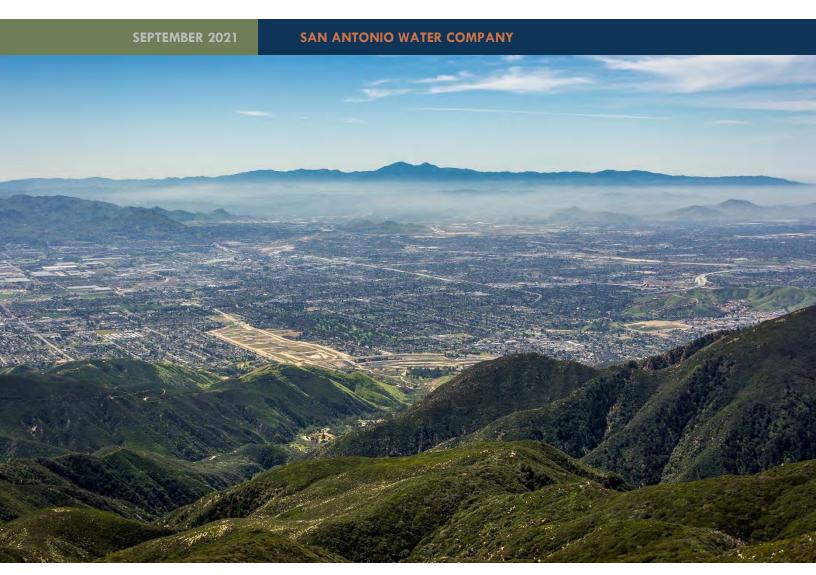


# Urban Water Management Plan







SAN ANTONIO WATER COMPANY

# Urban Water Management Plan

SEPTEMBER 2021

Prepared by Water Systems Consulting, Inc.



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# ACRONYMS & ABBREVIATIONS

°C Degrees Celsius

°F Degrees Fahrenheit

AB Assembly Bill

AF Acre Foot

AFY Acre Feet per Year

AHHG Area of Historic High Groundwater

AMR Automatic Meter Reader

APA Administrative Procedures Act

AWWA American Water Works Association

BMP Best Management Practice

CALWARN California Water/Wastewater Agency Response Network

CAT Climate Action Team
CCF Hundred Cubic Feet

CCR California Code of Regulations

CEQA California Environmental Quality Act

CFS Cubic Feet per Second

CII Commercial, Industrial, and Institutional

CIMIS California Irrigation Management Irrigation System

CUWCC California Urban Water Conservation Council

DCR DWR SWP Delivery Capacity Report
DDW SWRCB Division of Drinking Water

DFW California Department of Fish and Wildlife

DIP Ductile Iron Pipe

DMM Demand Management Measure

DWR California Department of Water Resources

EIR Environmental Impact Report

EPA United States Environmental Protection Agency

ERNIE Emergency Response Network of the Inland Empire

ESA Endangered Species Act

ET Evapotranspiration

ETo Reference Evapotranspiration

GAC Granulated Activated Carbon
GIS Geographic Information System
GPCD Gallons per Capita per Day

GPM Gallons per Minute

HECW High Efficiency Clothes Washer

HET High Efficiency Toilet

IX Ion Exchange

KAF Thousand Acre Feet

KAFY Thousand Acre Feet per Year

LAFCO Local Agency Formation Commission

MAF Million Acre-Feet

MCL Maximum Contaminant Level

MF Multi-family
MG Million Gallons

MGD Million Gallons per Day

MOU Memorandum of Understanding

MSL Mean Sea Level

MTBE Methyl Tertiary Butyl Ether

NMFS National Marine Fisheries Service

NOAA National Oceanic and Atmospheric Administration
NPDES National Pollutant Discharge Elimination System

PCE Perchloroethylene
PVC Polyvinyl Chloride

QWEZ Qualified Water Efficient Landscaper

RIX Rapid Infiltration and Extraction

RPA Reasonable and Prudent Alternative

RUWMP Regional Urban Water Management Plan

RWQCB Regional Water Quality Control Board

SAWCo San Antonio Water Company

SBX7-7 Senate Bill 7 of Special Extended Session 7

SF Single Family

SOI Sphere of Influence

SWRCB State Water Resources Control Board

TDS Total Dissolved Solids

TCE Trichloroethylene

ULFT Ultra-Low Flush Toilet

UV Ultraviolet

UWMP Urban Water Management Plan

UWMP Act Urban Water Management Planning Act

VOC Volatile Organic Compound

WBIC Weather Based Irrigation Controller
WSCP Water Shortage Contingency Plan

WFF Water Filtration Facility
WSS Water Sense Specification
WTP Water Treatment Plant

WWTP Wastewater Treatment Plant

#### 2020 URBAN WATER MANAGEMENT PLAN

# Introduction and Lay Description

This chapter provides a brief overview of the San Antonio Water Company (SAWCo) and the purpose of this Urban Water Management Plan (UWMP).

SAWCo is a private non-profit Mutual Water Company formed in 1882 under the General Corporation Laws of the United States with the purpose to furnish, lease, or sell water for irrigation, milling, manufacturing and other purposes to the newly established Ontario irrigation colony. Land for the irrigation colony was sold primarily for the booming citrus industry at the time, and a share in SAWCo was included with every acre of land purchased. Each shareholder was entitled to a portion of available local water, distributed equally by SAWCo amongst shareholders on a non-profit basis. Today SAWCo retains the same purpose of providing beneficial water service to all shareholders based on established monthly entitlements and a fixed number of shares.

#### IN THIS SECTION

- California Water Code
- UWMP Organization
- UWMP Relation to Other Efforts

#### 1.1 The California Water Code

In 1983, the State of California Legislature (Legislature) enacted the Urban Water Management Planning Act (UWMP Act). The law required an urban water supplier, providing water for municipal purposes to more than 3,000 customers or serving more than 3,000 acre-feet (AF) annually, to adopt an UWMP every five years demonstrating water supply reliability under normal as well as drought conditions.

Since the original UWMP Act was passed, it has undergone significant expansion, particularly since the completion of the 2015 UWMP. Prolonged droughts, groundwater overdraft, regulatory revisions, and changing climatic conditions affect the reliability of water suppliers as well as the statewide water reliability overseen by California Department of Water Resources (DWR), the State Water Resources Control Board (State Water Board), and the Legislature. Accordingly, the UWMP Act has grown to address changing conditions and the current requirements are found in Sections 10610-10656 and 10608 of the California Water Code.

DWR provides guidance for urban water suppliers by preparing an Urban Water Management Plan Guidebook 2020 (Guidebook) (California Department of Water Resources, 2021), conducting workshops, developing tools, and providing program staff to help water suppliers prepare comprehensive and useful UWMPs, implement water conservation programs, and understand the requirements in the California Water Code. Suppliers prepare their own UWMPs in accordance with the requirements and submit them to DWR. DWR then reviews the plans to make sure they have addressed the requirements identified in the California Water Code and submits a report to the Legislature summarizing the status of the plans for each five-year cycle.

The purpose of the UWMP is for water suppliers to evaluate their long-term resource planning and establish management measures to ensure adequate water supplies are available to meet existing and future demands. The UWMP provides a framework to help water suppliers maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during drought conditions or other water supply interruptions.

#### The UWMP is a valuable planning tool used for multiple purposes including:

- Provides a standardized methodology for water utilities to assess their water resource needs and availability.
- Serves as a resource to the community and other interested parties regarding water supply and demand, conservation and other water related information.
- Provides a key source of information for cities and counties when considering approval of proposed new developments and preparing regional long-range planning documents such as city and county General Plans.
- Informs other regional water planning efforts.

This plan, which was prepared in compliance with the California Water Code, and as set forth in the Guidebook and format established by the DWR, constitutes the 2020 UWMP for SAWCo.

### 1.2 UWMP Organization and Lay Description

This UWMP is organized as follows:

#### Chapter 1 – Introduction

The introduction provides a description of SAWCo and background on the UWMP and California Water Code. Water suppliers that serve more than 3,000 customers or 3,000 acre-feet-per-year (AFY) are required to prepare a UWMP. The UWMP is an important tool that details SAWCo's system and service area, estimates supply and demand over a twenty-five-year period, and analyzes reliability in terms of drought.

#### **Chapter 2 – Plan Preparation**

The UWMP is prepared based on guidance from DWR. This UWMP provides information in terms of calendar year (January 1st – December 31st) and in units of AFY. While preparing this UWMP, SAWCo coordinated with other local agencies and sent notifications that the UWMP was being developed, available for review, and details pertaining to the public hearing and plan adoption meeting.

#### **Chapter 3 – System Description**

This chapter summarizes SAWCo's service area, climate, demographics, and land use. SAWCo provides domestic service to the San Antonio Heights community with an estimated population of 3,000 people. SAWCo provides water based on entitlement and the number of shares. There are 6,389 shares in SAWCo. In 2020, only 6,178 shares were active.

#### **Chapter 4 – Water Use Characterization**

This chapter summarizes historical and future water use. SAWCo provides water for domestic, municipal, and miscellaneous uses. In addition, SAWCo spreads water in the Chino, Cucamonga, and Six Basins groundwater basins for groundwater recharge. In 2020, the largest customer was the City of Upland's purchases for irrigation water, which accounted for 50% of the total water sales.

SAWCo's Basic Area is nearly built out. SAWCo's ongoing Master Plan effort identified seven parcels as possible future development and corresponding water demand factors. Using the information developed in the Master Plan, it is estimated that should these seven parcels develop, future demands on SAWCo will increase by approximately 30 AFY.

#### **Chapter 5 – Water Supply Characterization**

SAWCo uses local groundwater from several groundwater basins and surface water to meet customer demands. Local groundwater is extracted from the Chino Basin, Cucamonga Basin, and Six Basins. The three groundwater basins are each adjudicated, and SAWCo's has water rights as defined by the various legal Judgements in place to protect and manage each basin. SAWCo also participates in groundwater recharge operations that enhance groundwater supply. Surface water from San Antonio Creek are pre-1914 water rights, and annual water availability is influenced by rainfall. The San Antonio Tunnel is a deep rock tunnel 100 feet below ground surface that collects naturally percolated groundwater.

#### Chapter 6 – Water Service Reliability and Drought Risk Assessment

Future demand and supply were analyzed to evaluate supply reliability over the planning period. The UWMP analyzed conditions for normal, or average, single-dry, and five-year consecutive dry periods. SAWCo aims to provide shareholders full entitlement, but in periods of drought, allocations per share may be reduced, depending on supply availability. In all scenarios, SAWCo expects to meet customer

demands based on shareholders full entitlement. In addition, a Drought Risk Assessment was performed to analyze anticipated supply and demand for the next five years (2021-2025). The Drought Risk Assessment analysis determines that SAWCo's supplies are able to reliably meet customer demands.

