

DRAFT ANNUAL WATER SHORTAGE ASSESSMENT REPORT

APRIL 2022



City of
Santa Monica[®]

City of Santa Monica

Table of Contents

1	INTRODUCTION	1-1
1.1	California Water Code Requirements.....	1-1
1.2	Water System Overview	1-2
2	ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT	2-1
2.1	Decision-making process.....	2-1
2.2	Key Data Inputs.....	2-2
2.2.1	Demand	2-3
2.2.2	Supply	2-10
3	Supply and Demand Assessment Results And Recommendations	3-1
3.1	Recommended Water Shortage Response Stage.....	3-1
3.2	Ongoing Reassessments.....	3-4

Figures

Figure 1.	Potable Water System Overview.....	1-3
Figure 2.	Components of the 2018 Sustainable Water Master Plan.....	1-1

Tables

Table 2-1.	Annual Water Supply and Demand Assessment Process.....	2-2
Table 2-2.	Water Demand by Sector in Acre-Feet (2017-2021).....	2-3
Table 2-3.	Current Year and Projected Year Demands (Non-Potable).....	2-9
Table 2-4.	Current Year and Projected Year Demands (Potable).....	2-10
Table 2-5.	Current Year and Projected Year Potable Supply	2-12
Table 2-6.	Current Year and Projected Year Non-Potable Supply	2-13
Table 3-1.	Assessment Results without Water Shortage Response Actions	3-1
Table 3-2.	Assessment Results with Stage 2 Water Shortage Response Actions	3-2
Table 3-3.	Water Shortage Stages and Reduction Targets.....	3-2
Table 3-4.	Summary of Water Shortage Response Actions	3-3

List of Acronyms

AF	Acre-Feet
AFY	Acre-Feet Per Year
AMI	Advanced Metering Infrastructure
AWSDA	Annual Water Supply and Demand Assessment
AWWA	American Water Works Association
BMP	Best Management Practice
CWC	California Water Code
DRINC	Drinking Water Information Clearinghouse
DWR	Department of Water Resources
GAC	Granular Activated Carbon
GSP	Groundwater Sustainability Plan
MCL	Maximum Contaminant Level
MG	Million Gallons
MGD	Million Gallons Per Day
MOU	Memorandum of Understanding
MTBE	Methyl Tert-Butyl Ether
MWD	Metropolitan Water District of Southern California
ND	Non Detect
NOV	Notice of Violation
PFAS	Per- and Polyfluoroalkyl Substances
SGMA	Sustainable Groundwater Management Act of 2014
SMB	Santa Monica Basin
SMBGSA	Santa Groundwater Basin Groundwater Sustainability Agency
SMURRF	Santa Monica Urban Runoff Recycling Facility
SWIP	Sustainable Water Infrastructure Project
SWMP	Sustainable Water Management Plan
SWRCB	State Water Resources Control Board
RO	Reverse Osmosis
TBA	Tert-Butyl Alcohol
WCU	Water Conservation Unit
WSCP	Water Shortage Contingency Plan
WSIP	Water Savings Incentive Program
WRD	Water Resources Division
WTP	Water Treatment Plant
WUA	Water Use Allowance

1 INTRODUCTION

This report presents findings from the City of Santa Monica (City) 2022 Annual Water Supply and Demand Assessment (AWSDA). The AWSDA is required by the California Water Code to analyze current water supply and demand conditions as well as project water supply reliability over the next year. In doing so, AWSDA's serve as a tool to help identify potential water supply shortages and to implement water shortage response actions to mitigate possible supply gaps.

Beginning in 2022, the California Water Code (§10632.1) requires urban water suppliers to conduct an AWSDA and submit an annual water shortage assessment report to the California Department of Water Resources (DWR) on or before July 1 of each year. The annual water shortage assessment report evaluates water supply reliability over the following year and provides an explanation of the process, data, and results of the assessment.

1.1 CALIFORNIA WATER CODE REQUIREMENTS

The 2022 AWSDA was performed in compliance with California Water Code (CWC) requirements. Guidelines for the AWSDA can be found in CWC Section 10632 and include the following:

CWC §10632.1 An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before July 1 of each year, submit an annual water shortage assessment report to the department with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage contingency plan. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.

CWC §10632(a)(2) The procedures used in conducting an annual water supply and demand assessment that include, at a minimum, both of the following:

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

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

- (i) Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.
- (ii) Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.
- (iii) Existing infrastructure capabilities and plausible constraints.
- (iv) A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.
- (v) A description and quantification of each source of water supply.

The written decision-making process used to determine water supply reliability and key data inputs and assessment methodology used for the 2022 AWSDA are detailed in Section 2 of this report, Annual Water Supply and Demand Assessment.

1.2 WATER SYSTEM OVERVIEW

The City's current domestic water supply consists of local groundwater and purchased imported water from the Metropolitan Water District of Southern California (MWD). Currently, the City extracts groundwater from ten active groundwater wells. Five of these wells are located in the Charnock subbasin, two are located in the Olympic subbasin, and three are located in the Arcadia subbasin. Three of the five wells located in the Charnock subbasin are treated at the Charnock Water Treatment Plant (Charnock WTP) and then blended with the two other Charnock wells prior to being pumped to the Arcadia Water Treatment Plant (Arcadia WTP) for further treatment. The Arcadia WTP provides multi-barrier treatment to all of the City's groundwater wells to reduce hardness in the groundwater and meet all federal and state drinking water regulations. Only one groundwater well, SM-1, located in the Arcadia subbasin is distributed, after disinfection at the well head, directly into the water distribution system as it does not require any additional treatment to meet federal and state drinking water regulations. Final treated water from the Arcadia WTP is sent to the 5-million-gallon (MG) Arcadia Reservoir and distributed for potable water use. In addition to the Arcadia Reservoir, the City also owns and operates three additional water storage reservoirs: Riviera Reservoir, Mt. Olivette Reservoir, and San Vincente Reservoir.

