I. Welcome

a. Dear Reader

With so much community growth in the last five years, it is as important as ever to be efficient with our water supplies. Growth means not only new people, but new neighborhoods, new businesses, new schools, and more. To maintain the vitality of the community, we must work to make sure we are meeting our per capita reduction goals. This updated Five-Year Conservation Plan describes how we aim to do that.

This Plan highlights the use reduction targets our community has set and discusses the programmatic, regulatory, and education efforts being made to meet them. It can be read in tandem with SAWS' 2024 Water Management Plan which offers a wider view of SAWS' forward planning efforts to ensure water supplies well into the future.

Although this is a comprehensive plan, it is not exhaustive. In order to make space for discussion about what we think is to come we could not include information about every single program currently in place. However, you can learn more about current SAWS Conservation activities by visiting us at saws.org/conservation and GardenStyleSA.com. Similarly, although we have a vision for the future, new ideas emerge all the time and so not every future initiative may be included in this plan either. What this plan does include is an outline of the most significant conservation strategies in place today, efforts already underway for the years ahead, and our immediate next steps on the road to reaching our per capita reduction goals.

Thank you for your interest in water conservation in San Antonio. It is our hope that the information in this plan demonstrates the importance of water conservation and efficiency for all SAWS customers, and that it spurs continued community discussion as to how we can collectively achieve meaningful water savings.

Karen Guz
Vice President of Conservation
San Antonio Water System

b. 2024 SAWS Conservation Team

Adolph Garcia – Consultant
Brad Wier – Planner II
Chad Cosper – Planner IV
Chelsea Hawkins – Manager – Program Planning
Cleveland Powell – Planner II
David Abrego – Consultant
Dominique Silva – Customer Service Specialist
Eduardo Salas-Gonzalez – Consultant
Gail Dugelby – Consultant
Jay Sotelo – Customer Service Specialist
Juan Renteria – Customer Service Specialist
Juan Soulas – Planner IV
Karen Guz – Vice President of Conservation
Kathy Martinez – Executive Administrative Assistant
Kevin Pride – Consultant
Martha Wright – Manager – Program Planning
Nathan Riggs – Project Coordinator
Paula Longoria – Customer Service Specialist
Sarah Gorton – Planner III
Sasha Kodet – Planner IV
Seth Patterson – Senior Consultant

Image: SAWS' Conservation Department

Conservation staff love working with the community to save water. Be on the lookout for their colorful vehicles around town, read their gardening and landscape tips on GardenStyleSA.com, or call (210) 704-SAVE to speak with them directly!

c. Highlights

Water conservation continues to be a critical component of San Antonio's water future. Since the 2019 Plan was developed five years ago, SAWS Conservation has:

- Saved more than 7.5 billion gallons of water through programs, education and enforcement.
- Grown the internal use of Salesforce to manage programs more effectively.
- Expanded the use of WaterSmart to make water use data more accessible to customers, provide custom insights about their use, and notify them of irregular or concerning use patterns.
- Piloted using ConnectH2O electronic meter data to share customer use data in meaningful ways such as watering wrong day messages and continuous use alerts which indicate a leak may be present.
- Added specialized staff to the Phone Team with employees trained to answer questions about hourly customer use data.
- Replaced the PatioScape Coupon program with the Outdoor Living Rebate, offering more material and supplier options, and
- Completed NAICS code assignments for all commercial accounts based on their use types.

Although conservation initiatives have helped maintain low water costs, reduce the need for supplemental supplies, and manage water resources sustainably, there is still more that can be done! SAWS is committed to pursuing new and meaningful water efficiency opportunities to ensure we get the most out of each drop as our community grows. New initiatives focus on maximizing water use data and updating drought and conservation rules. The updates to conservation rules focus on the most pressing issues such as:

- Ensuring all customers must follow the rules regardless of where they live.

- Improving the quality of irrigation systems being installed so as to reduce water waste.
- Updating the enforcement process to expediate and simplify it for all involved.
- Eliminating a loophole that allows significantly more operational time for drip irrigation systems than other types of irrigation. Better aligning SAWS drought stages with the Edwards Aquifer Authority's stages to send a unified message about the stage of drought.
- Updating the watering times to reduce impact to the energy grid related to demand from automatic irrigation systems.
- Adding price signals in advanced stages of drought to discourage high volumes of discretionary outdoor water use.

II. How We Use Water Today

a. The SAWS Service Area and Customer Growth

Service Area and Population

San Antonio is the seventh largest city in the United States and has been one of the fastest-growing large cities in the United States over the last few years. SAWS provides water service to San Antonio, as well as separately incorporated cities within Bexar County. Some parts of our service area extend beyond Bexar County.

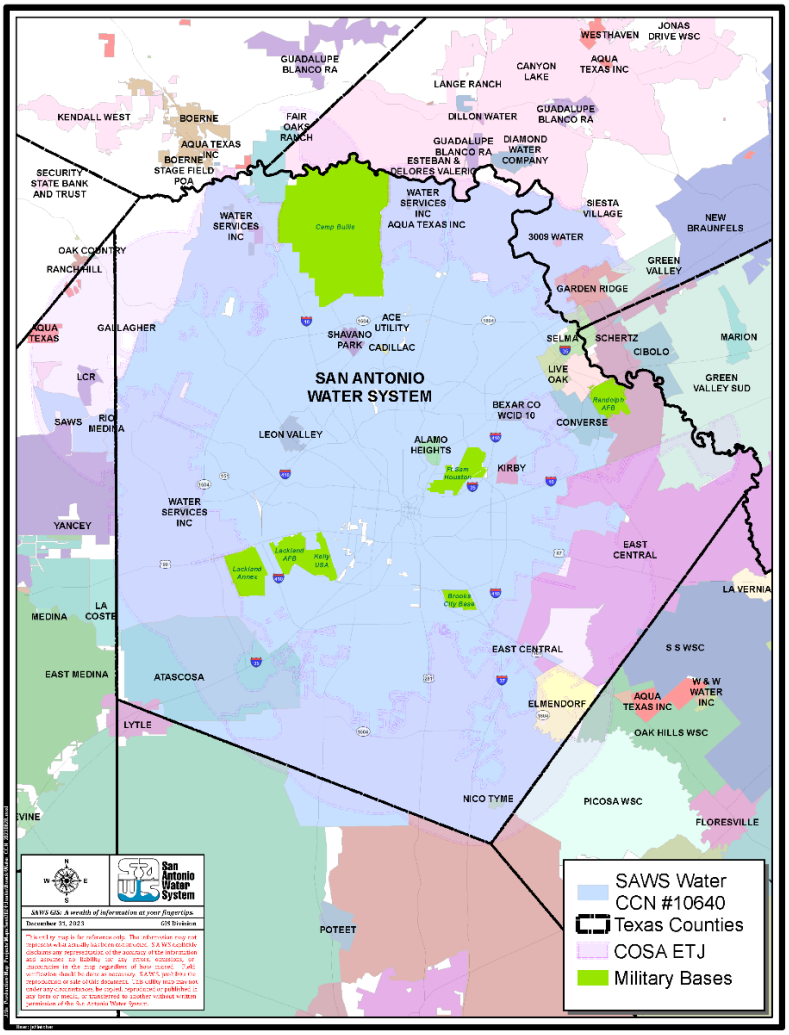


Image 1: The SAWS Service Area

Knowing how many people need water is a key piece of water planning. We reassess population forecasts at least once every five years. The 2024 population forecast projects that SAWS will gain 1.5 million new customers by 2070 bringing the total population to 3.5 million people by 2070 (Figure 1).

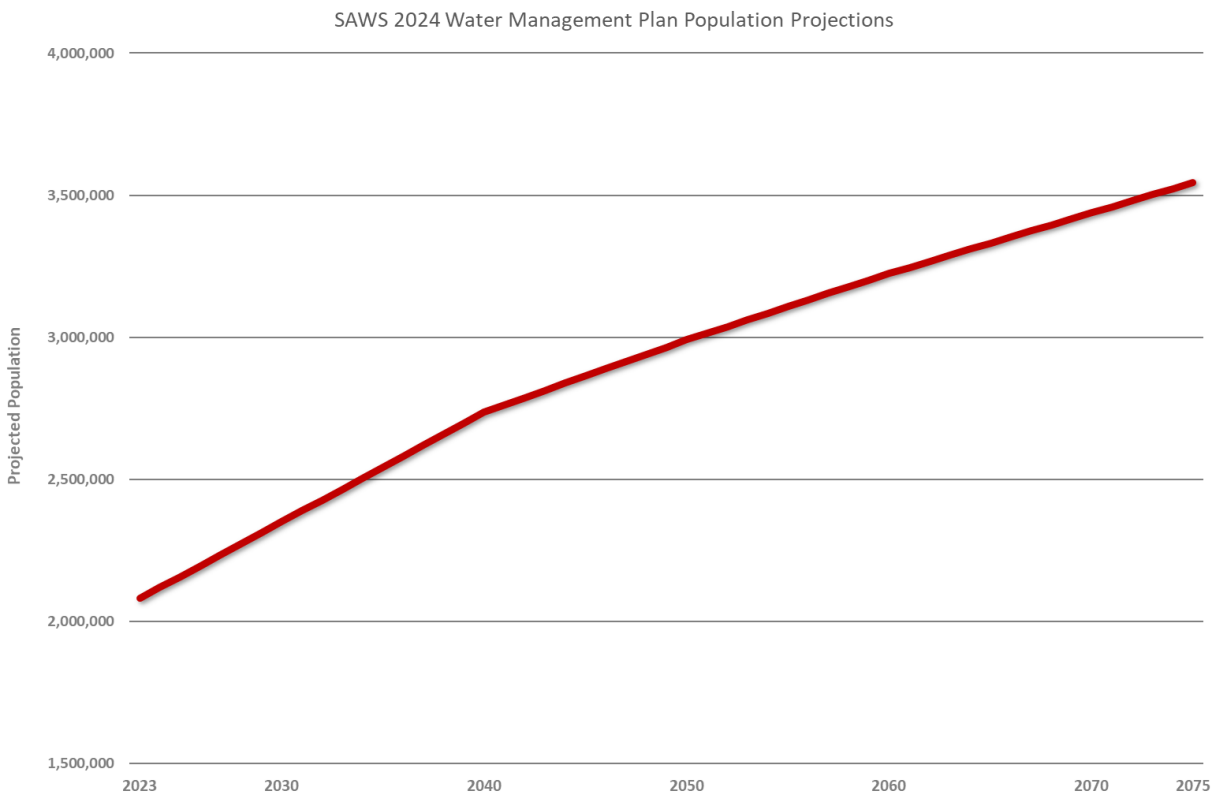


Figure 1: SAWS 2024 Water Management Plan Population Projection

Customer Types and Consumption Patterns

To help further understand how water is used, SAWS customer accounts are organized by type such as Residential or Commercial. Although SAWS serves a variety of customers, 66% of accounts are for single-family residences. Many single-family residences only use small amounts of water each month, but because they represent the largest portion of SAWS account types, the bulk of water use is for this group. In 2023, single-family residences used 51% of all billed water.

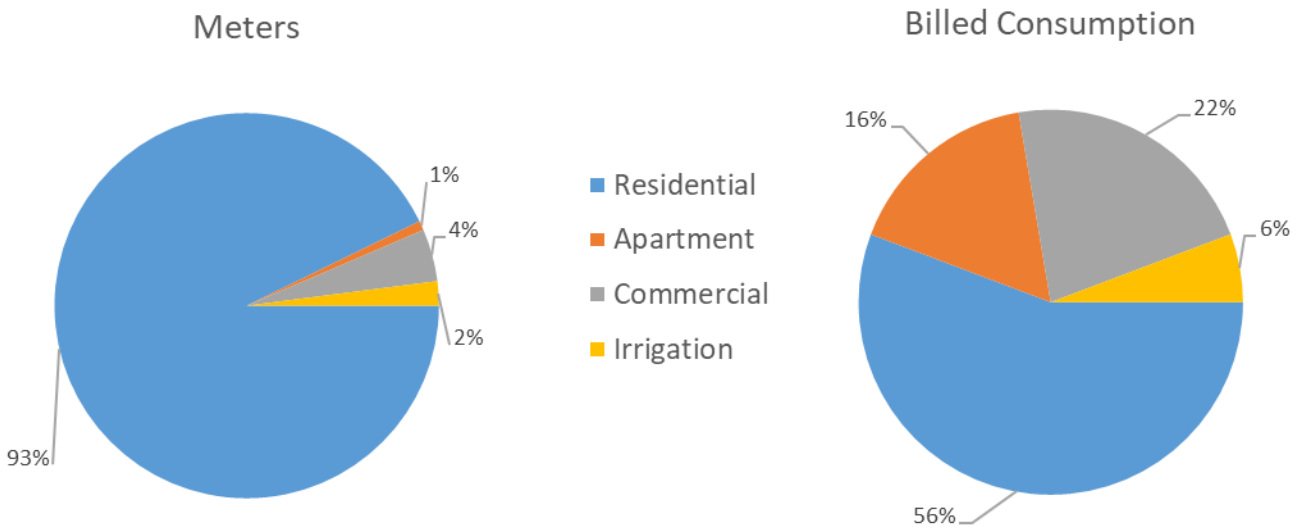


Figure 2, Meters shows the *Customer Accounts by Type, and Figure 3 Billed Consumption* shows billed consumption broken out by Account Type.

Conversely, apartment, commercial and industrial accounts were fewer in number, but combined used nearly as much water as single-family residences in 2023. Meters serving these types of accounts tend to be larger and provide water to many apartment units or may serve large business properties.

When looked at in isolation, Commercial accounts represented 6% of the total number of accounts. Many of these accounts are for large scale business operations, so it is unsurprising that these accounts used 21% of billed water. Apartments represent only 28% of SAWS accounts, but they used 16% of the water sold in 2023. Since 2002, dedicated landscape irrigation meters have been required at commercial properties. Since these are typically found at newer commercial properties only one percent of SAWS accounts are for irrigation only. However, this group used four percent of the water sold in 2023.

Water Use Patterns: Commercial

Water use among customer types varies due to a range of factors such as the presence of an irrigation system or the nature or seasonality of a business operation. Comparison of commercial accounts is significantly more challenging than residential because of the diversity of property types. For example, a school may have little to no seasonal use, while a restaurant has much different use compared to a manufacturing operation. In the last five years, all commercial accounts were assigned a six-digit property use code using the North American Industry Classification System (NAICS). This has allowed for comparisons between like properties. For example, the grocery retailer H.E.B. operates retail stores, administrative buildings, warehouses and other facilities across the service area. Depending on the end use of the water at those locations, simply looking at these commercial H.E.B. sites does not offer much insight. By assigning NAICS codes to each location based on what happens there, we can better understand what normal patterns of use are at each location, and in turn, are better able to understand where there might be a problem (leak) or an opportunity to engage a location in conservation.

Water Use Patterns: Residential Households

Many San Antonians are careful with their monthly water use. In 2023, 91% of all monthly bills sent to single family homes were for less than 12,000 gallons per month. In fact, a higher percentage of residential accounts fall in the lower two tiers, while the higher billing tiers consume proportionally large amounts of

water. The table below shows the number of bills and share of water consumed for each tiered rate of the residential customer class.

Tiered Rate	Use Up to (gallons)	Number of Bills by Tier (%)	Residential Billed Consumption by Tier (%)
1	4,000	46%	16%
2	7,000	28%	25%
3	12,000	17%	26%
4	20,000	6%	16%
5	Over 20,000	3%	17%

Table 1: Bills and Consumption by Tiered Rate for Residential Customers, 2023

Automatic irrigations systems are designed to quickly apply water to landscapes, so it is unsurprising that households with these systems have higher overall use patterns. SAWS Conservation analyzes water use patterns for Residential accounts to help identify which are most likely to benefit from an irrigation consultation and other programs that help customers use irrigation systems most efficiently and in keeping with drought rules. Other examples of data use are identifying and notifying customers of potential leaks and sending reminders to customers with high use patterns to reduce during the winter months in order to lower their winter average.

b. Balancing Interests in SAWS Water Sources

Human consumption is not the only use of water of which SAWS is mindful. The SAWS service area sits atop three major aquifers: Edwards, Carrizo-Wilcox and the Trinity. These aquifers are also associated with a bounty of springs and rivers that have supported human habitation for at least 10,000 years. Of all the sources, the Edwards Aquifer is SAWS' cornerstone supply. It is notable as a vast and prolific karst limestone formation that has been the primary source of water for generations. In recent decades, the Edwards Aquifer has been the subject of regional disputes, lawsuits concerning the Endangered Species Act, and evolving regulation. A regional Habitat Conservation Plan addressing endangered species concerns has helped manage the aquifer.

In addition, as the SAWS customer base has grown, significant steps have been taken to diversify its water supply portfolio so that SAWS is not solely reliant on the Edwards Aquifer. Customers also benefit from surface water from Canyon Lake and water from the Aquifer Storage and Recovery system at the H2Oaks facility. The recycled water system throughout the city helps offset the use of potable drinking water..

Most recently, the Vista Ridge Pipeline was brought online. In 2020, the pipeline began bringing non-Edwards water to San Antonio from a well field in Burleson County. This feat of engineering and years of planning help deliver 50 thousand acre-feet of water to SAWS customers annually from more than 140 miles away.

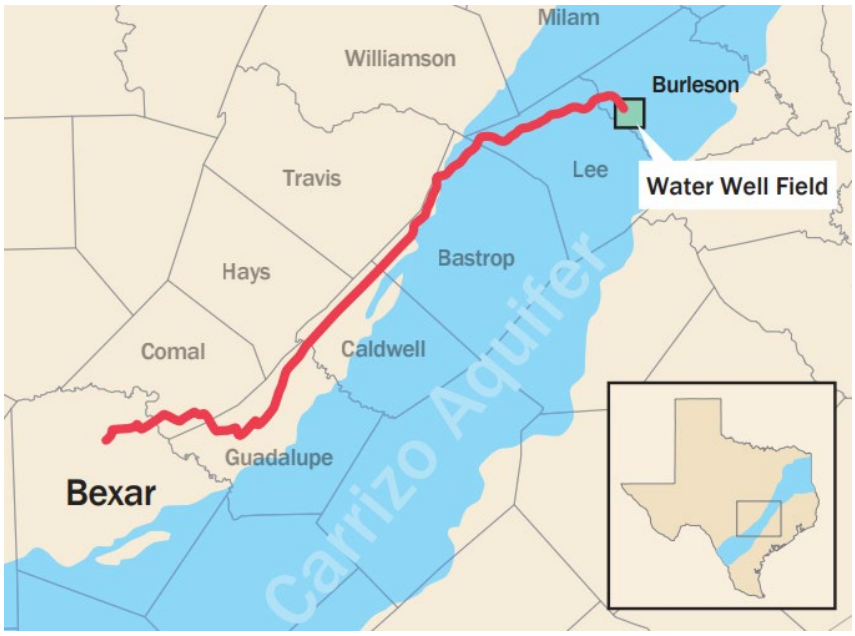


Image 2: The Vista Ridge Project moves water across five counties to the SAWS Service Area

Diversification, though important, is not the only solution. Alongside the development of new water sources, Conservation remains a key piece of the Water Management Plan. In fact, Conservation was the first strategy SAWS deployed to manage the challenges of weather, growth and new regulations. Conservation investments over the last 31 years have secured more water than any other SAWS water supply investment. While new water supply projects continue to reduce reliance on the Edwards Aquifer, water conservation remains a critical component of long-term planning, ensuring water availability for generations to come and supporting stable community growth.

c. Water Planning

"We plan for a time when generally water supplies are lowest and water demands are highest."

– Texas Water Plan

Located in south-central Texas, residents of the San Antonio area typically enjoy a moderate climate routinely punctuated by extremely hot and dry summer seasons and periods of significant rainfall. To ensure supply availability during the challenging summer months, in addition to balancing environmental interests in water supplies and supporting community growth, SAWS revisits its Conservation and Drought Plans, as well as its broader Water Management Plan approximately every five years. Resetting for growth expectations and weather forecasts, among other considerations, enables SAWS to stay ahead of water demand.

As part of this process, Conservation's strategies for reducing gallons per capita per day (GPCD) and mitigating peak demand is evaluated by the Water Management Plan Task Force, comprised of SAWS leadership. Together it reviews and updates GPCD targets, population forecasts, drought risks and integrated supply strategies, including water conservation. You can read the 2024 iteration of the Water Management Plan at SAWS.org.

i. Community Participation

Public Comment

Water planning in San Antonio is a multifaceted community process. SAWS holds public meetings, posts key documents for public feedback and review by the City Public Utility Office, and goes before both City Council and the SAWS Board of Trustees for their decisions on key activities. Additionally, City Council appoints the SAWS Board of Trustees, and the Mayor serves as an ex officio board member. Plans subject to this process include the broader Water Management Plan, the Drought Plan and its rules, and the Water

Conservation Plan. These Plans also go before Citizen Advisory Groups as noted below, as well as key stakeholder groups. These plans are designed with integration of these key planning areas in mind, and are implemented in tandem to support supply management in the long-term.

As with the 2019 Five-Year Conservation Plan, the draft 2024 update was made available on the SAWS website for public comment by customers, community leaders and stakeholder groups (Attachment A shows a summary of those comments). The draft was recommended for approval by the Community Conservation Committee (CCC) on May 8, 2024. It was approved by the Board on May 23, 2024 (Attachment H shows executed Board resolution.

Citizen Advisory Groups

SAWS actively engages with community members on conservation and programs through the CCC and the Customer Experience Committee (CEC). These committees create more opportunity for SAWS to hear directly from leaders in the community and account for that feedback in its decision-making. Committee members are appointed by the Board and are comprised of members from all parts of the service area.

The CEC began in 2021. It meets monthly and provides input on a range of topics that drive customer satisfaction including resiliency, conservation and customer assistance initiatives. Since 1997, the CCC has met monthly to generate and refine conservation program ideas and help build support for those programs throughout the community. In addition, members of the CCC provide input to the Board on current and future conservation planning. The CCC has played a major role throughout its 25-year history, resulting in the completion of indoor household programs and the maturation of outdoor programs.

Conservation is tasked with meeting the targets and goals set forth in the SAWS 2024 Water Management Plan and the 2024 Five-Year Conservation Plan. Funding needed to implement conservation programs is provided through dedicated funds set aside in the SAWS rate structure. The annual budget is approved by the Board. Progress on program implementation is reviewed by the CCC, while annual water savings are reviewed by Executive Management and an Annual Conservation Report is submitted to the Texas Water Development Board (TWDB) each May.

