brooking Park	4500 Nugget Avenue	3
Caldwell Park	3021 Pacific Avenue	3
Columbus Park	401 W. Worth Street	2
Constitution Park	1101 E. Lindsay Street	2
Corren Park	3525 A G Spanos Boulevard	1
Cortez Park	817 Erie Drive	5
Cruz Park	110 Segovia Lane	7
Dentoni Park	1430 Royal Oaks Drive	10
Eden Park	924 N. El Dorado Street	2
Fong Park (Phase I)	2525 Blossom Circle	5
Fremont Park	302 E. Fremont Street	2
Friedberger Park	1708 E. Walnut Street	2
Garrigan Park	3690 Iron Canyon Circle	6
Gibbons Park	1825 W. Hammer Lane	4
Gleason Park	535 E. Church Street	2
Harrell Park	2244 S. Lincoln Street	9
Holiday Park	614 Elaine Drive	2
Holmes Park	1718 Ralph Avenue	2
Iloilo Park	5920 Scott Creek Drive	6
Independence Park	802 E. Market Street	2
Lafayette Park	825 S. Hunter Street	2
Laughlin Park	2733 Estate Drive	5
Liberty Park	725 E. Jefferson Street	2
Loch Lomond	8477 N. El Dorado Street	5
Long Park	4535 Woodchase Lane	11
Nelson Park	3535 Brookview Drive	12
Parma Sister City Park	9127 Chianti Circle	4
Peterson Park	2429 S. Union Street	3

Table 3-1: City Parks by Type

NAME	LOCATION	ACRES
Pitts Park	510 Villa Point Drive	10
Sherwood Park	100 W. Robinhood Drive	6
Shropshire Park	4120 Pock Lane	6
Smith Park	2606 Wm Moss Boulevard	5
Sousa Park	2829 Yellowstone Avenue	3
Swenson Park	6803 Alexandria Place	9
Union Park	635 S. Pilgrim Street	2
Unity Park	5525 Rayanna Drive	5
Valverde Park	2418 Arden Lane	7
Weber Park	405 W. Oak Street	2
Weberstown-E Park	4750 Kentfield Road	5
Williams Brotherhood Park	2040 S. Airport Way	14
Total Neighborhood Park Acres		**215**
COMMUNITY PARKS		
Anderson Park	6201 N. El Dorado Street	11
Buckley Cove Park	4311 Buckley Cove Way	53
DeCarli Park	123 N. El Dorado Street	2
Equinoa Park (Phase I)	9499 Glacier Point Drive	6
Faklis Park	5250 Cosumnes Drive	16
Grupe Park	58518 Cumberland Place	21
King Plaza	555 N. El Dorado Street	2
Legion Park	1859 N. Baker Street	21
Louis Park	3201 Monte Diablo Avenue	60
McKinley Park	424 E. Ninth Street	22
McLeod Park	46 W. Fremont Street	4
Morelli Park	1025 W. Weber Avenue	4
North Seawall Park	306 W. Fremont Street	2
Oak Park	501 E. Alpine Avenue	61
Panella Park	5758 Lorraine Avenue	15
Sandman Park	8801 Don Avenue	16
South Seawall Park	Center & Weber-NW Corner	1

Table 3-1: City Parks by Type

NAME	LOCATION	ACRES
Stribley Park	502 Della Street	19
Van Buskirk Park	734 Houston Avenue	20
Victory Park	1001 N. Pershing Avenue	22
Weber Point Event Center	235 N. Center Street	10
Weston, P.E.	3603 EWS Woods Boulevard	23
	Total Community Parks Acres	**411**
SPECIALTY PARKS		
Barkleyville Dog Park	5505 Feather River Drive	3
Misasi Park	9820 Ronald McNair Way	11
	Total Specialty Parks Acres	**14**

In addition, Stockton has special purpose facilities that house recreational and community programs and/or facilities targeted to meet the needs of a certain sector of the population or neighborhood. In addition to two target park and recreation facilities, the Barkleyville Dog Park and the Misasi Sports Complex at McNair High School, the City operates five community centers offering a range of programs and services for residents of all ages:

- Arnold Rue Community Center, 5758 Lorraine Avenue
- Stribley Community Center, 1760 E. Sonora Street
- Van Buskirk Community Center, 734 Houston Avenue
- Seifert Community Center, 128 W. Benjamin Holt Drive (shared with Stockton Unified School District)
- Oak Park Senior Community Center, 730 E. Fulton Street

Park and community center standards provide a means to ensure that parks and recreation facilities are provided as the city develops. The City maintains the following park and community center standards:

- Neighborhood Parks: 2 net acres per 1,000 residents
- Community Parks: 3 net acres per 1,000 residents
- Regional Parks: 3 net acres per 1,000 residents
- City-Owned Community Centers: 1 center per 50,000 population
- Combined City-Owned and School District Community Centers: 1 center per 30,000 population

These standards are an important way to be able to require new development to provide facilities when parks or community centers to serve new residents are lacking nearby.

POLICY LU-3.3

Maintain or expand the currently available amount of public park and open space area in each neighborhood.

Action LU-3.3A

Continue to improve and maintain park facilities and fields to address deficiencies and improve park sustainability, including lighting improvements, conversion to solar lighting, drinking fountain maintenance, and natural stormwater management.

Action LU-3.3B

Pursue joint-use recreational facilities where possible, including on school grounds and utility easements.

Action LU-3.3C

Establish a citywide park maintenance assessment district.

Action LU-3.3D

Periodically review the City's Development Impact Fee requirements to determine whether they should be adjusted to reflect the City's priorities for parks, community centers, and libraries that serve the surrounding neighborhoods.

Action LU-3.3E

Require new development to improve utility easement property as usable public open space, where feasible.

Action LU-3.3F

Allow developers to develop pocket parks that function as social gathering places and/or children's play areas, and which can count towards the park standard requirements for new development.

GOAL LU-4: HIGH-QUALITY JOBS

Attract and retain companies that offer high-quality jobs with wages that are competitive with the region and state.

GOOD-PAYING JOBS ARE ESSENTIAL TO STOCKTON'S FUTURE

Enhancing Stockton's success as an economic hub depends on retaining, supporting, and attracting a diverse range of businesses that will sustain the local economy despite changing market forces.

Ten of the top 25 major employers in San Joaquin County already are located in Stockton, including three major governmental entities, two health care providers, two major growers and shippers of fruit and vegetable products, one aircraft servicing and maintenance company, a major home appliance manufacturer, the University of the Pacific, and two Walmart Supercenters. More than 37,900 new jobs are expected in Stockton between 2015 and 2040, with the most significant growth in the education and health services, professional and business services, and government sectors (see Figure 3-5). With a significant number of Stockton residents commuting outside the city for work and an expected increase in housing production in the city over the coming decades, there is potential for strong growth across office, commercial, and industrial sectors in many locations in Stockton.

POLICY LU-4.1

Encourage large-scale development proposals in appropriate locations that include significant numbers of higher-wage jobs and local revenue generation. Such development may utilize the Economic and Education Enterprise land use designation if the proposal meets all of the criteria listed under the definition of the designation.

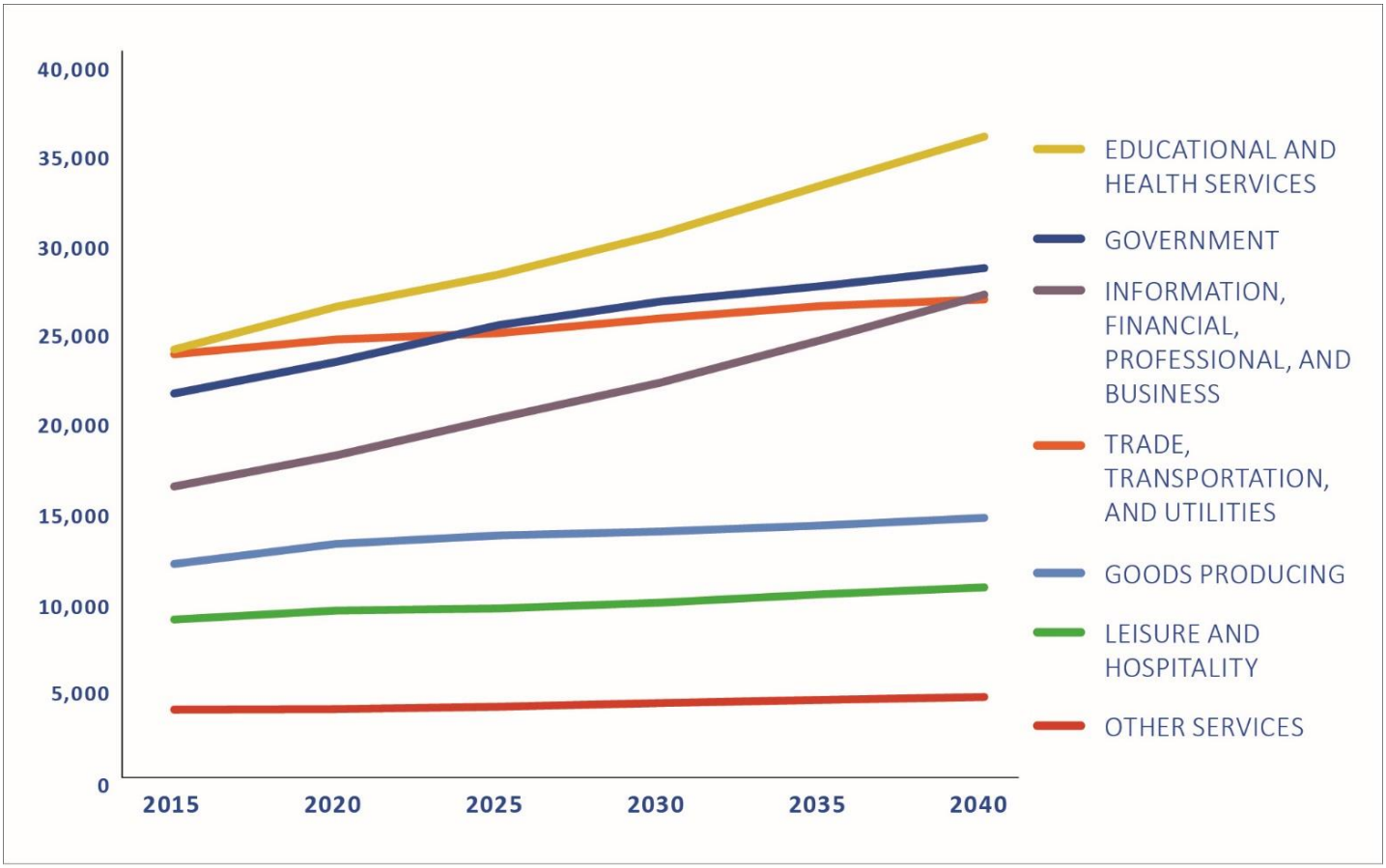
Action LU-4.1A

Update the Development Code and other City regulations to streamline project review as feasible for businesses that meet the City's economic development and workforce support objectives.

Action LU-4.1B

Seek out and market to businesses that build on Stockton's competitive advantages and offer high- and living-wage jobs in a range of industries, such as management of companies and enterprises, finance and insurance, wholesale trade, professional and technical services, information, healthcare and social assistance, and education.

Figure 3-5 Employment Forecast by Industry



Source: University of the Pacific, 2016; BAE 2016.

Action LU-4.1C

Conduct marketing and outreach to retain existing companies and use the City's permitting and regulatory processes to facilitate expansions of existing businesses, consistent with other General Plan policies and actions.

Action LU-4.1D

Consider future amendments to the General Plan for extraordinary growth plans outside the Urban Services Boundary that include significant job generators or public institutions such as a college campus.

POLICY LU-4.2

Attract employment- and tax-generating businesses that support the economic diversity of the city.

Action LU-4.2A

Maintain a memorandum of understanding (MOU) with the San Joaquin Partnership, the Chambers of Commerce, and the Business Council to share marketing leads and collaborate on business attraction efforts.

Action LU-4.2B

Develop strategic partnerships with higher education institutions, workforce training agencies, business associations, financial institutions, and venture capital concerns to support the development of beneficial industry clusters.

Action LU-4.2C

Continuously improve the efficiency, timeliness, and transparency of the City's permitting process to assist businesses in expanding or locating in Stockton, while providing certainty in fee calculations and regulatory requirements.

Action LU-4.2D

Continually reexamine the City's planning and permitting fee structures to ensure that they do not constitute undue burdens on business.

GOAL LU-5: PROTECTED RESOURCES

Protect, maintain, and restore natural and cultural resources.

NATURAL AND CULTURAL RESOURCES ARE A PILLAR OF A HEALTHY STOCKTON

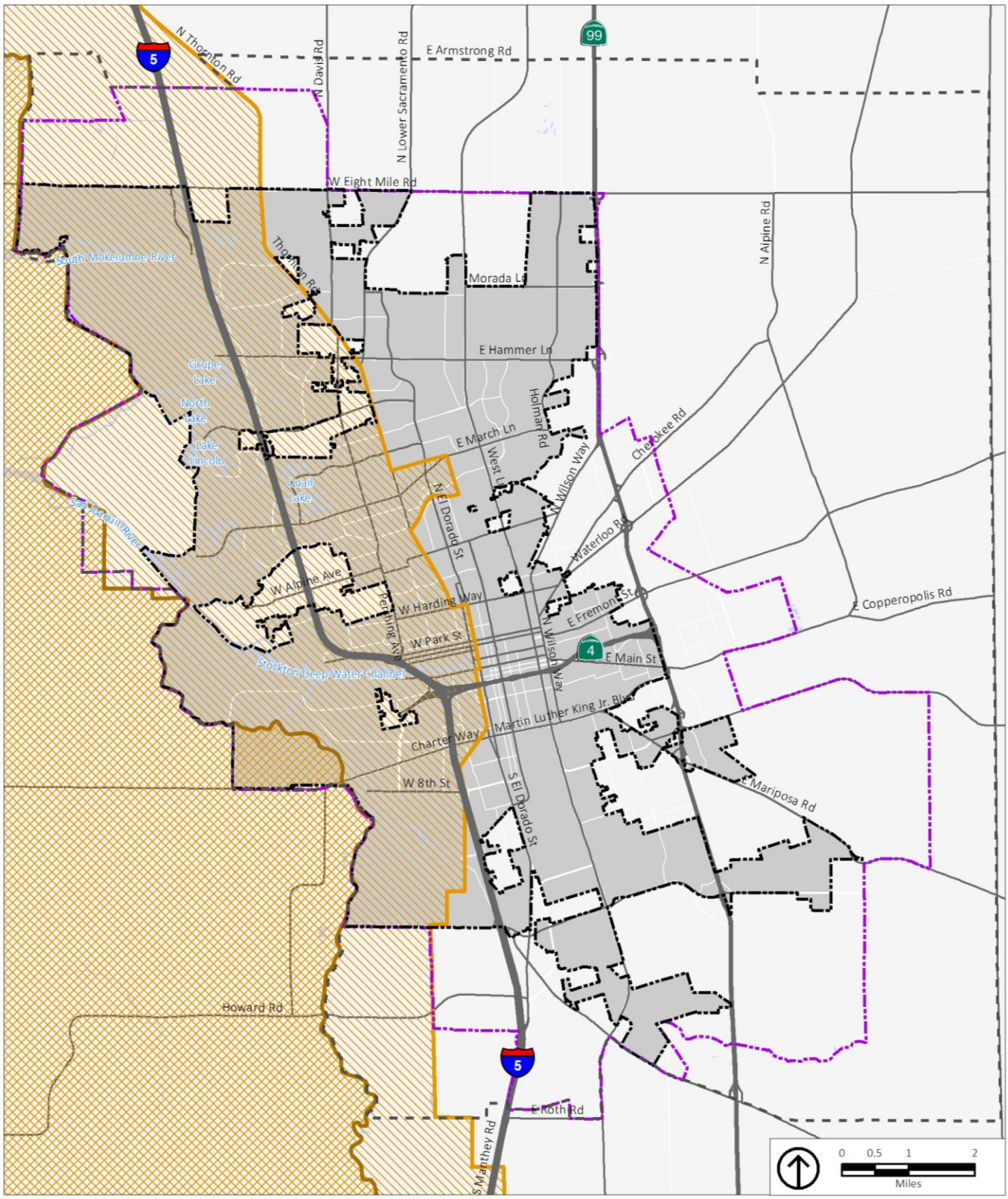
Stockton's setting affords great opportunities to appreciate natural resources even from within the urbanized environment. The city's location within the greater San Joaquin Valley and proximity to the Sacramento-San Joaquin Delta also reinforce the importance of avoiding impacts to sensitive natural, cultural, and scenic resources.

To aid regional conservation efforts, California's Delta Stewardship Council adopted the Delta Plan in 2013, which includes rules and recommendations to improve water supply, protect the Delta ecosystem, and preserve, protect, and enhance agricultural, cultural, and recreational features. As shown on Figure 3-6, the western portion of the Planning Area is located within the "Legal Delta," the area subject to State oversight through the Delta Plan, including actions such as ensuring that the Stockton General Plan is consistent with the Delta Plan.

Natural resources include not only the plants, trees, animals, fish, birds, and microorganisms present in the urban and natural environment around us, but also the water, soil, habitats, and ecosystems that make up the ecological community in which we live. Several rare and sensitive groups of plants and animals, or "natural communities," exist in the open space lands in and around Stockton, including coastal and valley freshwater marsh, great valley oak riparian forest, and valley oak woodland. The City collaborates with regional agencies and neighboring jurisdictions to manage and protect these and other natural resources as a voluntary participant in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan, which was adopted in 2001 .

Stockton is also home to valued cultural resources, including structures and objects associated with events and people that have contributed to local history. The early indigenous local inhabitants, the northernmost tribes of Yokuts, range over much of the northern San Joaquin Valley. The Northern Valley Yokuts tribe, the Chulamni, had a village, Yatchcumne (or Yachik) near Stockton, and another village, Tauquimne, in the eastern end of the San Joaquin-Sacramento Delta near Bear Creek. Approximately 100 archaeological sites and several fossil finds related to these early inhabitants have been identified in Stockton, and more may exist that have not yet been found.

Figure 3-6
Sacramento San Joaquin Delta



Source: CA Department of Water Resources, 2017; San Joaquin County, 2017; PlaceWorks, 2017.

Primary Delta
Legal Delta
City Limit
Sphere of Influence
General Plan Planning Area

POLICY LU-5.1

Integrate nature into the city and maintain Stockton's urban forest.

Action LU-5.1A

Require renovated and new projects to provide open spaces that create gateways, act as collectors for pedestrian systems, and/or provide a social focal point for a project and the surrounding community and corridor, as appropriate.

Action LU-5.1B

Protect, preserve, and improve riparian corridors and incorporate them in the City's parks, trails, and open space system.

Action LU-5.1C

Require landscape plans to incorporate native and drought-tolerant plants in order to preserve the visual integrity of the landscape, conserve water, provide habitat conditions suitable for native vegetation, and ensure that a maximum number and variety of well-adapted plants are maintained.

POLICY LU-5.2

Protect natural resource areas, fish and wildlife habitat, scenic areas, open space areas, agricultural lands, parks, and other cultural/historic resources from encroachment or destruction by incompatible development.

Action LU-5.2A

Continue to coordinate with the San Joaquin Council of Governments and comply with the terms of the Multi-Species Habitat Conservation and Open Space Plan to protect critical habitat areas that support endangered, threatened, and special-status species.

Action LU-5.2B

For projects on or within 100 feet of sites that have the potential to contain special-status species or critical or sensitive habitats, including wetlands, require preparation of a baseline assessment by a qualified biologist following appropriate protocols, such as wetland delineation protocol defined by the US Army Corps of Engineers. If such sensitive species or habitats are found to be present, development shall avoid impacting the resource, and if avoidance is not feasible, impacts shall be minimized through project design or compensation identified in consultation with a qualified biologist.

Action LU-5.2C

Require new development to implement best practices to protect biological resources, including incidental take minimization measures and other federal and State requirements and recommendations that are consistent with the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan.

Action LU-5.2D

Require the following tasks by a qualified archaeologist or paleontologist prior to project approval:

- Conduct a record search at the Central California Information Center located at California State University Stanislaus, the University of California Museum of Paleontology at Berkeley, and other appropriate historical or archaeological repositories.
- Conduct field surveys where appropriate.
- Prepare technical reports, where appropriate, meeting California Office of Historic Preservation or other appropriate standards.
- Where development cannot avoid an archaeological or paleontological deposit, prepare a treatment plan in accordance with appropriate standards, such as the Secretary of the Interior's Standards for Treatment of Archaeological Sites.

Action LU-5.2E

Continue to consult with Native American representatives, including through early coordination, to identify locations of importance to Native Americans, including archaeological sites and traditional cultural properties.

Action LU-5.2F

If development could affect a tribal cultural resource, require the developer to contact an appropriate tribal representative to train construction workers on appropriate avoidance and minimization measures, requirements for confidentiality and culturally appropriate treatment, other applicable regulations, and consequences of violating State laws and regulations.

Action LU-5.2G

Comply with appropriate State and federal standards to evaluate and mitigate impacts to cultural resources, including tribal, historic, archaeological, and paleontological resources.

Action LU-5.2H

Comply with applicable water conservation measures.

Action LU-5.2I

Coordinate with water agencies and non-profit organizations to promote public awareness on water quality and conservation issues and consistency in water quality impacts analyses.

CONSERVATION ALLOWS THE CITY, FARMS, AND OPEN SPACE TO THRIVE TOGETHER

In addition to their obvious importance in supplying food, local agricultural lands provide needed buffers between Stockton and neighboring cities, plus some of the most important scenic vistas in the Planning Area. Accordingly, the City has adopted a Right to Farm ordinance to protect local agricultural lands (Municipal Code Section 16.36.040), which limits the circumstances under which an agricultural operation may be considered a nuisance and establishes notification requirements for agricultural neighbors of this protection.

Repeated droughts have highlighted the need for water conservation, and increasingly sustainable methods for using energy are assisting both urban and agriculture uses in succeeding locally. The City has helped property owners identify options for energy efficient, renewable energy, and water saving improvements and considers water and energy conservation an integral requirement for future development.

POLICY LU-5.3

Define discrete and clear city edges that preserve agriculture, open space, and scenic views.

Action LU-5.3A

At the interface between development and rural landscapes, use landscaping and other attractive edging instead of soundwalls and similar utilitarian edges of developments to maintain the visual integrity of open space.

Action LU-5.3B

Coordinate with San Joaquin County and property owners in unincorporated areas to preserve agricultural land and open space areas in the unincorporated county that contribute to maintaining clear boundaries between cities.

Action LU-5.3C

Maintain the City's agricultural conservation program that requires either dedication of an agricultural conservation easement at a 1:1 ratio or payment of an in-lieu agricultural mitigation fee for the conversion of prime farmland, farmland of statewide importance, or unique farmland, as defined by the State Farmland Monitoring and Mapping Program.

POLICY LU-5.4

Require water and energy conservation and efficiency in both new construction and retrofits.

Action LU-5.4A

Require all new development, including major rehabilitation, renovation, and redevelopment, to adopt best management practices for water use efficiency and demonstrate specific water conservation measures.

Action LU-5.4B

Require all new development, including major rehabilitation, renovation, and redevelopment, to incorporate feasible and appropriate energy conservation and green building practices, such as building orientation and shading, landscaping, and the use of active and passive solar heating and water systems.

Action LU-5.4C

Update the Citywide Design Guidelines to strengthen energy conservation and green building provisions.

GOAL LU-6: EFFECTIVE PLANNING
Provide for orderly, well-planned, and balanced development.

STOCKTON NEEDS BALANCED GROWTH

Achieving the community's vision for the future of Stockton requires more than just good planning documents. The City needs to ensure that the pace and pattern of development can be supported by the infrastructure and service networks, promote fiscal health, align with regional plans, and represent community values. Prioritizing infill development is one strategy to efficiently use existing infrastructure networks in Stockton and avoid having to expand roadways, utilities, and services into new areas, even while accommodating new residents and attracting new jobs and visitors to the city. Expanding infrastructure beyond the current urban limit incurs both up front and long-term maintenance costs that, if not adequately funded by development, can detract from existing neighborhoods. As growth takes place, regularly monitoring its progress will help ensure that benefits are shared communitywide and that impacts can be mitigated.

POLICY LU-6.1

Carefully plan for future development and proactively mitigate potential impacts.

Action LU-6.1A

The Envision Stockton General Plan Update Environmental Impact Report (EIR) assumes the following maximum development projections for the year 2040 for the lands located within the Sphere of Influence, including projects that were already approved prior to the General Plan Update, but not yet constructed:

- 40,900 new dwelling units
- 13.8 million square feet of new commercial and office space
- 35.6 million square feet of new industrial space

When approved development within the city reaches the maximum number of residential units or any of the non-residential square footages projected in the General Plan EIR, require that environmental review conducted for any subsequent development project address growth impacts that would occur due to development exceeding the General Plan EIR's projections. This does not preclude the City, as lead agency, from determining that an EIR would be required for any development in the Sphere of Influence to the extent required under the relevant provisions of CEQA (e.g., Section 21166 and related guidelines). The City will conduct the appropriate scoping at the time of initial study for any project, all in accordance with these requirements.

Action LU-6.1B

Monitor the rate of growth to ensure that it does not overburden the City's infrastructure and services and does not exceed the amounts analyzed in the General Plan EIR.

Action LU-6.1C

Require that vacant unincorporated properties be annexed into the city prior to the provision of any City services, or that a conditional service agreement be executed agreeing to annex when deemed appropriate by the City.

Action LU-6.1D

Require that all utility connections outside the city limit be for land uses that are consistent with the General Plan.

Action LU-6.1E

Do not approve new development unless there is infrastructure in place or planned and funded to support the growth.

Action LU-6.1F

Evaluate and implement adjustments to the Public Facilities Fee structure to encourage development in areas where infrastructure is already present and ensure that non-infill development pays its fair share of anticipated citywide capital facilities and operational costs.

Action LU-6.1G

Maintain adequate staffing levels to support achieving the City's service level goals for police and fire protection.

POLICY LU-6.2

Prioritize development and redevelopment of vacant, underutilized, and blighted infill areas.

Action LU-6.2A

Develop and implement an infill incentive program that encourages infill development through expedited permitting, changes in fee structures, prioritizing infrastructure improvements in infill areas, property owner and/or landlord incentives to maintain property and reduce blight, and/or other strategies. As part of this program, define and prioritize categories of infill types based on land use and residential density or non-residential intensity.

Action LU-6.2B

Do not approve future annexations or City utility connections unless they are consistent with the overall goals and policies of the General Plan and do not adversely impact the City's fiscal viability, environmental resources, infrastructure and services, and quality of life.

Action LU-6.2C

Ensure prioritization of development and redevelopment of vacant, underutilized, and blighted infill areas be considered through strategies such as zoning changes and strategies to avoid gentrification.

Action LU-6.2D

Comply with State requirements that limit the idling of motor vehicles.

POLICY LU-6.3

Ensure that all neighborhoods have access to well-maintained public facilities and utilities that meet community service needs.

Action LU-6.3A

Require development to mitigate any impacts to existing sewer, water, stormwater, street, fire station, park, or library infrastructure that would reduce service levels.

Action LU-6.3B

Ensure that public facilities, infrastructure, and related land area and other elements are designed and right-of-way is acquired to meet 2040 planned development requirements to avoid the need for future upsizing or expansion, unless planned as phased construction.

Action LU-6.3C

Coordinate, to the extent possible, upgrades and repairs to roadways with utility needs, infrastructure upgrades, and bicycle and pedestrian improvements (i.e., "dig once").

Action LU-6.3D

Design public facilities and infrastructure to maintain and improve the visual quality of the urban environment, including through the following approaches:

- Designing buildings and infrastructure to fit into and complement their ultimate surroundings.
- Buffering buildings and infrastructure from their surroundings as appropriate to shield unsightly areas from public view.
- Providing appropriate landscaping.

POLICY LU-6.4

Ensure that land use decisions balance travel origins and destinations in as close proximity as possible, and reduce vehicle miles traveled (VMT).

Action LU-6.4A

Maintain a reasonable balance between potential job generation and local workforce availability with a goal of one job for each employed resident.

Action LU-6.4B

Maintain a reasonable proximity and balance (i.e., magnitude) between job-generating uses, housing opportunities, and resident services and amenities, including transit and active transportation.

Action LU-6.4C

Reduce Vehicle Miles Traveled (VMT) per household by planning new housing in closest proximity to employment centers, improving and funding public transportation and ridesharing, and facilitating more direct routes for pedestrians and bicyclists.

FISCAL HEALTH IS A NECESSARY PRIORITY

The potential for business attraction, retention, and expansion in Stockton can support the City government and the overall community in a variety of ways. A portion of sales tax from retail and business-to-business transactions goes directly into the City's General Fund, where it can be used to support services such as law enforcement, fire suppression, and street maintenance. Likewise, investment in real estate that leads to increased property value can also result in higher property tax revenues that support the General Fund. New development also pays a Utility User Tax, and lodging businesses pay an additional Transient Occupancy Tax, which together also fund City services. The sources of City revenues and the costs to provide City services in 2017 are shown on Figures 3-7 and 3-8.

Figure 3-7 2017 City Revenue Sources

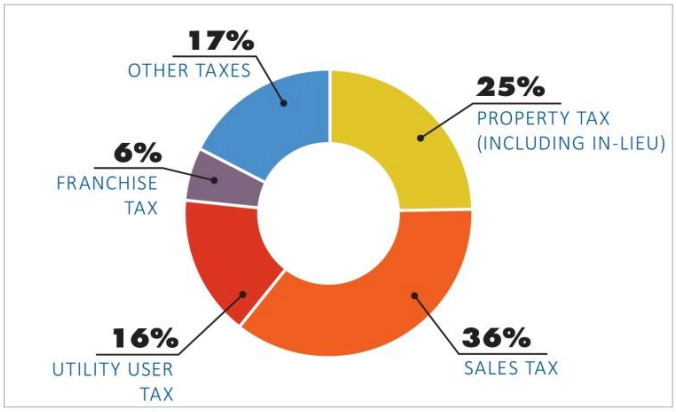
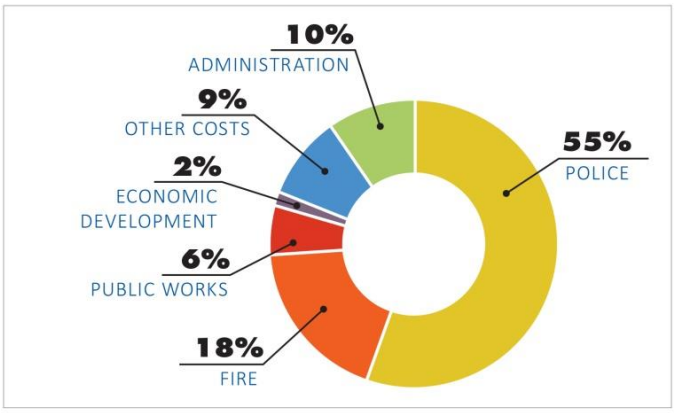


Figure 3-8 2017 City Service Costs from General Fund



Perhaps just as important as City tax revenues, new businesses offer increased job opportunities that put dollars directly in the pockets of employees and thereby increase spending power, and in turn, potential profitability for Stockton businesses. The location, appearance, and accessibility of business and employment centers are key to creating the synergy that encourages additional enterprises to locate and expand in the city.

POLICY LU-6.5

Improve and maintain the City's fiscal health.

Action LU-6.5A

Require preparation of a fiscal impact analysis for large development projects and proposed annexations to ensure a full accounting of infrastructure and public service costs and to confirm whether revenue enhancement mechanisms are necessary to ensure net fiscal balance or better, and require appropriate fiscal mitigations, when necessary, to ensure the City's ongoing fiscal health and continued viability of the City's General Fund.

Action LU-6.5B

Utilize development agreements as a tool to implement public facilities financing plans and to secure fiscal mitigations and various public benefits from new development projects.

Action LU-6.5C

Evaluate and update all development impact fees to be consistent with the 2040 General Plan.

Action LU-6.5D

Continue to utilize developer fees, the City's public facilities fees, and other methods (e.g., grant funding and assessment districts) to finance public facility design, construction, operation, and maintenance.

COORDINATION WITH REGIONAL PARTNERS MAKES CITY PLANNING MORE EFFECTIVE

The City of Stockton's jurisdiction ends at the city limit, but City staff and officials regularly work with other agencies to ensure that the region as a whole is operating cohesively toward a unifying vision. Participation in San Joaquin County planning efforts at the edge of Stockton and in regional planning programs facilitated by the San Joaquin Council of Governments, such as the Regional Transportation Plan/Sustainable Communities Strategy and Regional Smart Growth Transit-Oriented Development Plan, help to achieve this goal.

In addition to working collaboratively with other governmental agencies, an active civil society is key to achieving the General Plan goals and vision. Community participation in local government brings diverse viewpoints and values into the decision-making process and helps ensure that City actions benefit the broadest range of people possible. Inclusive, participatory processes lead to better informed solutions and build mutual understanding and trust between local government officials and the public they serve.

POLICY LU-6.6

Coordinate land use planning efforts among City departments and with regional agencies.

Action LU-6.6A

Provide written comments to San Joaquin County on all proposed significant development projects in the City's Planning Area to request consistency with this General Plan and other City regulations.

Action LU-6.6B

Participate in the San Joaquin Council of Governments' (SJCOG) regional planning programs and coordinate City plans and programs with those of SJCOG, including the Regional Transportation Plan/Sustainable Communities Strategy, among others, and work with non-profit organizations also engaging in these planning programs.

Action LU-6.6C

Review and update the Development Code to ensure consistency with the updated General Plan.

Action LU-6.6D

Review and update the Zoning District Map to ensure consistency with the updated General Plan.

POLICY LU-6.7

Enhance public participation in the planning process.

Action LU-6.7A

Work with community-based organizations to develop and implement a comprehensive and accountable long-term strategy to engage the Stockton community in planning decisions.

Action LU-6.7B

Require that sponsors of new development projects, especially those that require Planning Commission and/or City Council approval, have early, frequent, and meaningful communication with affected citizens and stakeholders.

This page intentionally blank

4 TRANSPORTATION

Transportation is an essential part of our everyday lives. How we choose to move around—to jobs, schools, homes, and shopping/leisure activities—has major implications for our lives, ranging from how much time we spend commuting to health issues related to air pollutants and limited time for recreation. Stockton has excellent regional access by road, water, and air. Locally, freeways and arterials provide quick access through town, but improving connections between neighborhoods and destinations in Stockton is a key consideration for the future. Closing gaps in the bicycle and trail network, improving the pedestrian realm, and expanding the range of efficient, safe, and easy options for getting around will enhance the quality of life for all community members. The focus of this chapter is on strengthening physical connections to the region and within the community. It is organized around four key goals that represent the priorities of the Stockton community:

- Mobile Community
- Active Community
- Sustainable Transportation
- Effective Transportation Assessments

GOALS, POLICIES, AND ACTIONS

GOAL TR-1: MOBILE COMMUNITY

Provide an integrated transportation system that enables safe and efficient movement of people and goods for all modes of travel.

MOBILITY FOR ALL IS THE NEW STANDARD

The local transportation system needs to serve all users, with a focus on safety, accessibility, and convenient, efficient travel between origins and destinations in Stockton. Enhancing mobility and connectivity for transit, bicycles, and pedestrians will also help reduce vehicle traffic congestion and pollution and promote public health.

Roadway classifications help define the function of various street types in the transportation network, based on level of traffic volume that can be served. Classifying roadway types allows the City to monitor performance and plan for improvements needed to accommodate changes in traffic, pedestrian, and bicycle volumes, physical development, and transit service modifications over the life of the General Plan. Classifications are also necessary to ensure the City is eligible for roadway maintenance and improvement funding.

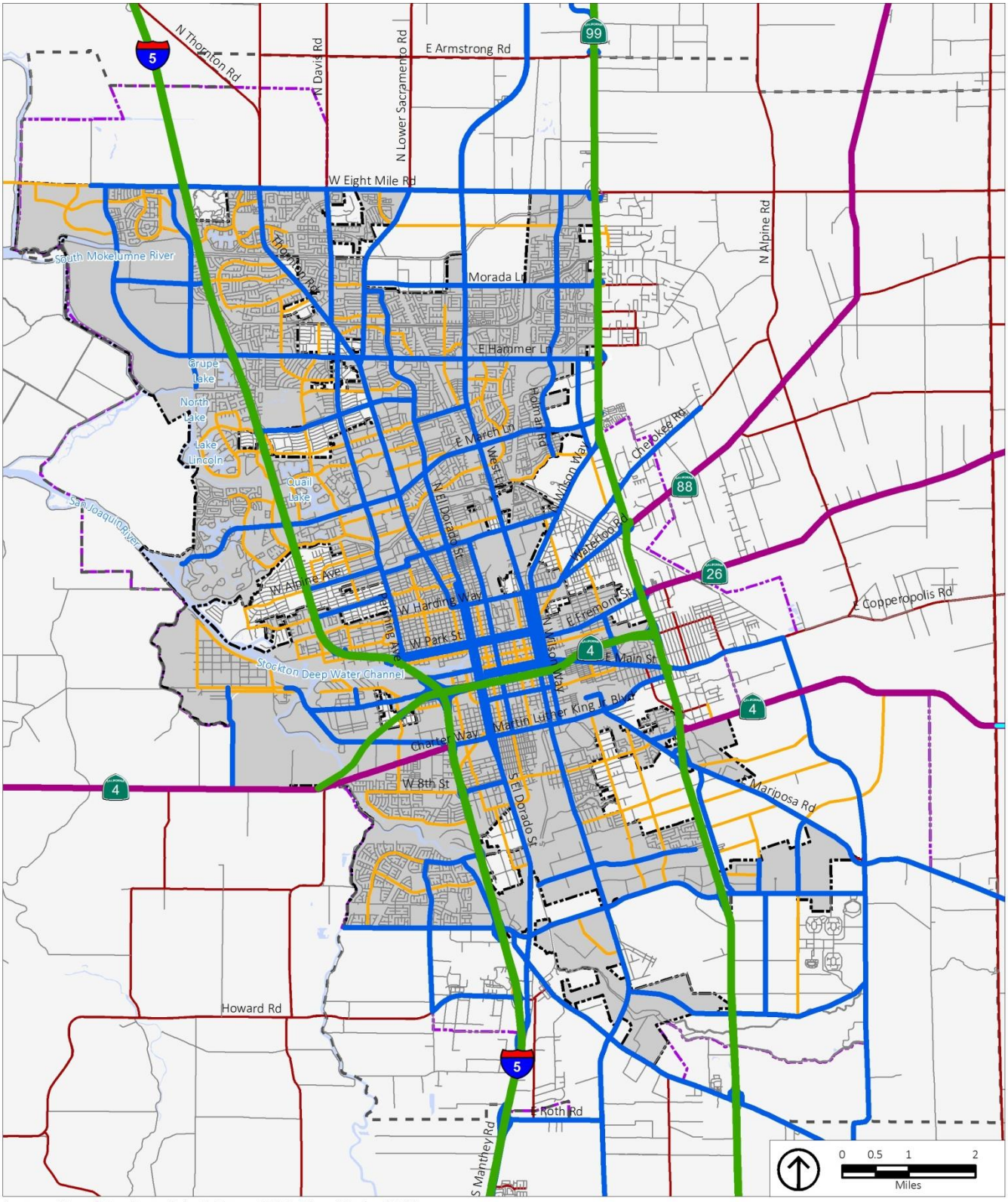
As interest in safe and sustainable transportation systems has emerged, communities throughout California have been changing the transportation planning paradigm from a vehicle-centered exercise to a "Complete Streets" approach, in which all travel modes are accommodated in a balanced way based on the particular street's location, land use context, and function within the citywide circulation network.

The General Plan defines the City's roadway network based on traditional categories recognized by regional, State, and federal transportation agencies for purposes of grant funding for ongoing street maintenance and rehabilitation programs. In addition, the City of Stockton will continue to consider whether and when to transition to a "Complete Streets" approach, in which all travel modes are explicitly accommodated in a balanced way based on the particular street's location, land use context, and function within the citywide circulation network.

The existing and future roadway networks are shown on Figure 4-1. The City's adopted Precise Road Plans, which protect, preserve, and require dedications for planned roadway and/or transportation corridors as future development occurs, are intended to be updated to conform to the planned roadway network, along with the multi-modal complete streets principles outlined in the policies and actions below. The roadway classifications included in the roadway network are as follows:

- Freeways and highways are high-speed facilities that move inter-city or regional traffic. Freeway access is generally limited to grade-separated interchanges, while highway access is provided at-grade in most cases. Freeways and highways that provide regional access to and from Stockton include Interstate 5 (I-5), State Route (SR) 99, SR 4, SR 26, and SR 88.

Figure 4-1
Circulation Map



Source: City of Stockton; Fehr & Peers, 2016; PlaceWorks, 2017.

Freeways
Highways
Arterials
Collectors
Rural Road
Local Roads
City Limit
Sphere of Influence
General Plan Planning Area

- **Arterials** are high-volume facilities that connect the regional roadway network to the local roadway network. Limited access is provided to abutting parcels in many cases. Arterial streets are typically high-volume, high-speed roadways generally serving between 20,000 and 50,000 vehicles per day with four to eight travel lanes; some minor arterials serve fewer than 20,000 vehicles per day. Traffic signals on arterial roadways in Stockton are generally connected to the City's Traffic Management System, which provides signal coordination and incident response services.

- **Collector streets** connect residential and local-serving commercial areas with the arterial system. Collector streets serve as principal traffic arteries within residential and commercial areas. These streets typically carry up to 10,000 vehicles per day, although some collectors may carry more vehicle traffic for short segments as they convey traffic between arterial streets and local residential streets. Two to four travel lanes are typically provided on collector streets in Stockton.

POLICY TR-1.1

Ensure that roadways safely and efficiently accommodate all modes and users, including private, commercial, and transit vehicles, as well as bicycles and pedestrians and vehicles for disabled travelers.

Action TR-1.1A

Direct truck traffic to designated truck routes that facilitate efficient goods movement and minimize risk to areas with concentrations of sensitive receptors, such as schools, for example by disallowing any new truck routes to pass directly on streets where schools are located, and vulnerable road users, like pedestrians and bicyclists.

Action TR-1.1B

Maintain and periodically update a schedule for synchronizing traffic signals along arterial streets and freeway interchanges to facilitate the safe and efficient movement of people and goods and to provide signal priority for transit vehicles at intersections.

Action TR-1.1C

Require roadways in new development areas to be designed with multiple points of access and to address barriers, including waterways and railroads, in order to maximize connectivity for all modes of transportation.

Action TR-1.1D

Update existing Precise Road Plans to reflect the 2040 General Plan, including changes in land use and level of service requirements, and a shift in priority from vehicular travel to travel by all modes through complete streets.

Action TR-1.1E

Work with local school districts to implement pedestrian crossing enhancements like stop signs within neighborhoods around schools, encourage activities like a walking school bus, and create educational programs that teach students bicycle safety.

REGIONAL CONNECTIONS BOOST THE ECONOMY

Stockton is a regional transportation hub. Residents and commuters have access to a variety of transit options for both inter-city and regional travel. The San Joaquin Council of Governments (SJCOG) coordinates transportation planning and financing for the region and administers regional plans that promote sustainable growth, including the Regional Transportation Plan & Sustainable Communities Strategy that guides funding and policy decisions, the Regional Congestion Management Program that identifies regionally significant roadways, and the Smart Growth Transit-Oriented Development Plan that promotes transit-friendly land use planning and development. Together, these plans intend

to enhance multi-modal opportunities in Stockton for both passengers and freight.

Bus routes provide service throughout the city and region, while rail lines provide connectivity to the Bay Area, Sacramento, and Southern California and beyond. San Joaquin Regional Transit District (RTD) provides public transit services in and around the city, as well as countywide. Passenger rail service providers include the Altamont Corridor Express (ACE), which connects passengers from the Central Valley to the Bay Area, and Amtrak, which connects rail passengers from Bakersfield to Oakland or Sacramento, plus buses to San Francisco and the Dublin/Pleasanton Bay Area Rapid Transit (BART) station. The Stockton Municipal Airport, located just south of the city limit, offers commercial passenger service to key destinations such as Las Vegas, Nevada, Phoenix/Mesa, Arizona, and San Diego.

The regional freight transportation system consists of rail, truck, air, and port facilities that support goods movement. Two major transcontinental railroads (BNSF and UPRR) serve the Port of Stockton and provide service to Mexico and Canada. Several short line railroads also operate in Stockton, including the Central California Traction Company (CCT), which provides freight service between Stockton and Lodi, and the Stockton Terminal & Eastern (STE) Railroads, which runs from Stockton to Linden. The Port of Stockton, one of only two inland sea ports in the state, provides an important commerce gateway to the Central Valley. As a Foreign Trade Zone, the Port facilitates international trade and increases the global competitiveness of US-based companies. The Stockton Metropolitan Airport is also a designated Foreign Trade Zone and provides air cargo service with intermodal connections to truck, rail, and the Port. To protect public safety and the long-term operations of the airport, SJCOG prepared the Airport Land Use Compatibility Plan (ALUCP), which provides guidance related to the placement of land uses near the Stockton Metropolitan Airport through the designation of Airport Safety Zones and related regulations (see Figure 4-2). Specifically, the ALUCP seeks to protect the public from adverse effects of aircraft noise, ensure that people and facilities are not concentrated in areas susceptible to aircraft accidents, and ensure that no structures or activities adversely affect navigable airspace.

POLICY TR-1.2

Enhance the use and convenience of rail service for both passenger and freight movement.

Action TR-1.2A

Actively support and pursue access to high-speed rail.

Action TR-1.2B

Support the San Joaquin Regional Transportation District's Regional Bus Service, Altamont Commuter Express (ACE), and AMTRAK's San Joaquin intercity rail service, and pursue and support other regional transit programs and projects, such as:

- ACE plans to bypass existing bottlenecks (e.g., the Union Pacific railyards in South Stockton);
- Connecting to the BART system;
- Extending ACE service south to Merced; and
- Proposing rail between Stockton and Sacramento along the California Traction and other rail corridors.

Action TR-1.2C

Provide grade separations at railroad crossings on arterial streets where feasible to ensure public safety and minimize traffic delay.

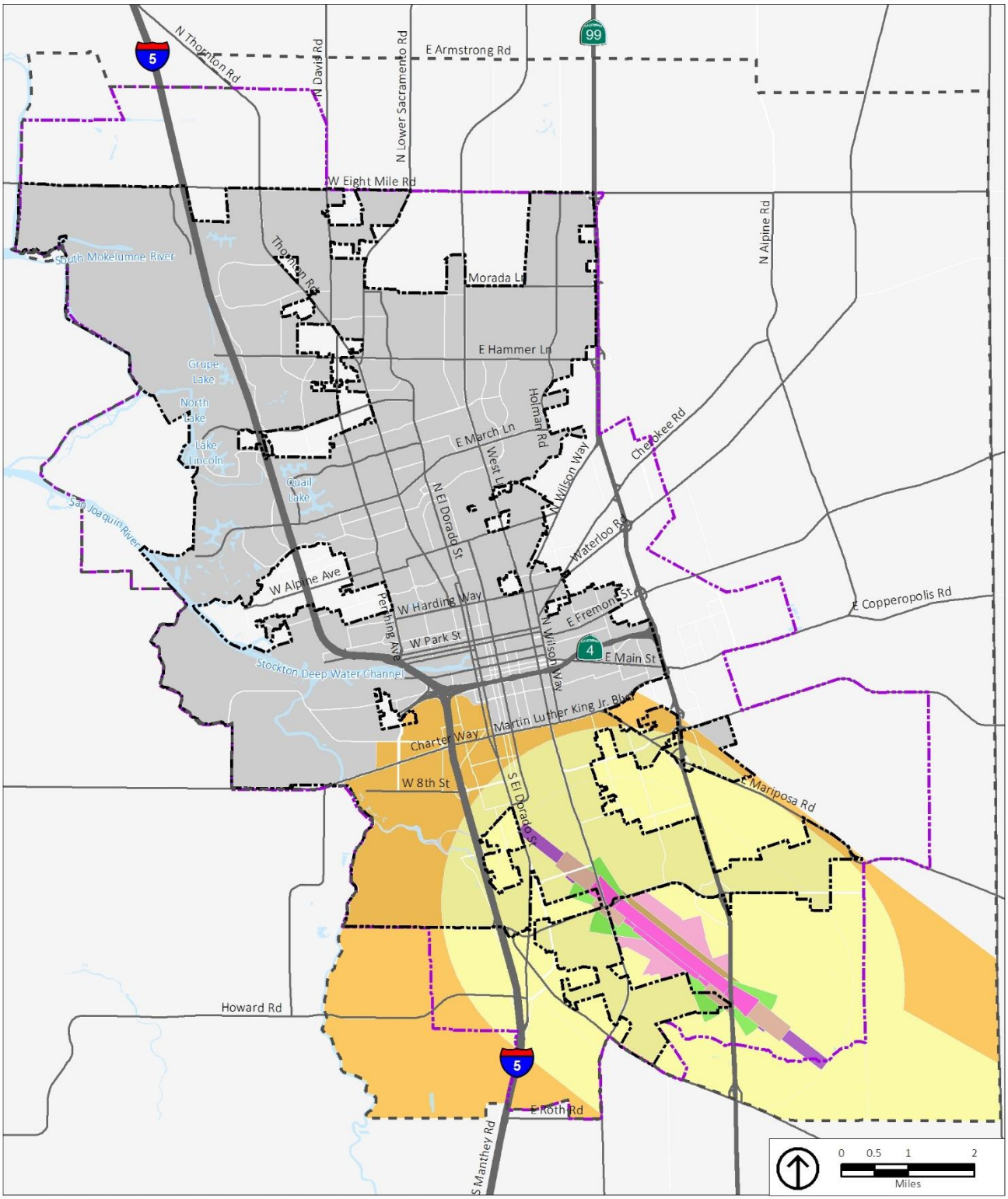
POLICY TR-1.3

Facilitate expanded port and airport operations, service, and development as travel and goods movement assets to the community and sources of employment growth.

Action TR-1.3A

Protect the Airport and related aviation facilities from encroachment by ensuring that all future development within the Airport Influence Area (AIA) is consistent with the policies adopted by the San Joaquin County Airport Land Use Commission (ALUC), except in cases where the City Council concludes that project approval would provide for the orderly development of the Airport and the areas surrounding it while protecting the public health, safety, and welfare by minimizing the public's exposure to excessive noise and safety hazards, consistent with the San Joaquin County Airport Land Use Compatibility Plan and the Stockton Metropolitan Airport Land Use Compatibility Plan.

Figure 4-2
Stockton Metropolitan Airport Safety Zones



Source: City of Stockton; San Joaquin County; PlaceWorks, 2017.

Safety Zones

- Zone 1, Runway Protection Zone
- Zone 2, Inner Approach/Departure Zone
- Zone 3, Inner Turning Zone
- Zone 4, Outer Approach/Departure Zone
- Zone 5, Sideline Safety Zone
- Zone 6, Airport Property Zone
- Zone 7, Traffic Pattern Zone
- Zone 8, Airport Influence Area
- City Limit
- Sphere of Influence
- General Plan Planning Area

Action TR-1.3B

Where substantial development already exists within the AIA and is incompatible with ALUC policies, only allow additional infill development of similar land uses if projects meet all of the following criteria to be an infill project:

- The project site is bounded on at least three sides by uses similar to those proposed.
- The proposed project would not extend the perimeter of the area developed with incompatible uses.
- The proposed project does not otherwise increase the intensity and/or incompatibility of the use with respect to the criteria identified in the San Joaquin County Airport Land Use Compatibility Plan and in the Stockton Metropolitan Airport Land Use Compatibility Plan through use permits, density transfers, or other strategies.

Action TR-1.3C

Within the AIA, require that new development or an expansion of an existing use that requires a building permit file an avigation easement with the City.

GOAL TR-2: ACTIVE COMMUNITY

Offer active transportation opportunities for the entire community.

SAFE ROUTES TO WORK AND SCHOOL MAKE A HEALTHIER CITY

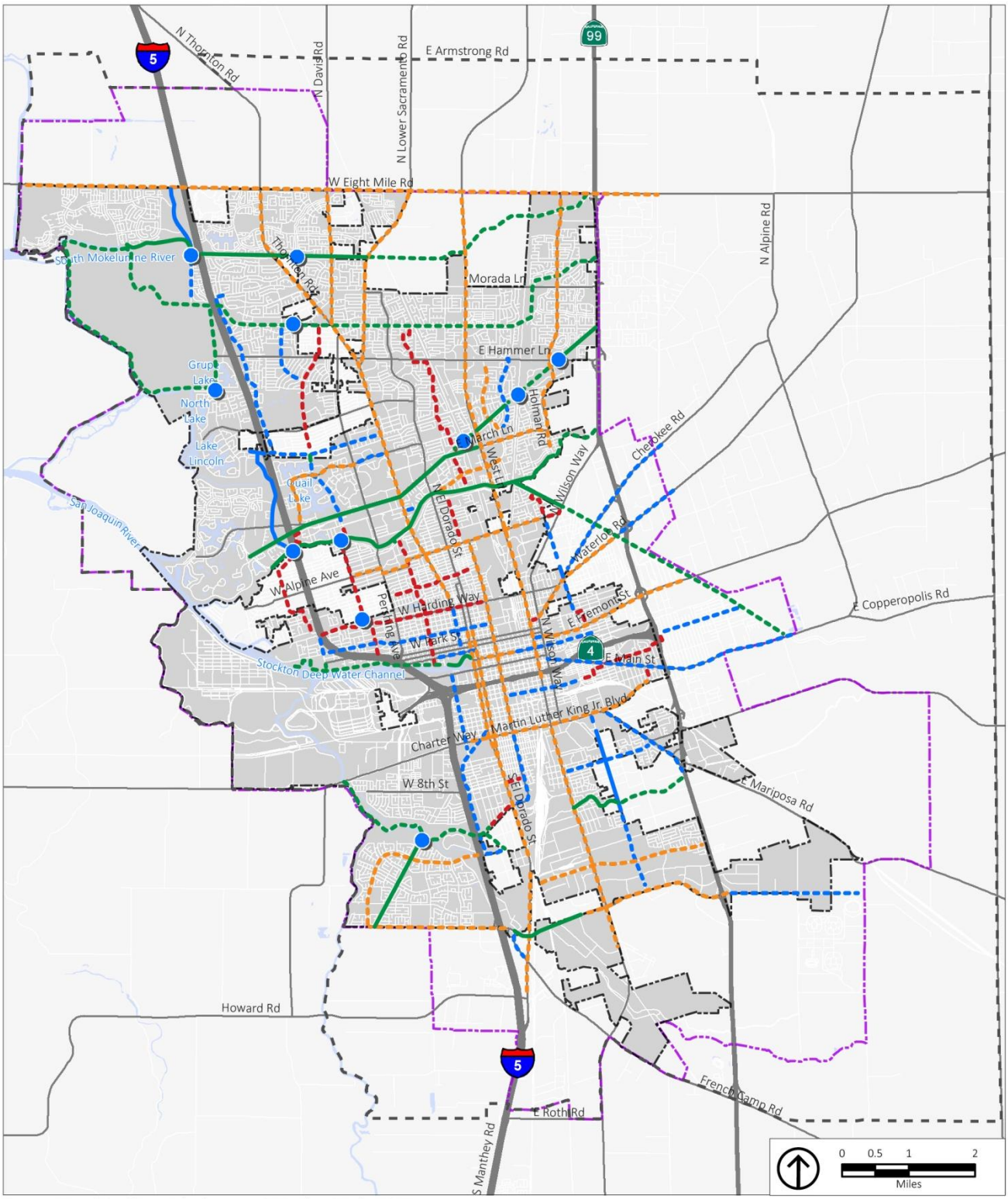
Fostering opportunities for safe non-automobile ("multi-modal") transportation is a long-held desire of the community. The pedestrian network generally consists of sidewalks and multi-use trails. Sidewalks are provided in most developed subdivisions and commercial areas, but there are gaps in the network, especially within unincorporated county pockets. Currently, the bicycle system in Stockton consists of about 117 miles of existing bikeways, including approximately 46 miles of bike paths, 36 miles of bike lanes, and 35 miles of bike routes.

However, local barriers such as waterways, railways, and freeways pose challenges to bicycle circulation and connectivity. Expanding the bicycle network will enhance opportunities for active transportation and reduce dependency on the car. The City's Bicycle Master Plan is an important tool to achieve this goal, as it provides an implementation roadmap for viable bicycling options for people of all ages and abilities.