#### **Chapter 7 – Water Shortage Contingency Plan**

The Water Shortage Contingency Plan (WSCP) provides guidance on declaring a water shortage stage and how to mitigate supply deficits. The WSCP defines four stages of water shortage and outlines the actions that will be required of customers during each stage. The complete WSCP is available in Appendix H.

#### **Chapter 8 – Demand Management Measures**

This chapter summarizes the various demand management measures used to implement water conservation throughout SAWCo. To participate in any of the rebate programs, interested customers should contact SAWCo directly.

#### Chapter 9 – Plan Adoption, Submittal, and Implementation

This chapter summarizes the various requirements to adopt and submit a UWMP and WSCP. Details on public hearing dates, notification letters to local agencies, and how to submit or amend a plan are discussed.

#### 1.3 UWMP Relation to Other Efforts

The UWMP characterizes water use, estimates future demands and supply sources, and evaluates supply reliability for normal, single-dry, and consecutive dry years. The UWMP Act also requires reevaluation of SAWCo's Water Shortage Contingency Plan (WSCP). Details on the WSCP are provided in Chapter 7.

Documents that were leveraged in preparation of this UWMP and how they overlap with the primary topics included in the UWMP are shown in Figure 1-1.

#### PLAN TOPICS











PLANNING DOCUMENT	PREPARED BY	DOCUM	IENT STATUS	SUPPLIES / RELIABILITY	DEMANDS / WATER USE EFFICIENCY	INFRASTRUCTURE	RISK & MITIGATION	EMERGENCY RESPONSE
Water Master Plan	WSC for SAWCo		Under development	✓	✓	✓		
AWIA Risk and Resilience Assessment and Emergency Response Plan	WSC for SAWCo	••••	Complete	✓		<b>√</b>	<b>√</b>	✓
2017 Water Master Plan	Civiltec Engineering, Inc for SAWCo	•••••	Complete	✓	✓	✓		
2017 Water Rate and Fee Study	Carollo Engineers for SAWCo	••••	Complete		<b>√</b>			
2015 Urban Water Management Plan	Civiltec Engineering, Inc for SAWCo		Complete	✓	<b>√</b>		✓	✓

Figure 1-1. UWMP Relation to Other Planning Efforts.

# Plan Preparation

This plan was prepared using guidance from the Department of Water Resources' (DWR) Urban Water Management Plan Guidebook 2020 (2020 UWMP Guidebook). This chapter provides details regarding SAWCo's UWMP preparation and the coordination and outreach efforts conducted.

A DWR review sheet checklist is provided in Appendix A.

# 2.1 Basis for Preparing a Plan

As mentioned in Chapter 1, the Water Code requires Suppliers with 3,000 or more service connections or water deliveries in excess of 3,000 AFY to prepare an UWMP every five years. Details pertaining to SAWCo's water system, such as public water system number, 2020 number of connections and volume of water supplied are provided in Table 2-1. In 2020, SAWCo delivered 16,345 AFY of water to nearly 1,210 service connections and in a wholesale capacity; therefore, SAWCo is required to prepare an UWMP. SAWCo included all 2020 data in the development of this UWMP.

#### IN THIS SECTION

- Basis for Preparing a Plan
- Coordination and Outreach

**Plan Preparation** Section 2

#### Table 2-1. DWR 2-2 Plan Identification

TYPE OF PLAN	MEMBER OF RUWMP	MEMBER OF REGIONAL ALLIANCE	NAME OF RUWMP OR REGIONAL ALLIANCE
Individual UWMP	No	No	

#### Table 2-2. DWR 2-3 Agency Identification

TYPE OF SUPPLIER	YEAR TYPE	FIRST DA	Y OF YEAR	UNIT TYPE	
Wholesaler	Calendar Years	DD	MM	Acre Feet (AF)	
		01	01		

#### 2.2 Coordination and Outreach

The UWMP Act requires a water purveyor to coordinate the preparation of its UWMP with other appropriate agencies in and around its service area. This includes other water suppliers that share a common source, water management agencies, and relevant public agencies. All relevant entities, including the County of San Bernardino, were sent 60-day notices of preparation and consideration for adoption at a public hearing prior to the adoption of the 2020 UWMP. Copies of the letters and other correspondence are provided in Appendix B. Public hearing notices are also provided in Appendix B.

#### 2.2.1 Wholesale and Retail Coordination

SAWCo provides water based on a fixed number of shares. Several local water suppliers own shares in SAWCo and are listed in Table 2-3.

#### Table 2-3. DWR 2-4W Water Supplier Information Exchange

Section 10631. Complete the table below.				
WHOLESALE WATER SUPPLIER NAME				
Cucamonga Valley Water District				
Monte Vista Water District				
City of Ontario				
City of Upland				

### 2.2.2 Coordination with Other Agencies and the Community

CWC Section 10621 requires that suppliers notify cities and counties to which they serve water that the UWMP and WSCP are being updated. Notices should be provided at least 60 days prior to a public hearing. To fulfill this requirement, SAWCo notified local and regional agencies of preparation of its 2020 UWMP and WSCP, inviting these agencies to submit any comments. SAWCo provided notices to the agencies listed in Table 2-4.

Plan Preparation Section 2

Table 2-4. Agency Coordination.

AGENCY/ORGANIZATION	WAS NOTIFIED OF PLAN AVAILABILITY <sup>1</sup>	WAS SENT A NOTICE OF INTENTION TO ADOP 60 DAYS PRIOR TO PUBLIC HEARING	
Water Suppliers			
Cucamonga Valley Water District	X	X	
Monte Vista Water District	Х	X	
Public Agencies			
City of Upland	X	Χ	
City of Ontario	Х	X	
City of Pomona	Х	X	
County of San Bernardino	Х	Х	
Others			
Chino Basin Watermaster	Х	X	

<sup>&</sup>lt;sup>1</sup>Was notified of availability of Draft UWMP and directed to an electronic copy of the draft plan on SAWCo's website.

# System Description

This section will describe SAWCo's service area, climate, population, demographics, and land uses.

SAWCo is governed by a seven-person Board of Directors elected to four-year terms. Daily operations are overseen by the General Manager with support by the Assistant General Manager and Water Utility Superintendent. SAWCo employs approximately 10 staff members to manage operational and administrative services.

SAWCo is governed by bylaws. The purpose of SAWCo is to develop, distribute, supply, and deliver water to its shareholders for irrigation, domestic, and all other useful purposes, in proportion to the number of shares of stock held by them respectively, at actual cost, and is not organized for the private gain of any person (San Antonio Water Company).

SAWCo contains a fixed number of shares at 6,389 shares. In 2020, 6,178 shares were actively taking water. Water is provided based on entitlement and the number of shares a customer holds. Shares may be divided or sold. In 2020, the total yearly entitlement was 13,000 AF; the yearly entitlement per share was equal to 2.03 AF/share.

#### IN THIS SECTION

- Service Area
- Climate
- Population and Demographics
- Land Uses

#### 3.1 Service Area

SAWCo's bylaws specify the service area is made up of a Basic Area and an Extended Area. The Basic Area generally coincides with the incorporated community of San Antonio Heights located north of the City of Upland in San Bernardino County, as shown in Figure 3-1. The Basic Area is bounded to the south by the City of Upland, to the north by the San Bernardino Mountains, to the west by the Los Angeles County Line and to the east by Cucamonga Creek. SAWCo provides retail service to all end users who reside in the Basic Area.

The Extended Area is identified as all lands not included in the Basic Area. Customers within the Extended Area are considered wholesale shareholders. There are however a limited number of retail customers in the Extended Area including the Upland Hills Golf course, the Red Hill Golf Course, Holliday Rock Company, and several grove irrigators.

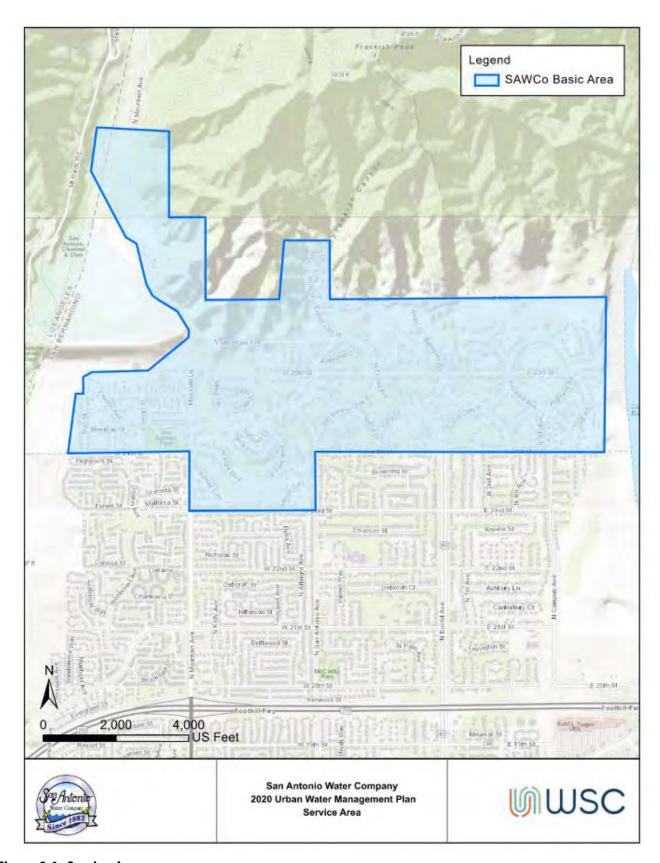


Figure 3-1. Service Area

#### 3.2 Service Area Climate

Table 3-1 presents average climate data for the service area, including temperature, rainfall, and reference evapotranspiration (ETo) from the California Irrigation Management Information System (CIMIS). CIMIS data was used as it provided the most recent data pertaining to temperature, rainfall, and ETo. As shown in

Table 3-1, the warmest month of the year is typically August with an average temperature of 82.4 degrees Fahrenheit (°F), while the coldest month of the year is December with an average temperature of 58.5°F.

The annual average precipitation within SAWCo's service area is about 15.6 inches. As shown in Table 3-1, the majority of rainfall occurs in the months of October through March. December is typically the wettest month with an average rainfall of approximately 3.9 inches.