Program Oversight

Conservation is tasked with meeting the targets and goals set out in the SAWS 2024 Five-Year Conservation Plan. Funding needed to implement conservation programs is provided through dedicated funds set aside in the SAWS rate structure. The annual budget is approved by the Board. Progress on program implementation is reviewed by the CCC, annual water savings are reviewed by Executive management, and an Annual Conservation Report is submitted to the TWDB each May.

SAWS also revisits its Water Management Plan approximately every five years. As part of this process, Conservation's success at accelerating gallons per capita per day (GPCD) reductions and mitigating peak demand is evaluated by the Water Management Plan Task Force, comprised of SAWS leadership from across the company. Per capita targets, population forecasts, drought risks and integrated supply strategies, including conservation, are all updated with each new SAWS Water Management Plan.

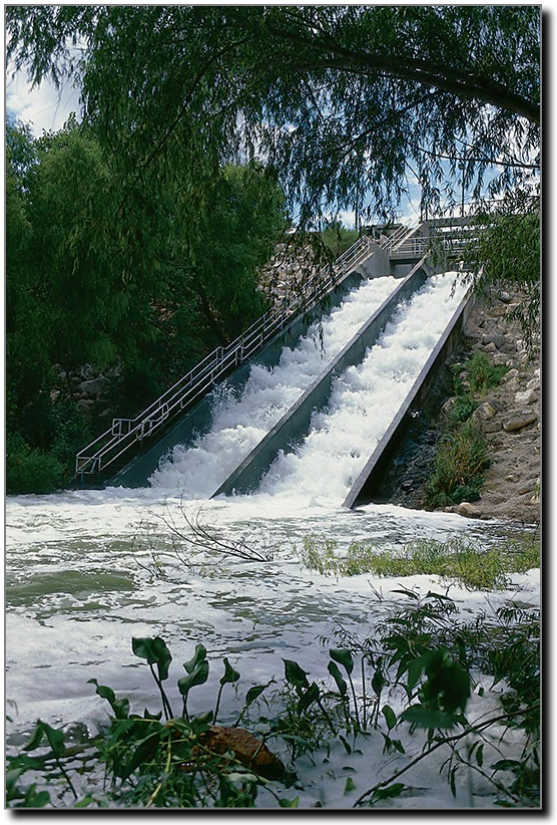
d. Recycled Water and Purple Pipe

In 1996, SAWS committed to building one of the nation's largest direct recycled water systems. This system produces high quality treated effluent to be used in three critical ways. First, SAWS produces enough recycled water to provide up to 25,000 Acre-Feet per Year (AFY) to customers: that's more than 8 billion gallons – enough to fill more than 16,000 Olympic-size pools! Having this reuse supply available to customers helps offset demand that would otherwise be placed on our potable water.

The community's commitment to conservation has been so successful that the amount of water available for reuse has been kept relatively stable over the last three decades. However, reuse water remains an important part of SAWS' supply diversification efforts. Today, more than 130 miles of purple pipelines with a capacity of 25,000 AFY deliver, on average, approximately 12,000 AFY of highly treated recycled water to more than 80 customers. These customers include industrial and commercial users, golf courses, municipal parks, universities, military and healthcare facilities.

Purple pipe infrastructure moves recycled water to customers for many uses other than potable drinking water such as landscape irrigation. The large amount of treated recycled water moving through these pipes helps offset what would otherwise be potable water needs.

The second critical role of SAWS high quality effluent is that the system contributes environmental water to supplement base river flows in the San Antonio River and Salado Creek. Annually, approximately 6,590 AFY is used to ensure flow during low flow periods or in the event of a drought. The result has been significant and lasting environmental improvements for the aquatic ecosystems in these streams. A third key use of SAWS treated effluent is to help produce affordable and sustainable energy for our community. A TCEQ bed and banks permit allows SAWS to supply up to 50,000 AFY to CPS Energy for its use in electrical generation so that CPS Energy does not have to use potable drinking water supplies. The recycled water system offsets up to 75,000 AFY in potable water.



Left: Outfall of high-quality treated effluent leaves the Steven M. Clouse Water Recycling Center and enters the Medina River to support base flows in the San Antonio River and Salado Creek.

While most of the available recycled water is accounted for, there are still customers pending connection to the system every year who would like to take advantage of this cost-effective option that benefits the community and the environment.

e. Wholesale Supplies

SAWS' commitment is to first ensure water supplies to meet the needs of SAWS customers. To support our regional community SAWS has agreements to provide approximately 1,420 acre-feet of wholesale water to several neighboring municipalities and utilities in 2024. As our infrastructure is capable of delivering water from more than one source, SAWS delivers water to the wholesale entities from our entire diversified water supply portfolio. Currently, SAWS does not wholesale any water from the Vista Ridge Project. However, the 2024 Water Management Plan allocates up to 5,000 acre-feet per year on a short-term basis available for future wholesale.

SAWS currently has four wholesale contracts with East Central Special Utility District, The City of Elmendorf, The Oaks WSC and Kendall County WCID #3. In 2023, the wholesale contracts totaled just over 1,320 acre-feet. These contracts are managed by the SAWS Water Resources team. All wholesale contracts require the wholesale purchaser to "develop and implement a water conservation plan using the applicable elements of 30 TAC Chapter 288." The approved Conservation Plan can be requested by SAWS. In addition, because the EAA may reduce SAWS' permitted amount of water available from the Edwards Aquifer in different stages of critical drought, SAWS obligates wholesale customers to adhere to similar cutbacks during critical drought periods. The wholesale contracts obligate the customer's adherence to requirements for pro rata water distribution and pro rata curtailment as set out in 30 TAC Chapter 288 and in accordance with the provisions of Texas Water Code §11.039. Details on notification of estimated critical period cutbacks are also outlined in the contracts which read, "On or about April first, June first, and September first the System will make a good faith effort to electronically notify the Customer with a report documenting the estimated critical period cutback to-date and projected annual critical period cutback. At any time during the year, the Customer may request from [SAWS] an estimate of the critical period reduction from the annual commitment."

III. Programs, Incentives and Resources

SAWS has a long and proud history of offering indoor and outdoor conservation programs for all customers. The scope and variety of our programs ensures that every SAWS customer has an opportunity to participate and reduce their water bills in affordable ways. In fact at this point 72% of single family customers have been part of a conservation program in the past five years.

After so many decades of conservation and data analysis, it is clear that helping customers reduce outdoor use while maintaining attractive landscapes is strategically critical to our drought prone community. Currently, outdoor use related to landscape and lawns is a primary focus and many programs and educational offerings prioritize efficient use of outdoor water. Transforming landscapes to include

regionally appropriate plants and materials is critical as these require less water to thrive in the region. With this in mind, SAWS continues to support customers in building living landscapes that are healthy and water efficient places you want to spend time in.

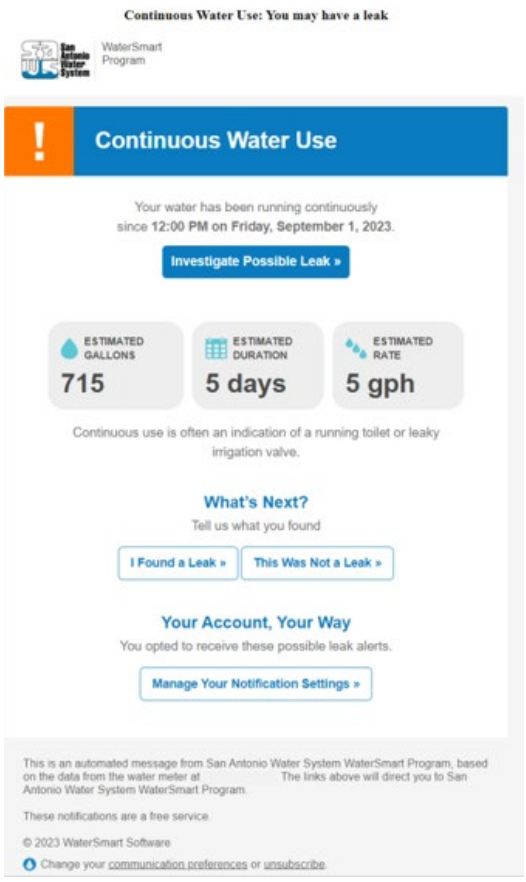
[PAGE CALLOUT: Transforming landscapes to include regionally appropriate plants and materials is critical as these require less water to thrive in the region. With this in mind, SAWS continues to support customers in building living landscapes that are healthy and water efficient places you want to spend time in.]

In the following sections of this plan we have highlighted some initiatives that are delivered digitally, our growing use of electronic meter data to save water and some of our most successful programs. We have also tried to highlight how program design is intentionally planned to provide opportunities for single family, commercial and industrial customers as well as customers in every socioeconomic group.

a. Conservation Resources for Customers

i. Technology and Analysis

Whether it's considering the efficiencies of new technology for customers or implementing software to better administer our programs, SAWS Conservation maintains its long-standing commitment to innovation and improvement. In 2017, Salesforce was implemented as the new Customer Relationship Management platform. It was initially used to help manage customer participation in programs, quickly identify the progress of different programs, and more easily communicate with customers; however, its use has grown over the past several years. Today, Salesforce is also used to generate text reminders for customer appointments, send electronic coupons to customers, and integrate with a successful portal to allow large irrigation properties to file checkup reports. In the coming years, we look forward to including customer consumption, expanding regulatory processes, and the ability for Salesforce to post conservation-related information directly to customer accounts in the billing system.



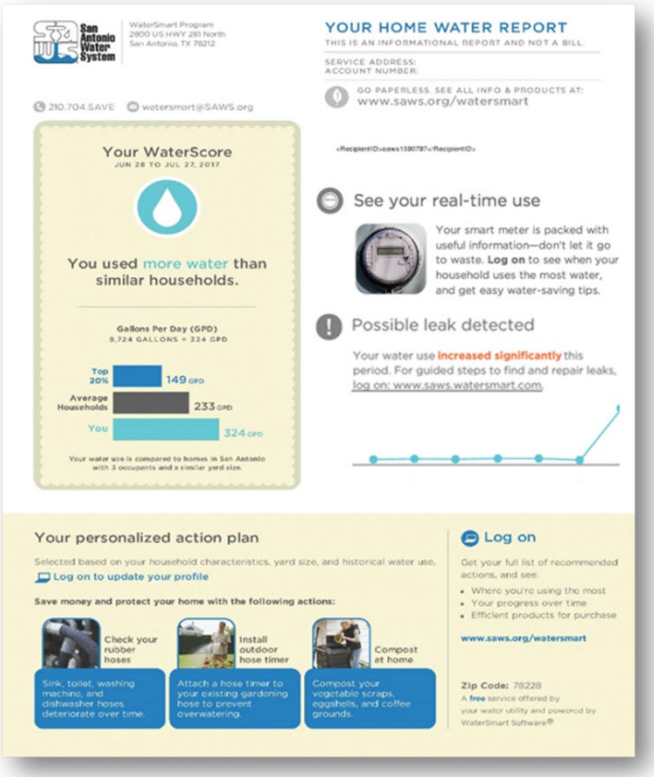
While Salesforce has changed our ability to interact with customers, new technology continues to transform how we do business. In recent years, utilities across the country have begun transitioning their metering from manual monthly reads to Advanced Metering Infrastructure (AMI). AMI provides utilities with significantly more data that is automatically transmitted on a recurring basis. In 2021, SAWS piloted AMI technology paired with ultrasonic meters as part of a new program called ConnectH2O. This program is designed to better connect people with the water that sustains them by providing customized information about their water use. During the pilot, SAWS conducted tests to ensure accuracy of readings and customers were given access to their water use information via the SAWS MyAccount website. In December of 2021 the SAWS Board of Trustees approved the customer-wide deployment of ConnectH2O. Full deployment will take several years but during that time SAWS continues to look at different aspects of ConnectH2O and ways it can be used to better serve and educate on the benefits of the program.

While AMI data will benefit the utility, it is also critical that customers use the data to better understand and monitor their water use. A key element of this is ensuring customers receive timely notifications when anomalies are seen in their specific data. In 2023, customers with ConnectH20 meters began receiving alerts by email, text and phone if their data showed continuous hourly use. Additional alerts are being sent to customers who appear to be watering on the incorrect watering day while drought rules are in place. These alerts are meant to help customers identify and correct an issue. Citations are not issued based on ConnectH2O data, but these alerts can also help customers avoid enforcement action for rule violations by enabling them to resolve an issue before it is observed by patrol staff.

Notifications of unexpected water use often leave customers wondering where to begin and often unsure if they need to call a plumber. Conservation has been working on providing the customer with self-help tools that will allow them to be hands on with the correction and increase awareness of their water usage. WaterSmart Software, one of Conservation's customer-facing resources, also contains a leak detection module that customers can use 24/7 to help identify the source of unexpected consumption. Additionally, customers may review their data to check for causes of high bills. In the future, we are hoping to take these self-help tools further to educate customers on what a plumber should check and what a customer can likely fix on their own.

Conservation is looking at how the ConnectH2O data can be used to enhance other programs. One example of this is a more proactive approach to Plumbers to People, a program designed to help residential customers repair leaking plumbing fixtures in their home. In the past, customers have notified SAWS when they identify an issue that needs to be fixed, but now hourly data reads may help us proactively identify customers that appear to have issue that could be addressed by this program.

With the increase in communications and the desire to have customers interacting with their data, two platforms are currently available for customers: WaterSmart and MyAccount. Conservation began using WaterSmart in 2017 to send customers monthly home water reports, but use of the software has expanded over the years. WaterSmart is highly interactive: customers can view their usage, get tips on how to conserve, trouble shoot causes of high bills, learn about programs, update their household information, set custom preferences for notifications, and more. Working in parallel, SAWS developed the MyAccount platform where customers can view their usage as well as view and pay their bill. As we receive customer feedback on these tools and programs, we are developing more ways to improve their user experience.



As AMI continues to be deployed across the country, new and innovative uses of the data are developed. SAWS Conservation is part of the conversation both locally and nationally helping us ensure we are implementing the latest strategies and offering the most benefit possible to our customers.

ii. Conservation Phone Team

The SAWS Conservation Phone Team is often a customer's first interaction with the conservation department – and many times with SAWS – so they must be knowledgeable about a range of information. This Team is comprised of six customer service representatives who are specially trained on Conservation rules, programs and how to interpret Connect H2O electronic meter data.. The Phone Team frequently answers questions about how to reduce outdoor use and coordinates scheduling and preparation for the Irrigation Consultation program. They also answer calls on a range of topics including:

SAWS Conservation Administrative and Phone Team

- Why conservation is important for our community.
- Other tools they can access to help them conserve.
- Programs they might consider participating in.
- High bill questions.
- Interpreting water use data including hourly Connect H2O leak alerts

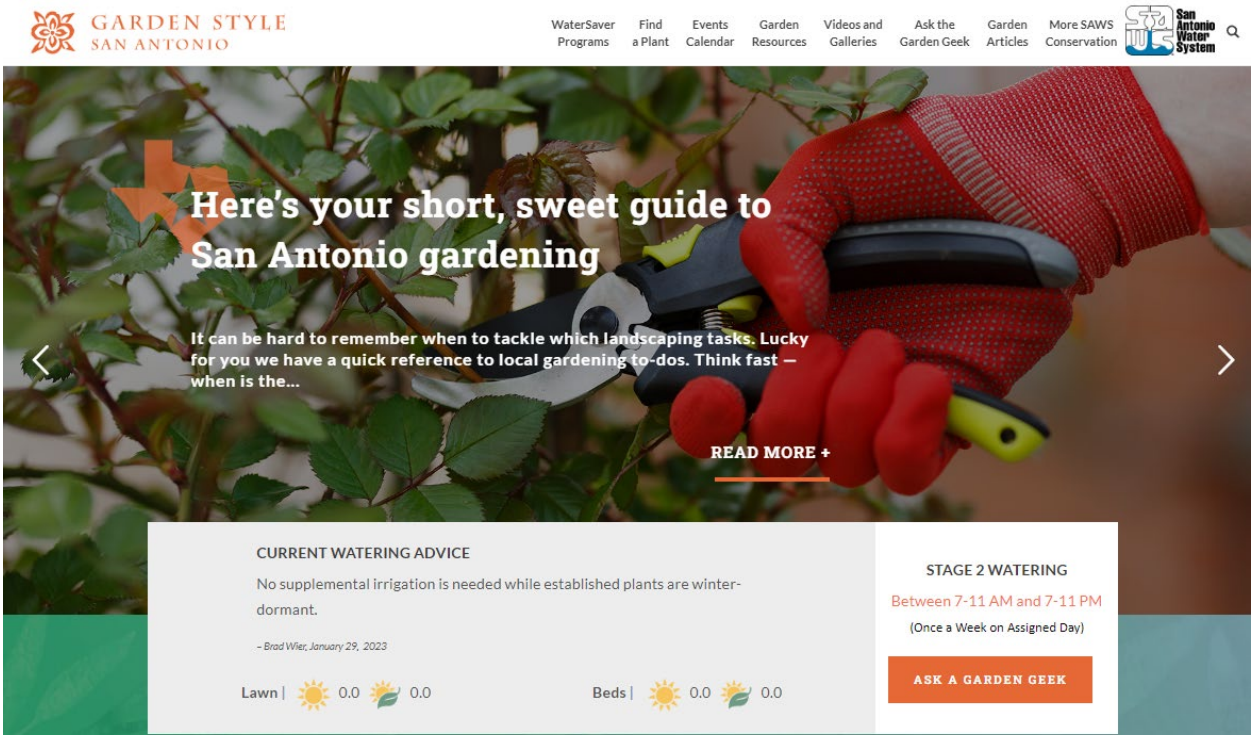
- Questions about watering rules or violations.
- Questions about communications issued by the Conservation Department.

The Phone Team works to address each call with efficiency and professionalism. SAWS Conservation call staff received a total of 21,416 calls in 2023 with an average of 88 calls per day and an average queue time of 39 seconds. During peak season they received an average of 108 calls per day and during off season received an average of 67 calls per day. Summer months are the peak season when weather is hot and dry and customers have an increased interest in water conservation.

In providing direct support to customers with transparency, these staff are pivotal when it comes to assisting and educating customers. Helping customers understand their individual role and responsibilities when it comes to conservation is key to reducing overall water usage and growing water awareness in the community. Customers can reach the SAWS Conservation Phone Team during normal business hours of Monday-Friday 8 a.m.-5 p.m. by calling 210-704-SAVE.

iii. GardenStyleSA.com

With easy landscape designs and expert watering advice, the Garden Style San Antonio (GSSA) website appeals to everyone looking to transform their yard into a more sustainable, low-water-use landscape. The information available on GSSA helps residents conserve water and reduce high demand in the summer months by functioning as a toolbox where the community can find the perfect low-water-use plant, download landscape designs, learn how to maintain their landscape and much more.



The home page for GardenStyleSA.com. The site offers information about conservation programs, WaterSaver Rewards classes, gardening and landscape tips for the San Antonio climate, and more!

The weekly newsletter which goes out to more than 35,000 households, is also part of Garden Style San Antonio. It provides current watering advice and gardening articles with the latest trends, tips and techniques, and information about educational opportunities for the community. The website is also the platform where customers can apply online for coupons and rebates.

GardenStyleSA.com also provides a platform to help people understand the additional community benefits derived from WaterSaver landscapes:

- Gardening and spending time in nature can positively impact our well-being and physical health.
- Pollinators and other wildlife thrive with native plants which also improve air quality, store carbon and are less expensive to maintain.
- Rain gardens and other nature-based landscape designs help prevent flooding by slowing storm water runoff and improve water quality by filtering out pollutants.

The GardenStyleSA.com website and e-newsletter continue to grow in popularity. Surveys of site users helps ensure that content meets the needs of those new to gardening as well as experts. Based on customer feedback, SAWS staff incorporated 16 Plant by Numbers landscape designs that guide beginner gardeners in implementing our Landscape Coupons to trouble spots in their home gardens. In 2023 there were more than 260,000 unique visitors to the site. Our e-newsletters reach thousands of households per week with a high open rate of 46%.

b. Residential Use Programs

iv. Landscape Transformation

SAWS created two grass removal incentive programs allowing customers to replace grass with WaterSaver Landscape coupon plants and the Outdoor Living rebate for patios. The WaterSaver Landscape coupon is used to replace grass with beds composed of attractive native and well adapted plants resulting in resilient, diverse GardenStyleSA landscapes. Fundamentals of the program are:

- Each coupon redeemed requires the removal of 200 square feet of grass in a contiguous area;
- Each coupon provides a $100 discount on the cost of 15 plants at participating locally owned vendors; and
- There is a lifetime program limit of eight coupons for up to 1,600 square feet of grass removal.

Before and after of 800 square foot lawn conversion project.

In 2015 SAWS launched the Patioscape Coupon program to help customers replace grass with a permeable patio. After seven years this program was retired and replaced with the Outdoor Living Rebate. This is a rebate program that offers customers more material options beyond pervious flagstone, steppingstones, or paver patios. It also now includes wooded or composite decks. Key tenants of this program are that:

- Patios, decks, and combination outdoor living spaces must be a minimum of 200 square feet and at least 10 feet wide (no walkways). Rebate caps at 600 square feet;
- Concrete, mortar, asphalt, or other impervious construction is not allowed; and
- Customers may buy project material from any store.
- A cash rebate is issued upon completed and approved work. Rebates range from $300 - $1,000.

Before and After of an Outdoor Living Rebate project installing functional outdoor space in lieu of grass.

Also required for both the and the Outdoor Living Rebate program and the WaterSaver Landscape discussed below are that:

- All homeowners with an in-ground irrigation system are required to schedule a free SAWS Irrigation Consultation regardless of grass removal program;
- Customers with irrigation systems must cap all irrigation heads in the transformed area; and
- Customer may qualify for an additional incentive using the SAWS Irrigation Design Rebate to cap zones or their entire irrigation system.