Local bikeways are classified based on traditional categories recognized by regional, State, and federal transportation agencies. The existing and future bicycle networks are shown on Figure 4-3. Each bikeway class is intended to provide bicyclists with safe and convenient riding conditions. Different bikeway designs offer various levels of separation from traffic based on traffic volume and speed, among other factors. There are four bikeway types (see Figure 4-4):

- **Class I Bikeway (Bike Path):** Bike paths provide a completely separate right-of-way and are designated for the exclusive use of people riding bicycles and walking with minimal cross-flow traffic. Stockton has many such paths located along creeks, canals, and rail lines.

Figure 4-3
Existing and Planned Bicycle Network



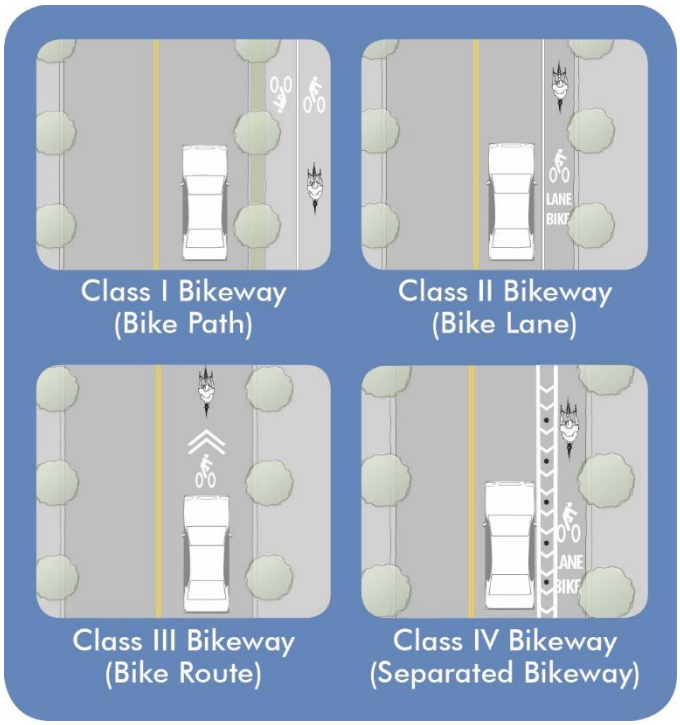
Source: City of Stockton; Fehr & Peers, 2016; PlaceWorks, 2017.

Existing Bicycle Network
- Class I (Bike Path)
- Class II (Bike Lane)

Planned Bicycle Network
- Class I (Bike Path)
- Class II (Bike Lane)
- Class III (Bike Route)
- Class IV (Separated Bikeway)

- New Bridge
- General Plan Planning Area
- City Limit
- Sphere of Influence

Figure 4-4 Bikeway Types



- Class II Bikeway (Bike Lane): Bike lanes provide designated street space for bicyclists, typically adjacent to the outer vehicle travel lanes. Bike lanes include special lane markings, pavement legends, and signage. Bike lanes may be enhanced with painted buffers between vehicle lanes and/or parking, and green paint at conflict zones (such as driveways or intersections).

- Class III Bikeway (Bike Route): Bike routes provide enhanced mixed-traffic conditions for bicyclists through signage, striping, and/or traffic calming treatments, and provide continuity to a bikeway network. Bike routes are typically designated along gaps between bike trails or bike lanes, or along low-volume, low-speed streets. Bicycle boulevards provide further enhancements to bike routes by encouraging slow speeds and discouraging non-local vehicle traffic, often through the use of traffic calming. Bicycle boulevards can also feature special wayfinding signage to nearby destinations or other bikeways.

- Class IV Bikeway (Separated Bikeway): Separated bikeways, also referred to as cycle tracks or protected bikeways, are bikeways for the exclusive use of bicycles which are physically separated from vehicle traffic. Separations may include grade separation, flexible posts, physical barriers, or on-street parking.

Stockton's bicycle network is also augmented by a network of informal or unmarked trails associated with levee access roads along the city's waterways and utility rights-of-way. While some of these levee trails have been upgraded to Class I facilities discussed above, many paved and unpaved trails are located along private rights-of-way and are may be gated, unsigned, and/or unpaved; therefore, they are not included in the official bicycle network.

POLICY TR-2.1

Develop safe and interconnected bicycle and pedestrian facilities, including along "complete" streets that target multiple travel modes.

Action TR-2.1A

Require safe and secure bicycle parking facilities to be provided at major activity centers such as public facilities, employment sites, and shopping and office centers, along with showers and lockers for major employment sites.

Action TR-2.1B

Maintain and implement the City of Stockton Bicycle Master Plan.

Action TR-2.1C

Maintain and implement the City of Stockton Safe Route to School Plan.

POLICY TR-2.2

Connect housing and employment development in areas with good transit access through open and inclusive processes where appropriate.

Action TR-2.2A

Require major new development to incorporate and fund design features to promote safe and comfortable access to transit, such as a circulation network that facilitates efficient and connected bus travel, clear pedestrian and bicycle routes connecting origins and destinations to transit stops, sheltered bus stops, park-and-ride facilities, and highly visible transit information and maps.

Action TR-2.2B

Obtain input from community residents, non-profit organizations, and local and regional transit operators on major new development projects, and support transit operators by ensuring major projects are designed to support transit and provide fair share funding of the cost of adequate transit service and access.

Action TR-2.2C

Request that public transit service providers expand routes and increase frequency and operational hours consistent with current short- and long-range transit planning, with the assistance of new development funding.

Action TR-2.2D

Support efforts to electrify buses.

POLICY TR-2.3

Utilize natural features and routes with lower traffic volumes and speeds to encourage residents to walk and wheel more frequently.

Action TR-2.3A

Develop and maintain bikeways on separate rights-of-way (e.g., Calaveras River, East Bay Municipal Utility District easement, French Camp Slough, and Shima Tract Levee).

Action TR-2.3B

Require dedication of adequate right-of-way for bicycle use in new arterial and collector streets, and where feasible, in street improvement projects.

GOAL TR-3: SUSTAINABLE TRANSPORTATION

Design transportation infrastructure to help reduce pollution and vehicle travel.

WE NEED ALTERNATIVES TO DRIVING ALONE

We all need to use some form of transportation to get to our jobs, schools, and other daily needs. The mode of transportation Stockton residents choose to reach these destinations is affected by job location, land use patterns, and availability of options such as transit and bike routes. Roadway design can foster the use of transportation modes that encourage walking and wheeling and reduce environmental impacts. Managing transportation sustainably into the future will mean operating within available funding levels and positioning Stockton to take advantage of current and future innovations such as alternative fuels, car-sharing, bicycle sharing, private transportation network services, autonomous vehicle technology, and other changes still to come.

POLICY TR-3.1

Avoid widening existing roadways in an effort to preclude inducement of additional vehicle traffic.

Action TR-3.1A

Limit street widths to the minimum necessary to adequately carry the volume of anticipated traffic, while allowing for safe bicycle and pedestrian facilities, emergency access, and large vehicle access.

Action TR-3.1B

Where feasible and appropriate, reduce the width of existing streets using bulb-outs, medians, pedestrian islands, shade tree landscaping, appropriate signage, and similar methods, while not jeopardizing emergency response.

Action TR-3.1C

Preserve right-of-way for transit and bicycle uses when designing new roadways and improving existing roadways, and ensuring adequate and clear signage.

POLICY TR-3.2

Require new development and transportation projects to reduce travel demand and greenhouse gas emissions, support electric vehicle charging, and accommodate multi-passenger autonomous vehicle travel as much as feasible.

Action TR-3.2A

Amend the parking requirements in the Development Code to encourage shared parking, require preferential parking for rideshare vehicles, and allow reduced parking requirements to support transit, bicycling, and walking.

Action TR-3.2B

Require commercial, retail, office, industrial, and multi-family residential development to provide charging stations and prioritized parking for electric and alternative fuel vehicles.

Action TR-3.2C

Respond to the implications and opportunities associated with connected vehicles and autonomous vehicles by monitoring technological advances and adjusting roadway infrastructure and parking standards to accommodate autonomous vehicle technology and parking needs.

Action TR-3.2D

Continue to coordinate with the San Joaquin Council of Governments to increase opportunities for additional park and ride facilities, consistent with the San Joaquin County Regional Park and Ride Lot Master Plan.

GOAL TR-4: EFFECTIVE TRANSPORTATION ASSESSMENTS

Ensure that traffic-related impacts of proposed land uses are evaluated and mitigated.

MILES TRAVELED IS THE NEW STATEWIDE MEASURING TOOL

The condition and efficiency of Stockton's roadway network are integral components to maintaining quality of life and fostering economic growth in the region. Senate Bill (SB) 743 has set the stage for moving away from Level of Service (LOS)—which measures delay to motorists—to vehicle miles traveled (VMT) as the metric to evaluate transportation network performance and land use and transportation planning decisions, with investments oriented toward reducing VMT.

The City of Stockton will continue to make use of LOS where it is more descriptive than VMT: for evaluating the operating conditions of selected, congested roadway segments and intersections within the city. LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver:

- LOS A, Free Flow or Insignificant Delays: Operations with very low delay. Most vehicles do not stop at all.
- LOS B, Stable Operation or Minimal Delays: An occasional approach phase is fully utilized. Some drivers feel restricted.
- LOS C, Stable Operation or Acceptable Delays: Drivers begin having to wait through more than one red signal. Most drivers feel somewhat restricted.
- LOS D, Approaching Unstable or Tolerable Delays: Drivers may have to wait through more than one red signal. Queues may develop, but dissipate rapidly, without excessive delays.
- LOS E, Unstable Operation or Significant Delays: Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
- LOS F, Forced Flow or Excessive Delays: Represents jammed conditions. Many cycle failures. Queues may block upstream intersections.

The City of Stockton strives to maintain LOS D or better for peak hour intersection and daily roadway segment operations. However, in the Downtown and other areas, exceptions to this standard are permissible to support other goals, such as encouraging safe travel by other modes of transportation than the car. The City can use VMT and LOS to support non-auto transportation modes, with the ultimate goal of maintaining and enhancing a complete roadway network that serves all travel modes in a balanced and equitable way.

POLICY TR-4.1

Utilize level of service (LOS) information to aid understanding of potential major increases to vehicle delay at key signalized intersections.

Action TR-4.1A

Strive for Level of Service (LOS) D or better for both daily roadway segment and peak hour intersection operations, except when doing so would conflict with other land use, environmental, or economic development priorities, and with the following additional exceptions:

- In the Greater Downtown, strive for LOS E or better, but LOS F may be acceptable after consideration of physical or environmental constraints and other City goals and policies.
- Strive for different LOS standards along the following corridors due to physical constraints that limit the improvements that can be constructed:
  - Benjamin Holt Drive, Plymouth Road to Gettysburg Place – LOS F
  - Eight Mile Road, Trinity Parkway to I-5 – LOS E
  - Eight Mile Road, Lower Sacramento Road to West Lane – LOS E
  - Eighth Street, I-5 to El Dorado Street – LOS E
  - Eighth Street, Airport Way to Mariposa Road – LOS E
  - French Camp Road, Manthey Road to I-5 – LOS E
  - French Camp Road, I-5 to Val Dervin Parkway – LOS F
  - Hammer Lane, I-5 to Kelly Drive – LOS E
  - Hammer Lane, West Lane to Holman Road – LOS E
  - Interstate 5, Hammer Lane to Benjamin Holt Drive – LOS E
  - Interstate 5, Benjamin Holt Drive to Downing Avenue – LOS F
  - Interstate 5, Downing Avenue to French Camp Road – LOS E
  - Otto Drive, I-5 to Thornton Road – LOS F
  - Roadway segments determined to be operating at deficient LOS by the San Joaquin Council of Governments in the Regional Congestion Management Program
- Accept worse than adopted-standard LOS at intersections where widening the intersection would reduce bicycle and pedestrian safety and/or increase pedestrian crossing times such that they would create longer traffic delays due to signal timing.

Action TR-4.1B

Amend the City's Transportation Impact Analysis Guidelines to reflect the updated LOS goals under Action TR-4.1.A and to refine the threshold at which a project needs to evaluate LOS impacts.

POLICY TR-4.2

Replace LOS with: (1) vehicle-miles traveled (VMT) per capita; and (2) impacts to non-automobile travel modes, as the metrics to analyze impacts related to land use proposals under the California Environmental Quality Act, in accordance with SB 743.

Action TR-4.2A

To evaluate the effects of new development and determine mitigation measures and impact fees, require projects to evaluate per capita VMT and impacts to transit, bicycle, and pedestrian modes.

Action TR-4.2B

Amend the City's Transportation Impact Analysis Guidelines to include alternative travel metrics and screening criteria.

POLICY TR-4.3

Use the threshold recommended by the California Office of Planning and Research for determining whether VMT impacts associated with land uses are considered significant under State environmental analysis requirements.

Action TR-4.3A

Amend the City's Transportation Impact Analysis Guidelines to:

- Establish a threshold of 15 percent below baseline VMT per capita to determine a significant transportation impact under the California Environmental Quality Act.
- Identify screening criteria that will streamline certain types of development and/or development in certain areas by not requiring a VMT analysis.

5 SAFETY

Every general plan in California must address natural and human-made hazards and dangers, and identify the potential risk of death, injuries, property damage, and economic and social dislocation from fires, floods, earthquakes, and other events. Public safety and emergency response are top priorities in Stockton, but not just in relation to widespread events. Concerns over personal safety weigh heavily on many neighborhoods, even to the point of discouraging residents from recreating or traveling along specific routes or at certain times of day. The focus of this chapter is on improving public safety and reducing the risk of hazards. The chapter is organized around four key goals that represent the priorities of the Stockton community:

- Safe Community
- Hazard Protection
- Clean Water
- Clean Air

GOALS, POLICIES, AND ACTIONS

GOAL SAF-1: SAFE COMMUNITY

Create a safe and welcoming environment in all areas of the city at all times of day.

PUBLIC SAFETY IS A TOP COMMUNITY PRIORITY

Violence and crime prevention are major issues for the Stockton community. As one of the City's strategic initiatives to reduce violence and crime and increase public safety, the Stockton Marshall Plan, funded by a ¾-cent sales tax approved by voters in 2013, emphasizes data-based targeting of "focus area" locations and predictive policing to achieve the objectives of preventing and stopping violence and building violence-prevention capacity.

Design of the built environment can also help prevent crime and increase both the sense and reality of safety. Research has shown that the most effective deterrent to criminal activity is the risk of being caught, and design of public spaces that places more eyes on the street and limits access points can create safer environments. Strategies for Crime Prevention Through Environmental Design (CPTED) include locating windows to overlook sidewalks and parking lots, increasing pedestrian and bicycle traffic, and installing fencing, landscaping, or lighting to control access. Well-maintained buildings and property also signal alert, active owners and can deter criminal activity.

The Stockton Police Department (SPD) and Fire Department (SFD) provide essential services to keep the community safe; police and fire stations are shown on Figure 5-1. The SPD provides professional law enforcement based on a model of prediction, prevention, pursuit, and partnerships. This model combines policing and enforcement strategies with community involvement and engagement. Through its commitment to community policing, the SPD has established a variety of mentorship programs and training classes that promote proactive partnership with neighborhood organizations and business owners to identify and solve issues.

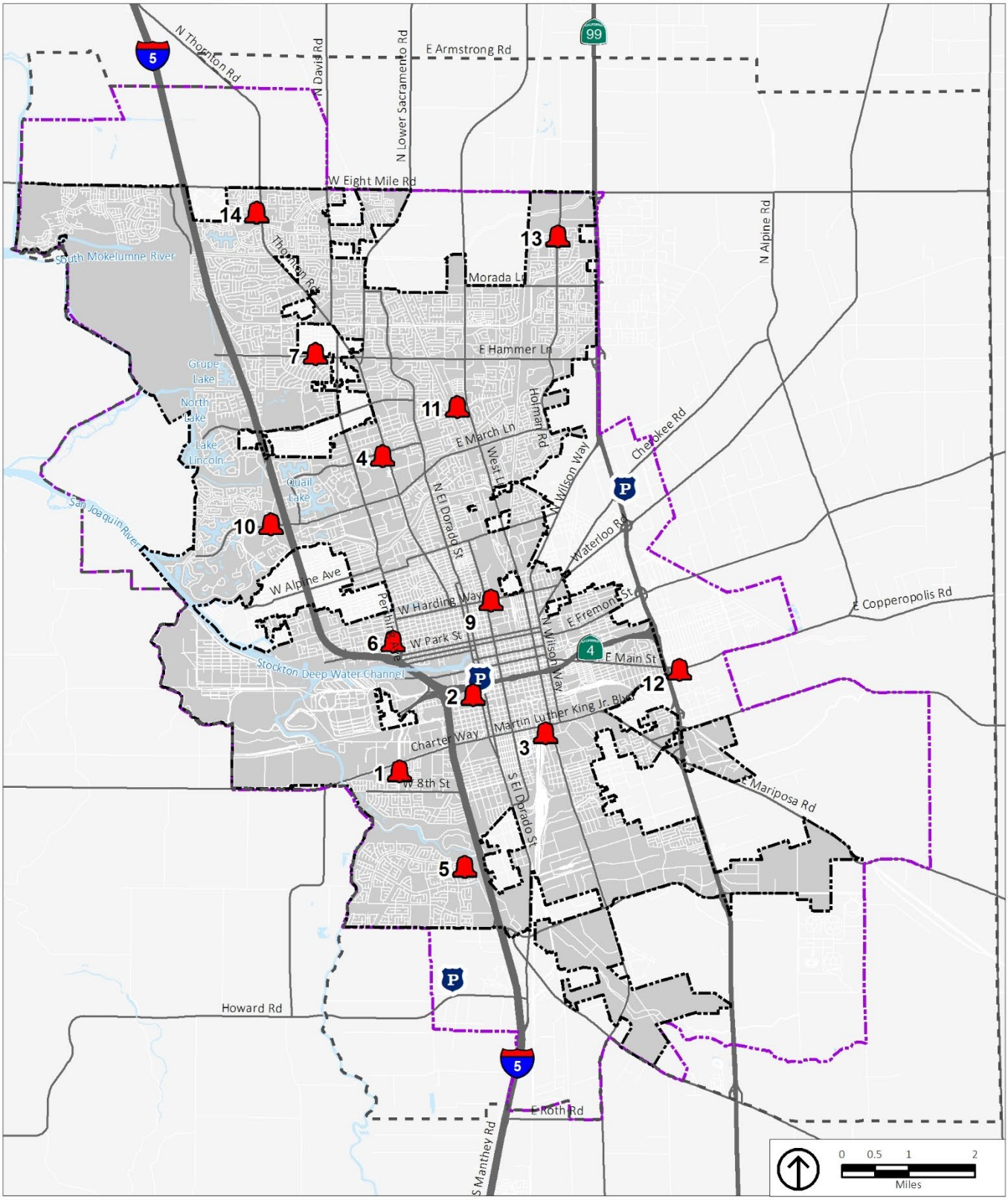
The SFD mission is centered on providing excellent emergency and non-emergency services through public education, prevention, and aggressive suppression and rescue activities. The SFD is an all-hazard fire department, capable of mitigating all types of both human-made and natural disasters. As such, the fire department has the following specialized teams:

- Hazardous Materials Team: A California Office of Emergency Services Type II Hazardous Materials Team staffed with seven personnel daily, trained to the Hazardous Materials Technician and Specialist level. Specialty apparatus and personnel are assigned to Fire Company 3.

- Water Rescue Team: Staffed by a team of four personnel daily, the water rescue team is capable of both surface and sub-surface water rescues, helping to protect over 1,000 miles of waterways surrounding the city. The team has specialty apparatus including personal watercraft, inflatable boats, and a water rescue vehicle. The Water Rescue Team is assigned to Fire Company 6. In addition to City resources, the California Office of Emergency Services has also assigned the City a tow vehicle and trailer (OES Boat Team #13) for deployment anywhere in the United States.

- Urban Search and Rescue (USAR) Team: Staffed by a team of seven personnel daily, the USAR Team is trained in rope rescue, confined space rescue, trench rescue, and building collapse. The team utilizes specialty apparatus including a Type I heavy rescue, and a California Office of Emergency Services Rescue Trailer.

Figure 5-1
Police and Fire Stations



Source: City of Stockton; San Joaquin County; PlaceWorks, 2017.

Fire Stations (Station ID #)

Police Stations

City Limit

Sphere of Influence

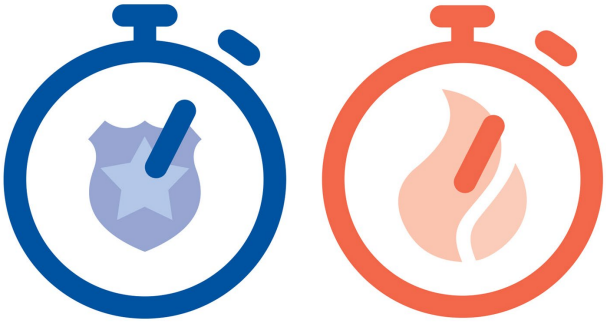
General Plan Planning Area

To reinforce their public service model, the SFD offers a variety of volunteer programs including the Community Emergency Response Team (CERT), which provides training to residents and members of the business community to increase disaster awareness and emergency response capability, as well as the Stockton Fire Explorers and Stockton Fire Auxiliaries. The City and San Joaquin County coordinate for response in emergency situations, and SFD offers disaster preparedness training opportunities through the CERT program. The risk of wildfire in the Planning Area is considered relatively low, given the lack of forest or grassland area that could serve as fuel sources for a wildfire.

Measure W was approved by voters November 2, 2004. It was originally adopted by Ordinance 038-04 C.S., and is codified in Section 3.52 of the Stockton Municipal Code, entitled Funding for Police and Fire Protection Services. The ordinance provides for a ¼-cent (0.25 per cent) transaction and use tax (i.e., sales tax), a tax dedicated to providing for police and fire personnel and services. The ordinance calls for Program Guidelines, which were developed and adopted by the City Council, August 4, 2004. The Program Guidelines prescribe two methods of ensuring that tax monies collected are used as specified by the ordinance. The first method is an independent audit and the second method is a citizens' committee. Measure W provides funding for 23 suppression positions within the SFD.

Public safety staffing and response time standards provide a means to ensure that the community will remain safe as the city develops. The City strives to achieve the following public safety standards:

- **Police Staffing:** 1.5 sworn officers per 1,000 residents.
- **Police Response Times:** Average law enforcement response time of 5 minutes or less for priority one calls (where a threat to persons may exist).
- **Fire Staffing:** 1.23 sworn firefighters per 1,000 residents for a population up to 500,000 people.
- **Fire Response Times:**
  - 240 seconds or less travel time for the arrival of the first arriving engine company at a fire suppression incident.
  - For other than high-rise, 480 seconds or less travel time for the deployment of an initial full alarm assignment at a fire suppression incident.
  - For high-rise, 610 seconds or less travel time for the deployment of an initial full alarm assignment at a fire suppression incident.



POLICY SAF-1.1

Invest in neighborhood safety through partnerships with the community to help prevent violence and crime ("community policing").

Action SAF-1.1A

Promote public safety programs, including business, neighborhood, and school watches; child identification and fingerprinting; and other public education efforts.

Action SAF-1.1B

Maintain and expand community outreach programs to improve the community's understanding of how the criminal justice system works, foster a positive relationship between community members and public safety staff, provide a venue for open dialog, and promote transparency in public safety.

Action SAF-1.1C

Engage with schools, non-profit organizations, and faith-based organizations to recognize and work with at-risk youth to avert future criminal activity.

POLICY SAF-1.2

Reduce community violence and crime by fostering community connectivity, creating a sense of place, and encouraging social interactions between residents, employees, and business owners.

Action SAF-1.2A

Update the City's Design Guidelines and Development Code to require new and retrofitted development to support effective police and fire protection response and services by using the following principles of crime prevention through environmental design (CPTED):

- Delineate private and public spaces
- Enhance visibility
- Control property access
- Ensure adequate property maintenance

Action SAF-1.2B

Pursue public art projects that match the culture of the neighborhood to create a sense of ownership and belonging.

Action SAF-1.2C

Engage residents and business owners in ongoing discussions about how land use and planning decisions can help to reduce violence.

Action SAF-1.2D

Incentivize a variety of uses in a neighborhood that will be active throughout the day and night.

POLICY SAF-1.3

Ensure that City-managed spaces and facilities support a feeling of safety for users.

Action SAF-1.3A

Design and maintain parks, waterways, trail corridors, and other facilities to meet the recreational needs of the community, while maximizing public safety and access concerns, such as through the following approaches:

- Locate facilities to ensure visibility along public roadways where appropriate.
- Provide clear access points.
- Maintain vegetation to maximize visibility and demonstrate active attention to the site.
- Use signage to clearly convey site ownership and rules.

Action SAF-1.3B

Design and improve City streetscapes to create safer places by maximizing visibility through installation and maintenance of appropriate lighting and landscaping.

GOAL SAF-2: HAZARD PROTECTION

Protect residents and businesses from natural and human-caused hazards.

WE NEED TO BE PREPARED FOR EMERGENCIES

The Hazard Protection section contains the City's policies and actions to minimize hazardous situations in and around Stockton. It identifies the natural and human-caused hazards that affect existing and future development, describes present and expected future conditions, and sets policies and standards for improved public safety. This includes efforts to minimize physical harm to the buildings and infrastructure in and around Stockton to reduce damage to local economic systems, community services, and ecosystems. Much more detail about this section and the issues it addresses are in the Safety Element Background Report.

CLIMATE CHANGE VULNERABILITY

Changes to the global climate system are expected to affect future occurrences of natural hazards in and around Stockton. Many hazards are projected to become more frequent and intense in coming years and decades—in some cases, these changes have already begun. Key effects of climate change that affect Stockton include increasing temperatures, changes in precipitation, and sea level rise. Overall precipitation levels are expected to increase only slightly, but there are likely to be more years of extreme precipitation events as well as droughts that last longer and are more severe.

Under California law, the Safety Element is required to include a vulnerability assessment that looks at how people, buildings, infrastructure, and other key community assets may be affected by climate change. The City prepared a Climate Change Vulnerability Assessment in the winter of 2023 to analyze Stockton's susceptibility to climate-related hazards. The assessment followed the most recent available guidance in the *California Adaptation Planning Guide*.

The Climate Change Vulnerability Assessment found that inland flooding and sea level rise pose the greatest threat to Stockton, followed by extreme heat, severe weather, wildfire and smoke, and human health hazards. The most vulnerable communities include low-resourced people of color, outdoor workers, and individuals experiencing homelessness, but many other groups also face an increased risk of harm. Many local and regional infrastructure networks are vulnerable, including the electrical grid, transportation systems, flood control systems, and water and wastewater infrastructure. Damage to these systems can create serious public health hazards and cause widespread economic harm. The Safety Element includes goals, policies, and implementation actions to increase community resilience and help lower vulnerability.

COMMUNITY WARNING SYSTEMS

San Joaquin County has partnered with Everbridge, a public warning platform, to implement SJREADY, a community notification system to alert residents about emergency events and other important public safety information. This system allows San Joaquin County to provide Stockton residents with critical information quickly in an emergency. There are also several other emergency alert systems, including notifications through broadcasters, cable television systems, and digital audio services. Social media and websites can supplement these alert systems.

EMERGENCY EVACUATION

With advanced warning, evacuation can be effective in reducing injury and loss of life during a catastrophic event. The San Joaquin County Office of Emergency Services has prepared an evacuation plan for response to flooding due to failure of a levee or dike. The evacuation plan includes routes for people evacuating by car, rally points for people needing assistance evacuating, and instructions for how to evacuate safely during a flood.

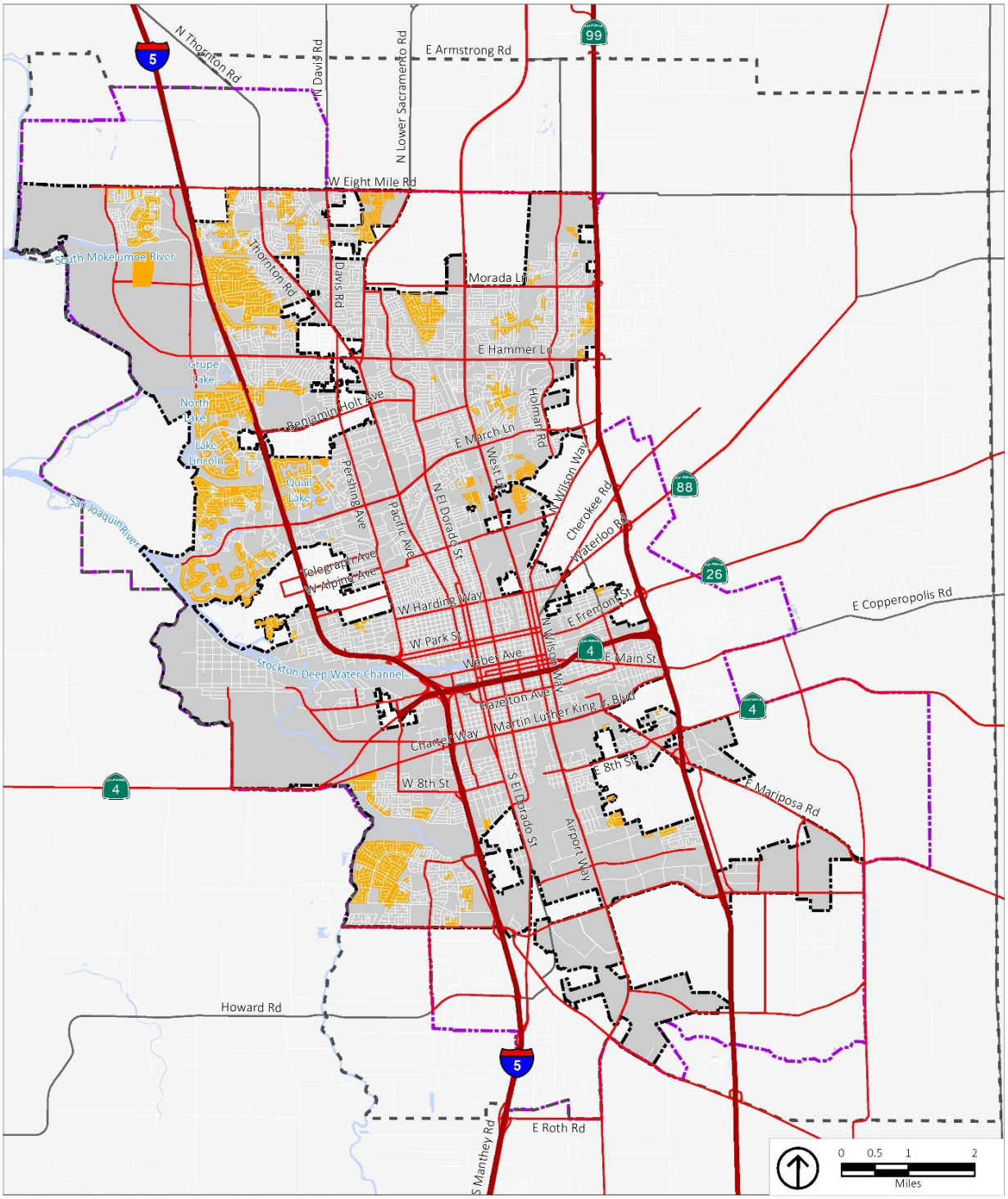
Figure 5-2 shows potential major evacuation routes in Stockton, including highways and surface streets. If there is a need for evacuation, emergency responders will direct community members to the most suitable evacuation routes for the specific needs and characteristics of the emergency. This figure also shows residential parcels that are at least half a mile from a major roadway and with limited access points. These parcels may face evacuation constraints, creating potential difficulties if there is a need to evacuate.

Stockton has prepared an analysis of potential evacuation times for different areas of the city under different emergency situations: a citywide evacuation due to a 500-year flood event that results in levee breaches, a major dam break, and a smaller-scale flood event exacerbated by sea level rise. In each scenario, the City identified the paths out of Stockton (or "evacuation gateways") that would remain viable and would not lead into another hazard zone, then estimated the time it would take residents to reach one of these gateways under either normal driving speeds or a constrained 5 miles per hour.

If normal driving speeds remain feasible, this modeling shows that most of Stockton could be evacuated in approximately 30 minutes, although areas in northwest Stockton could take longer since the most viable evacuation routes lead to the southeast. Under constrained driving speeds, evacuation times are significantly longer, particularly for areas in northwest Stockton, such as the Spanos Park and Bear Creek neighborhoods. The full results of the evacuation scenario are presented in the Safety Element Background Report. The policies in this Safety Element help address issues of evacuation constraints and similar challenges.

Figure 5-2

Evacuation Routes and Residential Parcels with Evacuation Constraints



Source: City of Stockton; Fehr & Peers, 2016; PlaceWorks, 2023; ESRI 2019

- General Plan Planning Area
- City Limit
- Sphere of Influence
- Residential Parcel with Potential Evacuation Constraints
- Possible Evacuation Route - Freeway
- Possible Evacuation Route - Surface Street

POLICY SAF-2.1

Prepare sufficiently for major events to enable quick and effective response.

Action SAF-2.1A

Formulate, review, periodically update, and make available to the public emergency management plans for the safe evacuation of people from areas subject to environmental hazards.

Action SAF-2.1B

Require new critical facilities, including hospitals, emergency operations centers, communications facilities, fire stations, and police stations, to be located, designed, and constructed to avoid or mitigate potential risks and ensure functional operation during flood events. Avoid locating critical facilities in the 100-year and 200-year floodplains or within the 2085 projected sea level inundation zone, and construct facilities to be resilient to seismic and geological events, fires, and explosions.

Action SAF-2.1C

Continue to work with San Joaquin County, the County Office of Emergency Services, other cities in the region, and disaster agencies to coordinate disaster and emergency preparedness planning.

Action SAF-2.1D

Ensure that emergency alerts and related notifications are widely distributed in multiple languages, formats, and media so as to effectively reach as many people as possible, including those with limited English proficiency and with access and functional needs.

POLICY SAF-2.2

Enhance the effectiveness of evacuations in Stockton.

Action SAF-2.2A

Require new development to provide adequate access for emergency vehicles and evacuation routes, including by designing roadway systems to provide multiple escape routes in the event of flooding or other emergencies.

Action SAF-2.2B

Regularly review the City's evacuation maps and update as necessary.

Action SAF-2.2C

Regularly share the City's evacuation maps with the public and property owners within flood zones.

Action SAF-2.2D

Coordinate with transit and service providers to identify and advertise ways to evacuate in the event of a flood or other emergency for individuals with restricted mobility or those who may need additional assistance.

Action SAF-2.2E

In partnership with the San Joaquin Council of Governments and other local agencies, retrofit potential evacuation routes to protect them against floodwaters and other emergencies, and ensure that they can provide viable paths out of Stockton.

Action SAF-2.2F

Conduct door-to-door evacuation notifications in areas with limited access to reliable communication, particularly in frontline communities or those that may need the greatest advanced notification.

Action SAF-2.2G

To the extent feasible in emergency conditions, phase evacuations to minimize roadway constraints and to allow all residents sufficient time to leave.

POLICY SAF-2.3

Ensure that community members are adequately prepared for natural disasters and emergencies through education and training.

Action SAF-2.3A

Develop neighborhood watch and emergency support groups to be trained and put into action in support of government staff in the event of an emergency.

Action SAF-2.3B

Conduct public education campaigns to increase awareness of and preparation for climate hazards.

SEISMIC AND GEOLOGIC HAZARDS

Seismic and geologic hazards are risks caused by the movement of the Earth's surface, or crust. Seismic hazards are earthquakes and related hazards. Geologic hazards are other hazards involving land movements that are not linked to seismic activity.

There are a few faults in the region capable of causing a major earthquake in Stockton, but they are all west of Stockton, closer to the San Francisco Bay. Closer to Stockton are some smaller faults, including the Stockton Fault that runs east-west across the city, but it is not known to be active. Strong shaking from a major earthquake is rare in Stockton, although there were reports of significant shaking and localized damage in the area during the 1989 Loma Prieta earthquake. Figure 5-3 shows key fault lines in the region but not all smaller or less active faults are shown.

If major shaking from an earthquake does occur in Stockton, there is a risk of significant injury or loss of life from the damage or collapse of buildings and structures. Older homes in particular are at risk, because they were constructed before modern buildings codes and may not be seismically retrofitted. There is also a risk of harm from secondary hazards caused by the shaking, including urban fires, dam failures, and toxic chemical releases.

Other geologic hazards that may occur in the area include landslides, subsidence (the gradual sinking of land, often due to groundwater pumping), and soils that can significant expand and contract depending on their moisture levels. There are no areas of substantial landslide risk in Stockton. Other parts of the Delta region have experienced subsidence, and there is an increased risk of further subsidence due to water management practices. Most of Stockton sits on areas with a moderate risk of soil expansion. Any construction on these soils may require specific management practices to reduce potential damage.

POLICY SAF-2.4

Reduce the potential harm from earthquakes and geologic hazards.

Action SAF-2.4A

Participate in local, county, and State-sponsored earthquake preparedness programs.

Action SAF-2.4B

Coordinate with the Stockton Fire Department, Stockton Community Emergency Response Team, San Joaquin County Office of Emergency Services, special districts, local utility providers, and major businesses to ensure effective preparation, response, and recovery services are available throughout the community before, during, and after a seismic event.

Action SAF-2.4C

Assess critical and lifeline facilities for seismic and landslide safety to ensure they remain operational after a seismic event or landslide.

Action SAF-2.4D

Identify City infrastructure with seismic or landslide vulnerabilities and pursue funding to conduct appropriate seismic retrofits.

Action SAF-2.4E

Continue to implement California Building Standards Code seismic safety standards for construction of new buildings.

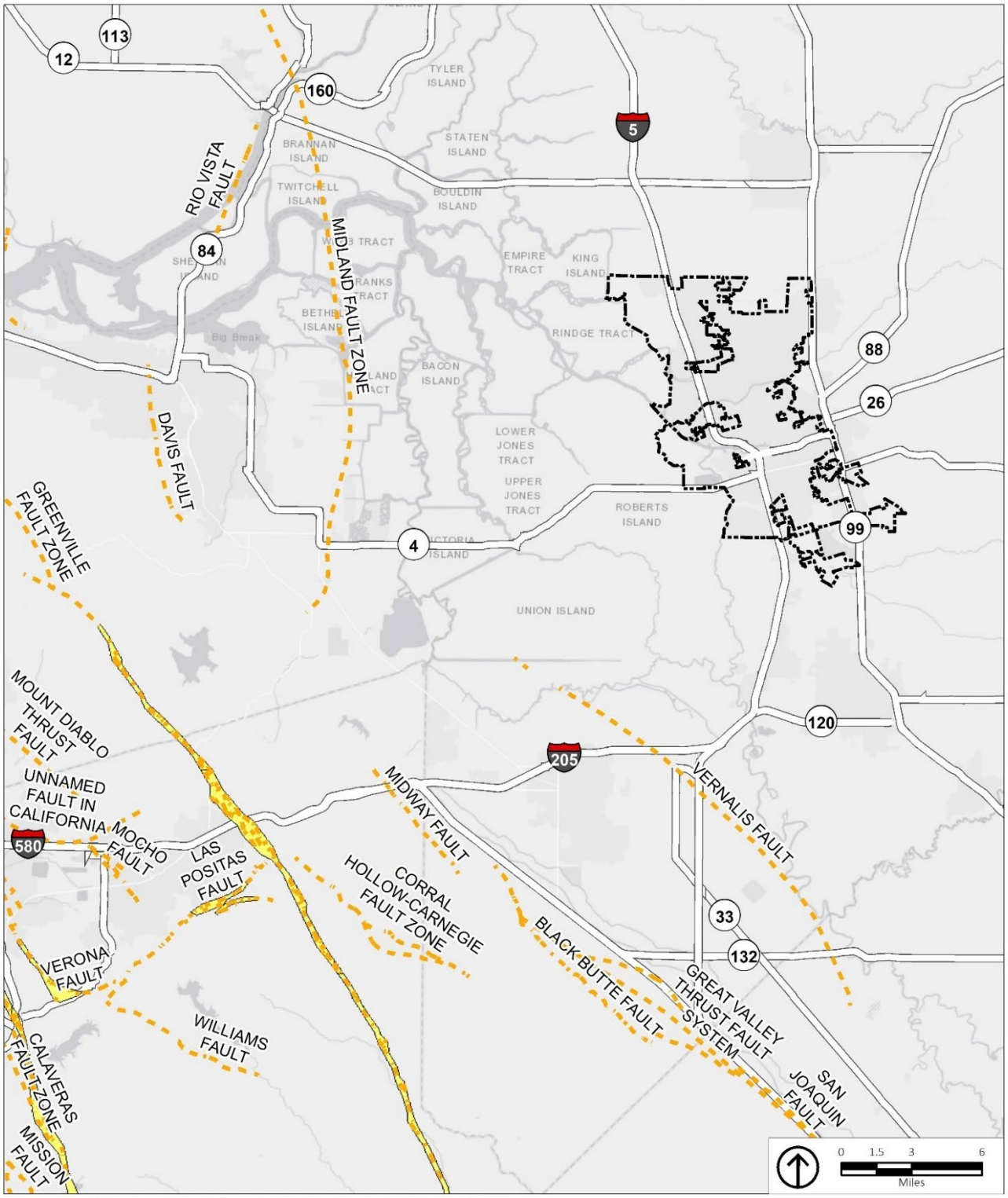
Action SAF-2.4F

Target low-income households, owners and occupants of structures constructed prior to 1980, and owners and occupants of unreinforced masonry buildings with information regarding the importance of seismic retrofitting, and help building owners and occupants connect with providers of these services.

Action SAF-2.4G

Locate new critical and lifeline facilities outside of landslide susceptibility areas, when feasible. If not feasible, appropriately site, design, and construct new critical facilities to be resilient to landslides.

Figure 5-3
Regional Fault Lines



Source: City of Stockton; Fehr & Peers, 2016; PlaceWorks, 2023, USGS 2010/2021

- City Boundary Line
- USGS Regional Fault Lines
- Alquist Priolo Fault Zones

FLOODING AND INUNDATION HAZARDS

Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide, significantly threatening people's health and lives and causing substantial damage to structures, landscapes, and utilities. Reclamation of Delta land over many years has reduced available floodplain and increased flooding potential. Flood risk is therefore one of the most pressing threats to the Delta area, and Stockton is one of the areas at highest risk.

Areas at an elevated risk of flooding are generally divided into 100-, 200-, and 500-year flood zones. A 100-year flood zone has a 1 percent chance of experiencing a major flood in any given year, a 200-year flood zone has a 0.5 percent chance, and a 500-year flood zone has a 0.2 percent chance. The majority of the city is in one of these flood zones, as shown on Figure 5-4, making flooding a hazard of significant concern for Stockton. Figure 5-5 shows the land uses in these affected areas.

Most of the city is protected from flooding by levees, which are shown on Figure 5-6. However, many levees in the Delta region were initially constructed more than a century ago using rudimentary equipment and nonengineered fill material excavated from adjacent channels, sloughs, and marshes. There have been several improvements to the levee system in and around Stockton in recent years, including construction of new flood protection facilities led by the San Joaquin Area Flood Control Agency. A number of local, regional, state, and federal agencies play a role in maintaining levees and other flood protection facilities in and around Stockton. This includes the Central Valley Flood Protection Board, a regulating authority over flood risk management in the Central Valley and responsible for adopting the Central Valley Flood Protection Plan.

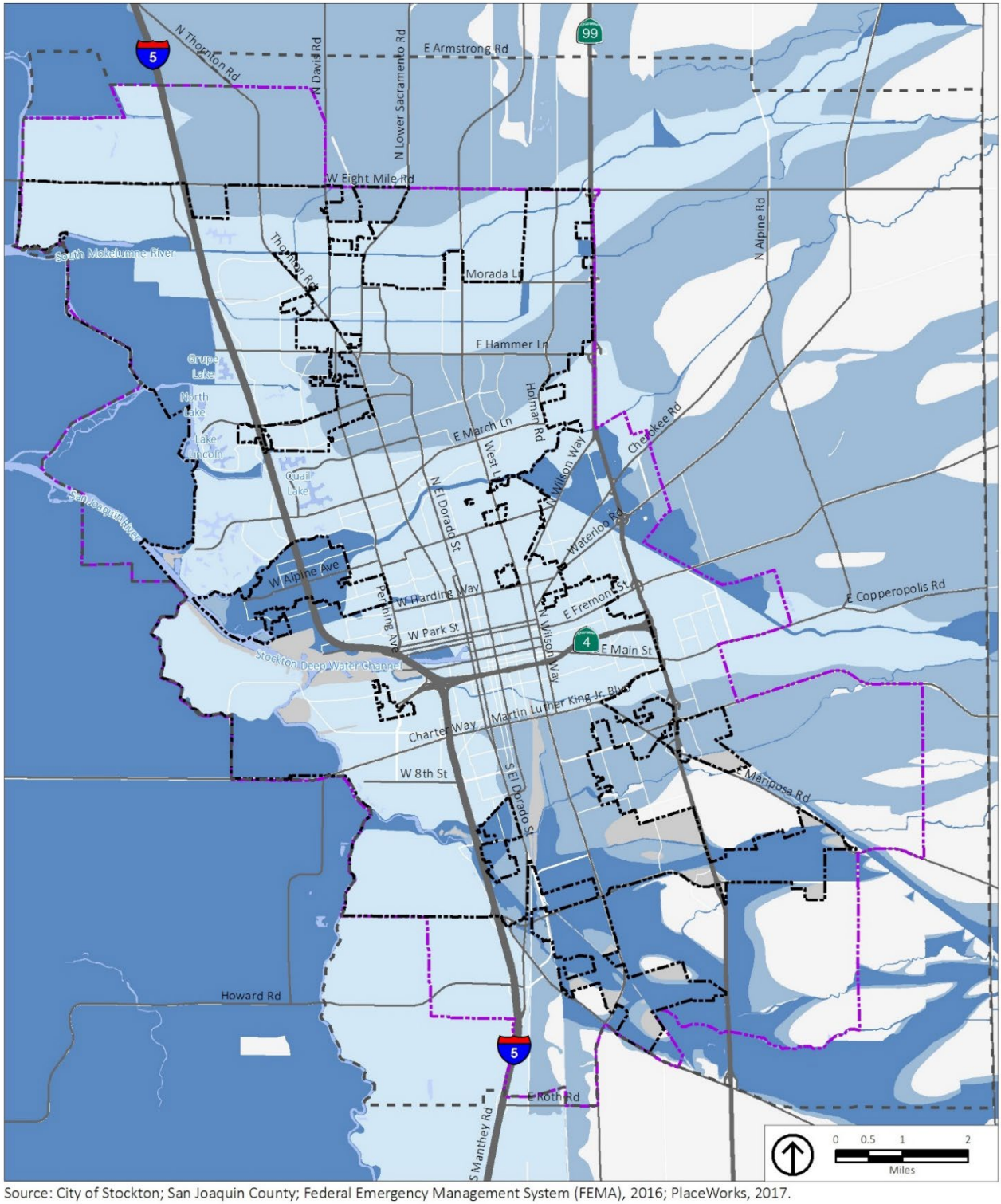
Despite these improvements, vulnerabilities remain in Stockton's levee system. The Country Club neighborhood and areas along the San Joaquin River and its floodplain in the southern part of the city do not receive adequate flood protection from levees. Although all remaining levees provide 100-year flood protection, no levees meet the State's 200-year flood protection requirement in the Central Valley Flood Protection Plan. The Delta's levees are also threatened by the active seismic zones west of the Delta, including the San Andreas and Hayward faults. Even without an earthquake or flood, Delta levees can fail during high tides or even on sunny days. In the event of a major levee break, much of the city would be inundated, potentially damaging tens of thousands of homes.

Sea Level Rise

Sea level rise is an increase in the ocean's surface height relative to the land in a particular location. It is a gradual process that takes place over years or decades, affecting communities near shorelines and low-lying waterways, including the Sacramento/San Joaquin Delta region. Sea levels in the San Francisco Bay-Delta Estuary are likely to rise at least to 7 to 13 inches by 2050, and potentially as high as 23 inches (almost two feet). By the end of the century, sea levels are likely to rise significantly higher, potentially as much as 7 to 10 feet. Figures 5-7 and 5-8 show the likelihood that certain areas of Stockton will be flooded due to sea level rise by 2050 and 2085, respectively.

There are a range of factors that impact water levels in the San Joaquin Delta, including inflows (from local and upstream precipitation), San Joaquin Delta exports into regional and state water systems, astronomical tides, atmospheric effects (pressure and wind), and flow control operations. Regional and local land subsidence further complicates local sea level trends for the Delta region. Decomposition of drained and converted marsh and peat soils in diked Delta islands have caused much of the Delta region to lie below sea level—in some places by as much as 20 feet. Continued land subsidence may increase the relative rate of locally observed sea level change for the Delta area when comparing water levels to local land elevations.

Figure 5-4
Flood Hazard and Levee Protection Zones



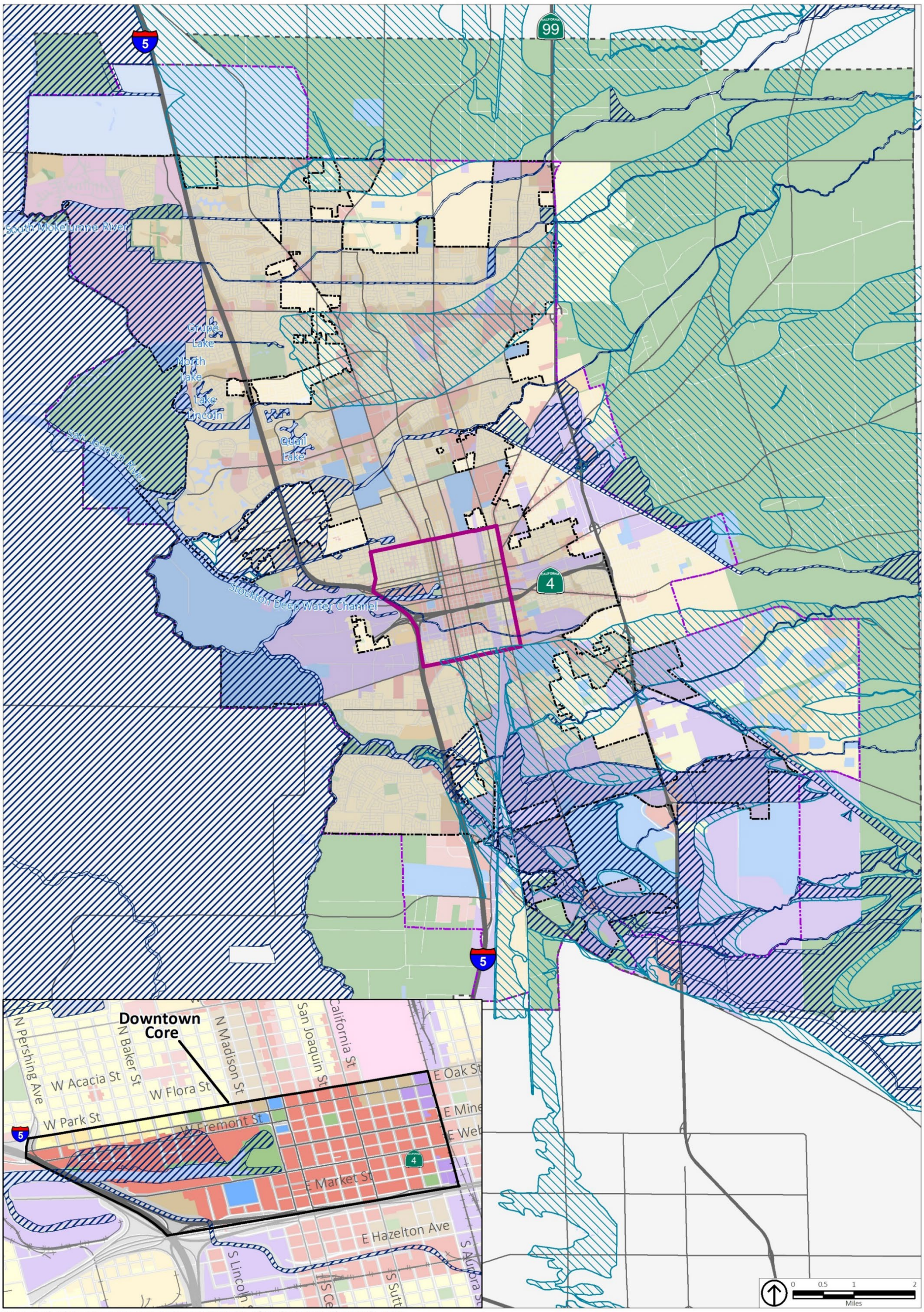
Source: City of Stockton; San Joaquin County; Federal Emergency Management System (FEMA), 2016; PlaceWorks, 2017.

Flood Zones
- 100-Year Flood Zone
- 500-Year Flood Zone
- Protected by a Levee

- City Limit
- Sphere of Influence
- General Plan Planning Area

This page intentionally blank

Figure 5-5
Planned Land Uses in Flood Hazard Zones



Source: Federal Emergency Management Agency, 2016; City of Stockton, 2017; PlaceWorks, 2017.

Flood Zones
- 100-Year Flood Zone
- 500-Year Flood Zone

- City Limit
- Sphere of Influence
- General Plan Planning Area
- Greater Downtown Boundary

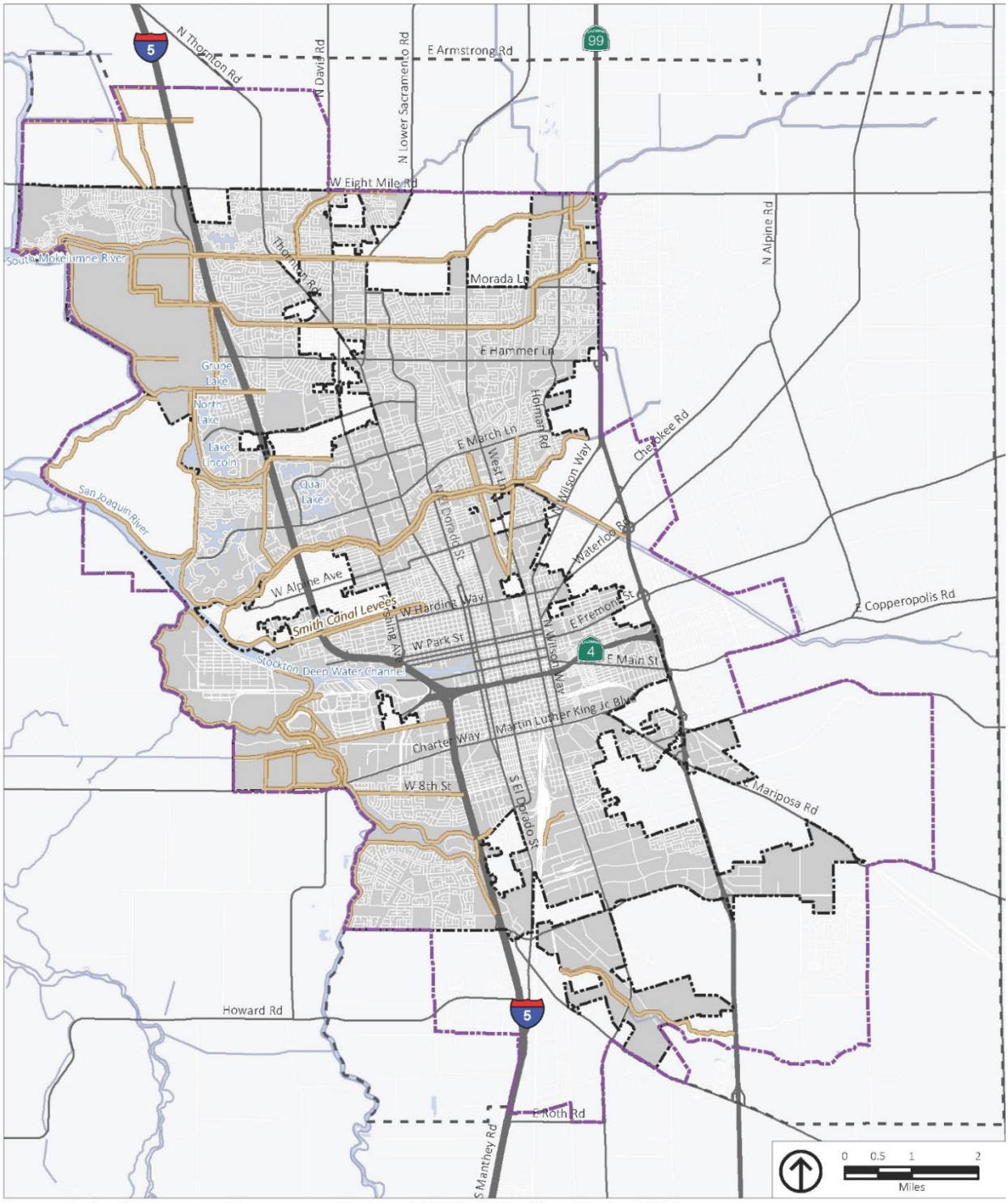
- Residential Estate
- Low Density Residential
- Medium Density Residential
- High Density Residential

- Mixed Use
- Commercial
- Administrative Professional
- Industrial

- Economic and Education Enterprise
- Institutional
- Parks and Recreation
- Open Space/Agriculture

This page intentionally blank.