The City supplements its local groundwater supply with imported water purchased from MWD. The City, along with 12 other local governments, formed the MWD in 1928. MWD was originally created to build the Colorado River Aqueduct to supplement the water

supplies of the original founding members in Southern California. Water was first delivered to the City in 1941 via the Colorado River Aqueduct. In 1972, MWD augmented its supply sources to include deliveries from the State Water Project via the California Aqueduct. Today, MWD serves more than 145 cities and 94 unincorporated communities across Southern California. An overview of the existing domestic potable water system is shown in Figure 1.

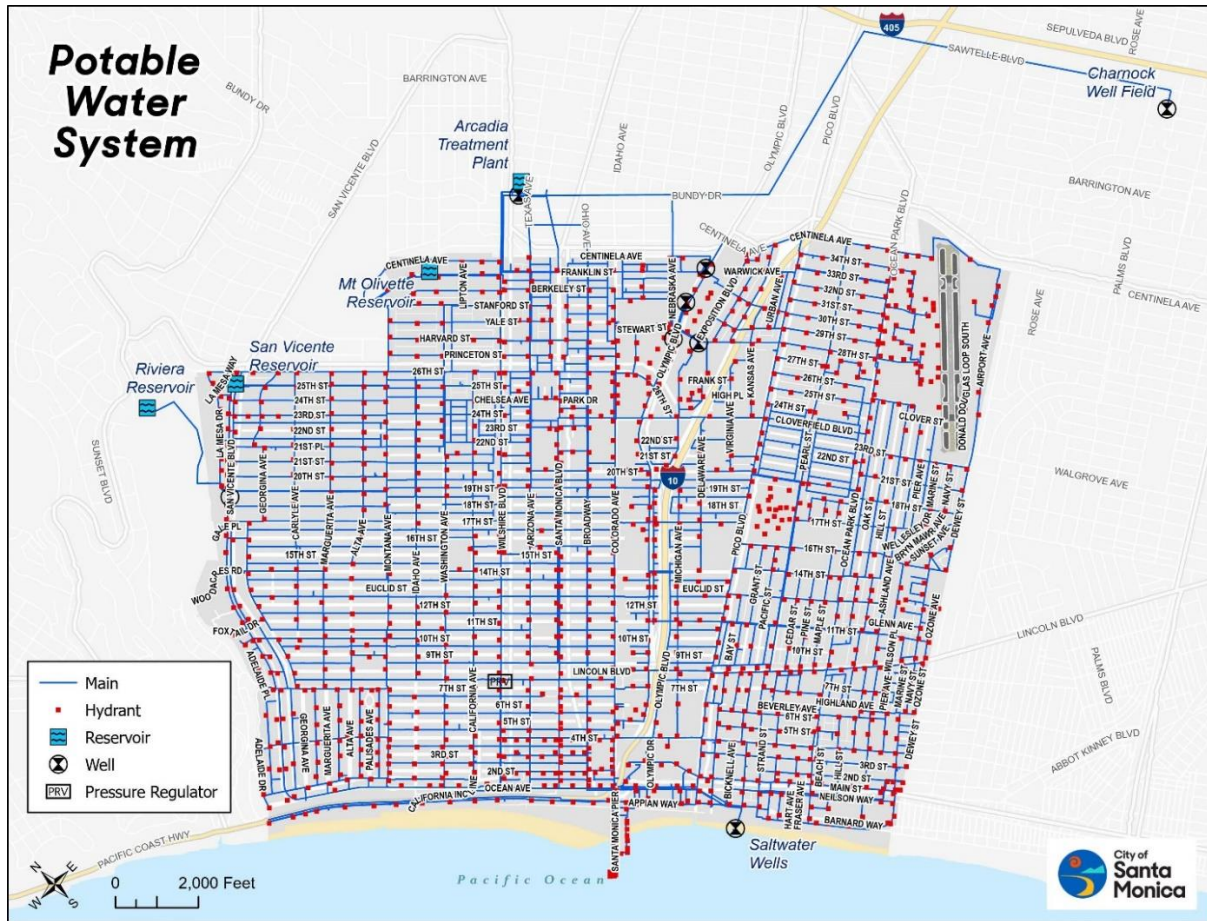


Figure 1. Potable Water System Overview

The City also has a dedicated recycled water system that provides service to 30 metered locations. The primary use of recycled water is for landscape irrigation, but it is also used for street sweeping, sewer jetting, and for lavatories at two facilities. Recycled water is distributed from the Santa Monica Urban Runoff Recycling Facility (SMURRF), which captures and treats urban runoff from the storm drain system. Prior to SMURRF operations, the runoff discharged to Santa Monica Bay and adversely impacted water quality.

In November 2018, City Council adopted an updated Sustainable Water Master Plan (SWMP). The intent of the 2018 SWMP update was to refine the pathway for the City to

reach its goal of becoming water self-sufficient on local water resources and reducing its use of imported water. The refined pathway to achieve water self-sufficiency by 2023 also considered impacts of on-going drought conditions as well as new regulations that required additional treatment for restoring local groundwater supplies. The SWMP builds on the City's previous successes by continuing to develop projects and programs at the local level to enhance the reliability and resiliency of the City's water supply.

When fully implemented, the projects outlined in the 2018 SWMP will provide a diversified, drought-resilient water supply portfolio that leverages all available water resources to the City. The key components of the SWMP are listed below and shown in Figure 2.

- **Component 1** – Increasing water conservation efforts to permanently reduce water demand.
- **Component 2** – Developing sustainable and drought resilient alternative water supplies.
- **Component 3** – Expanding local groundwater production within sustainable yield limits.