Since 2013 customers have replaced 4.5 million square feet of grass with more diverse plant material and functional outdoor living spaces. These landscapes need less water and are more resilient, increasing wildlife habitat and sequestering carbon in deep roots, woody stems, and leafy foliage. These gardens are changing the perception of what is attractive and desirable in Texas.

v. WaterSaver Rewards Program

Conservation engagement is incentivized through WaterSaver Rewards, which encourages customers to earn points for completing various Conservation programs and attending eligible classes, workshops and online events offered by SAWS and its educational partners. Depending on their engagement level, members can earn coupons to redeem at local vendors. These purchases were initially limited to rain barrels and mulch, but in recent years this requirement has been broadened to allow customers to select from plants, tools and landscape conservation suppliesAs we do with many programs, we are looking at how this program can be streamlined to minimize required staff resources and improve outcomes. Since its inception, the number of Rewards Members has grown from just over 1,000 to more than 13,000 in 2023. Despite success in enrolling many customers, this program has not yielded hoped for increased participation in gardening education activities. The program is being evaluated to determine whether it should be revised or if a different effort might better meet goals.

vi. Spring Bloom

Spring Bloom takes place each year at SAWS headquarters with conservation partners and landscape experts providing speakers, plant sales, children's activities and a WaterSaver plant giveaway. Approximately 2,000 residents attend this annual event. Surveys indicate that each year about 30% of attendees are new to the event and another 30% are new to SAWS' water conservation programs.

Attendees at SAWS' Annual Spring Bloom event learn about all things gardening from SAWS' expert staff of plant specialists and licensed irrigators, as well as area partner organizations.

vii. Conservation Irrigation Consultations

Conservation Consultations are the cornerstone of our outdoor conservation efforts. The Consultation team is made up of six people who are licensed irrigators and are passionate about promoting water efficient living landscapes. Consultants meet one-on-one with homeowners to give homeowners the confidence they need to make permanent changes that keep gardens healthy and beautiful. The free one-hour service includes:

SAWS Conservation Consultants

- Documenting how much water the irrigation system uses at the customer's settings.
- Giving the customer the consultant's recommended settings based on horticultural principles.
- Documenting any repairs needed and recommending efficiencies that will meet the landscape goals of the homeowner.
- Offering custom rebates to eliminate all or portions of the system.
- Offering rebate and coupon programs that facilitate landscape transformation to a more sustainable, climate-appropriate landscape.

The average post-consultation savings is 1,100 gallons per month for each consult. According to the Water Footprint Network, that's roughly enough water to make two cotton t-shirts. With these results, it is unsurprising that this popular program can have a multi-week waiting period during summer months. Based on current staffing levels, this program is at capacity for total annual consultations. However, Conservation continues to look for new opportunities to expand our irrigation education given that these one-on-one educational interactions result in quantifiable, sustainable reductions in customer use.

A SAWS Consultant reading a customer meter to check for irrigation flow.

viii. Conservation for All Customers

Programs to reduce outdoor use is a focal point of SAWS Conservation, but it is neither the only way to achieve savings nor are those programs relevant to all customers. Many of our customers have low to no outdoor water use and other programs are available for them.

Plumbers to People: Emergency Plumbing Assistance

We are proud that Plumbers to People (PTP) was the first conservation program launched by SAWS in 1994. The program was designed to provide water leak repair services for low-income customers. While it is an administratively complex program, it has provided emergency plumbing repair for many households, preventing waste. The repairs also stop the cycle of water disconnection that can occur if a family cannot afford either plumbing repairs or the high cost of continued water waste from leaks.

Some of the key program guidelines for PTP include:

- Household must be documented as falling within 125 percent of federal poverty guidelines.
- Account holder must own and reside in the home (no rentals).
- Leak must result in potable water waste.

In 2023, SAWS invested nearly $710,000 in this program, helping more than 1,100 households make important repairs and reduce their water waste. We expect this investment to grow as electronic meter data helps proactively identify leaks at eligible households.

Uplift Team Outreach

The SAWS Uplift program offers 14 different assistance options for our neighbors who face difficulty in paying their water bill. The Uplift Assistance Program, Project Agua, Plumbers to People and Laterals to People are four programs that offer direct payment assistance. The team of nine Uplift Specialists promotes the program and enrolls neighbors within the community at health fairs, senior centers, school carnivals, city council district offices, and more. Uplift program assistance is also promoted through customer newsletters, VIA bus ads, door hangers, billboards and periodic direct print and email campaigns.

In 2023, the Uplift team gave presentations and attended 386 community events, resulting in increased Uplift enrollment and assistance to over 34,000 households.

CPS Energy Program Collaboration

SAWS hopes to increase overall participation in its programs through cross-promotion efforts with CPS Energy (CPS). In the near future, SAWS and CPS aim to work more collaboratively to bring a full menu of resource efficiencies to shared customers. Current discussions are exploring website cross-linking, referral services, aligning on program details that might impact one of the utilities, and cross-training of program staff to help identify opportunities to assist customers. For example, a CPS employee providing weatherization services to a customer through the Casa Verde program might identify a water leak that could be repaired under SAWS' Plumbers to People program and make a referral to SAWS Conservation to get that same customer assistance.

SAWS and CPS are already collaborating in other ways. SAWS participated in CPS' Commercial Demand Response by making strategic operational changes that saved more than 7.5 megawatts of electricity – enough to power about 1,500 homes. This alleviated strain on the energy grid, but also earned SAWS more than $550,000 paid by CPS. Additionally, SAWS recently announced proposed changes to the watering hours. These changes have both water and energy conservation benefits. You can learn about the watering times in each stage of drought in Section VIII Drought Contingency Plan.

c. Industrial and Commercial Use Programs

Commercial, Industrial and Institutional (CII) customers account for six percent of SAWS meters but use 25% of the total water delivered. This is not unexpected because many of those SAWS meters represent scaled operations that promote economic activity. In 2023, nearly fifty percent of the annual savings documented by SAWS customers came from commercial customers.

i. Rebates

CII stakeholders were early supporters of investments in water conservation due to how critical water is for commercial operations. The San Antonio Manufacturers Association advocated for a portion of commercial meter fees to be dedicated to a commercial conservation fund starting in 1998. This dedicated funding has helped to develop one of the most robust commercial conservation programs in the United States.

Today's CII water users reflect a range of businesses and institutions in San Antonio. SAWS stays engaged with groups that represent facility managers, cooling tower management, heating and cooling, construction and manufacturing, and more.

Early incentive programs focused on indoor efficiencies, but over time SAWS reached saturation for these types of programs. Custom rebates are still available for CII customers to continue enabling a range of retrofit and process change opportunities that achieve measurable water savings.

Through the Commercial Custom Rebate program, SAWS has worked with businesses to support the installation of new technologies or modification of existing technologies that yield a demonstrable reduction in irrigation water use. In some instances projects have included irrigation removal or large scale irrigation rebates. Rebate funds have then been used by the property to convert parking lot islands from high water-using plants to xeriscape landscapes..

The NAICS coding initiative is an important element for CII analysis. SAWS assigned these codes based on how water is used at the property and solely based on the business type present at the service location. Review of CII properties by NAICS code will help SAWS perform more detailed analysis of use, including comparing like property types, and understand how to help sites save more water.

The Point Bluff Homeowners Association wanted to reduce water use across its property by making targeted changes to their irrigation system. With 11 irrigation meters and nearly 6.3 million gallons of annual use in 2019, the Association's irrigator suggested installing central control and master valves as two key elements of an overhaul to the irrigation system. While 25% savings were expected with the rebated changes, the Association achieved over 35% savings in 2022, even during a severe period of drought.

ii. Commercial Irrigation Checkup

Because of their size and complexity, commercial irrigation systems present unique maintenance and management challenges. Water bills for these systems can quickly rise to amounts that surprise the facility manager or responsible homeowners' association (HOA). Reasons for this include:

- Significant underground infrastructure that is prone to leaks as soils shift, vehicles drive over it or construction disturbs it.
- Irrigation controllers may be spread out over large properties, making it unlikely someone will manage to change schedules seasonally or with weather changes.
- Operation of the system is not taking place where it is easy for a manager to observe it for problems.
- Many sites do not have full-time on-site property management visiting daily, resulting in delayed identification of leaks.

In some cases, the facility manager or HOA may not even be aware the bill is high or higher than it should be. This is often because:

- Bills for irrigation water are sometimes paid by a corporate office, eliminating the price signal associated with poor management or unrepaired leaks.

- Large irrigation system owners often have no idea how much their irrigation system should use when it is in good working order.

The Annual Irrigation Checkup helps overcome these challenges.

What is the Checkup and Who Does It?
The Irrigation Checkup, introduced to city ordinance in 2006, is focused on large irrigation properties and large-use irrigation sites and requires them to submit an "Irrigation Checkup" annually to SAWS. The Checkup itself is documentation that the system can be operated without waste and notes how much water each meter associated with the system is expected to use in peak summer months. Large Property is defined as 5 acres or more and Large Use is determined by having used one million gallons or more for irrigation in the prior calendar year. Approximately 3,000 metered accounts meet the requirement on an annual basis, and most are commercial properties.

Results Are Impressive
Evaluations of Checkup submissions show savings of more than 10,000 gallons per month per property upon reaching compliance with the regulation, with some properties saving significantly more. The immediate savings stem from repairing leaks and replacing broken parts. Additional savings are achieved through owner and property manager education, specifically by ensuring they know how much water the system should use when in good working order. As part of the checkup, properties also submit current contact information for those responsible. This is beneficial when SAWS is alerted to problems with the system, including water waste, to have a current point of contact.

Additional benefits of this program are that irrigators and property managers become more interested in improving their irrigation systems when documenting usage. Checkup customers often work with staff to review their data and decide to make efficiency upgrades, which are eligible for a custom rebate. Older properties struggling to maintain aging systems are incentivized to permanently retire them instead of making costly repairs or retrofits. Permanent removal reduces the scope of the irrigation system and leads to permanent water savings. Once a system is permanently retired and no irrigation is used, the property is no longer required to comply with the irrigation checkup.

Improved Compliance from Rate Impact
In 2016, SAWS approved a measure that failure to comply with the annual irrigation checkup resulted in additional charges on the irrigation system account. This includes a late fee for not complying by May 1 and an additional noncompliance rate to be assessed on all monthly irrigation consumption that continues until compliance is met. As a result, compliance with the irrigation checkup requirement by the May 1 deadline and overall compliance have improved significantly.

IV. Reasonable and Meaningful Rules

i. History of Conservation Rules

Not every step forward in conservation looks like a new incentive or education program. Rules need to change, as the community's water needs change, to keep the community on track for a sustainable future. SAWS has helped update community rules many times over the last two decades. For example, SAWS has worked with commercial stakeholders to develop reasonable efficiency regulations codified in San Antonio Municipal Code. A few examples include:

- Cooling towers must operate at a minimum of four cycles of concentration.
- Newly installed shared-use laundry facilities must install water-efficient machines.
- Properties that are more than five acres in size or use more than 1 million gallons per year and have irrigation systems must submit system analysis reports as part of the Annual Irrigation Checkup.
- New commercial accounts must install dedicated irrigation meters as of 2000.

Another example is the introduction of enforcement for watering rule compliance. In the years after enforcement became available through municipal citation system, SAWS found that single family residences typically reduce use by 3,000 gallons immediately after receiving the first citation for violating the water rules. However, this is also an example of a rule change that had significant impact for a long time but has become less effective in recent years. This is due to the dollar amount of the citation being unchanged in the last 20 years and an increase in customers living outside of City limits and the City's Extraterritorial Jurisdiction and therefore not being subject to the citation system. It has also been a problem that citation costs do not escalate with repeat violations nor are they higher for very large irrigation use properties.

Regulations save water and money, and it is time to update them. In 2023, Conservation launched a new initiative to update several conservation rules in both the City Municipal Code and in SAWS' Utility Service Regulations. These rules will yield significant water savings. There were four primary points of focus with this initiative and several secondary items that were addressed.

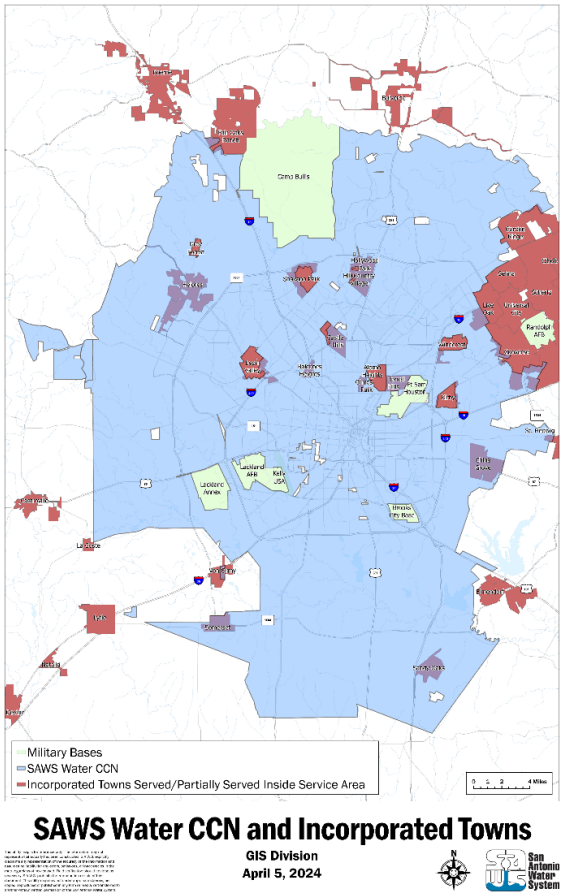
These proposed changes were shared extensively with the public including through more than 70 meetings with industry groups, local leadership and their constituents, and stakeholder events. In addition, information and survey opportunities were made available online through the custom website WateringRules.com. These changes, among others, were made in either or both the City Code and the SAWS Utility Service Regulations to ensure all customers were subject to the same requirements. The San Antonio City Council and the SAWS Board of Trustees approved these changes.

ii. Critical Updates

Irrigation is the biggest contributor to peak use during the hot and dry summer months. At the same time, there is increasing challenge in getting all of SAWS' customers to comply with the watering rules that help ensure appropriate and sustainable amounts of outdoor use through any drought period. As a result, the four critical updates focused on these issues:

1. Instead of a Municipal Court citation, SAWS will apply a fee on violators' bills

While citations can only be issued within the City of San Antonio and its extraterritorial jurisdiction (ETJ), fees can be issued to any SAWS customer who violates the rules regardless of the location of their property. Water use can be very high in areas with no enforcement mechanism. Customers who cannot receive a municipal citation may not be contributing to savings during periods of drought. By adopting a service



rule requiring all customers to follow drought rules, SAWS can enforce compliance fairly for all customers regardless of where they receive water service. To do this, the SAWS Board of Trustees needed to update the Utility Service Regulations and the City of San Antonio had to agree to update portions of ordinance and approve a fee structure for non-compliance.

Image 3: SAWS Customers, Separate Cities and Incorporated Towns. The map to the left shows the separately incorporated cities that are partially or completely served by SAWS, but in which no enforcement for watering violations could take place.

2. Improve the quality of new irrigation systems

Inefficient and badly designed irrigation can cause high water bills for homeowners and increase unnecessary strain on the water infrastructure. Texas has some of the most comprehensive rules for irrigation system design and installation, but most of these state rules are not enforced by any entity in the San Antonio area. SAWS is taking this challenge on by developing an irrigation system plan review and inspection process for single-family homes and other new construction outside of City limits and the ETJ. The City of San Antonio currently has a permit process in place irrigation in the city and outside the ETJ but does not have the capacity to complete plan review or operational inspections. By augmenting what the City is currently doing, all irrigation systems will go through plan review and inspection processes. SAWS is uniquely qualified to take on this role with its robust team of licensed irrigators and three TCEQ Irrigation Inspectors on staff.

3. Limit drip irrigation to designated watering days

Water run-off from improperly working irrigation system pools in the street. This amounts to water waste under SAWS' Conservation rules.

Drip irrigation applies water to landscapes at nearly the same rate as spray irrigation, meaning the two types of irrigation use about the same amount of water. Spray irrigation has always been limited to one day per week, during drought stages but drip has been allowed daily. This was viewed as a "loophole" that allowed extra watering for those using drip and encouraged expansive use of drip systems. Additionally, many people used excessive water as they mistakenly believed drip needed to run longer or more often. To resolve this, the rules were changed in both the City Code and SAWS' Utility Service Regulations, requiring that drip systems operate on designated days. Drip irrigation can be operated three times per week in Stage 1, two times per week in Stages 2 and 3, and one time per week in Stage 4, during watering hours.

4. During severe drought, send high users a financial signal to reduce outdoor water use

Did you know?

Homes with irrigation systems use 70% more water than homes without it. What's more, data analysis performed by SAWS Conservation indicates that on average a well-designed and properly working irrigation system will use 20% less water for the lifetime of that system. That can be a huge water *and* money savings for homeowners! Although Texas leads in having rigorous irrigation licensing and standards, many of these rules are not currently enforced. Our community's rapid growth includes the addition of many new irrigation systems. Requiring that any irrigation systems served by SAWS must follow all state standards will reduce water usage and water bills for customers.

The summers of 2022 and 2023 were extremely challenging with record heat and lack of rain in the summer months. The Drought Management Plan as implemented did not meet savings goals of 10% that are a necessary component of our long-term Water Management Plan. One challenge identified is that the original Stage 3 regulations that limit irrigation to only twice per month were perceived as harsh and punitive even to those already saving water and following rules. While plants can survive this watering schedule, feedback indicated that it would be best to implement a different new measure before this one. With this in mind, a High Use Surcharge was implemented for Stage 3 severe drought periods. Analysis in 2022 indicated that the top 6% of water users in single family accounted for 21% of water sold by volume to this customer class. To encourage impactful reductions by these customers a High Use Surcharge was designed with a 20,000 gallons per month threshold for single family so that it generally will only impact the top 5% of users. A unique threshold has been established for dedicated irrigation meters present at commercial properties so they too will be encouraged to save more in Stage 3drought periods.

The surcharge cost per thousand gallons was determined through a rate analysis effort that looked at costs the utility incurs during high production periods in drought. The rate of slightly over $10 per thousand gallons for water over the threshold should discourage high usage. For those who do not reduce and pay the surcharge, the funds will be managed in a restricted fund dedicated to drought management costs.

What about the twice per month watering schedule? This moved to Stage 4 which is an emergency stage only triggered if previous stages are not yielding necessary savings. There was an existing surcharge in Stage 4 with an unclear surcharge cost per unit. The cost was updated based on the recent rate case to match the costs in Stage 3. However, the threshold for the surcharge in Stage 4 is reduced to 12,000 gallons per month for all accounts to reflect the reduced watering schedule and urgency of any drought at that stage.

ix. Additional Updates

Additional changes to the rules were proposed to support these critical updates, provide clarity on existing rules, or because it made good sense to address additional concerns at the same time. These proposed changes include:

Alignment to EAA stages: Misalignment between the drought stages of the Edwards Aquifer Authority and SAWS causes customer confusion and makes it difficult to convey the true severity of drought. With this proposed change, SAWS and the EAA would be better aligned in signaling drought severity.

Access to Premises: Eliminate time restriction language so that SAWS trained personnel may perform all necessary maintenance, repairs and inspections concerning conservation when necessary. This change also

specifically establishes that it is an automatic violation of the rules to refuse SAWS trained personnel entry to areas such as gated communities.

Enforcement Provisions: The enforcement provisions would be consolidated to one section and broadened to be applicable to a wider range of conservation rules.

Flow Restrictors: This is a practice used by other utilities around the United States to reduce flow and thereby reduce water waste in extreme cases. This would be applied at locations that have repeated or continued violations, documented by trained personnel and only after the account holder has received notice and has had an opportunity to come into compliance. The flow restrictor would allow indoor flow rates for homes but make it challenging to operate an automatic irrigation system.

Turfgrass Soil Support: Clarified that the four-inch soil requirement must be met after sod is laid meaning that once the sod is settled and watered, there must be four-inch-deep soil. This ensures that even after compaction there is a reasonable about of soil to absorb water and reduce runoff. There is also an additional new requirement for soil organic matter to ensure that healthy landscape can be supported.

Variances: Simplified the procedural language and clarified SAWS conservation's ability to exercise reasonable flexibility in issuing variances. A benefit of this change is that variances could be issued with consideration to the weather and temperature at the time they are needed. Currently these considerations are not part of the variance administration process.

Watering Times: Changed the watering windows to help manage the community's energy needs. According to ERCOT, there are challenges with high demand of the energy grid from 7-9 p.m. during the summer. SAWS uses more energy during this time as many people start watering their landscapes and high-service pumps are turned on to refill the elevated tanks and maintain pressure. To overcome this, SAWS updated water times for year-round through Stage 2 drought conditions. Year-round watering times will be from midnight to 10 a.m. and 9:00 p.m. to midnight, daily. When in Drought Stage 1 the Year-Round watering hours still apply, but watering through the week changes from daily to once weekly, with the day assigned based on customer address numbers. When in Drought Stage 2, watering still occurs once weekly on a customer's assigned day, but the watering hours are reduced to 5:00 a.m. to 10:00 a.m. and 9:00 p.m. to midnight.

V. Conservation Education

SAWS strives to build the water literacy of community members through engaging and experiential educational programs. These creatively designed programs attract new people to learn about water management in our community. Educating the community on all things water is a big priority at SAWS. In recent years, SAWS worked to increase virtual opportunities making our programs more inclusive and enabling staff to engage more schools and community groups. The effort includes experts and staff from all departments.

Conservation Department: Staff offers educational programs and events specific to water conservation for the community. Several nonprofit organizations are under contract to provide educational activities and programs directly related to water conservation.

Education Department: A professional and award-winning team of SAWS educators has crafted educational programs and curricula aimed at adults and school-aged children alike to develop a water-literate community.

Community Outreach Department: Our Community Outreach Team engages in community conversations about water by creating and participating in unique events in person and on social media.

Social Media Department: Digital engagement experts build our social media presence and use digital campaigns to spread the word on water news, including timely conservation messages.

Uplift Department: The Uplift Team works to enroll low-income and other at-risk customer groups in various assistance programs.

SAWS education and outreach efforts focus on educating about water supply, stormwater runoff, point-source pollution, water production and treatment, and wastewater treatment issues. SAWS Education Department programs are designed to help students and adults make meaningful connections to our water resources in a way that helps community members develop their sense of environmental stewardship and civic responsibility. By connecting people to the value of water, we create a desire for them to conserve and protect it.

In 2023 alone, the SAWS Education Team reached over 14,000 community members through various programs:

Program	Count of Events	Sum of Attendees
Field Education	109	6,264
Events	77	3,579
Classroom Presentations	54	2,438
Teacher Training	6	141
Career Days	25	1,692
Intern Program	8	139
TOTAL	**279**	**14,253**

Table 2: Education and Outreach by Program

a. School Education

i. PreK-12th Grade Education

The SAWS education team offers pre-K through 12th grade presentations and field investigations aligned with the Texas Essential Skills and Knowledge (TEKS) curriculum standards. Age-appropriate programs engage students in direct experiences and help them make local connections, develop life skills, and examine the larger social context to make informed decisions as a citizen. These programs are available free of charge.