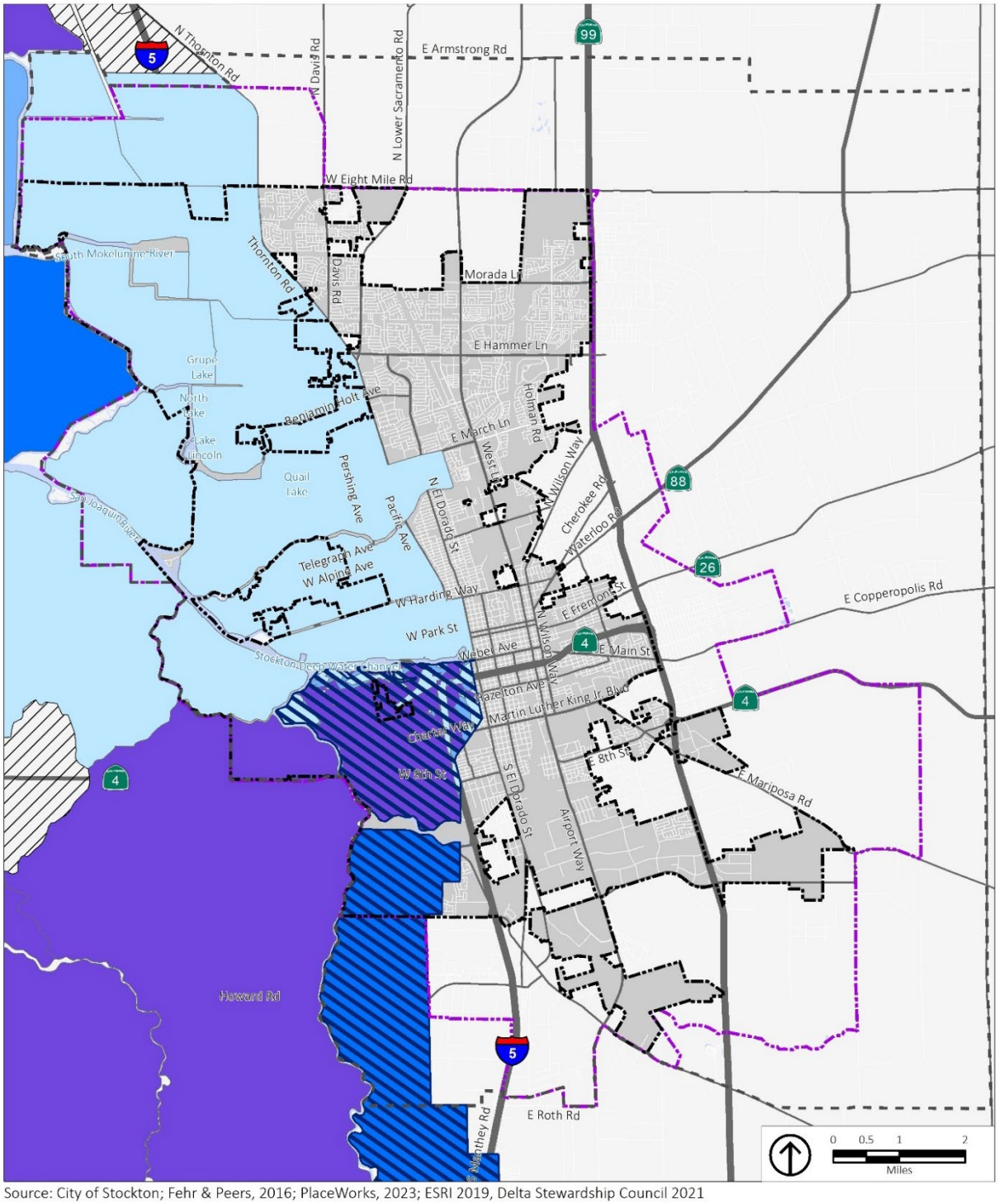
Figure 5-6
Flood Protection Levees



Source:Federal Emergency Management System (FEMA), 2017; PlaceWorks, 2017.

- Levees
- City Limit
- Sphere of Influence/ EIR Study Area
- General Plan Planning Area

Figure 5-7
2050 Sea Level Rise Projections (Probabilistic)



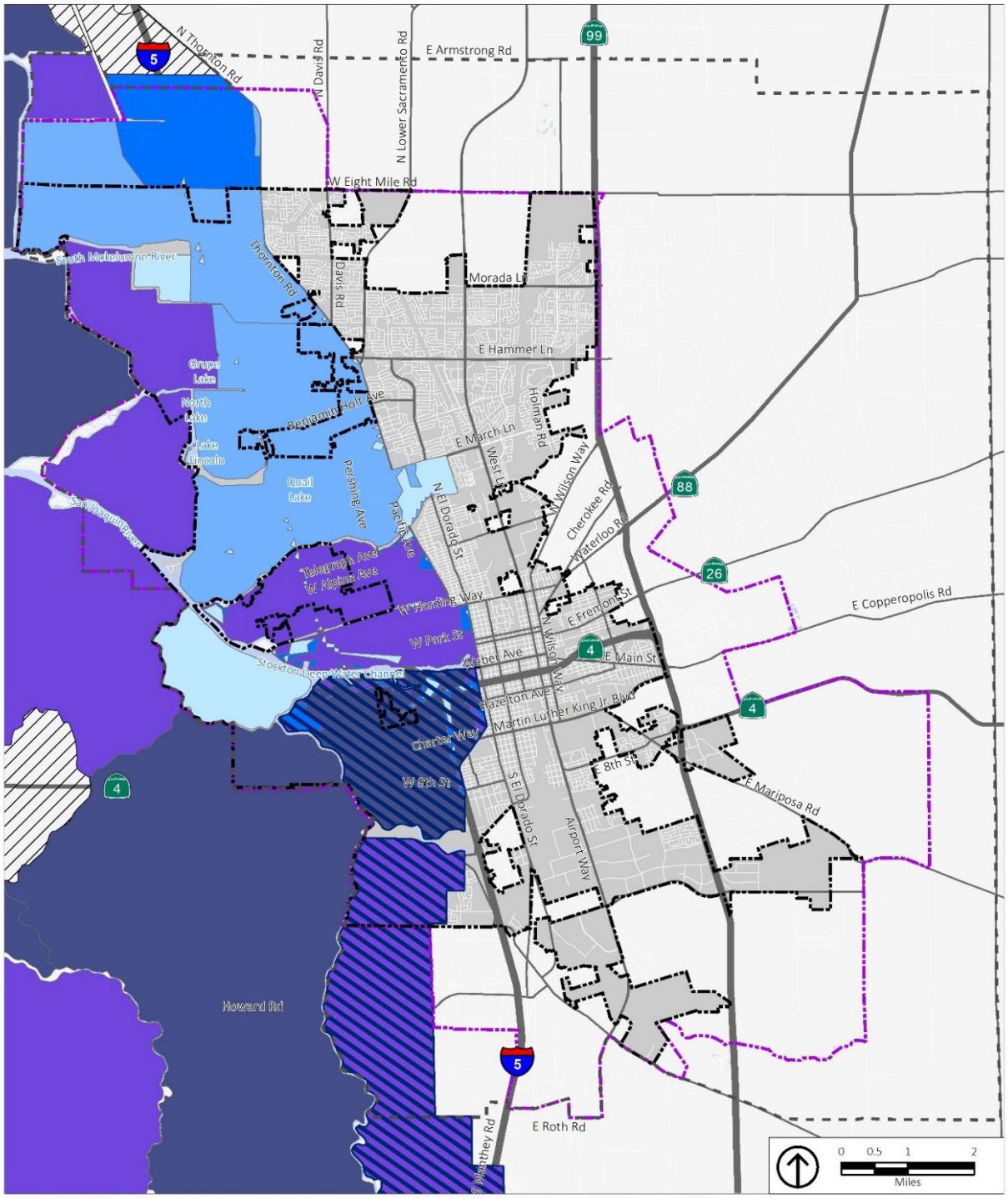
Source: City of Stockton; Fehr & Peers, 2016; PlaceWorks, 2023; ESRI 2019, Delta Stewardship Council 2021

- General Plan Planning Area
- City Limit
- Sphere of Influence
- Not Modeled
- High Risk of River Flooding

Flood Hazard for 2050 Probablistic Conditions

Annual Chance	*Return Period*	*Chance over 10 years*
10%	Less than 10 years	Greater than 65%
2-10%	10 to 50 years	18% to 65%
1-2%	50 to 100 years	10% to 18%
.5-1%	100 to 200 years	5% to 10%
<.5%	Greater than 200 years	Less than 5%

Figure 5-8
2085 Sea Level Rise Projections (Probabilistic)



Source: City of Stockton; Fehr & Peers, 2016; PlaceWorks, 2023; ESRI 2019, Delta Stewardship Council 2021

- General Plan Planning Area
- City Limit
- Sphere of Influence
- Not Modeled
- High Risk of River Flooding

Flood Hazard for 2085 Probablistic Conditions

Annual Chance	*Return Period*	*Chance over 10 years*
10%	Less than 10 years	Greater than 65%
2-10%	10 to 50 years	18% to 65%
1-2%	50 to 100 years	10% to 18%
.5-1%	100 to 200 years	5% to 10%
<.5%	Greater than 200 years	Less than 5%

Dam Failure

A dam failure is an uncontrolled release of water from a reservoir through a dam because of structural failures or deficiencies in the dam, usually associated with intense rainfall or prolonged flooding. Dam failures can range from minor to catastrophic. Although dam failures are very rare, they are not unprecedented. There are four major causes of dam failures: overtopping (when water levels in a reservoir rise above the top of the dam), foundation defects in the dam structure, piping and seepage failure in the dam or surrounding rock, and conduit and valve failure.

Stockton is within the inundation areas of four major dams: the New Hogan Dam on the Calaveras River, the New Melones Dam on the Stanislaus River, the Camanche Dam on the Mokelumne River, and the Don Pedro Dam across the Tuolumne River at the Don Pedro Reservoir. Failure of any of these dams would give residents about seven hours to evacuate. Other major regional dams could also affect Stockton but would have longer warning times. Figure 5-9 shows the dam hazard areas in Stockton.

Likelihood of Future Flooding

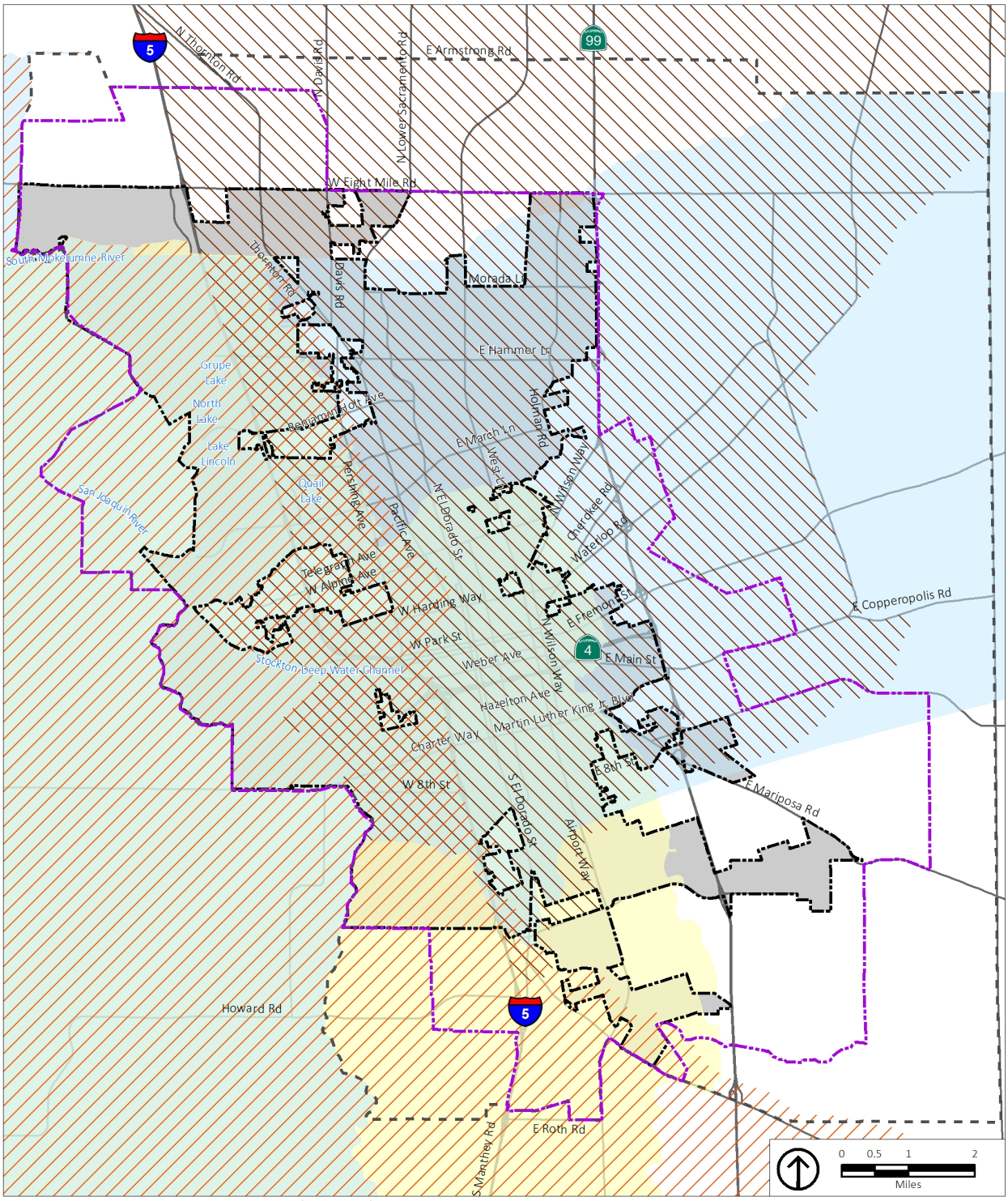
The city's proximity to the Delta, relatively low elevation, and potential to experience heavy rains mean that flood will continue to pose a significant hazard to the community. Climate change is expected to increase the frequency and intensity of strong storms that are more likely to create flooding. Sea level rise is expected to exacerbate this risk by increasing the height of the water surface in the Delta, including expanding the parts of the city that are considered prone to flood. By 2050, an addition 29,550 residents of Stockton are expected to be exposed to flooding, and 55,690 by the end of the century.

Increased frequency and severity of Delta flooding could have significant impacts on some of Stockton's most vulnerable residents. Approximately 65 percent of the Delta's population that could be exposed to the 100-year flood by 2050 reside in areas with high concentrations of socially vulnerable residents. Increases in damaging flood events will cause greater property damage, public health and safety concerns, displacement, and loss of life.

As sea levels rise and heavy precipitation becomes more common, the likelihood of levee overtopping will increase. Levee breaks could cause large amounts of salt water from the Bay to enter the Delta and would have an adverse effect on Delta water quality and water system operations. Salt water intrusion could take months to dissipate, depending on the severity of the levee break and the degree of intrusion.

Of the ecosystems currently protected by levees in the Delta region, 73 percent are at risk of flooding due to levee overtopping resulting from a combination of sea level rise and storm events. By 2085, rising sea levels are expected to cause all critical remaining tidal wetland ecosystems in the Delta to transition to different plant communities or drown completely.

Figure 5-9
Dam Inundation



Source: San Joaquin County, 2017; PlaceWorks, 2023; DWR, 2023 .

Dam Inundation Areas

- Camanche Dam
- New Melones Dam
- New Hogan Dam
- Don Pedro Reservoir

- City Limit
- Sphere of Influence/ EIR Study Area
- General Plan Planning Area

POLICY SAF-2.5

Protect the community from potential flood events.

Action SAF-2.5A

Coordinate with appropriate State, federal, and local flood control agencies to develop a flood protection plan for the levee systems protecting the city that:

- Identifies the levees protecting the city and the entities responsible for the operation and maintenance of the levees.
- Determines the flood levels in the waterways and the level of protection offered by the existing levees along the waterways.
- Identifies a long-term plan to upgrade the system as necessary to provide at least a 100-year level of flood protection to the city, and 200-year level of flood protection where feasible.
- Encourages multipurpose flood management projects that, where feasible, incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of the city's streams, creeks, and lakes.
- Includes provisions for updates to reflect future State or federally mandated levels of flood protection.

Action SAF-2.5B

Collaborate with State and local flood management agencies and other interested parties to develop funding mechanisms to finance the local share of flood management responsibilities and maintain cooperative working relationships with appropriate agencies to minimize flood hazards and improve safety.

Action SAF-2.5C

Require new public and private waterfront development to be oriented to waterways and provide setbacks and easements along levees and channels to provide space for levee widening, flood fighting, roadway and maintenance access, open space and trail amenities, and appropriate landscaping.

Action SAF-2.5D

For any critical public facility sited within the 100-year floodplains (as shown on Figure 5-4) or areas at risk of inundation from sea level rise by 2085 (as shown on Figure 5-8), the responsible agency or department shall implement site or building flood protection improvement methods to ensure operability and minimize damage.

Action SAF-2.5E

Work with residents experiencing insecure housing, with low incomes, with access and functional needs, and/or living in mapped flood hazard zones and levee protection areas (as identified on Figure 5-4) to connect with local, regional, state, and federal initiatives to improve housing resiliency.

Action SAF-2.5F

Work with residents experiencing insecure housing, with low incomes, with access and functional needs, and/or living in mapped flood hazard zones and levee protection areas (as identified on Figure 5-4) to insure their property and receive recovery resources in the aftermath of a flood.

Action SAF-2.5G

Work with residents experiencing insecure housing, with low incomes, with access and functional needs, and/or living in mapped flood hazard zones (as identified in Figure 5-4) to obtain relocation assistance and/or obtain affordable housing outside of flood hazard zones.

POLICY SAF-2.6

Minimize risks to the community from flooding through appropriate siting and protection of structures and occupants.

Action SAF-2.6A

Regulate new urban development in accordance with State requirements for 200-year level of flood protection and federal requirements for 100-year level of flood protection.

Action SAF-2.6B

Require flood-proofing of new and expanded buildings and structures in the mapped flood hazard zones and levee protection areas shown on Figure 5-4. Floodproofing methods will be determined on a project-by-project basis, and may include, but not be limited to:

(a) Anchoring to prevent flotation, collapse, or lateral movement.

(b) Using flood-resistant construction materials.

(c) Employing construction methods and practices that minimize flood damage.

(d) Elevating building pads and habitable building floors above the base flood elevation plus required freeboard.

(e) Providing adequate venting to allow for equalization of hydrostatic flood forces.

Action SAF-2.6C

Investigate and implement when feasible mitigation measures that offer 200-year level of flood protection for existing urban development in flood-prone areas.

Action SAF-2.6D

Preserve floodways and floodplains for non-urban uses to maintain existing flood carrying capacities, except when mitigated in conformance with the City's floodplain management program.

Action SAF-2.6E

Consider the best available flood and sea-level hazard information and mapping from regional, State, and federal agencies to inform land use and public facilities investment decisions.

OTHER HAZARDS OF CONCERN

Drought

A drought is an extended period when precipitation levels are well below normal but is a normal part of the climate cycle. Drought may cause losses to agriculture; affect domestic water supply, energy production, public health, and wildlife; or contribute to wildfire. Like most of California and the western United States, Stockton experiences drought cycles.

Drought impacts the city's water supply and, in severe instances, makes less water available for people, businesses, and natural systems. Both the City of Stockton Municipal Utilities District and the California Water Service Company Stockton District supply water to different parts of the community. Stockton's primary water sources during base years are surface water from several local and regional rivers (including the Calaveras, Stanislaus, and San Joaquin Rivers) and the East San Joaquin Subbasin of the San Joaquin Valley Groundwater Basin. As of August 2023, Stockton and its water sources were not in drought conditions, although San Joaquin County was in a state of extreme to exceptional drought—the highest level of drought recognized by the US Drought Monitor—as recently as December 2022. The City Utilities District and California Water both project that they will have an adequate water supply through 2045 for normal years, single dry years, and multiple dry years.

Although droughts are a regular feature of California's climate, scientists expect that climate change will lead to more frequent and intense droughts statewide. Climate change is expected to cause more precipitation to fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. How much snowpack will be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under wetter climate projections, the loss of snowpack would pose potential water shortage issues and exacerbate drought conditions.

Increasing frequency and severity of droughts will likely have negative impacts on Delta agriculture. Drought—especially in combination with other climate change stressors and hazards, such as extreme heat—may reduce crop productivity. Reductions in agricultural productivity would disproportionately impact low-income agricultural laborers, who would be more likely to lose their jobs first and who tend to have fewer resources to cope with drought and other climate change impacts. Drought and other climate change impacts may exacerbate existing water affordability issues. Increased frequency of droughts may also contribute to harmful algal blooms and degrade raw water quality, requiring drinking water treatment system upgrades.

Fire Hazards

Fire hazards include both wildfires and urban fires. Though the city is vulnerable to both kinds of fire threats, the climatic and vegetative conditions in Stockton are generally not conducive to the spread or development of wildfires. Fuel, weather, and topography are primary factors in how wildland fires spread. Wildfire risk in San Joaquin County is generally low. Fire protection in Stockton is provided by the SFD, as described in Section 2.1, Public Safety.

CAL FIRE (California Department of Forestry and Fire Protection) establishes fire hazard severity zones (FHSZ), designating each as moderate, high, or very high severity. There are no FHSZs in or immediately next to the city. However, there are high and very high FHSZs in neighboring counties, and smoke from fires in these areas could impact local air quality.

The wildland-urban interface (WUI) is an area where buildings and infrastructure (e.g., cell towers, schools, water supply facilities) mix with areas of flammable wildland vegetation. There are two types of WUI: interface (areas where housing and other development border wildland areas) and intermix (where development is mingled and interspersed with wildland areas). Additionally, the influence zone refers to an area made up of wildfire-susceptible vegetation up to 1.5 miles from the WUI, and the threat zone is an additional strip of vegetation modified to reduce flame heights and radiant heat. Figure 5-10 shows the WUI zones around Stockton.

Although the wildfire risk in Stockton is low, there is a risk of structural fires. Structural fires are often due to faulty wiring or mechanical equipment and combustible construction materials. The absence of fire alarms and fire sprinkler systems exacerbate the damages associated with a structural fire. Structural fires are largely from human accidents, although some fires may be started deliberately (arson). Older buildings that lack modern fire safety features may face greater risk of damage from fires.

Greater frequency of regional fires can create recurrent air quality degradation, leading to respiratory health effects. Wildfire smoke consists of a mix of gases and fine particulate matter from burning vegetation and materials. The pollutant of most concern from wildfire smoke is fine particulate matter ($PM_{2.5}$). $PM_{2.5}$ from wildfire smoke is damaging to human health due to its ability to deeply penetrate lung tissue and affect the heart and circulatory system. Although wildfire smoke presents a health risk to everyone, sensitive groups may experience more severe acute and chronic symptoms from exposure to wildfire smoke, such as children, older adults, people with chronic respiratory or cardiovascular disease, or people experiencing low socioeconomic status. Air quality in Stockton has been impacted by major recent wildfires, most notably the Lightning Complex Fire of 2020, Creek Fire of 2020, and Camp Fire of 2018. All of these fires resulted in elevated levels of particulate matter in San Joaquin County for several days.

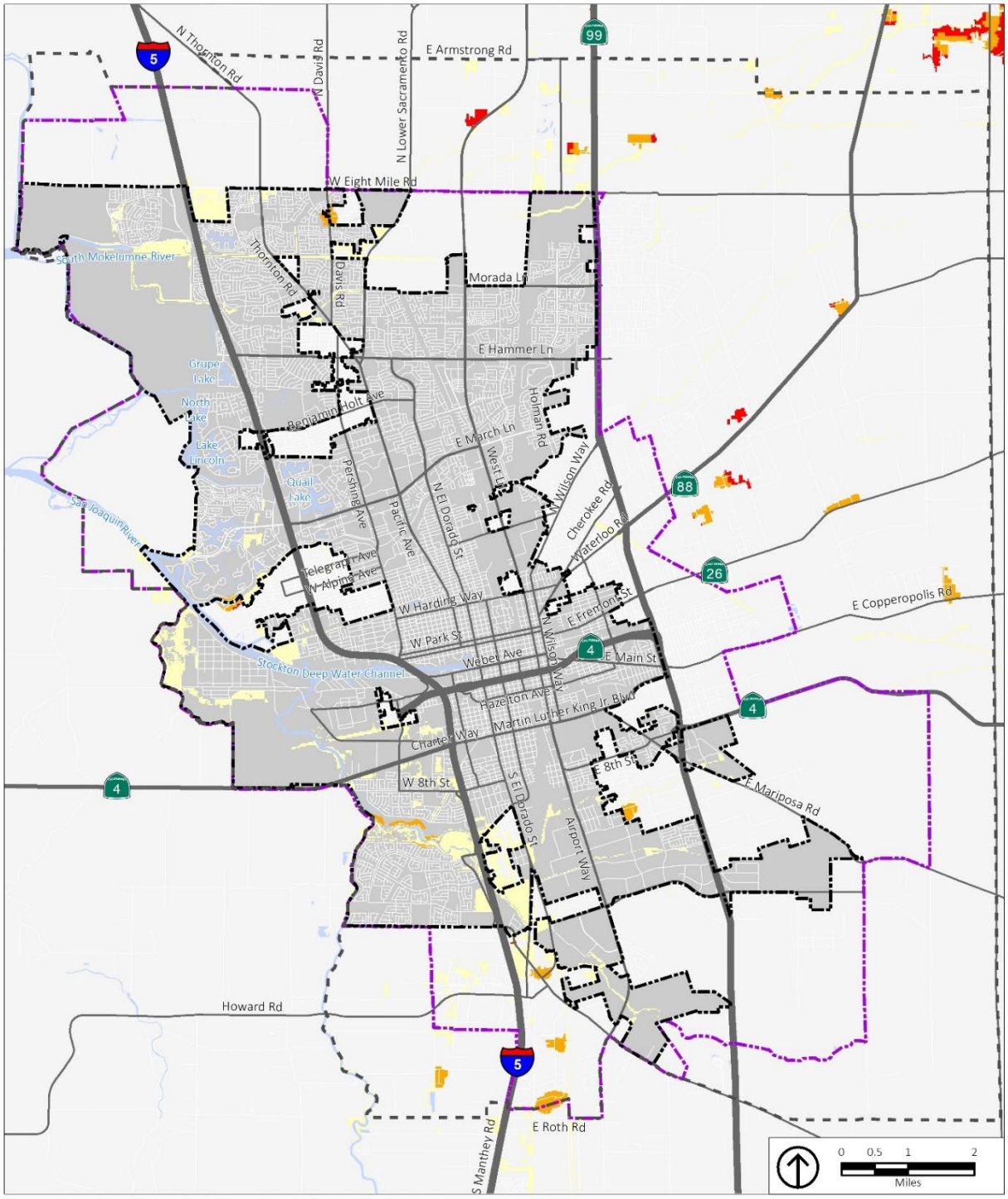
Warmer weather, reduced snowpack, and earlier snowmelt attributable to climate change are expected to increase wildfire risk due to increased fuel and ignition risks. Although Stockton itself faces a low wildfire risk, wildfire risk is generally projected to increase across Northern California, and wildfires are expected to become larger and harder to control, so Stockton will likely continue to be subject to wildfire smoke. Regional wildfires may also interfere with the city's power supply via Public Safety Power Shutoff events or damage to electricity transmission infrastructure.

Agricultural and Ecosystem Pests

Though there is limited agricultural land and open space in Stockton itself, San Joaquin County contains significant farmland, including prime farmland and farmland of statewide importance, as well as extensive wetlands and levee systems. Therefore, the county is vulnerable to agricultural and ecosystem pests. Pests that have been of particular concern in San Joaquin County recently include nutria and Russian knapweed.

Agricultural and ecosystem pests will likely maintain a presence in San Joaquin County, though their activity can be at least partially managed via the County's pest-control initiatives. Pest activity is likely to increase because higher temperatures caused by global warming allow insects to reproduce more rapidly and increase the activity window for pests and diseases. Row crops can be affected by fungal pathogens and invasive disease vectors as temperatures continue to rise, affecting the quality and viability of crops.

Figure 5-10
Wildland-Urban Interface Zones



Source: City of Stockton; Fehr & Peers, 2016; PlaceWorks, 2023; ESRI 2019, CalFire 2015

- General Plan Planning Area
- City Limit
- Sphere of Influence
- Wildland/Urban Intermix Zone
- Wildland/Urban Interface Zone
- Wildland/Urban Influence Zone

Extreme Heat

California's Cal-Adapt database of climate change effects defines extreme heat as temperatures that are hotter than 98 percent of the historical high temperatures for the area, as measured between April and October of 1961 to 1990. Days that reach this level are called extreme heat days. In Stockton, the extreme heat threshold is 102.3°F. An event with five extreme heat days in a row is called a heat wave. Extreme heat also takes the form of warm nights when temperatures do not cool down overnight to provide relief from the hot days. This can also cause higher electricity use during the nighttime hours as community residents use more energy to cool homes. In Stockton, a warm night occurs when the temperature stays above 66°F.

Health impacts are the primary concern with this hazard, though economic impacts are also an issue. People exposed to extreme heat can suffer heat-related illnesses such as heat cramps, heat exhaustion, and (most severely) heat stroke. The elderly, individuals below the poverty level, outdoor workers, immigrant communities, and those experiencing homelessness are among the most vulnerable to extreme heat. Very high temperatures can harm plants, animals, and natural ecosystems that are not well adapted to them. The heat causes more demand for electricity (usually to run air conditioning units) and, in combination with the stress on the power lines, may lead to brownouts and blackouts.

Extreme heat tends to occur on an annual basis and is likely to continue occurring annually. According to California's climate change projections, the number of extreme heat days in Stockton is expected to rise from a historical annual average of 4 to 23 by the middle of the century (2035 to 2064) and 44 by the end of the century (2070 to 2099), with occasional years experiencing many more extreme heat days. The number of warm nights in Stockton is projected to increase from an annual average of 4 historically to 27 by midcentury and 66 by the end of the century.

Severe Weather

Severe weather is generally any destructive weather event, but usually occurs in Stockton as strong storms or heavy fog. Severe weather is usually caused by intense storm systems, although strong winds can occur without a storm. The types of dangers posed by severe weather vary widely and may include injuries or deaths, damage to buildings and structures, fallen trees, roads and railways blocked by debris, and fires sparked by lightning. Severe weather can produce high winds and lightning that can damage structures and cause power outages. Lightning from these storms can ignite structure fires that can cause damage to buildings and endanger people. Objects such as vehicles, unprotected structures (e.g., bus stops, car ports), fences, telephone poles, or trees can also be struck directly by lightning, which may result in an explosion or fire.

Severe weather is an annual occurrence in San Joaquin County. However, actual damage associated with the primary effects of severe weather have been limited. Climate change is expected to cause an increase in intense rainfall and strong storm systems. This means that Stockton could see more intense weather resulting from these storms in the coming years and decades, although such an increase may not affect all forms of severe weather. Though average annual rainfall may increase only slightly, climate change is expected to cause an increase in the number of years with intense levels of precipitation. Heavy rainfall can increase the frequency and severity of other hazards, including flooding. The incidence of winter fog has decreased dramatically over the past three decades, due in part to declines in winter chill caused by climate change.

Human Health Hazards

Human health hazards are bacteria, viruses, parasites, and other organisms that are spread by insects, animals, and other pest organisms and can cause diseases and illness in people. Some of these diseases may cause only mild inconvenience, but others are potentially life threatening. These diseases can be and often are carried by animals, such as mice and rats, ticks, and mosquitos. Warmer temperatures and high levels of precipitation can lead to increased populations of disease-carrying animals, creating a greater risk of disease and increased rates of infection. Populations most vulnerable to human health hazards are those who spend a disproportionate amount of time outdoors, those with fragile immune systems or existing illnesses, and those who may live in substandard housing or not have access to health insurance and medical care.

Human health hazards of various scales and levels of severity are likely to continue to occur in the future. Climate change is projected to contribute to increases in average

temperature and changes in precipitation patterns that favor large precipitation events and associated flooding. These climatic changes promote the reproduction and speed the growth of many pest species, leading to higher populations of potential disease vectors. Overall risk of human health hazards is thus expected to increase.

POLICY SAF-2.7

Accommodate a changing climate through adaptation, mitigation, and resiliency planning and projects.

Action SAF-2.7A

Create a city-specific Local Hazard Mitigation Plan and incorporate this plan into the Safety Element. Begin creation of the plan within one year.

Action SAF-2.7B

Conduct regular updates to the City's climate change vulnerability assessment and associated adaptation and resilience policies and strategies, and incorporate them into the Safety Element, in accordance with SB 379.

Action SAF-2.7C

Continue to participate in regional climate change vulnerability assessment, adaptation planning, and resilience efforts. Accommodate a changing climate through adaptation and resiliency planning and projects, including pursuit of grant funding for implementation of resilience efforts.

Action SAF-2.7D

Continue to identify opportunities to expand the City's organization capacity to respond to the effects of climate change.

Action SAF-2.7E

Establish a network of equitably located community resilience centers that would offer refuge and backup power for community members in the event of a large-scale disaster or extreme heat event, including as a last resort shelter-in-place location.

Action SAF-2.7F

Install backup power and water resources at critical City facilities, emergency shelters, and cooling centers in case of power and water outages.

Action SAF-2.7G

Work with regional and local partners to increase the number of solar and battery systems installed at homes, businesses, and City facilities.

Action SAF-2.7H

Coordinate with transit providers to identify and advertise ways for individuals with restricted mobility to reach resilience centers, cooling centers, and alternate care sites.

Action SAF-2.7I

Conduct targeted public outreach and education about cooling strategies for those populations sensitive to higher temperatures, especially seniors and those who work outdoors, lack permanent shelter, and lack air conditioning.

Action SAF-2.7J

Partner with local community-based organizations to pursue grant funding opportunities to provide financial assistance or reduced costs for energy retrofits, cooling, ventilation, or other adaptation measures to help protect low-income households, senior citizens, and other vulnerable persons against extreme heat events.

Action SAF-2.7K

Plant trees and install more green space to provide shade and combat high heat, with a focus on neighborhoods that are most vulnerable to heat.

Action SAF-2.7L

Target residents living in the wildland urban interface (as shown on Figure 5-10) with information about the dangers of living in a wildfire hazard area and strategies for reducing wildfire risk.

Action SAF-2.7M

Work with existing property owners in wildland-urban interface areas to establish and maintain fire breaks and defensible space, vegetation clearance, emergency access

roads, water supply and fire flow, signage, and firefighting infrastructure that meets current adopted State, County, or community fire safety standards.

Action SAF-2.7N

Discourage new development in the wildland-urban interface (as shown on Figure 5-10). If new development does occur within these areas, require any construction of buildings or infrastructure to incorporate fire-safe design features that meet the State Fire Safe Regulations and Fire Hazard Reduction Around Buildings and Structures Regulation for road ingress and egress, fire equipment access, and adequate water supply.

Action SAF-2.7O

Expand and maintain the City's network of public drinking fountains and water dispensers.

Action SAF-2.7P

Coordinate with local medical providers and Public Health Services of San Joaquin County to ensure low-cost medical and emergency medical services are available to all residents in the city.

Action SAF-2.7Q

Work with San Joaquin County and the San Joaquin County Mosquito and Vector Control District to monitor the status of mosquitoes and agricultural and ecosystem pests and contribute resources to pest management initiatives as feasible.

NOISE CAN DETRACT FROM QUALITY OF LIFE

Noise can affect the way people live and work. Some types of noise are only short-term irritants, like the pounding of a jackhammer or the whine of a leaf blower. These mobile sources can generally be controlled through the City's noise ordinance, but fixed sources such as roads, the railroad, and the airport instead require the City to ensure that land uses, especially "sensitive receptors" like homes and schools, do not bring people too close to noise unless noise reduction measures like thicker walls and windows are determined to be acceptable.

State law requires general plans to use the Community Noise Equivalent Level (CNEL) or the Day/Night Average Sound Level (L_{dn}) to describe the community noise environment (in decibels, "dBA") and its effects on the population. The City of Stockton land use compatibility standards for noise are shown in Table 5-1, and the future 2040 roadway noise conditions are depicted graphically on Figure 5-11.

POLICY SAF-2.8

Protect the community from health hazards and annoyance associated with excessive noise levels.

Action SAF-2.8A

Prohibit new commercial, industrial, or other noise-generating land uses adjacent to existing sensitive noise receptors such as residential uses, schools, health care facilities, libraries, and churches if noise levels are expected to exceed 70 dBA Community Noise Equivalent (CNEL) (decibels on A-weighted scale CNEL) when measured at the property line of the noise sensitive land use.

Action SAF-2.8B

Require projects that would locate noise sensitive land uses where the projected ambient noise level is greater than the "normally acceptable" noise level indicated on Table 5-1 to provide an acoustical analysis that shall:

- Be the responsibility of the applicant;
- Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics;
- Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions;
- Estimate existing and projected (20-year) noise levels in terms of L_{dn}/CNEL and compare the levels to the adopted noise policies and actions in this General Plan;
- Recommend appropriate mitigation to achieve compatibility with the adopted noise policies and standards;
- Where the noise source in question consists of intermittent single events, address the effects of maximum noise levels in sleeping rooms in terms of possible sleep disturbance;
- Estimate noise exposure after the prescribed mitigation measures have been implemented;

- If the project does not comply with the adopted standards and policies of this General Plan, provide acoustical information for a statement of overriding considerations for the project; and
- Describe a post-project assessment program, which could be used to evaluate the effectiveness of the proposed mitigation measures.

Action SAF-2.8C

Require noise produced by commercial uses to not exceed 75 dB L_{dn}/CNEL at the nearest property line.

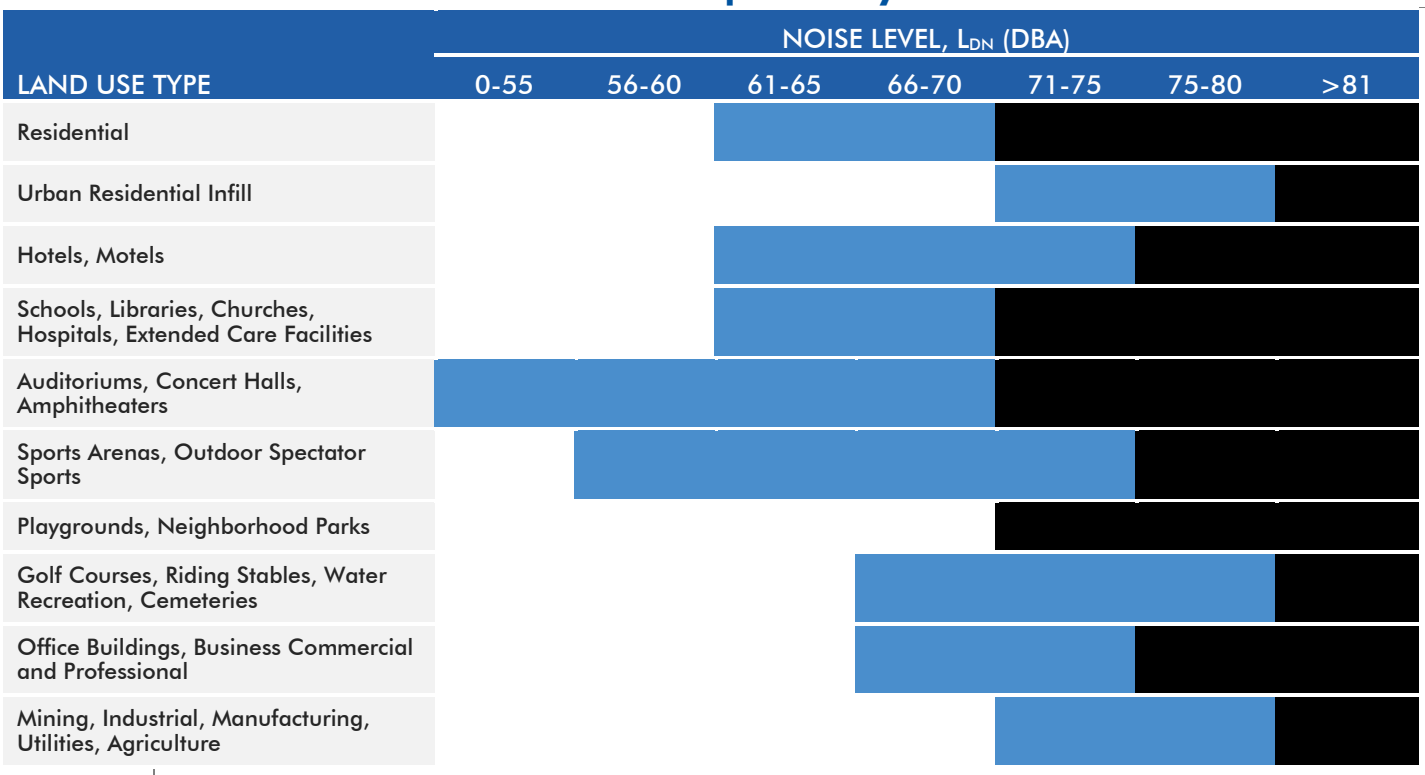
Action SAF-2.8D

Grant exceptions to the noise standards for commercial and industrial uses only if a recorded noise easement is conveyed by the affected property owners.

Action SAF-2.8E

Require all new habitable structures to be set back from railroad tracks to protect residents from noise, vibration, and safety impacts.

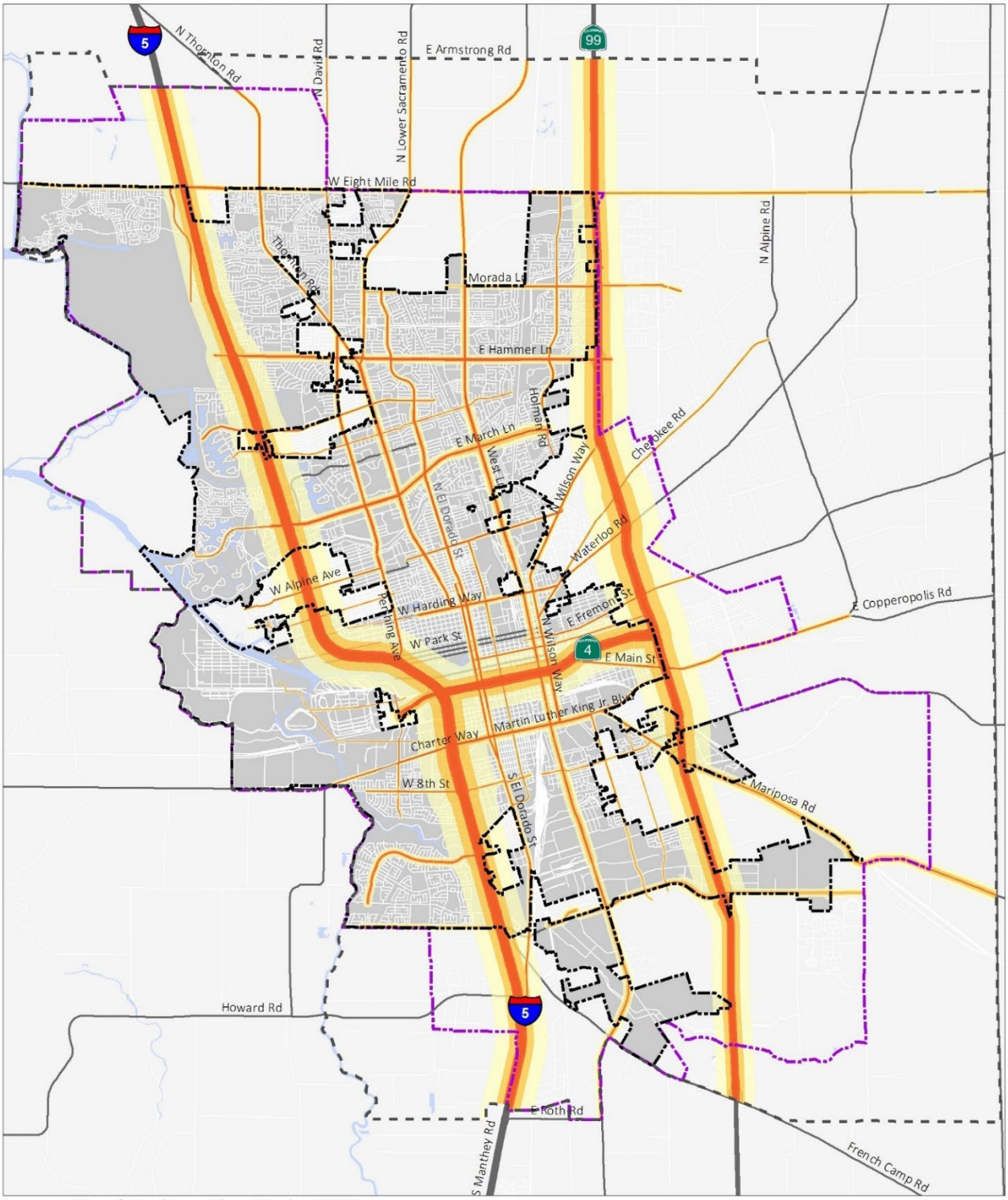
Table 5-1 Maximum Allowable Noise Exposure by Land Use



	Normally Acceptable. Specified land use is satisfactory based on the assumption that any buildings involved are of normal, conventional construction, without any special noise insulation requirements.
	Conditionally Acceptable. New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed insulation features have been included in the design.
	Unacceptable. New construction or development should not be undertaken.

Notes: If existing noise standards are currently exceeded, a proposed project shall not incrementally increase noise levels by more than 3 dBA. Urban residential infill applies to residential uses in the Greater Downtown.

Figure 5-11
2040 Roadway Noise Contours



Source: City of Stockton; PlaceWorks, 2016.

Future (2040) Noise Contours
- 70dB
- 65dB
- 60dB

- City Limit
- Sphere of Influence
- General Plan Planning Area

HAZARDOUS MATERIALS NEED TO BE CONTROLLED

State and federal laws regulate the production, storage, handling, and disposal of hazardous materials and waste, including industrial wastes, pesticides, radioactive substances, asbestos, and combustible fuels. Hazardous materials commonly used in the home include garden pesticides, waste oil, paint supplies, car batteries, and pool chemicals. Limited quantities of household hazardous waste may be transported to and dropped off at a recycling center. State and federal rules require inventory and reporting for businesses that store more than 55 gallons of hazardous liquids, 500 pounds of solids, or 200 cubic feet of compressed gases, including plans for incident prevention and emergency response and evacuation.

Although hazardous materials are carefully regulated today, past activities have left some contaminated sites in Stockton, as well as others where contamination is suspected and investigation is underway. Contamination has resulted from leaking underground storage tanks, disposal of hazardous materials, and various past industrial practices. The California Department of Toxic Substances Control oversees cleanup of such sites, but the potential for accidents and spills means that the City also must strive to reduce risks.

POLICY SAF-2.9

Minimize the risk to city residents and property associated with the transport, distribution, use, and storage of hazardous materials.

Action SAF-2.9A

Restrict transport of hazardous materials within the city to routes that have been designated for such transport.

Action SAF-2.9B

When appropriate, require new development to prepare a hazardous materials inventory and/or prepare Phase I or Phase II hazardous materials studies, including any required cleanup measures.

Action SAF-2.9C

Educate the public about the types of household hazardous wastes and the proper methods for their disposal.

Action SAF-2.9D

Restrict, to the extent feasible, development of new hazardous waste storage facilities in mapped 100-year flood hazard zones and areas subject to sea level rise in 2085 (see Figures 5-4 and 5-8).

Action SAF-2.9E

Work with existing handlers of hazardous materials and the Stockton Fire Department to reduce the risk of hazardous materials exposures in the event of flooding.

GOAL SAF-3: CLEAN WATER

Sustain clean and adequate water supplies.

EVERYONE HAS A RIGHT TO CLEAN WATER

Access to safe water is a fundamental human need for both physical and social health. Maintaining clean water supplies requires constant vigilance, significant expenditures, and sometimes changes in behavior, especially as the impacts of human activities become more pervasive.

Water supply, quality, and distribution are vital to Stockton's ability to serve its population now and in the future. Regulatory pressures, droughts, and saline intrusion affecting groundwater supplies have already strained the region's water supplies. As a result, the City has focused attention on the availability of existing surface water supplies, and is cooperating with other agencies in the region to manage groundwater resources at a sustainable yield.

Meanwhile, water conservation and efficiency has become a normal way of life in and around Stockton. Increasing use of reclaimed (or "recycled") water can be an effective way to protect water supply. For example, simple "graywater" systems can re-use water from bathroom sinks, showers, bathtubs, and washing machines to irrigate landscaping. Stockton also is committed to protecting water quality by ensuring adequate collection, treatment, and safe disposal of wastewater.

POLICY SAF-3.1

Secure long-term renewable contracts and related agreements to ensure that surface water rights will be available to meet projected demand.

Action SAF-3.1A

Actively participate in appropriate forums designed to discuss and solve regional water supply and quality issues.

POLICY SAF-3.2

Protect the availability of clean potable water from groundwater sources.

Action SAF-3.2A

Continue to cooperate with San Joaquin County, Stockton East Water District, and CalWater to monitor groundwater withdrawals and ensure that they fall within the target yield for the drinking water aquifer.

Action SAF-3.2B

Require new development to employ low impact development (LID) approaches, including:

- Conserving natural areas and reducing imperviousness
- Runoff storage
- Hydro-modification (to mimic pre-development runoff volume and flow rate)
- Reducing trash accumulation
- Public education and outreach

POLICY SAF-3.3

Encourage use of recycled ("gray") water for landscaping irrigation to reduce demand on potable supplies.

Action SAF-3.3A

Require new development to install non-potable water infrastructure for irrigation of large landscaped areas where feasible.

Action SAF-3.3B

Investigate and implement Code amendments to allow installation of dual plumbing and/or rainwater capture systems to enable use of recycled water and/or captured rainwater generated on-site.

POLICY SAF-3.4

Ensure adequate collection, treatment, and safe disposal of wastewater.

Action SAF-3.4A

Require all new urban development to be served by an adequate wastewater collection system to avoid possible contamination of groundwater from onsite wastewater disposal systems.

Action SAF-3.4B

Conduct outreach and provide information to encourage homeowners with septic tanks to abandon existing septic tanks and hook up to the City wastewater collection system.

Action SAF-3.4C

Continue to discharge treated effluent to the Delta and reuse that water through the City's California Water Code Section 1485 water right.

GOAL SAF-4: CLEAN AIR

Improve local air quality.

AIR QUALITY IN THE VALLEY HAS TO IMPROVE

The San Joaquin Valley Air Basin is burdened by air pollution from a variety of industrial and vehicular sources. Topographic and meteorological conditions unique to the area trap these particulates and generate high levels of unhealthy air in the region. The San Joaquin Valley Air Pollution Control District oversees plans and control measures to address air pollution, primarily from stationary sources such as industry and power plants. The District also enforces rules and regulations to control air pollution and to assess potential air quality impacts of proposed land uses. The City of Stockton also plays an important role in helping to minimize air pollutant emissions, both through direct regulations on land use activities and through policies and actions that help reduce the need to travel long distances and that promote alternatives to single-occupant vehicular travel. Goals, policies, and actions that address air quality are highlighted with the throughout the document.

POLICY SAF-4.1

Reduce air impacts from mobile and stationary sources of air pollution.

Action SAF-4.1A

Require the construction and operation of new development to implement best practices that reduce air pollutant emissions, including:

- Use of low-emission and well-maintained construction equipment, with idling time limits.
- Development and implementation of a dust control plan during construction.
- Installation of electrical service connections at loading docks, where appropriate.
- Installation of Energy Star-certified appliances.
- Entering into Voluntary Emissions Reduction Agreements with the San Joaquin Valley Air Pollution Control District.

Action SAF-4.1B

Use the results of the Health Risk Assessments required by the California Air Toxics "Hot Spots" Act to establish appropriate land use buffer zones around any new sources of toxic air pollutants that pose substantial health risks.

Action SAF-4.1C

Require the use of electric-powered construction and landscaping equipment as conditions of project approval when appropriate.

Action SAF-4.1D

Limit heavy-duty off-road equipment idling time to meet the California Air Resources Board's idling regulations for on-road trucks.

POLICY SAF-4.2

Encourage major employers to participate in a transportation demand management program (TDM) that reduces vehicle trips through approaches such as carpooling, vanpooling, shuttles, car-sharing, bike-sharing, end-of-trip facilities like showers and bicycle parking, subscription bus service, transit subsidies, preferential parking, and telecommuting.

Action SAF-4.2A

Provide information and conduct marketing and outreach to major existing and new employers about the transportation demand management (TDM) program facilitated by the San Joaquin Council of Governments.

POLICY SAF-4.3

Coordinate with the San Joaquin Valley Air Pollution Control District and non-profit organizations to promote public awareness on air quality issues and consistency in air quality impacts analyses.

Action SAF-4.3A

Distribute educational materials from the San Joaquin Valley Air Pollution Control District on the City's website and at its Permit Center.

Action SAF-4.3B

Coordinate review of development project applications with the San Joaquin Valley Air Pollution Control District to ensure that air quality impacts are consistently identified and mitigated during CEQA review.

Policy SAF-4.4

Help the public prepare for and avoid the negative impacts of poor air quality events.

Action SAF-4.4A

Develop and implement a plan to provide convenient, equitable, accessible clean indoor refuges during times when outdoor air quality is deemed unhealthy.

Action SAF-4.4B

Work with local employers, service agencies, and health providers to distribute N95 masks during poor air quality events.

Action SAF-4.4C

Work with residents, community service providers, and employers to improve residential and commercial indoor ventilation systems, including identifying funding assistance for low-income households to purchase air purifiers, air conditioners, fans, or similar devices.

POLICY SAF-4.5

Reduce community GHG emissions.

Action SAF-4.5A

Maintain, implement, and regularly update the City of Stockton Climate Action Plan (CAP) and update the CAP to include the following:

- Updated communitywide GHG emissions inventory;
- 2030 and 2045 GHG emissions reduction targets, consistent with SB 32 and AB 1279;
- Estimated 2030 and 2045 GHG emissions reduction benefits of State programs;
- New and/or revised GHG reduction strategies that, when quantified, achieve the 2030 and 2045 reduction targets and continue emission reductions beyond 2045; and
- New or updated implementation plan for the CAP.

POLICY SAF-4.6

Expand opportunities for recycling, re-use of materials, and waste reduction.

Action SAF-4-6A

Use recycled materials and products for City projects and operations where economically feasible, and work with recycling contractors to encourage businesses to use recycled products in their manufacturing processes and encourage consumers to purchase recycled products.

Action SAF-4-6B

Continue to require recycling in private and public operations, including construction/ demolition debris.

Action SAF-4-6C

Expand educational and outreach efforts to promote recycling by occupants of multi-family housing, businesses, and schools.

This page intentionally blank.

This page intentionally blank

6 COMMUNITY HEALTH

A city is only as healthy as its people. We need to feel safe and have access to good food and the outdoors, and our collective well-being and chance for positive change depends on strengthening bonds between community members. When people in Stockton connect with one another and make choices together to improve their lives, neighborhoods, and the community, it builds a sense of belonging that enhances overall health and livability for everyone in the city. The focus of this chapter is on promoting personal health and fostering a climate of collaboration and opportunities for positive collective impact. It is organized around five key goals that represent the priorities of the Stockton community:

- Healthy People
- Restored Communities
- Skilled Workforce
- Affordable Housing
- Sustainability Leadership

GOALS, POLICIES, AND ACTIONS

GOAL CH-1: HEALTHY PEOPLE

Support the ability of the entire community to maintain healthy lifestyles.