Table 3-1. Average Climate 1

MONTH	AVERAGE TEMPERATURE (°F)	AVERAGE RAINFALL (INCH)	AVERAGE STANDARD ETO (INCH)
January	59.9	2.8	2.2
February	60.5	2.1	2.8
March	63.8	1.9	4.3
April	67.0	0.9	5.4
May	69.8	0.4	5.8
June	75.8	0.1	6.6
July	81.2	0.2	7.5
August	82.4	0.0	7.3
September	80.1	0.5	5.6
October	73.5	1.3	4.0
November	65.0	1.6	2.7
December	58.5	3.9	2.0
ANNUAL AVERAGE	69.8	<b>15.6</b> <sup>2</sup>	4.7

<sup>&</sup>lt;sup>1</sup> Data based on CIMIS weather station 78 Pomona; https://cimis.water.ca.gov/. Averages calculated from 2010-2020 data.

<sup>&</sup>lt;sup>2</sup> Annual total rainfall.

## 3.3 Service Area Population and Demographics

#### 3.3.1 Service Area Population

SAWCo's Basic Service Area closely follows the boundaries of the census designated place of San Antonio Heights, which had a population of 3,092 in 2017, down from 3,371 in 2010 per the US Census (Datausa.io, 2017). To identify the population for 2020, the DWR population tool was used. Using a persons per connection factor of 2.73, it was estimated that the population within the Basic Area is 3,303 people.

San Antonio Heights is primarily residential and nearly built out. SAWCo has identified seven parcels that could potentially be developed and require water service. For this UWMP, it was assumed development would occur between 2025 and 2030. Therefore, future population was determined to increase to 3,322 people and remain constant throughout the planning horizon.

$$Future\ population = 2020\ population + 2.73 \frac{persons}{connection}*7\ future\ connections = 3,322\ people$$

SAWCo also provides water for irrigation, industrial, agricultural, and wholesale in the Extended Area. Land use and planning in the extended area is under the jurisdiction of numerous cities and San Bernardino County and is addressed in their respective UWMPs.

Table 3-2. DWR 3-1W Current and Projected Population

POPULATION SERVED	2020	2025	2030	2035	2040	2045
Basic Area - San Antonio Heights	3,303	3,303	3,322	3,322	3,322	3,322

## 3.3.2 Other Social, Economic, and Demographic Factors

Based on 2015-2019 data, the United States Census Bureau (Census) estimates that households within the San Antonio Heights are composed of 2.69 people per household and approximately 64% of households are composed of married-couples with families. The median age of a resident within the San Antonio Heights is approximately 48 years old. Based on 2015-2019 Census data, 95% of people 25 years or older had at least graduated from high school and 42% obtained a bachelor's degree or higher. It was estimated that 5% of people did not complete high school.

Throughout the San Antonio Heights, approximately 58% of the working population (people ages 16 and over) were employed. Approximately 75% held a private wage or salary position, and 16% were employed by the federal, state, or local government. Educational services, health care and social assistance (30%) is the most common industry that San Antonio Heights residents work in, followed by a retail trade (14%). The median household income was \$91,897, while the median earnings for a full-time, year-round worker was \$78,071 (United States Census Bureau, n.d.).

It was estimated that 5.2% of people within the San Antonio Heights were in poverty. 1.8% of households participated in government programs, such as the Supplemental Nutrition Assistance Program (SNAP). Of the households that received SNAP, 100% had children under the age of 18 within the household (United States Census Bureau, n.d.).

Census data reported that of the people identifying as one race alone, 79.7% were White. Approximately 4.5% identified as two or more races. Of the total population, an estimated 60.3% identified as White non-Hispanic and 27.8% as Hispanic. It was estimated that 18.9% of people at least

5 years or older spoke a language other than English at home. In addition to English, Asian and Pacific Islander languages were the most common languages spoken by San Antonio Heights residents. 7.4% of people stated that they did not speak English "very well" (United States Census Bureau, n.d.).

#### 3.4 Land Uses within Service Area

As mentioned, SAWCo provides potable water service to the Basic Area, which incorporates the community of San Antonio Heights. This area consists of residential users only. There are only seven parcels currently identified as undeveloped. If they are developed, single-family residences will be established. Therefore, both current and future land uses within SAWCo's Basic Area is residential only.

# Water Use Characterization

SAWCo provides potable and non-potable water to customers within its service area.

SAWCo provides potable water to residents within the San Antonio Heights and on occasion, to the City of Upland. SAWCo provides non-potable water for irrigation to various local irrigators and other agencies, including the Cities of Upland and Ontario, Monte Vista Water District, and Cucamonga Valley Water District. Other large irrigation accounts include the Holiday Rock Company and Red Hill Golf Course and Homeowners Association.

SAWCo's bylaws outline the various water services provided, which include domestic, municipal, and miscellaneous uses, defined below (San Antonio Water Company):

**Domestic:** water treated by SAWCo and directly delivered to shareholders through SAWCo's distribution system.

Municipal: untreated water and delivered to shareholders who in turn treat the water for delivery of domestic, commercial, and other users through their delivery systems.

**Miscellaneous:** untreated water directly delivered to shareholders through SAWCo's distribution system for a variety of legal permissible uses, including farm irrigation, golf course watering, and rock company operations.

#### IN THIS SECTION

- Non-Potable vs.
   Potable Water Use
- Water Use by Sector

#### 4.1 Non-Potable Versus Potable Water Use

As mentioned, SAWCo serves both potable and non-potable water. Potable water is provided to residents within the San Antonio Heights and to the City of Upland. Non-potable water used for irrigation is also provided to several local irrigators and other nearby agencies, as mentioned above. Based on data for 2016 through 2020, SAWCo's average non-potable deliveries account for 84% of the total water provided by SAWCo.

## 4.2 Past, Current, and Projected Water Use by Sector

SAWCo has provided potable and non-potable water to its customers and will continue to do so in the future. Past deliveries are shown in Figure 4-1.

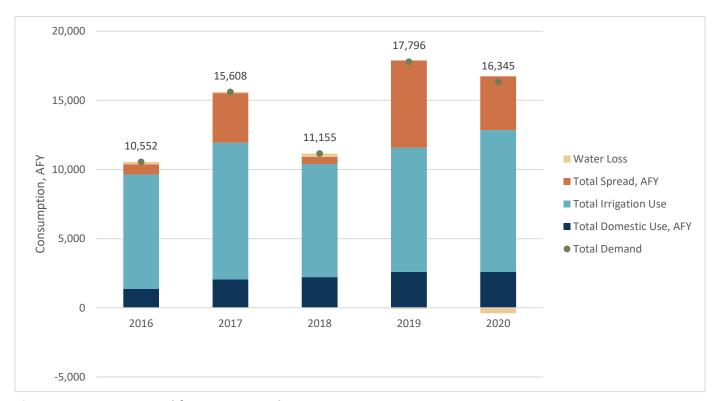


Figure 4-1. Water Demand for 2016-2020, AFY

## 4.2.1 Distribution System Water Losses

Over the last few years, SAWCo has focused on mitigating water losses. Based on historical data, it was clear that SAWCo experienced meter inaccuracies throughout the system. As shown above in Figure 4-1, SAWCo experienced negative water losses, meaning SAWCo sold more water than produced. As a result, the volume of 2020 actual water use shown in Table 4-1 differs from the total supply shown in Table 5-6.

Investigation helped SAWCo identify a substantial area of water losses, located at a flow meter at the Basin 6 settling ponds. In early 2021, SAWCo fixed this meter, and since then, water losses have

remained consistent. Based on data for January through April 2021, water losses have been recorded as 0.9% within the domestic system and 1% within the irrigation system.

In addition, SAWCo has replaced customer meters with Automated Meter Reading (AMR) to improve data collection and response.

#### 4.2.2 Current Water Use

In 2020, SAWCo provided 16,746 AF of water to its customers or spread into groundwater storage. The City of Upland's irrigation system consumed 50% of SAWCo's total water produced. The second largest water use was for spreading, accounting for 23% of the total water produced. Potable deliveries for SAWCo's domestic system within the San Antonio Heights accounted for 8%. A breakdown of water used in 2020 is provided in Figure 4-2.

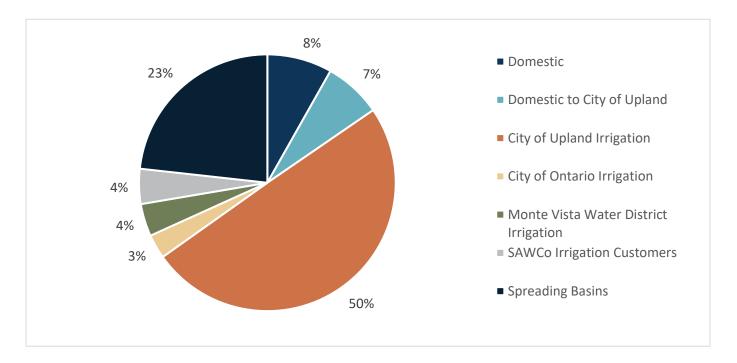


Figure 4-2. 2020 Water Use

Table 4-1. DWR 4-1W Actual Demands for Water, AFY

_		TOTAL:	16,747
Groundwater Recharge	Spreading Basins	Raw Water	3,893
Landscape	Minor Irrigators	Raw Water	740
Sales/Transfers/Exchanges to Other Agencies	City of Ontario	Raw Water	511
Sales/Transfers/Exchanges to Other Agencies	Monte Vista Water District	Raw Water	687
Sales/Transfers/Exchanges to Other Agencies	City of Upland	Raw Water	8,332
Sales/Transfers/Exchanges to Other Agencies	City of Upland	Drinking Water	1,213
Single Family	SAWCo Domestic Customers	Drinking Water	1,371
USE TYPE	ADDITIONAL DESCRIPTION	LEVEL OF TREATMENT WHEN DELIVERED	2020 VOLUME

#### 4.2.3 Projected Water Use

SAWCo's system is very close to buildout and therefore, demands are expected to increase minimally. The majority of the San Antonio Heights area is already developed and any new development, should it occur, is expected along Holly Drive. These developments are anticipated to be single family residential and require potable service only.

Future demands were estimated as part of SAWCo's 2020 Master Plan, using a factor calculated from 2019 consumption and parcel acreage. This factor was applied to areas identified as possible development within the 2017 Water Master Plan and added to current demand to determine the total future demand for SAWCo's potable system. Areas for possible development are identified in Figure 4-3 below and corresponding demand for each parcel is summarized in Table 4-2.