In addition, “mini grants” are available to cover transportation costs for field trips to SAWS facilities for middle and high school students. “Mini grants” are also available through our Water Education Partners for elementary school field trips to one of our partner locations that do water education. The funds can be used for transportation and/or admission costs. Our Water Education Partners currently include:

Elementary students visit the San Antonio Botanical Gardens made possible by the mini-grant fund.

San Antonio Botanical Garden

Cibolo Center for Conservation

Santikos Micronaut Center

Edwards Aquifer Authority Education Outreach Center

ii. Academy of Water Influencers

Through the Academy of Water Influencers program high school students are invited to learn alongside industry professionals by completing a series of learning modules and community awareness projects, or products designed to solve water issues they have identified. Students display their work at an annual conference. This program is new but is still growing. Over the last two years, approximately 150 students participated annually.

iii. Workforce Capacity Building

SAWS Education participates in Career Days at schools, universities and community events to help build the future water workforce and begin sharing the importance of water planning and water management through a variety of careers. We are intentional about including the trades in our career days. This is a viable and needed path in the water industry and the trades as a career option are historically not shared at these events or are discussed less favorably than the traditional college route. Recently, SAWS partnered with the Texas Chapter of the American Water Works Association on a new program that helps high school students obtain their class D water license for free before graduation. Through this program, called SETH, SAWS is helping develop professionals to steward water resources in the future and replace our retiring workforce. SAWS education has also partnered with the Texas 4-H Water Ambassadors Program to help grow the next generation of water leaders.

b. Public Tours

The popular "Rain to Drain Experience" takes participants on a day-long tour that traces water beginning at an Edwards Aquifer recharge cave, stopping at a SAWS water production facility, and finally to a water recycling plant. Our education team also offers facility tours every week to stakeholder groups, researchers, university classes, conference attendees, and other groups visiting our beautiful city. In 2023, SAWS Education launched the very first Halloween tour of our largest water recycling center.

Image: Master Naturalists visit the H2Oaks facility to learn about water supply, treatment, and conservation in San Antonio.

SAWS also offers virtual tours through its Speaker Series for those who can't attend the "Rain to Drain Experience" in person. The Speaker Series also addresses topics such as aquifer recharge, water production and treatment, diversifying water supplies, various conservation topics, and more.

c. Educators

SAWS works to support educators by hosting an annual Teachers' Event where they hear about SAWS' Education Programs that help bring STEM to life, both in the classroom and in the community. SAWS Education shares how teachers can find lesson plans, activities, a virtual classroom, and background information on a variety of water-related topics at SAWS.org. In addition to providing classroom resources, one of the main purposes of this yearly event is to remind our teachers how important they are, let them know we are here to help them as a resource, and thank them for all that they do!

d. Career Education

SAWS believes its greatest resource are the employees. Therefore, SAWS Education includes staff in our education programming. Quarterly SAWS takes volunteer staff on an all-day "Rain to Drain Experience" to connect our team members to what we do and to each other. When running a water utility with approximately1,800 team members, it is easy for departments to get siloed. After this day-long trip, all staff feel connected to the SAWS mission, to our shared goals, and to each other. Additionally, SAWS Education takes interns on a Rain-to-Drain tour as part of the intern program, which also includes other experiences like "lunch with a SAWS executive." SAWS has been voted a top workplace in San Antonio multiple times, in part due to the intentionality of programs like these.

e. Stakeholders

Every year SAWS field educators take stakeholder groups on facility tours giving them an up-close look and deeper understanding of the water system's operations. This time is also an opportunity to talk with stakeholders about the need for sustainable resource management and gather community feedback that can be used to improve operations and programs.

SAWS also offers Lunch and Learn programs for area stakeholders such as City of San Antonio departments, the San Antonio River Authority, Edwards Aquifer Authority, building managers, engineering

groups, public health organizations and medical students, water conferences, and political leaders to name a few. In 2022, a special Lunch and Learn program was hosted for our Rate Advisory Committee, Community Conservation Committee, and Community Experience Committee. This gives committee members an up-close look at water distribution and water recycling.

f. Community Connection

i. Communications

In 2021, SAWS launched the campaign "Be Ready for the Unexpected" to help the community prepare for water emergencies. The goal was to help customers understand what they could do during a freeze to prevent major home water leaks, as well as while under a boil water notice or other emergency impacting their drinking water. The campaign consists of a webpage featuring various how-to videos and infographics that addressed the following topics:

- Tools to have on-hand for water emergencies.
- How to turn off your water.
- Know your pipes and what is homeowner's responsibility.
- What to do during a boil water notice.
- What to do after a boil water notice.
- How to flush during an outage.
- Minimizing damage in a freeze.
- Preparing and protecting your pipes
- How to prevent swimming pool damage
- How to use your meter to find leaks

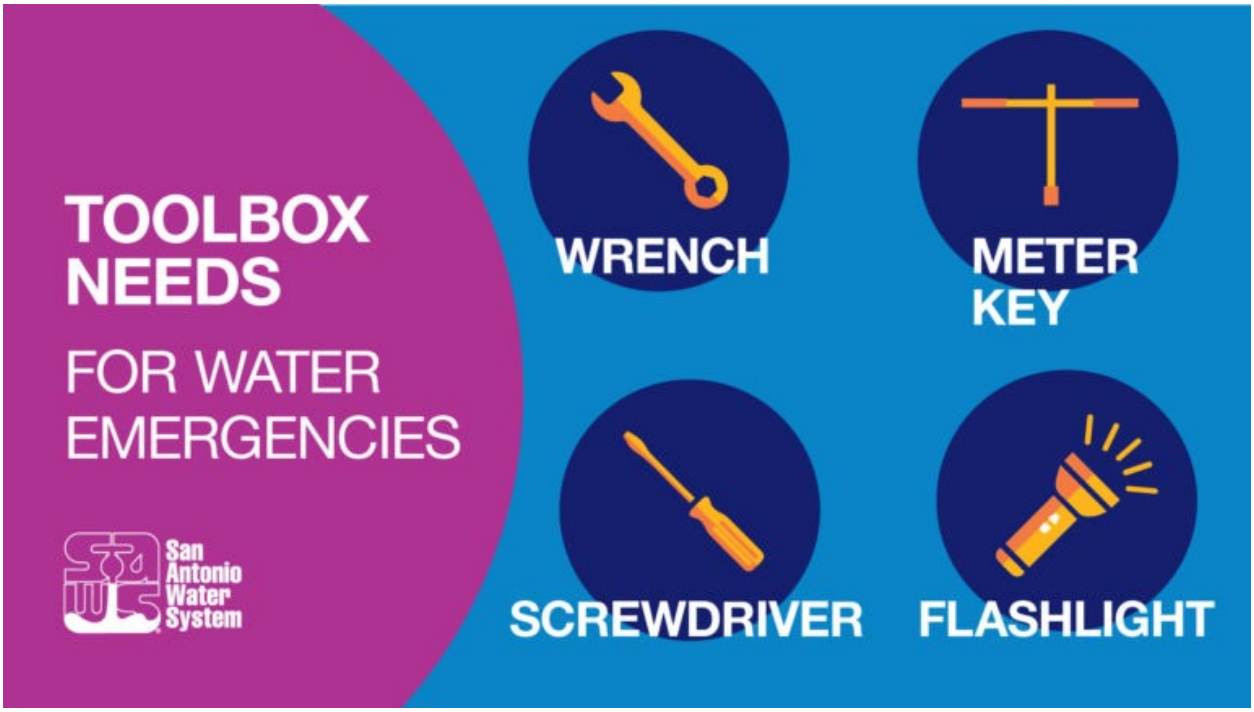


Image: Campaign materials from the Be Ready Campaign. These and other materials are available in English and Spanish at saws.org/beready.

The webpage information was repurposed as a downloadable digital toolkit and a companion reference booklet. Campaign materials were detailed, but non-technical, and offered in English and Spanish to reach as many people as possible.

As San Antonio prepared for its first freeze of 2022, SAWS worked with the City of San Antonio and local community partners to distribute the information – sometimes even in hardcopy form for those without regular internet access. In 2023, campaign materials were revived and used across social media channels to remind customers what to do in the event of an emergency.

In the summer of 2023, SAWS launched the "Wrangle Your Water Use" campaign to remind customers that Stage 2 watering rules still apply. At the time, SAWS had been in Stage 2 drought conditions for more than a year. With this uncommon occurrence, SAWS launched this new campaign to bring attention to the fact that drought can persist and all customers needed to conserve. The campaign consists of graphics showing that customers can still have a colorful yard while sticking to their watering day and times. The message was shared on social media, digital media, print, radio and billboards.

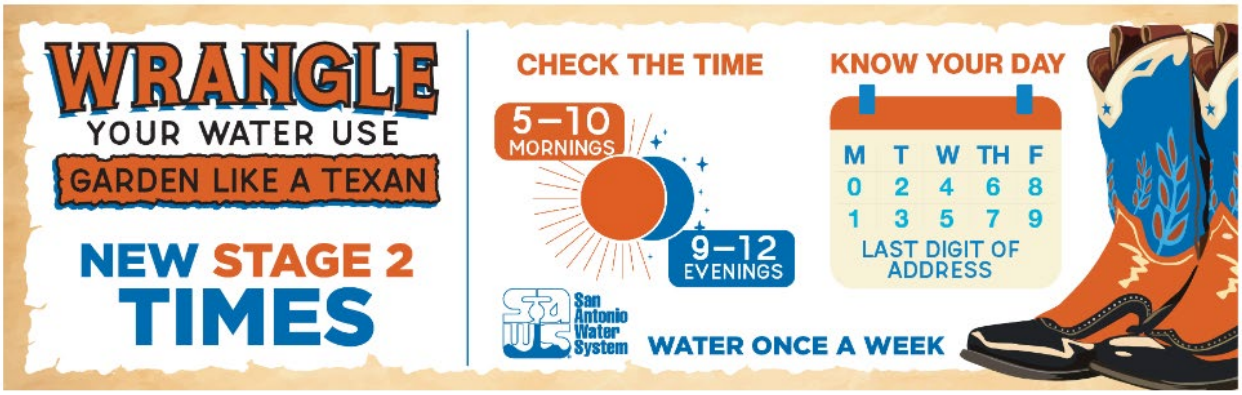


Image 4: Promotional Material for Stage 2 of drought as part of the SAWS' Wrangle Your Water Use Campaign.

ii. Community Outreach

Staying connected with SAWS customers is the primary focus of the SAWS Community Outreach Team. Whether through engagement on social media platforms, SAWS events or community volunteer opportunities, the SAWS team stays connected with customers, creating a valued relationship. Throughout the year, the SAWS Outreach team can be found at staple San Antonio events like the Fiesta Flambeau Parade (attended by more than 600,000 people) featuring our larger-than-life foam toilet as the focal point of our parade float, or marching with neighbors at the annual Martin Luther King Jr. March – the largest in the U.S. Through periodic outreach campaigns like "SAWS Summer," customers interact with SAWS at pop-up events and through social media contests. They can also find the team volunteering at local nonprofit agencies like the San Antonio Food Bank or Haven for Hope as part of these special campaigns.

The Outreach Team creates innovative ways to share water and wastewater messaging to the community, including social media channels which reach nearly 75,000 followers and an additional 675,000 neighbors within our service area on the social platform Nextdoor.

iii. Local Conservation Partners

SAWS has contracts with six nonprofit organizations that receive performance payments based on managing preapproved education activities related to water conservation. This cost-effective program has multiplied the education impact by thousands of contacts each year. The following organizations are currently on contract and helped reach over 220,000 people with water education in 2023:

- Bexar County Master Gardeners
- Eco Centro, Alamo Colleges District

- Gardening Volunteers of South Texas
- Green Spaces Alliance
- Mitchell Lake Audubon Center
- San Antonio Botanical Society

Stakeholder Education Partnerships

Collaborations with many regional organizations help to create cohesive community messages. Some of these partnerships include:

- Alamo Area Master Naturalists
- Texas A&M AgriLife Extension Service
- Native Plant Society of Texas
- Trinity University
- San Antonio Botanical Garden
- San Antonio Parks and Recreation Department
- Texas A&M University-San Antonio

The San Antonio Water System and the San Antonio Botanical Garden (Garden) have been partners in water conservation since the earliest days of the SAWS Conservation program in 1993. Early efforts revolved around educating people on the very new concept of WaterSaver landscaping. This was done through events like a drive-up Q&A at the Garden with professional horticulturist and a small demonstration garden outside the gates for people to see. The partnership quickly evolved into additional demonstration gardens including the WaterSaver Garden which visually described the "Seven Xeriscape Steps" that continues to be the basis for WaterSaver gardens today.

The expanding partnership also developed popular events such as the SAWS Garden Jazz Party, an annual event held at the Garden for 20 years. It also led to the WaterSaver Lane – a Garden visitor favorite that SAWS Conservation developed at the Garden. This partnership between a local botanical garden and the local water utility was presented as a unique and mutually beneficial partnership model at the American Association of Botanical Gardens and Arboretum annual conference in 2005.

The Garden education program has a performance-based contract with SAWS Conservation to provide specific information to the public on WaterSaver landscapes. Gardening is hard and this partnership between SAWS conservation experts and the horticultural and outdoor education experts at the San Antonio Botanical Garden provides additional credibility to critical information needed to garden with conservation in mind.

In more recent years, SAWS became a major sponsor of the San Antonio Botanical Garden master plan. Efforts of this plan includes sponsoring the new Education Welcome Center and the complete redesign of WaterSaver Lane – now WaterSaver Community – which opened in 2023.

Pictured above is the Southeast Garden of San Antonio Botanical Garden's WaterSaver Community. This garden feature provides community-wide examples of regionally appropriate landscape designs and emphasizes low-water using plant selection.

Industry Partnerships

Partnerships with industry specific organizations are key to obtain feedback on trends, program design and ensuring reasonable and effective regulation. Some of the organizations that have been helpful include:

- Building Owners and Managers Association
- Community Association Institute
- Greater San Antonio Builders Association
- Green Industry Alliance
- International Facility Management Association
- Real Estate Council of San Antonio
- San Antonio Apartment Association
- San Antonio Board of Realtors
- San Antonio Irrigation Association
- San Antonio Manufacturers Association
- Southwest Car Wash Association
- Texas Nursery and Landscape Association
- Texas Turf Irrigation Association

iv. Global Conservation Partners

SAWS is an active participant in the greater water community. It has developed partnerships across the state, the country and the world to help other communities grow their conservation efforts and learn

from them too. The last couple of years SAWS Education has taken the Texas Water Development Board (TWDB) on tours and provided Lunch and Learns virtually. In 2023, the entire TWDB Finance team came on a "Rain to Drain Experience" tour. In another example, SAWS hosted an all-day Rain to Drain for the 2023 Central Texas Water Conservation Symposium.

SAWS also visits regularly with other utilities who have questions about the conservation programs or supply diversity initiatives such as our Aquifer Storage and Recovery (ASR) operation.

SAWS is an active member of the Central Texas Water Efficiency Network, the Texas Chapter of the American Water Works Association, and the national non-profit Alliance for Water Efficiency. Through its participation with these organizations, it supports on-going and cutting-edge research and learns about other opportunities to share across San Antonio.

Notably, in 2022 SAWS hosted the Saudi Green Initiative team all the way from Saudi Arabia. SAWS shared about San Antonio's water history and how that influenced diversification of the city's water portfolio. Guests learned in detail how the ASR center and desalination processes work. In 2022, SAWS was also invited to send two organizational leaders to Denmark to learn about advances there in conservation, technology, communication and operational efficiencies. These exchanges are what help make SAWS a leader in water management.

VI. Rate Structure

SAWS designed its rate structure to recover the costs of production and delivery for each type of customer served. The rate structure is also intended to send a price signal that will motivate customers to conserve water, while also keeping rates affordable for essential residential use. The SAWS rate structure further addresses affordability concerns through a separate rate schedule for residential customers who are economically disadvantaged. SAWS conducts a formal review of cost of service and rate design approximately every five years. This review involves a Rate Advisory Committee of citizens, the expertise of industry rate analysts, and extensive community input. SAWS' most recent cost of service and rate design study was completed in 2022. The San Antonio City Council must approve any rate change proposed by SAWS.

Customers are billed monthly based on water usage measured in gallons, though meter readings are taken in either 100 cubic foot (CCF) or 100-gallon increments, depending on meter type. The current rate structure consists of rate classes for residential, general, landscape irrigation service, wholesale water service and recycled water service. Residential, general and landscape rates are explained below. Wholesale and recycled service are charged with an availability fee and a volume charge. Rates also vary depending on whether the customer is located inside or outside the city limits.

A water supply fee is assessed to fund the development of and production from new water sources. Other pass-through fees are charged through cooperative agreements with government agencies, including the Texas Commission on Environmental Quality and the Edwards Aquifer Authority.

a. Residential Class Service

SAWS' residential class includes all single or double unit residences served by a single metered connection. Customers are charged a monthly service availability charge based on meter size, as shown in Table 3.

Table 3: Residential class monthly service availability charge (2023)

Meter Size	Inside City Limits	Outside City Limits
5/8"	$9.00	$11.70
3/4"	$11.93	$15.51
1"	$17.79	$23.13
1 ½"	$32.44	$42.18
2"	$50.02	$65.03
3"	$96.90	$125.97
4"	$149.64	$194.54
6"	$296.14	$384.99

8”	$471.94	$613.53
10”	$589.14	$765.89
12”	$823.54	$1,070.61

The service availability charge is increased by $2.00 inside city limits or $2.60 outside city limits if usage exceeds 4,000 gallons. The monthly volume charge is measured per 1,000 gallons of water usage and billed in threshold blocks as shown in Table 4.

Table 4: Residential class monthly volume charge (2023) - rate per 1,000 gallons

Usage Gallon Block Threshold	Inside City Limits	Outside City Limits
4,000	$0.907	$1.180
7,000	$1.678	$2.182
12,000	$3.039	$3.951
20,000	$3.991	$5.189
Over 20,000	$5.669	$7.370

An affordability rate structure is offered to customers who meet an income eligibility requirement. The service availability charge is based on the monthly volumetric usage.

Table 5: Affordability Rate Structure

Usage Gallon Block Threshold	Inside City Limits	Outside City Limits
0 - 2,000	$--	$--
Over 2,000	$3.00	$3.90

The monthly volume charge is measured per 1,000 gallons of water usage and billed in threshold blocks as shown in Table below. Many utilities do not have an affordability rate structure in place. More than 34,000 families benefitted from this rate through the SAWS Uplift program in 2023.

Table 6: Volumetric Charge

Usage Gallon Block Threshold	Inside City Limits	Outside City Limits
2,000	$--	$--
6,000	$1.00	$1.30
10,000	$1.50	$1.950
15,000	$2.50	$3.25
Over 15,000	$3.50	$4.55

Sewer rates are charged for all metered residential connections using winter averaging for the volume charge. The average water usage of three consecutive billing periods from November 15 to March 15 is computed and residential sewer rates are charged based on this winter average. Customers are encouraged to shut off irrigation systems and conserve water during winter averaging to reduce their sewer charges for the year to come.

b. General Class Service

Business customers are grouped into a general class rate category that includes apartment, commercial, industrial and municipal customers. A multi-step, base-excess use structure is used. The base amount is 100

percent of a customer's average annual usage and increased unit rates apply as usage exceeds the base amount. Similar to the Residential Class Rates, a monthly service availability fee is charged as shown in Table 7 below. The monthly volume charge is shown in Table 7.

Table 7: General class monthly service availability charge (2023)

Meter Size	Inside City Limits	Outside City Limits
5/8"	$12.70	$16.00
3/4"	$16.48	$20.66
1"	$24.04	$29.98
1 ½"	$42.94	$53.28
2"	$65.62	$81.23
3"	$126.10	$155.77
4"	$194.14	$239.64
6"	$383.14	$472.59
8"	$609.94	$752.13
10"	$761.14	$938.49
12"	$1,063.54	$1,311.21

Table 8: General class monthly volume charge (2023) - rate per 1,000 gallons

Usage Blocks	Inside City Limits	Outside City Limits
Base	$1.958	$2.546
>100-125 percent of Base	$2.252	$2.928
>125-175 percent of Base	$2.937	$3.819
>175 percent of Base	$3.427	$4.456

Sewer rates are charged for all metered general class connections based on 100% of their monthly water usage. If the general class customer has an irrigation system connected to the meter, a portion of water will be billed at irrigation rates. The portion deemed irrigation use would be subject to sewer charges.

c. Landscape Irrigation Service

Rates are charged to customers with landscape irrigation service, excluding meters that use water as a part of their business function or for health and safety reasons (e.g., process water, nurseries, school athletic fields). In 2002, commercial customers were required to separately meter irrigation according to the City of San Antonio Unified Development Code. Accounts started prior to that time are charged based on a percentage of estimated irrigation water use.

Charges for service availability and volume charges are shown in Table 9 and Table 10, respectively.

Table 9: Landscape irrigation monthly service availability fee (2023)

Meter Size	Inside City Limits	Outside City Limits
5/8"	$12.70	$16.00
3/4"	$16.48	$20.66
1"	$24.04	$29.98
1 ½"	$42.94	$53.28
2"	$65.62	$81.23
3"	$126.10	$155.77

4”	$194.14	$239.64
6”	$383.14	$472.59
8”	$609.94	$752.13
10”	$761.14	$938.49
12”	$1,063.54	$1,311.21

Table 10: Landscape irrigation monthly volume charge (2023) - rate per 1,000 gallons

Usage Gallon Block Threshold	Inside City Limits	Outside City Limits
8,000	$3.475	$4.518
18,000	$4.865	$6.325
160,000	$6.255	$8.132
Over 160,000	$7.993	$10.391

No sewer charges are billed on irrigation accounts.

d. Non-Compliance Charge

The non-compliance charge was developed to help ensure that all SAWS customers are subject to enforcement of the drought rules regardless of municipal boundaries. The non-compliance charge is based on the costs of drought rule enforcement.

All Drought Stages	Less Than 1M gallons/ SF and Small Commercial	Greater than or equal to 1M gallons / Meters at Large Use Irrigation Sites
1st Violation	$137.00	$500.00
2nd Violation	$225.00	$625.00
3rd Violation +	$500.00	$1,250.00

Table 11: Non-Compliance Charge

e. Drought Surcharge

The Drought Surcharges aims to encourage the highest using customers to make meaningful reductions in use during advanced stages of drought. The surcharge is based on the dollar cost value impact of high use on the water system during drought periods.