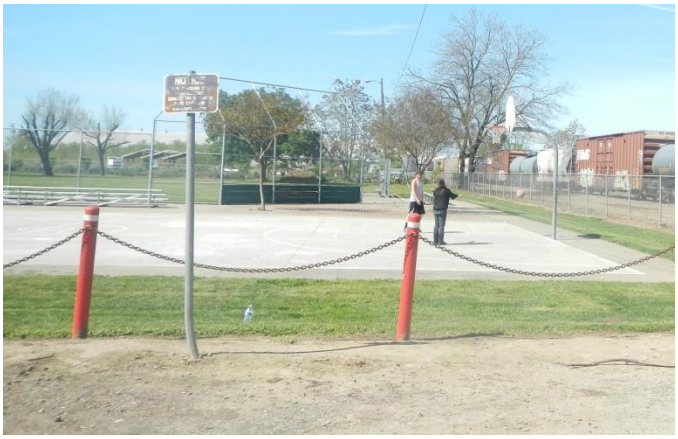
STOCKTON IS COMMITTED TO PROMOTING PUBLIC HEALTH

In 2010, the City Council adopted a resolution advocating and supporting the Healthy Eating and Active Living (HEAL) Cities Campaign, joining a growing group of California communities choosing to address the relationship of the built environment and related matters to community health, and also identifying the General Plan as an important vehicle to promote health and wellness choices for Stockton residents.

While genetics, healthcare, and lifestyle choices affect health, so can land use patterns, transportation infrastructure, access to open space, economic success, and a variety of other factors, which in turn are guided and supported by the City and other partners, such as San Joaquin County Public Health Services, local educational providers, and numerous advocacy groups. The wide variety of programs supportive of public health, and their success, can be expanded through continued and enhanced communitywide collaboration with these and other agencies and organizations.

Public health is a high priority for Stockton residents. Based on clear and cohesive input and direction from community members during the Envision Stockton 2040 General Plan process, the public health co-benefits of good planning have been woven into the goals, policies, and actions throughout this General Plan, as indicated with the throughout the document.

Active lifestyles and healthy food are two of the best tools to combat obesity and chronic disease. Land use patterns and building placement and design can promote physical activity, and recreation and active transportation, which are key to healthier lifestyles, require safe and well-maintained places for the community to gather and travel. Nutrition influences not only the incidence of obesity, diabetes, and a variety of other diseases, but also school achievement, job attainment, and quality of life generally. The City of Stockton seeks to ensure that all parts of the city are served by healthy retail food sources and offer well-designed urban green space to sustain both physical and mental health.



POLICY CH-1.1

Maintain walking and wheeling facilities and parks that are safe and accessible in all areas of Stockton.

Action CH-1.1A

Plant and maintain appropriate shade trees along all City streets to reduce heat exposure, prioritizing areas of the city with significantly less tree canopy, and provide a buffer between the travel way and bicycle and pedestrian facilities, and provide other amenities like well-marked crosswalks, bulb-outs, and pedestrian-scale street lighting.

Action CH-1.1B

Prepare a parks master plan through an open and engaging process inclusive of community residents that assesses the quality and distribution of existing parks, facilities, and community centers throughout the city relative to the population served (i.e., within a set walking distance) and their needs (i.e., considering age, income, and abilities), and, based on this information, identifies and prioritizes new, renovation, and expansion park and community center projects and describes funding means and timelines.

POLICY CH-1.2

Promote healthy retail food choices within and adjacent to residential areas.

Action CH-1.2A

Adapt, expand, and target existing small business development programs to provide training, promotion, and technical, financial, and business assistance to small neighborhood grocery and convenience stores that provide healthy food and accept Supplemental Nutrition Assistance Program (SNAP or CalFresh) and Supplemental Nutrition for Women, Infants and Children (WIC).

Action CH-1.2B

Prepare a healthy food ordinance that creates incentives and guidelines that support access to healthy food, such as standards requiring that a percent of sales area in neighborhood food and beverage stores be devoted to healthy foods and/or requiring acceptance of CalFresh and WIC. As part of this ordinance, collect geographic data about current health conditions, and discourage unhealthy food establishments (e.g., mini markets and fast food restaurants) in neighborhoods with high rates of obesity and/or diabetes.

Action CH-1.2C

Collaborate with non-profit partners and San Joaquin County Public Health Services to attract full-service grocery stores in areas that lack access to fresh food and/or are at a high risk of obesity and diabetes.

Action CH-1.2D

Prioritize pedestrian and active transportation improvement projects in low-income/disadvantaged communities that connect residential areas to retail locations that sell healthy food.

POLICY CH-1.3

Encourage activities that support local agriculture, such as farmers' markets, urban farming and community gardening.

Action CH-1.3A

Provide public land, traffic control, cleanup, and other City services to farmers' markets, including technical assistance to encourage markets to accept CalFresh and WIC.

Action CH-1.3B

Create an accessible inventory of publicly-owned and private vacant sites appropriate for community gardens or other forms of urban agriculture.

Action CH-1.3C

Amend the Development Code to include standards for small-scale, urban local food operations.

Action CH-1.3D

Adopt and Implement an Urban Agriculture Incentive Zone (per AB 551) to allow privately-owned vacant property to be productively used for growing food.

Action CH-1.3E

Partner with nonprofits, local farmers and San Joaquin County Public Health Services to conduct public outreach and education to aid in the development of an urban agriculture ordinance.

Action CH-1.3F

Identify new potential locations for farmers' markets in low-income and nutrient deficient neighborhoods, including opportunities to hold markets on publicly owned land.

GOAL CH-2: RESTORED COMMUNITIES

Restore disadvantaged communities to help them become more vibrant and cohesive neighborhoods with high-quality affordable housing, a range of employment options, enhanced social and health services, and active public spaces.

EQUITY MEANS EQUAL OPPORTUNITY FOR ALL

Low-income residents, communities of color, tribal nations, and immigrant communities have historically disproportionately experienced environmental burdens and related health problems. This inequity has resulted from many factors, including inappropriate zoning and incomplete land use planning, which have led to development patterns that concentrate pollution emissions and environmental hazards near communities that have not had the political wherewithal to protect themselves. As many of these "disadvantaged" or "environmental justice" communities continue to face significant barriers to their overall health, livelihood, and sustainability, State law now requires that general plans address environmental justice through Senate Bill (SB) 1000. Just as importantly, community input throughout the Envision Stockton 2040 General Plan process confirmed the need to prioritize these strategies. Therefore, policies and actions throughout the General Plan that help aim to reduce health risks in disadvantaged communities in Stockton are highlighted with the throughout the document.

State law defines environmental justice as:

> *The fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.*

Figure 6-1 shows local disadvantaged communities. These areas were mapped using the California Communities Environmental Health Screening Tool (CalEnviroScreen), developed by the State Office of Environmental Health Hazard Assessment on behalf of the California Environmental Protection Agency. CalEnviroScreen measures pollution and population characteristics using 20 indicators such as air and drinking water quality, waste sites, toxic emissions, asthma rates, and poverty. It applies a formula to each census tract in the state to generate a score that rates the level of cumulative impacts on each area. A census tract with a higher score is one that experiences higher pollution burden and vulnerability than census tracts with lower scores.

Through SB 244, State law also requires that general plans identify Disadvantaged Unincorporated Communities, which are disadvantaged communities located outside of the city limit, but within the Sphere of Influence (SOI). Because they are located outside of the city limit, these areas often lack adequate infrastructure to sustain public health and safety. Therefore, the law requires that cities analyze infrastructure and fire service needs and deficiencies, and assess potential funding mechanisms for expansions of services and facilities. In 2016, the City identified and analyzed Disadvantaged Unincorporated Communities within its SOI. The analysis, which is provided as Appendix B to the General Plan, concluded that there are no infrastructure or service deficiencies within most of the Disadvantaged Unincorporated Communities in the SOI. However, portions of some communities rely on septic systems and wells, and lack wastewater collection and water distribution infrastructure.

POLICY CH-2.1

Prioritize maintenance of streets and improvement of sidewalks, parks, and other infrastructure in areas of the city that historically have been comparatively underserved by public facilities, including implementation of complete streets where needed, especially in conjunction with infrastructure maintenance and improvement projects.

Action CH-2.1A

When considering parks and infrastructure maintenance and improvement projects, consider the following through an open and engaging process inclusive of community residents:

- Whether the affected community is underserved or disadvantaged.
- What the priority needs of the community are and whether the project would address those needs.
- Whether the project would negatively impact the community, such as through increased exposure to pollutants or displacement of residents or local businesses.

Action CH-2.1B

Provide incentives for rehabilitation or redevelopment of distressed properties that takes into consideration strategies to avoid gentrification.

Action CH-2.1C

Develop incentives to promote reuse of distressed areas, such as through re-zoning, permit streamlining, density bonuses, and other appropriate tools.

Action CH-2.1D

Conduct marketing to potential developers to encourage the redevelopment and conversion of distressed commercial strips into housing and mixed-use areas that includes strategies to avoid gentrification.

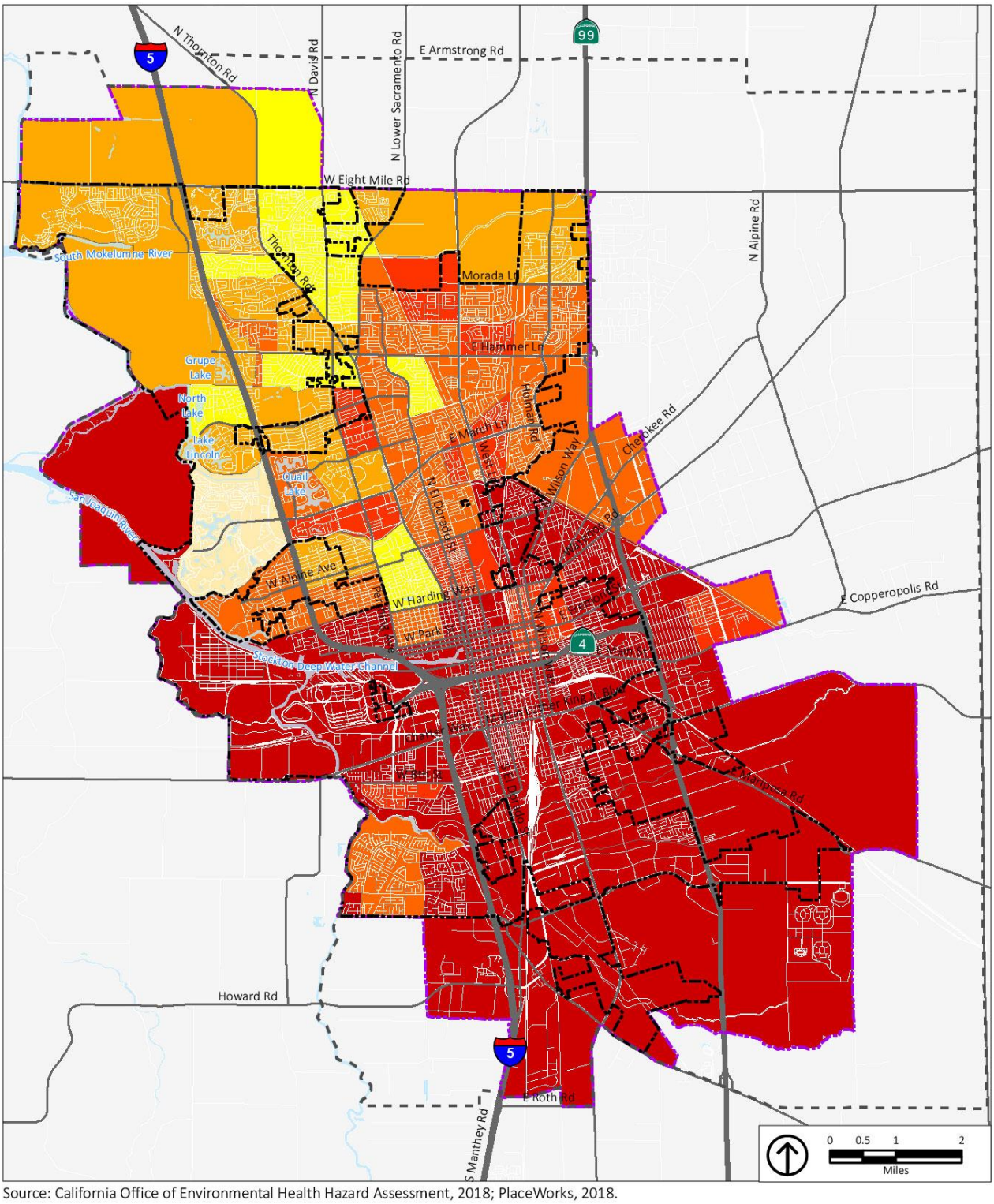
Action CH-2.1E

Investigate and implement programs that will incentivize landlords to maintain properties free of Municipal Code violations and criminal activity.

Action CH-2.1F

Work with transit agencies, non-profit organizations, and communities to maintain and improve transit service in underserved and disadvantaged neighborhoods to connect residents with jobs, shopping, and services.

Figure 6-1
Disadvantaged Communities



Source: California Office of Environmental Health Hazard Assessment, 2018; PlaceWorks, 2018.

Percent of Disadvantaged Communities

- 91-100% (highest scores)
- 81-90%
- 71-80%
- 61-70%
- 51-60%
- 41-50%
- 31-40%
- 21-30%
- 11-20%
- 0-10% (lowest scores)

- General Plan Planning Area
- City Limit
- Sphere of Influence

POLICY CH-2.2

Stimulate investment through partnerships with private property owners, neighborhood groups, health and housing advocates, non-governmental organizations, and other community supporters.

Action CH-2.2A

Aggressively facilitate the conservation and rehabilitation of older neighborhoods through the following approaches:

- Utilize all federal, State, and local programs for conservation and rehabilitation projects.
- Prioritize older disadvantaged neighborhoods for investment using funds such as the Community Development Block Grants.
- Encourage private investment in older neighborhoods.
- Cooperate in joint public-private partnerships to invest in older neighborhoods.

Action CH-2.2B

Establish Transit Oriented Development (TOD) Overlay Zones around the Robert J. Cabral ACE Train Station and the San Joaquin Street Amtrak Station to promote high-density residential, including affordable and mixed-income housing, and other TOD.

Action CH-2.2C

Evaluate and implement adjustments to the Public Facilities Fee structure to promote development in the Downtown.

Action CH-2.2D

Collaborate with non-profit partners and San Joaquin Public Health Services to attract medical clinics, mental health facilities, and pharmacies in areas that lack access to health care.

POLICY CH-2.3

Focus on reducing the unique and compounded environmental impacts and risks in disadvantaged communities.

Action CH-2.3A

Build strong ties with disadvantaged communities to ensure that local residents can make significant contributions to planning decisions through the following:

- Use culturally appropriate approaches.
- Consider the convenience of the timing and locations of meetings to community members.
- Use social media and other communication techniques for those without time to attend public meetings.
- Provide translation services and translated materials when needed.
- Partner with non-profit organizations who are already active within the community.

Action CH-2.3B

Expand efforts to repair and rehabilitate substandard housing in disadvantaged communities, taking into consideration strategies to avoid gentrification.

Action CH-2.3C

Require applicants for residential remodel and rehabilitation projects to remediate structural health hazards, such as lead-based paint, mold, mildew, and asbestos.

Action CH-2.3D

Focus enforcement of public health-related codes in disadvantaged communities, including on properties that are managed by homeowners associations.

Action CH-2.3E

Work with wastewater, water, and stormwater utilities to seek funding to complete sewer, water, and stormwater systems in areas within the SOI where parcels still rely on septic systems, wells, and roadside ditches.

GOAL CH-3: SKILLED WORKFORCE

Expand opportunities for local enterprise, entrepreneurship, and gainful employment.

GOOD EDUCATION AND TRAINING LEAD TO GOOD JOBS

Providing good jobs for Stockton residents requires making sure that there are a wide variety of jobs available and that community members have the education and skills needed to get those jobs. Similarly, to attract new businesses, Stockton must offer a workforce that possesses the skills that employers need. Promoting the workforce and building the local economy requires diversifying the economy and preparing Stockton's youth for employment after graduation from high school or college.

POLICY CH-3.1

Promote entrepreneurial development and small business expansion.

Action CH-3.1A

Coordinate with the Small Business Development Centers and other agencies to provide well-tailored services and resources for small and minority-owned businesses.

Action CH-3.1B

Provide training, promotion, and technical, financial, and business assistance to small and minority-owned businesses.

POLICY CH-3.2

Encourage neighborhood-serving commercial uses in areas where frequently needed goods and services are not widely available, especially for those areas with no availability within a 2-mile radius.

Action CH-3.2A

Work with property owners to develop corridor-specific strategies for attracting and retaining businesses that will provide synergistic opportunities and improve the availability of goods and services adjacent to residential areas.

Action CH-3.2B

Consider options and develop an ordinance to restrict mini markets, gas stations, fast food restaurants, check-cashing establishments, and tobacco stores in areas with high existing concentrations of similar establishments, and continue to restrict over-concentrations of liquor stores through the City's Alcohol Ordinance. To inform the development of this ordinance, create a map that identifies the locations of current establishments of these types, and regularly maintain it so that it continues to aid in decision-making about such uses.

Action CH-3.2C

Work with regulators, service providers, and employers to ensure the provision of safe, affordable, and high-quality childcare services.

Action CH-3.2D

Work with the California Department of Alcoholic Beverage Control to avoid over concentration of liquor stores.

POLICY CH-3.3

Ensure that Stockton youth and adults have access to the services and resources they need to enhance and renew their vocational and professional skills for job readiness and retention.

Action CH-3.3A

Collaborate with educational institutions, the San Joaquin County Economic Development Association, and workforce training agencies on programs that educate and train youth for the labor force.

Action CH-3.3B

Continue to work with the San Joaquin County Workforce Investment Board (WIB), the San Joaquin County Economic Development Association (EDA), and similar organizations to develop the workforce.

Action CH-3.3C

Continue to work with community-based organizations that employ local Stockton youth to perform energy efficiency, alternative energy, and water conservation assessments and installations in local homes and businesses.

LIBRARIES AND SCHOOLS ARE CENTRAL TO LEARNING

Good schools are the building blocks of a vibrant, healthy community. With good schools, a community becomes a great place to raise a family, and a good education system not only attracts new residents but also encourages young people to stay in the community as they start their own families. Good schools can drive economic development, as businesses are attracted to cities with good schools where their employees will want to raise families. The school districts that serve Stockton are shown on Figure 6-2.

Colleges, universities, and libraries also play an important role in the life of the community. Aside from the direct contributions they make to the local economy as large employers, post-secondary educational institutions provide critical workforce development and training through partnerships with local businesses and community groups. In addition, libraries offer numerous educational programming from preschool to adults, including English as a Second Language (ESL) and other literacy programs.

Post-secondary education in Stockton is offered at a number of colleges and universities, including San Joaquin Delta College, University of the Pacific, and the Stockton campus of California State University, Stanislaus. In addition, the Stockton-San Joaquin County Public Library provides a robust literacy program and operates five libraries in Stockton: Cesar Chavez Central Library, Margaret K. Troke Branch Library, Maya Angelou Branch Library, Fair Oaks Branch Library, and Weston Ranch Branch Library.

POLICY CH-3.4

Foster innovation through access to quality community education and library services.

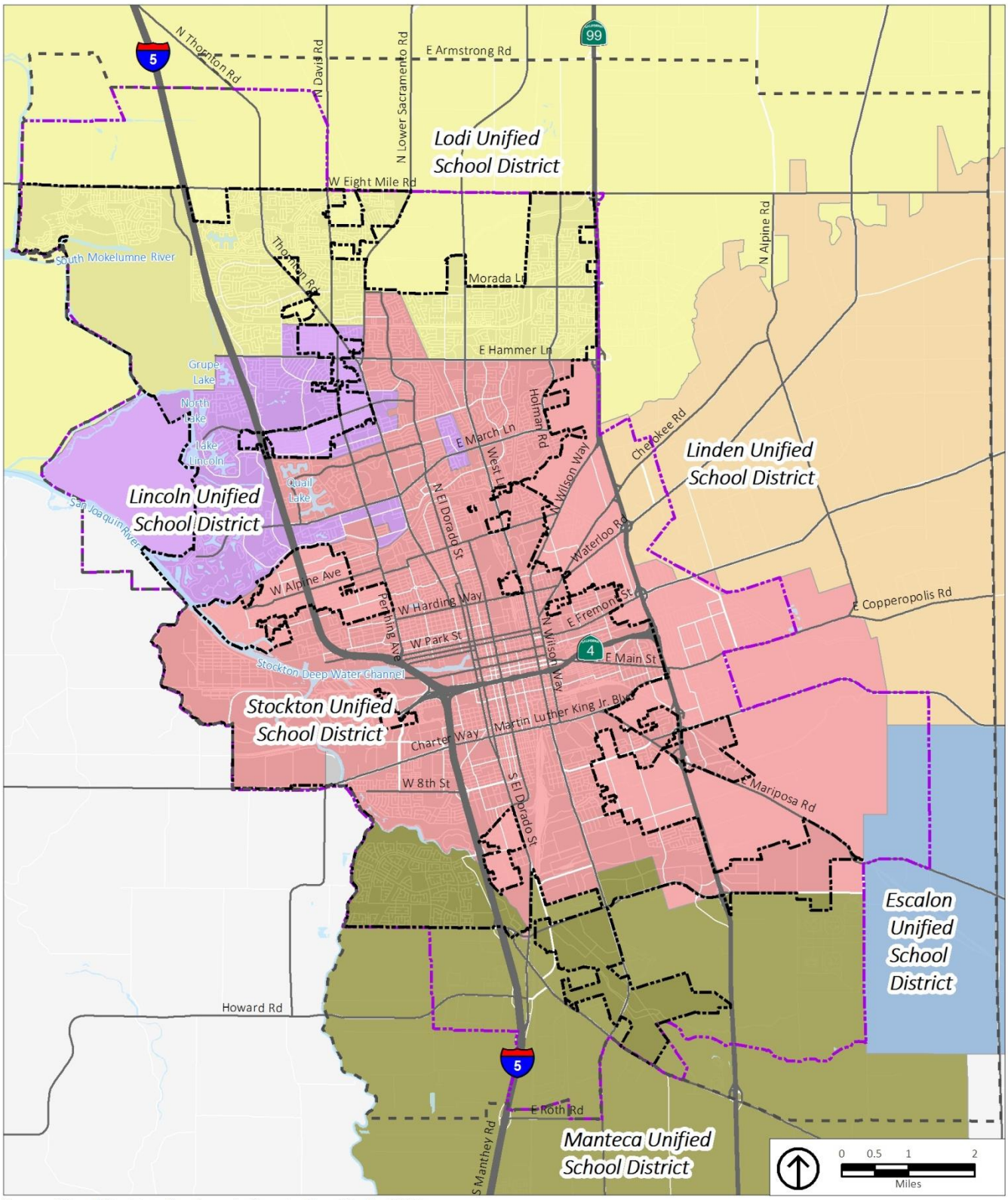
Action CH-3.4A

Work with school districts to prioritize the expansion or renovation of existing schools in infill areas and evaluate various approaches to infill area school expansions, such as smaller school sizes (e.g., lower capacity campuses spread through an area) or smaller campus land areas (e.g., multi-story facilities).

Action CH-3.4B

Promote the use of City parks and community centers for child care, youth, and family programs, including programs for after school, holiday, and vacation time periods.

Figure 6-2
School Districts



Source: City of Stockton; San Joaquin County; PlaceWorks, 2017.

School Districts

- Stockton Unified School District
- Escalon Unified School District
- Linden Unified School District
- Lodi Unified School District
- Lincoln Unified School District
- Manteca Unified School District

- City Limit
- Sphere of Influence
- General Plan Planning Area

Action CH-3.4C

Continue to promote the development of a new University of California, California State University, or private college or university campus within the city through outreach, marketing, and cooperation with other agencies and organizations.

GOAL CH-4: AFFORDABLE HOUSING

Ensure that all residents have a safe, high-quality, and stable place to call home.

SAFE HOUSING IS A BASIC HUMAN NEED

State law recognizes the challenge to ensure that everyone has a home, and requires that cities and counties update their housing elements on a more frequent basis than the rest of the general plan (every eight years in Stockton's case). State law also requires that housing elements demonstrate the ability to accommodate the regional housing demand projections prepared by regional councils of governments, such as the San Joaquin Council of Governments (SJCOG) in the Stockton region. Stockton's Housing Element, adopted under a separate cover, fulfills these State requirements.

In addition to the goals, policies, and programs outlined in the Housing Element, the policies and actions in this section focus on using land use planning to increase opportunities for affordable housing and to combat homelessness, which are clear priorities for the City and community. Rental and ownership housing is unaffordable for many Stockton residents, causing some to live in substandard conditions or to not have a home at all. As shown on Figure 6-3, the ratio of median home prices to median incomes in Stockton is higher in 2017 than it has been over the past 20 years, including in 2006, when home prices peaked. Clearly, both affordable housing and quality jobs are vital components of a strategy to address this issue. Meanwhile, the City plans to continue to work with other agencies to help people who are currently homeless to secure housing and other basic human needs.

POLICY CH-4.1

Attract and encourage residential development that offers a range of housing options to meet the needs and income constraints of all Stockton residents.

Action CH-4.1A

Maintain a ratio of 30 percent multi-family residential uses or higher in the citywide housing stock.

Action CH-4.1B

Conduct a study to explore the feasibility of inclusionary housing requirements, in-lieu fee levels, density bonus, modified fee structures, and/or tax incentives to promote the inclusion of a meaningful percentage of affordable units within market rate housing projects, and implement the feasible approaches identified in the study.

Figure 6-3 Median Home Prices Compared to Median Income

Action CH-4.1C

Explore the feasibility of developing an ordinance to allow "tiny homes" and container homes to serve as permanent housing.

Action CH-4.1D

Study and implement adjustments to the Public Facilities Fee structure, parking requirements, and other development standards to facilitate the development of secondary residential units and other smaller dwelling units that can serve as relatively affordable housing.

Action CH-4.1E

Ensure that affordable housing projects and project components meet health and safety requirements that are consistent with market rate housing during project application review and ongoing Code enforcement.

Action CH-4.1F

Provide assistance to developers seeking to build affordable housing in Stockton with preparing applications for regional, State, and/or federal funding assistance programs.

POLICY CH-4.2

Support homeless members of the Stockton community with programs to improve quality of life.

Action CH-4.2A

Coordinate with local and regional agencies and community organizations to address the needs of homeless people, including shelter, food, clothing, health care, mental health, and transportation.

Action CH-4.2B

Provide information about shelter and food assistance programs via the range of the City's communication tools.

Action CH-4.2C

Support programs to provide rental and homeownership assistance to low-income people and families through outreach and other assistance.

Action CH-4.2D

Support programs to reduce homelessness through education, job training, and substance abuse counseling and rehabilitation through outreach and other assistance.

GOAL CH-5: SUSTAINABILITY LEADERSHIP

Exhibit leadership in sustainability for the Central Valley and beyond.

TODAY'S CLIMATE REQUIRES ADAPTABILITY

The scientific consensus is that human activity involving the use of fossil fuels has resulted in an ever-accelerating increase in the amount of heat-trapping gases, known as greenhouse gases (GHGs), in the earth's atmosphere. In California, communities are now having to adapt to the resulting climate change effects: warmer winters and spring temperatures; less precipitation falling as snow; less spring snow accumulation in the lower and middle elevation mountain zones; earlier spring snowmelt; and earlier spring flower blooms. According to the California Climate Action Team—a committee of State agency secretaries and the heads of agencies, boards, and departments, led by the Secretary of the California Environmental Protection Agency—even if actions could be taken to immediately curtail GHG emissions, the potency and long atmospheric lifetimes of emissions that have already built up, combined with the inertia of the earth's climate system, could still produce significant additional climate change effects. Consequently, some impacts from climate change are now considered unavoidable, and to sustain quality of life for the community, the City of Stockton now needs to consider how to counteract potential impacts to public health, water resources, agriculture, forest and biological resources, and energy demands. Goals, policies, and actions that address climate change are highlighted with the throughout the document.

Recycling, conservation, and re-use of materials and other diversion of solid waste from landfills are important strategies for overall sustainability. State law requires that cities divert at least 50 percent of their solid waste through source reduction, recycling, and composting. Stockton consistently achieves this target, in part from providing curbside recycling and green waste collection and from the City's multi-family recycling program, which offers recycling assistance to property managers through multi-language educational materials, recycling containers for residents, promotional materials and events, and recycling program start-up assistance.

POLICY CH-5.1

Accommodate a changing climate through adaptation, mitigation, and resiliency planning and projects.

Action CH-5.1A

Upon the next revision of the City's Local Hazard Mitigation Plan, conduct a comprehensive climate change vulnerability assessment to inform the development of adaptation and resilience policies and strategies, and incorporate them into the Safety Element, in accordance with SB 379.

Action CH-5.1B

Maintain and implement the City of Stockton Climate Action Plan (CAP) and update the CAP to include the following:

- Updated communitywide GHG emissions inventory;
- 2030 GHG emissions reduction target, consistent with SB 32;
- Estimated 2030 GHG emissions reduction benefits of State programs;
- Summary of the City's progress toward the 2020 local GHG emissions reduction target;
- New and/or revised GHG reduction strategies that, when quantified, achieve the 2030 reduction target and continue emission reductions beyond 2030; and
- New or updated implementation plan for the CAP.

Action CH-5.1C

Accommodate a changing climate through adaptation and resiliency planning and projects.

POLICY CH-5.2

Expand opportunities for recycling, re-use of materials, and waste reduction.

Action CH-5.2A

Use recycled materials and products for City projects and operations where economically feasible, and work with recycling contractors to encourage businesses to use recycled products in their manufacturing processes and encourage consumers to purchase recycled products.

Action CH-5.2B

Continue to require recycling in private and public operations, including construction/demolition debris.

Action CH-5.2C

Expand educational and outreach efforts to promote recycling by occupants of multi-family housing, businesses, and schools.

APPENDIX A:
SUMMARY OF POLICIES AND ACTIONS BY TOPIC

.....

UDPATE- Safety and Housing Element Actions Updated July 9, 2024

APPENDIX A

SUMMARY OF POLICIES AND ACTIONS BY TOPIC

DOWNTOWN

LAND USE

Policy LU-2.1	**Promote the Downtown and waterfront as a hub for regional commerce and entertainment, with high-quality housing to complement commercial activity and to infuse the area with daytime, evening, and weekend activity.**
Action LU-2.1A	Work with other public agencies and organizations to develop and utilize all available financing tools and incentives to stimulate investment in the Downtown.
Action LU-2.1B	Amend the Development Code to provide flexibility for redevelopment of historic structures in the Downtown to meet the needs of modern users while maintaining the overall historic value.
Action LU-2.1C	Improve Downtown wayfinding for vehicles and pedestrians to direct visitors to key destinations throughout the Downtown.
Action LU-2.1D	Improve sidewalk maintenance in the Downtown, and widen key sidewalks to provide space for outdoor seating and tree plantings.
Action LU-2.1E	Develop and implement a public/private strategy for mixed-use high-end development along both sides of the Stockton Channel/San Joaquin River Corridor, including the following: ■ A public promenade along the North Channel to Louis Park and the South Channel to Mormon Slough. ■ Mixed-use development and re-use of historic structures.
Policy LU-2.2	**Facilitate the development of at least 4,400 new housing units in the Greater Downtown by 2040.**
Action LU-2.2A	Amend the Development Code to provide more flexibility for residential development to be feasible, including through a streamlined residential development permit process, and to contribute to the "charm" of the Downtown.
Action LU-2.2B	Establish Transit Oriented Development (TOD) Overlay Zones around the Robert J. Cabral ACE Train Station and the San Joaquin Street Amtrak Station to promote high-density residential, including affordable and mixed-income housing, and other TOD.
Action LU-2.2C	Evaluate and implement adjustments to the Public Facilities Fee structure to promote development in the Downtown.
Action LU-2.2D	Discourage urban development at the edges of the city that would detract from or compete with the housing goals of the Greater Downtown.

Policy LU-2.3	**Encourage more Downtown community and regional entertainment venues.**
Action LU-2.3A	Establish an entertainment district in the Downtown with a discrete boundary and strategies to promote entertainment uses, such as: ■ Reducing permit requirements; ■ Eliminating the requirement to sell food at bars; ■ Providing incentives for clubs and restaurants; ■ Allowing for reduced or shared parking; and ■ Delineating an area in which to facilitate food trucks and pop-up businesses.
Action LU-2.3B	Partner with ride-sharing companies to facilitate safe nightlife in the Downtown.
Action LU-2.3C	Develop curbside management policies that are flexible to accommodate the evolving nature of ride-sharing programs and future reliance on autonomous vehicles in the Downtown.
Action LU-2.3D	Promote events that bring residents and visitors to the Downtown.
Policy LU-2.4	**Encourage more resident- and visitor-serving restaurants, retail, and consumer services to locate in the Downtown.**
Action LU-2.4A	Implement strategies to promote new Downtown restaurant, retail, and consumer service businesses that primarily serve the needs of Downtown residents, but also add value for visitors, such as by: ■ Reducing permit requirements; ■ Allowing for reduced or shared parking; ■ Providing incentives; and ■ Facilitating planning and permitting for building renovations.
Action LU-2.4B	Partner with the Downtown Stockton Alliance to market the Downtown to existing Stockton businesses that would benefit from relocating to a centralized location.
Action LU-2.4C	Partner with the Downtown Stockton Alliance to market the Downtown to attract businesses that complement the Downtown's multi-modal connectivity by appealing to the needs of travelers and providing shopping and recreation opportunities for visitors and commuters alike.
Policy LU-2.5	**Promote Downtown Stockton as a primary transit node that provides multi-modal connections throughout the city and region.**
Action LU-2.5A	Improve transit, bicycle, and pedestrian connectivity between the Downtown and local colleges and universities.
Action LU-2.5B	Study the possible one-way to two-way conversions of streets in the Downtown (e.g., El Dorado/Center, Park/Oak, and Main/Market) in order to improve pedestrian and bicycle safety, slow traffic speeds, and support local businesses.

Action LU-2.5C Continue to develop an active transportation plan for Downtown Stockton, and implement complete streets projects to improve bicycle and pedestrian safety that are identified in the plan.

Policy LU-6.2 **Prioritize development and redevelopment of vacant, underutilized, and blighted infill areas.**

Action LU-6.2A Develop and implement an infill incentive program that encourages infill development through expedited permitting, changes in fee structures, prioritizing infrastructure improvements in infill areas, property owner and/or landlord incentives to maintain property and reduce blight, and/or other strategies. As part of this program, define and prioritize categories of infill types based on land use, and residential density or non-residential intensity.

COMMUNITY HEALTH

Action CH-2.2B Establish Transit Oriented Development (TOD) Overlay Zones around the Robert J. Cabral ACE Train Station and the San Joaquin Street Amtrak Station to promote high-density residential, including affordable and mixed-income housing, and other TOD.

Action CH-2.2C Evaluate and implement adjustments to the Public Facilities Fee structure to promote development in the Downtown.

PUBLIC HEALTH

LAND USE

Action LU-2.2B Establish Transit Oriented Development (TOD) Overlay Zones around the Robert J. Cabral ACE Train Station and the San Joaquin Street Amtrak Station to promote high-density residential, including affordable and mixed-income housing, and other TOD.

Policy LU-2.5 **Promote Downtown Stockton as a primary transit node that provides multi-modal connections throughout the city and region.**

Action LU-2.5A Improve transit, bicycle, and pedestrian connectivity between the Downtown and local colleges and universities.

Action LU-2.5B Study the possible one-way to two-way conversions of streets in the Downtown (e.g., El Dorado/Center, Park/Oak, and Main/Market) in order to improve pedestrian and bicycle safety, slow traffic speeds, and support local businesses.

Action LU-2.5C Continue to develop an active transportation plan for Downtown Stockton, and implement complete streets projects to improve bicycle and pedestrian safety that are identified in the plan.

Policy LU-3.2	**Retain narrower roadways and reallocate right-of-way space to preserve street trees and mature landscaping and enhance the pedestrian and bicycle network within and adjacent to residential neighborhoods.**
Action LU-3.2A	Implement the "road diet" recommendations from the City's Bicycle Master Plan that reduce roadway widths to provide space for bike lanes and other amenities that improve safety and ease of the streetscape for all modes.
Policy LU-3.3	**Maintain or expand the currently available amount of public park and open space area in each neighborhood.**
Action LU-3.3A	Continue to improve and maintain park facilities and fields to address deficiencies and improve park sustainability, including lighting improvements, conversion to solar lighting, drinking fountain maintenance, and natural stormwater management.
Action LU-3.3B	Pursue joint use recreational facilities where possible, including on school grounds and utility easements.
Action LU-3.3C	Establish a citywide park maintenance assessment district.
Action LU-3.3D	Periodically review the City's Development Impact Fee requirements to determine whether they should be adjusted to reflect the City's priorities for parks, community centers, and libraries that serve the surrounding neighborhoods.
Action LU-3.3E	Require new development to improve utility easement property as usable public open space, where feasible.
Action LU-3.3F	Allow developers to develop pocket parks that function as social gathering places and/or children's play areas, and which can count towards the park standard requirements for new development.
Policy LU-5.1	**Integrate nature into the city and maintain Stockton's urban forest.**
Policy LU-5.2	**Protect natural resource areas, fish and wildlife habitat, scenic areas, open space areas, agricultural lands, parks, and other cultural/historic resources from encroachment or destruction by incompatible development.**
Action LU-5.2I	Coordinate with water agencies and non-profit organizations to promote public awareness on water quality and conservation issues and consistency in water quality impacts analyses.
Policy LU-6.3	**Ensure that all neighborhoods have access to well-maintained public facilities and utilities that meet community service needs.**
Action LU-6.4C	Reduce Vehicle Miles Traveled (VMT) per household by planning new housing in closest proximity to employment centers, improving and funding public transportation and ridesharing, and facilitating more direct routes for pedestrians and bicyclists.

TRANSPORTATION

Policy TR-1.1	**Ensure that roadways safely and efficiently accommodate all modes and users, including private, commercial, and transit vehicles, as well as bicycles and pedestrians and vehicles for disabled travelers.**
Action TR-1.1A	Direct truck traffic to designated truck routes that facilitate efficient goods movement and minimize risk to areas with concentrations of sensitive receptors, such as schools, for example by disallowing any new truck routes to pass directly on streets where schools are located, and vulnerable road users, like pedestrians and bicyclists.
Action TR-1.1D	Update existing Precise Road Plans to reflect the 2040 General Plan, including changes in land use and level of service requirements, and a shift in priority from vehicular travel to travel by all modes through complete streets.
Action TR-1.1E	Work with local school districts to implement pedestrian crossing enhancements like stop signs within neighborhoods around schools, encourage activities like a walking school bus, and create educational programs that teach students bicycle safety.
Action TR-1.3A	Protect the Airport and related aviation facilities from encroachment by ensuring that all future development within the Airport Influence Area (AIA) is consistent with the policies adopted by the San Joaquin County Airport Land Use Commission (ALUC), except in cases where the City Council concludes that project approval would provide for the orderly development of the Airport and the areas surrounding it while protecting the public health, safety, and welfare by minimizing the public's exposure to excessive noise and safety hazards, consistent with the San Joaquin County Airport Land Use Compatibility Plan and the Stockton Metropolitan Airport Land Use Compatibility Plan.
Policy TR-2.1	**Develop safe and interconnected bicycle and pedestrian facilities, including along "complete" streets that target multiple travel modes.**
Action TR-2.1A	Require safe and secure bicycle parking facilities to be provided at major activity centers such as public facilities, employment sites, and shopping and office centers, along with showers and lockers for major employment sites.
Action TR-2.1C	Maintain and implement the City of Stockton Safe Route to School plan.
Policy TR-2.2	**Connect housing and employment development in areas with good transit access through open and inclusive processes where appropriate.**
Action TR-2.2A	Require major new development to incorporate and fund design features to promote safe and comfortable access to transit, such as a circulation network that facilitates efficient and connected bus travel, clear pedestrian and bicycle routes connecting origins and destinations to transit stops, sheltered bus stops, park-and-ride facilities, and highly visible transit information and maps.
Action TR-2.2B	Obtain input from community residents, non-profit organizations, and local and regional transit operators on major new development projects, and support transit

operators by ensuring major projects are designed to support transit and provide fair share funding of the cost of adequate transit service and access.

Action TR-2.2C — Request that public transit service providers expand routes and increase frequency and operational hours consistent with current short- and long-range transit planning, with the assistance of new development funding.

Policy TR-2.3 **Utilize natural features and routes with lower traffic volumes and speeds to encourage residents to walk and wheel more frequently.**

Action TR-2.3A — Develop and maintain bikeways on separate rights-of-way (e.g., Calaveras River, East Bay Municipal Utility District easement, French Camp Slough, and Shima Tract Levee).

Action TR-2.3B — Require dedication of adequate right-of-way for bicycle use in new arterial and collector streets, and where feasible, in street improvement projects.

Policy TR-3.1 **Avoid widening existing roadways in an effort to preclude inducement of additional vehicle traffic.**

Action TR-3.1A — Limit street widths to the minimum necessary to adequately carry the volume of anticipated traffic, while allowing for safe bicycle and pedestrian facilities, emergency access, and large vehicle access.

Action TR-3.1B — Where feasible and appropriate, reduce the width of existing streets using bulb-outs, medians, pedestrian islands, shade tree landscaping, appropriate signage, and similar methods, while not jeopardizing emergency response.

Action TR-3.1C — Preserve right-of-way for transit and bicycle uses when designing new roadways and improving existing roadways, and ensuring adequate and clear signage.

Action TR-4.2A — To evaluate the effects of new development and determine mitigation measures and impact fees, require projects to evaluate per capita VMT and impacts to transit, bicycle, and pedestrian modes.

Action TR-4.2B — Amend the City's Transportation Impact Analysis Guidelines to include alternative travel metrics and screening criteria.

SAFETY

Policy SAF-2.5 **Protect the community from health hazards and annoyance associated with excessive noise levels.**

Action SAF-2.5A — Prohibit new commercial, industrial, or other noise-generating land uses adjacent to existing sensitive noise receptors such as residential uses, schools, health care facilities, libraries, and churches if noise levels are expected to exceed 70 dBA Community Noise Equivalent (CNEL) (decibels on A-weighted scale CNEL) when measured at the property line of the noise sensitive land use.

Action SAF-2.5B — Require projects that would locate noise sensitive land uses where the projected ambient noise level is greater than the "normally acceptable" noise level indicated on Table 5-1 to provide an acoustical analysis that shall:

- Be the responsibility of the applicant;
- Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics;
- Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions;
- Estimate existing and projected (20-year) noise levels in terms of L_{dn}/CNEL and compare the levels to the adopted noise policies and actions in this General Plan;
- Recommend appropriate mitigation to achieve compatibility with the adopted noise policies and standards;
- Where the noise source in question consists of intermittent single events, address the effects of maximum noise levels in sleeping rooms in terms of possible sleep disturbance;
- Estimate noise exposure after the prescribed mitigation measures have been implemented;
- If the project does not comply with the adopted standards and policies of this General Plan, provide acoustical information for a statement of overriding considerations for the project; and
- Describe a post-project assessment program, which could be used to evaluate the effectiveness of the proposed mitigation measures.

Action SAF-2.5C Require noise produced by commercial uses to not exceed 75 dB L_{dn}/CNEL at the nearest property line.

Action SAF-2.5D Grant exceptions to the noise standards for commercial and industrial uses only if a recorded noise easement is conveyed by the affected property owners.

Action SAF-2.5E Require all new habitable structures to be set back from railroad tracks to protect residents from noise, vibration, and safety impacts.

Policy SAF-2.6 Minimize the risk to city residents and property associated with the transport, distribution, use, and storage of hazardous materials.

Action SAF-2.6A Restrict transport of hazardous materials within the city to routes that have been designated for such transport.

Action SAF-2.6B When appropriate, require new development to prepare a hazardous materials inventory and/or prepare Phase I or Phase II hazardous materials studies, including any required cleanup measures.

Action SAF-2.6C Educate the public regarding the types of household hazardous wastes and the proper methods of disposal.

Policy SAF-3.2 Protect the availability of clean potable water from groundwater sources.

Action SAF-3.4A Require all new urban development to be served by an adequate wastewater collection system to avoid possible contamination of groundwater from onsite wastewater disposal systems.

Action SAF-3.4B	Conduct outreach and provide information to encourage homeowners with septic tanks to abandon existing septic tanks and hook up to the City wastewater collection system.
Policy SAF-4.1	**Reduce air impacts from mobile and stationary sources of air pollution.**
Action SAF-4.1A	Require the construction and operation of new development to implement best practices that reduce air pollutant emissions, including: ■ Use of low-emission and well-maintained construction equipment, with idling time limits. ■ Development and implementation of a dust control plan during construction. ■ Installation of electrical service connections at loading docks, where appropriate. ■ Installation of Energy Star-certified appliances. ■ Entering into Voluntary Emissions Reduction Agreements with the San Joaquin Valley Air Pollution Control District.
Action SAF-4.1B	Use the results of the Health Risk Assessments required by the California Air Toxics "Hot Spots" Act to establish appropriate land use buffer zones around any new sources of toxic air pollutants that pose substantial health risks.
Action SAF-4.1C	Require the use of electric-powered construction and landscaping equipment as conditions of project approval when appropriate.
Action SAF-4.1D	Limit heavy-duty off-road equipment idling time to meet the California Air Resources Board's idling regulations for on-road trucks.

COMMUNITY HEALTH

Policy CH-1.1	**Maintain walking and wheeling facilities and parks that are safe and accessible in all areas of Stockton.**
Action CH-1.1A	Plant and maintain appropriate shade trees along all City streets to reduce heat exposure, prioritizing areas of the city with significantly less tree canopy, and provide a buffer between the travel way and bicycle and pedestrian facilities, and provide other amenities like well-marked crosswalks, bulb-outs, and pedestrian-scale street lighting.
Action CH-1.1B	Prepare a parks master plan through an open and engaging process inclusive of community residents that assesses the quality and distribution of existing parks, facilities, and community centers throughout the city relative to the population served (i.e., within a set walking distance) and their needs (i.e., considering age, income, and abilities), and, based on this information, identifies and prioritizes new, renovation, and expansion park and community center projects and describes funding means and timelines.
Policy CH-1.2	**Promote healthy retail food choices within and adjacent to residential areas.**

Action CH-1.2A	Adapt, expand, and target existing small business development programs to provide training, promotion, and technical, financial, and business assistance to small neighborhood grocery and convenience stores that provide healthy food and accept Supplemental Nutrition Assistance Program (SNAP or CalFresh) and Supplemental Nutrition for Women, Infants and Children (WIC).
Action CH-1.2B	Prepare a healthy food ordinance that creates incentives and guidelines that support access to healthy food, such as standards requiring that a percent of sales area in neighborhood food and beverage stores be devoted to healthy foods and/or requiring acceptance of CalFresh and WIC. As part of this ordinance, collect geographic data about current health conditions, and discourage unhealthy food establishments (e.g., mini markets and fast food restaurants) in neighborhoods with high rates of obesity and/or diabetes.
Action CH-1.2C	Collaborate with non-profit partners and San Joaquin County Public Health Services to attract full-service grocery stores in areas that lack access to fresh food and/or are at a high risk of obesity and diabetes.
Action CH-1.2D	Prioritize pedestrian and active transportation improvement projects in low-income/disadvantaged communities that connect residential areas to retail locations that sell healthy food.
Policy CH-1.3	**Encourage activities that support local agriculture, such as farmers' markets, urban farming and community gardening.**
Action CH-1.3A	Provide public land, traffic control, cleanup, and other City services to farmers' markets, including technical assistance to encourage markets to accept CalFresh and WIC.
Action CH-1.3B	Create an accessible inventory of publicly-owned and private vacant sites appropriate for community gardens or other forms of urban agriculture.
Action CH-1.3C	Amend the Development Code to include standards for small-scale, urban local food operations.
Action CH-1.3D	Adopt and Implement an Urban Agriculture Incentive Zone (per AB 551) to allow privately-owned vacant property to be productively used for growing food.
Action CH-1.3E	Partner with nonprofits, local farmers and San Joaquin County Public Health Services to conduct public outreach and education to aid in the development of an urban agriculture ordinance.
Action CH-1.3F	Identify new potential locations for farmers' markets in low-income and nutrient deficient neighborhoods, including opportunities to hold markets on publicly owned land.
Policy CH-2.1	**Prioritize maintenance of streets and improvement of sidewalks, parks, and other infrastructure in areas of the city that historically have been comparatively underserved by public facilities, including implementation of complete streets where needed, especially in conjunction with infrastructure maintenance and improvement projects.**

Action CH-2.2B	Establish Transit Oriented Development (TOD) Overlay Zones around the Robert J. Cabral ACE Train Station and the San Joaquin Street Amtrak Station to promote high-density residential, including affordable and mixed-income housing, and other TOD.
Action CH-2.2D	Collaborate with non-profit partners and San Joaquin Public Health Services to attract medical clinics, mental health facilities, and pharmacies in areas that lack access to health care.
Policy CH-2.3	**Focus on reducing the unique and compounded environmental impacts and risks in disadvantaged communities.**
Action CH-2.3C	Require applicants for residential remodel and rehabilitation projects to remediate structural health hazards, such as lead-based paint, mold, mildew, and asbestos.
Action CH-2.3D	Focus enforcement of public health-related codes in disadvantaged communities, including on properties that are managed by homeowners associations.
Action CH-2.3E	Work with wastewater, water, and stormwater utilities to seek funding to complete sewer, water, and stormwater systems in areas within the SOI where parcels still rely on septic systems, wells, and roadside ditches.
Policy CH-3.2	**Encourage neighborhood-serving commercial uses in areas where frequently needed goods and services are not widely available, especially for those areas with no availability within a 2-mile radius.**
Action CH-3.2A	Work with property owners to develop corridor-specific strategies for attracting and retaining businesses that will provide synergistic opportunities and improve the availability of goods and services adjacent to residential areas.
Action CH-3.2B	Consider options and develop an ordinance to restrict mini markets, gas stations, fast food restaurants, check-cashing establishments, and tobacco stores in areas with high existing concentrations of similar establishments, and continue to restrict over-concentrations of liquor stores through the City's Alcohol Ordinance. To inform the development of this ordinance, create a map that identifies the locations of current establishments of these types, and regularly maintain it so that it continues to aid in decision-making about such uses.
Action CH-3.2C	Work with regulators, service providers, and employers to ensure the provision of safe, affordable, and high-quality childcare services.
Action CH-3.4B	Promote the use of City parks and community centers for child care, youth, and family programs, including programs for after school, holiday, and vacation time periods.
Action CH-4.1E	Ensure that affordable housing projects and project components meet health and safety requirements that are consistent with market rate housing during project application review and on-going Code enforcement.

Action CH-4.2A	Coordinate with local and regional agencies and community organizations to address the needs of homeless people, including shelter, food, clothing, health care, mental health, and transportation.
Action CH-4.2B	Provide information about shelter and food assistance programs via the range of the City's communication tools.
Action CH-4.2C	Support programs to provide rental and homeownership assistance to low-income people and families through outreach and other assistance.
Action CH-4.2D	Support programs to reduce homelessness through education, job training, and substance abuse counseling and rehabilitation through outreach and other assistance.

ENVIRONMENTAL JUSTICE

LAND USE

Policy LU-6.2	**Prioritize development and redevelopment of vacant, underutilized, and blighted infill areas.**
Action LU-6.2C	Ensure prioritization of development and redevelopment of vacant, underutilized, and blighted infill areas be considered through strategies such as zoning changes and strategies to avoid gentrification.
Policy LU-6.3	**Ensure that all neighborhoods have access to well-maintained public facilities and utilities that meet community service needs.**
Action LU-6.7A	Work with community-based organizations to develop and implement a comprehensive and accountable long-term strategy to engage the Stockton community in planning decisions.

TRANSPORTATION

Action TR-1.1A	Direct truck traffic to designated truck routes that facilitate efficient goods movement and minimize risk to areas with concentrations of sensitive receptors, such as schools, for example by disallowing any new truck routes to pass directly on streets where schools are located, and vulnerable road users, like pedestrians and bicyclists.
Action TR-1.3A	Protect the Airport and related aviation facilities from encroachment by ensuring that all future development within the Airport Influence Area (AIA) is consistent with the policies adopted by the San Joaquin County Airport Land Use Commission (ALUC), except in cases where the City Council concludes that project approval would provide for the orderly development of the Airport and the areas surrounding it while protecting the public health, safety, and welfare by minimizing the public's exposure to excessive noise and safety hazards, consistent with the San Joaquin County Airport Land Use Compatibility Plan and the Stockton Metropolitan Airport Land Use Compatibility Plan.

COMMUNITY HEALTH

Action CH-1.1B Prepare a parks master plan through an open and engaging process inclusive of community residents that assesses the quality and distribution of existing parks, facilities, and community centers throughout the city relative to the population served (i.e., within a set walking distance) and their needs (i.e., considering age, income, and abilities), and, based on this information, identifies and prioritizes new, renovation, and expansion park and community center projects and describes funding means and timelines.

Action CH-1.2A Adapt, expand, and target existing small business development programs to provide training, promotion, and technical, financial, and business assistance to small neighborhood grocery and convenience stores that provide healthy food and accept Supplemental Nutrition Assistance Program (SNAP or CalFresh) and Supplemental Nutrition for Women, Infants and Children (WIC).

Action CH-1.2B Prepare a healthy food ordinance that creates incentives and guidelines that support access to healthy food, such as standards requiring that a percent of sales area in neighborhood food and beverage stores be devoted to healthy foods and/or requiring acceptance of CalFresh and WIC. As part of this ordinance, collect geographic data about current health conditions, and discourage unhealthy food establishments (e.g., mini markets and fast food restaurants) in neighborhoods with high rates of obesity and/or diabetes.

Action CH-1.2C Collaborate with non-profit partners and San Joaquin County Public Health Services to attract full-service grocery stores in areas that lack access to fresh food and/or are at a high risk of obesity and diabetes.

Action CH-1.3A Provide public land, traffic control, cleanup, and other City services to farmers' markets, including technical assistance to encourage markets to accept CalFresh and WIC.

Action CH-1.3F Identify new potential locations for farmers' markets in low-income and nutrient deficient neighborhoods, including opportunities to hold markets on publicly owned land.

Policy CH-2.1 Prioritize maintenance of streets and improvement of sidewalks, parks, and other infrastructure in areas of the city that historically have been comparatively underserved by public facilities, including implementation of complete streets where needed, especially in conjunction with infrastructure maintenance and improvement projects.

Action CH-2.1A When considering parks and infrastructure maintenance and improvement projects, consider the following through an open and engaging process inclusive of community residents:

- Whether the affected community is underserved or disadvantaged.
- What the priority needs of the community are and whether the project would address those needs.

- Whether the project would negatively impact the community, such as through increased exposure to pollutants or displacement of residents or local businesses.

Action CH-2.1B Provide incentives for rehabilitation or redevelopment of distressed properties that takes into consideration strategies to avoid gentrification.

Action CH-2.1C Develop incentives to promote reuse of distressed areas, such as through re-zoning, permit streamlining, density bonuses, and other appropriate tools.

Action CH-2.1D Conduct marketing to potential developers to encourage the redevelopment and conversion of distressed commercial strips into housing and mixed-use areas that includes strategies to avoid gentrification.

Action CH-2.1E Investigate and implement programs that will incentivize landlords to maintain properties free of Municipal Code violations and criminal activity.

Action CH-2.1F Work with transit agencies, non-profit organizations, and communities to maintain and improve transit service in underserved and disadvantaged neighborhoods to connect residents with jobs, shopping, and services.

Policy CH-2.2 Stimulate investment through partnerships with private property owners, neighborhood groups, health and housing advocates, non-governmental organizations, and other community supporters.

Action CH-2.2A Aggressively facilitate the conservation and rehabilitation of older neighborhoods through the following approaches:

- Utilize all federal, State, and local programs for conservation and rehabilitation projects.
- Prioritize older disadvantaged neighborhoods for investment using funds such as the Community Development Block Grants.
- Encourage private investment in older neighborhoods.
- Cooperate in joint public-private partnerships to invest in older neighborhoods.

Action CH-2.2D Collaborate with non-profit partners and San Joaquin Public Health Services to attract medical clinics, mental health facilities, and pharmacies in areas that lack access to health care.

Policy CH-2.3 Focus on reducing the unique and compounded environmental impacts and risks in disadvantaged communities.