Component 3 – New Local Groundwater
Expansion of Arcadia WTP

Component 2 – Alternative Water Supply
Production Efficiency Upgrade at Arcadia

Component 1 – Optimal Conservation Plan

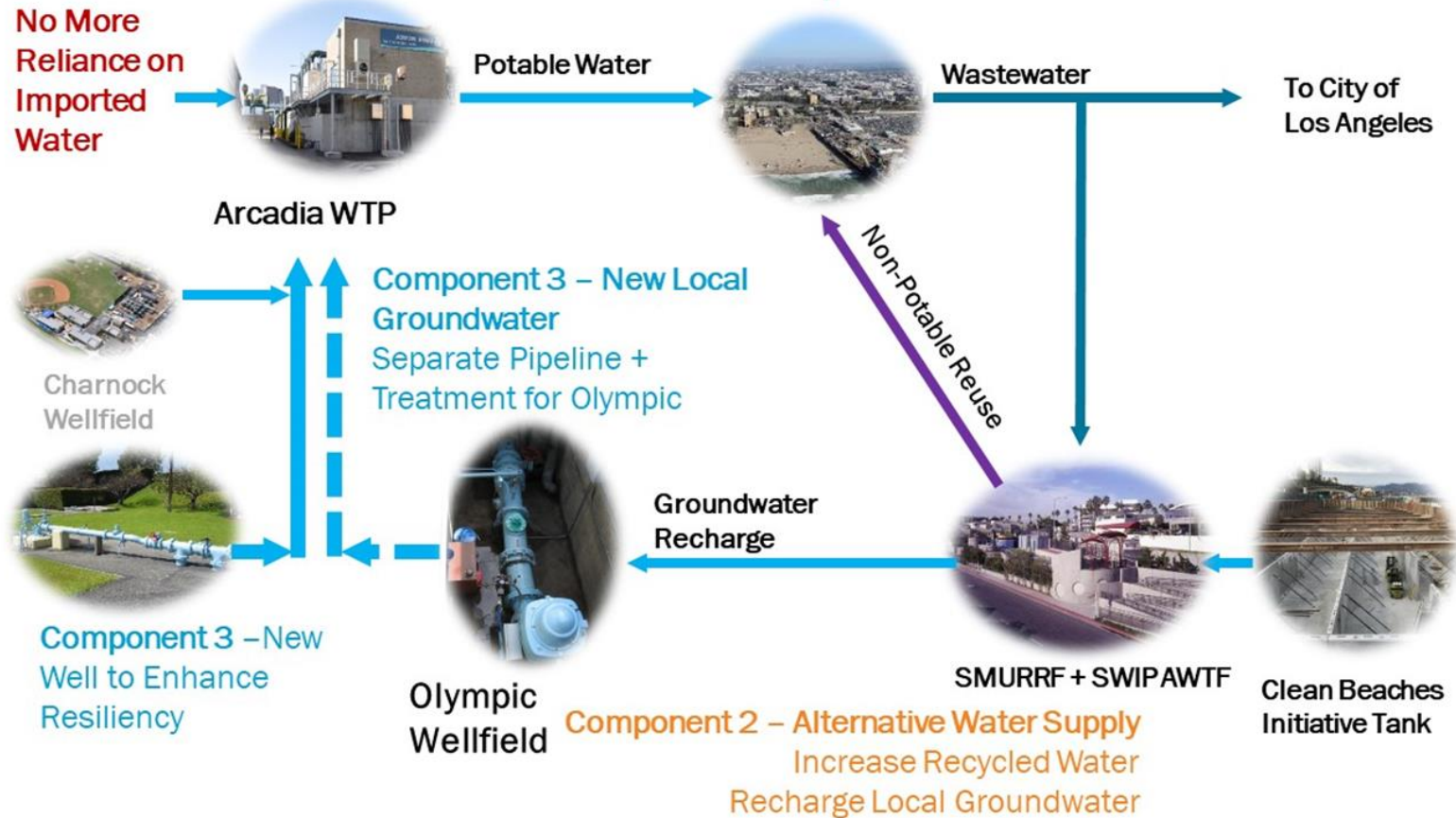


Figure 2. Components of the 2018 Sustainable Water Master Plan

2 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT

AWSDAs analyze current water demand and supply conditions and project water supply reliability over the next year. To analyze current water demand and supply, City staff compiled water use and water supply data over the previous calendar year (i.e., January 1, 2021 to December 31, 2021) to project the current year's trends for water demand and supply. This information, in combination with other considerations such as anticipated growth, weather patterns, and other plausible factors, were then used to project demand and supply over the next year. It is assumed that it will be a dry year for the next projected year. Because annual water shortage assessment reports are due by July 1st of each year, the projected water demand and supply is for the period from July 1, 2022 to June 30, 2023. The following sections detail the decision-making process and data inputs used for the AWSDA and water shortage assessment report.

2.1 DECISION-MAKING PROCESS

CWC §10632 requires AWSDAs to be conducted according to a written decision-making process. The City's written decision-making process is outlined in the City's Water Shortage Contingency Plan (WSCP), which serves as the City's action plan during an actual or predicted drought or a catastrophic water supply shortage. The process includes presenting the findings to the City's Commission on Sustainability, Environmental Justice, and the Environment (formerly the Task Force on the Environment); public notification regarding the proposed water supply shortage stage, water shortage response actions, and upcoming City Council meeting for the Public Hearing; and formal adoption of the annual water shortage assessment report findings and proposed water supply shortage stage by City Council. A timeline for the decision-making process is provided in Table 2-1.