Customer Class	Rate	Meter Size	Stage 3 Threshold (gallons)	Stage 4 Threshold (gallons)
Residential	$10.37	All Sizes	20,000	12,000
	$10.37	5/8	12,000	7,200
		3/4	18,000	10,800
		1	30,000	18,000

Billed Commercial Irrigation		1.5	60,000	36,000
		2	96,000	57,600
		3	210,000	126,000
		4	360,000	216,000
		6	810,000	486,000
		8	1,080,000	648,000
		10	1,440,000	864,000

Table 12: Drought Surcharge

VII. Drought Contingency Plan

San Antonio is located in a part of Texas that experiences recurring periods of drought. The Drought Contingency Plan (DCP) guides community response to drought to ensure water supplies continue to be available for human health and safety. The SAWS Conservation Department is primarily responsible for the implementation and enforcement of the DCP. Provisions of the DCP can be found in both the SAWS Utility Service Regulations and in the San Antonio city ordinance. With input from SAWS, the San Antonio city manager may declare a Drought Stage is in effect.

Drought status is communicated though an official public notice in the paper of record, as well as press releases sent to local media, SAWS websites and radio announcements. Social media sites, such as Nextdoor, Facebook and Instagram, are also utilized. Messages are included in the GardenStyleSA.com weekly newsletter and the bill insert. Local irrigators, HOA property managers and other stakeholders are individually notified.

a. Implementation & Enforcement

SAWS has up to five part-time police officers to augment specially trained SAWS staff who work part-time on water waste cases year-round. The number of water patrol staff increases by more than 35 during drought. Water patrol staff include trained Conservation staff and trained staff from other SAWS departments that can issue violations if they witness and document non-compliance with the rules. No personalized warnings are generally given by water patrol staff during drought stages after the first month of drought declaration because so much public notice has been in place to make people aware of the rules. In addition, SAWS has an online water waste reporting system. These anonymous community reports result in a warning as a violation can only be issued if the violation is witnessed and documented by water patrol staff.

Both 2022 and 2023 were significant drought years. SAWS declared Stage 2 drought in April of 2022 and remained in that stage through the time of this Plan's publication. During this time, citations were still the only mechanism to provide a consequence for violating drought rules. In 2022, 4,573 citations and 7,455 warnings were issued. In 2023, 9,463 citations and 6,386 warnings were issued. However, more than 90 percent of people who received a citation changed their habits or made repairs and never received a second citation. Commercial properties and absentee high-end homeowners were the most likely to get multiple citations for repeat offenses.

Drought worsened in 2023 as the community continued to expand. While most customers responded to their citation by returning to compliance, others did not. For the first time, SAWS exercised a rule within

City Code to disconnect irrigation only meters at commercial sites that were documented as repeat violators despite multiple rounds of contact and notice being provided.

At the same time, Conservation was launching a new initiative to update conservation rules in both the City Code and SAWS' Utility Service Regulations. During this process, it was determined that shifting away from a municipal process to a "fee on the bill" model used by many other utilities could lead to quicker compliance with fewer repeat offenders because it would be applied directly to the bill much more quickly than if a customer had to wait for a notice from court. Better still, this model could help reduce the need for disconnects and help customers resolve their violations more expeditiously than is typical with the municipal court process. Best of all, this change would enable fairer enforcement of the rules on all SAWS customers, not only those residing with the City's jurisdiction.

b. Drought Watering Rules

While SAWS has made strides in diversifying its water sources, the Edwards Aquifer continues to provide approximately 60% of the water supplied by the system annually. The overriding goal of drought restrictions is to make sure SAWS does not violate its permit with the Edwards Aquifer Authority. There are prorated reductions in the permit as the aquifer level drops. Permit reductions are triggered when the Edwards Aquifer level and/or spring flow at Comal and San Marcos Springs reach certain levels. There is not complete alignment between Edwards Aquifer permit cut stages and those imposed on SAWS customers. There are five stages of critical period issued by the Edwards Aquifer Authority. SAWS has four drought stages with increasingly restrictive water use rules that are primarily focused on outdoor water use. SAWS Drought Stages 1-3 are triggered when the Edwards Aquifer Authority declares its own stages 1-3. SAWS Stage 4 is only implemented for SAWS customers if other drought measures are deemed insufficient to reduce water use sufficiently. Coming out of drought stages also varies from the Edwards Aquifer Authority. Although SAWS makes an effort to align to EAA stages, it also strives to avoid coming in and out of restrictions frequently and therefore does not lift drought stages unless it appears that the situation is stable and not likely to worsen soon.

Critical Period Stage	J-17 Index Well Level above mean sea level (amsl)	San Marcos Springs Flow cubic feet per second (cfs)	Comal Springs Flow cubic feet per second (cfs)	% of Water Reduction
No Stage indicates stable levels	660 feet or above	96 or above	225 or above	0%
Stage 1	less than 660 feet	less than 96	less than 225	20%
Stage 2	Less that 650 feet	less than 80	Less than 200	30%
Stage 3	Less than 640 feet	Not Applicable	Less than 150	35%
Stage 4	Less than 630 feet	Not Applicable	Less than 100	40%
Stage 5	Less than 625 feet	Not Applicable	Less than 45/40*	44%

*Stage 5 Comal Springs Flow - to enter this stage based on the springflow, the reading must be less than 45 cfs on a ten-day rolling average, or less than 40 cfs based on a three-day rolling average. To leave this stage, the ten-day rolling average must be 45 cfs or greater.

Image 5: EAA Drought Stage Triggers. The Edwards Aquifer Authority declares drought based on the conditions shown above. When the EAA enters a drought, SAWS may follow depending on conditions across the SAWS system and availability of other supplies. However, regardless of whether SAWS enters a stage it does experience permit cutbacks that correspond to each stage of drought declared by the EAA. This means that less groundwater is available to SAWS.

Watering rules for Year-Round through Stage 2 were recently changed to continue restricting use during drought while redirecting that use to new time blocks that support management of the energy grid.

Year-Round Conservation Rule Highlights

- Customers can water with an irrigation system before 10 a.m. and after 9 p.m. any day.
- Customers may water with a hand-held hose any time.
- Water waste is prohibited at all times. This includes overspray and runoff from lawn watering.
- Restaurants may serve water only on request (to reduce dishwashing).
- Charity car washes allowed only at commercial car wash facilities.

Stage 1

Stage 1 restrictions begin when the 10-day rolling average of the Edwards Aquifer level drops to 660 feet mean sea level at the monitored well. Coming out of drought stages can be considered 15 days after the aquifer is above the trigger.

- Watering with a spray irrigation system, sprinkler or soaker hose is allowed only once a week before 10 a.m. or after 9 p.m. on your designated watering day, as determined by the last number of your street address.
- Drip irrigation systems may run up to three days a week on Monday, Wednesday, and Friday before 10 a.m. or after 9 p.m.
- Watering with a handheld hose is permitted any time and any day. Watering other than by handheld hose is not allowed on the weekends.
- Water waste is prohibited at all times. Water waste includes allowing water to run off into a gutter, ditch, or drain; or failing to repair a controllable leak.
- Watering days begin and end at midnight; overnight watering is not allowed.
- All residential fountains and indoor commercial fountains can operate at any stage of drought.
- Outdoor commercial fountains must have a SAWS variance in order to operate during Drought Stages 1 through 4.
- Washing impervious cover such as parking lots, driveways, streets or sidewalks is prohibited. Health and safety variances to this rule may be requested from SAWS.
- Residential car washing allowed once per week on Saturday or Sunday as long as there is no water waste.
- The use of SAWS-certified commercial car wash facilities is allowed any day.
- Operators of golf courses, athletic fields and parks must submit a conservation plan to SAWS. Golf courses, athletic fields and parks may not irrigate between the hours of 10 a.m. and 9 p.m.
- Landscape areas on golf courses not directly “in play" are required to follow one-day-per-week watering based on address unless otherwise instructed by SAWS.
- The use of recycled water, with no potable water backup for irrigation is allowed – without waste – any day during the restricted hours if the customer has posted proper signage approved by SAWS.

Stage 1 restrictions continue until there is an announcement in the newspaper that Stage 1 has been canceled or that Stage 2 is in effect.

Stage 2

Stage 2 restrictions begin when the 10-day rolling average of the Edwards Aquifer level reaches 650 feet mean sea level at the monitored well. Coming out of drought stages can be considered 15 days after the aquifer is above the trigger.

- All restrictions from Stage 1 remain in effect, unless added to or replaced by Stage 2 rules.
- Landscape watering with a spray irrigation system, sprinkler or soaker hose is allowed only once a week from 5-10 a.m. and 9 p.m.-12 a.m. on your designated watering day, as determined by your address.
- Drip irrigation systems may run up to two days a week on Monday and Friday before 10 a.m. or after 9 p.m.
- Watering with a handheld hose is permitted any time and any day.

- Hotels, motels and other lodging must offer and clearly notify guests of a "linen/towel change on request only" program.

Stage 2 restrictions continue until there is an announcement in the newspaper that Stage 2 has been canceled or that Stage 3 is in effect.

Stage 3

Stage 3 restrictions begin when the 10-day rolling average of the Edwards Aquifer level drops to 640 feet mean sea level at the monitored well. All restrictions from Stage 1 and Stage 2 remain in effect, unless added to or replaced by Stage 3 rules. With respect to irrigation specifically, all Stage II restrictions remain in place including watering days and hours. Additionally, a Drought Surcharge in effect for high volume customers pursuant to §30-128 of the San Antonio City Code. The surcharge is assessed on all accounts for water used or assumed to be used for landscape irrigation. The surcharge remains in effect for a minimum of one complete billing month and will remain in effect if Stage 3 is still in effect at the beginning of the next billing month.

Stage 4

Once Stage 3 is declared, Stage 4 may be implemented when the aquifer drops to 630' msl and/or if the total supply of water from the Edwards Aquifer and other sources is projected to be insufficient to meet customer demand, even while implementing lesser restriction stages. Stage 4 restrictions may be declared at the discretion of the City Manager in consultation with the SAWS President/CEO. Stage 4 restrictions continue until there is an announcement in the newspaper that Stage 4 has been canceled.

All restrictions from Stage 1, 2, and 3 remain in effect, unless added to or replaced by Stage 4 rules. With respect to irrigation:

- Landscape watering allowed only every other week with a spray irrigation system, sprinkler or soaker hose from 5-10 a.m. and 9 p.m.-12 a.m. on your designated watering day, as determined by your address. Weeks when no watering is allowed will be announced via local media and online.
- Drip irrigation systems may run one day a week, on Friday, from 5-10 a.m. and 9-12 p.m.
- Watering with a handheld hose is permitted any time and any day.
- Once in Stage 4, additional restrictions on water use may be established at the discretion of the President/CEO of the San Antonio Water System in consultation with the City Manager.
- A Drought Surcharge in also effect for high volume customers pursuant to §30-128 of the San Antonio City Code. The surcharge is assessed on all accounts for water used or assumed to be used for landscape irrigation. The surcharge remains in effect for a minimum of one complete billing month and will remain in effect if Stage 4 is still in effect at the beginning of the next billing month. In addition to the surcharges imposed, an additional limitation is placed on landscape irrigation usage. The rate of this surcharge is the same as that applied in Stage 3, however the volumetric threshold at which the rate is applied is lower in Stage 4 since drought conditions are more severe and a stronger signal to conserver is needed.

c. Variances

Variances are available but have specific detailed requirements for each one. A full description can be found in Chapter 34, Article 4 of the San Antonio City Ordinance. A summary of the variances include:

New landscapes (not for additions to existing landscapes): The variance allows daily watering for up to five weeks after installation. Watering must be done during drought hours Monday through Friday with a sprinkler or irrigation system. All other drought rules, such as no runoff, must be followed. Variances must be requested through the SAWS online variance request. The bulk of requests come from home builders.

Outdoor non-residential fountains: Water features with more than 1,000 square feet of pool surface area can get a Basic Fountain Variance that allows eight hours of run time daily during Stages 1 and 2, and four hours during Stages 3 and 4. An Advanced Fountain Variance allows for more hours but requires a sophisticated fountain management system. Those with less than 1,000 square feet of pool surface area must also apply for a Basic Outdoor Water Feature Variance but run times are not limited.

Athletic fields: Athletic field managers may apply for either a basic or advanced variance to once per week watering restrictions through the SAWS online variance request. The Basic Athletic Field Variance allows for each field to be watered on an assigned day designated in the variance. The Advanced Athletic Field Variance requires additional documentation regarding the condition and management of the field. Those receiving advanced variances may split their watering over two or three assigned days per week based on the type of sports field being irrigated.

Large properties: Large property managers may request a variance to water their property more than one day a week but each zone may only be watered once per week. An extensive plan and associated data on the irrigation system is verified by SAWS along with specific signage throughout the property is required. This ensures that as much conservation as possible takes place on the site. With the development of new proposed drought rules that limit drip irrigation operation an increase in variances for large properties is expected.

Power washers: Commercial power washers must register with SAWS. During drought, they are required to get a variance from SAWS for each of their jobs. These requests are made online. Homeowners who rent power washers to use at their home during drought must also request a variance from SAWS. Only those activities that are health or safety related, or required to facilitate painting are allowed. No water is allowed to drain into the street or storm drain.

Commercial watering day: Commercial properties with several locations, such as restaurant chains, grocery store chains, or single properties with several buildings and separate addresses, may request a variance to water all locations on the same day (usually Wednesday) to allow for consistency across locations and addresses. This application is usually made via phone or email request to SAWS Conservation as it is not a common occurrence.

Hose-End Irrigation Time: Homeowners who have no automatic irrigation on site may receive a variance allowing them to alter evening watering hours on their day to 7-10 p.m. They must attest that no functional or non-functional irrigation is on the property.

VII. Conservation in SAWS Operations

a. Managing for Peak Water Production

After more than two decades of supply diversification from the Edwards Aquifer, SAWS has access to 13 water supply projects from seven different water sources. The current diversified water supply portfolio consists of groundwater and surface water supplies from:

- Edwards Aquifer owned and leased permits
- Aquifer Storage and Recovery
- Carrizo Aquifer from the Local Carrizo project in southern Bexar County at H_2Oaks
- Carrizo Aquifer from the Regional Carrizo Project in Gonzales County
- Carrizo Aquifer from the Schertz-Seguin Local Government Corporation (SSLGC) in Gonzales County through the Regional Carrizo Project
- Carrizo Aquifer from the Wells Ranch project from Canyon Regional Water Authority in Guadalupe and Gonzales Counties

- Carrizo Aquifer from the Vista Ridge project in Burleson County
- Simsboro Aquifer from the Vista Ridge project in Burleson County
- Trinity Aquifer from northern Bexar County (Oliver Ranch, Timberwood Park and Texas Water Supply Company)
- Wilcox Aquifer from the Brackish Groundwater Desalination project in southern Bexar County at H_2Oaks;

And surface water supplies from:

- Guadalupe-Blanco River Authority's Western Canyon Project (Canyon Lake)
- Recycled Water System.

In addition, SAWS Aquifer Storage and Recovery project reached a record storage volume of 198,500 acre-feet, which is approximately nine months' worth of potable demand.

During the summer, average pumping typically increases (Figure 4). Maximum daily pumping of more than 351 million gallons was recorded on August 15, 2023.

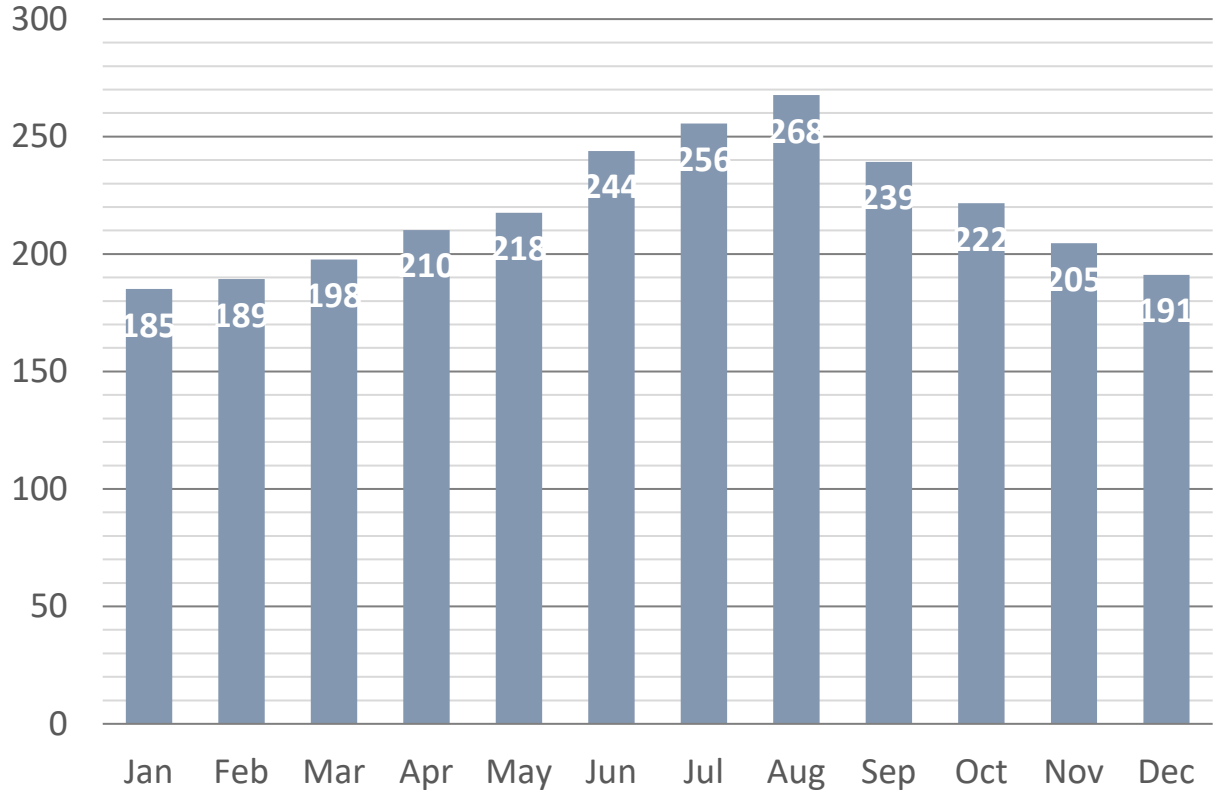


Figure 4: Average monthly total production levels in millions of gallons by month (2007-2023)

Water systems are designed and built to ensure that customer water demand can be supplied on every day of the year. When summer daily use levels spike up much higher than winter daily use levels, it triggers the need for additional infrastructure and supplies. Since infrastructure and extra supplies are only needed some of the time, this is an expensive challenge. For this reason, SAWS Conservation programs that reduce peak summer usage are a priority. Reducing peak use levels saves money for individual customers but also keeps the cost of operations less expensive for everyone.

b. Water Loss Audit and Water Loss Control Program

SAWS makes it a priority to pursue all financially feasible operations side conservation opportunities. Conducting an annual Water Loss Audit and having a Water Loss Control Program is critical to this focus.

Within the water industry, water losses refer to nonrevenue water: any water that is produced by the utility but does not result in revenue. For this reason, water losses go beyond water that leaks out of the distribution system, commonly referred to as main breaks. Water losses also include water that may be delivered to and used by customers but not paid for by anyone. Other authorized water uses may come from firefighting or operations such as flushing lines, internal process water used in water treatment facilities or backwashing pumps to keep them cool. The purpose of a Water Loss Audit is to account for and understand how much water is nonrevenue in nature, and determine how much of it can be reduced or eliminated in an economically feasible manner.

A Water Loss Control Program is a complex and ongoing effort that involves all SAWS departments. The annual Water Loss Audit reflects a compilation of data and analysis from Production, Metering, Distribution & Collection, and Finance. Placing a value on nonrevenue water helps SAWS determine which investments to reduce water losses are expected to have the best yield. The first step in developing a water loss strategy is measuring water as it flows through the system. Master meters are used to track inputs to the system while customer meters measure the water delivered to the customer.

Master Meters: Measuring Production of Water Supplies

All water is metered before entering the SAWS distribution system. Production from utility-owned wells is metered at the wellhead. Water purchased from another supplier is metered prior to entering the distribution system. Most current wholesale and municipal connections are mechanically metered, with the exception of some large meters servicing large industrial customers such as Boeing and PortSA.

Data from these daily reads is reviewed by a data analysts in the Water Resources Department. They resolve issues such as communications failures that caused a meter read not to be transmitted, a meter failure or other issue. Production reports are aggregated from all production meters to track production over time.

Production meters are tested on a regular basis to ensure their accuracy. Results from these tests have indicated that some production meters record more water than is actually produced while others record less water than produced. The challenge this presents is being analyzed to quantify this effect before making intervention decisions.

Customer Metering, Testing, Repair and Replacement

There are over 565,000 active customer meters within the SAWS system. All are critical assets that must be monitored and maintained for proper operation. Customer meters are managed in two categories: small (up to 2”) and large (more than 2”). Testing, replacement and repair regimes differ significantly between these two categories due to unit cost and revenue potential for customer metering assets.

In the small meter category, the current meter replacement program is performed by SAWS staff as meters are identified that are slowing down or failing to read any water flow. These are referred to as sick meters within the water industry. Sick or broken meters are reset as needed by SAWS through service requests and work orders. When data or customer reports raise questions about meter performance, pulled meters may be tested by the SAWS Meter Shop.

As part of annual water loss management efforts, there is a goal to run cost effective statistical sampling of 250-500 meters per year. A sampling plan that outlines random selection of different size meters are coordinated for reset and testing. This business practice provides an understanding of meter registration performance. Over time this information will allow SAWS to make more nuanced replacement program decisions and keep a pulse of how well all meters in the system are performing.

Large meters are those over two inches in size and come in a wide variety of types, including turbine, displacement, magnetic and compound meters. In this category, SAWS has a testing schedule where all meters are tested at least once every 18 months, with certain high-use meters tested on a 12-month rotation. Some large meters are flow tested but not accuracy tested, often because the service is not able to be taken down for the time needed to conduct an in-situ accuracy test. Broken or sick meters are tested as needed based on service requests and work orders. Meters are tested by SAWS staff and those that fail at one of the three flow levels (high, medium, low) are repaired or replaced as needed, and re-tested. There is no targeted replacement program for meters of this size. Instead, meters are replaced as needed when repairs are not possible or feasible. Very large meters (those over two inches in size) are replaced with coordination from staff in the SAWS Customer Service Department.

c. Challenges Unique to SAWS

SAWS is not only one of the largest water utilities in the United States, it is also one of the most complex.