Action CH-2.3A Build strong ties with disadvantaged communities to ensure that local residents can make significant contributions to planning decisions through the following:

- Use culturally appropriate approaches.
- Consider the convenience of the timing and locations of meetings to community members.
- Use social media and other communication techniques for those without time to attend public meetings.
- Provide translation services and translated materials when needed.

- Partner with non-profit organizations who are already active within the community.

Action CH-2.3C Require applicants for residential remodel and rehabilitation projects to remediate structural health hazards, such as lead-based paint, mold, mildew, and asbestos.

Action CH-2.3D Focus enforcement of public health-related codes in disadvantaged communities, including on properties that are managed by homeowners associations.

Action CH-2.3E Work with wastewater, water, and stormwater utilities to seek funding to complete sewer, water, and stormwater systems in areas within the SOI where parcels still rely on septic systems, wells, and roadside ditches.

Action CH-3.1B Provide training, promotion, and technical, financial, and business assistance to small and minority-owned businesses.

Policy CH-3.2 Encourage neighborhood-serving commercial uses in areas where frequently needed goods and services are not widely available, especially for those areas with no availability within a 2-mile radius.

Action CH-3.2A Work with property owners to develop corridor-specific strategies for attracting and retaining businesses that will provide synergistic opportunities and improve the availability of goods and services adjacent to residential areas.

Action CH-3.2B Consider options and develop an ordinance to restrict mini markets, gas stations, fast food restaurants, check-cashing establishments, and tobacco stores in areas with high existing concentrations of similar establishments, and continue to restrict over-concentrations of liquor stores through the City's Alcohol Ordinance. To inform the development of this ordinance, create a map that identifies the locations of current establishments of these types, and regularly maintain it so that it continues to aid in decision-making about such uses.

Action CH-3.2C Work with regulators, service providers, and employers to ensure the provision of safe, affordable, and high-quality childcare services.

Action CH-3.2D Work with the California Department of Alcoholic Beverage Control to avoid over concentration of liquor stores.

Action CH-4.1E Ensure that affordable housing projects and project components meet health and safety requirements that are consistent with market rate housing during project application review and on-going Code enforcement.

Policy CH-4.2 Support homeless members of the Stockton community with programs to improve quality of life.

Action CH-4.2A Coordinate with local and regional agencies and community organizations to address the needs of homeless people, including shelter, food, clothing, health care, mental health, and transportation.

Action CH-4.2C Support programs to provide rental and homeownership assistance to low-income people and families through outreach and other assistance.

Action CH-4.2D Support programs to reduce homelessness through education, job training, and substance abuse counseling and rehabilitation through outreach and other assistance.

AIR QUALITY

LAND USE

Policy LU-1.1 **Encourage retail businesses and housing development in mixed-use developments along regional transportation routes and in areas that serve local residents.**

Action LU-1.1B Evaluate the City's parking policies, and amend the Development Code to provide more flexibility as appropriate to facilitate mixed-use redevelopment.

Action LU-2.2B Establish Transit Oriented Development (TOD) Overlay Zones around the Robert J. Cabral ACE Train Station and the San Joaquin Street Amtrak Station to promote high-density residential, including affordable and mixed-income housing, and other TOD.

Action LU-2.2D Discourage urban development at the edges of the city that would detract from or compete with the housing goals of the Greater Downtown.

Action LU-2.3C Develop curbside management policies that are flexible to accommodate the evolving nature of ride-sharing programs and future reliance on autonomous vehicles in the Downtown.

Policy LU-2.5 **Promote Downtown Stockton as a primary transit node that provides multi-modal connections throughout the city and region.**

Action LU-2.5A Improve transit, bicycle, and pedestrian connectivity between the Downtown and local colleges and universities.

Action LU-2.5C Continue to develop an active transportation plan for Downtown Stockton, and implement complete streets projects to improve bicycle and pedestrian safety that are identified in the plan.

Policy LU-3.2 **Retain narrower roadways and reallocate right-of-way space to preserve street trees and mature landscaping and enhance the pedestrian and bicycle network within and adjacent to residential neighborhoods.**

Action LU-3.2A Implement the "road diet" recommendations from the City's Bicycle Master Plan that reduce roadway widths to provide space for bike lanes and other amenities that improve safety and ease of the streetscape for all modes.

Policy LU-5.3 **Define discrete and clear city edges that preserve agriculture, open space, and scenic views.**

Policy LU-6.2	**Prioritize development and redevelopment of vacant, underutilized, and blighted infill areas.**
Action LU-6.2A	Develop and implement an infill incentive program that encourages infill development through expedited permitting, changes in fee structures, prioritizing infrastructure improvements in infill areas, property owner and/or landlord incentives to maintain property and reduce blight, and/or other strategies. As part of this program, define and prioritize categories of infill types based on land use, and residential density or non-residential intensity.
Action LU-6.2B	Do not approve future annexations or City utility connections unless they are consistent with the overall goals and policies of the General Plan and do not adversely impact the City's fiscal viability, environmental resources, infrastructure and services, and quality of life.
Action LU-6.2D	Comply with State requirements that limit the idling of motor vehicles.
Policy LU-6.4	**Ensure that land use decisions balance travel origins and destinations in as close proximity as possible, and reduce vehicle miles traveled (VMT).**
Action LU-6.4A	Maintain a reasonable balance between potential job generation and local workforce availability with a goal of one job for each employed resident.
Action LU-6.4B	Maintain a reasonable proximity and balance (i.e., magnitude) between job generating uses, housing opportunities, and resident services and amenities, including transit and active transportation.
Action LU-6.4C	Reduce Vehicle Miles Traveled (VMT) per household by planning new housing in closest proximity to employment centers, improving and funding public transportation and ridesharing, and facilitating more direct routes for pedestrians and bicyclists.
Action LU-6.6B	Participate in the San Joaquin Council of Governments' (SJCOG) regional planning programs and coordinate City plans and programs with those of SJCOG, including the Regional Transportation Plan/Sustainable Communities Strategy, among others, and work with non-profit organizations also engaging in these planning programs.

TRANSPORTATION

Action TR-1.1A	Direct truck traffic to designated truck routes that facilitate efficient goods movement and minimize risk to areas with concentrations of sensitive receptors, such as schools, for example by disallowing any new truck routes to pass directly on streets where schools are located, and vulnerable road users, like pedestrians and bicyclists.
Action TR-1.1B	Maintain and periodically update a schedule for synchronizing traffic signals along arterial streets and freeway interchanges to facilitate the safe and efficient

movement of people and goods and to provide signal priority for transit vehicles at intersections.

Action TR-1.1D Update existing Precise Road Plans to reflect the 2040 General Plan, including changes in land use and level of service requirements, and a shift in priority from vehicular travel to travel by all modes through complete streets.

Action TR-1.1E Work with local school districts to implement pedestrian crossing enhancements like stop signs within neighborhoods around schools, encourage activities like a walking school bus, and create educational programs that teach students bicycle safety.

Action TR-1.2A Actively support and pursue access to high-speed rail.

Action TR-1.2B Support the San Joaquin Regional Transportation District's Regional Bus Service, Altamont Commuter Express (ACE), and AMTRAK's San Joaquin intercity rail service, and pursue and support other regional transit programs and projects, such as:

- ACE plans to bypass existing bottlenecks (e.g., the Union Pacific railyards in South Stockton);
- Connecting to the BART system;
- Extending ACE service south to Merced; and
- Proposing rail between Stockton and Sacramento along the California Traction and other rail corridors.

Policy TR-2.1 Develop safe and interconnected bicycle and pedestrian facilities, including along "complete" streets that target multiple travel modes.

Action TR-2.1A Require safe and secure bicycle parking facilities to be provided at major activity centers such as public facilities, employment sites, and shopping and office centers, along with showers and lockers for major employment sites.

Action TR-2.1B Maintain and implement the City of Stockton Bicycle Master Plan.

Policy TR-2.2 Connect housing and employment development in areas with good transit access through open and inclusive processes where appropriate.

Action TR-2.2A Require major new development to incorporate and fund design features to promote safe and comfortable access to transit, such as a circulation network that facilitates efficient and connected bus travel, clear pedestrian and bicycle routes connecting origins and destinations to transit stops, sheltered bus stops, park-and-ride facilities, and highly visible transit information and maps.

Action TR-2.2B Obtain input from community residents, non-profit organizations, and local and regional transit operators on major new development projects, and support transit operators by ensuring major projects are designed to support transit and provide fair share funding of the cost of adequate transit service and access.

Action TR-2.2C Request that public transit service providers expand routes and increase frequency and operational hours consistent with current short- and long-range transit planning, with the assistance of new development funding.

Action TR-2.2D	Support efforts to electrify buses.
Policy TR-2.3	**Utilize natural features and routes with lower traffic volumes and speeds to encourage residents to walk and wheel more frequently.**
Action TR-2.3A	Develop and maintain bikeways on separate rights-of-way (e.g., Calaveras River, East Bay Municipal Utility District easement, French Camp Slough, and Shima Tract Levee).
Action TR-2.3B	Require dedication of adequate right-of-way for bicycle use in new arterial and collector streets, and where feasible, in street improvement projects.
Policy TR-3.1	**Avoid widening existing roadways in an effort to preclude inducement of additional vehicle traffic.**
Action TR-3.1A	Limit street widths to the minimum necessary to adequately carry the volume of anticipated traffic, while allowing for safe bicycle and pedestrian facilities, emergency access, and large vehicle access.
Action TR-3.1B	Where feasible and appropriate, reduce the width of existing streets using bulb-outs, medians, pedestrian islands, shade tree landscaping, appropriate signage, and similar methods, while not jeopardizing emergency response.
Action TR-3.1C	Preserve right-of-way for transit and bicycle uses when designing new roadways and improving existing roadways, and ensuring adequate and clear signage.
Policy TR-3.2	**Require new development and transportation projects to reduce travel demand and greenhouse gas emissions, support electric vehicle charging, and accommodate multi-passenger autonomous vehicle travel as much as feasible.**
Action TR-3.2A	Amend the parking requirements in the Development Code to encourage shared parking, require preferential parking for rideshare vehicles, and allow reduced parking requirements to support transit, bicycling, and walking.
Action TR-3.2B	Require commercial, retail, office, industrial, and multi-family residential development to provide charging stations and prioritized parking for electric and alternative fuel vehicles.
Action TR-3.2C	Respond to the implications and opportunities associated with connected vehicles and autonomous vehicles by monitoring technological advances and adjusting roadway infrastructure and parking standards to accommodate autonomous vehicle technology and parking needs.
Action TR-3.2D	Continue to coordinate with the San Joaquin Council of Governments to increase opportunities for additional park and ride facilities, consistent with the San Joaquin County Regional Park and Ride Lot Master Plan.
Policy TR-4.2	**Replace LOS with: (1) vehicle-miles traveled (VMT) per capita; and (2) impacts to non-automobile travel modes, as the metrics to analyze impacts related to land use proposals under the California Environmental Quality Act, in accordance with SB 743.**

Action TR-4.2A To evaluate the effects of new development and determine mitigation measures and impact fees, require projects to evaluate per capita VMT and impacts to transit, bicycle, and pedestrian modes.

Action TR-4.2B Amend the City's Transportation Impact Analysis Guidelines to include alternative travel metrics and screening criteria.

Policy TR-4.3 **Use the threshold recommended by the California Office of Planning and Research for determining whether VMT impacts associated with land uses are considered significant under State environmental analysis requirements.**

Action TR-4.3A Amend the City's Transportation Impact Analysis Guidelines to:

- Establish a threshold of 15 percent below baseline VMT per capita to determine a significant transportation impact under the California Environmental Quality Act.
- Identify screening criteria that will streamline certain types of development and/or development in certain areas by not requiring a VMT analysis.

SAFETY

Policy SAF-4.1 **Reduce air impacts from mobile and stationary sources of air pollution.**

Action SAF-4.1A Require the construction and operation of new development to implement best practices that reduce air pollutant emissions, including:

- Use of low-emission and well-maintained construction equipment, with idling time limits.
- Development and implementation of a dust control plan during construction.
- Installation of electrical service connections at loading docks, where appropriate.
- Installation of Energy Star-certified appliances.
- Entering into Voluntary Emissions Reduction Agreements with the San Joaquin Valley Air Pollution Control District.

Action SAF-4.1B Use the results of the Health Risk Assessments required by the California Air Toxics "Hot Spots" Act to establish appropriate land use buffer zones around any new sources of toxic air pollutants that pose substantial health risks.

Action SAF-4.1C Require the use of electric-powered construction and landscaping equipment as conditions of project approval when appropriate.

Action SAF-4.1D Limit heavy-duty off-road equipment idling time to meet the California Air Resources Board's idling regulations for on-road trucks.

Policy SAF-4.2 **Encourage major employers to participate in a transportation demand management program (TDM) that reduces vehicle trips through approaches such as carpooling, vanpooling, shuttles, car-sharing, bike-sharing, end-of-trip facilities like showers and bicycle parking,**

subscription bus service, transit subsidies, preferential parking, and telecommuting.

Action SAF-4.2A Provide information and conduct marketing and outreach to major existing and new employers about the transportation demand management (TDM) program facilitated by the San Joaquin Council of Governments.

Policy SAF-4.3 Coordinate with the San Joaquin Valley Air Pollution Control District and non-profit organizations to promote public awareness on air quality issues and consistency in air quality impacts analyses.

Action SAF-4.3A Distribute educational materials from the San Joaquin Valley Air Pollution Control District on the City's website and at its Permit Center.

Action SAF-4.3B Coordinate review of development project applications with the San Joaquin Valley Air Pollution Control District to ensure that air quality impacts are consistently identified and mitigated during CEQA review. ***

COMMUNITY HEALTH

Policy CH-1.1 Maintain walking and wheeling facilities and parks that are safe and accessible in all areas of Stockton.

Action CH-1.1A Plant and maintain appropriate shade trees along all City streets to reduce heat exposure, prioritizing areas of the city with significantly less tree canopy, and provide a buffer between the travel way and bicycle and pedestrian facilities, and provide other amenities like well-marked crosswalks, bulb-outs, and pedestrian-scale street lighting.

Action CH-1.2D Prioritize pedestrian and active transportation improvement projects in low-income/disadvantaged communities that connect residential areas to retail locations that sell healthy food.

Action CH-2.1F Work with transit agencies, non-profit organizations, and communities to maintain and improve transit service in underserved and disadvantaged neighborhoods to connect residents with jobs, shopping, and services.

Action CH-2.2B Establish Transit Oriented Development (TOD) Overlay Zones around the Robert J. Cabral ACE Train Station and the San Joaquin Street Amtrak Station to promote high-density residential, including affordable and mixed-income housing, and other TOD.

Policy CH-3.2 Encourage neighborhood-serving commercial uses in areas where frequently needed goods and services are not widely available, especially for those areas with no availability within a 2-mile radius.

Action CH-3.2A Work with property owners to develop corridor-specific strategies for attracting and retaining businesses that will provide synergistic opportunities and improve the availability of goods and services adjacent to residential areas.

Action CH-3.4A Work with school districts to prioritize the expansion or renovation of existing schools in infill areas and evaluate various approaches to infill area school

expansions, such as smaller school sizes (e.g., lower capacity campuses spread through an area) or smaller campus land areas (e.g., multi-story facilities).

Action CH-4.1A Maintain a ratio of 30 percent multi-family residential uses or higher in the citywide housing stock.

Action CH-4.1D Study and implement adjustments to the Public Facilities Fee structure, parking requirements, and other development standards to facilitate the development of secondary residential units and other smaller dwelling units that can serve as relatively affordable housing.

CLIMATE CHANGE

LAND USE

Policy LU-1.1 **Encourage retail businesses and housing development in mixed-use developments along regional transportation routes and in areas that serve local residents.**

Action LU-1.1B Evaluate the City's parking policies, and amend the Development Code to provide more flexibility as appropriate to facilitate mixed-use redevelopment.

Action LU-2.2B Establish Transit Oriented Development (TOD) Overlay Zones around the Robert J. Cabral ACE Train Station and the San Joaquin Street Amtrak Station to promote high-density residential, including affordable and mixed-income housing, and other TOD.

Action LU-2.2D Discourage urban development at the edges of the city that would detract from or compete with the housing goals of the Greater Downtown.

Action LU-2.3C Develop curbside management policies that are flexible to accommodate the evolving nature of ride-sharing programs and future reliance on autonomous vehicles in the Downtown.

Policy LU-2.5 **Promote Downtown Stockton as a primary transit node that provides multi-modal connections throughout the city and region.**

Action LU-2.5A Improve transit, bicycle, and pedestrian connectivity between the Downtown and local colleges and universities.

Action LU-2.5C Continue to develop an active transportation plan for Downtown Stockton, and implement complete streets projects to improve bicycle and pedestrian safety that are identified in the plan.

Policy LU-3.2 **Retain narrower roadways and reallocate right-of-way space to preserve street trees and mature landscaping and enhance the pedestrian and bicycle network within and adjacent to residential neighborhoods.**

Action LU-3.2A	Implement the "road diet" recommendations from the City's Bicycle Master Plan that reduce roadway widths to provide space for bike lanes and other amenities that improve safety and ease of the streetscape for all modes.
Action LU-5.2H	Comply with applicable water conservation measures.
Action LU-5.2I	Coordinate with water agencies and non-profit organizations to promote public awareness on water quality and conservation issues and consistency in water quality impacts analyses.
Policy LU-5.3	Define discrete and clear city edges that preserve agriculture, open space, and scenic views.
Action LU-5.3C	Maintain the City's agricultural conservation program that requires either dedication of an agricultural conservation easement at a 1:1 ratio or payment of an in-lieu agricultural mitigation fee for the conversion of prime farmland, farmland of statewide importance, or unique farmland, as defined by the State Farmland Monitoring and Mapping Program.
Action LU-5.4A	Require all new development, including major rehabilitation, renovation, and redevelopment, to adopt best management practices for water use efficiency and demonstrate specific water conservation measures.
Policy LU-6.2	**Prioritize development and redevelopment of vacant, underutilized, and blighted infill areas.**
Action LU-6.2A	Develop and implement an infill incentive program that encourages infill development through expedited permitting, changes in fee structures, prioritizing infrastructure improvements in infill areas, property owner and/or landlord incentives to maintain property and reduce blight, and/or other strategies. As part of this program, define and prioritize categories of infill types based on land use, and residential density or non-residential intensity.
Action LU-6.2B	Do not approve future annexations or City utility connections unless they are consistent with the overall goals and policies of the General Plan and do not adversely impact the City's fiscal viability, environmental resources, infrastructure and services, and quality of life.
Policy LU-6.4	**Ensure that land use decisions balance travel origins and destinations in as close proximity as possible, and reduce vehicle miles traveled (VMT).**
Action LU-6.4A	Maintain a reasonable balance between potential job generation and local workforce availability with a goal of one job for each employed resident.
Action LU-6.4B	Maintain a reasonable proximity and balance (i.e., magnitude) between job generating uses, housing opportunities, and resident services and amenities, including transit and active transportation.

Action LU-6.4C Reduce Vehicle Miles Traveled (VMT) per household by planning new housing in closest proximity to employment centers, improving and funding public transportation and ridesharing, and facilitating more direct routes for pedestrians and bicyclists.

Action LU-6.6B Participate in the San Joaquin Council of Governments' (SJCOG) regional planning programs and coordinate City plans and programs with those of SJCOG, including the Regional Transportation Plan/Sustainable Communities Strategy, among others, and work with non-profit organizations also engaging in these planning programs.

TRANSPORTATION

Action TR-1.1B Maintain and periodically update a schedule for synchronizing traffic signals along arterial streets and freeway interchanges to facilitate the safe and efficient movement of people and goods and to provide signal priority for transit vehicles at intersections.

Action TR-1.1D Update existing Precise Road Plans to reflect the 2040 General Plan, including changes in land use and level of service requirements, and a shift in priority from vehicular travel to travel by all modes through complete streets.

Action TR-1.1E Work with local school districts to implement pedestrian crossing enhancements like stop signs within neighborhoods around schools, encourage activities like a walking school bus, and create educational programs that teach students bicycle safety.

Action TR-1.2A Actively support and pursue access to high-speed rail.

Action TR-1.2B Support the San Joaquin Regional Transportation District's Regional Bus Service, Altamont Commuter Express (ACE), and AMTRAK's San Joaquin intercity rail service, and pursue and support other regional transit programs and projects, such as:

- ACE plans to bypass existing bottlenecks (e.g., the Union Pacific railyards in South Stockton);
- Connecting to the BART system;
- Extending ACE service south to Merced; and
- Proposing rail between Stockton and Sacramento along the California Traction and other rail corridors.

Policy TR-2.1 Develop safe and interconnected bicycle and pedestrian facilities, including along "complete" streets that target multiple travel modes.

Action TR-2.1A Require safe and secure bicycle parking facilities to be provided at major activity centers such as public facilities, employment sites, and shopping and office centers, along with showers and lockers for major employment sites.

Action TR-2.1B Maintain and implement the City of Stockton Bicycle Master Plan.

Policy TR-2.2	**Connect housing and employment development in areas with good transit access through open and inclusive processes where appropriate.**
Action TR-2.2A	Require major new development to incorporate and fund design features to promote safe and comfortable access to transit, such as a circulation network that facilitates efficient and connected bus travel, clear pedestrian and bicycle routes connecting origins and destinations to transit stops, sheltered bus stops, park-and-ride facilities, and highly visible transit information and maps.
Action TR-2.2B	Obtain input from community residents, non-profit organizations, and local and regional transit operators on major new development projects, and support transit operators by ensuring major projects are designed to support transit and provide fair share funding of the cost of adequate transit service and access.
Action TR-2.2C	Request that public transit service providers expand routes and increase frequency and operational hours consistent with current short- and long-range transit planning, with the assistance of new development funding.
Action TR-2.2D	Support efforts to electrify buses.
Policy TR-2.3	**Utilize natural features and routes with lower traffic volumes and speeds to encourage residents to walk and wheel more frequently.**
Action TR-2.3A	Develop and maintain bikeways on separate rights-of-way (e.g., Calaveras River, East Bay Municipal Utility District easement, French Camp Slough, and Shima Tract Levee).
Action TR-2.3B	Require dedication of adequate right-of-way for bicycle use in new arterial and collector streets, and where feasible, in street improvement projects.
Policy TR-3.1	**Avoid widening existing roadways in an effort to preclude inducement of additional vehicle traffic.**
Action TR-3.1A	Limit street widths to the minimum necessary to adequately carry the volume of anticipated traffic, while allowing for safe bicycle and pedestrian facilities, emergency access, and large vehicle access.
Action TR-3.1B	Where feasible and appropriate, reduce the width of existing streets using bulb-outs, medians, pedestrian islands, shade tree landscaping, appropriate signage, and similar methods, while not jeopardizing emergency response.
Action TR-3.1C	Preserve right-of-way for transit and bicycle uses when designing new roadways and improving existing roadways, and ensuring adequate and clear signage.
Policy TR-3.2	**Require new development and transportation projects to reduce travel demand and greenhouse gas emissions, support electric vehicle charging, and accommodate multi-passenger autonomous vehicle travel as much as feasible.**
Action TR-3.2A	Amend the parking requirements in the Development Code to encourage shared parking, require preferential parking for rideshare vehicles, and allow reduced parking requirements to support transit, bicycling, and walking.

Action TR-3.2B	Require commercial, retail, office, industrial, and multi-family residential development to provide charging stations and prioritized parking for electric and alternative fuel vehicles.
Action TR-3.2C	Respond to the implications and opportunities associated with connected vehicles and autonomous vehicles by monitoring technological advances and adjusting roadway infrastructure and parking standards to accommodate autonomous vehicle technology and parking needs.
Action TR-3.2D	Continue to coordinate with the San Joaquin Council of Governments to increase opportunities for additional park and ride facilities, consistent with the San Joaquin County Regional Park and Ride Lot Master Plan.
Policy TR-4.2	**Replace LOS with: (1) vehicle-miles traveled (VMT) per capita; and (2) impacts to non-automobile travel modes, as the metrics to analyze impacts related to land use proposals under the California Environmental Quality Act, in accordance with SB 743.**
Action TR-4.2A	To evaluate the effects of new development and determine mitigation measures and impact fees, require projects to evaluate per capita VMT and impacts to transit, bicycle, and pedestrian modes.
Action TR-4.2B	Amend the City's Transportation Impact Analysis Guidelines to include alternative travel metrics and screening criteria.
Policy TR-4.3	**Use the threshold recommended by the California Office of Planning and Research for determining whether VMT impacts associated with land uses are considered significant under State environmental analysis requirements.**
Action TR-4.3A	Amend the City's Transportation Impact Analysis Guidelines to: ■ Establish a threshold of 15 percent below baseline VMT per capita to determine a significant transportation impact under the California Environmental Quality Act. ■ Identify screening criteria that will streamline certain types of development and/or development in certain areas by not requiring a VMT analysis.

SAFETY

Policy SAF-4.2	**Encourage major employers to participate in a transportation demand management program (TDM) that reduces vehicle trips through approaches such as carpooling, vanpooling, shuttles, car-sharing, bike-sharing, end-of-trip facilities like showers and bicycle parking, subscription bus service, transit subsidies, preferential parking, and telecommuting.**
Action SAF-4.2A	Provide information and conduct marketing and outreach to major existing and new employers about the transportation demand management (TDM) program facilitated by the San Joaquin Council of Governments.

COMMUNITY HEALTH

Policy CH-1.1	**Maintain walking and wheeling facilities and parks that are safe and accessible in all areas of Stockton.**
Action CH-1.1A	Plant and maintain appropriate shade trees along all City streets to reduce heat exposure, prioritizing areas of the city with significantly less tree canopy, and provide a buffer between the travel way and bicycle and pedestrian facilities, and provide other amenities like well-marked crosswalks, bulb-outs, and pedestrian-scale street lighting.
Action CH-1.2D	Prioritize pedestrian and active transportation improvement projects in low-income/disadvantaged communities that connect residential areas to retail locations that sell healthy food.
Action CH-2.1F	Work with transit agencies, non-profit organizations, and communities to maintain and improve transit service in underserved and disadvantaged neighborhoods to connect residents with jobs, shopping, and services.
Action CH-2.2B	Establish Transit Oriented Development (TOD) Overlay Zones around the Robert J. Cabral ACE Train Station and the San Joaquin Street Amtrak Station to promote high-density residential, including affordable and mixed-income housing, and other TOD.
Policy CH-3.2	**Encourage neighborhood-serving commercial uses in areas where frequently needed goods and services are not widely available, especially for those areas with no availability within a 2-mile radius.**
Action CH-3.2A	Work with property owners to develop corridor-specific strategies for attracting and retaining businesses that will provide synergistic opportunities and improve the availability of goods and services adjacent to residential areas.
Action CH-3.3C	Continue to work with community-based organizations that employ local Stockton youth to perform energy efficiency, alternative energy, and water conservation assessments and installations in local homes and businesses.
Action CH-3.4A	Work with school districts to prioritize the expansion or renovation of existing schools in infill areas and evaluate various approaches to infill area school expansions, such as smaller school sizes (e.g., lower capacity campuses spread through an area) or smaller campus land areas (e.g., multi-story facilities).
Action CH-4.1A	Maintain a ratio of 30 percent multi-family residential uses or higher in the citywide housing stock.
Action CH-4.1C	Explore the feasibility of developing an ordinance to allow "tiny homes" and container homes to serve as permanent housing.
Action CH-4.1D	Study and implement adjustments to the Public Facilities Fee structure, parking requirements, and other development standards to facilitate the development of secondary residential units and other smaller dwelling units that can serve as relatively affordable housing.

Policy CH-5.1 **Accommodate a changing climate through adaptation, mitigation, and resiliency planning and projects.**

Action CH-5.1A Upon the next revision of the City's Local Hazard Mitigation Plan, conduct a comprehensive climate change vulnerability assessment to inform the development of adaptation and resilience policies and strategies, and incorporate them into the Safety Element, in accordance with SB 379.

Action CH-5.1B Maintain and implement the City of Stockton Climate Action Plan (CAP) and update the CAP to include the following:

- Updated communitywide GHG emissions inventory;
- 2030 GHG emissions reduction target, consistent with SB 32;
- Estimated 2030 GHG emissions reduction benefits of State programs;
- Summary of the City's progress toward the 2020 local GHG emissions reduction target;
- New and/or revised GHG reduction strategies that, when quantified, achieve the 2030 reduction target and continue emission reductions beyond 2030; and
- New or updated implementation plan for the CAP.

Action CH-5.1C Accommodate a changing climate through adaptation and resiliency planning and projects.

Policy CH-5.2 **Expand opportunities for recycling, re-use of materials, and waste reduction.**

Action CH-5.2A Use recycled materials and products for City projects and operations where economically feasible, and work with recycling contractors to encourage businesses to use recycled products in their manufacturing processes and encourage consumers to purchase recycled products.

Action CH-5.2B Continue to require recycling in private and public operations, including construction/demolition debris.

Action CH-5.2C Expand educational and outreach efforts to promote recycling by occupants of multi-family housing, businesses, and schools.

This page intentionally blank

APPENDIX B:
SB 244 ANALYSIS

.....

APPENDIX B
SB 244 ANALYSIS

There are hundreds of disadvantaged unincorporated communities (DUCs) throughout California, including more than 200 in the San Joaquin Valley alone. Many of these communities are geographically isolated islands. The living conditions in many of these communities suggest a distinct lack of public and private investment that threatens the health and safety of the residents and fosters economic, social, and educational inequality. Many of these communities lack basic infrastructure, including streets, sidewalks, storm drainage, clean drinking water, and adequate sewer service. In response to these conditions, the State Legislature passed Senate Bill 244 (SB 244) in 2011 with the intent of addressing the legal, financial, and political barriers that contribute to inequality and infrastructure deficits in DUCs. Accounting for these communities in the long-range planning process, as required by SB 244, is one way to ensure a more efficient system for delivery of services and infrastructure, including water, wastewater, storm drainage, and structural fire protection. Furthermore, investment in these services and infrastructure will result in the enhancement and protection of public health and safety for residents of these communities.

SB 244 Requirements: City, County, LAFCo

The requirements of SB 244 apply differently to cities, counties, and local agency formation commissions (LAFCos). These differences reflect the distinct physical and social settings of cities and counties and the different institutional authorities and responsibilities of cities, counties, and LAFCos.

Cities and Counties

The requirements for cities and counties focus on their compliance with State Planning and Zoning Law, and particularly on general plans. SB 244 added the following requirements to Government Code Section 65588 concerning general plan land use elements:

- In the case of a city, an identification of each unincorporated island or fringe community within the city's sphere of influence. In the case of a county, an identification of each legacy community within the boundaries of the county, but not including any area within the sphere of influence of any city. This identification shall include a description of the community and a map designating its location.

- For each identified community, an analysis of water, wastewater, stormwater drainage, and structural fire protection needs or deficiencies.

- An analysis, based on then existing available data, of benefit assessment districts or other financing alternatives that could make the extension of services to identified communities financially feasible.

SB 244 also added Section 65302.10 to the Government Code to define the terms used in the legislation as they relate to cities and counties. According to the legislation, the key terms are defined as follows:

- "Community" means an inhabited area within a city or county that is comprised of no less than 10 dwellings adjacent or in close proximity to one another.
- "Disadvantaged unincorporated community" means a fringe, island, or legacy community in which the median household income is 80 percent or less than the statewide median household income.
- "Unincorporated fringe community" means any inhabited and unincorporated territory that is within a city's sphere of influence.
- "Unincorporated island community" means any inhabited and unincorporated territory that is surrounded or substantially surrounded by one or more cities or by one or more cities and a county boundary or the Pacific Ocean.
- "Unincorporated legacy community" means a geographically isolated community that is inhabited and has existed for at least 50 years.

Local Agency Formation Commissions

For LAFCO purposes, the definition of a DUC differs from those for cities and counties. SB 244 identifies a DUC for LAFCO purposes as an inhabited territory, as defined by Section 56046 of the Government Code (i.e., 12 or more registered voters), that constitutes all or a portion of a "disadvantaged community" as defined by Section 79505.5 of the Water Code (i.e., a community with an annual median household income that is less than 80 percent of the statewide annual median household income). SB 244 requires that, in conjunction with sphere of influence reviews or updates occurring after July 1, 2012, LAFCOs include determinations concerning the present and planned capacity of public facilities and adequacy of public services for DUCs within or adjacent to the sphere of influence of any city or special district. This includes evaluation of sewer, water, and structural fire protection needs or deficiencies; it does not explicitly include drainage. SB 244 defines DUCs slightly differently for LAFCOs than it does for cities and counties. SB 244 also includes procedural requirements related to approval of proposed annexations contiguous with DUCs.

In December 2012, San Joaquin LAFCo updated its Policies and Procedures to comply with the requirements of SB 244. The update consisted of identifying a series of DUCs within the Stockton Metropolitan Area and adopting policy language addressing these communities. According to the policy, San Joaquin LAFCo shall not approve an annexation of 10 acres or more that is adjacent to a disadvantaged unincorporated community unless a concurrent application of all or part of the DUC has also been filed. The policy excepts areas for which an application has been made in the past five years and areas where a majority of the registered voters within the DUC are opposed to annexation.

In developing its modified Sphere of Influence policies, San Joaquin LAFCO identified five DUCs within or adjacent to the City of Stockton's SOI: August CDP; Garden Acres CDP; Kennedy CDP; French Camp CDP; and Taft Mosswood.

DUC Identification

SB 244 outlines the general characteristics of DUCs, but does not provide guidance on how to identify them. To assist local governments in addressing the requirements of SB 244, the Governor's Office of Planning and Research (OPR) published a technical advisory memo in February 2013. The memo recommends data sources for identifying the income status of communities and mapping sources for identifying "communities" as defined by SB 244. It also referenced methodological guidance prepared by PolicyLink in collaboration with California Rural Legal Assistance. Based on the guidance provided by OPR and Policy, the City of Stockton identified DUCs in the Stockton area by focusing on a combination of income status and parcel density. Following are brief descriptions of the steps the City followed to identify these communities.

Income Status

To identify communities that meet the income status defined by SB 244, the City relied on the 2000 Census for income data because it disaggregated data to the Census block group level. The City also reviewed the 2010 Census and more recent American Community Survey (ACS) data, but the 2010 Census did not include income data and the ACS sample sizes were too small to produce reliable data for unincorporated areas. In 2000, the median household income of California was $47,493, so the City included in its analysis any census block group with a median income of less than $37,994 (i.e., 80 percent of the statewide median). In doing so, the City isolated census blocks in unincorporated areas within the City's sphere of influence.

Parcel Density

After isolating the census blocks that met the income threshold, the City proceeded with a parcel density analysis to identify "communities" as defined by SB 244. This analysis focused on identifying closely-settled places, rather than spread-out rural or semi-rural communities. The City identified areas with a density of at least 250 parcels per square mile, which is comparable to the density of Census Designated Places (unincorporated communities tracked by the Census Bureau). Within these areas, the City then screened to areas with at least 10 dwellings "adjacent or in close proximity to one another" as described by SB 244. In doing so, the City eliminated non-residential areas; areas less than three-quarters of an acre with only one or two houses; and any obvious narrow "slivers" that were a result of GIS layer overlap (e.g., along city limits and census tract overlaps).

Communities Identified

The City identified 3 types of DUCs in its analysis: Census Designated Places (CDPs), Island, and Fringe Communities.

- The CDPs that the City identified are derived from San Joaquin County LAFCo's DUC analysis.
- The Island Communities are located within the city boundaries and Sphere of Influence.
- The Fringe Communities are located outside of city boundaries, but within the Sphere of Influence.

Table B-1 lists the DUCs in the Stockton area by type, size (in acres), and the number of parcels in each community.

Table B-1. City of Stockton DUCs

Name	Type	Size (acres)	Parcels
1. August CDP	CDP	805	2,137
2. French Camp CDP	CDP	2,006	606
3. Garden Acres CDP	CDP	1,652	2, 901
4. Kennedy CDP	CDP	774	888
5. Taft Mosswood CDP	CDP	310	493
6. Boggs Tract	Island	100	325
7. East Alpine Community	Island	4	10
8. East Interstate Community	Island	51	212
9. Fremont St Community	Island	194	221
10. Holt Ave/Pershing Ave Community	Island	79	252
11. Mariposa Road Community	Island	35	223
12. North Oaks Community	Island	52	232
13. West Lane Community	Island	45	195
14. Pershing Ave Community	Island	110	473
15. Waller-Childress Community	Island	35	34
16. Rose Terrace	Island	33	106
17. West Interstate 5 Community	Island	85	22
18. Charter Way Community	Fringe	654	775
19. State Route 88 Community	Fringe	281	143
20. Sunny Road Community	Fringe	59	47

Source: Mintier Harnish, September 2017.

EXHIBIT 1

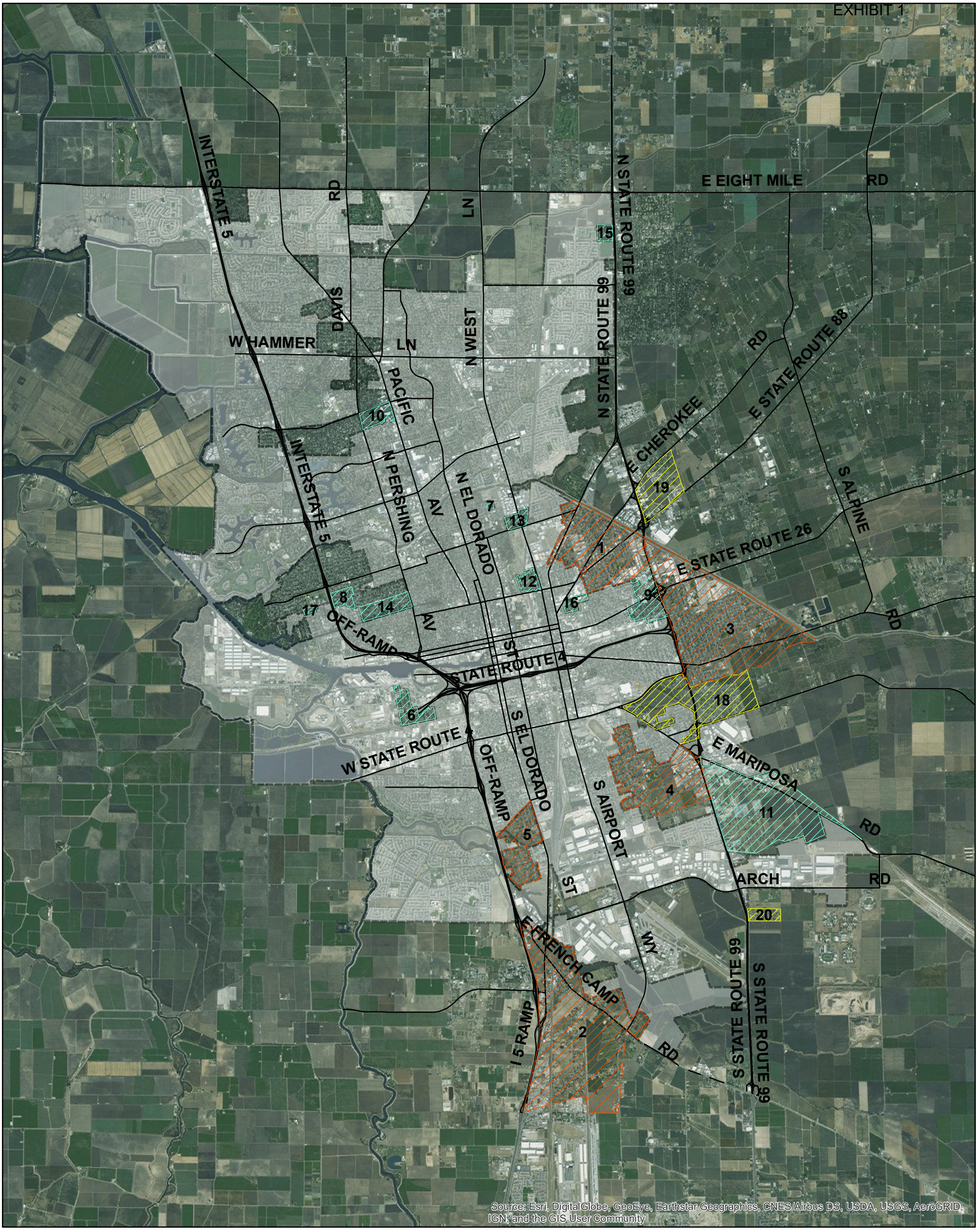


Figure B-1:
Disadvantaged Unincorporated Communities

Map date: October 21, 2016

Source: City of Stockton; San Joaquin County; United States Census, 2000.

DUCs (CDP)
1. August
2. French Camp
3. Garden Acres
4. Kennedy
5. Taft Mosswood

DUCs (Island)
6. Boggs Tract
7. Sperry Tract
8. East Interstate 5 Community
9. Fremont St. Community
10. Holt Ave/Pershing Ave Community
11. Mariposa Road Community
12. North Oaks Community
13. West Lane Community
14. Pershing Ave Community
15. Waller-Childress Community
16. Rose Terrace
17. West Interstate 5 Community

DUCs (Fringe)
18. Charter Way Community
19. State Route 88 Community
20. Sunny Road Community
City Limits

0 0.75 1.5 3 Miles

N

Please see next page.

Infrastructure Analysis

Once DUCs have been identified, SB 244 requires an analysis of infrastructure services for each DUC. This section first provides an overview of service providers in the Stockton Metropolitan Area and then describes public services within each of the DUCs in the Stockton area consistent with the requirements of SB244.

Overview of Service Providers in Stockton Area

Water

Water service providers in the Stockton Metropolitan Area include the City of Stockton Municipal Utilities Department (COSMUD), California Water Service Company (Cal Water), and San Joaquin County Maintenance Districts (SJMCDs) covering Lincoln Village and Colonial Heights. These providers deliver a combination of treated surface water supplied by the Stockton East Water District (SEWD), Delta Water Supply Project (DWSP) water from the San Joaquin River, and pumped groundwater.

Sewer

Wastewater collection and treatment facilities in the Stockton Metropolitan Area consist of the Stockton Regional Wastewater Control Facility (RWCF) and the City of Stockton Wastewater Collection System Facilities. The RWCF provides primary, secondary, and tertiary treatment of municipal wastewater from throughout the city. The RWCF has a designed flow capacity of 55 mgd and average daily flow rate of 31.7 mgd. Treated effluent from the RWCF is dechlorinated and discharged to the San Joaquin River.

The City's wastewater collection system is divided into 15 designated sub-areas or "systems." Pump stations are located throughout the city and are integral to the wastewater collection system. Most of the pump stations discharge to pressure sewers that convey flow under pressure either directly to the RWCF or to a downstream gravity sewer.

Storm Drainage

Storm drainage services for the Stockton Area are provided by the City of Stockton and San Joaquin County. Data for this part of this analysis came from consultation with County of San Joaquin staff.

Fire Protection

Fire protection services for the Stockton Area are provided by City of Stockton Fire Department, French Camp-McKinley Fire District, Eastside Rural County Fire Protection District, Montezuma Fire Protection District, and Waterloo-Morada Fire Protection District. Data for this part of this analysis came from consultation with fire department staff.

CDP Communities

1. August CDP

The August Community is made up of 2,137 parcels totaling approximately 805 acres.

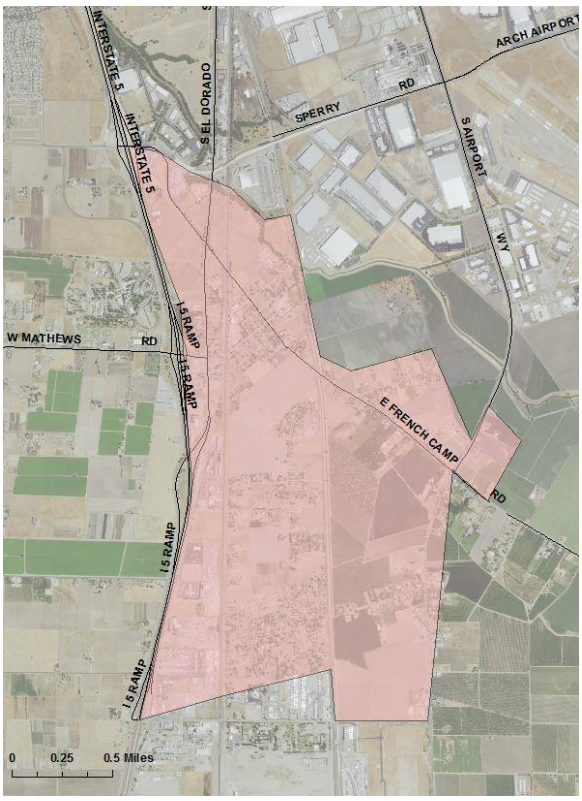
Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer –This area is covered by the East Stockton Sanitary Sewer Project and is served by the City of Stockton Collection System 4, as defined in the City's Wastewater Master Plan. Service is provided to unincorporated area properties according to out-of-agency agreements. Additional sewer lines and connections consistent with the Wastewater Master Plan would have to be constructed to accommodate growth upon annexation.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire - Fire services for this area are provided by Eastside Rural County Fire Protection District which contracts with the City of Stockton Fire Department. The area has access to fire hydrants. There are no fire service deficiencies in this area.

2. French Camp CDP



The French Camp Community is made up of 606 parcels totaling approximately 2,006 acres.

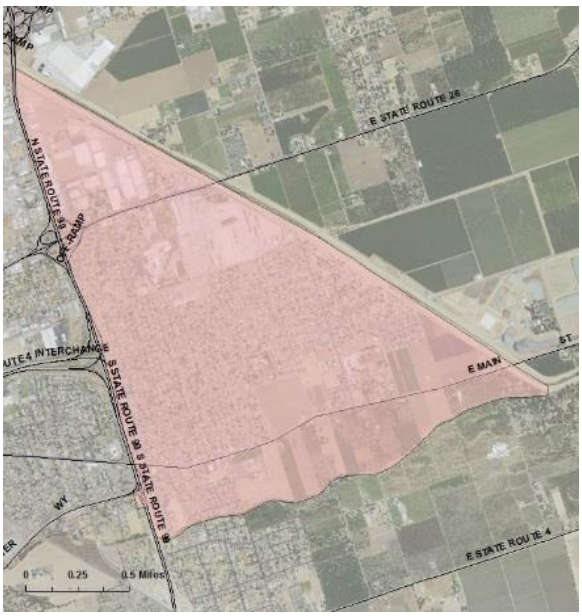
Water – Although this area is covered by the City of Stockton Water Master Plan, it is not currently served by a public water system. Instead, existing development relies on individual wells, many of which have experienced contamination problems over the years (e.g., coliform bacteria, high salt concentration). Through its Water Master Plan CIP, the City of Stockton has identified the need for water tanks and a network of 12-inch water lines to serve the area.

Sewer –Sewer system services in the French Camp area within the Stockton SOI are currently provided by individual septic systems. While there are no reported problems associated with sufficiency of these systems to serve existing development, new wastewater infrastructure will be required to serve additional development. The City's 2035 Wastewater Master Plan outlines a variety of improvements (e.g., gravity sewers, force mains, pump stations) for future services in the area. These are part of the proposed Collection System 13 facilities, which will serve French Camp and other annexation areas south of the city within Stockton's SOI.

Drainage – Roadside ditches and on-site private drainage ponds are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – Fire services for this area are provided by the French Camp-McKinley Fire District which contracts with the City of Stockton Fire Department. French Camp Proper has access to fire hydrants and water on the fire trucks and the French Camp Rural has access to fire tenders and water on the fire trucks. There are no fire service deficiencies in this area.

3. Garden Acres CDP



The Garden Acres Community is made up of 2,901 parcels totaling approximately 1,652 acres.

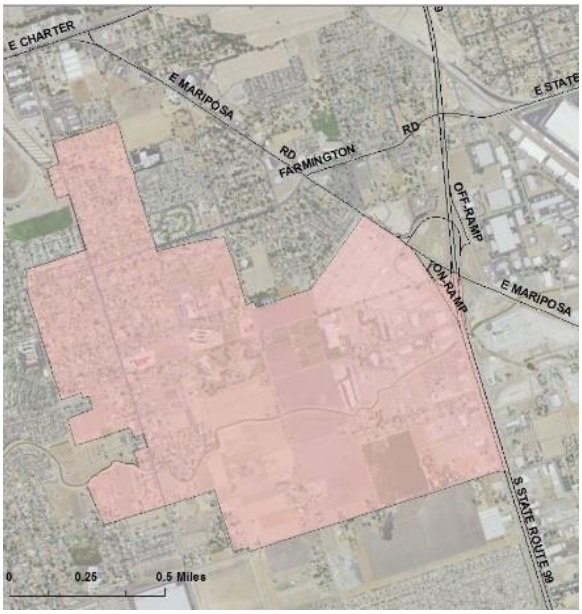
Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer facilities in part of this area are provided by the East Stockton Sanitary Sewer Project, while the rest of the area relies on septic systems. The City of Stockton Wastewater Management Plan addresses improvement needs in this area (in existing Collection Systems 4 and 6 and a small part of the proposed new Collection System 12). There are no deficiencies in sewer services in this area..

Drainage – Storm drain services are provided by San Joaquin County through a combination of an underground storm main and roadside ditches. There are no storm drain deficiencies in this area.

Fire – Fire services for this area are provided by Eastside Rural County Fire Protection District which contracts with the City of Stockton Fire Department. The area has access to fire hydrants. There are no fire service deficiencies in this area.

4. Kennedy CDP



The Kennedy Community is made up of 888 parcels totaling approximately 774 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

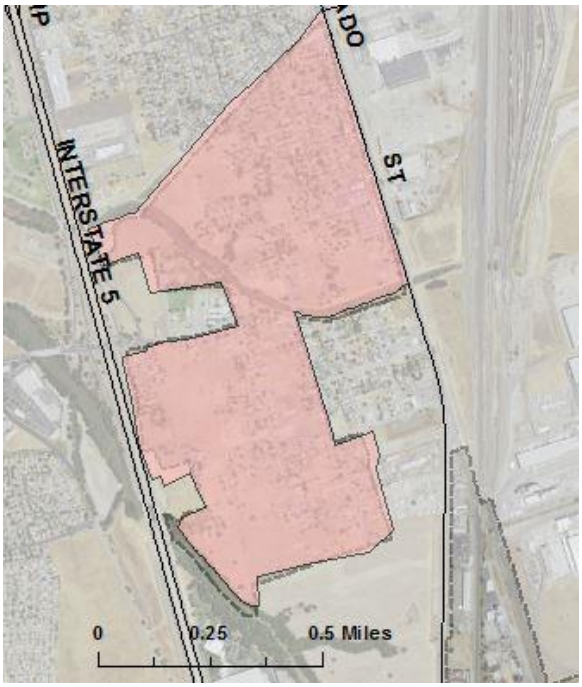
Sewer –Sewer system services to this area are provided by the City of Stockton through Morrison Gardens Sanitary District facilities. The City's 2035 Wastewater Master Plan outlines a variety of improvements (e.g., gravity sewers, force mains, pump stations) for potential future services in the area. These are part of the proposed Collection System 6 and 7 facilities. Because connections to the public treatment system are limited, there are deficiencies in sewer services in this area. New service lines would need to be constructed to accommodate new development.

Drainage – Storm drain services are provided by San Joaquin County through an underground storm main. There are no storm drain deficiencies in this area.

Fire – Fire services for this area are provided by the Montezuma Fire Protection District. The area includes Montezuma Fire Station #1 and has access to fire hydrants. There are no fire service deficiencies in this area.

5. Taft Mosswood CDP

The Taft Mosswood Community is made up of 493 parcels totaling approximately 310 acres.



Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer services are provided to this area by San Joaquin County Public Works through Taft Improvement District No. 52 (south of Walker Slough) and Mosswood Sewer Project facilities (north of Walker Slough), but connections are limited. Thus, there are deficiencies in sewer services in this area.

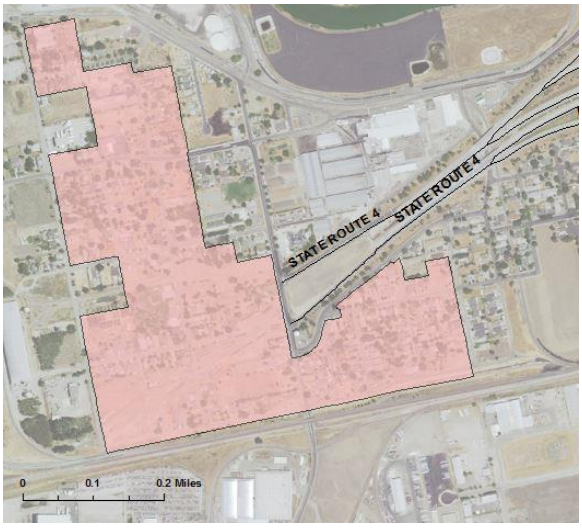
Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – Fire services for this area are provided by the French Camp-McKinley Fire District which contracts with the City of Stockton Fire Department. The area has access to fire hydrants and all the fire trucks carry water on board. There are no fire service deficiencies in this area.

Island Communities

6. Boggs Tract

Boggs Tract is made up of 325 parcels totaling approximately 100 acres.



Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – The sewers serving Boggs Tract in the southern and eastern parts of the area are deficient and in need of improvement.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are storm drain deficiencies in this area.

Fire – Boggs Tract Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #2, located in Stockton. There are no fire service deficiencies in this area.

7. East Alpine Community

The East Alpine Community is made up of 10 parcels fronting Wright Avenue totaling approximately 4 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer system services are provided to this area by the City of Stockton's Sewer Collection System 2.. There are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by the City of Stockton through an underground storm main. There are no storm drain deficiencies in this area.

Fire – Eastside Rural County Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #9, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

8. East 5 Interstate Community

The East Interstate Community is made up of 212 parcels totaling approximately 51 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer system services are provided to this area by Pacific Gardens Sanitary District which contracts for treatment by the City of Stockton. There are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by San Joaquin County through an underground storm main. There are no storm drain deficiencies in this area.

Fire – The Tuxedo-County Club Rural County Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #6, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

9. Fremont Street Community

The Fremont Street Community is made up of 221 parcels totaling approximately 194 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plans prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – This area is covered by the East Stockton Sanitary Sewer Project and is served by the City of Stockton Collection System 4, as defined in the City's Wastewater Master Plan. Service is provided to unincorporated area properties according to out-of-agency agreements. Additional sewer lines and connections consistent with the Wastewater Master Plan would have to be constructed to accommodate growth upon annexation.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – Eastside Rural County Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #12, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

10. Holt Avenue/Pershing Avenue Community

The Holt Ave/Pershing Ave Community is made up of 252 parcels totaling approximately 79 acres.

Water –Water is provided to this area by the City of Stockton from groundwater wells and surface water. As documented in the 2015 Urban Water Management Plan prepared for the City of Stockton, the facilities serving the DUCs have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

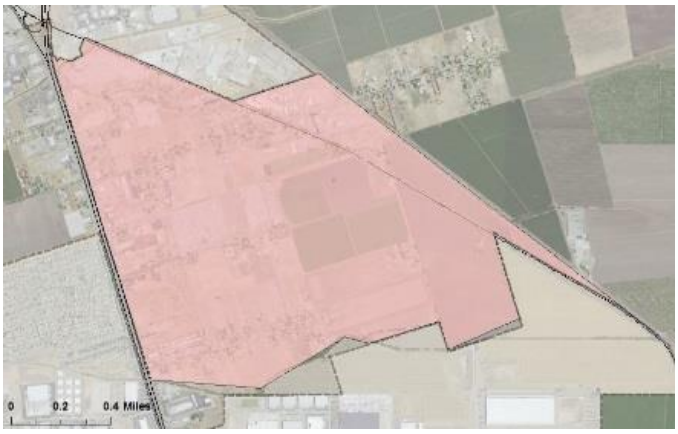
Sewer – Lincoln Village Maintenance District sewer system services are provided to this area by the City of Stockton Sewer System 2. According to the 2035 Stockton General Plan Infrastructure Evaluation, there is a sewer line that is in need of improvement in the southern portion of the community. Otherwise, there are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by San Joaquin County through an underground storm main. There are no storm drain deficiencies in this area.

Fire – Lincoln Rural County Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #4, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

11. Mariposa Road Community

The Mariposa Road Community is made up of 223 parcels totaling approximately 35 acres.