Table 2-1. Annual Water Supply and Demand Assessment Process

Month	Activity
January	Water Resources Division (WRD) and Water Conservation Unit (WCU) commence the annual water supply and demand assessment
February	WRD and WCU present annual assessment findings and proposed water supply shortage stage to the Task Force on the Environment
March	WRD and WCU prepare an annual water shortage assessment report and proposed water supply shortage stage, if any, to the Public Works Department Head for approval
April	Public notification regarding proposed water supply shortage stage, water shortage response actions, and upcoming City Council meeting
May	WRD and WCU present annual water shortage assessment report findings and proposed water supply shortage stage to City Council for formal adoption by resolution
On or before July 1st	WRD submits a final water shortage assessment report to the State of California Department of Water Resources

2.2 KEY DATA INPUTS

CWC §10632 requires the following data inputs and assessment methodology to be used to evaluate the urban water supplier’s water supply reliability for the current year and one dry year:

- Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.
- Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.
- Existing infrastructure capabilities and plausible constraints.
- A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.
- A description and quantification of each source of water supply.

The following sections describe these inputs in detail.

2.2.1 Water Demand

Water usage for the City is tracked by six of the water sectors including Single-Family Residential, Multi-Family Residential, Commercial/Industrial, Institutional, Landscape, and Fire Service. The predominate water usage within the City is by residential users, which account for more than two-thirds of the City's total water consumption. Total water usage in the multi-family residential category is about double compared to single-family residential. Commercial/industrial water consumption is similar in magnitude to the single-family residential sector and is approximately 25% of the total water usage within the City. The other three sectors (institutional, landscape, and fire service) combined account for approximately 7 percent of water use. Table 2-2 summarizes the constrained water demand in the City over the last five years in acre-feet (AF). Constrained demand includes water reduction from water conservation efforts or approximately 18-20% water reduction for the City.

Table 2-2. Water Demand by Sector in Acre-Feet (2017-2021)

	2017	2018	2019	2020	2021
Single Family Residential	2,641	2,773	2,556	2,756	2,845
Multi-Family Residential	4,987	4,917	4,752	4,944	4,752
Industrial/Commercial	3,030	3,028	2,914	2,100	2,131
Institutional	399	474	356	273	267
Landscape Irrigation	440	456	450	438	576
Fire Service	5	3	3	2	3
Water Loss	-	-	-	66	66 ¹
Constrained Demand²	11,502	11,651	11,030	10,580	10,641

¹Water Loss Audit has yet to be completed for 2021, 2020 water loss figure is assumed for 2021.

²Demand summarized in this table are actual water demand (or constrained water demand as defined by DWR), which includes water demand reduction from water conservation efforts.

As a result of the COVID-19 pandemic, overall water use in the City declined approximately 7.7 percent compared to average from 2017 to 2019 (pre-pandemic). The City experienced a substantial decrease in water use by commercial/industrial and institutional users during the COVID-19 pandemic of 30 and 40 percent, respectively, while single-family residential use increased 5 percent and multi-family residential use remained about the same.

The water demand summarized in Table 2-2 also considered water loss in the water distribution system. Distribution system water loss, defined as the difference between water supplied to the system less authorized consumption, has declined linearly during this entire reporting period. The City meets the Water Loss Audit Standard through its participation in annual water audits. The audits are validated by an independent third-party according to American Water Works Association (AWWA) standards. In 2015 the total water loss was approximately 3.8% and in 2016 it was 1.6%. However, subsequent years (2017-2019) have yielded water consumption exceeding water supplied and thus it is assumed that water loss was 0% during the 2017-2019 period.

The discrepancy for water consumption exceeding water supplied has been attributed to several factors. First, there is a timing issue with the manual meter reading. The City maintains a 60-day billing cycle so there is a lag in consumption data relative to source water entering the system. Second, the metering of the source water entering the City's distribution system are in multiple locations. The City's water system has four sources entering the system; two MWD feeder services, Santa Monica Well 1 and the Arcadia Water WP. MWD's two feeder service lines both have meters and are maintained by MWD. Santa Monica Well 1 has a dedicated magnetic flowmeter. The Arcadia WTP does not have a single flowmeter for the potable water produced. Rather, potable water effluent flow from the Arcadia Water Treatment Plant is a composite of multiple internal plant flowmeters. These internal flows originate from internal bypass flows and reverse osmosis product flows. It is likely that the discrepancies in reporting are due to variations in accuracy from the various flow meters when tabulated.

The City is in the process of installing flow meters at the Arcadia WTP and installing water meters on the customer's end with Advanced Metering Infrastructure (AMI) throughout the distribution system. The new meters at the Arcadia WTP will allow for more accurate flow accounting while the AMI smart meters provide for real-time water demand monitoring in the distribution system, as opposed to the current 60-day meter reading cycle.

2.2.1.1 Water Conservation

The City has a long history of promoting water conservation. In 2002, the City initiated its Water Efficiency Strategic Plan and in 2004 began implementing various conservation programs including the No Water Waste and Green Building Ordinances. On August 12, 2014, City Council adopted a resolution declaring a Stage 2 Water Supply Shortage thereby requiring mandatory water conservation to achieve a 20% reduction in water use compared to 2013. Subsequently, on October 28, 2014, Council also authorized the significant expansion of staffing and funding to augment the City's water conservation efforts to address the state-wide drought and help the City meet its water self-sufficiency goal. The City has remained in a Stage 2 Water Shortage since 2014, which has contributed

to a water demand reduction of about 20 percent or approximately 2,500 acre-feet per year (AFY).