- There are more than 7,600 miles of potable water pipes and over 300,000 pipe segments, more than 140,000 valves and more than 565,000 customer meters to maintain in the SAWS water system.
- Being one of the older cities in the country means that water infrastructure is composed of varied materials, ages and construction types.
- Having seven different water sources builds resilience but it also adds complexity in how water is managed, distributed and measured.

Water pipe repairs, such as the one shown below, are a costly and critical activity in any water system. SAWS typically repairs up to 9,900 potable water pipes each year. Identifying which infrastructure is most vulnerable to breaks is a priority component of the SAWS Water Loss Control Program.

- The ability to produce water from over 175 wells is unique. Most utilities produce from one source or only a handful of sources.
- The distribution complexity hampers the ability to implement some typical simple water management strategies, such as district managed areas (DMA's) and pressure management controls. SAWS will be exploring opportunities to control system water loss on complex water delivery systems while maintain system reliability to its customers.
- The SAWS service area covers a geographical area with significant elevation changes, resulting in a large number of distinct pressure zones.

SAWS calls on a wide array of technology, data analysis and expertise to manage these challenges. SAWS continues to build an informed cost justified water loss program that is a strategic high priority.

SAWS typically repairs approximately 7,700 to 9,900 potable water pipes and services each year. SAWS also finds approximately 14,000 meter leaks each year with the significant majority of those being customer leaks. Identifying which infrastructure is most vulnerable to breaks is a priority component of the SAWS Water Loss Control Program.

Above: Excavating a hidden leak revealed through proactive planned leak detection

d. The Future of the Water Loss Control Program

Water Loss Goals and Targets: Expectations Vary from Year to Year

Water loss variability is exacerbated in San Antonio by extreme weather conditions and use of different sources to meet high production levels in summer months. Innovations like Aquifer Storage and Recovery, groundwater desalination and the use of multiple water sources have given the community tremendous water supply redundancy. They also complicate our measurements within a complex distribution system. Finding cost effective means to improve measurements is one of the focal points of water loss auditing.

We express our water loss improvement goals by year as required by Texas reporting requirements. However, readers of this plan should be aware that we are more concerned with trends over time than water losses in a particular year, which could be strongly influenced by weather or other factors. In addition, this report presents loss in terms of loss in gallons per person per day (GPCD) only and does not include loss as a percent of water entering distribution as was included in previous conservation plans. The American Water Works Association has advised that utilities transition away from percentages because they can be influenced by total consumption in some years in a way that makes them less consistent and reliable. GPCD is a less impressionable unit of measure. Water loss as total GPCD has also been reported in past Water Conservation Plans. The TWDB also promotes metrics presented in forms other than percentages for the same reason. SAWS tends to benchmark better than average against national validated data, such as those collected in the American Water Works Association's Water Audit and Data Initiative. However, 2022 and 2023 were exceptional drought years in which extreme and prolonged heat resulted in more leaks and higher loss GPCD.

Table 13: Historical water loss as total GPCD

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
GPCD	18	18	16	16	20	15	16	17	22	28

The relationship between drought and leaks is a direct one and is particularly pronounced during hot summer months. Demand rises as people irrigate more, and use water for other outdoor recreation such as

topping or filling pools. As demand increases, pipes experience increased pressure. When that happens constantly, hydraulic shock – aka water hammer - occurs as water has to suddenly stop, change direction, or change momentum. This wears on connection points – such as pipe to valve - and causes more leaks. The additional system pressure also causes more water to escape through the break points. Additionally, the extreme heat necessitates that crews take more water breaks and change out more frequently for safety. To overcome some of these challenges in 2022 and 2023 SAWS added 12 more repair crew - 50 employees – to its staff count to mitigate against delayed repair time associated with crew safety measures. It also took steps to reduce the vacancy rate among these positions by developing more growth opportunities which serves to create continuity in knowledge of the distribution system among crews, improved safety, and career satisfaction for these essential employees. Staff schedules were also changed to provide increased coverage over the weekends and more consistent coverage and crew availability throughout the week. In addition, new strategies were implemented to reduce the backlog of leaks including new approaches to data analysis and bringing in contractors to repair the least complex leaks.

Other efforts taken in 2022 and 2023 to mitigate for drought-induced spikes in leaks included:

- **Proactive Leak Investigation**
  - Data-driven decision making in setting water loss control priorities.
  - Improved audit data validity programs through bottom-up field investigations. The alerts and investigations result in repairs that continue to assist SAWS in a large volume of hidden water loss reduction.
  - Invested in acoustic logger investigations which are five times more efficient in finding hidden leaks than past investigative methods.
  - Conducted more proactive leak detection investigations which are twenty times more efficient than reactive investigations.
  - Acoustic logger investigations are the most efficient at reducing water loss given their high volumes of water reduced per request. SAWS has invested in 500 additional acoustic loggers which increases identification of leaks for repair.
  - Auditioned new leak detection tools including comprehensive scan technology.
- **Maximizing Connect H_2O Data Analytics Opportunities for Nonrevenue Water Reduction**
  - Customer leak detection efforts, especially for those customers already in the AMI network.
- **Asset Management of Meter and Pipe Health**
  - Utilized failure prediction software to identify water mains for replacement based on failure related work order history and likelihood of future failures.
  - Performed calibration inspections on electronic flow meters to ensure the meter is recording flow accurately.
  - When a mechanical meter replacement was warranted, SAWS replaced them with an electronic meter to improve meter accuracy.
  - Performed annual condition assessments on distribution system mains to detect leaks and determine the structural condition of high-risk mains. Upon detecting a leak, operations crews investigate and repair or replace the main

The Future of the Water Loss Program

The special efforts made in 2022 and 2023 will continue going forward as SAWS works to lower its water loss GPCD, but SAWS is moving forward on other parallel tracts that continue a water balance approach with annual auditing and reporting as required by the state. SAWS' best business practices include field tests and verifications to better inform process, data and audit improvements. A suite of potential specific interventions will be evaluated for implementation during the next five years. These include:

- Potential capital expenditures on production metering specific for water loss control.
- Information technology projects critical to processing data efficiently.
- Working with key staff to improve data collection and analysis.

Some of the strategies SAWS will continue in the next five years are:

- Data and process improvements
  - Increased staffing.
  - Continue to update and enhance data-related Standard Operating Procedures for the Water Loss Audit which will improve audit validity and value.
  - Formalize a cross-functional task force on water loss control under the coordination of the Water Resources Department.
  - Using the AMI network to transmit pressure and leak data in the fut
  - Monitoring real-time water use as the AMI network is fully deployed.
  - Water main leak detection through small virtual district meter areas.
- Proactive Leak Detection
  - Evaluate the full system sweeps to increase efficiency through improved, efficient technologies including:
  - Acoustic (external and internal to the water column) will be used
  - Pressure with machine learning and flow mass balance – with targeted coverages based on data.
  - SAWS continues to consider other tools for additional efficiencies in leak detection.
- Apparent (Customer Meter Accuracy) Loss Testing
  - Continue to conduct periodic random stratified testing of the customer meter population.
  - Continue to work with Water Loss Consultants who can advise on improved testing schedules and new technologies for large meters.
  - Improve data sets associated with large meter testing to enhance analysis and program management options. Continue testing approximately 2,500 new and used meters for quality control meter program.
- Further Exploration of Technologies
  - Continue to implement Advanced Meter Infrastructure (AMI) and determine to what degree the AMI data can improve our understanding of nonrevenue water through the alignment of production and usage data.
  - Continue to collaborate with peer utilities on topics such as workflow process and technology advances that may improve water loss control.
- Intervention Analysis
  - Review the feasibility for enhanced metering of our largest production facilities where over-registration may be resulting in inaccurate and higher water loss reports. This is challenging for SAWS due to the high number of Edwards Aquifer master meters and diversity of other supplies in SAWS portfolio.
  - Continue to work with staff to improve work order data that will enhance our understanding of the condition of the potable water infrastructure.
  - Continue analysis that will help move potable water improvements into proactive capital projects and reduce reactive, expensive repairs from failure.

The same technology used to find water on other planets is being utilized by SAWS. Satellite imagery coupled with advanced radar technology that is able to distinguish specific characteristics of potable water can assist SAWS in locating hidden sub-surface leaks that cannot be detected acoustically. A sweep of key portions of the large SAWS distribution system highlights areas where technicians can check for leaking pipes.

- SAWS remains committed to a robust effort on repair and replacement of identified mains in the system.

SAWS plans to continue curbing instances of real loss, monitoring the health of metering assets and incorporating field data into standard reporting. SAWS will continue to identify strategic options to improve cost effective loss control that may develop in the coming years. SAWS will continue to strive for optimized, cost-effective interventions.

IX. The Future of Conservation

a. We Can Save More

There are many more opportunities to save water in San Antonio while still maintaining gorgeous landscapes, the quality lifestyle we have come to expect and the economic activity that helps our community thrive. The opportunities of the future will be different from those we used in the past. We must look carefully at how we use water and understand how different segments of SAWS customers can be influenced to use less over time. A critical component of our future success will hinge on our ability to make modest reductions during times when it becomes hot and dry in San Antonio.

The GPCD graphic (figure 7) illustrates the volatility of per person demand with weather and whether watering rules are in effect. The tendency of water use to go up when it stops raining and temperatures rise is not unique to San Antonio. Because we are challenged by diminished supplies and a tendency for demand to increase at the same time, the Water Management Plan for SAWS is very focused on our ability to manage through prolonged periods of drought. The good news is that we can accomplish this with a combination of diversified supplies, reasonable watering rules and long-term conservation initiatives.

The current Five-Year Conservation Plan requirement for the State of Texas coincides with the SAWS timeline to update our Water Management Plan. Because our Water Management Plan is for decades into the future, we have worked to forecast water savings decades from now. We are confident that our community can continue on its trajectory of reducing per capita demand over time.

While San Antonio has accelerated water use reductions for decades already, there are always more opportunities to save. New technology and changing customer water use patterns provide insight into these opportunities. Some surprising facts:

- On average, 14 percent of total residential indoor water use in the United States can be attributed to undetected leaks, according to the 2016 Water Research Foundation's Residential End Uses of Water, Version 2.
- Indoor per capita usage in single family homes is about 42 gallons per person per day in San Antonio. When leaks are repaired and fixtures are efficient, this can drop to only 35 gallons per capita per day.
- While most people have a sense of what to expect in their monthly bill, they typically have little understanding of how much they use or how they are using it.
- Households that have an irrigation system grossly underestimate how much of their monthly usage comes from landscape watering. Most believe it is less than 30 percent of their use instead of up to the 60 percent that is typical, according to the 2019 Alliance for Water Efficiency Landscape Transformation Executive Summary.
- Many households and businesses water landscapes as much during wet, cool months as they do during hot, dry ones.
- Poorly installed irrigation systems may use 20% more over the lifetime of the irrigation system.
- When people become more aware of their water usage patterns, they use less without realizing it.
- Businesses in San Antonio are aware of water and the need to use it wisely. As technologies change and process improvements become available, they take advantage of these to reduce their usage.

i. New Metrics

How Do We Forecast Demand Decades Into the Future?

For prior Conservation Plans, SAWS depended upon analysis of past trends and knowledge of future opportunities to derive expected per capita reductions. For this plan, we felt that it was time to use additional tools for this plan to increase confidence that ambitious sounding goals can be met while sustaining a high-quality lifestyle and economy we expect in San Antonio.

For this plan SAWS worked with Maddaus Water Management to utilize a disaggregated model of water use for today and going forward. This model required dividing total SAWS water usage into defined categories to determine current demand from each. In addition, conservation interventions (programs, education and regulations) were each analyzed to determine how much water each could save from each water use group (single family, multi-family, commercial, commercial irrigation and nonrevenue water). The model provided an opportunity to assess the relative impact of conservation programs as available today against several mixes of new programs that can be offered in the future.

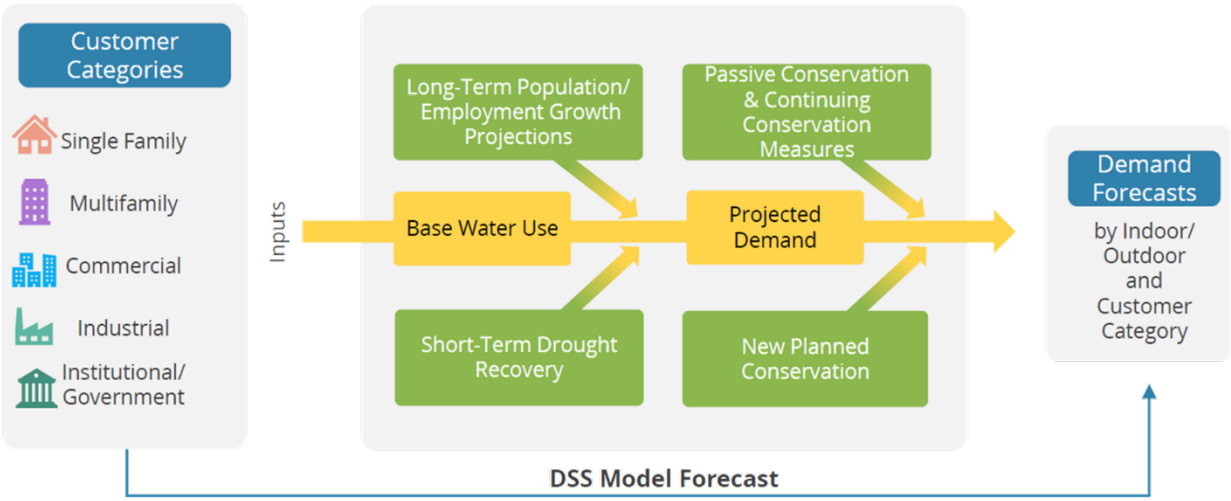


Figure 5: Demand Model Structure

SAWS also considered how much savings would continue to be achieved if only the current mix of programs were used going forward. Then the impact of several proposed initiatives was also considered.

Current programs are summarized in Figure 6 below and contrasted with near-term new measures and future more advanced programs that can also be deployed. By comparing the relative impact of various programs and deployment timelines, we were able to see the impact on long-term water usage. This model strategy also helped us determine the relative importance of specific programs that will take more effort to achieve. For example, the need to enforce statewide irrigation efficiency standards for all new irrigation systems was found to be a critical program for sustaining reasonable water usage into the future. Without this program intervention, we would likely see increases in demand over time as more inefficient irrigation systems are added in our community. This program intervention will be particularly impactful during drought years because irrigation cycles of operation are more frequent during dry years.

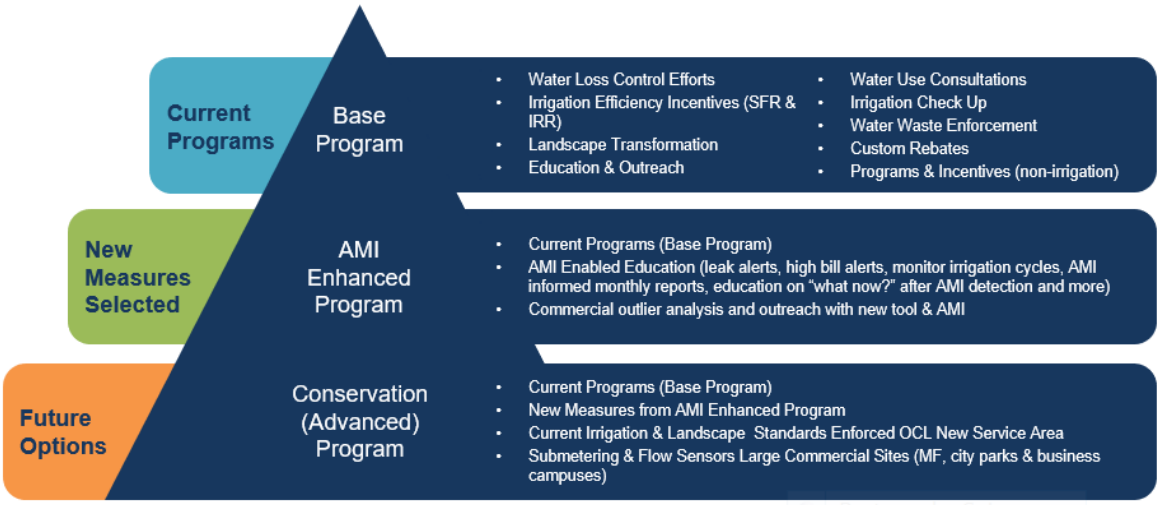


Figure 6: Outline of Programmatic Development

Impact of Program Choices

The 2017 Water Management Plan from SAWS included Figure 7 showing the total GPCD forecast for normal years. Progress on this from 2017 until 2021 was excellent with per capita levels below the forecast for normal weather years. Unfortunately, 2022 and 2023 were problematic with per capita levels going up significantly during extreme weather. In these two years, SAWS did not meet the 10% reduction from normal target called for in the Water Management Plan. The problem this poses is that without the 10% reduction during drought, our community could expect a near-term shortfall in available supplies that would require deeper restrictions than desired. Our updated plan is designed to include both long-term conservation efforts and drought plan efforts to mitigate this issue in the future.

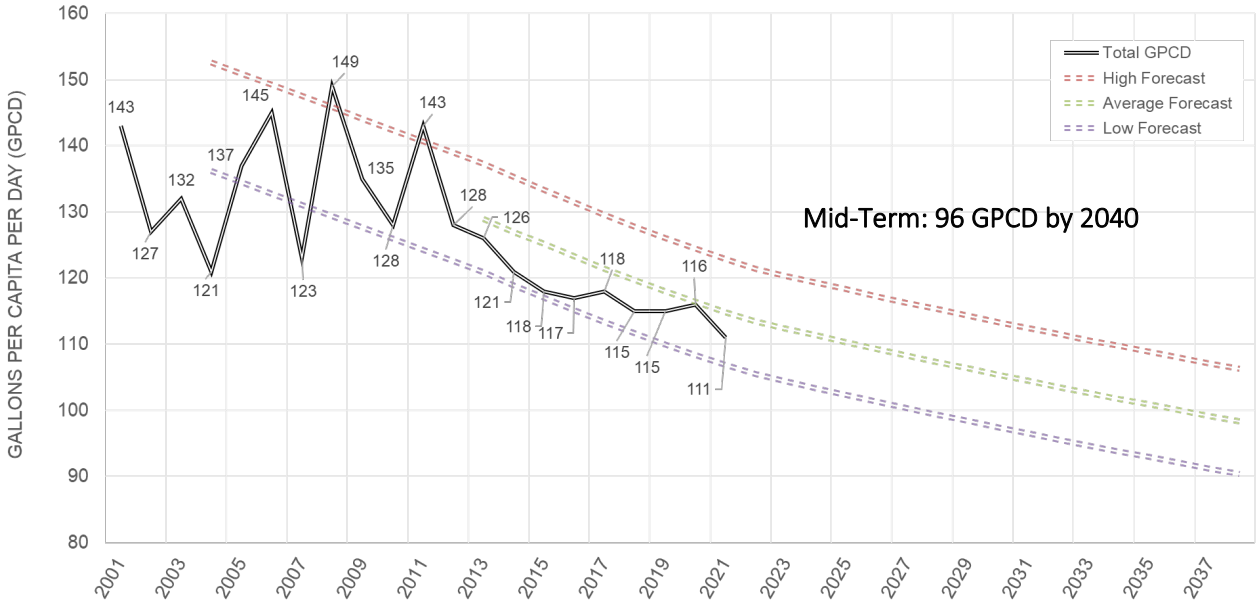


Figure 7: Annual Gallons Per Capita Per Day Forecast, High and Low Range

Baseline Choice: What If We Changed Nothing?

If SAWS were to stop adjusting conservation incentives, education and reasonable regulations, we would still see declines in GPCD during normal weather years in future decades. Our per capita would likely drop to 99 by the year 2040. This is less than the forecasted decline to 96 by 2040 proposed in the 2017 plan. This would happen because we must take into account changing water usage patterns with more homes being built with features like sprinkler systems, water softeners and swimming pools. In order to offset the increases seen with these devices it is necessary to take new actions. A larger problem with the baseline forecast is what would be likely to happen during severe drought years like the ones our community experienced in 2022 and 2023. If we do not address outdoor usage patterns in a serious way, we will continue to see increased usage during hot, dry summers. Because our Water Management Plan is designed to ensure water security in prolonged periods of drought, we cannot ignore this risk. Fortunately, we can solve this challenge.

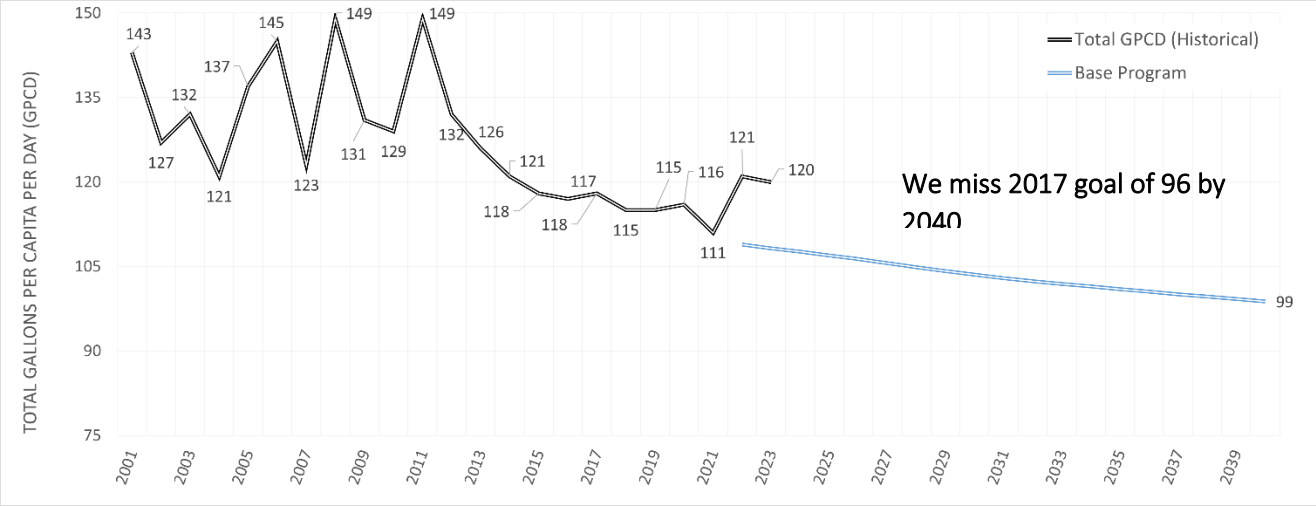


Figure 8: Annual Gallons Per Capita Per Day Forecast

Adding New Program Opportunities from Connect H2O Electronic Meters

SAWS has been rapidly deploying electronic meters in our system. We will have over 200,000 installed by the end of 2024. This exciting technology affords many new conservation opportunities. Some of these opportunities center around ensure that leaks in homes and businesses are found and addressed more quickly. Other key opportunities using the data to make people aware when their irrigation is operating more days per week than allowed by drought regulations. And finally, there will be opportunities to enhance the outcomes from all programs as conservation staff can help customers see in near real time if they are getting the expected water savings from participation in programs like landscape transformation. These programs are significant in their impact and over time will take our per capita consumption in normal weather years down to 97 by 2040. This is nearly the same as the forecast put out in 2017.