Water – Water is provided to this area by California Water Service and the City of Stockton. As documented in the 2015 Urban Water Management Plans prepared for the City of Stockton and Cal Water, the facilities serving the DUCs have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

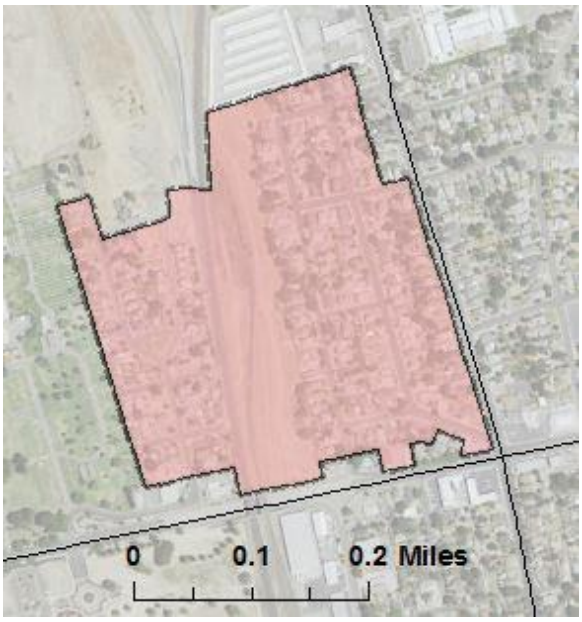
Sewer –Sewer system services are provided to this area by the City of Stockton through Morrison Gardens Sanitary District facilities. The City's 2035 Wastewater Master Plan outlines a variety of improvements (e.g., gravity sewers, force mains, pump stations) for potential future services in the area. These are part of the proposed Collection System 7 and 8 facilities. Because connections to the public treatment system are limited, there are deficiencies in sewer services in this area.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – The Montezuma Fire Protection District provides fire protection services to this area, which has access to fire hydrants. There are no fire service deficiencies in this area.

12. North Oaks Community

The North Oaks Community is made up of 232 parcels totaling approximately 52 acres.



Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

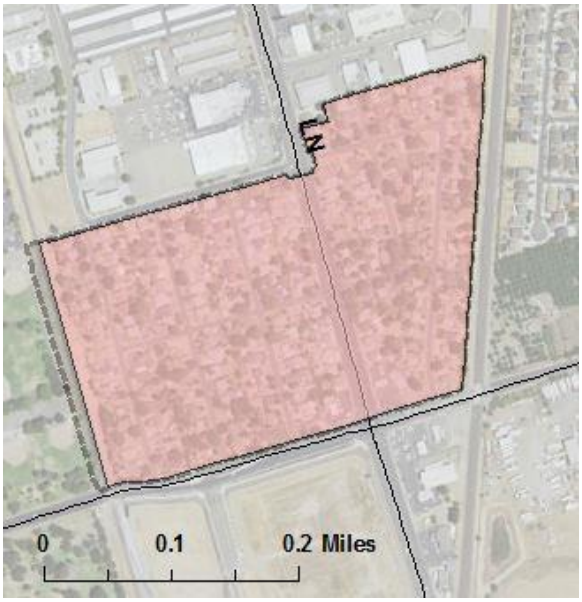
Sewer – Sewer system services are provided to this area through a City of Stockton Assessment District via Collection System 3. There are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by the City of Stockton through an underground storm main. There are no storm drain deficiencies in this area.

Fire – The City of Stockton Fire Department provides fire protection with the operation of Station #11, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

13. West Lane Community

The West Lane Community is made up of 195 parcels totaling approximately 45 acres.



Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer system services are provided to this area through a City of Stockton Assessment District via Collection System 3. There are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by the County. There are no storm drain deficiencies in this area.

Fire – The Eastside and Lincoln Fire Protection Districts contract with the City of Stockton Fire Department to provide fire protection with the operation of Station #9, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

14. Pershing Avenue Community

The Pershing Avenue Community consists of 473 parcels totaling approximately 110 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plans prepared for Cal Water, the facilities serving the DUCs have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer – Sewer system services are provided to this area by Pacific Gardens Sanitary District which contracts for treatment by the City of Stockton. There are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by San Joaquin County through an underground storm main. There are no storm drain deficiencies in this area.

Fire – The Tuxedo-County Club Rural County Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #6, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

15. Waller-Childress Community

The Waller-Childress Community is made up of 34 parcels totaling approximately 35 acres. It surrounded on the north, south, and west by incorporated areas of Stockton and on the east by Highway 99.

Water – Water is provided to this area by groundwater wells, and the City's Water Master Plan does not show any plans for extension of public water service to the area. While there are no known deficiencies in water services in this area, annexation or further subdivision of the area would likely require new facilities.

Water is provided to this area by groundwater wells, and the City's Water Master Plan does not show any plans for extension of public water service to the area. While there are no deficiencies in water services in this area, annexation or further subdivision of the area would likely require new facilities.

Sewer –Sewer system services in the Waller-Childress area are currently provided by individual septic systems. While there are no known deficiencies with these systems, annexation or further subdivision of the area would likely require extension and connection with the public sewer system in the adjacent area.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire - Fire services for this area are provided by the Waterloo Morada Fire District. The area does not have access to fire hydrants, but has access to fire tenders and water on the fire trucks. There are no fire service deficiencies in this area.

16. Rose Terrace Community

The Rose Terrace Community is made up of 106 parcels totaling approximately 33 acres.

Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

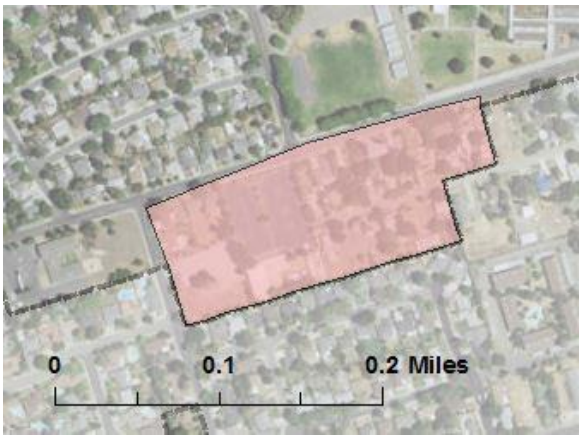
Sewer – Sewer facilities in this area are provided by the East Stockton Sanitary Sewer Project. There are no deficiencies in sewer services in this area.

Drainage – Storm drain services are provided by San Joaquin County through an underground storm main. There are no storm drain deficiencies in this area.

Fire – The Eastside Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #9, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

17. West Interstate 5 Community

The West Interstate 5 Community is made up of 22 parcels totaling approximately 10 acres.



Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer –Sewer system services are provided to this area by Pacific Gardens Sanitary District which contracts for treatment with the City of Stockton. There are no deficiencies in sewer services in this area.

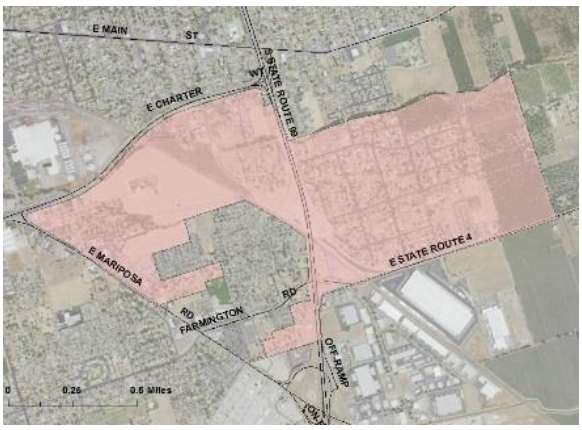
Drainage – Given the absence of storm drainage infrastructure, there are storm drain deficiencies in this area.

Fire – The Tuxedo-County Club Rural County Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #6, located in Stockton. The area has access to fire hydrants. There are no deficiencies in this area. There are no fire service deficiencies in this area.

Fringe Communities

18. Charter Way Community

The Charter Way Community is made up of 775 parcels totaling approximately 650 acres. It is bisected by Highway 99 and the AT&SF railroad tracks.



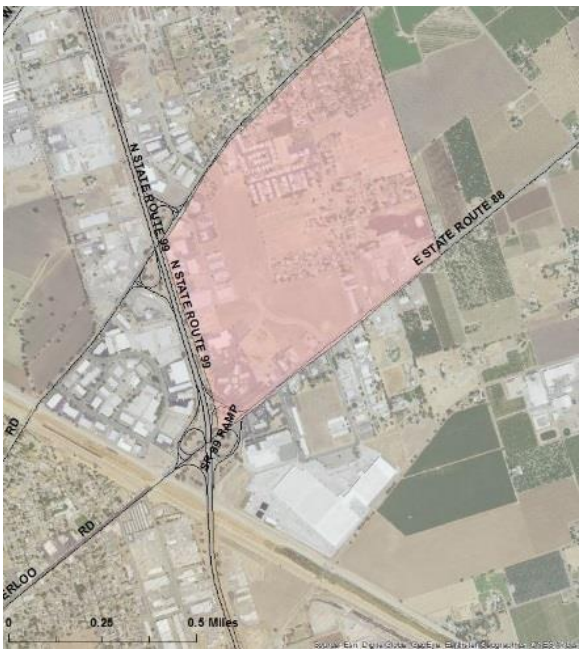
Water – Water is provided to this area by California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

Sewer –Sewer facilities in the area east of Highway 99 are provided by the East Stockton Sanitary Sewer Project. The City of Stockton Wastewater Master Plan anticipates the provision of force main and gravity trunk improvements planned between State Route 4 and Charter Way to accommodate growth in the area. Since much of this area is not connected to a public sewer system, there are deficiencies in sewer services in this area.

Drainage – In the area east of Highway 99, storm drain services are provided by San Joaquin County through an underground storm main. The area west of Highway 99 relies on roadside ditches, so there are storm drain deficiencies in this area.

Fire – The Eastside Fire Protection District contracts with the City of Stockton Fire Department to provide fire protection with the operation of Station #12, located in Stockton. The area has access to fire hydrants. There are no fire service deficiencies in this area.

19. State Route 88 Fringe Community



The State Route 88 Fringe Community is made up of 143 parcels totaling approximately 281 acres.

Water –Water is provided to this area by the California Water Service as part of the Central Stockton Storage and Distribution system. As documented in the 2015 Urban Water Management Plan prepared for Cal Water, the facilities serving this area have sufficient capacity and access to high-quality water supplies to address current and projected demands. There are no deficiencies in water services in this area.

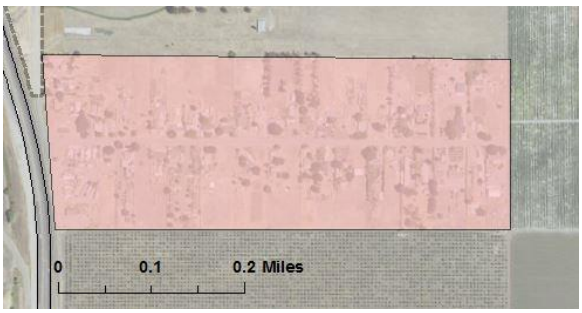
Sewer – County Service Area 15 (Waterloo-99) provides sewer system services to this area. According to the City of Stockton Wastewater Master Plan, there are planned node and gravity trunk improvements throughout most of the area. While there are currently no deficiencies in sewer services in this area, new sewer lines would need to be constructed to accommodate growth in demand.

Drainage – Storm drain services are provided by San Joaquin County through an underground storm main. There are no storm drain deficiencies in this area.

Fire – Fire services for this area are provided by the Waterloo Morada Fire District. The area has access to fire hydrants. There are no fire service deficiencies in this area.

20. Sunny Road Community

The Arch Road Fringe Community is made up of 47 parcels totaling approximately 59 acres.



Water –Water is provided to this area by groundwater wells, and the City's Water Master Plan does not show any plans for extension of public water service to the area. While there are no known deficiencies in water services in this area, annexation or further subdivision of the area would likely require new facilities.

Sewer –Sewer system services are provided to this area by the City of Stockton's Sewer System 8, although the homes along Sunny Road rely on septic systems. The City's 2035 Wastewater Master Plan identifies Sunny Road as a candidate for a new gravity sewer line.

Drainage – Roadside ditches are used to manage stormwater for the community. Because there is no formal storm drain system, there are drainage deficiencies in this area.

Fire – Fire services for this area are provided by the Montezuma Fire Protection District which contracts with the City of Stockton Fire Department. The area does not have access to fire hydrants, but has access to fire tenders and water on fire trucks. There are no fire service deficiencies in this area.

Potential Funding Sources

As summarized above, there are several communities that have stormwater deficiencies and all areas outside of Colonial Heights Maintenance District, Lincoln Village Maintenance District, Pacific Gardens Sanitary District, Country Club Sanitary District, and the City of Stockton Assessment District in the vicinity of Alpine would need new sewer lines to accommodate growth in demand. There are several ways that services to these areas could be improved, including annexation to the City of Stockton and connection to the City's existing and planned infrastructure. For most of these areas, the City has provided a backbone sanitary sewer system, so connection to public treatment systems is a viable option. Generally, funding sources for other needed system improvements include CFDs, taxes, bonds, grants, and exactions. Some financing mechanisms may, however, be difficult to use because they require voter approval. For this reason, grants are often used for infrastructure improvements to reduce the cost burden for taxpayers, although grant programs can be very competitive and, thus, not a reliable source of funding. Given the City Council's July 2018, the establishment of CFDs may be the most promising way to ensure necessary improvements can be funded and maintained.

In addition to local infrastructure funding mechanisms, there are also funding sources offered by the federal and state government that address existing deficiencies and/or expansion of infrastructure for new development. A summary of each program is provided below:

- Community Development Block Grants (CDBG) – The Community Development Block Grant program is an annual funding mechanism offered by the United States Housing and Urban

Development Department. These versatile grants often fund the construction of projects such as water and sewer facilities, recreation facilities, street maintenance, as well as other public work projects.

- Integrated Regional Water Management (grants) – This funding program is offered by the California Department of Water Resources. DWR's IRWM Grant Programs are managed within the Division of IRWM, Financial Assistance Branch, with assistance from DWR's regional offices. The IRWM Grant Programs include IRWM funding for planning, disadvantaged community involvement, implementation, and companion grant programs that support sustainable groundwater planning and water-energy programs and projects.

- Proposition 84 - The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act provides funding from the State Water Resources Control Board. Proposition 84 allows the funding to be utilized for capital costs on projects that pertain to protecting river, lakes, and streams from excessive stormwater runoff. Such projects that can be funded could be related to the collection of stormwater, and treatment of water to reduce the likelihood of ground contamination.

Conclusion

The DUCs in the Stockton Metropolitan Area are generally well-served by current fire protection and water services providers, but public wastewater collection and storm drain systems are unavailable in many areas. This includes where storm drainage is provided via roadside ditches, with no connections to storm drain systems, as well as several areas where sewer lines would need to be constructed to accommodate growth in demand. In areas where services are deficient, new development, with or without annexation, would require improvements to bring them up to contemporary standards and to accommodate new development. This would include connection to public sewer systems and extension of storm drainage systems, as anticipated by the City's Wastewater Master Plan and Stormwater Management Plan in several areas. Also, in some DUCs, as with other areas within the City's SOI, fire protection services are provided by independent fire protection districts.

APPENDIX C: RESOLUTIONS

RESOLUTION 2018-12-04-1503-01
Resolution Certifying the Environmental Impact Report for the Envision Stockton 2040 General Plan Update (General Plan) and Utility Master Plan Supplements (UMPS), adopting the Findings of Fact, adopting a Mitigation Monitoring and Reporting Program, Rejecting Land Use Alternatives, and Adopting a Statement of Overriding Considerations

RESOLUTION 2018-12-04-1503-02
Resolution Adopting the Envision Stockton 2040 General Plan Update (General Plan) and Adopting the Utility Master Plan Supplements (UMPS)

RESOLUTION 2018-12-04-1503-03
Resolution Adopting Written Findings of Consistency with the Delta Plan with Supporting Documentation

Resolution No. 2018-12-04-1503-01

STOCKTON CITY COUNCIL

RESOLUTION CERTIFYING THE ENVIRONMENTAL IMPACT REPORT FOR THE ENVISION STOCKTON 2040 GENERAL PLAN UPDATE (GENERAL PLAN) AND UTILITY MASTER PLAN SUPPLEMENTS (UMPS), ADOPTING THE FINDINGS OF FACT, ADOPTING A MITIGATION MONITORING AND REPORTING PROGRAM, REJECTING LAND USE ALTERNATIVES, AND ADOPTING A STATEMENT OF OVERRIDING CONSIDERATIONS

On January 26, 2016, the City Council of the City of Stockton (City Council) authorized the preparation of the Envision Stockton 2040 General Plan Update (General Plan), Utility Master Plan Supplements (UMPS), and General Plan and UMPS Environmental Impact Report (EIR); and

On May 24, 2017, a Notice of Preparation (NOP) was prepared and circulated through the State of California Governor's Office of Planning and Research for a programmatic EIR for the General Plan and UMPS (State Clearing House Number 2017052062); and

On June 8, 2017, the City held a duly-noticed public scoping meeting for the Draft General Plan and UMPS programmatic EIR (Draft EIR) at the Jack Silva Conference Room at the City of Stockton Permit Center, located at 345 N El Dorado St, Stockton, California; and

On July 25, 2017, after numerous public meetings and workshops, and subsequent analysis and consideration of alternative plan ideas, the City Council identified the preferred draft General Plan land use alternative to be analyzed in the General Plan and UMPS programmatic EIR; and

On August 23, 2017, the NOP was reissued, exclusively to reflect a single map correction, which began a second 30-day review period; and

On June 26, 2018, a Notice of Completion of the Draft EIR was prepared and circulated through the State of California Governor's Office of Planning and Research, and. the 45-day public review and comment period took place between June 26, 2018 and August 10, 2018; and

On June 26, 2018, a Notice of Availability (NOA) of the Draft EIR and notice of the public comment hearing for the Draft EIR were distributed to responsible agencies; local, State, and federal agencies; interested groups; and interested persons; and on that same day notices thereof were posted at Stockton City Hall, in a local newspaper The Record, and on the General Plan website; and

On August 2, 2018, the Planning Commission held a duly-noticed review and comment meeting on the Draft EIR; and

On October 10,2018, the City published the Final General Plan and UMPS programmatic EIR (Final EIR), which included responses to comments received on the Draft EIR; and

On October 25, 2018, and November 15, 2018, the Planning Commission held a duly-noticed public hearing regarding the General Plan and UMPS EIR, Adoption of Findings of Fact, Statement of Overriding Considerations, Mitigation Monitoring and Reporting Program, and Draft General Plan and UMPS, and the Commission voted 6-1, Davie dissenting, to recommend that the City Council certify the EIR and approve the General Plan and UMPS; and

On December 4, 2018, the City Council held a duly-noticed public meeting to consider the Final EIR and proposed General Plan and UMPS (together, "the Project") as recommended by the Planning Commission, and the Council received testimony from City staff, City's consultants, and interested persons, now, therefore,

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS:

That the City Council of the City of Stockton does hereby certify that the Final EIR has been completed in compliance with the California Environmental Quality Act. and finds in regard to the Environmental Impact Report that:

1. The City Council of the City of Stockton has reviewed and considered the information contained in the Final EIR prior to approving the proposed General Plan and UMPS.

A. Changes or alterations have been incorporated into the project, including policies and actions contained in the plan and mitigation measures, which mitigate or avoid the significant effects on the environment, including as incorporated into the Mitigation Monitoring and Reporting Program to be adopted for the project (Exhibit 2).

B. Those changes or alterations that are within the responsibility and jurisdiction of another public agency have been, or can and should be, adopted by that other agency.

C. Specific economic, legal, social, technological, or other considerations identified in detail in the Findings of Fact and Statement of Overriding Considerations (Exhibit 1) make infeasible certain mitigation measures or the alternatives identified in the Final EIR.

D. The benefits of the proposed project outweigh the unavoidable adverse environmental effects and, thus, the adverse effects of the project are found to be acceptable as detailed in the Findings of Fact and Statement of Overriding Considerations (Exhibit 1).

E. The significant effects which cannot be mitigated are found to be acceptable to support approval of the Project based upon the information

provided in the Final EIR and in the project record as more particularly described in the Findings of Fact and Statement of Overriding Considerations (Exhibit 1).

2. The City Council of the City of Stockton finds that the Final EIR for the proposed General Plan and UMPS reflects the independent judgment of the City acting as lead agency for the Project.

3. The City Manager is authorized to take such other actions as are necessary and appropriate to carry out the purpose and intent of this Resolution.

PASSED, APPROVED, and ADOPTED December 4, 2018.

for Mayor Tubbs

MICHAEL D. TUBBS, Mayor
of the City of Stockton

ATTEST:

for

CHRISTIAN CLEGG, Deputy City Manager/
and Interim City Clerk of the City of Stockton

EXHIBIT 1

RESOLUTION CERTIFYING THE ENVIRONMENTAL IMPACT REPORT FOR THE ENVISION STOCKTON 2040 GENERAL PLAN UPDATE (GENERAL PLAN) AND UTILITY MASTER PLAN SUPPLEMENTS (UMPS), ADOPTING THE FINDINGS OF FACT, ADOPTING A MITIGATION MONITORING AND REPORTING PROGRAM, REJECTING LAND USE ALTERNATIVES, AND ADOPTING A STATEMENT OF OVERRIDING CONSIDERATIONS

I. INTRODUCTION

The proposed Envision Stockton 2040 General Plan (General Plan) is the principal policy and planning document for guiding future conservation and development in the city. It represents the basic policy direction of the Stockton City Council on community values, ideals, and aspirations to govern a shared environment through the year 2040. The General Plan addresses all aspects of development including, among others, land use, transportation, housing, economic development, public facilities and infrastructure, and open spaces.

The overall purpose of the proposed General Plan is to create a policy framework that articulates a vision for the City's physical form, while preserving and enhancing quality of life for Stockton residents. The key components of the proposed General Plan include broad community goals for the future of Stockton and specific policies and implementing actions to help meet the goals. The proposed General Plan contains the following chapters:

- Introduction
- Planning Framework
- Land Use
- Transportation
- Safety
- Community Health

The State of California encourages cities to look beyond their borders when undertaking the sort of comprehensive planning required of a general plan. For this reason, the proposed General Plan delineates three partly overlapping areas outside the city limit: the Urban Services Area Boundary (USAB), the Sphere of Influence (SOI), and the Planning Area. The General Plan also delineates the Greater Downtown and Downtown Core areas, and proposes policies and land use standards that are specific to these geographic regions. These planning boundaries are shown in Figure 3-2 of the Draft General Plan and UMPS EIR (Draft EIR) and are more particularly described below. The City has jurisdiction only over land that is within the city limit; however, it is probable that some of the land within the SOI will be annexed by the City of Stockton within the horizon of the proposed General Plan, and would, therefore, be subject to the City's jurisdiction in the future.

Accordingly, the Final General Plan and UMPS EIR (Final EIR) focuses on the analysis of potential changes within the city limit and SOI. This area is referred to herein as the

EXHIBIT 1

EIR Study Area. The EIR Study Area boundary is shown on Figure 3-2, Planning Boundaries, of the Draft EIR.

The proposed UMPS identify needed infrastructure improvements to serve future development. Specifically, the UMPS evaluate and identify the following types of infrastructure improvement needs:

- Water storage
- Water pumping facilities
- Water distribution pipelines
- Sewer collection systems
- Wastewater treatment facilities
- Stormwater detention storage
- Stormwater pumping facilities

These facilities are sized for the amount of development included in the 2040 development projection, including approved and pending development projects. The proposed UMPS also present approximate cost information for new infrastructure improvements.

In compliance with the California Environmental Quality Act (CEQA), the Final EIR describes the potential environmental impacts associated with the adoption and implementation of the proposed General Plan and UMPS. Section 15125 of the CEQA Guidelines establishes that the physical environmental conditions at the time of the issuance of the Notice of Preparation (NOP) constitute the baseline conditions by which an impact is determined to be significant. The NOP for the proposed General Plan and EIR was published on May 24, 2017 (California State Clearinghouse #2017052062), and subsequently reissued on August 23, 2017. The City of Stockton is the lead agency for the environmental review of the proposed project.

The Final EIR provides the information and findings on which the City Council may certify that it has prepared the Final EIR for the proposed project in compliance with all of CEQA's procedural and substantive requirements (see **Section II** of this attachment). **Section III** of this attachment provides information and findings regarding the potential environmental impacts of the proposed project and the effectiveness and feasibility of mitigation measures proposed in the Final EIR and the City's adoption of those mitigation measures as conditions of approval of the proposed project. **Sections IV & V** provide information and findings on CEQA-related considerations regarding irreversible or growth inducing impacts and findings on which the City Council may reject or adopt alternatives to the proposed project studied in the Final EIR. Finally, **Section VI** provides a statement of overriding considerations by which the City Council may justify its approval of the proposed project despite the fact that implementation of the proposed project may result in significant and unavoidable adverse environmental impacts.

EXHIBIT 1

II. FINDINGS FOR CERTIFICATION OF THE FINAL ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED GENERAL PLAN AND UTILITY MASTER PLAN SUPPLEMENTS

The City Council finds, based on substantial evidence in the record of this proceeding, that the Final EIR for the proposed General Plan and UMPS, which consists of the Draft EIR and its appendices, Responses to Comments and associated modifications to the Draft EIR, and the Mitigation Monitoring and Reporting Program, has been completed in accordance with the requirements of CEQA, the CEQA Guidelines, the Stockton Municipal Code and all other applicable laws and regulations.[1]

Specifically, the City Council finds, based on substantial evidence in the record of this proceeding, that:

1. The City of Stockton caused an EIR for the proposed project to be prepared pursuant to CEQA, the CEQA Guidelines, and the City of Stockton Municipal Code.

2. A Notice of Preparation (NOP) of the Draft EIR was filed with the California Governor's Office of Planning and Research on May 24, 2017 for a 30-day review period and was circulated for public comments. On August 23, 2017, the NOP was subsequently reissued to revise a figure in the project description that shows the extent of proposed urban to agriculture/open space changes, which began a second 30-day review period. Notices for the NOP were mailed to other agencies (local and federal) and to interested persons and community members. Notices for the NOP were also posted at the County Clerk's Office and in Stockton City Hall.

3. On June 8, 2017, the City held a public meeting to conduct a scoping session for the Draft EIR. Comments were received on the NOP, which were subsequently incorporated into the Draft EIR.

4. A Notice of Completion (NOC) and copies of the Draft EIR were distributed to the California State Clearinghouse on June 26, 2018, to those public agencies that have jurisdiction by law with respect to the project, and to other interested parties and agencies. The City sought the input of such persons and agencies through various means, including direct communication to agency staff. Additional copies of the Draft EIR were distributed by the City to agencies who requested them. The 45-day public review and comment period ended on August 10, 2018.

5. A Notice of Availability (NOA) of the Draft EIR was distributed to all responsible and trustee agencies; other local and federal agencies; and interested groups,

---

[1] CEQA is codified at sections 21000, *et seq.* of the California Public Resources Code. The CEQA Guidelines are set forth at California Code of Regulations, Title 14, sections 15000, *et seq.* The Stockton Development Code is set forth at Title 16 of the Stockton Municipal Code. The custodian of the record of this proceeding is the City of Stockton, Community Development Department, 345 N El Dorado Street, Stockton, California.

EXHIBIT 1

organizations, and individuals on June 26, 2018. The NOA stated that the City had completed the Draft EIR and that copies were available at the City of Stockton, 425 North El Dorado Street, Stockton and that the document was available for review on the City of Stockton "Envision Stockton" website. The NOA was also delivered electronically to all persons who had requested such notice up to that date. The notice indicated that the official public review period for the Draft EIR was from June 26, 2018 to August 10, 2018.

6. On August 2, 2018, the City's Planning Commission held a review and comment meeting on the Draft EIR, at which time the Commission accepted public comments on the Draft EIR. The comments received at that hearing were included and responded to in the Final EIR.

7. On October 10, 2018, the City published the Final EIR, which included responses to the comments received on the Draft EIR. The City emailed notices of the Final EIR's availability for review to interested persons, including State, federal, and local agencies. The notice further advised that the project and Final EIR would be discussed at the Planning Commission's October 25, 2018 meeting. The City also made available for review the Final EIR at City Hall and on the City's "Envision Stockton" website.

8. On October 10, 2018, the City posted a display ad in The Record, a newspaper of general circulation within the city, advertising the October 25, 2018 meeting of the Planning Commission, when the Commission would discuss and make a recommendation to the City Council regarding the Final EIR for the proposed General Plan and UMPS, the Draft General Plan, and the UMPS. Notice of this meeting was also sent to all responsible and trustee agencies; other local and federal agencies; interested groups, organizations, and property owners; and individuals.

9. On October 25, 2018, and November 15, 2018, the Planning Commission of the City of Stockton held a duly noticed public hearing regarding the General Plan and UMPS EIR, Adoption of Findings of Fact, Statement of Overriding Considerations, Mitigation Monitoring and Reporting Program, and Draft General Plan and UMPS. The Commission voted 6-1, Davie dissenting, to recommend that the City Council certify the EIR and approve the General Plan and UMPS.

10. On November 20, 2018, the City posted a display ad in The Record, a newspaper of general circulation within the city, advertising the December 4, 2018, public hearing of the Stockton City Council to consider certification of the EIR and approval of the General Plan and UMPS. This notice advertised the location and availability of the Final EIR and all documents related to the project.

11. Testimony, documentary evidence, and all correspondence submitted or delivered to the City in connection with the Planning Commission and City Council hearings

EXHIBIT 1

on this project and the Final EIR and from community meetings held during the review process have been reviewed and considered by the City Council.

12. All staff reports, memoranda, maps, letters, minutes of meetings, and other documents relied upon or prepared by City staff relating to the project, including but not limited to, the proposed General Plan and UMPS, the Draft EIR, and Final EIR, have been reviewed and considered by the City Council.

Based on the foregoing and substantial evidence in the record of this proceeding, the City Council hereby finds, declares, and certifies that:

1. The Final EIR was prepared, published, circulated, reviewed and completed in accordance with the requirements of CEQA, the CEQA Guidelines and the Stockton Municipal Code, and constitutes an adequate, accurate, objective, and complete Final EIR in accordance with the requirements of CEQA, the CEQA Guidelines and the Stockton Municipal Code.

2. The Final EIR consists of the Draft EIR, Responses to Comments and associated modifications to the Draft EIR, the Mitigation Monitoring and Reporting Program, all appendices, and the documents and materials incorporated by reference into the EIR.

3. The Final EIR has been presented to the City Council, and the City Council has reviewed and considered the information contained therein prior to acting on the proposed project, and the City Council finds that the Final EIR reflects the independent judgment and analysis of the City of Stockton.

4. The Final EIR reflects the best efforts of the City of Stockton to undertake all reasonably feasible and prudent actions to discover, analyze, disclose, and mitigate all potentially significant environmental impacts of the proposed project.

5. The changes and additions to the Draft EIR made in the Final EIR do not constitute "significant new information" within the meaning of Public Resources Code Section 21092.1, and therefore recirculation of the Draft EIR for public review and comment is not required.

6. The Final EIR has been presented to the City Council, and the City Council has reviewed and considered the information contained therein and in the record prior to making these findings or taking action on the proposed General Plan and UMPS.

7. The City Council hereby adopts the attached Findings of Fact and Statement of Overriding Considerations, and a Mitigation Monitoring and Reporting Program to require and ensure that all mitigation measures found to be reasonably feasible and effective are implemented.

EXHIBIT 1

III. FINDINGS OF FACT REGARDING THE ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED ENVISION STOCKTON 2040 GENERAL PLAN UPDATE AND UTILITY MASTER PLAN SUPPLEMENTS INCLUDING THE MITIGATION MEASURES ANALYZED AND RECOMMENDED IN THE FINAL ENVIRONMENTAL IMPACT REPORT

The EIR for the proposed General Plan and UMPS evaluates all potentially significant environmental impacts that could result from the approval of the proposed project, alternatives to the proposed project, and measures designed to mitigate or avoid the potentially significant impacts of the proposed project. A Mitigation Monitoring and Reporting Program has been prepared for the proposed General Plan and UMPS and is included in the project record. This section lists all identified potentially significant or significant impacts of the proposed project and, where applicable, mitigation measures adopted to avoid, reduce, or attempt to reduce those impacts to a less-than-significant level.

A. Less-than-Significant Impacts and Potentially Significant Impacts that are Avoided or Reduced to a Less-than-Significant Level.

Findings: As authorized by Public Resources Code Section 21081 and CEQA Guidelines Sections 15091, 15092, and 15093, the City finds that, unless otherwise stated, all of the changes or alterations to the proposed project listed below have been required, or incorporated into, the proposed project so as to mitigate or avoid the significant or potentially significant environmental impacts listed below, as identified in the Final EIR; that these mitigation measures will be effective to reduce or avoid the potentially significant impacts as described in the Final EIR; and that these mitigation measures are feasible to implement and are within the responsibility and jurisdiction of the City of Stockton to implement or enforce. These Findings of Fact are supported by substantial evidence in the record of proceedings before the City as stated below.

AESTHETICS

a. Less-than-Significant Impact, no mitigation required

Impact AES-1: Implementation of the proposed project would not have a substantial adverse effect on a scenic vista.

Impact AES-2: Implementation of the proposed project would not substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway.

Impact AES-3: Implementation of the proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings.

EXHIBIT 1

Impact AES-4: Implementation of the proposed project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

AGRICULTURAL AND FORESTRY RESOURCES

a. No Impact

Impact AG-3: Implementation of the proposed project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production.

b. Less-than-Significant Impact, no mitigation required

Impact AG-4: Implementation of the proposed project would not result in the loss of forest land or conversion of forest land to non-forest use.

Impact AG-5: Implementation of the proposed project would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmlands of concern under CEQA to non-agricultural use or conversion of forest land to non-forest use.

AIR QUALITY

a. Less-than-Significant Impact after mitigation

Impact AQ-5: Implementation of the proposed General Plan could expose sensitive receptors to substantial toxic air contaminant concentrations from non-permitted sources.

Mitigation Measure AQ-5: Prior to discretionary project approval, applicants for industrial or warehousing land uses in addition to commercial land uses that would generate substantial diesel truck travel (i.e., 100 diesel trucks per day or 40 or more trucks with diesel-powered transport refrigeration units per day based on the California Air Resources Board recommendations for siting new sensitive land uses), shall contact the San Joaquin Valley Air Pollution Control District (SJVAPCD) or the City of Stockton in conjunction with the SJVAPCD to determine the appropriate level of health risk assessment (HRA) required. If preparation of an HRA is required, all HRAs shall be submitted to the City of Stockton and the SJVAPCD for evaluation.

The HRA shall be prepared in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment and the SJVAPCD. If the HRA shows that the incremental cancer risk exceeds ten in one million (10E 06) or the risk thresholds in effect at the time a project is considered, or that the appropriate noncancer hazard index exceeds 1.0 or the thresholds as determined

EXHIBIT 1

by the SJVAPCD at the time a project is considered, the applicant will be required to identify and demonstrate that measures are capable of reducing potential cancer and noncancer risks to an acceptable level, including appropriate enforcement mechanisms.

Measures to reduce risk impacts may include but are not limited to:

- Restricting idling on-site beyond Air Toxic Control Measures idling restrictions, as feasible.
- Electrifying warehousing docks.
- Requiring use of newer equipment and/or vehicles.
- Restricting offsite truck travel through the creation of truck routes.

Measures identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the site development plan as a component of the proposed project.

Facts in Support of Findings for Impact AQ-5: After the implementation of the recommended mitigation measure, potential impacts would be reduced to a less-than-significant level.

Impact AQ-6: Operation of new industrial land uses accommodated under the proposed General Plan has the potential to create objectionable odors that could affect a substantial number of people.

Mitigation Measure AQ-6: Prior to project approval, if it is determined during project-level environmental review that a project has the potential to emit nuisance odors beyond the property line, an odor management plan shall be prepared and submitted by the project applicant prior to project approval to ensure compliance with San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 4102. The following facilities that are within the buffer distances specified from sensitive receptors (in parentheses) have the potential to generate substantial odors:

- Wastewater Treatment Plan (2 miles)
- Sanitary Landfill (1 mile)
- Transfer Station (1 mile)
- Composting Facility (1 mile)
- Petroleum Refinery (2 miles)
- Asphalt Batch Plan (1 mile)
- Chemical Manufacturing (1 mile)
- Fiberglass Manufacturing (1 mile)
- Painting/Coating Operations (1 mile)
- Food Processing Facility (1 mile)
- Feed Lot/ Dairy (1 mile)
- Rendering Plant (1 mile)

EXHIBIT 1

The Odor Management Plan prepared for these facilities shall identify control technologies that will be utilized to reduce potential odors to acceptable levels, including appropriate enforcement mechanisms. Control technologies may include but are not limited to scrubbers (e.g., air pollution control devices) at an industrial facility. Control technologies identified in the odor management plan shall be identified as mitigation measures in the environmental document and/or incorporated into the site plan.

Facts in Support of Findings for Impact AQ-6: After the implementation of the recommended mitigation measure, potential impacts would be reduced to a less-than-significant level.

BIOLOGICAL RESOURCES

a. Less-than-Significant Impact, no mitigation required

Impact BIO-1: Implementation of the proposed project would not have a substantial adverse effect on any species identified as a candidate, sensitive, or special status species.

Impact BIO-2: Implementation of the proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community.

Impact BIO-3: Implementation of the proposed project would not have a substantial adverse effect on federally protected wetlands.

Impact BIO-4: Implementation of the proposed project would not interfere substantially with the movement of any native resident or migratory fish and wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Impact BIO-5: Implementation of the proposed project would not conflict with any local policies or ordinances protecting biological resources.

Impact BIO-6: Implementation of the proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

CULTURAL AND TRIBAL CULTURAL RESOURCES

a. Less-than-Significant Impact, no mitigation required

Impact CULT-1: Implementation of the proposed project would not cause a substantial adverse change in the significance of an historical resource.

EXHIBIT 1

Impact CULT-2: Implementation of the proposed project would not cause a substantial adverse change in the significance of an archaeological resource.

Impact CULT-3: Implementation of the proposed project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Impact CULT-4: Implementation of the proposed project would not disturb any human remains.

Impact CULT-5: Implementation of the proposed project would not cause a substantial adverse change in the significance of a tribal cultural resource.

GEOLOGY, SOILS, SEISMICITY, AND MINERAL RESOURCES

a. Less-than-Significant Impact, no mitigation required

Impact GEO-1: Implementation of the proposed project would not expose people or structures to potential substantial adverse effects involving rupture of a known earthquake fault; strong seismic ground shaking; seismic-related ground failure, including liquefaction; or landslides.

Impact GEO-2: Implementation of the proposed project would not result in substantial soil erosion or the loss of topsoil.

Impact GEO-3: Implementation of the proposed project would not result in a significant impact related to development on unstable geologic units or soils or result in lateral spreading, subsidence, liquefaction, or collapse.

Impact GEO-4: Implementation of the proposed project would not create substantial risks to property as a result of its location on expansive soil, as defined by Section 1803.5.3 of the California Building Code.

Impact GEO-5: Implementation of the proposed project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Impact GEO-6: Implementation of the proposed project would a) result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or b) result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

EXHIBIT 1

GREENHOUSE GAS EMISSIONS

a. Less-than-Significant Impact, no mitigation required

Impact GHG-2: Implementation of the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

HAZARDS AND HAZARDOUS MATERIALS

a. No Impact

Impact HAZ-6: Implementation of the proposed project would not be within the vicinity of a private airstrip and would not result in a safety hazard for people residing or working in the project area.

b. Less-than-Significant Impact, no mitigation required

Impact HAZ-1: Implementation of the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Impact HAZ-2: Implementation of the proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Impact HAZ-3: Implementation of the proposed project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼-mile of an existing or proposed school.

Impact HAZ-4: Implementation of the proposed project would not create a significant hazard to the public or the environment as a result of being located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

Impact HAZ-5: Implementation of the proposed project would not result in a safety hazard for people residing or working within the airport land use plan area.

Impact HAZ-7: Implementation of the proposed project would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.

Impact HAZ-8: Implementation of the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires.

EXHIBIT 1

HYDROLOGY AND WATER QUALITY

a. Less-than-Significant Impact, no mitigation required

Impact HYDRO-1: Implementation of the proposed project would not violate any water quality standards or discharge requirements.

Impact HYDRO-2.1: Implementation of the proposed project would not substantially deplete groundwater supplies.

Impact HYDRO-2.2: Implementation of the proposed project would not substantially interfere with groundwater recharge.

Impact HYDRO-3: Implementation of the proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.

Impact HYDRO-4: Implementation of the proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

Impact HYDRO-6: Implementation of the proposed project would not otherwise substantially degrade water quality.

Impact HYDRO-7: Implementation of the proposed project would place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

Impact HYDRO-8: Implementation of the proposed project would not place within a 100-year flood hazard area structures which would impede or redirect flood flows.

Impact HYDRO-9: Implementation of the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

Impact HYDRO-10: Implementation of the proposed project would not cause substantial flood hazards arising from seiche, tsunami, or mudflow.

b. Less-than-Significant Impact after mitigation

Impact HYDRO-5: Development allowed under the proposed General Plan could result in existing and planned stormwater drain infrastructure to be undersized or otherwise inadequate, which could lead to flooding and polluted runoff.

EXHIBIT 1

Mitigation Measure HYDRO-5: Complete a citywide storm drainage master plan, including hydrologic and hydraulic models for existing land use conditions and for the land uses anticipated in 2040 under the proposed General Plan. The master plan should identify the future stormwater infrastructure needs and develop a current stormwater capital improvement plan. As part of this process, identify areas that have constraints, prioritize watersheds to be modeled, and evaluate the City stormwater fee program for potential revisions. In addition, require new development to complete stormwater plans covering drainage, flood control, and storm water quality/permitting. Use the master plan and project-level stormwater plans to assess future development, and require that future development construct the required on- and off-site infrastructure. Implementation of this mitigation measure should be timed to anticipate and precede significant developments that would be most likely to place large demands on the current stormwater system.

Facts in Support of Findings for Impact HYDRO-5: After the implementation of the recommended mitigation measure, potential impacts would be reduced to a less-than-significant level.

LAND USE AND PLANNING

a. Less-than-Significant Impact, no mitigation required

Impact LU-1: Implementation of the proposed project would not physically divide an established community.

Impact LU-2: Implementation of the proposed project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect.

Impact LU-3: Implementation of the proposed project would not conflict with any applicable habitat conservation plan or natural community conservation plan.

NOISE

a. Less-than-Significant Impact, no mitigation required

Impact NOISE-1: The proposed project would not expose people to or generate noise levels in excess of standards established in the General Plan or the Municipal Code, and/or the applicable standards of other agencies.

Impact NOISE-2: The proposed project would not expose people to or generate excessive groundborne vibration or groundborne noise levels.

EXHIBIT 1

Impact NOISE-4: The proposed project would cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Impact NOISE-5: The proposed project would not expose people residing or working in the vicinity of the project area to excessive aircraft noise levels from a public airport or public use airport.

Impact NOISE-6: The proposed project would not expose people residing or working in the project area to excessive noise levels from a private airstrip.

POPULATION AND HOUSING

a. Less-than-Significant Impact, no mitigation required

Impact POP-2: Implementation of the proposed project would not displace substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere.

Impact POP-3: Implementation of the proposed project would not displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

PUBLIC SERVICES AND RECREATION

a. Less-than-Significant Impact, no mitigation required

Impact PS-1: Implementation of the proposed project would not result in the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.

Impact PS-2: Implementation of the proposed project would not result in the need for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.

Impact PS-3: Implementation of the proposed project would not result in the need for new or physically altered park facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives.

Impact PS-4: Implementation of the proposed project would not increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur, or be accelerated.

EXHIBIT 1

Impact PS-5: Implementation of the proposed project would not include recreational facilities and or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Impact PS-6: Implementation of the proposed project would not result in the need for new or physically altered school facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives.

Impact PS-7: Implementation of the proposed project would not result in the need for new or physically altered library facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives.

TRANSPORTATION AND TRAFFIC

a. Less-than-Significant Impact, no mitigation required

Impact TRAF-3: Implementation of the proposed Plan would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

Impact TRAF-4: Implementation of the proposed Plan would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Impact TRAF-5: Implementation of the proposed Plan would not result in inadequate emergency vehicle access.

Impact TRAF-6: Implementation of the proposed Plan would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

UTILITIES AND SERVICE SYSTEMS

a. Less-than-Significant Impact, no mitigation required

Impact UTIL-1: Implementation of the proposed project would have sufficient water supplies available to serve the proposed project from existing entitlements and resources, and would not require new or expanded entitlements.

Impact UTIL-2: Implementation of the proposed project would not require or result in the construction of new water facilities or expansion of existing facilities, the construction of which would cause significant environmental effects.

EXHIBIT 1

Impact UTIL-3: Implementation of the proposed project would not exceed wastewater treatment requirements of the CVRWQCB.

Impact UTIL-4: Implementation of the proposed project would not require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which would cause significant environmental effects.

Impact UTIL-5: The City of Stockton Municipal Utilities Department, which would serve the project, has sufficient wastewater treatment capacity to serve the project as well as existing developments in its service area.

Impact UTIL-6: Implementation of the proposed project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Impact UTIL-7: Implementation of the proposed project would be served by landfills with sufficient permitted capacity to accommodate the project's solid waste disposal needs.

Impact UTIL-8: Implementation of the proposed project would comply with federal, State, and local statutes and regulations related to solid waste.

Impact UTIL-9: Implementation of the proposed project would not result in a substantial increase in natural gas and electrical service demands that would require new energy supply facilities and transmission infrastructure or capacity-enhancing alterations to existing facilities, the construction of which would cause significant environmental effects.

B. Significant Impacts that Cannot be Avoided

Findings: The City finds that, where feasible, the changes or alterations that have been required or incorporated into the proposed project will reduce the significant environmental impacts identified in the Final EIR, which are listed below, but not to a less-than-significant level. That is because specific economic, legal, social, technological, or other considerations render the mitigation measures analyzed infeasible, as supported by substantial evidence in the record of this proceeding. Unless otherwise noted, the City of Stockton hereby finds the following mitigation measures infeasible or ineffective, and therefore finds the following impacts significant and unavoidable.

AGRICULTURAL AND FORESTRY RESOURCES

a. Significant and Unavoidable Impact after mitigation

Impact AG-1: Although the proposed General Plan includes policies and actions that would reduce and partially offset the conversion of farmland, it designates

EXHIBIT 1

approximately 16,160 acres of farmlands of concern under CEQA for non-agricultural uses.

Mitigation Measure AG-1: Prior to project approval, if a development project will convert prime farmland, farmland of statewide importance, or unique farmland to a non-agricultural use, the project applicant shall demonstrate participation in the City's agricultural conversion program, which requires either dedication of an agricultural conservation easement at a 1:1 ratio or payment of an in-lieu agricultural mitigation fee.

Facts in Support of Findings for Impact AG-1: Conservation easements will not fully mitigate the impact because farmland of concern under CEQA would still be converted to a non-agricultural use. Because these farmland areas are located near existing urbanized areas, they may not be viable for agricultural operations due to conflicts with nearby urbanized areas. The only way to fully mitigate this impact would be to prohibit any development on farmland of concern. CEQA does not require that the project be changed in order to avoid an impact, and much of the farmland of concern that is designated for a non-agricultural use is already entitled for development; no additional mitigation is available, resulting in a significant and unavoidable impact.

b. Significant and Unavoidable Impact (no mitigation available)

Impact AG-2: The proposed General Plan designates 2,464 acres of lands with active Williamson Act contracts for non-agricultural uses.
Facts in Support of Findings for Impact AG-2: Because these parcels with Williamson Act contracts are located near existing urbanized areas, they may not be viable for agricultural operations due to conflicts with nearby urbanized areas. As discussed under Impact AG-1, above, no additional mitigation is available, resulting in a significant and unavoidable impact.

AIR QUALITY

a. Significant and Unavoidable Impact after mitigation

Impact AQ-1: Implementation of the proposed General Plan would result in the generation of substantial long-term criteria air pollutant emissions that would exceed the SJVAPCD regional significance thresholds and would therefore not be considered consistent with the existing AQMPs.

Mitigation Measure AQ-1: Implement Mitigation Measure AQ-3 to further reduce long-term criteria air pollutant emissions.

Facts in Support of Findings for Impact AQ-1: The various goals, policies, and actions of the proposed General Plan, in addition to applicable SJVAPCD rules and regulations and Mitigation Measure AQ-1, would contribute to reducing long-

EXHIBIT 1

term criteria air pollutant emissions to the extent feasible. However, due to the magnitude and intensity of development accommodated by the proposed General Plan, as well as current and future regional air quality influences beyond the control of the City of Stockton, Impact AQ-1 would remain significant and avoidable.

Impact AQ-2: Construction activities associated with implementation of the proposed General Plan and UMPS could exceed the SJVAPCD regional significance thresholds.

Mitigation Measure AQ-2: Prior to issuance of any construction permits for development projects subject to California Environmental Quality Act (CEQA) review (i.e., non-exempt projects), development project applicants shall prepare and submit to the City of Stockton Planning and Engineering Division a technical assessment evaluating potential project construction-related air quality impacts. The evaluation shall be prepared in conformance with San Joaquin Valley Air Pollution Control District (SJVAPCD) methodology in assessing air quality impacts. The prepared evaluation for projects that meet the SJVAPCD Small Projects Analysis Level (SPAL) screening criteria shall at minimum, identify the primary sources of construction emissions and include a discussion of the applicable SJVAPCD rules and regulations and SPAL screening criteria to support a less than significant conclusion.

For projects that do not meet the SPAL screening criteria, project-related construction emissions shall be quantified. If construction-related criteria air pollutants are determined to have the potential to exceed the SJVAPCD adopted thresholds of significance, as identified in the Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), the City of Stockton Planning and Engineering Division shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during construction activities to below these thresholds. These identified measures shall be incorporated into appropriate construction documents (e.g., construction management plans) submitted to the City and shall be verified by the City's Planning and Engineering Division. Mitigation measures to reduce construction-related emissions could include, but are not limited to:

- Using construction equipment rated by the United States Environmental Protection Agency as having Tier 3 (model year 2006 or newer) or Tier 4 (model year 2008 or newer) emission limits, applicable for engines between 50 and 750 horsepower. A list of construction equipment by type and model year shall be maintained by the construction contractor on-site, which shall be available for City review upon request.
- Ensuring construction equipment is properly serviced and maintained to the manufacturer's standards.
- Use of alternative-fueled or catalyst-equipped diesel construction equipment, if available and feasible.

EXHIBIT 1

- Clearly posted signs that require operators of trucks and construction equipment to minimize idling time (e.g., five minute maximum).
- Preparation and implementation of a fugitive dust control plan that may include the following measures:
    - Disturbed areas (including storage piles) that are not being actively utilized for construction purposes shall be effectively stabilized using water, chemical stabilizer/suppressant, or covered with a tarp or other suitable cover (e.g., revegetated).
    - On-site unpaved roads and offsite unpaved access roads shall be effectively stabilized using water or chemical stabilizer/suppressant.
    - Land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled utilizing application of water or by presoaking.
    - Material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained when materials are transported offsite.
    - Operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.) (Utilize electric-powered vacuums or devices to capture materials.)
    - Following the addition of materials to or the removal of materials from the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
    - Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
    - Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.
    - Limit traffic speeds on unpaved roads to 15 mph.
    - Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.
    - Install wheel washers for all exiting trucks or wash off all trucks and equipment leaving the project area.
    - Adhere to Regulation VIII's 20 percent opacity limitation, as applicable.
- Enter into a Voluntary Emissions Reduction Agreement (VERA) with the SJVAPCD. The VERA shall identify the amount of emissions to be reduced, in addition to the amount of funds to be paid by the project applicant to the SJVAPCD to implement emission reduction projects required for the project.

EXHIBIT 1

Facts in Support of Findings for Impact AQ-2: Implementation of the proposed project would occur over a period of 23 years or longer. Construction activities associated with development allowed under the proposed General Plan and UMPS could generate short-term emissions that exceed the SJVAPCD's significance thresholds during this time and cumulatively contribute to the nonattainment designations of the SJVAB. Implementation of Mitigation Measure AQ-2, in addition to applicable regulatory measures (e.g., SJVAPCD Rules 9510 and Regulation VIII) and the proposed Action SAF-4.1.A related to reducing construction-related emissions, would reduce criteria air pollutant emissions from construction-related activities to the extent feasible and may result in reducing construction-related regional air quality impacts of subsequent individual projects to less-than-significant levels. However, due to the programmatic nature of the proposed project, construction time frames and equipment for individual site-specific projects are not available and there is a potential for multiple developments to be constructed at any one time, resulting in significant construction-related emissions. Therefore, despite adherence to Mitigation Measure AQ-2, Impact AQ-2 would remain significant and unavoidable.

Impact AQ-3: Operation of development projects allowed under the proposed General Plan would generate emissions that would exceed the SJVAPCD regional significance thresholds for VOC, NOX, CO, PM10, and PM2.5.

Mitigation Measure AQ-3: Prior to discretionary approval by the City of Stockton for development projects subject to California Environmental Quality Act (CEQA) review (i.e., non-exempt projects), project applicants shall prepare and submit a technical assessment evaluating potential project operation phase-related air quality impacts to the City of Stockton Planning and Engineering Division for review and approval. The evaluation shall be prepared in conformance with San Joaquin Air Pollution Control District (SJVAPCD) methodology in assessing air quality impacts. If operation-related air pollutants are determined to have the potential to exceed the SJVAPCD-adopted thresholds of significance, as identified in the Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), the City of Stockton Planning and Engineering Division shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during operational activities. The identified measures shall be included as part of the conditions of approval. Possible mitigation measures to reduce long-term emissions can include, but are not limited to the following:

- For site-specific development that requires refrigerated vehicles, the construction documents shall demonstrate an adequate number of electrical service connections at loading docks for plug-in of the anticipated number of refrigerated trailers to reduce idling time and emissions.
- Applicants for manufacturing and light industrial uses shall consider energy storage and combined heat and power in appropriate applications to optimize renewable energy generation systems and avoid peak energy use.

EXHIBIT 1

- Site-specific developments with truck delivery and loading areas and truck parking spaces shall include signage as a reminder to limit idling of vehicles while parked for loading/unloading in accordance with Section 2485 of 13 CCR Chapter 10.
- Provide changing/shower facilities as specified, at minimum, or greater than in the guidelines in Section A5.106.4.3 of the CALGreen Code (Nonresidential Voluntary Measures).
- Provide bicycle parking facilities equivalent to or greater than as specified in Section A4.106.9 (Residential Voluntary Measures) of the CALGreen Code.
- Provide preferential parking spaces for low-emitting, fuel-efficient, and carpool/van vehicles equivalent to or greater than Section A5.106.5.1 of the CALGreen Code (Nonresidential Voluntary Measures).
- Provide facilities to support electric charging stations per Section A5.106.5.3 (Nonresidential Voluntary Measures) and Section A5.106.8.2 (Residential Voluntary Measures) of the CALGreen Code.
- Applicant-provided appliances shall be Energy Star-certified appliances or appliances of equivalent energy efficiency (e.g., dishwashers, refrigerators, clothes washers, and dryers). Installation of Energy Star-certified or equivalent appliances shall be verified by Building & Safety during plan check.
- Applicants for future development projects along existing and planned transit routes shall coordinate with the City Stockton and San Joaquin Regional Transit District to ensure that bus pad and shelter improvements are incorporated, as appropriate, and that these transit improvements consider and implement design features (e.g., pullout lanes for buses) to avoid or reduce impediment/queuing of vehicles.
- Applicants for future development projects shall enter into a Voluntary Emissions Reduction Agreement (VERA) with the San Joaquin Valley Air Pollution Control District (SJVAPCD). The VERA shall identify the amount of emissions to be reduced, in addition to the amount of funds to be paid by the project applicant to the SJVAPCD to implement emission reduction projects required for the project.

Facts in Support of Findings for Impact AQ-3: Application of State and SJVAPCD rules and regulations, such as Rules 9510 and 9410, and implementation of the proposed General Plan goals, policies, and actions would contribute to reducing operation-related criteria air pollutants generated from energy, area, and mobile sources to the extent feasible. Incorporation of Mitigation Measure AQ-3 would also contribute to reducing criteria air pollutants. Implementation of the aforementioned rules, goals and policies, and mitigation could contribute to reducing operation-phase regional air quality impacts of future individual projects to a less than significant level. However, Impact AQ-3 would remain significant and unavoidable due to the magnitude of the overall development associated with the proposed General Plan, combined with current and future regional air quality influences beyond the control of the City of Stockton.

EXHIBIT 1

Impact AQ-4: Development allowed under the proposed General Plan and UMPS could result in short- and long-term emissions that could cause or contribute to a violation of the AAQS.