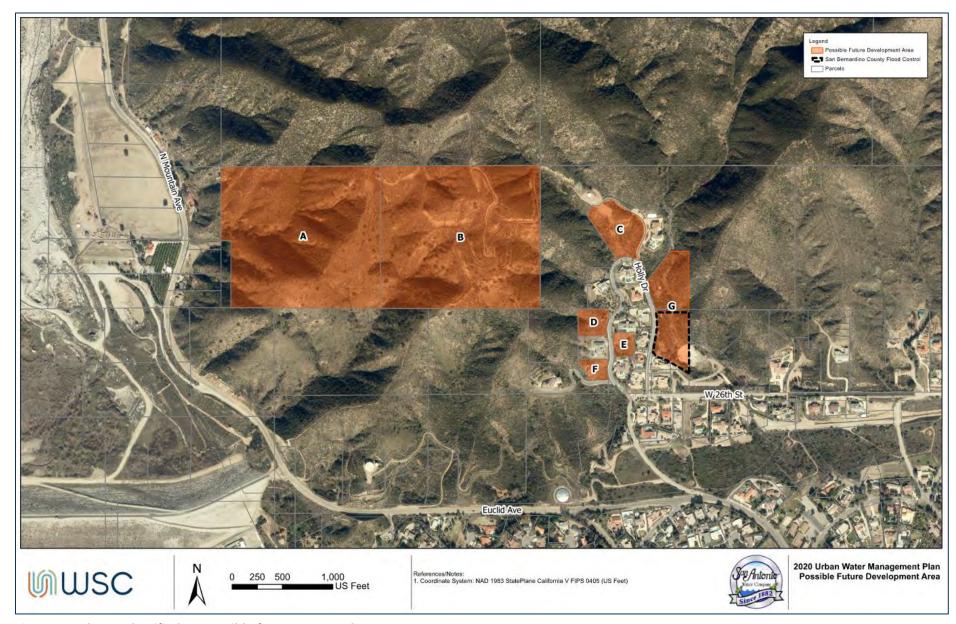


Figure 4-3. Areas Identified as Possible for Future Development

Table 4-2. Future Potable Demand from Future Development

AREA	ACRES	WATER DEMAND FACTOR (GPM/ACRE)	WATER DEMAND (GPM)	WATER DEMAND (AFY)
A <sup>1</sup>	33.8	1.036	17.53	10.9
B1	35.2	1.036	18.23	11.3
С	3.4	1.036	3.54	2.2
D	1.2	1.036	1.28	0.8
E	0.8	1.036	0.81	0.5
F	0.8	1.036	0.82	0.5
G <sup>2</sup>	5.9	1.036	6.09	3.8
			ADDITIONAL FUTURE DEMAND, AFY	29.9

Notes:

### 4.2.4 Characteristic Five-Year Water Use

As outlined in SAWCo's Bylaws, SAWCo provides water to its shareholders and expects its customers to maximize their shares. Therefore, SAWCo projects future water uses based on total shares and entitlement for each customer.

Table 4-3. DWR 4-2W Projected Demands for Water

	ADDITIONAL DESCRIPTION		PRO	JECTED WATER	R USE	
USE TYPE	-	2025	2030	2035	2040	2045
Single Family	SAWCo Domestic Customers	1,270	1,270	1,270	1,270	1,270
Sales/Transfers/Exchanges to Other Agencies	City of Upland	9,186	9,186	9,186	9,186	9,186
Sales/Transfers/Exchanges to Other Agencies	Monte Vista Water District	671	671	671	671	671
Sales/Transfers/Exchanges to Other Agencies	Cucamonga Valley Water District	8	8	8	8	8
Sales/Transfers/Exchanges to Other Agencies	City of Ontario	601	601	601	601	601
Industrial	Holiday Rock Company	269	269	269	269	269
Landscape	Red Hills Golf Course	444	444	444	444	444
Other	Red Hill HOA	20	20	20	20	20
Other	Minor Irrigators	102	102	102	102	102
Groundwater Recharge	Spreading Basins	2,000	2,000	2,000	2,000	2,000
-	TOTAL:	14,571	14,571	14,571	14,571	14,571

<sup>&</sup>lt;sup>1</sup>If developed, parcel expected to be half developed. Half of total parcel acreage used to determine future demand.

<sup>&</sup>lt;sup>2</sup>Half of area identified as future development is highly unlikely to be developed. Southern portion of Area G owned by San Bernardino County Flood Control. Dashed lines in Figure 4-3 delineate area owned by San Bernardino County Flood Control.

Table 4-4. DWR 4-3W Total Gross Water Use

	2020	2025	2030	2035	2040	2045
Potable and Raw Water From Table 4-1 W and 4-2W	16,747	14,571	14,571	14,571	14,571	14,571
Recycled Water Demand* From Table 6-4W	-	-	-	-	-	-
Total Water Demand:	16,747	14,571	14,571	14,571	14,571	14,571

# 4.3 Climate Change Considerations

It is anticipated that SAWCo's shareholders will continue to use water based on their share's entitlement. Demands may decrease as the result of water supply shortage and drought messaging, as discussed in SAWCo's Water Shortage Contingency Plan.

# Water Supply Characterization

This section describes the existing and projected supplies for SAWCo. SAWCo currently receives all its water supply from local sources including the San Antonio Creek, groundwater from the San Antonio Tunnel, and three groundwater basins: Chino Basin, Cucamonga Basin, and Six Basins.

Surface water from San Antonio Creek are pre-1914 water rights, and annual water availability is influenced by rainfall. The San Antonio Tunnel is a deep rock tunnel 100 feet below ground surface that collects naturally percolated groundwater. The three groundwater basins are each adjudicated, and SAWCo's water rights are defined by the various legal Judgements in place to protect and manage each basin. SAWCo also participates in groundwater recharge operations that enhance groundwater supply.

SAWCo provides water from the San Antonio Tunnel (Tunnel), the Chino Basin, and the Cucamonga Basin to its domestic customers. During times of large flows from the Tunnel, potable water overflows into the irrigation system through the Forebay Pump Station. This provides SAWCo with the opportunity to avoid large water losses within the domestic system and decrease groundwater extraction for the irrigation system.

#### IN THIS SECTION

- Purchased Water
- Groundwater
- Wastewater and Recycled Water
- Future Projects
- Summary of Existing and Planned Supplies
- Energy Intensity

## 5.1 Water Supply Analysis Overview

SAWCo currently relies on local supply sources to meet its shareholder needs. Supplies include local surface water from the San Antonio Creek and groundwater from several basins. SAWCo expects to continue using these local sources throughout the future.

**Surface Water:** SAWCo may obtain up to 13,864 AFY of surface water from the San Antonio Creek. However, the actual volume received depends on minimum stream flowrates and can vary significantly based on rainfall. Water from the San Antonio Creek is used to meet irrigation demands and also conveyed to the City of Upland's water treatment plant for treatment and subsequent distribution by the City of Upland.

**Tunnel Water:** SAWCo may obtain all the volume of water in the San Antonio Tunnel (Tunnel). The Tunnel is supplied by naturally percolated groundwater, which can vary year to year based on rainfall and snowpack. SAWCo may also divert water from the San Antonio Creek spreading grounds north of the San Antonio Tunnel, where it is percolates into the tunnel and is conveyed to SAWCo's Forebay Tank and can be used in either the domestic or irrigation system.

**Groundwater:** SAWCo has groundwater rights in the Chino, Cucamonga, and Six Basins, as summarized in Table 5-1 below.

Table 5-1. SAWCo's Groundwater Rights

<b>GROUNDWATER BASIN</b>	SAWCO RIGHTS, AFY	NOTES
Chino Basin	1,234	
Cucamonga Basin	4,500 – 8,500	SAWCo may obtain up to 6,500 AFY of groundwater from the Cucamonga Basin, provided 2,000 AF is spread each year. If SAWCo spreads less than 2,000 AFY, SAWCo may only extract 4,500 AFY. If SAWCo spreads an excess of 2,000 AFY, SAWCo may extract up to 95% of the total spreading surplus amount, but not more than 8,500 AFY.
Six Basins	932	

### 5.2 UWMP Water Supply Characterization

Details on SAWCo's various supply sources are described in this section.

### 5.2.1 Purchased or Imported Water

SAWCo does not currently purchase or import water.

#### 5.2.2 Groundwater

SAWCo obtains groundwater from the Chino, Cucamonga, and Six Basins groundwater basins. Groundwater extracted from the Chino Basin is used for potable demands only. Groundwater from the Cucamonga Basin and Six Basins is used within SAWCo's irrigation system. Figure 5-1 shows the various groundwater basins SAWCo utilizes and their boundaries.

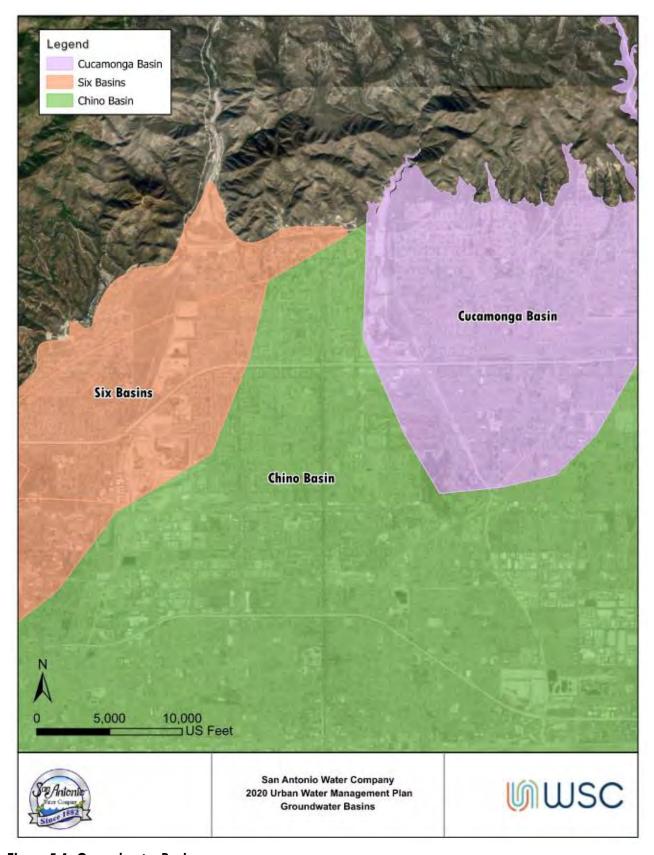


Figure 5-1. Groundwater Basins

#### 5.2.2.1 Chino Basin

The Chino Basin is a subbasin to the Upper Santa Ana Valley Groundwater Basin and is designated by DWR as Basin 8-002.01. The Chino Basin underlies southeast Los Angeles County, northwest Riverside County, and southwest San Bernardino County. It is bound to the northwest by the San Jose fault, to the north by the Cucamonga fault and impermeable rocks that make up the San Gabriel Mountains. To the east, the Chino Basin is bounded by the Rialto-Colton fault, to the southeast by the Jurupa, Pedley, La Sierra Hills as well as the Santa Ana River. It is bounded to the southwest by the Chino and Puente Hills (California Department of Water Resources, 2016). The Chino Basin is considered a very-low-priority basin under the Sustainable Groundwater Management Act (SGMA).