Water Demand Management is achieved through implementation of various water conservation and efficiency programs designed to permanently reduce residential and commercial potable water use. Continuation of existing, and implementation of proposed conservation measures are essential for the City to reduce overall use in the face of increased demand pressures from new housing and from the commercial and institutional sectors of the local economy. Below is a list of some of the key conservation measures currently being implemented:

- **Water Neutrality Ordinance (SMMC 7.16.050):** On July 1, 2017, the City's Water Neutrality Ordinance went into effect and capped water use for new developments to the average five-year historical water use for that individual parcel. If the projected annual water use for the development is greater than existing parcel's annual average over the past five years, the increased amount must be offset by funding water-efficient retrofits of existing buildings elsewhere in the City. Offset retrofits currently include low-flow indoor fixtures (toilets, urinals, showerheads, aerators). The ordinance applies to pools, ponds, spas and other water features as well. This ordinance was developed and is implemented by WCU staff. Implementation includes performing over 500 development project plan checks each year along with determining fees and managing a full-scale Water Neutrality Direct Install program.
- **Water Use Allowances (WUAs):** The WUA is a component of the WSCP and is the mechanism to implement the mandatory reduction required by a Water Supply Shortage. WUAs represent the amount of water that can be used by a water customer without risk of receiving an exceedance citation (see below). The WUA for the current Stage 2 Water Supply Shortage is 20% below the amount of water used in 2013. Every water customer in the City receives a WUA uniquely calculated for each billing period.
- **Water Use Allowance Exceedance Citations:** A water customer can receive an administrative citation for exceeding their WUA for any given billing period. Citation fees are \$250 for the first exceedance, \$500 for the second exceedance (within 12 months of the first) and \$1,000 for the third exceedance (within 12 months of the second). Since 2015, over 1,300 WUA Exceedance Citations have been issued.
- **Water Use Consultations:** WCU staff make onsite visits to customers to comprehensively audit indoor water use (measuring flush and flow fixtures, appliances, checking for leaks, behaviors), outdoor water use (irrigation system, checking for leaks, behaviors), along with a meter check. Recommendations for saving water are documented and sent to the customer. Consultations have resulted

in the discovery and repair of major leaks, adjustment of irrigation system timers, installation of low-flow devices (aerators and showerheads (free), toilets and urinals (rebates), and water-use behavior changes. This program is free of charge for any Santa Monica water customer. Since 2015, over 650 consultations have been provided to City water customers.

- **Enhanced Landscape Rebate Program:** The City's most successful rebate program provides rebates for customers that replace their turf grass and overhead spray irrigation with sustainable, drought tolerant, low-water using landscapes with no or drip irrigation only. Santa Monica's unique landscape rebate requirements establish effective water conservation, provide successful and maintainable projects, and ensure an aesthetically pleasing landscape. Since 2015, over 675 rebate projects have been completed removing over 1.1 million square feet of turf at a program cost of \$2.2 million.
- **Landscape Consultants:** The WCU has partnered with professional landscape professionals who meet with potential landscape rebate customers at their property and provide expert advice on sustainable landscaping and completing a rebate. This service is \$50 for a two-hour consultation. Since 2015 over 600 Landscape Consultations have been completed. Since 2015, over 620 Landscape Consultations have been completed. Note: This program was temporarily halted in 2020 due to Covid-19 budget cuts.
- **Water Waste Patrols:** WCU staff enforces SMMC 7.16.020, the "No Water Waste" ordinance. Responses to inbound water waste complaints are handled immediately, and proactive patrols in the community provide on-site detection of water waste. Notices of Violations (NOVs) are issued to ensure resolution of water waste issues with Citations issued as needed. Since 2015, over 1,500 NOVs have been issued.
- **Enhanced MWD Water Conservation Rebates:** As a member-agency of the Metropolitan Water District of Southern California (MWD), the City of Santa Monica participates in their program to provide rebates for high efficiency toilets, urinals, clothes washers, restaurant appliances, irrigation devices and other devices. Since 2015, the WCU has increased the supplemental funding added to MWD's base rebate amounts to further incentivize installation of these water-conserving devices. Since 2015, over 7,200 devices have been rebated at a cost to the City of \$137,000.
- **Free Water Saving Items:** WCU staff has distributed thousands of water saving items to Santa Monica water customers since 2015. These items include low-flow faucet aerators, low-flow showerheads, automatic shut-off hose nozzles, toilet leak-detection dye tabs, shower buckets, flow-rate bags, and reusable canvas bags. The WCU also provides free tent cards and door hangers for hotels/motels to encourage water conservation by guests through reusing towels and sheets. These free items

are available in the OSE office and are also distributed at outreach events. Since 2015, over 17,000 water saving devices have been distributed.

- Customer Support: WCU staff provides excellent customer phone and email support every workday regarding any water conservation issue or program. Approximately 300 phone calls and emails from Santa Monica water customers are received and responded to each year.

Depending on funding, additional conservation measures that are planned for implementation over the next five years include:

- Water Conservation Programs Master Plan: An overall master plan will be developed to provide a more detailed water conservation framework and benefit/cost analysis of existing and proposed programs. An outside consultant will be retained to provide guidance and support for developing this plan.
- Marketing/Messaging Program for “Conservation as a Way of Life” and Potential Drought Resurgence: Working with the Office of Sustainability’s contracted marketing agency, a new water conservation marketing campaign will be created with messaging aligned with the State’s “Making Water Conservation a California Way of Life.” Depending on conditions, drought-related information this may also become part of the messaging.
- Targeted Commercial Sector Programs: Restaurants, hotels, and medical facilities are the highest commercial users of water in the City. As such, outreach and support program will be developed for one-on-one audits, evaluations, process recommendations, and rebate incentives for fixtures/devices to provide meaningful water savings in these specific sectors. An outside contractor may be used to develop and implement these programs.
- Expanded School Education Program: Building upon the pilot program described above, the City will again partner with the Discovery Science Center to expand the pilot school program to all fifth-grade Santa Monica students to provide education on water conservation and the impacts on our water supply and local watershed.
- Performance Pays: This effort will leverage Metropolitan Water District’s Water Savings Incentive Program (WSIP) for unique, innovative water conservation programs. Potential projects include pump pods for fire department trainings and cooling tower retrofits with new technology.
- School District Retrofits via Water Neutrality Direct Install Program: The scope of properties where the Water Neutrality Direct Install program retrofits fixtures will be expanded from residential and CII to include all City campuses of the Santa Monica-Malibu Unified School District.