Mitigation Measure AQ-4a: Implement Mitigation Measures AQ-2 and AQ-3 to further reduce construction and operation-related criteria air pollutant emissions.

Mitigation Measure AQ-4b: Prior to discretionary approval, applicants for development projects that are subject to the California Environmental Quality Act (CEQA) shall assess their projects to the San Joaquin Valley Air Pollution Control District's (SJVAPCD) Rule 9510 Applicability Thresholds as follows:

- 50 residential units;
- 2,000 square feet of commercial space;
- 25,000 square feet of light industrial space;
- 100,000 square feet of heavy industrial space;
- 20,000 square feet of medical office space;
- 39,000 square feet of general office space;
- 9,000 square feet of education space;
- 10,000 square feet of government space;
- 20,000 square feet of recreational space; or
- 9,000 square feet of space not identified above.

Applicants for development projects subject to CEQA that do not meet the SJVAPCD Rule 9510 Applicability Thresholds shall assess whether project-related construction and operational emissions exceed the SJVAPCD 100 pounds per day ambient air quality screening threshold. Applicants for development projects that exceed this ambient air quality screening threshold shall prepare or have prepared an ambient air quality analysis, consistent with the SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), to assess whether the subject development project would cause or contribute to a violation of any California Ambient Air Quality Standard or National Ambient Air Quality Standard. The ambient air quality analysis shall identify measures to reduce impacts as necessary. Recommended measures may include those identified in Mitigation Measures AQ-2 and AQ-3. The related recommendations of the ambient air quality analysis shall be incorporated into all construction management and design plans and which shall be submitted to the City and verified by the City's Planning and Engineering Division.

Facts in Support of Findings for Impact AQ-4: Application of State and SJVAPCD rules and regulations, implementation of the proposed General Plan policies and actions, and incorporation of Mitigation Measures AQ-4a and AQ AQ-4b would reduce construction and operation-related criteria air pollutants to the extent feasible. However, despite implementation of the proposed plans, policies, and adherence to the mitigation measures, Impact AQ-4 would remain significant

EXHIBIT 1

and unavoidable due to the magnitude of development associated with the proposed General Plan and UMPS, combined with current and future regional air quality influences beyond the control of the City of Stockton.

GREENHOUSE GAS EMMISSIONS

a. Significant and Unavoidable Impact after mitigation

Impact GHG-1: Implementation of the proposed General Plan would result in a substantial increase in GHG emissions.

Mitigation Measure GHG-1: Within 24 months of adoption of the proposed General Plan, the City of Stockton shall proceed to adoption hearings for an update to its Climate Action Plan (CAP). The CAP shall provide:

- GHG inventories of existing and 2030 GHG levels;
- Targets for 2030 from land uses under the City's jurisdiction based on the goals of SB 32; and
- Tools and strategies for reducing GHG emissions in accordance with the 2030 goals of the CAP.

The City shall consider the following GHG reduction measures in its CAP Update:

- Reevaluate the City's current green building requirements (Stockton Municipal Code Chapter 15.72, Green Building Standards) every five years to consider additional requirements for substantial new residential and non-residential development to ensure that new development achieves a performance objective consistent with the best performing (top 25 percent) of city green building measures in the state.
- Require financing and/or installing energy-saving retrofits on existing structures as potential mitigation measures for discretionary projects that have significant GHG impacts as part of the CEQA process.
- Utilize transfer of development rights and other mechanisms, such as an infill mitigation bank, to enhance the viability of development in the Greater Downtown.
- Establish a goal for 15 percent of existing development to install solar panels over carports.
- Establish a goal to achieve 10 percent of non-residential electricity and 5 percent of residential electricity entirely by solar.
- Offer incentives for contractors that use electric equipment when bidding on City contracts.
- Limit non-essential idling of large construction equipment to no more than 3 minutes.

EXHIBIT 1

In addition, to implement the CAP, the City shall develop key ordinances, programs, and policies required to promote voluntary, incentive- based measures in the CAP, establish the planning framework for the performance-based development review process, and support and implement the local mandatory GHG reduction measures. These implementation tasks include:

- Update the community GHG inventory to monitor emissions trends every five years.
- In 2030, develop a plan for post-2030 actions.
- Appoint an Implementation Coordinator to oversee the successful implementation of all selected GHG reduction strategies. The primary function of the Implementation Coordinator will be to create a streamlined approach to manage implementation of the CAP. The Implementation Coordinator will also coordinate periodic community outreach to leverage community involvement, interest, and perspectives.

Facts in Support of Findings for Impact GHG-1: Implementation of the proposed General Plan policies and actions, combined with Mitigation Measure GHG-1, would reduce GHG emissions to the extent feasible. However, due to the magnitude of growth associated with the proposed General Plan, it is anticipated that an increase in GHG emissions would remain substantial and would not contribute to net achievement of the State's long-term climate stabilization goals. While adherence to the City of Stockton's CAP would also contribute to reducing GHG emissions in the EIR Study Area and to progress in meeting the year 2020 AB 32 reduction target, additional federal, State, and local measures would be necessary to reduce GHG emissions to meet the long-term GHG reduction goals under Executive Order S-03-05. At this time, there is no plan past 2030 to achieve the long-term GHG reduction goal established under Executive Order S-03-05. As identified by the California Council on Science and Technology, the State cannot meet the 2050 goal without major advancements in technology. Since no additional statewide measures are currently available, Impact GHG-1 would remain significant and unavoidable.

NOISE

a. Significant and Unavoidable Impact (no mitigation available)

Impact NOISE-3: Increased traffic from projected development allowed by the proposed General Plan would result in a significant increase in traffic noise levels compared to existing conditions along the following roadway segments:

1. SR-99 between Farmington Road and Mariposa Road
2. SR-4 west of I-5
3. Eight Mile Road between Mokelumne Drive and Trinity Parkway
4. Eight Mile Road between West Lane and SP Railroad
5. Eight Mile Road between SR-99 and west of Bear Creek
6. March Lane between West Land and Bianchi
7. French Camp Road between McDougald and E.W.S Wood

EXHIBIT 1

8. California Street between Park and Weber
9. California Street between Weber and Crosstown Freeway
10. Airport Way between Main and Market
11. Airport Way between Ninth and Tenth
12. Airport Way between Sperry and CE Dixon St
13. Mariposa Road between Stagecoach and SR-99
14. B Street between Ralph Avenue and Arch Airport

Facts in Support of Findings for Impact NOISE-3: The following mitigation measures were considered, but as described below, were found to be infeasible.

Technological Advances for Noise-Generating Vehicles

Implementation of improved technologies for the prevention or muffling of noise from vehicles could theoretically prevent substantial increases to ambient noise levels; however, this approach would be infeasible as much of this implementation is beyond the jurisdiction of the City.

Beyond currently-accepted State and industry standards and best practices, developing and/or requiring novel technological improvements for noise-generating vehicles would not be affordable, scientifically plausible, or within the City's jurisdiction. Therefore, this potential mitigation measure is regarded as infeasible.

Universal Use of Noise-Attenuating Features

The universal use of noise attenuating features such as rubberized asphalt, soundwalls, berms, and improved building sound-insulation, could prevent transmission of excessive noise to the outdoor and indoor areas of sensitive land uses and/or could prevent projected increases in ambient noise levels. However, this approach would be infeasible. Specifically, rubberized asphalt reduces tire-pavement noise and when new, achieves a reduction of approximately 4 dB when compared to normal pavement surfaces. However, these noise reduction properties degrade over time, and the noise reduction would not be sufficient to reduce noise impacts in many areas of Stockton. The typical cost of rubberized asphalt -- more than twice that of conventional treatments – can also be expected to render this measure economically infeasible.

In many cases, aesthetic concerns, costs, physical constraints, or other issues would prevent the universal implementation of adequate noise-attenuating features. In addition to their expense, soundwalls often block views and are often regarded as unsightly, targets for graffiti, or presenting safety concerns. Moreover, the construction of soundwalls can result in reduced pedestrian and vehicle connectivity, which would contravene other goals of the proposed General Plan and have negative social, economic, and even environmental consequences.

Although improved building construction and insulation beyond that required by California Title 24 and the General Plan could further reduce indoor exposure to

EXHIBIT 1

excessive noise, substantial outdoor increases to ambient noise levels would remain. Therefore, this potential mitigation measure is regarded as infeasible.

Summary

In summary, for this traffic-generated noise impact, there is no feasible mitigation that would prevent substantial increases in ambient noise levels since all conceivable mitigations would be, in some circumstances, economically impractical, scientifically unachievable, outside the City's jurisdiction, and/or inconsistent with City planning goals and objectives, as demonstrated in the EIR. Thus, because no feasible mitigation measures are available to mitigate noise impacts to a less than significant level, traffic noise would remain a significant and unavoidable impact.

POPULATION AND HOUSING

a. Significant and Unavoidable Impact (no mitigation available)

Impact POP-1: The proposed General Plan and UMPS would induce substantial employment growth within the EIR Study Area.

Facts in Support of Findings for Impact POP-1: In order to reduce the anticipated employment growth by 2040 to an "insubstantial" level that would not exceed SJCOG's projections, the City would have to limit employment development opportunities substantially. As noted in the Draft EIR, 43,750 new jobs are projected within approved and pending development projects alone, a number that itself exceeds SJCOG's employment growth forecast. Since the City cannot rescind existing development entitlements, it would be infeasible to reduce the employment development capacity in the city to SJCOG's projections. The proposed General Plan land use map represents a land use plan that the City believes is appropriate to accommodate growth projected for 2040 and beyond. It is not feasible to mitigate employment growth to a level that is less than "substantial;" therefore, this impact is considered significant and unavoidable.

TRANSPORTATION AND TRAFFIC

a. Significant and Unavoidable Impact after mitigation

Impact TRAF-1: Implementation of the proposed General Plan, in combination with regional growth, would result in increased vehicle traffic, which would affect the operation of local roadways and freeway segments. As shown in Table 4-14.2 and discussed above, the proposed General Plan would result in significant level of service impacts to roadway and freeway segments.

Mitigation Measure TRAF-1a: The City shall implement the following to reduce the severity of potential LOS impacts on the following City roadway segments:

EXHIBIT 1

- **March Lane at UPRR.** The adopted 2035 General Plan identifies an eight-lane cross section for this roadway from North El Dorado Street to State Route 99. The proposed General Plan envisions a six-lane cross-section through 2040. With an eight-lane cross-section, the roadway would operate within the established LOS policy. Therefore, to mitigate the impact, the City shall reserve sufficient right-of-way to accommodate an eight-lane cross-section, plus associated turn pockets at intersections. Construction of an eight-lane cross-section would result in an acceptable level of service for vehicles, but could preclude the provision of facilities that would encourage higher levels of transit ridership, walking and bicycling along the corridor.

  Prior to the construction of additional roadway improvements along the March Lane corridor, the City shall conduct a focused complete streets study to analyze and evaluate peak hour and daily operations of March Lane between I-5 and State Route 99 to identify the cross-section required to accommodate existing and planned growth. The complete streets study shall consider the potential mode shift under scenarios that provide additional bicycle, pedestrian, and transit facilities along the corridor. Should the complete streets study show that corridor operations would fall within the established level of service standard for the six-lane cross-section, an implementation program of the identified bicycle, pedestrian, and transit improvements shall be required. Alternatively, the mitigation measure is to provide an eight-lane cross-section for vehicles. Implementation of this mitigation measure would reduce the potential impact to a less-than-significant level.
- **March Lane between West Lane and Bianchi Road.** The adopted 2035 General Plan identifies an eight-lane cross section for this roadway from North El Dorado Street to State Route 99. The proposed General Plan envisions a six-lane cross-section through 2040. With an eight-lane cross-section, the roadway would operate within the established LOS policy. Therefore, to mitigate the impact, the City shall reserve sufficient right-of-way to accommodate an eight-lane cross-section, plus associated turn pockets at intersections.
  Prior to the construction of additional roadway improvements along the March Lane corridor, the City shall conduct a focused complete streets study to evaluate peak hour and daily operations of March Lane between I-5 and State Route 99 to identify the cross-section required to accommodate existing and planned growth. The analysis shall consider the potential mode shift under scenarios that provide additional bicycle, pedestrian, and transit facilities along the corridor. Should corridor operations fall within the established level of service standard with a six-lane cross-section, the study shall identify bicycle, pedestrian, and transit enhancements that are necessary to serve the corridor. Otherwise, the mitigation measure is to provide an eight-lane cross-section for vehicles. Implementation of this mitigation measure would reduce the potential impact to a less-than-significant level.

EXHIBIT 1

- **Dr. Martin Luther King Jr. Boulevard between I-5 and Airport Way.** This section of Dr. Martin Luther King Jr. Boulevard is built out to its ultimate capacity and no further improvements are planned. Provision of parallel capacity in the area would provide alternative travel choices within this area of South Stockton, but is not expected to result in LOS D operations in the Cumulative with Proposed Plan condition. Therefore, this impact would remain significant and unavoidable.
- **8th Street between Pock Lane and D Street.** This roadway section currently provides one travel lane in each direction with on-street parking within a 60-foot curb-to-curb right-of-way. There is sufficient right-of-way to modify the roadway cross-section to maintain on-street parking (8 feet), provide bicycle lanes (6 feet), one travel lane in each direction (10 feet), and a center two-way left-turn lane (12-feet). With modifications within the existing right-of-way, vehicular capacity could increase, reducing the impact to a less-than-significant level. Therefore, to mitigate the impact, the City shall conduct a detailed engineering study of 8th Street between El Dorado Street and Mariposa Road to identify roadway improvements that can be implemented within the existing right-of-way to improve travel for all modes, especially considering the potential for a grade-separated crossing of the railroad tracks, which would provide an additional east-west connection in South Stockton. Implementation of this mitigation measure would reduce this impact to a less-than-significant level.
- **Arch Airport Road between SR 99 and Quantas Lane.** This section of Arch-Airport Road is built out to its ultimate capacity and no further improvements are planned. Provision of parallel capacity in the area would provide alternative travel choices within this area of South Stockton, but is not expected to result in LOS D operations in the Cumulative with Proposed Plan condition. Therefore, this impact would remain significant and unavoidable.
- **California Street between Harding Way and Park Street.** Prior to the construction of roadway improvements along the California Street corridor, the City shall conduct a focused complete streets study to evaluate peak hour and daily operations of California Street from north of Harding Way to south of Park Street. The evaluation shall consider the effect of providing exclusive bicycle facilities on peak hour and daily operations along the corridor. The study shall also evaluate parallel roadway facilities that could potentially see an increase in vehicle traffic with a lane reduction on California Street.

  Should the study indicate vehicle operations would fall below the level of service standard for the facility, even considering potential traffic shifts to other roadways (and the secondary impact of those shifts), and the potential mode shift to non-auto travel modes, the mitigation measure is to retain the existing vehicle capacity and explore other alternatives for providing bicycle facilities through the corridor. Should the analysis indicate vehicle levels of service would remain within the City's standard for the roadway facility, the mitigation measure is to construct exclusive bicycle facilities within the

EXHIBIT 1

existing cross-section. Implementation of this mitigation measure would reduce this impact to a less-than-significant level.

- **B Street between Dr. Martin Luther King Jr. Boulevard and 4th Street.** The City shall reserve sufficient right-of-way to accommodate a four-lane cross-section, plus associated turn pockets at intersections.

  Prior to the construction of additional roadway improvements along the B Street corridor, the City shall conduct a focused complete streets study to evaluate peak hour and daily operations of B Street between Dr. Martin Luther King Jr. Boulevard and Arch-Airport Road to identify the cross-section required to accommodate existing and planned growth. The analysis shall consider the potential mode shift under scenarios that provide additional bicycle, pedestrian, and transit facilities along the corridor. Should corridor operations fall within the established level of service standard with a two-lane cross-section, the study shall identify bicycle, pedestrian, and transit enhancements that are necessary to serve the corridor. Otherwise, the mitigation measure is to provide a four-lane cross-section for vehicles. Implementation of this mitigation measure would reduce the potential impact to a less-than-significant level.

Mitigation Measure TRAF-1b: The City shall implement the following to reduce the severity of potential LOS impacts on the following freeway segment:

- **State Route 99 between Farmington Road and Fremont Street.** The Cumulative with Proposed Plan transportation analysis considers the widening of State Route 99 through Stockton to its ultimate planned width. No additional improvements have been identified. Implementation of the proposed General Plan and its associated policies are expected to provide alternative travel choices to Stockton residents and workers, shifting travel patterns and modes. However, deficient operations are expected to occur on State Route 99, and this impact would remain <u>significant and unavoidable</u>.

Facts in Support of Findings for Impact TRAF-1: As indicated above, with implementation of Mitigation Measures TRAF-1a and TRAF-1b, the impact would remain significant and unavoidable due to three roadway segments (see underlining above).

Impact TRAF-2: Implementation of the proposed General Plan, in combination with regional growth, would result in increased vehicle traffic, which would affect the operation of regional roadways and freeway segments. As discussed above, the proposed General Plan would result in significant level of service impacts to roadway and freeway segments.

Mitigation Measure TRAF-2: The City of Stockton shall continue to participate in planning efforts for regional transportation facilities.

EXHIBIT 1

Facts in Support of Findings for Impact TRAF-2: With implementation of Mitigation Measure TRAF-2, the impact would remain significant and unavoidable.

IV. EVALUATION OF ALTERNATIVES

CEQA mandates that an EIR evaluate a reasonable range of alternatives to the project or the project location that generally reduce or avoid potentially significant impacts of the project. CEQA requires that every EIR evaluate a "No Project" alternative. Alternatives provide a basis of comparison to the project in terms of beneficial, significant, and unavoidable impacts. This comparative analysis is used to consider reasonable, feasible options for minimizing environmental consequences of a project.

The proposed General Plan and UMPS Draft EIR analyzed three alternatives, including the No Project alternative, the Corridors Focus Alternative, and the Infill Focus Alternative. Table 5-1, *Comparison of Impacts from Project Alternatives*, of the Draft EIR provides a side-by-side comparison of the three alternatives and their impacts as they relate to the impacts of the proposed General Plan and UMPS.

1. No Project Alternative

As required by CEQA Guidelines section 15126.6(e), the proposed General Plan evaluates a No Project Alternative. The evaluation of the No Project Alternative allows decision makers to compare the impacts of the proposed project to the impacts of the No Project Alternative. CEQA Guidelines section 15126.6(e)(2) requires the No Project Alternative analysis to discuss what would reasonably be expected to occur in the foreseeable future if the project were not approved. Under the No Project Alternative the proposed General Plan and UMPS would not be adopted, future development in Stockton would continue to be subject to existing policies, regulations, and land use designations pursuant to the existing General Plan, and future infrastructure development would continue to be subject to the current Utility Master Plans, which were adopted to support development under the existing 2035 General Plan.

It is estimated that this alternative would likely result in the same horizon-year development levels as the proposed project. The No Project Alternative would include the same level of growth within the General Plan horizon as the proposed project, but under a different land use map, which is shown on Figure 5-3 of the Draft EIR. The main differences in the land use map compared to the proposed General Plan are that residential growth would be directed to villages at the edges of the city (including on approximately 9,000 acres of land designated for open space and agriculture under the proposed General Plan), and commercial and industrial development would be interspersed along key corridors.

Ability to Meet Project Objectives

The No Project Alternative does not meet the City Council's objectives for the General Plan. By maintaining the Village designation in an extensive area outside the city limit,

EXHIBIT 1

maintaining a lower allowed residential density within the Downtown Core and Greater Downtown, and excluding the extensive policies and actions that promote infill development, the No Project Alternative would not support the objectives related to strengthening the city's core through revitalization of the Downtown and other existing neighborhoods, nor the sustainability objectives related to maintaining clear, discrete edges of the city surrounded by agricultural land. By excluding the focused policies and actions related to access to healthy food and physical activity, the No Project Alternative would not further the objective of providing opportunities for the entire Stockton community to maintain active and healthy lifestyles. Finally, by excluding the focused policies and actions related to crime prevention, the No Project Alternative would not support the objective to make all parts of Stockton safer.

Summary of Environmental Impacts

The No Project Alternative would result in several slightly greater impacts than the proposed General Plan and UMPS. These slightly greater impacts are associated with Aesthetics, Agricultural and Forestry Resources, Air Quality, Biological Resources, Cultural and Tribal Cultural Resources, Greenhouse Gas Emissions, Hydrology and Water Quality, Land Use and Planning, Noise, Transportation and Traffic, and Utilities and Service Systems. The No Project Alternative and the proposed General Plan and UMPS would have similar impacts to Geology, Soils, Seismicity, and Mineral Resources; Hazards and Hazardous Materials; Population and Housing; and Public Services and Recreation.

Findings

Specific economic, social, or other considerations make infeasible the No Project Alternative identified in the Final EIR as described below:

- The No Project Alternative would not meet the objectives of strengthening the city's core through revitalization of the Downtown and other existing neighborhoods.
- The No Project Alternative would not accomplish the sustainability objectives related to maintaining clear, discrete edges of the city surrounded by agricultural land.
- The No Project Alternative would not further the objective of providing opportunities for the entire Stockton community to maintain active and healthy lifestyles.
- The No Project Alternative would not support the objective to make all parts of Stockton safer.
- The No Project Alternative would have slightly greater impacts to Aesthetics, Agricultural and Forestry Resources, Air Quality, Biological Resources, Cultural and Tribal Cultural Resources, Greenhouse Gas Emissions, Hydrology and Water Quality, Land Use and Planning, Noise, Transportation and Traffic, and Utilities and Service Systems.

EXHIBIT 1

2. Corridors Focus Alternative

Under the Corridors Focus Alternative, the policies and actions in the proposed General Plan would be adopted, but the land use map and the associated UMPS to plan for infrastructure to serve that land use pattern would be different, focusing residential development into village areas at the edge of the city and retail development along major corridors. The land use map for the Corridors Focus Alternative is shown on Figure 5-4 of the Draft EIR. It is estimated that this alternative would likely result in the same horizon-year development levels as the proposed project.

Ability to Meet Project Objectives

The Corridors Focus Alternative does not meet the City Council's objectives for the General Plan. By maintaining the Village designation in a large area outside the city limit, the No Project Alternative would not further the sustainability objectives related to maintaining clear, discrete edges of the city surrounded by agricultural land.

Summary of Environmental Impacts

The Corridors Focus Alternative would result in several slightly greater impacts than the proposed General Plan and UMPS. These slightly greater impacts are associated with Aesthetics, Agricultural and Forestry Resources, Air Quality, Biological Resources, Cultural and Tribal Cultural Resources, Greenhouse Gas Emissions, Hydrology and Water Quality, Noise, Transportation and Traffic, and Utilities and Service Systems. The Corridors Focus Alternative and the proposed General Plan and UMPS would have similar impacts to Geology, Soils, Seismicity, and Mineral Resources; Hazards and Hazardous Materials; Land Use and Planning; Population and Housing; and Public Services and Recreation.

Findings

Specific economic, social, or other considerations make infeasible the Corridors Focus Alternative identified in the Final EIR for the reasons below:

- The Corridors Focus Alternative would not accomplish the sustainability objectives related to maintaining clear, discrete edges of the city surrounded by agricultural land.
- The Corridors Focus Alternative would have slightly greater impacts to Aesthetics, Agricultural and Forestry Resources, Air Quality, Biological Resources, Cultural and Tribal Cultural Resources, Greenhouse Gas Emissions, Hydrology and Water Quality, Noise, Transportation and Traffic, and Utilities and Service Systems.

3. Infill Focus Alternative

Under the Infill Focus Alternative, the policies and actions in the proposed General Plan would be adopted, but the land use map and the associated UMPS to plan for

EXHIBIT 1

infrastructure to serve that land use pattern would be slightly different. The most significant difference is that this alternative does not include the Economic and Education Enterprise designation in the area north of Eight Mile Road, and instead designates it primarily for Open Space and Agriculture. Within the core of the city, the Infill Focus Alternative would provide for more Professional Office uses along S Airport Way and more High Density Residential near Weston Ranch. The land use map for the Infill Focus Alternative is shown on Figure 5-5 of the Draft EIR. It is estimated that this alternative would likely result in the same horizon-year development levels as the proposed project.

Ability to Meet Project Objectives

The Infill Focus Alternative does not meet the City Council's objectives for the General Plan. By excluding the Economic and Education Enterprise designation, the Infill Focus Alternative would not further the economic development objectives related to providing job opportunities with competitive wages, attracting major employers and attracting a California State University (CSU) Stockton or similar facility.

Summary of Environmental Impacts

CEQA requires the identification of an environmentally superior alternative in an EIR. The Infill Focus Alternative is identified in the Final EIR as the Environmentally Superior Alternative. By focusing development in the core of the city and designating the area north of Eight Mile Road for Open Space and Agriculture, this alternative would be an improvement over the proposed project with respect to potential negative impacts associated with Aesthetics, Agricultural and Forestry Resources, Air Quality, Biological Resources, Cultural and Tribal Cultural Resources, Greenhouse Gas Emissions, Hydrology and Water Quality, Noise, Transportation and Traffic, and Utilities and Service Systems.

The impacts of the Infill Focus Alternative and the proposed General Plan and UMPS on Geology, Soils, Seismicity, and Mineral Resources; Hazards and Hazardous Materials; Land Use and Planning; Population and Housing; and Public Services and Recreation would be similar.

Findings

Specific economic, social, or other considerations make infeasible the Infill Focus Alternative identified in the Final EIR for the reasons below:

- The Infill Focus Alternative does not further the City Council's objective of providing job opportunities with competitive wages.
- The Infill Focus Alternative does not further the City Council's objective of attracting major employers.
- The Infill Focus Alternative does not further the City Council's objective of attracting a CSU Stockton or similar educational facility.

EXHIBIT 1

V. OTHER CEQA-REQUIRED CONSIDERATIONS

Growth Inducement

Section 15126.2(d) of the CEQA Guidelines requires that an EIR discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Typical growth inducements might be the extension of urban services or transportation infrastructure to a previously unserved or under-served area, or removal of major barriers to development. Not all growth inducement is necessarily negative. Negative impacts associated with growth inducement occur only where the projected growth would cause adverse environmental impacts.

Growth-inducing impacts fall into two general categories: direct or indirect. Direct growth-inducing impacts are generally associated with providing urban services to an undeveloped area. Providing urban services to a site, and the subsequent development, can serve to induce other landowners in the vicinity to convert their property to urban uses. Indirect, or secondary growth-inducing impacts consist of growth induced in the region by additional demands for housing, goods, and services associated with the population increase caused by, or attracted to, a new project.

Direct Impacts

The proposed project (which includes already approved or pending development both within the city limits and outside the City's jurisdiction) would directly induce population, employment, and economic growth by allowing development and associated infrastructure in areas that are currently undeveloped. Implementation of the proposed project would result in the following growth by 2040 based on the buildout methodology described in Chapter 3, Project Description, of the Draft EIR:

- 40,900 new dwelling units, including:
  - 26,300 new single-family units
  - 14,600 new multi-family units
- 132,200 new residents[2]
- 13.8 million square feet of new commercial and office space
- 35.6 million square feet of new industrial space

The primary mechanism for this growth within the city and Sphere of Influence (SOI) is the proposed General Plan land use map, which allows for some development in areas that are not currently developed. The anticipated locations of this growth are shown in Figures 3-3 and 3-5 in Chapter 3, Project Description, of the Draft EIR.

---

[2] Based on an assumption of 3.23 persons per household, as reported in: State of California, Department of Finance, 2017. *E-5 Population and Housing Estimates for Cities, Counties and the State* — January 1, 2011- 2017.

EXHIBIT 1

The proposed General Plan land use map allows some development in areas of the EIR Study Area presently used as agriculture and vacant land. However, through the Open Space and Agriculture designation in the proposed land use map, combined with policies and actions enacted under the General Plan, the proposed project would control the geographical extent of growth and encourage sustainable patterns of urban land uses. In addition, the proposed General Plan commits the City to controlled and orderly use of its natural resources through policies to conserve agricultural land and promote compact growth.

Specifically, Policy LU-5.3 and Action LU-5.3.B direct the City to define discrete and clear city edges that preserve agriculture, open space, and scenic views, including through the development of a greenbelt or community separator around the city. Goal LU-2 and its associated actions and policies support compact growth by promoting development in the Downtown. Meanwhile, Policy 6.2 and its associated actions direct the City to prioritize development and redevelopment of vacant, underutilized, and blighted infill areas. Actions LU-6.1.B, LU-6.1.E, and LU-6.1.F promote orderly growth by directing the City to monitor the rate of growth to ensure that it does not overburden the City's infrastructure and services, ensure that there is adequate infrastructure to serve new development, and evaluate and implement adjustments to the Public Facilities Fee structure to encourage development in areas where infrastructure is already present and ensure that non-infill development pays its fair share of anticipated citywide capital facilities and operational costs. In addition, Policy LU-5.2 and its associated actions protect natural resource areas, fish and wildlife habitat, scenic areas, open space areas, and agricultural lands.

As a result, while the proposed project would result in increased local growth, the Open Space and Agriculture designation in the proposed land use map, combined with policies and actions included in the proposed General Plan, would reduce the potential for negative impacts associated with direct growth inducement to a less-than-significant level.

Indirect Impacts

While the proposed General Plan does allow growth, it also includes the Open Space and Agriculture designation in the proposed land use map and policies and actions that would control the geographical extent of growth and encourage sustainable patterns of urban land uses, as described above. The proposed General Plan land use map provides a mixture of housing, shopping, public, and employment opportunities so that as the number of residents increase, they do not pressure adjacent communities to provide new commercial and employment opportunities. As stated above, the General Plan commits to only allow development where infrastructure is in place or is planned. As a result, the proposed General Plan and UMPS would result in a less-than-significant indirect growth-inducing impact.

EXHIBIT 1

Findings Regarding Growth Inducing Impacts

While the proposed General Plan would result in increased local growth, the Open Space and Agriculture designation in the proposed land use map, combined with policies and actions included in the proposed General Plan, would reduce the potential for negative impacts associated with direct growth inducement to a less-than-significant level.

While the proposed General Plan allows growth, the land use map and policies and actions included in the proposed General Plan would reduce the potential for negative impacts associated with indirect growth inducement to a less-than-significant level.

Unavoidable Significant Impacts

Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. More information on these impacts is found in Chapter 4, Environmental Evaluation, of the Draft EIR. Significant and unavoidable impacts are identified in Section III above.

Significant Irreversible Changes

Section 15126.2(c) of the CEQA Guidelines requires discussion of the extent to which a proposed project will commit nonrenewable resources to uses that future generations will probably be unable to reverse.

A project would generally result in a significant irreversible impact if:

- Primary and secondary impacts would commit future generations to similar uses.
- The project would involve a large commitment of nonrenewable resources.
- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project.

Changes in Land Use that Commit Future Generations

Development allowed by the proposed General Plan would result in the conversion of some agricultural and vacant lands to residential, commercial, and industrial uses, and the intensification of underutilized areas. In addition, intensification of land uses and development of currently undeveloped lands would contribute to traffic congestion, as described in Section 4.14, Transportation and Traffic, of the Draft EIR. Development allowed under the proposed General Plan would constitute a long-term commitment to residential, commercial, industrial, parking, public, and other urban uses.

Irreversible Damage from Environmental Accidents

Irreversible changes to the physical environment could occur from accidental release of hazardous materials associated with development activities. However, compliance with State and federal hazardous materials regulations and local emergency plans, as

EXHIBIT 1

discussed in Section 4.8, Hazards and Hazardous Materials, of the Draft EIR, would reduce this potential impact to a less-than-significant level. No other irreversible changes are expected to result from the adoption and implementation of the proposed General Plan and UMPS.

Large Commitment of Nonrenewable Resources

Implementation of the proposed General Plan and UMPS would result in the commitment of limited, renewable resources such as lumber and water. In addition, development allowed by the proposed General Plan and UMPS would irretrievably commit nonrenewable resources for the construction and maintenance of buildings, infrastructure, and roadways. These non-renewable resources include mined materials such as sand, gravel, steel, lead, copper, and other metals. Development allowed under the proposed General Plan also represents a long-term commitment to the consumption of fossil fuels, natural gas, and gasoline. Increased energy demands would apply to construction, lighting, heating, and cooling of residences, and transportation of people within, to, and from the EIR Study Area. Proposed General Plan Policy LU-5.4 and Action LU-5.4.B promote energy conservation and efficiency, which could minimize or incrementally reduce the consumption of these resources.

Cumulative Impacts

Section 15130 of the CEQA Guidelines states that cumulative impacts shall be discussed when a project's incremental effect is cumulatively considerable. It further states that this discussion shall reflect the level and severity of the impact and the likelihood of occurrence, but not in as great detail as that necessary for the proposed project alone. section 15355 of the CEQA Guidelines defines cumulative impacts to be "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Cumulative impacts represent the change caused by the incremental impact of the proposed project when added to effects of past projects, other current projects and probable future projects in the vicinity.

CEQA Guidelines section 15130 (b)(1) states that the information utilized in an analysis of cumulative impacts should come from one of two sources, either:

1. A list of past, present, and probable future projects producing related cumulative impacts, including, if necessary, those projects outside the control of the agency; or
2. A summary of projections contained in an adopted general plan or related planning document designed to evaluate regional or area-wide conditions.

The cumulative impacts analyses in the EIR use method No. 2. The proposed project consists of the Envision Stockton 2040 General Plan Update and UMPS. Consistent with Section 15130(b)(1)(B) of the CEQA Guidelines, the EIR analyzes the environmental impacts of projected development that will occur under the proposed General Plan through its horizon year of 2040. As a result, this EIR addresses the cumulative impacts of development within the City of Stockton and the region surrounding it, as appropriate.

EXHIBIT 1

In most cases, the potential for cumulative impacts is contiguous with the SOI. Potential cumulative impacts that have the potential for impacts beyond the SOI (e.g., traffic, air quality, noise) have been addressed through cumulative growth in the SOI and region. Regional growth outside Stockton has accounted for traffic, air quality, and noise impacts that are identified through use of the regional traffic model, which uses regional growth projections to calculate future traffic volumes.

VI. STATEMENT OF OVERRIDING CONSIDERATIONS

In determining whether to adopt the General Plan and UMPS, CEQA requires a public agency to balance the benefits of a project against its unavoidable environmental risks. (CEQA Guidelines, section 15093). In accordance with Public Resources Code section 21081(b) and CEQA Guidelines section 15093, the City Council has, in determining whether or not to adopt the General Plan and UMPS, balanced the economic, social, technological, academic, and other benefits of the project against its unavoidable environmental effects, and has found that the benefits of the project outweigh the significant adverse environmental effects that are not mitigated to less-than-significant levels, for the reasons set forth below. This statement of overriding considerations is based on the City Council's review of the Final EIR and other information in the administrative record.

On the basis of the above findings and the substantial evidence in the record of this proceeding, the City specifically finds, and therefore makes this Statement of Overriding Considerations, that as a part of the process of obtaining project approvals, all significant effects on the environment with implementation of the proposed project have been eliminated or substantially lessened where feasible. Furthermore, the City has determined that any remaining significant effects on the environment found to be unavoidable are acceptable due to the following overriding considerations:

1. The proposed General Plan and UMPS represent a vision that accommodates a balance between the City's economic development needs and the quality of life that the community seeks to achieve.

2. The proposed General Plan and UMPS represent a balance between the many interests of community members and agencies who have participated in the General Plan process.

3. The proposed General Plan and UMPS accommodate development that has already been entitled through permit approvals and development agreements, and which contribute substantially to the significant impact findings identified in the Final EIR.

4. The proposed General Plan contains land uses, policies, and actions that will promote a sustainable, infill-focused development pattern while maintaining the opportunity for a major economic development catalyst project to come to Stockton.

EXHIBIT 1

5. The General Plan contains land uses, policies, and actions that will provide opportunities and support both residential and employment growth within its existing neighborhoods, while still maintaining the opportunity for large job-generators and/or educational institutions that require large tracks of undeveloped lands to locate in Stockton.

6. The proposed General Plan contains land uses, policies, and actions that will support the revitalization of the Downtown and other existing neighborhoods in Stockton. In the Downtown, revitalization is supported by increasing the allowed residential density in the Downtown Core and Greater Downtown, along with actions that would increase flexibility and provide incentives for Downtown development and that would promote transit-oriented development (TOD) around the Downtown rail stations. Outside the Downtown, revitalization is supported by prioritizing maintenance activities in historically underserved areas and providing incentives for property maintenance, rehabilitation, and redevelopment.

7. The proposed General Plan contains land use and economic development policies and actions that support existing businesses while helping to attract new businesses, particularly uses that are identified in the City's Economic Development Strategic Plan.

8. The proposed General Plan incorporates a combination of non-vehicular and vehicular transportation improvements that meet the transportation challenges of the future so that people can travel safely and conveniently on foot or by car, air, bicycle, and transit. The proposed General Plan also includes or maintains policies that ensure compatibility between the City's land use plans and the surrounding airports.

9. The proposed General Plan includes actions that direct the City to amend its Transportation Impact Analysis Guidelines to consider non-vehicular travel metrics and to establish CEQA thresholds based on vehicle miles traveled (VMT) rather than level of service (LOS), consistent with State law.

10. The proposed General Plan includes land uses, policies, and actions that facilitate and incentivize infill development and establish criteria for balanced growth, helping to fulfill the City's obligations under its 2008 Settlement Agreement to facilitate the development of 4,400 units within the Greater Downtown and an additional 14,000 units within the city limit as it existed in 2008, to provide incentives for infill development, and to establish criteria for balanced growth.

11. The proposed General Plan increases the allowed residential density in the Downtown Core and Greater Downtown, supporting revitalization of the Downtown and helping to fulfill the City's obligations under its 2008 Settlement Agreement to facilitate the development of 4,400 units within the Greater Downtown.

EXHIBIT 1

12. The proposed General Plan will strengthen the City's goals to provide housing for all needs in the community by supporting and expanding on the policies and goals in the Housing Element, increasing the allowed residential density in the Downtown Core and Greater Downtown, and providing land use designations that allow a variety of housing styles, types, and densities throughout the city.

EXHIBIT 1

EXHIBIT 2

2040 General Plan Update, Utility Master Plan Supplements (UMPS), Mitigation Monitoring and Reporting Program, www.stocktongov/envisionstockton

Resolution No. 2018-12-04-1503-02

STOCKTON CITY COUNCIL

RESOLUTION ADOPTING THE ENVISION STOCKTON 2040 GENERAL PLAN UPDATE (GENERAL PLAN) AND ADOPTING THE UTILITY MASTER PLAN SUPPLEMENTS (UMPS)

On January 26, 2016, the City Council of the City of Stockton initiated a comprehensive update to the Stockton General Plan, known as the Envision Stockton 2040 General Plan Update (General Plan), and supplements to the Stockton Utility Master Plans, known as the Utility Master Plan Supplements (UMPS); and

On October 25, 2018, and November 15, 2018, the Planning Commission of the City of Stockton conducted a public hearing to consider a recommendation on the General Plan and UMPS, and the Commission recommended by a vote of 6-1, Davie dissenting, that the City Council certify the Environmental Impact Report (EIR) for the General Plan and UMPS and adopt the General Plan and UMPS; and

The City Council has considered the Planning Commission recommendations and heard testimony from staff, consultants, landowners, and other interested parties, and the Council has considered the factual information contained in the written record and the testimony given at the public meetings and hearings, and based on this factual information, the City Council finds that with respect to the comprehensive update to the General Plan and the supplements to the Stockton Utility Master Plans:

A. The proposed General Plan and UMPS are internally consistent with the goals, objectives, and policies of the proposed General Plan;

B. The proposed General Plan and UMPS establish appropriate goals, policies, and actions to address such issues as land use, transportation, safety, and community health;

C. The proposed General Plan and UMPS would maintain the appropriate balance of land uses within the city;

D. The proposed General Plan and UMPS would not be detrimental to the public health, safety, or welfare of the community;

E. The proposed General Plan has been updated in conformity with the provisions of the State law requirements of California Government Code section 65300 *et seq.*;

F. The City Council has reviewed and considered the Final EIR for the proposed General Plan and UMPS and has recommended certification of the Final EIR as being adequate under the California Environmental Quality Act (CEQA);

G. The mitigation measures, findings, and statement of overriding considerations as set forth in detail in the Findings and Statement of Overriding Considerations for the General Plan and UMPS are hereby adopted in relation to the proposed General Plan and UMPS; now, therefore,

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS

1. The City Council of the City of Stockton does hereby adopt the Envision Stockton 2040 General Plan, and the Utility Master Plan Supplements (UMPS), attached as Exhibit 1, including final revisions as described in the staff report, attached to this resolution and incorporated herein.

2. The City Manager is authorized to take such other actions as are appropriate and necessary to carry out the purpose and intent of this Resolution.

PASSED, APPROVED, and ADOPTED December 4, 2018.

Elbert H. Holt for Mayor Tubbs

MICHAEL D. TUBBS, Mayor
of the City of Stockton

ATTEST:

for

CHRISTIAN CLEGG, Deputy City Manager/
Interim City Clerk of the City of Stockton

EXHIBIT 1

2040 General Plan Update, Utility Master Plan Supplements (UMPS), www.stocktongov/envisionstockton

Resolution No. 2018-12-04-1503-03

STOCKTON CITY COUNCIL

RESOLUTION ADOPTING WRITTEN FINDINGS OF CONSISTENCY WITH THE DELTA PLAN WITH SUPPORTING DOCUMENTATION

The 2009 Delta Reform Act (the "Act") created the Delta Stewardship Council (the "DSC") and established new state policies aimed at addressing preservation of the California Delta ecosystem while simultaneously ensuring that the important role the Delta plays as a critical link in the state's water infrastructure be continued in a sustainable manner; and

The Act established two "coequal goals": Provide a more reliable water supply for California; and protect, restore and enhance the Delta ecosystem. The coequal goals must be met in a manner that protects and enhances the unique cultural, recreational, natural resource and agricultural values of the Delta as an evolving place; and

The Act mandated that the DSC establish a legally enforceable plan for the management of Delta water and environmental resources (the "Delta Plan") and to ensure compliance with the Delta Plan through oversight and coordination with state and local agencies.

In May of 2013, the DSC adopted the Delta Plan, and all activities that thereafter occur in whole or in part within the legal Delta, and that are deemed Covered Actions under the Delta Plan and the Act, must be undertaken in a manner consistent with the applicable regulatory policies adopted therein; and

Notwithstanding anything to the contrary in this Resolution or the administrative record of this action, the City reserves the right to contest whether its adoption of the Envision Stockton 2040 General Plan Update is a Covered Action pursuant to the exemption provided in Water Code section 85057.5(b)(4) based upon the consistency present between the Envision Stockton 2040 General Plan Update and the Sustainable Communities Strategy and Regional Transportation Plan adopted by the San Joaquin Council of Governments in June of 2018, but in the spirit of comity and transparency the City has adopted this Resolution to provide full disclosure of the pertinent facts and to ensure compliance with applicable law; and

Pursuant to Water Code section 85057.5 the adoption of the Envision Stockton 2040 General Plan Update may be considered a Covered Action, and pursuant to Water Code section 85225, prior to implementing the Covered Action the city must submit to the DSC a written certification of consistency, with detailed findings as to whether this action is consistent with the Delta Plan. This resolution is intended to provide the city's written certification of consistency with the Delta Plan and to provide the detailed findings and supporting documentation for those findings; and

Before the City Council has adopted this certification of consistency it has considered the draft Envision Stockton 2040 General Plan Update and Utility Master Plan Supplements; the Draft and Final Environmental Impact Report; the staff report to City Council; the

October 25 and November 15, 2018 Planning Commission staff reports; the Signed Planning Commission Resolution 2018-11-15-0501; the Policy and Action Changes Memo of November 16, 2018; the September 24, 2018 Ag Belt Memo; the Revised UMPS dated October 2018; the CAPAC General Plan- Settlement Consistency Table; the August 10, 2018 letter form the DSC (attached hereto as **Exhibit 1**) and all of the associated records, correspondence, testimony and information that constitutes the administrative record of the this proceeding as that term is defined in the California Environmental Quality Act and its associated regulations and case law and the City Council hereby incorporates by reference said documents and information as if set forth fully herein; now, therefore,

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS:

1. The Above recitals are true and correct and are incorporated herein by this reference.

2. For the reasons stated above, based on the findings stated herein, and as otherwise stated and shown in the administrative record of this action, the City Council of the City of Stockton does hereby certify that the Envision Stockton 2040 General Plan Update and Utility Master Plan Supplements are consistent with the Delta Plan.

3. The City Council has made detailed findings to support this certification stated above, pursuant to 23 CCR 5002; Delta Plan Policy G P1.

4. The policies set out in the Delta Plan potentially applicable to this action are 23 CCR 5010 (Locate New Urban Development Wisely - DP P1), 23 CCR 5013 (Require Flood Protection for Residential Development in Rural Areas RR P2), 23 CCR 5014 (Protect Floodways RR P3) and 23 CCR 5015 (Floodplain Protection RR P4).

5. Policy DP P1 requires that new development within the legal Delta be limited to specified areas; including "[a]reas that city or county general plans as of the date of the Delta Plan's adoption, designate for residential, commercial, and industrial development in cities or their spheres of influence…". The areas within the legal Delta designated for such development in the City of Stockton general plan effective on the date of the Delta Plan's adoption are depicted in **Exhibit 2**. Although the terms on that map do not always explicitly say the permitted development is "residential, commercial and industrial" in nature the City's chosen terms have the same effect, as per the stipulated judgement in the Delta Stewardship Council Cases, Judicial Council Coordination Proceeding No. 4758, attached hereto as **Exhibit 3**. As can be seen in the current map depicting the areas of "residential, commercial and industrial" growth to be allowed under the Envision Stockton 2040 General Plan Update and Utility Master Plan Supplements, attached hereto as **Exhibit 4**, such development will be limited to the area previously so designated in the City of Stockton general plan effective on the date of the Delta Plan's adoption.

6. Policy RR P2 requires that new residential development of five or more parcels shall be protected through floodproofing to a level of 12 inches above the 100-year base flood elevation plus sufficient additional elevation against a 55-inch rise in sea level at the Golden Gate, unless the development is located within certain areas including

"[a]reas that city or county general plans, as of the date of the Delta Plan's adoption, designate for development in cities or their spheres of influence...". As explained in paragraph 4, above, the area within the legal Delta designated for residential development in the Envision Stockton 2040 General Plan Update and Utility Master Plan Supplements was previously so designated in the City of Stockton general plan on the date of the Delta Plan's adoption. Further, the Envision Stockton 2040 General Plan Update and Utility Master Plan Supplements impose the flood control requirements of SB 5, including 200-year flood protection, on all new development in the legal Delta.

7. Policy RR P3 prohibits encroachment in a floodway. In the Envision Stockton 2040 General Plan Update and Utility Master Plan Supplements, the City of Stockton has undertaken appropriate analysis of potential stormwater and flood related impacts and has imposed all appropriate and feasible measures in mitigation of those potential impacts; including specifically the imposition of all current standards associated with the design and operation of the City's MS4 and compliance with the City's current and future stormwater permits issued by the State of California, including measures intended to provide 200-year flood protection as required by SB5 and to reduce and/or retain stormwater runoff from future development.

8. Policy RR P4 prohibits encroachments to be constructed in the Lower San Joaquin River Floodplain Bypass area. As depicted in Attachment D, the Envision Stockton 2040 General Plan Update and Utility Master Plan Supplements do not contemplate development and/or encroachments within the Lower San Joaquin River Floodplain Bypass area and further the Envision Stockton 2040 General Plan Update and Utility Master Plan Supplements impose on all new development within the legal Delta the flood control requirements imposed by SB 5.

9. The City reserves the right to contest whether its adoption of the Envision Stockton 2040 General Plan Update and Utility Master Plan Supplements is a Covered Action pursuant to the exemption provided in Water Code section 85057.5(b)(4) based upon the consistency present between the Envision Stockton General Plan Update and the Sustainable Communities Strategy and Regional Transportation Plan adopted by the San Joaquin County Council of Governments in June of 2018.

10. The City Manager is authorized and directed to make such filings as are required pursuant to Water Code section 85225 and all associated policies and regulations, and to take such other actions as are appropriate and necessary to carry out the purpose and intent of this Resolution.

PASSED, APPROVED, and ADOPTED December 4, 2018

for Mayor Tubbs

MICHAEL D. TUBBS, Mayor
of the City of Stockton

ATTEST:

CHRISTIAN CLEGG, Deputy City Manager and
Interim City Clerk of the City of Stockton

Exhibit 1

DELTA STEWARDSHIP COUNCIL
A California State Agency

980 NINTH STREET, SUITE 1500
SACRAMENTO, CALIFORNIA 95814
HTTP://DELTACOUNCIL.CA.GOV
(916) 445-5511

Chair
Randy Fiorini

Members
Frank C. Damrell, Jr.
Michael Gatto
Maria Mehranian
Susan Tatayon
Skip Thomson
Ken Weinberg

Executive Officer
Jessica R. Pearson

August 10, 2018

David Stagnaro
Planning Manager
City of Stockton
425 North El Dorado Street
Stockton, CA 95202
David.Stagnaro@stocktonca.gov

RE: Comments on Envision Stockton 2040 General Plan Update and Draft Environmental Impact Report for the General Plan Update and Utility Master Plan Supplements

Dear Mr. Stagnaro:

Thank you for the opportunity to review and provide comments on the Draft Envision Stockton 2040 General Plan Update and Draft Environmental Impact Report (Draft EIR) for the General Plan Update and Utility Master Plan Supplements. Delta Stewardship Council (Council) staff also appreciated the opportunity to attend a workshop on the General Plan Update on July 30, 2018 and to discuss certain aspects of the General Plan Update and Draft EIR with you via telephone on August 6, 2018.

The Council is an independent State of California agency established by the Sacramento-San Joaquin Delta Reform Act of 2009 (SBX7 1; Delta Reform Act). The Council is charged with furthering California's coequal goals for the Delta through the adoption and implementation of the Delta Plan, regulatory portions of which became effective on September 1, 2013.

As stated in the Delta Reform Act, the State has "'coequal goals' (which) means two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place" (Water Code section 85054).

Through the Delta Reform Act, the Council was directed to review and provide timely advice to local and regional planning agencies regarding the consistency of local and regional planning documents with the Delta Plan. The Council's input includes, but is not limited to, reviewing the consistency of local and regional planning documents with the ecosystem restoration needs of the Delta and reviewing whether the lands set aside for natural resource protection are sufficient to meet the Delta's ecosystem needs. (Water Code section 85212).

"Coequal goals" means the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place."

CA Water Code §85054

Covered Action Status

Through the Delta Reform Act, the Council was granted specific regulatory and appellate authority over certain actions of State or local public agencies that take place in whole or in part in the Delta. To do this, the Delta Plan contains a set of regulatory policies with which State and local agencies are required to comply. The Delta Reform Act specifically established a certification process for compliance with the Delta Plan. This means that State and local agencies that propose to carry out, approve, or fund a qualifying action in whole or in part in the Delta, called a "covered action," must certify that this covered action is consistent with the Delta Plan and must file a certificate of consistency with the Council that includes detailed findings.

As noted in the Draft General Plan, most of the western portion of Stockton's Planning Area is located within the Legal Delta, and thus subject to State oversight through the Delta Plan. The City of Stockton (City) has identified the need for the General Plan to be consistent with the Delta Plan (Draft General Plan, p. 3-17). The City has also identified that the Delta Plan includes a requirement for consistency findings for covered actions, which include the proposed General Plan (Draft EIR, pp. 4.2-3, 4.4-6, 4.10-4). The City also acknowledges the role of the Delta Plan's policies to address flood protection for residential development and limit encroachment in floodplains (Draft EIR, p. 4.9-7).

It should be noted that the Delta Reform Act establishes specific criteria and categories for exempting actions from the Council's regulatory authority. One of these exemptions is for actions within the Secondary Zone of the Delta that a metropolitan planning organization determines are consistent with its sustainable communities strategy (SCS). Such proposed actions are not covered actions regulated by the Council (Water Code section 85057.5(b)(4)).

The Draft EIR analyzes consistency with the San Joaquin Council of Governments' (SJCOG) 2014 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (Draft EIR, p. 4.10-18). An updated 2018 RTP/SCS was adopted by SJCOG on June 28, 2018. With respect to land use, the 2018 RTP/SCS is consistent with the Delta Plan. The City may request an evaluation of the updated General Plan's consistency with SJCOG's 2018 RTP/SCS. If SJCOG determines that the updated General Plan is consistent, the proposed project would be exempt from the Council's covered action process.

Additional information on covered actions and the certification process can be found on the Council website, http://deltacouncil.ca.gov/covered-actions.

Comments on the Draft General Plan

Based on our review, Council staff has not identified any specific inconsistency between the Draft General Plan and the Delta Plan pursuant to Water Code section 85212. In fact, several General Plan policies align with the Delta Reform Act and the Delta Plan, including the following:

- **General Plan Land Use Designations.** Council staff is pleased to see that the General Plan Update will re-designate areas depicted as "Village" in the southern portion of the Planning Area to "Open Space/Agriculture". The Council supports this proposed change, which contributes to consistency between the General Plan and the Delta Plan.

  Other land use designation changes in the Planning Area within the secondary zone of the Legal Delta appear to align with **Delta Plan Policy DP P1, Locate New Urban Development Wisely** (23 Cal. Code of Regs. section 5010). This includes redesignation of areas north of the City Limits from "Village" to "Economic and Education Enterprise," as the subject area was previously designated for development in the City's General Plan as of the date of the Delta Plan's adoption (May 16, 2013).

- **Climate Change**. The Council supports General Plan Policy CH-5.1A which outlines the City's intention to conduct a "comprehensive climate change vulnerability assessment to inform the development of adaptation and resilience policies and strategies". In a closely related effort, over the next couple of years, the Council will be undertaking a *Climate Change Vulnerability Assessment and Adaptation Strategy for the Sacramento – San Joaquin Delta* that seeks to incorporate stakeholder input, best available science, and identifies specific high-priority options for adapting to the changing climate. Council staff look forward to working with the City as a collaborative stakeholder in this process.

Council staff requests the City incorporate the following technical correction to the Draft General Plan regarding the Delta Plan:

- Land Use Element, p. 3-17, second paragraph. Please change the reference to the "Delta Reform Plan" to the "Delta Plan."

Comments on the Draft EIR

Council staff appreciates the City's consideration and incorporation of comments we offered on the Notice of Preparation (NOP) for the 2040 General Plan Update and Utility Master Plan Supplements EIR in a letter dated June 22, 2017.

Council staff notes that the City evaluates the potential for conflict with the Delta Plan within the Draft EIR in the discussion of Impact LU-2, on p. 4.10-23. The analysis focuses on how

General Plan goals SAF-3 (Sustain Clean and Adequate Water Supplies) and LU-5 (Protect, Maintain, and Restore Natural and Cultural Resources) and associated policies support the coequal goals. The analysis also identifies that, as discussed above, the proposed General Plan does not allow new residential, commercial, or industrial development in the Delta that was not already allowed in the existing 2007 General Plan, noting consistency with Delta Plan Policy **DP P1**. The City concludes that implementation of the proposed General Plan policies and actions would support, rather than conflict with the Delta Plan. This information will be useful for the City to present as part of the record accompanying a certification of consistency with the Delta Plan, should it be determined that the General Plan Update is a covered action.