The Chino Basin is governed by the Chino Basin Watermaster. The Chino Basin Watermaster serves to enforce the provisions of the 1978 Judgment in Chino Basin Municipal Water District vs. City of Chino et al (Judgment) and any other orders from the Court, as well as develops an Optimum Basin Management Program. Under the 1978 Judgment, the Chino Basin's safe yield was established as 140,000 AFY. The safe yield is defined in the Chino Basin Judgment as "the long-term average annual quantity of groundwater (excluding replenishment of stored water but including return flow to the Basin from use of replenishment or stored water) which can be produced from the Chino Basin under conditions of a particular year without causing an undesirable result" (Chino Basin Municipal Water District v. City of Chino, et al., 1978). The 1978 Chino Basin Judgment's allocation of the safe yield of the Chino Basin includes three separate Pools: The Overlying Agricultural Pool, Overlying Non-Agricultural Pool, and the Appropriative Pool. SAWCo is a member of the Appropriative Pool and has an appropriative right of 2.748 percent of the total appropriative rights in the Chino Basin. Under the 1978 Judgment, SAWCo was entitled to 1,506.888 AF. A copy of the 1978 Judgement is provided in Appendix D.

In 2020, the Safe Yield was recalculated to better manage the Basin and ensure sustainability. As established in the 2000 Optimum Basin Management Program (OBMP), the safe yield of the Chino Basin must be recalculated every 10 years, commencing in 2011. The Watermaster evaluated the safe yield recalculation using a groundwater flow model to redetermine the net recharge into the Chino Basin and identify any factors that could create undesirable results. The resulting Safe Yield was estimated at 135,000 AF (Chino Basin Watermaster, 2020). As a result, starting on June 30, 2020, SAWCo is entitled to 1,232.038 AF.

The Chino Basin Watermaster has also developed an updated 2020 OBMP that outlines how the Chino Basin should be managed over the next 20 years. The 2020 OBMP, provided as Appendix E, also includes the storage management plan that encompasses the recalculated safe yield.

The Chino Basin Watermaster also reallocates the unused portion of the Chino Basin safe yield from to the Overlying Agricultural Pool to the Appropriative Pool members as a supplement to the Appropriative Pool share of OSY rights in any year. These transfers are permanent if agricultural land has been converted to non-agricultural use, or temporary if agricultural pool extractions are less than their share of the safe yield. As agricultural production declines within the Chino Basin, the reallocation of water to the Appropriative Pool is expected to increase. Appropriators, like SAWCo, who are party to the Chino Basin Judgment are authorized to continue to produce groundwater while exceeding their water rights. Such extractions result in assessments by the Chino Basin Watermaster to pay for water to replenish the basin, through imported surface water recharge. Water to replenish the Chino Basin is purchased from Metropolitan Water District of Southern California (Metropolitan) by Chino Basin Watermaster in coordination with the Inland Empire Utilities Agency (IEUA) or from Appropriation Pool participants (Civiltec Engineering Inc. for San Antonio Water Company, June 2016).

#### 5.2.2.2 Cucamonga Basin

The Cucamonga Basin is a subbasin to the Upper Santa Ana Valley Groundwater Basin and is designated by DWR as Basin 8-002.02. The Cucamonga Basin is bounded to the north by the San Gabriel Mountains and bounded by the Red Hill fault to the west, east and south (California Department of Water Resources, 2016). The Cucamonga Basin is considered a very-low-priority basin under the Sustainable Groundwater Management Act (SGMA).

In 1958, the Cucamonga Judgement was established and outlined water rights for individual groundwater producers, how much can be exported to non-overlaying areas, and specific requirements for spreading (San Antonio Water Company vs Others, 1958). The Cucamonga Judgment stipulates production for all stakeholders of 22,721 AFY, with SAWCo's water production right of 6,500 AFY, provided SAWCo spreads 2,000 AFY of water from the San Antonio Canyon. If the annual spreading is less than 2,000 AFY, SAWCo's water rights may be reduced to a minimum amount of 4,500 AFY. However, if the spreading exceeds 2,000 AFY, SAWCo can credit 95% of the excess up to a maximum of 8,500 AFY production. From 2010-2019, SAWCo spread an average of 1,500 AFY; however, spreading between 2012 through 2018 were less than 2,000 AFY. As a result, SAWCo's 2020 production right from the Cucamonga Basin was limited to approximately 6,000 AF (4,500 AF plus the 10-year average spread). A copy of the Cucamonga Judgement is provided in Appendix F.

#### 5.2.2.3 Six Basins

The Six Basins are a part of the Main San Gabriel Basin, designated by DWR as Basin 4-013 and as a very low priority basin. The Six Basins area consists of six interconnected groundwater basins: Canyon, Upper Claremont Heights, Lower Claremont Heights, Live Oak, Ganesha, and the Pomona Basins. The Six Basins area is bounded by the San Jose Hills to the south, the Chino Basin to the east, the San Gabriel Mountains to the to the north, and the Main San Gabriel Basin to the west.

The Six Basins are further broken down into the Four Basins and Two Basins. The Four Basins include the Canyon, Upper Claremont Heights, Lower Claremont Heights and Pomona Basins. The Two Basins refer to the Live Oak and Ganesha Basins. Water within the Two Basins is used solely by the City of La Verne (Jericho Systems, Inc. and Tom Dodson & Associates for Three Valley Municipal Water District, May 2021). SAWCo is entitled up to 7.166 percent of the OSY of the Four Basins. For 2020, SAWCo was entitled to 932.10 AFY with 2,643.30 AFY available from storage.

The Six Basins is managed by the Six Basins Watermaster. The Six Basins were adjudicated in 1998 through the stipulated judgement "Southern California Water Company vs. City of La Verne et al." known as the Six Basins Judgement, provided in Appendix G. The Six Basins Judgement specified a safe yield of 19,300 AFY and the Six Basins Watermaster establishes operating safe yields (OSY) annually. In additions, water users within the Six Basins may obtain "carryover rights" for unused production (Southern California Water Company vs. Others, 1998).

The Six Basins Watermaster is currently developing a Six Basins Strategic Plan (Strategic Plan). The Strategic Plan's Draft Program Environmental Impact Report (PEIR) is currently in a public review period. This Strategic Plan will become the conjunctive water management program utilized by the Six Basins Watermaster to implement water supply and conservation projects in coordination with others and to optimize conjunctive water management activities within the Six Basins (Jericho Systems, Inc. and Tom Dodson & Associates for Three Valley Municipal Water District, May 2021). Specifically, the Strategic Plan aims to:

- · Enhance water supplies
- Enhance basin management
- Protect and enhance water quality
- Equitably finance the Strategic Plan implementation

#### 5.2.2.4 Past Five Years

Groundwater extractions by basin over the past five years are provided in Table 5-2.

Table 5-2. DWR 6-1W Groundwater Volume Pumped

All or part of the groundwater described below is desalinated.

Alluvial Basin Chino Basin 897 393 487		TOTAL:	7,935	7,038	7,863	6,997	6,935
Alluvial Basin Chino Basin 897 393 487		Six Basins	757	884	969	1,180	1,252
		Cucamonga Basin	6,281	<i>5,</i> 761	6,407	5,340	4,945
		Chino Basin	897	393	487	477	738
GROUNDWATER TYPE LOCATION OR BASIN NAME 2016 2017 2018	PE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020

#### Table 5-3. DWR 6-1W Groundwater Volume Pumped: Potable

All or part of the groundwater described below is desalinated.

_	TOTAL:	1,013	435	488	477	<i>7</i> 51
Alluvial Basin	Cucamonga Basin	116	42	1	-	13
Alluvial Basin	Chino Basin	897	393	487	477	738
GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020

#### Table 5-4. DWR 6-1W Groundwater Volume Pumped: Non-Potable

All or part of the groundwater described below is desalinated.

	TOTAL:	6,922	6,604	7,375	6,520	6.185
Alluvial Basin	Six Basins	757	884	969	1,180	1,252
Alluvial Basin	Cucamonga Basin	6,165	5,720	6,406	5,340	4,933
GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020

#### 5.2.2.5 San Antonio Tunnel

SAWCo is entitled to all water supplied through the San Antonio Tunnel (Tunnel). The Tunnel is a deep rock tunnel located 100 feet below ground surface and is supported by redwood beams and solid rock. Groundwater naturally percolates into the Tunnel and can vary year to year based on rainfall and snowpack. SAWCo may also divert water from the San Antonio Creek spreading grounds north of the Tunnel, where it is percolates into the tunnel and used primarily as a potable supply. The Tunnel deliveries this supply at SAWCo's Forebay station. In times of high Tunnel flows and low domestic demand, Tunnel water overflows into the irrigation system to avoid water losses. The average supply from the Tunnel since 1999 is 2,443 AFY and ranged from only 727 AF in 2015 to 3,682 AF in 1996.

#### 5.2.3 Surface Water

SAWCo has rights for up to 13,864 AFY of surface water from the San Antonio Creek. However, the actual volume received depends on minimum stream flowrates and can vary significantly based on rainfall. SAWCo's supply from the San Antonio Creek since 1999 ranged from a low of 1,181 AF in

2018 to a high of 9,072 AF in 2005. The average volume from San Antonio Creek during years with average rainfall years is 4,042 AFY.

#### 5.2.4 Stormwater

SAWCo's water sources are limited to groundwater from the basins that underlie SAWCo's service area and local surface water runoff.

#### 5.2.5 Wastewater and Recycled Water

SAWCo does not own or operate wastewater or recycled water facilities and therefore does not have any current nor planned recycled water use. SAWCo encourages the use of recycled water as a regional resource through its affiliation with the Inland Empire Utilities Agency (IEUA). In the event that a SAWCo customer were to acquire recycled water as a supply, the customer may choose to lease, sell, or inactivate their shares within SAWCo.