- **Greywater System Permitting Guidebook:** The use of graywater onsite is less energy intensive than treating wastewater and can be a cost-effective alternative water supply for irrigation and other non-potable uses at the property. Santa Monica residents and businesses can currently install Laundry-to-Landscape greywater systems without a permit, but more complex systems require a permit. To assist those that would like to install advanced onsite greywater systems, the City intends to provide a guidebook to help developers navigate the permitting process to help incentive these systems.
- **Flow Measuring and Irrigation Controller Devices Incentives:** As a bridge to advanced metering infrastructure (AMI), and to realize the potential water savings from customers having real-time water use data (including leak alerts), an incentive program will be developed for customers to obtain and install a flow measuring device on their water meter. In addition, incentives for installing and properly programming a smart irrigation controller will potentially be developed to address outdoor water efficiency.
- **Clothes Washer Incentive for Multi-Family:** Clothes washers are among the highest uses of indoor water. Typically, in multi-family shared laundry rooms, the machines are older, top-loading, water-inefficient models that use 25-40 gallons per load. A program will be developed to incentivize property owners to lease or purchase newer, high efficiency clothes washing machines that use approximately 15 gallons/load.
- **Irrigation System Audit and Repair:** Much of the outdoor water waste occurs due to incorrect watering schedules programmed in customer's irrigation timers/controllers (i.e. overwatering). In addition, leaks and broken sprinklers heads go unnoticed as irrigation is typically run at night and not observed. This new program will utilize a contractor to provide extensive outdoor audits and make necessary timer adjustments and simple repairs to save water.

2.2.1.2 Non-potable Water Demand

The City has a dedicated recycled water system that provides service to 30 metered locations. The primary use of recycled water is for landscape irrigation, but it is also used for street sweeping, sewer jetting, and for lavatories at two facilities. Projected water demand is expected to increase over the coming year as new developments requiring recycled water come online. Aquifer injection of advanced treated recycled water is also estimated to commence in March 2023.

Table 2-3. Current Year and Projected Year Demands (Non-Potable)

	Current Year (AF)	Projected Year (AF)
Non-Potable Reuse	65	235
Aquifer Recharge (Direct Injection)*	0	90
Total Demand	65	325

*200 GPM aquifer injection estimated to begin in March 2023

2.2.1.3 Unconstrained Demand

The CWC requires water suppliers to estimate the current year’s unconstrained demand as part of the AWSDA. Unconstrained demand is water demand absent any water supply or demand restrictions (e.g., mandatory conservation). Water suppliers then use the current year unconstrained demand, while also considering other factors such as weather and population growth, to project demand for the twelve-month period following the July 1st AWSDA deadline (i.e., July 1 to June 30).

Table 2-4 summarizes the current year and projected year unconstrained demands as well as constrained demands, derived by subtracting an estimated 20 percent conservation savings. Constrained demands are included for ease of comparison with the five-year summary of the City’s water usage presented in Table 2-2. As previously mentioned, overall water use after COVID-19 decreased by approximately 7.7 percent. However, as a conservative approach for the AWSDA, the estimated water use over the next year was increased by 10 percent. This increase is conservative because it assumes a full economic recovery from COVID-19 (higher industrial/commercial and institutional use), an increase in population (higher single- and multi-family residential use), and dry weather over the next year (higher irrigation use). Additionally, the projected constrained demand of 11,713 AF is higher than any of the three years preceding the COVID-19 pandemic.

Table 2-4. Current Year and Projected Year Demands (Potable)

	Current Year (AF)	Projected Year (AF)
Single Family Residential	3,557	3,939
Multi-Family Residential	5,941	6,580
Industrial/Commercial	2,664	2,951
Institutional	333	369
Landscape Irrigation	720	798
Fire Service	3	4
Water Loss	66	66
<i>Unconstrained Demand</i>	<i>13,284</i>	<i>14,707</i>
Estimated 20% Conservation Savings	2,643	2,928
Constrained Demand	10,641	11,779

2.2.2 Water Supply

The City currently purchases imported water from MWD to supplement its local water supplies. The City is one of 15 Retail agencies served by MWD and receives imported water at two locations: the Arcadia WTP and the Charnock WTP. Both of these connections are 24 inches in size and are capable of serving 100 percent of the City's water needs. The City's Tier 1 imported water supply limit from MWD has been 7,406 AFY since 2016 and the City has been well under this limit in the past 10 years since the Charnock Well Field Restoration Project was completed in 2010 to restore local groundwater supplies. Additional MWD supply beyond the Tier 1 limit is also available to the City at a higher Tier 2 water supply rate.

The California Water Code requires AWSDAs to evaluate water supply reliability for the current year and one dry year. Relative to previous years, the local groundwater supply in 2021 was lower than average. The lower local production was a result of two factors. First, two groundwater wells were taken offline due to operational issues. One of the wells, Charnock 13 (CH-13), is located in the City's largest producing groundwater aquifer, the Charnock Well Field. The other well, Santa Monica 4 (SM-4), is the highest producing well in the City's second largest producing groundwater aquifer, the Olympic Well Field. CH-13

began operating again in September 2021 and SM-4 is anticipated to be back in operation by the fall of 2022.

The other factor that contributed to lower groundwater supply in 2021 was the Arcadia WTP temporarily being taken offline during construction of the Arcadia WTP expansion project. The Arcadia WTP is the City's primary drinking water treatment facility. The expansion project would upgrade the Arcadia Water Treatment Plant and increase the production capacity from 11 million gallons per day (MGD) to 13 MGD. This project is scheduled to be completed in 2023.

To assess supplies under a single dry year, the City used the available water supply estimate from the drought risk assessment performed as part of the 2020 Urban Water Management Plan. The drought risk assessment projected that under a single, worst-case dry year, the City's local groundwater supply was approximately 6,755 AF, which equates the lowest five-year running average for the City's water supply from 2010 to 2020. The 2010-2020 time period was chosen because it is after the City completed the Charnock Well Field Restoration Project in 2010 and is more representative of existing operating conditions (e.g., available groundwater supply and annual MWD imported water use).