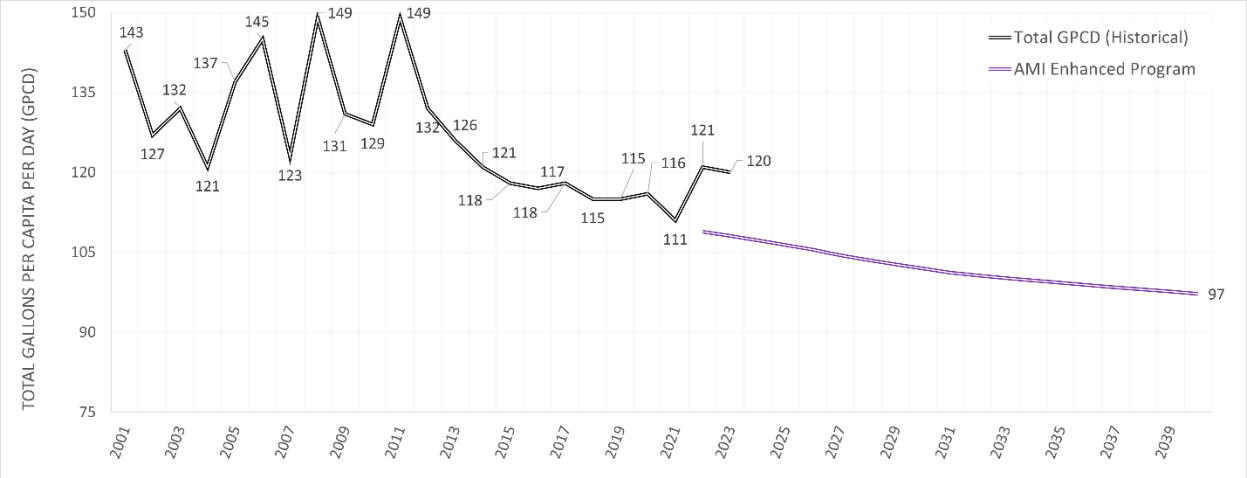


Figure 9: Annual Gallons Per Capita Per Day Forecast, AMI Program Enhancement

<u>But What About Extreme Weather Years? What Is Our Peaking Risk?</u>

The biggest challenge in our recent Water Management Plan update is not how to reduce water in normal weather years. We have confidence that we will achieve those targets. The new programs we plan to use are already showing excellent results in the pilot phases. The big concern is instead how we prevent an increase in GPCD during very hot, dry summers. Analysis of 2022 and 2023 usage patterns combined with analysis of housing patterns gives us reason to believe that absent taking serious intervention steps we could see an increase of 10-20% in extreme drought years.

Figure 10: Single Family Usage Over Time by Age of Housing Stock

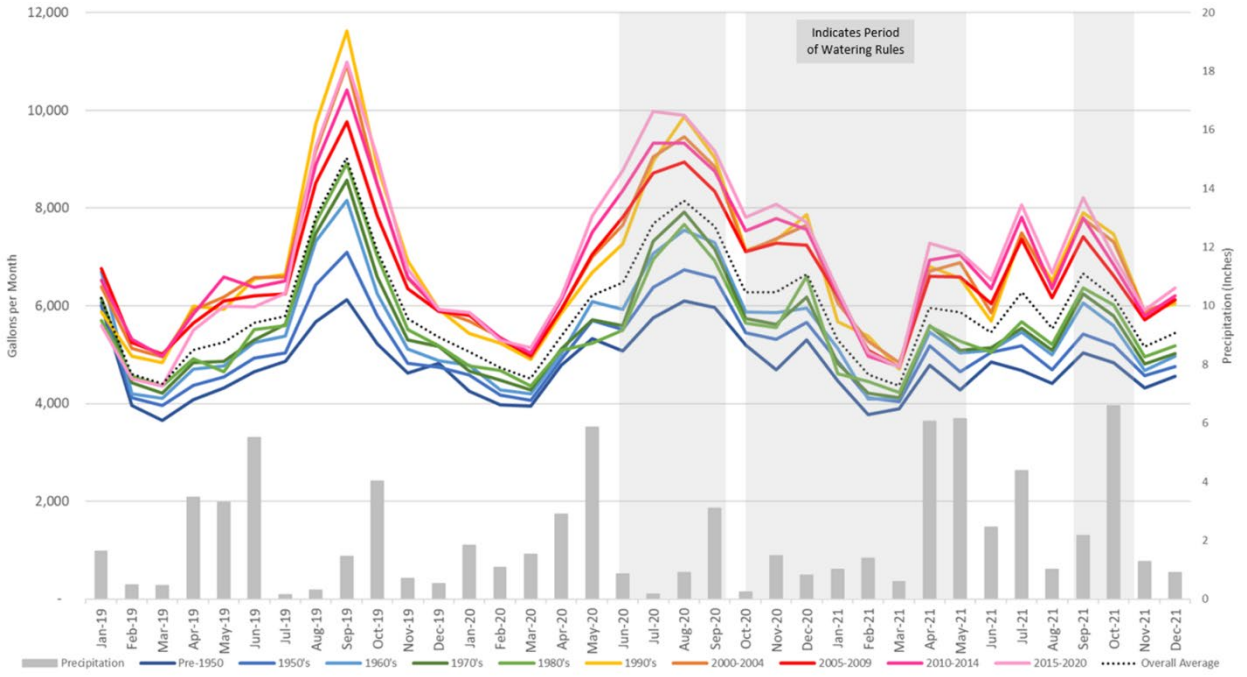


Figure 10 illustrates by water use patterns for newer homes are a cause for concern. Older homes that are less likely to have sprinkler systems, water softeners and pools use significantly less water during all seasons and all years. However, the spread between water usage of newer homes and older ones becomes more pronounced in months when there is less rain. Homes with sprinkler systems are capable of applying larger amounts of water to landscapes. As more homes with sprinkler systems are added, this will drive higher peak usage when it is hot and dry.

Figure 11: Single Family Flume Users Monthly Water Usage Variability By Watering Method

A water sensor called Flume became very popular in San Antonio when SAWS was providing a modest incentive for them. These devices read the meter every five seconds and relayed it via the internet to an app for home users to interpret. Flume users voluntarily provided information on their Flume app about household specifics such as how the water their landscape. The Flume analysts were able to use this data to compare daily water usage of those who said they water with a sprinkler system, with a garden house or said they did not water. The difference in water usage for households with sprinkler systems vs others is stark and not surprising.

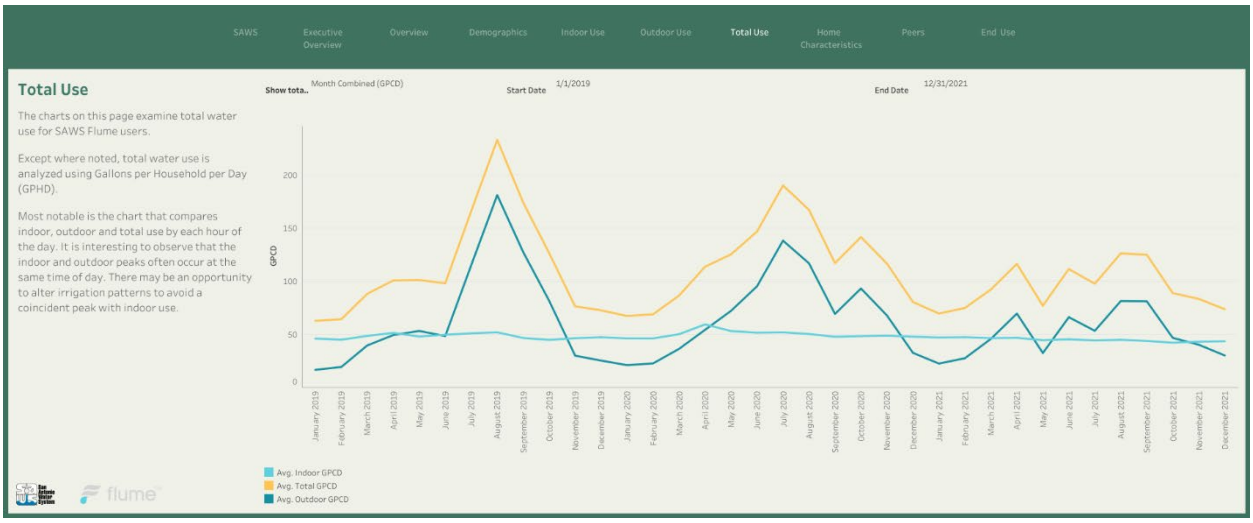


Figure 12: Total GPCD, Outdoor GPCD and Indoor GPCD Patterns

Flume completed additional analysis of Flume users to assess how outdoor usage influenced total GPCD. Figure 12 makes it clear that for the single-family group served by SAWS, Total GPCD is highly influenced by outdoor water usage. The indoor GPCD is relatively steady for the time period and Flume users analyzed. The total GPCD becomes higher as outdoor usage climbs. Residential per capita is highly influence by outdoor water habits and by the method of outdoor watering.

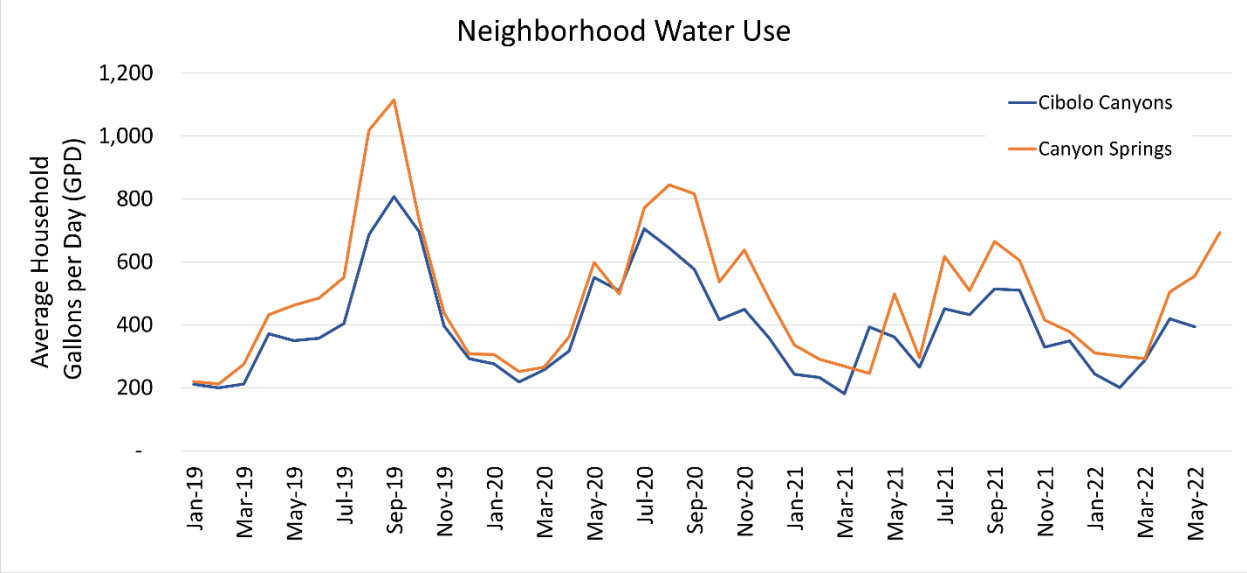
What Can We Do to Solve This?

The good news is that it is possible to mitigate the increasing market share of sprinkler systems as new homes are built with this feature. This will require new drought plan measures as outlined in the drought portion of this plan. It will also require ensuring that new irrigation systems are installed to maximum efficiency. Texas has some of the highest irrigation design and installation standards in the United States. However, we are not getting the full benefit of these in San Antonio because we have not yet invested in a plan review and operational inspection for every new system put in. Poorly installed systems have poor pressure management and poor zoning causing 20% or more of water applied to be wasted with each irrigation cycle. This can be corrected if a plan review and operational inspection is put into place.

How do we Know An Irrigation Plan Review & Inspection Will Work?

Many years ago a neighborhood called Cibolo Canyons was proposed. As part of the development plan, there was an agreement about how landscape and irrigation would be installed with careful oversight by contractors hired by the developer. SAWS also provided oversight to ensure irrigation and landscape was being installed correctly. A nearby neighborhood was also developed nearby called Canyon Springs. It also has high quality homes that all come with irrigation systems. However, the Canyon Springs irrigation systems were not subject to any oversight. Despite similar lot sizes, home values, geography and timing the water use outcomes are very different. The Cibolo Canyon homes peak up less in the summer months by about 20%. There is good reason to believe that quality irrigation and landscape installation at Cibolo Canyons has helped the homeowners there sustain their landscapes through summer with less water usage.

Figure 13: Comparison of Neighborhood with Irrigation Standards & Without Standards



What Saves Water When Irrigation Systems Are Improved?

There are many ways that a properly designed and installed irrigation can help a user have lower water usage. All areas of the landscape should be hydro zoned to allow lower usage in bedding areas than grass. Pressure within the system should be within range for operation of equipment. When pressure is too low the system cannot spread water over an area and when it is too high water mists out and evaporates. And when critical system components like the master valve and rain sensor are not properly installed, they do not operate to save water. SAWS performs thousands of Irrigation Consultations each year and has seen examples of these problems in many new irrigation systems. These issues are hard to correct after the system is installed, so it is important to design and install systems correctly.

What Are the Goals for Saving in Normal Weather Years Going Forward?

Table 14: Total GPCD normal weather goals for 2024-2034

2024		2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
107		106	106	105	104	103	102	101	101	100	100

We are proposing the mix of programs that leads to a gradual reduction of per capita to 97 GPCD in a normal weather year. Just as critical are the updates to the SAWS Drought Management Plan that will allow us to meet the modest 10% reduction in demand during times when permitted supplies are reduced. The five critical updates to the Drought Management Plan include:

- Having rules outlined in the SAWS Utility Service Agreement so it is clear that rules apply equally to all SAWS customers regardless of municipal boundaries.
- Shifting the consequence of non-compliance to a charge on the SAWS bill so that the consequence is equal for all SAWS customers regardless of municipal boundaries.
- Implementing a new Stage 3 that includes a High Use Surcharge aimed at influencing the top 5% of water users to reduce outdoor water consumption.

- Implementing a SAWS-based irrigation plan review and operational inspection over the next two years for all new irrigation systems added to SAWS metered accounts.
- Changing watering hours to allow more early morning times and shifting evening hours away from peak energy demand times.

Because weather patterns are so variable, we do not expect the Gallons per Capita per Day (GPCD) to drop each year. In some years lower usage occurs due to ample rainfall or a lot of rain in summer months. For example GPCD in 2021 was 111 which was lower than expected. In contrast during exceptionally hot and dry years without implementation of drought stages we will have an expected increase in per capita water consumption, but not as high as predicted without conservation. Although annual targets are set, long-term trends in per capita usage are studied more carefully to ensure the community is moving in the right direction.

ii. Very Long-Term Goals

SAWS expects to reduce its total per capita consumption to 85 GPCD by 2075. These targets were selected to ensure conservation continues to make a significant water supply contribution. These targets can be found online in the SAWS 2024 Water Management Plan at https://watercitysa.com/

Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Total	107	106	106	105	104	103	102	101	101	100	100
Residential	52	52	49	48	47	46	45	45	44	43	42

Table 15: Total and Residential GPCD Targets

b. Plan Evaluation and Measurable Savings

i. Have an Adaptable Plan

The SAWS Conservation Plan is implemented annually. Programs are outlined in advance to determine budget and resources needed and available to achieve planned savings. The annual plan is adjusted quarterly to account for real-time weather conditions, new opportunities, and customer response patterns. A program may be expanded if it is doing well, modified to improve customer participation, or discontinued if it is not achieving savings. The goal is to end each year with at least one billion gallons of water saved.

ii. Measuring and Tracking Success

Each year program data is analyzed to evaluate progress towards savings and GPCD goals. A summary report is compiled each year that shows how many customers participated in each program and how much water savings was achieved as a result. Education metrics ensure the community remains engaged in water conservation.

Top-down analysis: This uses broad water use patterns over time to determine if changes are occurring. Total GPCD should trend downward over time. Residential GPCD should also track downward over time.

Bottom-up analysis: This adds up the savings of individual customers who participated in programs to determine if net savings are high enough to achieve GPCD reductions in the plan.

Program participation: Active programs are monitored on an ongoing basis using dashboards in our Salesforce Program Management Platform, which give real-time feedback on the number of customers completing each program.

Conservation market share: At the end of 2023, participation was analyzed showing that 70 percent of customers had used at least one conservation program. As San Antonio continues to grow, adding new customers every day, the goal is to expand the conservation market share and meaningfully interact with all new and existing customers at least once every 5 years.

Conservation education and outreach: Customer participation in the programs offered by SAWS and contracted education partnerships is tracked. The goal is to reach over 100,000 people with face-to-face conservation education each year.

Digital education and outreach: Digital engagement is also tracked. GardenStyleSA.com total visits and time per visit are tracked through Google Analytics. Other digital engagement includes social media and a monthly e-newsletter tracked for open and click-through rates. Marketing emails, including subject line, time and day sent are all tracked to monitor open and uptake rates and determine the optimal information on how and when to send.

Where Do Savings Estimates Come From?
Savings estimates are first derived from theoretical analysis of programs. Knowledge of water use patterns and the conservation change being implemented are used to estimate what savings may be. This theoretical savings is later tested against actual savings achieved by conducting a program evaluation. Program evaluations account for all manner of variables that could contribute to a program's success. Because program evaluation is a rigorous and time-consuming process, a full analysis cannot be performed on each program every year.

While analysis shows the majority of households have engaged in water conservation at least once, there are new opportunities for those households to participate in our programs. A new category of customers, called "conservation newcomers," is defined as anyone who has not engaged with SAWS Conservation in a tracked program in the last five years. This includes residents who have not interacted and people who moved to the community during that time. In 2023, 2,704 households engaged in something new.

Every year SAWS adds up total participation in SAWS education programs, total participation in incentives and the impact of reasonable regulations. Each program is assigned a per unit savings metric based on best available data and program evaluations. This becomes the "Annual Savings Portfolio" that helps to determine if we are remaining on track to achieve enough savings each year to reach long-term goals. An example of the 2023 Annual Savings Portfolio can be found in the appendix.

We hope that the Five-Year Conservation Plan has been helpful and increased your awareness of both the challenges and opportunities we have regarding water management in San Antonio. We welcome feedback and questions. You can reach out to us at conserve@saws.org. (general email).

Index of Abbreviations

AFY	Acre-Feet per Year. *One acre-foot is equal to 325,851 gallons.*
AMI	Advanced Metering Infrastructure
ASR	Aquifer Storage and Recovery
CCC	Community Conservation Committee
CEC	Customer Experience Committee
CII	Commercial, Industrial and Institutional customer class
DCP	Drought Contingency Plan
EAA	Edwards Aquifer Authority
GPCD	gallons per capita per day
GSSA	Garden Style San AntonioHOA Homeowners' Association
NAICS	North American Industry Classification System
PTP	Plumbers to People
TCEQ	Texas Commission on Environmental Quality
TWDB	Texas Water Development Board

List of Attachments

These attachments are copies of documents provided to the Texas Commission on Environmental Quality and the Texas Water Development Board to meet regulatory requirements for planning and reporting on water conservation. While many of these items are not required parts of the Water Conservation Plan, they are related and are included here in the spirit of transparency.

Attachment A: TWDB Water Conservation Plan Requirements Checklist
Attachment B: TWDB Utility Profile
Attachment C: TWDB Best Management Practices Decoded
Attachment D: TCEQ Water Conservation Plan Requirements Checklist
Attachment E: TCEQ Utility Profile
Attachment F: Letter to Region L
Attachment G: Summary of Public Comments
Attachment H: SAWS Board Resolution Approving the Five-Year Water Conservation Plan

Texas Water Development Board

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

CONTACT INFORMATION

Name of Utility: SAN ANTONIO WATER SYSTEM

Public Water Supply Identification Number (PWS ID): TX0150018

Certificate of Convenience and Necessity (CCN) Number: 10640

Surface Water Right ID Number: 2144-D, 3867-A, 4768-B, 5549-C, 12096

Wastewater ID Number: 20285

Contact: First Name: Chelsea Last Name: Hawkins

Title: Resource Analyst

Address: 2800 US Hwy 281 North City: San Antonio State: TX

Zip Code: 78212 Zip+4: Email: Chelsea.Hawkins@saws.org

Telephone Number: 2107047283 Date: 4/30/2024

Is this person the designated Conservation Coordinator? ○ Yes ◉ No

Coordinator: First Name: Karen Last Name: Guz

Title: Vice President, Conservation

Address: 2800 US Hwy 281 North City: San Antonio Zip Code: 78212

Email: karen.guz@saws.org Telephone Number: 210-704-7283

Regional Water Planning Group: L

Groundwater Conservation District:

Our records indicate that you:

☑ Received financial assistance of $500,000 or more from TWDB

☑ Have 3,300 or more retail connections

☑ Have a surface water right with TCEQ

A. Population and Service Area Data

1. Current service area size in square miles: 928

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

Attached file(s):

File Name	File Description
CCN Map.pdf	

2. Historical service area population for the previous five years, starting with the most current year.

Year	Historical Population Served By Retail Water Service	Historical Population Served By Wholesale Water Service	Historical Population Served By Wastewater Water Service
2023	2,085,931	22,356	1,950,139
2022	2,046,513	22,000	1,910,697
2021	2,003,714	27,888	1,869,404
2020	1,955,528	21,480	1,820,983
2019	1,895,236	19,806	1,762,110

3. Projected service area population for the following decades.

Year	Projected Population Served By Retail Water Service	Projected Population Served By Wholesale Water Service	Projected Population Served By Wastewater Water Service
2030	2,349,371	25,310	2,198,174
2040	2,736,140	29,477	2,560,052
2050	2,990,615	32,218	2,798,150
2060	3,224,544	34,738	3,017,023
2070	3,437,966	37,038	3,316,555

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

4. Described source(s)/method(s) for estimating current and projected populations.

The current population estimate is derived using active residential connections and active apartment connections with associated units. Active residential connections are multiplied by a persons per household factor of 2.75 representing persons per connection for the single-family population estimate. Active apartment units are multiplied by the same factor and then reduced by a current multifamily occupancy rate for the City of San Antonio which generates a multifamily population estimate.