#### 5.2.5.1 Wastewater Collection, Treatment, and Disposal

SAWCo's domestic customers utilize septic tanks to dispose of their wastewater.

#### 5.2.6 Desalinated Water Opportunities

SAWCo does not currently nor plan to use desalinated water as a supply source.

#### 5.2.7 Water Exchanges and Transfers

SAWCo maintains interconnections with the City of Upland. Two of these connections have been identified for emergency use. However, SAWCo has not provided or purchased any emergency sales through the emergency interconnections over the last five years. In addition, several water suppliers own shares in SAWCo; therefore, they are considered SAWCo customers or shareholders and are discussed in Chapter 4.

#### 5.2.8 Future Water Projects

SAWCo is currently updating its Water Master Plan. As part of the Water Master Plan, future projects that may increase SAWCo's supply and reliability may be identified. The Water Master Plan is anticipated to be complete by the end of 2021.

SAWCo is currently constructing several projects to increase storage and capture all raw water released through the Frankish Tunnel. Both projects are anticipated to be complete in early 2021.

Table 5-5. DWR 6-7W Expected Future Water Supply Projects or Programs

The supplier will complete the table.

NAME OF FUTURE PROJECTS OR PROGRAMS	JOINT PROJECT WITH OTHER SUPPLIERS	AGENCY NAME	DESCRIPTION	PLANNED IMPLEMENTATION YEAR	PLANNED FOR USE IN YEAR TYPE	EXPECTED INCREASE IN WATER SUPPLY TO SUPPLIER, AF
Frankish Tunnel Outfall Improvements	No	N/A	Improve the Frankish Tunnel outfall to capture all water released through the Frankish Tunnel for storage into various groundwater basins for future use.	2021	All Year Types	
Holly Drive Reservoir Upgrades	No	N/A	Installation of two 100,000-gallon tanks for additional fire and operations water storage.	2022	All Year Types	0.55
Well 19	No	N/A	Construction of new well for domestic use.	2022-2023	All Year Types	2,400

#### 5.2.9 Summary of Existing and Planned Sources of Water

SAWCo currently utilizes local surface water and groundwater sources to meet its customers' demands. SAWCo will continue to efficiently utilize existing sources to meet future needs. Future supply projections reflect 20-year average supply from the San Antonio Creek and San Antonio Tunnel, while groundwater sources reflect SAWCo's total water right by basin.

Water Supply Characterization Section 5

Table 5-6. DWR 6-8W Actual Water Supplies

			2020
WATER SUPPLY	ADDITIONAL DETAIL ON WATER SUPPLY	ACTUAL VOLUME	WATER QUALITY
Groundwater (not desalinated)	Chino Basin	738	Drinking Water
Groundwater (not desalinated)	Cucamonga Basin	13	Drinking Water
Groundwater (not desalinated)	Cucamonga Basin	4,933	Other Non-Potable Water
Groundwater (not desalinated)	Six Basins	1,252	Other Non-Potable Water
Surface water (not desalinated)	San Antonio Creek	6,901	Other Non-Potable Water
Groundwater (not desalinated)	San Antonio Tunnel	1,833	Drinking Water
Groundwater (not desalinated)	San Antonio Tunnel	676	Other Non-Potable Water
-	TOTAL:	16,346	

Water Supply Characterization Section 5

#### Table 5-7. DWR 6-9W Projected Water Supplies

#### PROJECTED WATER SUPPLY

		2025	2030	2035	2040	2045
WATER SUPPLY	ADDITIONAL DETAIL ON WATER SUPPLY	REASONABLY AVAILABLE VOLUME				
Surface water (not desalinated)	San Antonio Creek	4,416	4,416	4,416	4,416	4,416
Groundwater (not desalinated)	San Antonio Tunnel	2,178	2,178	2,178	2,178	2,178
Groundwater (not desalinated)	Chino Basin	1,234	1,234	1,234	1,234	1,234
Groundwater (not desalinated)	Cucamonga Basin	6,500	6,500	6,500	6,500	6,500
Groundwater (not desalinated)	Six Basins	932	932	932	932	932
-	TOTAL:	15,260	15,260	15,260	15,260	15,260

Supply from the San Antonio Creek and San Antonio Tunnel reflect 20-year average supply from 2000 through 2020. Supply from various groundwater basins reflect SAWCo's total water rights from each basin.

#### 5.2.10 Special Conditions

As mentioned previously, SAWCo is currently developing a Water Master Plan. The master planning effort also includes a supply risk and resilience analysis that addresses both the domestic and irrigation systems. Existing supply sources were analyzed, the top risks to their supplies evaluated, and the impacts these risks would have on SAWCo's ability to continue to provide a reliable and high-quality water to its shareholders quantified.

#### 5.2.10.1 Climate Change Effects

Climate change is expected to result in more extreme droughts, shifting rainfall patterns, more intense rainfall and flooding, and higher variability from surface water supplies. Climate change is occurring and the best mitigation SAWCo can take is to plan and prepare for climate change related impacts. The Cal-Adapt Climate Projections for the Desert Region of San Bernardino County, of which SAWCo overlies, estimates a 2- to 4-inch decline in annual average rainfall by 2050 due to climate change. However, all models predict shifting rainfall patterns with wetter winters and drier summers (2021 California Energy Commission, 2021).

#### 5.3 Energy Intensity

SAWCo monitors funds spent on energy at its facilities. In 2020, SAWCo spent approximately \$629,000 on energy. It was assumed that energy is billed at \$0.23 per kilo-Watt hour (kWh). Therefore, it was estimated that SAWCo consumed 2.7 million kWh to provide service to its customers, yielding an energy intensity of 167.3 kWh/AF.

Table 5-8. DWR O-1B Recommended Energy Reporting - Total Utility Approach

Water Delivery Product (If delivering more than one type of prod table O-1C)	uct use Table O-1C): Mu	Iltiple Products (un	able to use
ENTER START DATE FOR REPORTING 1/1/2020 PERIOD	URBAN WATER SUP	PLIER OPERATION	AL CONTROL
END DATE 12/30/2020			
	SUM OF ALL WATER MANAGEMENT PROCESSES	NON-CONS HYDRO	
Water Volume Units Used: AF	TOTAL UTILITY	HYDROPOWER	NET UTILITY
Volume of Water Entering Process (A	F) 16,345	0	16,345
Energy Consumed (kW	h) 2,734,416	0	2,734,416
ENERGY INTENSITY (KWH/A	F) 167.3	0.0	167.3

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

**Data Quality Narrative:** Energy usage assumed based on a factor of \$0.23/kWH and applied to the total amount SAWCo paid in 2020.

# Water Service Reliability and Drought Risk Assessment

This section considers SAWCo's water supply reliability during normal, single dry, and multiple dry water years over the planning horizon. A Drought Risk Assessment of the next five years is also included.

The supply reliability assessment discusses factors (i.e. climatic, environmental, water quality, and legal) that could potentially limit the expected quantity of water available to SAWCo through 2045. Multiple drought scenarios are considered and the quantitative impacts of the aforementioned factors on water supply and demand are discussed, as well as possible methods for addressing these issues. The management tools that SAWCo has implemented to maximize current resources is also discussed.

#### IN THIS SECTION

- Water Service Reliability Assessment
- Drought Risk Assessment

#### 6.1 Water Service Reliability Assessment

#### 6.1.1 Constraints on Water Sources

As described in the previous section, SAWCo relies on surface water from the San Antonio Creek, naturally percolated water through the San Antonio Tunnel, and groundwater from several local basins.

#### **Climatic Factors**

Water available from the San Antonio Creek and Tunnel are highly susceptible to climate change and increased drought periods. The San Antonio Creek relies on rainfall and the snowpack in the local mountains. In periods of dry weather, the San Antonio Creek may cease to flow, resulting in decreased supply to SAWCo's irrigation system. The Tunnel also relies on naturally percolated groundwater from rainfall.

Groundwater within the Chino, Cucamonga, and Six Basins may be impacted by climate change. As other sources are negatively impacted, basin users may need to extract additional groundwater to meet their needs. Since the Chino, Cucamonga, and Six Basins are adjudicated, SAWCo obtains water rights within these basins. Should severe conditions occur, SAWCo's allocation may be reduced to avoid over-extraction and harm to the basins. In the event that SAWCo's water allocations are reduced, SAWCo's shareholders may also receive a reduction in allocation.

#### **Environmental Factors**

Local groundwater basins may be impacted by water quality. Groundwater management agencies, like the Chino Basin Watermaster, has and continues to focus on sustainable basin management to ensure local sources remain and that stakeholders can fully utilize their water rights. The Chino Basin Watermaster continues to monitor contaminants that may impact supply and publishes water quality data in the State of the Basin report every two years.

Similarly, the Six Basins Watermaster publishes an annual report that addresses the status of the Six Basins, including details on groundwater levels and the operating safe yield determination.

#### **Other Factors**

In times of severe drought, total entitlement to SAWCo and its shareholders has been adjusted to mitigate supply shortages. Entitlement has been reduced equally among all shareholders, based on a percentage. Should future severe dry periods occur, it is possible that entitlement may need to be reduced to align with supply available and in coordination with other supply management agencies and users, like Watermasters and other groundwater basin users.

#### 6.1.1 Year Type Characterization

As required, the water service reliability assessment and Drought Risk Assessment (DRA) analyze supply over several water years: normal, single dry, and multiple dry years.

DWR defines these years as:

- Normal Year: this condition represents the water supplies a supplier considers available during normal conditions. This could be a single year or averaged range of years that most closely represents the average water supply available.
- Single Dry Year: the single dry year is recommended to be the year that represents the lowest water supply available.

• Five-Consecutive Year Drought: the driest five-year historical sequence for the supplier, which may be the lowest average water supply available for five years in a row.

#### 6.1.1.1 Sources for Water Data

SAWCo provides water service based on the number of shares a customer holds. To determine the amount of supply available, the 20-year average volume was determined, as shown in Figure 6-1. SAWCo will only produce what is required to meet shareholder's demands; therefore, it assumed that the total supply available will equal the Company-wide shareholder entitlement of 14,571 AFY.

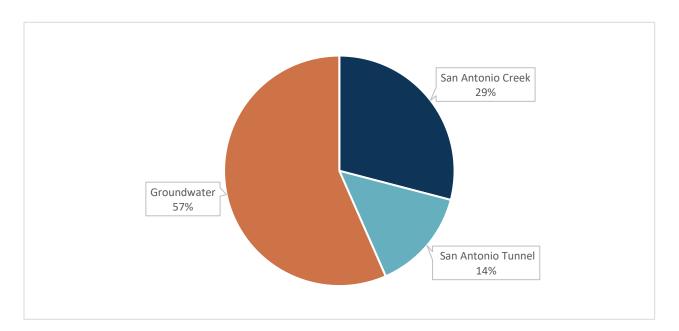


Figure 6-1. Average Supply

Table 6-1. DWR 7-1W Basis for Water Year Data

Quantification of available supplies is provided in this table as either volume only, percent only, or both.