2.2.2.1 Existing Infrastructure Capabilities and Plausible Constraints

In addition to evaluating water supply reliability for the current year and one dry year, the California Water Code also requires suppliers to consider existing infrastructure capabilities and plausible constraints. As previously mentioned, construction will be occurring at the City's Arcadia Water Treatment Plant through 2023. It is estimated that this could result in a decrease in the local groundwater supply of approximately 1,454 AF due to plant shutdowns during construction.

2.2.2.2 Regulatory Considerations

Over 20 years ago, Methyl tert-Butyl Ether (MTBE) and Tert-Butyl Alcohol (TBA), compounds once used as gasoline additives, were detected in three of the Charnock Sub-basin wells. These contaminants shutdown production from the Charnock Sub-basin, the City's largest groundwater supply, until the completion of the Charnock Well Field Restoration Project. The treatment from this project uses Granular Activated Carbon (GAC) filtration, from coconut shells, to successfully treat MTBE and TBA concentrations to levels well below the Maximum Contaminant Level (MCL) of 5 ppb. As a part of the Charnock Well Field Restoration Project, additional treatment processes were also added at the Arcadia WTP including reverse osmosis (RO) and aeration to provide multi-barrier treatment for the local groundwater.

More recently in April 2019, the State Water Resources Control Board (SWRCB) investigated source water wells in California most vulnerable to Per- and polyfluoroalkyl substances (PFAS) contamination. This included those near airports and landfills, and later those near secondary sources of PFAS activities. The SWRCB did not require Santa Monica

to sample its sources. However, the City proactively sampled the City’s Drinking Water sources in August/September of 2019, and PFAS was not detected in the City’s drinking water supply. All PFAS samples analyzed by an outside laboratory were Non-Detect (ND). Additionally, GAC and RO, both part of the City’s treatment process, are effective at removing many PFAS compounds.

In May 2017, the Cities of Santa Monica, Los Angeles, Beverly Hills, Culver City, and Los Angeles County signed a Memorandum of Understanding (MOU) to form the Santa Monica Basin Groundwater Sustainability Agency (SMBGSA). The SMBGSA is tasked with implementing an ongoing sustainable groundwater management program for the SMGB in conformance with California’s Sustainable Groundwater Management Act (SGMA) of 2014. A key piece of this program is the development of a Groundwater Sustainability Plan (GSP), which was approved by the SMBGSA in January 2022.

The GSP is the first comprehensive groundwater assessment and management plan specific to the SMB, which has been identified as a medium-priority groundwater basin by the California DWR. The SMBGSA is required to provide a description of the sustainable management criteria that will be used for the basin. As part of the GSP, sustainable management criteria (e.g., sustainable yield) and interfaces with neighboring groundwater basins (e.g., West Coast Basin and Central Basin) for the Santa Monica Basin (SMB) was assessed. Projected groundwater levels calculated using a calibrated groundwater model indicate that at a production rate of 9,000 AFY, groundwater elevations will decline and recover based on the volume of recharge available in the SMB.

2.2.2.3 Projected Available Water Supply

Current year and projected year supply used for the AWSDA are provided in Table 2-5. The projected year water supply includes existing infrastructure capabilities, plausible constraints, and regulatory considerations described above. As a conservative approach, the projected supply assumes that only MWD’s Tier 1 supply is available.

Table 2-5. Current Year and Projected Year Potable Supply

	Current Year (AF)	Projected Year (AF)
Local Groundwater	5,236	5,301*
MWD Tier 1	7,406	7,406
Total Supply	12,642	12,707

*Derived from subtracting the 1,454 AF decrease in groundwater supply during Arcadia WTP construction from the 6,755 AF water supply used in the drought risk assessment.

2.2.2.4 Projected Available Non-Potable Supply

In 2001, the City began operating the SMURRF to treat dry-weather urban runoff that was previously discharged into Santa Monica Bay from the Pier and Pico-Kenter storm drains. The SMURRF is operated by Santa Monica, though operating costs and revenues are shared jointly with the City of Los Angeles, as a Best Management Practice (BMP) facility. Treated water from SMURRF is sent through a City-wide non-potable water distribution system that serves parks, medians, Woodlawn Cemetery, and dual-plumbed buildings for toilet flushing. The non-potable water is also used by City operations for street sweeping, sewer jetting, and pressure washing.

In addition to SMURRF, the City will be completing the Sustainable Water Infrastructure (SWIP) Advanced Water Treatment Facility (AWTF) toward the end of 2022. The SWIP AWTF will be the City’s first wastewater treatment facility and will be able to produce up to 1 million MGD of advanced treated recycled water on average (approximately 10 percent of the City’s total wastewater flow). Initially, advanced treated recycled water would be used to meet non-potable reuse demands. Ultimately the advanced treated recycled water would also be used to augment the groundwater aquifer at the Olympic Well Field via direct aquifer injection. The City is also exploring the potential for direct potable reuse in the future when regulatory guidelines are available in 2023. Table 2-6 summarizes the current year and projected year non-potable supplies available to the City.

Table 2-6. Current Year and Projected Year Non-Potable Supply

	Current Year (AF)	Projected Year (AF)
SMURRF	65	Up to 500
SWIP	0	Up to 1,100
Total Non-Potable Supply	65	Up to 1,600

3 Supply and Demand Assessment Results and Recommendations

The results of the AWSDA indicate that without water shortage response actions, a 13% water supply shortage is projected for the next year (see Table 3-1 below). A 13% water supply shortage equates to the State's Standard Shortage Level 2 (10-20% shortage) where necessary actions (e.g., water conservation) need to be taken to enhance the reliability and resiliency of the available water supply.