Closing Comments

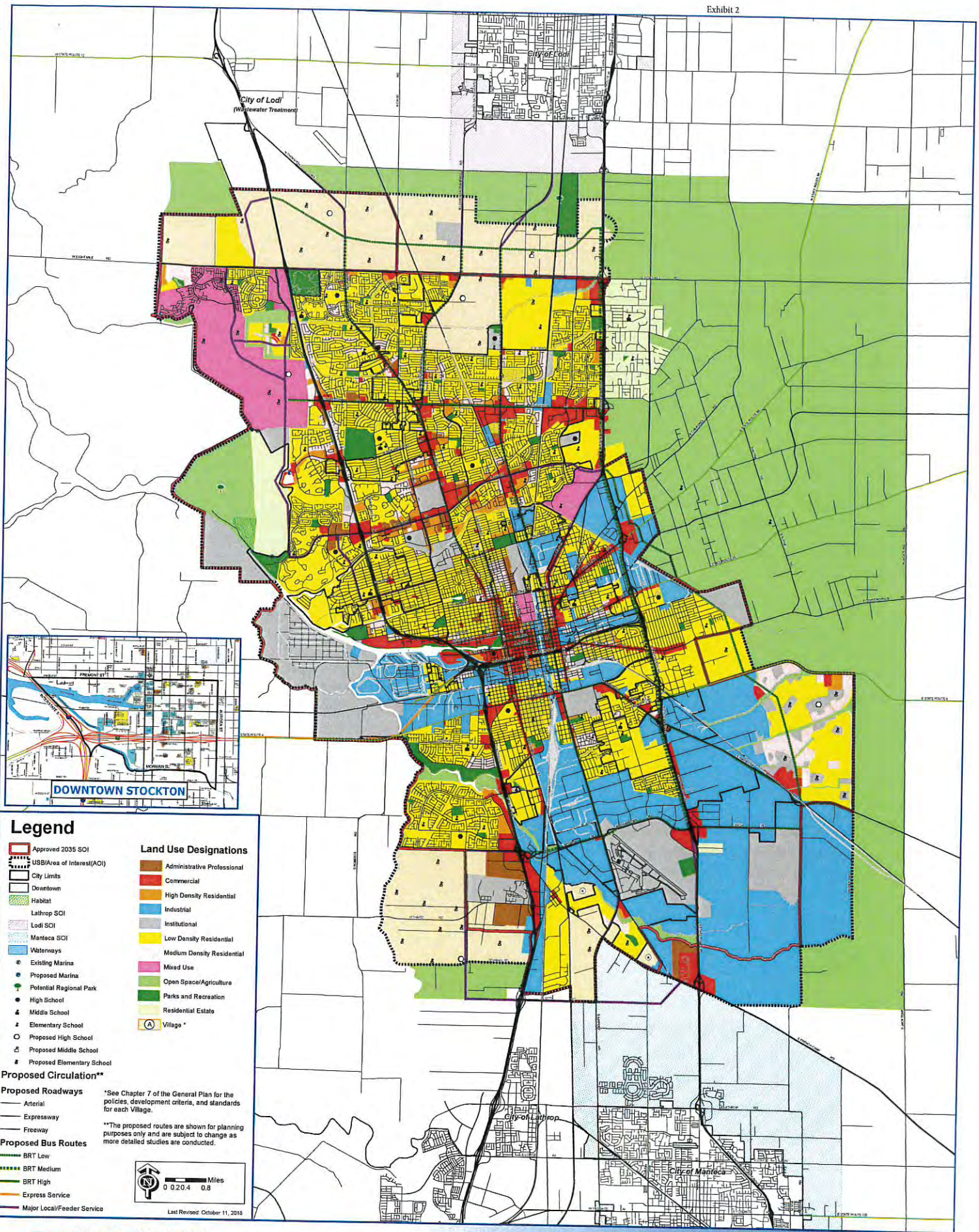
We encourage the City to continue early consultation with Council staff and to work collaboratively with SJCOG, as appropriate, to discuss the consistency certification process for the General Plan Update. Continued consultation is an important step to ensure consistency between the 2040 General Plan and the Delta Plan, so that the two plans are complementary and serve to protect the Delta. Please contact Kate Anderson of my staff at (916) 445-5028 or kate.anderson@deltacouncil.ca.gov with any questions, comments, or concerns.

Sincerely,

Jeff Henderson, AICP
Deputy Executive Officer
Delta Stewardship Council

EXHIBIT 1

Exhibit 2



John Luebberke, City Attorney – SBN: 164893
CITY OF STOCKTON
425 N. El Dorado Street
Stockton, California 95202-1951
Telephone: (209) 937-8333

Attorneys for Petitioner City of Stockton

Jeanne M. Zolezzi – SBN: 121282
Steven A. Herum – SBN: 90462
HERUM\CRABTREE\SUNTAG
A California Professional Corporation
5757 Pacific Avenue Suite 222
Stockton, California 95207
Telephone: (209) 472-7700

Attorneys for Petitioner City of Stockton

Exempt from Filing Fees Pursuant to Government Code Section 6103

THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF SACRAMENTO

Coordination Proceeding Special Title (Rule 3.550), DELTA STEWARDSHIP COUNCIL CASES	JUDICIAL COUNCIL COORDINATION PROCEEDING NO. 4758 **STIPULATED JUDGMENT** Date Action Filed: June 13, 2013 Judge: Honorable Michael Kenny Dept.: 31

Pursuant to section 664.6 of the Code of Civil Procedure, the Delta Stewardship Council (Council) and City of Stockton (City) hereby stipulate to the entry of judgment in this matter. The Council and the City enter into this stipulation in light of the following:

RECITALS

A. On May 16, 2013, the Council adopted the Delta Plan, pursuant to the Sacramento-San Joaquin Delta Reform Act of 2009 (Act) (Wat. Code, §§ 85000 et seq.).

B. Subsequently, numerous parties filed a total of seven lawsuits challenging the Council's adoption of the Delta Plan and its implementing regulations. One of those lawsuits was filed by the City. Specifically, on June 14, 2013, the City filed a Petition for Writ of

Mandate challenging the validity of the Delta Plan, the Delta Plan's regulations, and the Delta Plan's Environmental Impact Report.

C. The City and the Council have determined that the City's challenges can be fully resolved by documenting the Council's interpretations of one of its regulations, and its interpretation of a statutory provision, as explained in recitals D through H, below. The City and the Council are therefore entering this stipulation in order to document those interpretations.

D. Delta Plan Policy 1 ("DP P1," codified as 23 California Code of Regulations section 5010), generally limits new "residential, commercial and industrial development" to specified geographical areas that a general plan, in existence as of May 16, 2013, designated "for residential, commercial and industrial development."

E. The City is concerned that DP P1 uses the terms "residential, commercial or industrial development" but that the City's applicable general plan uses different terms for those same types of development. The City wants the Council to make it clear that the Council interprets DP P1's terms as applying to the City's functionally equivalent terms. The City is also concerned that DP P1 could apply to, and potentially prohibit, certain public facilities such as a public waste water treatment facility.

F. The Council always assumed that DP P1's use of the terms "residential, commercial or industrial development" applied whether a plan used those precise terms, or functionally equivalent terms. The Council also always assumed that DP P1 does not apply to public facilities such as a public waste water treatment facility.

G. The City is concerned that the Council might interpret the term "covered action" in Water Code section 85057.5 as including the City's filing a water rights application with the State Water Resources Control Board, and/or that Board's processing or approving such an application.

H. The Council always assumed that the covered action exclusion for "a regulatory action of a state agency" in Water Code section 85057.5, subdivision (b) (1) excludes the actions described in the preceding paragraph (G).)

I. The Council's interpretations fully resolve the City's concerns that the Council's adoption of the Delta Plan and its related actions were potentially inconsistent with the laws outlined in the City's petition and briefs.

THEREFORE IT IS HEREBY ORDERED, ADJUDGED AND DECREED

1. Interpretation of "residential, commercial and industrial" in DP P1. The designations "residential," "commercial," and "industrial" used in DP P1 apply to the City's other functionally equivalent general plan urban-type designations. For example, they apply to the designations, in the City general plan that was in effect on May 16, 2013, of "Village," "Low Density Residential," "Medium Density Residential," "High Density Residential," "Administrative-Professional," and "Mixed Use." The above does not alter DP P1's limitation of new "residential, commercial, and industrial development" to areas designated for development as of May 16, 2013, as shown in Figure 7-10 of Appendix 7 to the Delta Plan's implementing regulations (23 CCR Appendix 7). (The identical Figure 7-10 can be found in Appendix 7 to the Delta Plan adopted on May 16, 2013.) Functionally equivalent designations are also limited to those areas. For example, a proposed action (see 23 CCR § 5001, subd. (y) for the definition of a "proposed action") in an area designated as "Village" in a City general plan in effect on May 16, 2013, but that as of that date was located outside of the City or its sphere of influence, would be inconsistent with DP P1.

2. Application of DP P1 to Public Works. Public works are not "residential," "commercial" or "industrial." As a result, DP P1 does not apply to any public works projects such as a public waste water treatment facility. These would include the construction, operation, maintenance, repair and replacement of public works improvements pursuant to and consistent with one or more of the plans listed at the end of this paragraph. "Construction" means designing, building or installing pumps, roadways, conveyance facilities and infrastructure, structures and other ancillary public improvements. In contrast, DP P1 applies to any proposed action that involves any new residential, commercial or industrial development (including functionally equivalent development), even if the development is needed to help fund or otherwise support a public works project and/or a listed plan.

- Water Master Plan (Prepared for City of Stockton by West Yost Associates, Consulting Engineers; dated July 2008)
- 2035 Wastewater Master Plan (Prepared for City of Stockton by West Yost Associates, Consulting Engineers; dated October 2008)
- Regional Wastewater Control Facility Capital Improvement and Energy Management Plan (dated August, 2011)
- Portions of the "City of Stockton FY 2016-2021 Capital Improvement Plan Proposed" (dated May 16, 2016 [date appears on page 1 of that document's embedded City Manager's Message]) that address Sanitation (P-74 through P-81), Stormwater (P-82 through P-87) and Water (P-158 through P-168)

3. The term "covered action" in Water Code section 85057.5 does not apply to the City's filing a water rights application with the State Water Resources Control Board (SWRCB), and/or the SWRCB's processing or approval of such an application. Those actions are excluded by Water Code section 85057.5, subdivision (b) (1), which excludes "a regulatory action of a state agency." Moreover, SWRCB applications often include details that may point to particular projects. Those details concerning projects do not convert a SWRCB application, or the SWRCB's processing or approval of the application, into a covered action. In contrast, other public agency actions concerning those projects are potentially covered actions. The fact that a project may potentially or actually receive water subject to the SWRCB water right does not exempt non-SWRCB government actions concerning the project from being covered actions. For example, even if a project is described in a SWRCB application and/or approval, a proposed local government grading permit, zoning change or other action for that project is potentially a covered action.

4. The parties incorporate into this agreement the interpretation presented by the Trial Court at page 31 line 1 through Page 32 Line 6 of the May 18, 2016 Ruling On Submitted Matter about the Delta Reform Act. A copy of those pages is attached hereto as Exhibit A.

5. City's Right. In the event that the Council, the Legislature or a court (in a final decision in which appeals have been exhausted or the time to appeal has expired) alters, rescinds

or invalidates one or more provision in paragraphs (1-3), above, by entering this agreement the City does not waive its right to challenge, in a new lawsuit, any such altered measure, or the application of such rescinded or invalidated measure to the City.

6. City's and Council's Right. The City and/or the Council may introduce this Stipulated Judgment in any judicial or administrative proceeding in which the Council, or any other entity or individual, asserts that the City has not complied with any of the Council's regulations.

7. Fees and Costs. The City and the Council shall assume and pay for their respective attorneys' fees and legal costs and expenses related to this stipulation, and the City's lawsuit against the Council.

8. Other Plaintiffs/Petitioners. Except for the City, this judgment does not affect any plaintiffs or petitioners in this Coordinated Proceeding.

///

///

///

///

///

///

///

///

///

///

///

///

///

///

///

///

Dated: Oct 27, 2016

DELTA STEWARDSHIP COUNCIL

By _____
Randy Fiorini, Chair

APPROVED AS TO FORM:

_____
Bethany Pane, Acting Chief Counsel

Dated: Dec. 13, 2016

CITY OF STOCKTON

By _____
Kurt Wilson, City Manager

APPROVED AS TO FORM:

_____
John Luebberke, City Attorney

GOOD CAUSE APPEARING THEREFORE IT IS SO ORDERED:

Dated: _____, 2016

_____
Judge of the Superior Court

EXHIBIT A

Petitioner's stated concern is that WR P1 permits a Southern-California water supplier to achieve priority in obtaining water. However, the plain language of WR P1 does not affect water right priorities. WR P1 does not provide that if a consistency certification is undergoing the appeals process, another water supplier may come in and usurp the challenged party's water rights or priority. Clearly, Respondent has no authority over water-priority determinations, and any plan or project subject to WR P1 would only be valid to the extent it sought water that a supplier was entitled to via its water rights. Accordingly, the Court finds WR P1 does not alter or affect water rights or priorities.

With regard to whether WR P1 affects water right applications, Respondent argues water rights applications are not covered actions pursuant to section 85057.5, subdivision (b)(1):

> "(b) 'Covered action' does not include any of the following:
> (1) A regulatory action of a state agency."

WR P1 cannot apply to the granting or denial of a water rights application, a matter controlled by the SWRCB (§§ 1250, et seq.). Petitioner argues that the plain language of WR P1 could prevent action pursuant to a granted water rights application. While the SWRCB may grant appropriation rights pursuant to section 1253, those rights are still subject to a certification of Delta Plan consistency pursuant to 23 CCR section 5002. However, the requirement of reducing Delta reliance to the extent feasible and cost effective is merely a statutory enumeration of the principle of reasonable use and the public trust doctrine.

Section 85023 provides "[t]he longstanding constitutional principle of reasonable use and the public trust doctrine shall be the foundation of state water management policy and are particularly important and applicable to the Delta." Accordingly, the Legislature affirmed its intent that these principles continue to apply to limit an owner's interest in water. (*Alegretti & Co v. County of Imperial* 138 Cal.App.4th 1261, 1279 [water rights are restricted to a "reasonable beneficial use" consistent with article X, section 2 of the California Constitution]; *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419, 437 ["parties acquiring rights in trust property...can assert no vested right to use those rights in a manner harmful to the trust."]) If an

in-Delta supplier seeks to exercise its water rights without undertaking locally cost effective and technically feasible projects that reduce reliance on the Delta, such an undertaking is contrary to both the principle of reasonable use and the public trust doctrine. Consequently, WR P1 is an assessment of whether a water supplier is compliant with reasonable use and the public trust doctrine. As such, it does not modify water rights in contravention of the Delta Reform Act or preexisting water rights protections.

Conclusion

The petition for writ of mandate with regard to the statutory challenges heard in this bifurcated proceeding is **DENIED** in accordance with the above ruling.

In accordance with Local Rule 1.06, counsel for Respondent is directed to prepare an order denying the petition, incorporating this ruling as an exhibit to the order, and a separate judgment; submit them to counsel for Petitioner for approval as to form in accordance with Rule of Court 3.1312(a); and thereafter submit them to the Court for signature and entry in accordance with Rule of Court 3.1312(b).

C. *Save the California Delta Alliance v. Delta Stewardship Council*

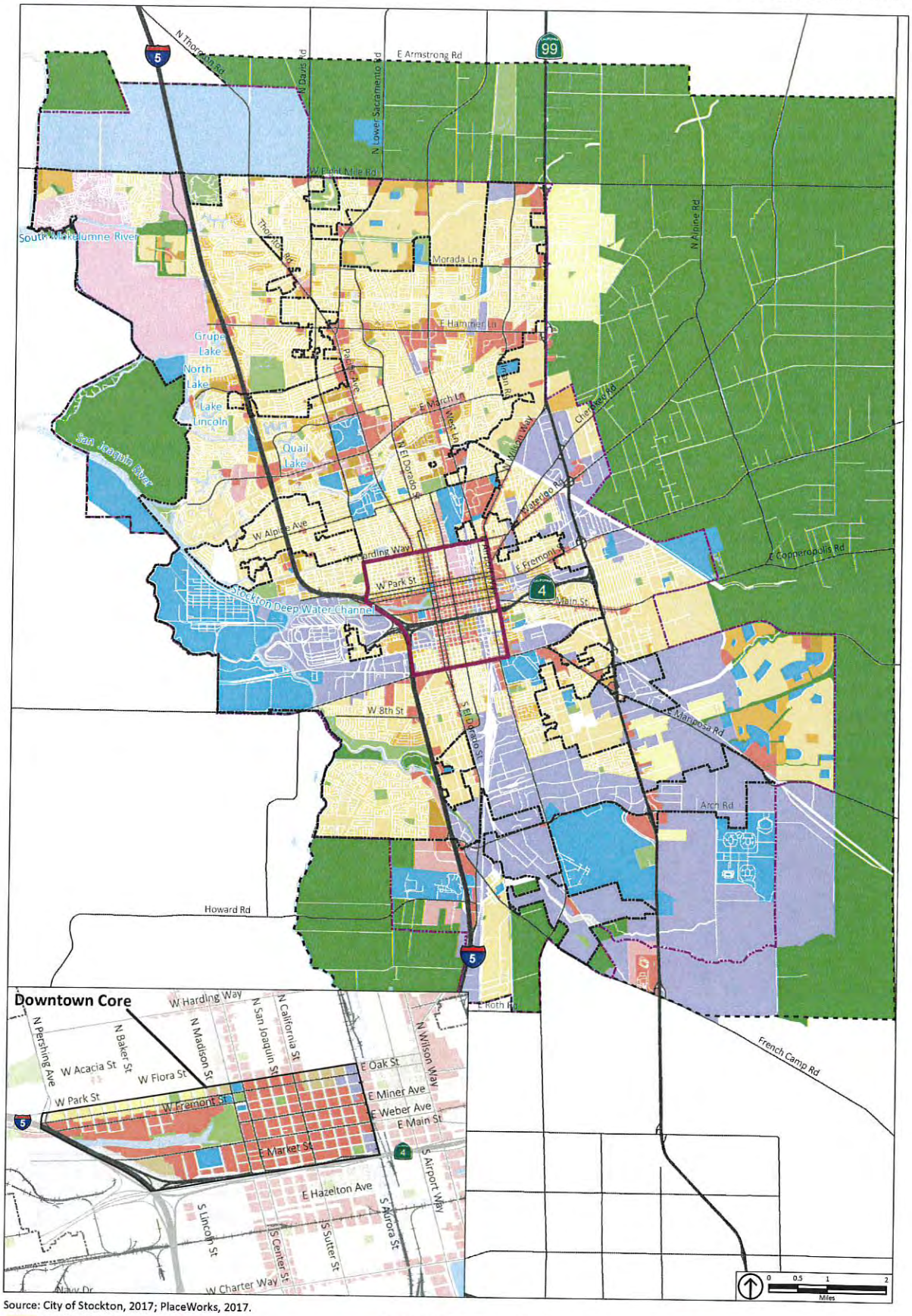
Petitioner Save the California Delta Alliance argues the Delta Plan is deficient in the following five areas:

1. Appendix A and the BDCP Covered Activity Consistency Rule contain unlawful underground regulations determining that BDCP projects are exempt from the Delta Plan.
2. The BDCP exemption rule impairs the scope of the Delta Reform Act.
3. The flow policy violates the Delta Reform Act.
4. The Delta Plan does not contain any conveyance or storage policies, in violation of the Delta Reform Act.
5. The Council has effectively "rubber-stamped" the BDCP for Delta Plan inclusion, contrary to Section 85321.

///

///

///



Source: City of Stockton, 2017; PlaceWorks, 2017.

- Residential Estate
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Mixed Use
- Commercial
- Administrative Professional
- Industrial
- Economic and Education Enterprise
- Institutional
- Parks and Recreation
- Open Space/Agriculture
- City Limit
- Sphere of Influence
- General Plan Planning Area
- Greater Downtown Boundary

Figure 3-3
Proposed General Plan Land Use Map

December 4, 2018 | Adopted

ATTACHMENT L: SAWS WATER EDUCATION PROGRAM ANNUAL REPORT

SAWS Water Education Program

ANNUAL REPORT

2024/2025 School Year

SAWS
STOCKTON AREA WATER SUPPLIERS

Stockton East Water District
California Water Service Co.
San Joaquin County
City Of Stockton

WATER EDUCATION PROGRAM

Report Summary

SAWS
Stockton East Water District
California Water Service Co.
San Joaquin County
City Of Stockton
STOCKTON AREA WATER SUPPLIERS

WATER EDUCATION PROGRAM

School Year: 2024/2025 ♦ August 1, 2024 through July 31, 2025

Report Summary

This report presents an overview of the implementation of the Stockton Area Water Suppliers (SAWS) Water Education Program in the 2024/2025 school year. The report includes a summary of the year's outreach effort, a full report, the data resulting from that outreach effort, a description of the programs and presentations offered to Stockton area educators by the SAWS Water Education Program, participant feedback, and a plan for the 2025/2026 school year.

In early May 2024, teachers and/or administrators in eligible schools were invited via email to participate in the SAWS Water Education Program for the 2024/2025 school year. Our presentation calendar was fully booked by mid-July. School began in the four school districts served by SAWS between July 30 and August 6, 2024, with SAWS presentations commencing the first week of September. The September start of the program allows teachers approximately six weeks to become familiar with their students and get them settled into a routine before introducing a visitor.

In the 2024/2025 school year, the SAWS Water Education Program was offered in the four school districts served by SAWS, including all elementary schools in the Stockton and Lincoln Unified School Districts, Lodi USD elementary schools south of Eight Mile Road, and Manteca USD elementary schools in and north of French Camp.

SAWS also offers a virtual program through an online platform called Padlet. The SAWS Padlet is a virtual/online bulletin board application that offers teachers a collection of videos and links that can be used for pre-teaching or review of the SAWS presentations and resources for student projects. The SAWS Padlet Board can be viewed here: https://padlet.com/dashboard?mobile_page=Collection&filter=all

In 2024, the SAWS staff produced a video entitled "Where Does My Water Come From?" The four-minute video traces the journey of Stockton's drinking water from source to tap and is available on the SAWS Padlet. SAWS presenters show this video upon arrival for in-class presentations in grades 2-6. Showing the video at the beginning of these presentations gives students a preview of the program's content and allows time for the SAWS presenter to set up. When the presentation commences, the message in the video is reinforced with grade appropriate curriculum and hands-on activities that are a

part of each presentation. The SAWS "Where Does My Water Come From?" video may be viewed here: https://www.youtube.com/watch?v=QGiurIHz0nI

2024/2025 Program Highlights:

In the 2024/2025 school year, the SAWS Water Education Program offered six grade-level specific in-class presentations and participated in a variety of Stockton area youth-oriented events.

- The program served 55 schools and venues, providing supplies and materials for 8,883 students in 327 classrooms through the in-class program, and 10,450 students at seven youth-oriented events, for a total of 19,333 students. A breakdown into specific categories (presentation type, grade level, school district and water provider) is presented in the "Program Stats" section of this report.
- The coordinator attended a variety of on-line meetings and seminars, including DWR's Water Education Committee meetings. The coordinator is also a member of the San Joaquin County Office of Education's Community Partners for Environmental Literacy (CPEL), a collaboration of local educators working toward effective environmental outreach, both physical and virtual.
- The coordinator continues to attend DWR Water Education Committee Meetings, which are held both in-person and virtually throughout the year. This group usually meets in person bi-annually to share outreach methods and strategies intended to promote collaborative and coordinated water education outreach throughout the State of California.

Factors Influencing Program Stats

As compared to the outreach numbers in the 23/24 school year, the SAWS Water Education Program outreach numbers declined by approximately six percent in 24/25. Two main factors influenced this decline:

- The Grade 4 "California Water" presentation is being phased out. We have determined that fourth grade reading and comprehension skills are not strong enough for the curriculum in that program. A similar presentation has been developed and is being offered to sixth grade classrooms in the 25/26 school year, but it may take time to make teachers aware of the program's availability and restore that headcount. We are developing a new presentation for

Grade 4 using Ag in the Classroom curriculum and expect to offer that to teachers for the 26/27 school year.

- The SAWS Water Education Program lost a presenter in 2024. Training new personnel results in fewer presentations because the new presenter must accompany an experienced presenter in the classroom until they know the scripts and feel comfortable presenting solo, and training can only take place when school is in session. The program is experiencing this again, as last year's new hire left in June and was replaced in August. This year's new hire is currently training and should be working solo by November.

Other factors can influence outreach numbers as well. We cannot control the grade levels requesting a visit from the SAWS Water Education Program; teachers and administrators contact the coordinator to schedule presentations, and our K, 1 and 2 programs are very popular. If we do more lower elementary school presentations, we will see a drop in headcounts because lower grades have fewer students per classroom.

For a complete breakdown of the 2024/2025 SAWS Water Education Program outreach statistics, please turn to the "Program Stats" tab in this report.

Looking Ahead: The 2025/2026 School Year

Most Stockton area elementary school campuses began the school year in late July 2025. The SAWS Water Education Program staff has met all requirements and been approved for admission to school campuses by the four school districts served by the Stockton Area Water Suppliers. The SAWS Water Education Program began its regular schedule for the 2025/2026 school year on September 2, 2025.

In May 2025, the coordinator sent broadcast invitations to hundreds of teachers and administrators in schools served by the SAWS Water Education Program. The response was enthusiastic; our calendar is full for in-class presentations and youth-oriented events for the 2025/2026 school year.

Miss Sue (Sue Daugherty) has signed on for another year of SAWS Water Education Program classroom presentations. Mrs. To-Cowell left our staff to return to the Lodi Unified School District in the capacity of Vice Principal. Our newest presenter, Ms. Nicole Songer, has been training with Mrs. Coon and Miss Sue, and will be on her own in the classroom by November. Mrs. Coon will continue to provide backup for classroom presentations while managing the SAWS Water Education Program,

including further program development and implementation as well supplemental outreach, scheduling and working with SEWD, the Urban Contractors, schools and other water agencies to disseminate effective water education to Stockton area schools and communities.

The SAWS Water Education Program is entering its 21st year serving Stockton area schools. The program has developed a devoted following among teachers in the four school districts we serve. Educators often design lesson plans that coordinate with our presentations, which focus on water science, water awareness and conservation. In pursuit of these goals, the coordinator will continue to work with staff, the Department of Water Resources, SJCOE/CPEL and other outreach organizations to integrate Next Generation Science Standards (NGSS) and content standards relating to water into our presentations. Resources and materials will continue to be available to teachers; the SAWS Water Education Program uses both physical and virtual educational tools to reinforce our message through pre and post teaching, classroom programs, and outreach at events. This includes videos, digital links and narrated water education vignettes and clips that can be inserted into or used in conjunction with teachers' lesson plans. The SAWS Water Education Program also supplies valuable classroom materials for teachers who utilize the program. Each child receives a grade appropriate, lesson-related workbook and coloring/work sheet, a sharpened pencil and/or a box of crayons, and each teacher receives a package containing white board markers, magnet clips, rain gauges, hand sanitizers, and other items they can use in the classroom.

California continues to contend with serious water issues; the state's water shortages are due to many factors. SAWS Water Education Program presentations will continue to stress conservation and new water storage along with raising awareness of water issues in Stockton, San Joaquin County and California. We have found that elementary school age children are very effective messengers, as they are likely to discuss what they learn in school with parents and family.

Full Report

SAWS
Stockton East Water District
California Water Service Co.
San Joaquin County
City Of Stockton
STOCKTON AREA WATER SUPPLIERS

WATER EDUCATION PROGRAM

THE SAWS WATER EDUCATION PROGRAM

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 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 earlier 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 The SAWS Water Education Program. Stockton was one of the most successful cities in the state when it came to implementing conservation measures during the last drought, reducing water use by nearly 30 percent. Since its inception, the Stockton Area Water Suppliers (SAWS) alliance has funded multi-faceted outreach in our communities, reaching thousands of students and citizens every year; the program has reached over 450,000 people through classroom presentations and public, youth-oriented events since 2005. 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 have and will continue to practice conservation measures to aid in dealing with California's water issues.

We have found that the students and teachers we visit are drought aware. Even primary grade students can define the meaning of the word "drought" and the source of the problem. While media messaging may be responsible for 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, farming issues and ag water, water conveyance and distribution systems, groundwater, and the conservation concepts that relate to all these topics. 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 2024/2025 school year were sent to teachers and administrators via email in early May 2024. The presentation calendar was full by the time school began in late July.

The final headcount for the 2024/2025 school year was 19,333 students/citizens.

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 these lessons to life for students. Often, one teacher or administrator 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 often coordinate our "California Water" presentation with 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 /NGSS standards 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.

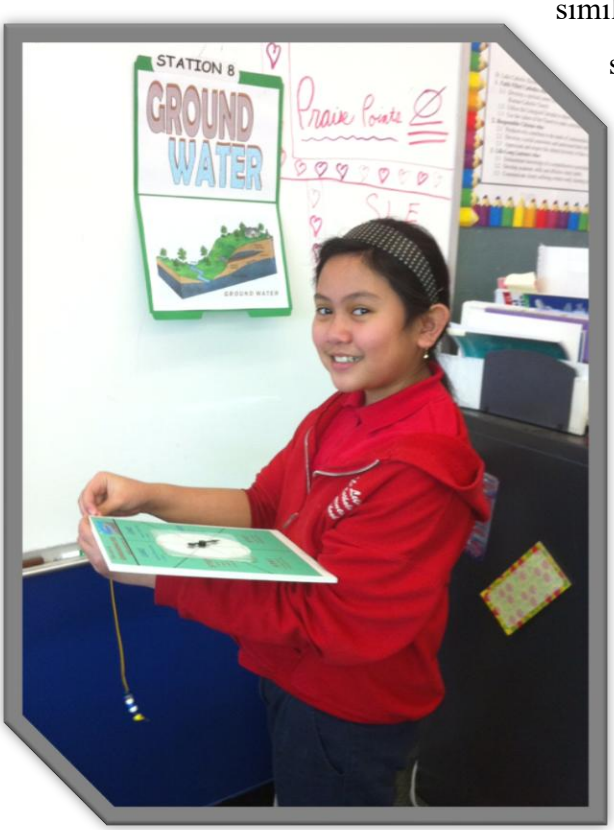
Kindergarten and Grade 1 teachers can use our popular "Water Cycle Story" presentation to reinforce lessons and meet standards involving weather, states of matter, and forming and testing a hypothesis.

The "H20 to Go!" presentation reinforces second grade standards related to gravity, motion and machines through fun, hands-on activities

Grade 2 teachers often coordinate their lesson plans with our "H20 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.

SAWS presenter explains how water is conveyed from the water treatment plant to water storage tanks and finally to our homes

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 standards specific to each grade 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 water cycle to Stockton's water faucets. 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, agricultural and state water issues are also discussed.



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 agriculture and allocation of our natural resources. Students learn how water is distributed throughout the state via the State Water Project, working collaboratively to find water bodies, cities, and landmarks on topographical maps. This program is offered to Grades 4 and 6, adjusted for grade level.

The SAWS Water Education Program only distributes promotional items that are practical and useful in the classroom.

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, rain gauges, crayon packs and other items.

These items are of great value in the classroom, as teachers often supply these items at their own expense. 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/NGSS standards to water resources, the environment, conservation/drought and water legislation in California. The combination of education and entertainment we provide makes learning

Our message is reinforced through the use of colorful visuals, songs, physical activity and audience participation

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."

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 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 opportunities.

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

Event/After School Program

The "H20lympics" 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. This encourages contemplation of the scientific principles behind the activities: *How many water drops can I fit on the head of a penny? Why does the paperclip float? Can I keep my water drop intact while guiding it through a laminated maze?*

SAWS presenter explains surface tension to fourth-grade students at Tully Knoles Elementary during a hands-on activity included in the "SAWS H20lympics" after school presentation.

The format of the H20lympics 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/groundwater discussion into the "H20lympics" program format, and, depending on the venue, sometimes include a prize wheel or "water saver" button-making activity.

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 H20lympics 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

As part of the SAWS Water Education Program activities at AgVenture, students make personalized "I'm a Water Saver!" buttons

Every third grader in San Joaquin County is eligible to participate in this innovative 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 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.

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 SAWS exhibit was funded by a grant from the State of California in 2005.

The "Waterburger" at the Children's Museum

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 participates in regularly:

- **San Joaquin County AgVentures (South County, Stockton & Lodi)**
  The SAWS Water Education Program has participated in AgVenture since 2005. SAWS staffs a booth featuring hands-on activities and a prize wheel. Our participation in AgVenture allows us to promote SAWS sponsored in-class, after school and assembly programs while sharing our message of water/drought 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. The SAWS Water Education Program participated in all three Stockton area AgVentures in the 2024/2025 school year. In previous years, the coordinator submitted a water science/conservation video that was used during virtual AgVenture. The video is still available online at https://www.sjcagventure.com/

SAWS Staff at the Stockton AgVenture January 2025

- **Rotary Read-In:** The SAWS Water Education Program participates in this annual event.
- **Lincoln USD "Window on Your Future":** The coordinator participates in this event annually, wherein mock job interviews designed to prepare Lincoln High School students for entry into the job market are conducted by members of the business community. This event presents an opportunity for staff to share career path outreach with potential job seekers.
- **Manteca Unified School District's Farm Days:** The SAWS Water Education Program staffs H20lympics booths at these MUSD Farm Day events.
- **Stockton's Earth Day Festival:** SAWS is a main sponsor of this popular annual festival at Victory Park in Stockton. The Coordinator staffed a booth at the event on April 27, 2025.
- **Water Treatment Plant Tours:** The SAWS Water Education Program and SEWD staff offer 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 attends both virtual and in-person DWR Water Education Committee meetings, joining water educators from all over California to share resources and ideas for water conservation education and outreach.
- **CPEL:** The Coordinator participates 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. CPEL/SJCOE often sponsors virtual seminars to share learning tools and methods with environmental educators and promote networking among environmental educators in San Joaquin County.

Coordinator Kristin Coon hosted the SAWS Booth at the 2025 Stockton Earth Day Festival

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, scheduling and all other aspects of program operations, including implementation of in-class and virtual learning programs. The approved program budget for 2025/2026 went into effect on April 1, 2025, and the contract between SEWD and Kristin Coon Consulting is currently in effect from August 1, 2024 through July 31, 2026.

Staffing

In the 2024/2025 school year, under the supervision of Kristin Coon Consulting, the SAWS Water Education Program continued to serve the SAWS alliance, providing in-class water education presentations in Stockton area schools and outreach at various youth-oriented events.

When the statewide shutdown of schools occurred in mid-March 2020 and all scheduled presentations were cancelled, Kristin Coon Consulting continued to pay classroom instructors based on an average of the previous year's compensation. This was necessary to retain instructors and prepare for resumption of the in-class program. In 2021, coordinator Kristin Coon developed a virtual outreach program, offered the program to teachers and administrators, organized, prepared, scheduled and delivered virtual learning supplies and supporting materials to Stockton area schools, and managed the day-to-day business of the Water Education Program.

In the 2022/2023 school year, after the COVID pandemic, most Stockton area schools returned to normal operations and the SAWS educators resumed a regular presentation schedule. This continued into the 23/24 and the 24/25 school years. Sue Daugherty ("Miss Sue") and Van Ha To-Cowell ("Mrs. To-Cowell") shared instructor duties for the entire school year, backed by Mrs. Coon, who also tended to administrative tasks and prepared for and hosted events. Our team received rave reviews from teachers and administrators (see "Feedback" section). At the end of the school year, Miss Sue signed on for another year, but Mrs. To-Cowell gave notice after returning to the Lodi Unified School District as a part-time administrator. In June 2025, Nicole Songer ("Miss Nicole") joined the SAWS staff to replace Mrs. To-Cowell. As of this writing, the SAWS Water Education Program is fully staffed, and Miss Sue and Miss Nicole have committed to the SAWS Water Education Program through June 2026.

Looking Ahead: The Coming School Year

At this writing, the SAWS Water Education Program calendar is fully booked through late May 2026 for classroom presentations and youth-oriented events, and a presentation waiting list has been established.

Mrs. Coon is working to implement a new closing review document for each presentation offered by SAWS to insure student understanding of our message. The SAWS Water Education Program began in-class presenting on September 2, 2025. Miss Nicole has been training with both Miss Sue and Mrs. Coon in September, and is expected to be on her own in the classroom by October 1. Mrs. Coon will continue to provide backup for classroom presentations while managing the SAWS Water Education Program, including further program development as well supplemental outreach, scheduling and working with SEWD, the Urban Contractors, schools and other water agencies to disseminate effective water education to Stockton area schools and communities.

Conclusion

As we embark upon our 21st year serving SAWS and Stockton area schools, 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 2023/2024 school year, the SAWS Water Education reached 19,333 students through in-class and special event programs. 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.

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 a new school.

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 awareness and conservation practices. 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/NGSS 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.

Classroom Kits Supplied by SAWS

Teachers participating in the SAWS Water Education Program receive a "bag of goodies," supplies and materials to share with students that complement the videos and activities on the SAWS Padlets, along with items for their classroom. The Coordinator and Water Education Instructors deliver the materials and supplies to each classroom we visit.

SAWS Water Education Program Staff, 2024-2025

Sue Daugherty, Kristin Coon, Van Ha To-Cowell, Blair Baker

The water education staff for the 2024-2025 school year consisted of Sue Daugherty, Blair Baker and Kristin Coon. Miss Blair left the program in May 2024 for a full-time position with AVID Water. Miss Blair's replacement, Ms. Van Ha To-Cowell, joined our staff in April 2024 and left the program at the end of May 2025 to take a part-time administrative position with Lodi USD. Ms. To-Cowel was replaced by Miss Nicole Songer in June 2025.

Feedback

SAWS
Stockton East Water District
California Water Service Co.
San Joaquin County
City Of Stockton
STOCKTON AREA WATER SUPPLIERS

WATER EDUCATION PROGRAM

Teacher and Student Feedback on the SAWS Water Education Program

Teacher Feedback is key to enhancing and improving our programs

The presentation aligns perfectly with our science curriculum. The hands-on activities enhance and reinforce the concepts presented.
Grade 1 Teacher, Henry Elementary
***

The presenter was very knowledgeable and the students were very engaged with her lessons. I liked that the students were able to look at and touch a topographical map and given the opportunity to find California waterways and landmarks.
Grade 6 Teacher, San Joaquin Elementary
***

Such a fun way to cover our science standards!
Grade 3 Teacher, Tully C. Knoles Elementary
***

I teach at a Title 1 school, so we are not able to go on many field trips – but SAWS brought the field trip to us! Thank you for a wonderful presentation!
Grade 2 Teacher, Sutherland Elementary
***

Our presenter was wonderful! The information she provided was educational and inspiring for my students. Every year I learn something new from this program.
Grade 3 Teacher, Aspire Port City Academy
***

Both my students and I really enjoyed the water filtration demonstration and the experiment with surface tension and cohesion.
Grade 3 Teacher, Kennedy Elementary
***

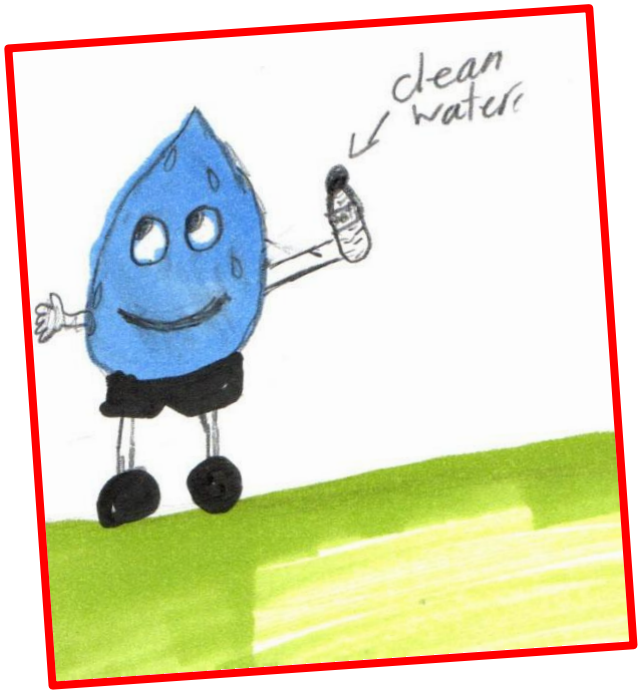
The "Incredible Journey" activity really illustrated how water continuously moves through the water cycle.
Grade 5 Teacher, Elkhorn Elementary
***

My students were very involved and entertained throughout the presentation. I love that it brings science to our classroom!
Grade 4 Teacher, Hazelton Elementary
***

The instructor was amazing – kind, respectful and the rapport with my students was great! I like the visuals and realia used during the presentation.
Kindergarten Teacher, Pittman Charter School
***

You teach the material in an engaging manner and connect it to students' real lives. A wonderful program!
Grade 5 Teacher, Mable Barron Elementary
***

There were hands-on activities, singing, and movement. Every child got to participate. AND…they learned about the water cycle!
Kinder Teacher, Ansel Adams Elementary
***
It's amazing how much students learn! My students were engaged the whole time. Thank you for the supplies (crayons, activity books, coloring materials) and the teacher gifts. Please come back soon!
Kindergarten Teacher, Don Riggio Elementary
***
This program fits with science, math, and language arts (reading, listening, speaking skills) requirements. Add in the hands-on activities, and it's a perfect fit for this grade level!
Grade 5 Teacher, Clairmont Elementary
***
This program presents an engaging topic students don't know much about. Thank you for coming to our classroom!
Grade 3 Teacher, Manlio Silva Elementary
***
We loved the new video! It presents the topic at the beginning, and the rest of the presentation builds and enhances that knowledge and the Padlet is also very useful. Every component of the presentation was terrific and interactive! Keep up the cool work!
Grade 2 Teacher, Podesta Ranch Elementary
***
I love everything about this program! Scheduling was very accommodating. The materials provided are very popular with the kids, and teachers love the visuals. Our presenter was outstanding! She was energetic, comical and relatable to the students, who were highly engaged. The presentation really shows students the importance of water, rather than just telling them.
Grade 5 Teacher, John Muir Elementary



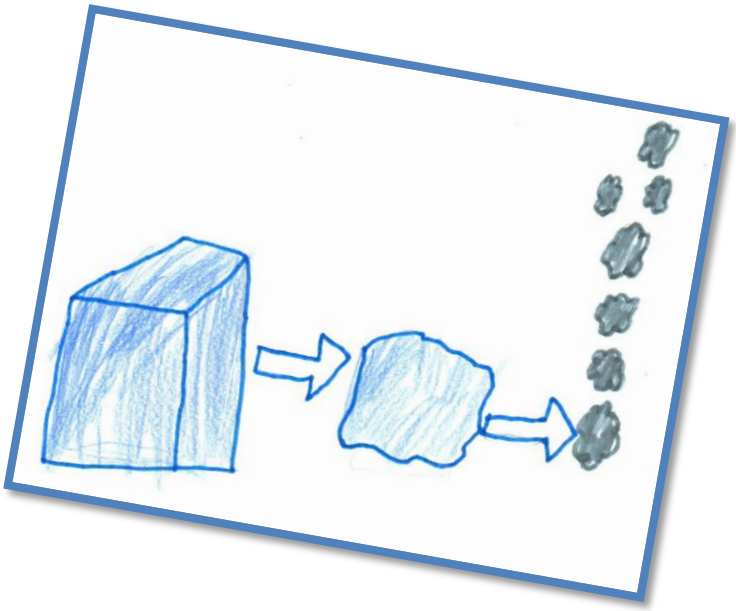


EXHIBIT 1

1819 Bianchi Road

May 10, 2024

Dear Miss Sue, Thank you for the lesson on water. I learned more about the water cycle and our water. I also learned how our water is cleaned and transported to our homes. I liked the map challange where we tried to find the places on the map. The part where we debated about who gets the water, was also very interesting to me. This water lesson has taught me lots of cool facts that I haven't known before.

Sincerely,
Kailen Zhao♡
Mrs. Pichardo's Class
Rio Calaveras Elementary School

Stats

SAWS
Stockton East Water District
California Water Service Co.
San Joaquin County
City Of Stockton
STOCKTON AREA WATER SUPPLIERS

WATER EDUCATION PROGRAM

SAWS Water Education Program Presentation/Event Breakdown
School Year: 2024/2025

By Presentation Type

Presentation Type	# of Presentations	# of Students or	%
Classroom Presentations	326	8823	45.6%
Events	7	10450	54.1%
Water Treatment Plant Tours	0	0	0.0%
After School Program	1	60	0.3%
Totals	**334**	**19333**	**100%**

By Grade

Grade	Clsrms	Students	%
K	32	815	4%
Gr 1	70	1760	9%
Gr 2	66	1690	9%
Gr 3	65	1665	9%
Gr 4	36	1163	6%
Gr 5	36	1177	6%
Gr 6	13	420	2%
SDC	8	133	1%
After School	1	60	0%
Event**	7	10450	54%
	334	**19333**	**100%**

By Presenter

Presenter	Venues/ Classrooms	Students/ Citizens	%
Kristin Coon	17	10485	54%
Mrs. To-Cowell	161	4552	24%
Miss Sue	156	4296	22%
	334	**19333**	**100%**

By Water Provider

Provider	Students	%
Cal Water	3709	19%
City of Stockton	5110	26%
Unincorporated/SJ County	864	4%
All **	10250	51%
	19933	**100%**

By School District

District	Students	%
Stockton USD	2302	12%
Lodi USD	2363	12%
Lincoln USD	2739	14%
Manteca USD	987	5%
Aspire/Charter/Private	692	4%
All/Other**	10250	53%
	19333	**100%**

Total Schools/Venues 24/25
55

**** Students or children reached through city or county wide events: unable to determine district, provider, or grade**

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*	SY 20/21*	SY 21/22*	SY 22/23*	SY 23/24*	SY 24/25*
SAWS Water Ed Prog	8044	12357	15344	18293	18838	18915	21345	19748	26320	23538	24350	18670	22438	23980	16111	8373	18775	20604	20597	19333
Assembly Program	3002	11452	9925	13989	4459	4660	6085	4731	5934	4730	5736	0	2725	2151	658	2383	0	0	0	0
Totals:	11046	23809	25269	32282	23297	23575	27430	24479	32254	28268	30086	18670	25163	26131	16769	10756	18775	20604	20597	19333

*** See notes by SY below:**

SY 05/06: 14 GWM (SYRCL) assemblies performed in the 2005/2006 school year. One presenter (KC)

SY 07/08: 53 GWM (SYRCL) assemblies performed in the 2006/2007 school year. One presenter (KC)

SY 07/08: 46 GWM (SYRCL) assemblies performed in the 2007/2008 school year. One presenter (KC)

SY 08/09: 54 GWM (SYRCL) assemblies performed in the 2008/2009 school year. 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. 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

SY 20/21: 4 Zun Zun assemblies performed in 20/21 (virtual only). Two presenters (KC, KK), one contractor (Zun Zun). Schools closed entire 20/21 school year due to COVID19; all outreach was virtual. In-class presentations for 2021 Summer School only.

SY 21/22: 0 Zun Zun assemblies 21/22 due to COVID19. Three presenters (KC, KK, SD) thru Feb 22, two presenters (KC, SD) Mar-July. Many school campuses still closed first semester due to COVID19, most opened after Jan 1. Mix of virtual and in-class presentations.

SY 22/23: Zun Zun assemblies discontinued. Staff working on video outreach. Three presenters (KC, SD, BB). All school districts resumed normal operations

SY 23/24: Staff developed water conservation video. Four presenters (KC, SD, BB, VT). Miss Blair replaced by Mrs. To-Cowell May 2024.

SY 24/25: Three presenters (KC, SD, VT). Mrs. To-Cowell replaced by Mrs. Nicole July 2025.

ATTACHMENT M: CLASSROOM AQUARIUM EDUCATION PROGRAM SLIDES

Classroom Aquarium Education Program (CAEP)

Water Advisory Group

April 2, 2025

Agenda Item No. 25-0410

CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

Overview

- The Classroom Aquarium Education Program (CAEP) provides teachers and students with hands-on learning opportunities to study aquatic ecosystems, particularly salmon, through classroom aquariums and field trips.

CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

History

- "Fish in the Classroom" program originated in British Columbia as part of the "environmental movement" of the 1970s.
- Educators established the first programs in California in the 1980s.
- Since 2000, the program has been administered by the California Department of Fish and Wildlife (CDFW) and is offered statewide in partnership with regionally-based community organizations.

CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

Program Goals

- Promote public awareness of the need to maintain and protect aquatic environments.
- Give students and teachers 'ownership' of the natural resource.
- Demonstrate how individual actions can either have a positive or negative impact on our natural resources.

CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

How It Works

New Teacher Training	CDFW Form 772 (Permit Application) Deadline	Fish tank up and running at least 10 days before egg delivery	Sponsors deliver 35 Chinook salmon eggs to classrooms	Fish released into source river
October	December	Before winter holiday break	January 8, 2025	Eight weeks from egg delivery date

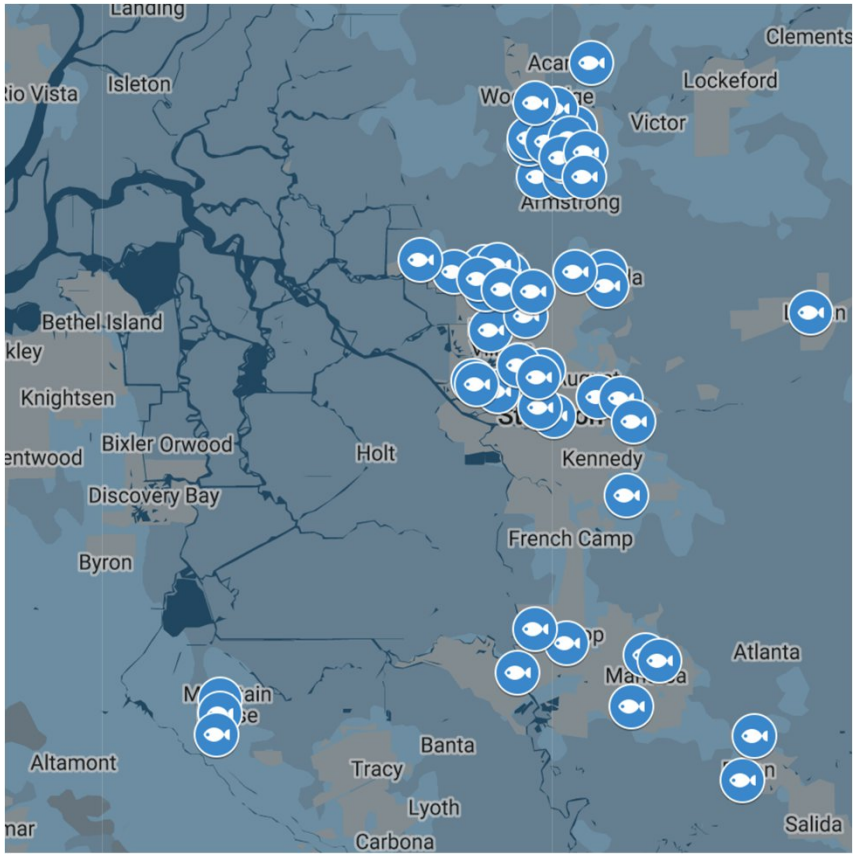
CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

Mokelumne River Hatchery

- Local salmon eggs come from the Mokelumne River Hatchery downstream of Camanche Reservoir.
- The Mokelumne River Hatchery was built in 1963 to offset the loss of fish spawning habitat due to the construction of Camanche Dam by East Bay Municipal Utility District (EBMUD).

CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

Salmon in Stockton Classrooms



- City of Stockton MUD became a sponsor in the 2022 salmon season.
- 18 local schools sponsored to date, K-12.

Salmon in Stockton Classrooms

Anunciation Catholic	First Baptist Christian	John Muir Elementary
Brookside Elementary	Franklin High School	Lincoln High School
CBK Alpine	Grunsky Elementary	One. Frontier
Christa McAuliffe Middle	Hazelton Elementary	Podesta Ranch Elementary
Don Riggio School	Henry Elementary	Pulliam Elementary
Fillmore Elementary	John McCandless STEM Charter	St. Luke Catholic Elementary

CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

Salmon in Stockton Classrooms

- Sponsors may provide a salmon kit to first-time teachers, including:
  - ✓Fish tank or mini refrigerator
  - ✓Airline tubing
  - ✓Air pump
  - ✓Fish net
  - ✓Turkey baster
  - ✓Aquarium thermometer
  - ✓Ammonia and pH detector

CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

Salmon in Stockton Classrooms

Students raise Chinook salmon in classroom aquariums, observing their development from the eyed-egg stage to alevin and young fry.

CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

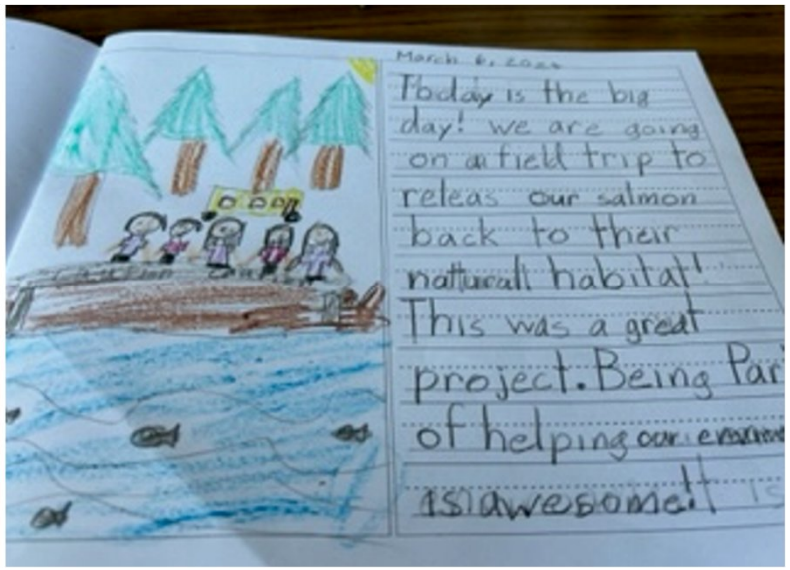
Salmon in Stockton Classrooms

- The program culminates in a field trip to a local stream or river where students release the fry.

CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

Salmon in Stockton Classrooms

- CAEP lessons plans correlate with the California Science Education Standards



CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

Questions

CITY OF STOCKTON
MUD
MUNICIPAL UTILITIES DEPARTMENT

ATTACHMENT N: NOTIFICATION LETTERS TO CITIES AND COUNTIES

CITY OF STOCKTON

MUNICIPAL UTILITIES • 2500 Navy Drive • Stockton, CA 95206 • 209-937-8700
www.stocktonca.gov

March 13, 2026

PREPARATION OF 2025 URBAN WATER MANAGEMENT PLAN

This letter serves as formal notice that the City of Stockton, through its Municipal Utilities Department (COSMUD), is preparing its 2025 Urban Water Management Plan (UWMP) in accordance with the Urban Water Management Planning Act (California Water Code §§10610–10645). The California Water Code 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 update that plan at least every five years.

The UWMP is a long-range planning document that evaluates existing and projected water supplies, water demands, water use efficiency measures, and water supply reliability over a 25-year planning horizon. The 2025 UWMP will update COSMUD's previously adopted 2020 UWMP and will be submitted to the California Department of Water Resources (DWR) by the statutory deadline of July 1, 2026.

Pursuant to California Water Code §10620(b), COSMUD is notifying neighboring cities and counties of the preparation of the 2025 UWMP and providing an opportunity to coordinate, comment, or provide relevant planning information that may be applicable to regional water supply planning efforts.

A draft UWMP will be made available for public review and comment prior to adoption by the Stockton City Council. Information regarding public review availability, hearing dates, and document access will be provided once scheduled.

If you wish to contact COSMUD about its review process, you may do so by writing to the undersigned or by email to Travis.Small@stocktonca.gov

C. MEL LYTLE, Ph.D.
DIRECTOR OF MUNICIPAL UTILITIES

TRAVIS SMALL
DEPUTY DIRECTOR OF WATER RESOURCES

CML:TS:jdc

CITY OF STOCKTON

MUNICIPAL UTILITIES • 2500 Navy Drive • Stockton, CA 95206 • 209-937-8700
www.stocktonca.gov

March 13, 2026

PREPARATION OF THE WATER SHORTAGE CONTINGENCY PLAN

This letter serves as formal notice that the City of Stockton, through its Municipal Utilities Department (COSMUD), is preparing its 2025 Water Shortage Contingency Plan (WSCP). The WSCP is being updated concurrently with COSMUD's 2025 Urban Water Management Plan (UWMP) and will be submitted to the California Department of Water Resources (DWR) as required by the Urban Water Management Planning Act.

The 2025 WSCP establishes a comprehensive framework for preparing for and responding to potential water supply shortages affecting COSMUD's municipal water system. The plan identifies defined water shortage stages and corresponding response actions intended to minimize service disruptions, protect public health and safety, and ensure regulatory compliance during drought conditions, infrastructure limitations, regulatory constraints, or emergency events.

In coordination with regional and local agencies, COSMUD is providing this notice to neighboring cities and counties to support consistency in regional water planning efforts and to provide an opportunity for coordination and input.

The draft WSCP will be made available for public review prior to adoption by the Stockton City Council, consistent with City procedures for public participation and plan adoption. Information regarding document availability, public review periods, and hearing dates will be provided once scheduled.

If you wish to contact COSMUD about its review process, you may do so by writing to the undersigned or by email to Travis.Small@stocktonca.gov

C. MEL LYTLE, Ph.D.
DIRECTOR OF MUNICIPAL UTILITIES

TRAVIS SMALL
DEPUTY DIRECTOR OF WATER RESOURCES

CML:TS:jdc