-		AVAILABLE SUPPLY IF YEAR TYPE REP		
YEAR TYPE	BASE YEAR	VOLUME AVAILABLE	PERCENT OF AVERAGE SUPPLY	
Average Year		14,571	100%	
Single-Dry Year		14,571	100%	
Consecutive Dry Years 1st Year		14,571	100%	
Consecutive Dry Years 2nd Year		14,571	100%	
Consecutive Dry Years 3rd Year		14,571	100%	
Consecutive Dry Years 4th Year		14,571	100%	
Consecutive Dry Years 5th Year		14,571	100%	

#### 6.1.2 Water Service Reliability

Results of the water supply and demand analysis for normal, single dry, and five-year consecutive dry droughts are shown in the following tables. SAWCo expects to meet demands under all water year scenarios with existing supply sources.

Depending on rainfall and other local factors, the amount of water available from the San Antonio Creek and Tunnel may be reduced. The variability of water utilized from each source is illustrated in Figure 6-2. SAWCo plans to mitigate reductions from San Antonio Creek by increased groundwater pumping in drier years.

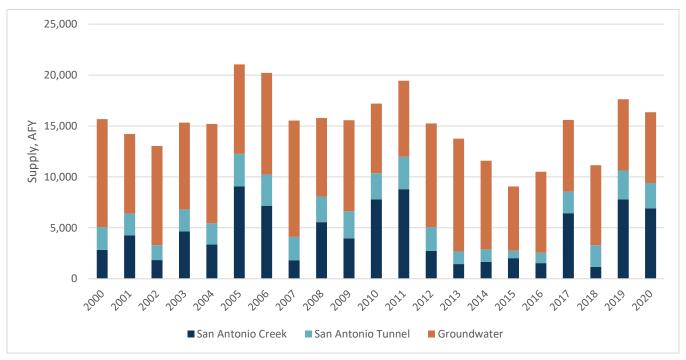


Figure 6-2. Historical Supply Variability

Table 6-2. DWR 7-2W Normal Year Supply and Demand Comparison

	2025	2030	2035	2040	2045
Supply Totals From Table 6-9W	15,260	15,260	15,260	15,260	15,260
Demand Totals From Table 4-3W	14,571	14,571	14,571	14,571	14,571
DIFFERENCE:	689	689	689	689	689

Supply totals reflect 20-year average supply from the San Antonio Creek and Tunnel, and total SAWCo allocation rights for groundwater.

Table 6-3. DWR 7-3W Single Dry Year Supply and Demand Comparison

	2025	2030	2035	2040	2045
Supply Totals	14,571	14,571	14,571	14,571	14,571
Demand Totals	14,571	14,571	14,571	14,571	14,571
DIFFERENCE:	0	0	0	0	0

Table 6-4. DWR 7-4W Multiple Dry Years Supply and Demand Comparison

		2025	2030	2035	2040	2045
First	Supply Totals	14,571	14,571	14,571	14,571	14,571
Year	Demand Totals	14,571	14,571	14,571	14,571	14,571
-	DIFFERENCE:	0	0	0	0	0
Second	Supply Totals	14,571	14,571	14,571	14,571	14,571
Year	Demand Totals	14,571	14,571	14,571	14,571	14,571
-	DIFFERENCE:	0	0	0	0	0
Third	Supply Totals	14,571	14,571	14,571	14,571	14,571
Year	Demand Totals	14,571	14,571	14,571	14,571	14,571
-	DIFFERENCE:	0	0	0	0	0
Fourth	Supply Totals	14,571	14,571	14,571	14,571	14,571
Year	Demand Totals	14,571	14,571	14,571	14,571	14,571
-	DIFFERENCE:	0	0	0	0	0
Fifth	Supply Totals	14,571	14,571	14,571	14,571	14,571
Year	Demand Totals	14,571	14,571	14,571	14,571	14,571
-	DIFFERENCE:	0	0	0	0	0

#### 6.1.3 Descriptions of Management Tools and Options

SAWCo relies on local sources to meet demands and intends to continue to utilize existing sources well into the future. SAWCo is proactive in ensuring these resources, such as the San Antonio Tunnel, is cared for and continues to evaluate its condition to ensure long-term reliability.

#### 6.2 Drought Risk Assessment

The Drought Risk Assessment (DRA) is based on an analysis of historical drought data forecasted into the future under various drought conditions, with a focus on the five-year consecutive drought scenario. The DRA analyzes historical data to assess patterns and more reliably determine if there could be any water shortages in the next five years. If demands cannot be met by the expected supply available, shortage response actions from SAWCo's WSCP may be implemented. Details on SAWCo's WSCP are provided in Appendix H.

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

The data, methods, and basis for a water shortage condition were identified using typical normal year supply and total possible system demand (total entitlement based on all SAWCo shares). Since the total number of shares within SAWCo is fixed, the total demand is also fixed, and therefore constant over the next five years.

#### 6.2.2 DRA Water Source Reliability

The DRA provides a snapshot of the anticipated surplus or deficit if a drought were to occur in the next five years. As described previously, SAWCo provides water based on total number of shares a stakeholder possesses. SAWCo will provide the water entitled to its shareholder, or only what is needed, to meet shareholder demands. SAWCo anticipates meeting all demands over the next five years.

Table 6-5. DWR 7-5 Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b)

2021	Gross Water Use	14,571				
	Total Supplies	14,571				
	Surplus/Shortfall without WSCP Action	0				
	Planned WSCP Actions (Use Reduction and Supply Augmentation)					
	WSCP (Supply Augmentation Benefit)					
	WSCP (Use Reduction Savings Benefit)					
	Revised Surplus/Shortfall	0				
	Resulting Percent Use Reduction from WSCP Action	0%				
2022	Gross Water Use	14,571				
	Total Supplies	14,571				
	Surplus/Shortfall without WSCP Action	0				
	Planned WSCP Actions (Use Reduction and Supply Augmentation)					
	WSCP (Supply Augmentation Benefit)					
	WSCP (Use Reduction Savings Benefit)					
	Revised Surplus/Shortfall	0				
	Resulting Percent Use Reduction from WSCP Action	0%				
2023	Gross Water Use	14,571				
	Total Supplies	14,571				
	Surplus/Shortfall without WSCP Action	0				
	Planned WSCP Actions (Use Reduction and Supply Augmentation)					
	WSCP (Supply Augmentation Benefit)					
	WSCP (Use Reduction Savings Benefit)					
	Revised Surplus/Shortfall	0				
	Resulting Percent Use Reduction from WSCP Action	0%				
2024	Gross Water Use	14,571				
	Total Supplies	14,571				
	Surplus/Shortfall without WSCP Action	0				
	Planned WSCP Actions (Use Reduction and Supply Augmentation)					
	WSCP (Supply Augmentation Benefit)					
	WSCP (Use Reduction Savings Benefit)					
	Revised Surplus/Shortfall	0				
	Resulting Percent Use Reduction from WSCP Action	0%				
2025	Gross Water Use	14,571				
	Total Supplies	14,571				
	Surplus/Shortfall without WSCP Action	0				
	Planned WSCP Actions (Use Reduction and Supply Augmentation)					
	WSCP (Supply Augmentation Benefit)					
	WSCP (Use Reduction Savings Benefit)					
	Revised Surplus/Shortfall	0				
	Resulting Percent Use Reduction from WSCP Action	0%				

#### 2020 URBAN WATER MANAGEMENT PLAN

### Water Shortage Contingency Plan Summary

The Water Shortage Contingency Plan (WSCP) is a strategic plan that SAWCo uses to prepare for and respond to foreseeable and unforeseeable water shortages. A water shortage occurs when the water supply available is not sufficient to meet the normally expected customer water use at a given time. A shortage may occur for many reasons, such as an extended drought, water pollution, power outage, or a catastrophic event.

The WSCP provides guidance to SAWCo's Board of Directors, staff, and the public by identifying anticipated water shortages and response actions to manage any water shortage with predictability and accountability in an efficient manner. This WSCP is intended to provide a working framework and options to guide SAWCo's response to water shortages.

#### IN THIS SECTION

WSCP Overview

#### 7.1 WSCP Overview

The WSCP is composed of the following elements:

#### Water Supply Reliability Analysis

Summarizes SAWCo's water supply analysis and reliability and identifies any key issues that may trigger a shortage condition. Details on the water supply reliability analysis are provided in Chapter 7.

#### **Annual Water Supply and Demand Assessment**

Describes the key data inputs, evaluation criteria, and methodology for assessing the system's reliability for the coming year and the steps to formally declare a water shortage.

#### **Shortage Stages**

Establishes water shortage levels to clearly identify and respond to a water shortage emergency.

#### **Shortage Response Actions**

Describes the response actions that may be implemented or considered for each shortage stage to reduce gaps between available supply and demand.

#### **Communication Protocols**

Describes communication protocols SAWCo follows to ensure that its stakeholders are well-informed of shortage conditions and requirements.

#### **Compliance and Enforcement**

Defines compliance and enforcement actions available to implement the WSCP.

#### **Legal Authority**

Summarizes the legal documents that provide SAWCo with the authority to declare a water shortage emergency and implement and enforce response actions.

#### **Financial Consequences of WSCP Implementation**

Describes the anticipated financial impact of a water shortage and identifies mitigation strategies to offset financial burdens.

#### **Monitoring and Reporting**

Summarizes the monitoring and reporting techniques to evaluate the effectiveness of shortage response actions and overall WSCP implementation. Results will be used to determine whether additional shortage response actions should be implemented and if current actions are successful.

#### **WSCP Refinement Procedures**

Describes the factors that may trigger updates to the WSCP and outlines how to complete an update.

#### **Special Water Features Distinctions**

Defines considerations and definitions for water use for decorative features versus pools and spas. Decorative features include ornamental fountains, ponds, and other aesthetic features.

#### Plan Adoption, Submittal, and Availability

Describes the WSCP adoption process, submittal, and availability after revision.

The WSCP is a stand-alone document that can be modified as needed, and included as Appendix H.

## Demand Management Plan Measures

This section provides a comprehensive description of the water conservation programs that SAWCo has implemented for the past five years, is currently implementing, and plans to implement in the future.