Table 3-1. Assessment Results without Water Shortage Response Actions

	Total (AF)
Anticipated Unconstrained Demand	14,707
Anticipated Total Water Supply	12,707
Surplus/Shortage w/out Water Shortage Response Actions	-2,000
% Surplus/Shortage w/out Water Shortage Response Actions	-14%
State Standard Shortage Level	2

3.1 RECOMMENDED WATER SHORTAGE RESPONSE STAGE

The City's WSCP utilizes the same water shortage levels as the State and includes water shortage response actions for a Stage 2 Shortage. The goal of these water shortage response actions is to reduce water demand to enhance the reliability of the water supply. For a Stage 2 Storage, water supply shortage actions are needed to reduce water demand by 20 percent. The City has been in a Stage 2 water shortage stage since 2014 and has consistently achieved 20 percent reductions in water demand. Incorporating Stage 2 Shortage response actions to reduce water demand by 20 percent yields a positive water supply balance for the projected year. Based on these results, the City will remain in a Stage 2 Water Shortage Stage and continued to implement necessary water conservation measures to maintain 20 percent water demand reduction.

Table 3-2. Assessment Results with Stage 2 Water Shortage Response Actions

	Total (AF)
Anticipated Unconstrained Demand	14,707
Benefit from Water Shortage Response Actions	-2,928
Adjusted Water Demand from Water Shortage Response Actions	11,779
Anticipated Total Water Supply	12,707
Revised Surplus/Shortage w/Water Shortage Response Actions	928
Revised % Surplus/Shortage w/ Water Shortage Response Actions	7%

As future non-potable water supply capability far exceeds projected demand, it is anticipated that the SMURRF and SWIP AWTF will operate to meet non-potable demand and aquifer recharge demand at one injection well. To maximize the use of advanced treated recycled water, the City is analyzing potential sites for two additional injection wells and exploring the potential for direct potable reuse in the future to further enhance the reliability and resiliency of the City's water supply portfolio.

The City's water shortage stages and associated water use reduction targets from the City's WSCP are provided in Table 3-3. The recommended Stage 2 Water Shortage Stage includes mandatory water use restrictions with a City-wide use reduction goal of 20% compared to the 2013 water use baseline. Water shortage actions implemented as part of a Stage 2 Water Shortage Stage are provided in Table 3-4.

Table 3-3. Water Shortage Stages and Reduction Targets

Water Shortage Stage	Shortage Level	Water Shortage Condition	Water Use Restrictions	City-wide Use Reduction Goal
Stage 1	≤10%	Minimal	Voluntary	10%
Stage 2*	10-20%	Moderate	Mandatory	20%
Stage 3	20-30%	Significant	Mandatory	30%
Stage 4	30-40%	Severe	Mandatory	40%
Stage 5	40-50%	Critical	Mandatory	50%
Stage 6	>50%	Catastrophic	Mandatory	>50%

*Recommended Water Shortage Stage

Table 3-4. Summary of Water Shortage Response Actions

Water Shortage Stage	Action	Estimated Reduction
Stage 1	Offer Water Use Surveys	1% - 2%
Stage 1	Provide Rebates on Plumbing Fixtures and Devices	1% - 2%
Stage 1	Provide Rebates for Landscape Irrigation Efficiency	1% - 2%
Stage 1	Provide Rebates for Turf Replacement	1% - 2%
Stage 1	Landscape - Restrict or prohibit runoff from landscape irrigation	1% - 2%
Stage 1	Landscape - Limit landscape irrigation to specific times	1% - 2%
Stage 1	CII - Restaurants may only serve water upon request	1% - 2%
Stage 1	Water Features - Restrict water use for decorative water features, such as fountains	1% - 2%
Stage 1	Pools and Spas - Require covers for pools and spas	1% - 2%
Stage 1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	1% - 2%
Stage 1	Other - additional conservation measures by City staff	1% - 2%
Stage 1	Other - Irrigation Association's Best Management Practices for all City landscaped areas	1% - 2%
Stage 1	Other - immediate notification by City staff of any leaks seen on City property or private property	1% - 2%
Stage 1	Other - immediate notification by City staff of any leaks seen on City property or private property	1% - 2%
Stage 2	Other - continued implementation of Stage 1 actions	10% - 20%
Stage 2	Other - Implement Water Use Allowances (WUAs) for a 20% reduction from the amount of water used in 2013.	10% - 20%
Stage 2	Expand Public Information Campaign	1% - 10%
Stage 2	Increase Water Waste Patrols	1% - 10%

3.2 ONGOING REASSESSMENTS

The City has been providing monthly water production and conservation reports to the SWRCB since July 2014 to comply with the statewide drought emergency water conservation regulation. While the emergency regulation expired in November 2017, the City continues to report voluntarily. Monthly reports became mandatory again in October 2020 after the SWRCB adopted a new regulation on Monthly Urban Water Conservation Reporting. The new reporting regulation requires monthly reporting of key elements and additional information during water shortages. The reports, compiled by the City, include information on residential water use, total potable water production, measures implemented to conserve water and improve efficiency, and local enforcement actions. The reports are submitted to the SWRCB's Drinking Water Information Clearinghouse online portal.

Over the next few years, the City will also be upgrading its water meters with AMI, which will allow real-time water demand monitoring as opposed to the current 60-day meter reading cycle. The City is also working on two master planning documents: a Water Master Plan and a Water Conservation Master Plan. These master plans will help identify water system improvements over the next ten years and will help refine the implementation of water conservation measures to further reduce water demand.

On the water supply side, the City's WRD provides monthly water production reports to interested parties within the City. The reports include information on well production, finished local water production and imported water purchased. Staff will continue monthly monitoring of water supplies to assess water shortage conditions.

As an adaptive management plan, the WSCP will be refined as needed to ensure it continues to effectively address potential water shortage conditions. On an ongoing basis, using the reports and compliance tracking process described above, any necessary changes to the WSCP will be identified. In addition, as a part of annual demand and supply assessments, the WSCP will be reviewed with refinements incorporated as needed.