### 8.1 Demand Management Measures for Wholesale Suppliers

#### 8.1.1 Metering

In September 2020, SAWCo's Board approved a \$740,000 project to replace all meters with new automated meters. The new meters will be Automated Meter Reading (AMR) cellular meters and will record water use daily. In addition, SAWCo is developing an online portal so that all shareholders can access their water consumption and receive alerts directly. All meters were replaced in early 2021. Previously, SAWCo staff visited meters once a month and manually read and logged meters.

#### IN THIS SECTION

- Demand Management Measures for Wholesalers
- Other Demand Management Measures
- Reporting Implementation

#### 8.1.2 Public Education and Outreach

SAWCo provides updated information on its website, Facebook account, through quarterly newsletters, bill inserts, and other outreach materials. SAWCo may also participate in local events such as The Water Fair and Pancake Breakfast.

#### 8.1.3 Water Conservation Program Coordination and Staffing

SAWCo does not have a dedicated water conservation coordinator, but employs administrative staff devoted to commit part time as SAWCo's water conservation representative.

#### 8.1.4 Asset Management

SAWCo uses an "Asset Depreciation Schedule" that provides equipment service life for different types of water distributions facilities. A straight-line depreciation method is used to determine remaining service life estimates of existing equipment for the purposes of making replacement recommendations. SAWCo is currently developing an updated Water Master Plan that will identify replacement projects. SAWCo also maintains an annual maintenance budget to respond to needed repairs and perform routine preventive maintenance.

#### 8.1.5 Wholesale Supplier Assistance Programs

SAWCo's wholesale agencies are provided toilets with installation for their customers. Agencies will provide name and contact information and contractor Bottomline Solutions will contact to set up appointment to remove old toilet and install new UHET toilets. Old toilets are also hauled away and disposed of.

#### 8.2 Other Demand Management Measures - Rebates

SAWCo currently administers the following rebate programs through the Metropolitan Water District of Southern California. More information on each of these rebates can be found on SAWCo's website, <a href="https://www.sawaterco.com/rebates">https://www.sawaterco.com/rebates</a>, or at <a href="https://socalwatersmart.com">https://socalwatersmart.com</a>.

#### **High-Efficiency Clothes Washers**

Using high-efficiency washers can reduce water and energy usage in the home. The high-efficiency washers only use about 20-60% of water compared to traditional washers, which translate to energy savings as it uses as little as 20-50% of energy because there is less water to heat. SAWCo offers rebate starting at \$85 for purchase of a high-efficiency washers. A listing of high-efficiency washers can be found at SoCal WaterSmart web site.

#### **Weather-Based Irrigation Controllers**

The Weather-Based Irrigation Controllers (WBICs) help reduce overwatering by applying water only when plants need it. It provides the appropriate watering schedule, adjusts for weather changes and irrigates based on the needs of the landscape and soil conditions. SAWCo offers rebates starting at \$80 per controller for less than one acre of landscape and \$35 per station for more than one acre of landscape.

#### **Rotating Sprinkler Nozzles**

Rotating sprinkler nozzles use less water than traditional sprinklers because it operates with lower precipitation rates, have greater uniform distribution and coverage. Rotating nozzles are a great water conservation tool as it applies water more slowly and uniformly than conventional sprays, especially when adjusted for specific site conditions. To help with wasteful water runoff, check out SoCal WaterSmart for recommended rotating nozzles. SAWCo offers \$2 per nozzle rebates with a minimum quantity of 30 nozzles.

#### **Turf Removal**

SAWCo offers a turf removal rebate. Interested stakeholders can apply through SoCal Water\$mart at https://socalwatersmart.com.

#### **Rain Barrels and Cisterns**

Rain barrels and cisterns can be installed to capture stormwater and runoff from rooftops and stored for later use. SAWCo offers a \$35 rebate for the purchase of a rain barrel and a rebates for cisterns start at \$250.

#### Single Family/Multi Family High Efficiency Toilet

SAWCo offers single family or multifamily premium high efficiency toilet rebates, starting at \$40 for a 1.08 gallons per flush (GPF) toilet.

#### **Soil Moisture Sensor Systems**

Soil moisture sensor systems helps to save water by sensing the moister in the soil and regulate the irrigation system for watering in response to changes of the weather for large residential sites.

#### 8.3 Reporting Implementation

SAWCo provided an update to its Board on April 20, 2021 summarizing the various conservation efforts implemented during 2020 and summarized below.

#### 8.3.1 Local Assistance in meeting Best Management Practices

**Table 8-1. Conservation Rebates** 

RESIDENTIAL REBATE PROGRAMS (FISCAL YEAR) THRU METROPOLITAN WATER DISTRICT	DEVICES/REBATES	EST. GALLONS SAVED/ DEVICE/YEAR	TOTAL EST. GALLONS SAVED PER YEAR
High Efficiency Clothes Washers	2	11,243	22,486
Rotating Nozzles	0		
Weather Based Irrigation Controllers	1	105,91 <i>7</i>	105,917
High Efficiency Toilets (premium)	1	13,851	13,851
Rain Barrels	0	619	
Turf Removal	0		
Landscape Audit	1	3,485	3,485
Total Savings for calendar year — thru 12/31/2020	5		145,739

### $8.3.2\ \text{SAWCo's}$ efforts in meeting Best Management Practices as of 3/31/2021

Table 8-2. DMM Efforts

SAWCO PROGRAMS	TOTAL BUDGET	DEVICES/REBATES	ESTIMATED GALLONS SAVED PER DEVICE PER YEAR	TOTAL ESTIMATED GALLONS SAVED PER YEAR
Toilet Direct Installation for	\$5,000	4	15,600	62,400
SAWCo Customers	Cost to date: \$1,035 4 toilets			
SAWCo Wholesale Agencies	\$15,000	14	15,600	218,400
Assistance-Toilet Direct	Cost to date:			
Installation	\$3,860			
	14 toilets			
TOTAL	\$20,000	18		280,800

# Plan Adoption, Submittal, and Implementation

This section describes steps taken to adopt and submit the and to make it publicly available.

#### 9.1 Notice of Public Hearing

Before the public hearing, SAWCo made a draft WSCP and draft UWMP available for public inspection at SAWCo's office and website. Pursuant to CWC Section 10642, general notice of the public hearing was provided through publication of the hearing date and time and posting of the hearing at SAWCo's office.

Table 9-1 provides a summary of the notifications that were issued as a part of SAWCo's development of the UWMP. SAWCo notified the public within its service area of the opportunity to provide input regarding the UWMP. A copy of the public outreach materials, including newspaper notices and invitation letters, are included in Appendix B.

#### IN THIS SECTION

- Public Hearing and Notices
- Public Hearing and Adoption
- Plan Submittal
- Public Availability

Table 9-1. DWR 10-1W Notification to Cities and Counties

Supplier has not notified more than 10 cities or counties in accordance with Water Code Sections 10621 (b) and 10642. Completion of the table is required.

CITY	60 DAY NOTICE	NOTICE OF PUBLIC HEARING	OTHER
City of Upland	Yes	Yes	
City of Ontario	Yes	Yes	
City of Pomona	Yes	Yes	
COUNTY	60 DAY NOTICE	NOTICE OF PUBLIC HEARING	OTHER
County of San Bernardino	Yes	Yes	
OTHER	60 DAY NOTICE	NOTICE OF PUBLIC HEARING	OTHER
Cucamonga Valley Water District	Yes	Yes	
Monte Vista Water District	Yes	Yes	
Chino Basin Watermaster	Yes	Yes	

#### 9.2 Public Hearing and Adoption

Prior to adoption of the WSCP and 2020 UWMP, SAWCo held a public hearing regarding its WSCP and UWMP on September 21, 2021.

The WSCP and UWMP were publicly reviewed during the September 21, 2021 public hearing. This hearing provided the cities and counties and other members of the public a chance to review the staff report and attend the hearing to provide comment. The public hearing took place before the adoption allowing opportunity for the report to be modified in response to public input. Following the public hearing, the WSCP and UWMP were adopted by SAWCo on September 21, 2021.

A copy of the Resolution of Plan Adoption signed by the SAWCo Board is included as Appendix C of the UWMP. The UWMP includes all applicable information necessary to meet the requirements of CWC. The 2020 UWMP and WSCP were submitted to the DWR within 30 days of adoption.

#### 9.3 Plan Submittal

A hard copy of the Final 2020 UWMP and WSCP were sent to the California State Library and electronical copies to DWR (electronically using the WUEdata reporting tool), and electronical copies to all cities and counties within SAWCo's service area within 30 days of adoption.

#### 9.4 Public Availability

To fulfill the requirements of CWC Section 10642 of the UWMP Act, SAWCo made the 2020 UWMP and WSCP available online and at the main SAWCo office located at 139 N. Euclid Avenue, Upland, CA 91786-6036 between the hours of 8:00 am and 4:00 pm, Monday – Thursday, and on alternating Fridays between 8:00 am and 3 pm, for public review within 30 days of adoption.

#### 9.5 Amending an Adopted UWMP or WSCP

Amendments to the SAWCo's 2020 UWMP and WSCP will be made on an as needed basis. Should SAWCo need to amend the adopted 2020 UWMP or WSCP in the future, SAWCo will hold a public hearing for review of the proposed amendments to the document and send a 60-day notification letter to all cities and counties within their service area and notify the public in same manner as set forth in this UWMP. Once the amended document is adopted, a copy of the finalized version will be distributed to the California State Library, DWR (electronically using the WUEdata reporting tool), and all cities and counties within SAWCo's service area within 30 days of adoption. The finalized version will also be made available to the public both online on SAWCo's website and in person at SAWCo's office during normal business hours.

## References

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- San Antonio Water Company vs Others, Case No. 92645 (Superior Court of the State of California in and for the County of San Bernardino 1958).
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- United States Census Bureau. (n.d.). *American Community Survey Narrative Profiles. Temescal Valley CDP, California*. (U.S. Department of Commerce) Retrieved from United States Census Bureau: https://www.census.gov/acs/www/data/data-tables-and-tools/narrative-profiles/2019/report.php?geotype=county&state=06&county=065



## Appendix A. DWR Review Checklist

B

# Appendix B. Letters of Notification and Public Hearing Notices



## Appendix C. Adoption Resolutions

## Appendix D. 1978 Chino Basin Judgment



### Appendix E. Chino Basin 2020 Optimum Basin Management Program



### Appendix F. Cucamonga Judgment



## Appendix G. Six Basins Judgment



### Appendix H. Water Shortage Contingency Plan