The utility developed the most current population projections using the 2022 End of Year population estimate and projected the population using a combination of annual growth rates from the Alamo Area Metropolitan Planning Organization and Texas Water Development Board, which generates this analysis every five years.

Population served by wholesale service was previously calculated including incorporated areas to which SAWS provides water. As of 2023 this calculation is updated.

B. System Input

System input data for the previous five years.
Total System Input = Self-supplied + Imported – Exported

Year	Water Produced in Gallons	Purchased/Imported Water in Gallons	Exported Water in Gallons	Total System Input	Total GPCD
2023	69,255,628,034	23,892,433,740	2,037,588,049	91,110,473,725	120
2022	65,471,804,068	28,639,631,647	3,935,855,233	90,175,580,482	121
2021	60,239,018,750	28,967,578,384	7,998,279,083	81,208,318,051	111
2020	63,069,958,319	22,266,361,120	2,367,392,560	82,968,926,879	116
2019	71,795,448,962	12,862,997,063	4,816,912,419	79,841,533,606	115
Historic Average	65,966,371,627	23,325,800,391	4,231,205,469	85,060,966,549	117

C. Water Supply System

1. Designed daily capacity of system in gallons: 2,917,610,000

2. Storage Capacity

2a. Elevated storage in gallons: 104,270,000

2b. Ground storage in gallons: 187,100,000

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

D. Projected Demands

1. The estimated water supply requirements for the next ten years using population trends, historical water use, economic growth, etc.

Year	Population	Water Demand (gallons)
2025	2,157,339	73,879,200,764
2026	2,195,745	74,286,891,412
2027	2,234,152	74,652,094,991
2028	2,272,558	75,102,083,649
2029	2,310,964	75,569,462,139
2030	2,349,371	76,065,656,080
2031	2,388,048	76,589,621,709
2032	2,426,725	77,261,769,082
2033	2,465,402	77,980,679,731
2034	2,504,078	78,726,337,682

2. Description of source data and how projected water demands were determined.

Projections are from the 2024 Water Management Plan

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

E. High Volume Customers

1. The annual water use for the five highest volume **RETAIL customers.**

Customer	Water Use Category	Annual Water Use	Treated or Raw
City of San Antonio	Commercial	1,675,704,393	Treated
TOWERJAZZ TEXAS INC.	Commercial	433,161,123	Treated
UNIVERSITY OF TEXAS SA	Commercial	412,427,960	Treated
HEB GROCERY CO	Commercial	404,621,301	Treated
METHODIST HEALTHCARE	Commercial	368,368,928	Treated

2. The annual water use for the five highest volume **WHOLESALE customers.**

Customer	Water Use Category	Annual Water Use	Treated or Raw
East Central SUD	Municipal	167,098,443	Treated
City of Elmendorf	Municipal	20,574,345	Treated
The Oaks WSC	Municipal	17,662,355	Treated

F. Utility Data Comment Section

Additional comments about utility data.

Texas Water Development Board

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

Section II: System Data

A. Retail Water Supplier Connections

1. List of active retail connections by major water use category.

Water Use Category Type	Total Retail Connections (Active + Inactive)	Percent of Total Connections
Residential - Single Family	575,371	65.75 %
Residential - Multi-Family	246,051	28.12 %
Industrial	269	0.03 %
Commercial	53,457	6.11 %
Institutional	0	0.00 %
Agricultural	0	0.00 %
Total	875,148	100.00 %

2. Net number of new retail connections by water use category for the previous five years.

	Net Number of New Retail Connections						
Year	**Residential - Single Family**	**Residential - Multi-Family**	**Industrial**	**Commercial**	**Institutional**	**Agricultural**	**Total**
2023	13,809	8,117	0	611	0	0	22,537
2022	15,662	6,157	1	14,870	0	0	36,690
2021	13,441	1,510	11	0	0	0	14,962
2020	14,064	7,063	1	8,673	0	0	29,801
2019	8,658	6,641	0	0		0	15,299

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

B. Accounting Data

The previous five years' gallons of RETAIL water provided in each major water use category.

Year	Residential - Single Family	Residential - Multi-Family	Industrial	Commercial	Institutional	Agricultural	Total
2023	38,409,217,730	12,174,611,879	2,637,887,755	16,186,220,358	0	0	69,407,937,722
2022	39,586,063,236	12,163,536,149	3,065,917,907	15,550,484,375	0	0	70,366,001,667
2021	34,967,246,520	11,461,606,668	2,482,878,313	14,854,893,137	0	0	63,766,624,638
2020	39,293,442,692	11,231,635,753	2,398,058,458	14,252,455,343	0	0	67,175,592,246
2019	36,195,182,563	10,636,991,951	2,612,068,295	15,858,129,384	0	0	65,302,372,193

C. Residential Water Use

The previous five years residential GPCD for single family and multi-family units.

Year	Total Residential GPCD
2023	66
2022	70
2021	64
2020	72
2019	69
Historic Average	68

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

D. Annual and Seasonal Water Use

1. The previous five years' gallons of treated water provided to RETAIL customers.

Month	Total Gallons of Treated Water				
	2023	2022	2021	2020	2019
January	6,843,516	6,463,895	6,198,335	5,964,471	5,612,675
February	6,102,900	5,839,692	6,525,705	5,428,478	5,090,885
March	7,136,566	6,766,133	6,792,288	5,693,840	5,983,963
April	6,740,677	7,159,223	6,957,790	5,856,454	6,077,612
May	6,976,175	7,873,243	6,540,257	7,081,457	6,303,537
June	7,957,818	8,887,242	7,008,922	7,464,958	6,375,085
July	9,497,476	9,275,258	6,978,887	8,766,491	7,736,912
August	9,880,755	8,790,399	7,484,521	8,498,509	9,233,828
September	8,818,809	7,988,741	7,343,378	7,208,966	8,254,954
October	7,862,123	8,157,656	6,865,588	7,847,845	7,412,387
November	7,056,608	6,863,232	6,386,953	7,077,142	6,100,377
December	7,088,646	6,970,176	6,376,725	6,426,285	6,089,252
Total	91,962,069	91,034,890	81,459,349	83,314,896	80,271,467

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

2. The previous five years' gallons of raw water provided to RETAIL customers.

Month	Total Gallons of Raw Water				
	2023	2022	2021	2020	2019
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Total	0	0	0	0	0

3. Summary of seasonal and annual water use.

	Summer RETAIL (Treated + Raw)	Total RETAIL (Treated + Raw)
2023	27,336,049	91,962,069
2022	26,952,899	91,034,890
2021	21,472,330	81,459,349
2020	24,729,958	83,314,896
2019	23,345,825	80,271,467
Average in Gallons	24,767,412.20	85,608,534.20

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

E. Water Loss

Water Loss data for the previous five years.

Year	Total Water Loss in Gallons	Water Loss in GPCD	Water Loss as a Percentage
2023	21,285,680,159	28	23.36 %
2022	19,429,069,543	26	22.08 %
2021	15,184,888,814	21	18.52 %
2020	14,621,872,113	20	17.42 %
2019	13,398,073,243	19	16.78 %
Average	16,783,916,774	23	19.63 %

F. Peak Day Use

Average Daily Water Use and Peak Day Water Use for the previous five years.

Year	Average Daily Use (gal)	Peak Day Use (gal)	Ratio (peak/avg)
2023	251,950	297130	1.1793
2022	249,410	292966	1.1746
2021	223,176	233394	1.0458
2020	228,259	268803	1.1776
2019	219,921	253758	1.1539

G. Summary of Historic Water Use

Water Use Category	Historic Average	Percent of Connections	Percent of Water Use
Residential - Single Family	37,690,230,548	65.75 %	56.08 %
Residential - Multi-Family	11,533,676,480	28.12 %	17.16 %
Industrial	2,639,362,145	0.03 %	3.93 %
Commercial	15,340,436,519	6.11 %	22.83 %
Institutional	0	0.00 %	0.00 %
Agricultural	0	0.00 %	0.00 %

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

H. System Data Comment Section

In some years SAWS netted a negative number of new connections in the industrial and commercial customer classes. SAWS saw the most fluctuation between 2019 and 2022, likely as a result of the impact of COVID on businesses. The TWDB interface does not allow a negative number entry so a "0' was used instead.

Section III: Wastewater System Data

A. Wastewater System Data

Attached file(s):

File Name	File Description
SAWS Wastewater System.docx	

1. Design capacity of wastewater treatment plant(s) in gallons per day: 187,000,000

2. List of active wastewater connections by major water use category.

Water Use Category	Metered	Unmetered	Total Connections	Percent of Total Connections
Municipal	513,223		513,223	69.02 %
Industrial	142		142	0.02 %
Commercial	230,270		230,270	30.97 %
Institutional	0		0	0.00 %
Agricultural	0		0	0.00 %
Total	743,635		743,635	100.00 %

3. Percentage of water serviced by the wastewater system: 92.00 %

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

4. Number of gallons of wastewater that was treated by the utility for the previous five years.

Month	Total Gallons of Treated Water				
	2023	2022	2021	2020	2019
January	3,965,025	3,853,447	3,713,731	3,889,067	4,407,296
February	3,746,499	3,680,047	3,734,514	3,635,398	3,804,524
March	4,143,006	3,896,512	3,890,772	3,927,219	4,072,893
April	4,320,611	3,948,010	3,867,879	3,780,991	4,036,765
May	4,735,769	4,189,293	4,668,177	4,099,492	4,468,450
June	4,389,963	4,004,375	4,406,964	3,911,402	4,464,110
July	4,421,367	4,211,891	4,797,222	3,967,438	4,291,007
August	4,422,512	4,308,986	4,379,372	3,949,008	4,093,067
September	4,225,623	4,084,203	3,991,509	3,872,314	3,896,969
October	4,278,572	4,055,120	4,379,068	3,769,768	3,972,649
November	4,127,228	3,928,979	3,905,503	3,624,256	3,713,882
December	4,142,134	4,033,946	3,983,912	3,658,819	3,787,388
Total	50,918,309	48,194,809	49,718,623	46,085,172	49,009,000

5. Could treated wastewater be substituted for potable water?

( ) Yes (•) No

B. Reuse Data

1. Data by type of recycling and reuse activities implemented during the current reporting period.

Type of Reuse	Total Annual Volume (in gallons)
On-site Irrigation	1,594,043,867
Plant wash down	0
Chlorination/de-chlorination	
Industrial	1,475,966,543
Landscape irrigation (park,golf courses)	0
Agricultural	0
Discharge to surface water	2,796,804,709
Evaporation Pond	0
Other	0
Total	5,866,815,119

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

C. Wastewater System Data Comment

Additional comments and files to support or explain wastewater system data listed below.

Texas Commission on Environmental Quality
Water Availability Division
MC-160, P.O. Box 13087 Austin, Texas 78711-3087
Telephone (512) 239-4600, FAX (512) 239-2214

Utility Profile and Water Conservation Plan Requirements for Municipal Water Use by Retail Public Water Suppliers

This form is provided to assist retail public water suppliers in water conservation plan assistance in completing this form or in developing your plan, please contact the Conservation staff of the Resource Protection Team in the Water Availability Division at (512) 239-4600.

Water users can find best management practices (BMPs) at the Texas Water Development Board's website http://www.twdb.texas.gov/conservation/BMPs/index.asp. The practices are broken out into sectors such as Agriculture, Commercial and Institutional, Industrial, Municipal and Wholesale. BMPs are voluntary measures that water users use to develop the required components of Title 30, Texas Administrative Code, Chapter 288. BMPs can also be implemented in addition to the rule requirements to achieve water conservation goals.

Contact Information

Name of Water Supplier:	San Antonio Water System
Address:	2800 US Hwy 281 North
Telephone Number:	210-704-7283 Fax: ( )
Water Right No.(s):	2144-D, 3867A, 4768-B, 5549-C, 12096
Regional Water Planning Group:	L
Water Conservation Coordinator (or person responsible for implementing conservation program):	Karen Guz Phone: (210) 704-7283
Form Completed by:	Chelsea Hawkins
Title:	Senior Resource Analyst
Signature:	Date:04/29/2024

A water conservation plan for municipal use by retail public water suppliers must include the following requirements (as detailed in 30 TAC Section 288.2). If the plan does not provide information for each requirement, you must include in the plan an explanation of why the requirement is not applicable.

Utility Profile

I. POPULATION AND CUSTOMER DATA

A. Population and Service Area Data

1. Attach a copy of your service-area map and, if applicable, a copy of your Certificate of Convenience and Necessity (CCN).

2. Service area size (in square miles): 928

   (Please attach a copy of service-area map)

3. Current population of service area: 2,085,931

4. Current population served for:

   a. Water 2,085,931

   b. Wastewater 1,950,139

5. Population served for previous five years:

Year	*Population*
2023	2,085,931
2022	2,046,513
2021	2,003,714
2020	1,941,408
2019	1,895,236

6. Projected population for service area in the following decades:

Year	*Population*
2020	1,941,408
2030	2,349,371
2040	2,736,140
2050	2,990,615
2060	3,224,543

7. List source or method for the calculation of current and projected population size.

   2021 Population Est. * Growth rates generated from 2020 AAMPO population projections thru 2040 and 2021 TWDB population projections thru 2070.

B. Customer Data

Senate Bill 181 requires that uniform consistent methodologies for calculating water use and conservation be developed and available to retail water providers and certain other water use sectors as a guide for preparation of water use reports, water conservation plans, and reports on water conservation efforts. A water system must provide the most detailed level of customer and water use data available to it, however, any new billing system purchased must be capable of reporting data for each of the sectors listed below. More guidance can be found at: http://www.twdb.texas.gov/conservation/doc/SB181Guidance.pdf

1. Quantified 5-year and 10-year goals for water savings:

	Historic 5-year Average	*Baseline*	*5-year goal for year 2029*	*10-year goal for year 2034*
Total GPCD	117	118	112	107
Residential GPCD	68	72	73	70
Water Loss GPCD	23	18	15	13
Water Loss Percentage	19.63%	14.95%	13.39%	12.15%

Notes:
Total GPCD = (Total Gallons in System ÷ Permanent Population) ÷ 365
Residential GPCD = (Gallons Used for Residential Use ÷ Residential Population) ÷ 365
Water Loss GPCD = (Total Water Loss ÷ Permanent Population) ÷ 365
Water Loss Percentage = (Total Water Loss ÷ Total Gallons in System) x 100; or (Water Loss GPCD ÷ Total GPCD) x 100

2. Current number of active connections. Check whether multi-family service is counted as ☐ Residential or ☒ Commercial?

Treated Water Users	*Metered*	*Non-Metered*	*Totals*
Residential	875,289	0	875,289
Single-Family	575,371	0	575,371
Multi-Family	246,051	0	246,051
Commercial	53,457	0	53,457
Industrial/Mining	269	0	269
Institutional	0	0	0
Agriculture	0	0	0
Other/Wholesale	10	0	10

3. List the number of new connections per year for most recent three years.

Year	2023	2022	2021
Treated Water Users			
Residential	21,926	21,819	14,951
Single-Family	13,809	15,662	13,441
Multi-Family	8,117	6,157	1,510
Commercial	611	14,870	-8,316
Industrial/Mining	-5	1	11
Institutional	0	0	0
Agriculture	0	0	0
Other/Wholesale	1	0	0

4. List of annual water use for the five highest volume customers.

Customer	*Use (1,000 gal/year)*	*Treated or Raw Water*
City of San Antonio	1,675,704	Treated
TowerJazz Texas Inc.	433,161	Treated
University of Texas SA	412,428	Treated
HEB Grocery	404,621	Treated
Methodist Healthcare	368,369	Treated

II. WATER USE DATA FOR SERVICE AREA

A. Water Accounting Data

1. List the amount of water use for the previous five years (in 1,000 gallons).

   Indicate whether this is ☐ diverted or ☒ treated water.

Year	2023	2022	2021	2020	2019
Month					
January	6,843,516	6,463,895	6,198,335	5,964,471	5,612,675
February	6,102,900	5,839,692	6,525,705	5,428,478	5,090,885
March	7,136,566	6,766,133	6,792,288	5,693,840	5,983,963
April	6,740,677	7,159,223	6,957,790	5,856,454	6,077,612
May	6,976,175	7,873,243	6,540,257	7,081,457	6,303,537
June	7,957,818	8,887,242	7,008,922	7,464,958	6,375,085
July	9,497,476	9,275,258	6,978,887	8,766,491	7,736,912
August	9,880,755	8,790,399	7,484,521	8,498,509	9,233,828
September	8,818,809	7,988,741	7,343,378	7,208,966	8,254,954
October	7,862,123	8,157,656	6,865,588	7,847,845	7,412,387
November	7,056,608	6,863,232	6,386,953	7,077,142	6,100,377
December	7,088,646	6,970,176	6,376,725	6,426,285	6,089,252
Totals	91,962,070	91,034,890	81,459,347	83,314,897	80,271,468

2. Describe how the above figures were determined (e.g, from a master meter located at the point of a diversion from the source or located at a point where raw water enters the treatment plant, or from water sales).

   Metered points of sale, meter data

3. Amount of water (in 1,000 gallons) delivered/sold as recorded by the following account types for the past five years.

Year	2023	2022	2021	2020	2019
Account Types					
Residential	50,583,830	51,749,599	46,428,853	50,525,078	46,832,175
Single-Family	38,409,218	39,586,063	34,967,247	39,293,443	36,195,183
Multi-Family	12,174,612	12,163,536	11,461,607	11,231,636	10,636,992
Commercial	16,186,220	15,550,484	14,854,893	14,252,455	15,858,129
Industrial/Mining	2,637,888	3,065,918	2,482,878	2,398,058	2,612,068
Institutional	0	0	0	0	0
Agriculture	0	0	0	0	0
Other/Wholesale	-	-	-	-	-

4. List the previous records for water loss for the past five years (the difference between water diverted or treated and water delivered or sold).

Year	*Amount (gallons)*	*Percent %*
2023	21,285,680,159	23.36%
2022	20,041,180,829	22.08%
2021	15,009,424,554	18.52%
2020	14,419,977,256	17.42%
2019	13,398,073,243	16.78%

B. Projected Water Demands

1. If applicable, attach or cite projected water supply demands from the applicable Regional Water Planning Group for the next ten years using information such as population trends, historical water use, and economic growth in the service area over the next ten years and any additional water supply requirements from such growth.

III. WATER SUPPLY SYSTEM DATA

A. Water Supply Sources

1. List all current water supply sources and the amounts authorized (in acre feet) with each.

Water Type	*Source*	*Amount Authorized*
Surface Water		
Groundwater	*See*	*Attached*
Other		

B. Treatment and Distribution System (if providing treated water)

1. Design daily capacity of system (MGD): 2,917.61

SAWS relies primarily on privately owned groundwater derived from various aquifers, including the Edwards Aquifer, Trinity Aquifer, Carrizo Aquifer, Simsboro Aquifer, and the Lower Wilcox Aquifer. SAWS's privately owned groundwater supplies are provided from wells owned by SAWS or through contracts between SAWS and third parties. SAWS supplements its groundwater supplies with relatively small amounts of treated surface water purchased from Guadalupe Blanco River Authority (GBRA) and Canyon Regional Water Authority.

In May of 2023, the capacity of wells operated by SAWS and contractors was 997.22 million gallons per day (mgd). The capacity of 297 service pumps was 1,629.02 mgd. The capacity of 134 storage tanks included an elevated storage capacity of 104.27 million gallons and a ground storage capacity of 187.10 million gallons.

2. Storage capacity (MGD):

   a. Elevated 104.27

   b. Ground 187.10

3. If surface water, do you recycle filter backwash to the head of the plant?

   ☐ Yes ☐ No If yes, approximate amount (MGD):

IV. WASTEWATER SYSTEM DATA

A. Wastewater System Data (if applicable)

1. Design capacity of wastewater treatment plant(s) (MGD): 187,000,000

2. Treated effluent is used for ☐ on-site irrigation, ☐ off-site irrigation, for ☐ plant wash-down, and/or for ☐ chlorination/dechlorination.

   If yes, approximate amount (in gallons per month):

3. Briefly describe the wastewater system(s) of the area serviced by the water utility. Describe how treated wastewater is disposed. Where applicable, identify treatment plant(s) with the TCEQ name and number, the operator, owner, and the receiving stream if wastewater is discharged.

Water is treated at three different water recycling facilities, with ID numbers of WQ0010137003, WQ0010137033, WQ0010137040. All are owned and operated by San Antonio Water System. Effluent is disposed by direct reuse and by discharge to receiving streams, as described below.

Steven Clouse WRC:
-Outfall 001 to the Medina River below Medina Diversion Lake in Segment No. 1903 of the San Antonio River Basin
-Outfall 002 through approximately 15 miles of pipeline to the Upper San Antonio River in Segment No. 1911 of the San Antonio River Basin at a point approximately 600 feet northwest of the intersection of Tuleta Street and Broadway
-Outfall 003 through approximately 14 miles of pipeline to the Upper San Antonio River in segment no. 1911 of the San Antonio River Basin at a point approximately 500 feet northwest of the intersection of Isleta Street and East Josephine Street. -Outfall 004 through approximately 20 miles of pipeline to Salado Creek in Segment No. 1910 of the San Antonio River Basin at a point approximately 100 feet south of the intersection of Salado Creek and Rittiman Road.
-Outfall 005 through a pipeline to the Upper San Antonio River in Segment No. 1911 of the San Antonio River Basin at a point approximately 800 feet southeast of the intersection of South Alamo Street and East Market Street.
-Outfall 006 to the Upper San Antonio River in Segment No. 1911 of the San Antonio River Basin

Leon Creek WRC: -Outfall 001 into Comanche Creek, thence to the Lower Leon Creek in Segment No. 1906 of the San Antonio River Basin -Outfall 002 via pipeline to Mitchell Lake, thence to Cottonmouth Creek, thence to the Medina River below Medina Diversion Lake in Segment no 1903 of the San Antonio River Basin

Medio Creek WRC: -Outfall 001 to an unclassified portion of Medio Creek, thence to an unclassified lake, thence to Medio Creek in Segment No. 1912 of the San Antonio River Basin

B. Wastewater Data for Service Area (if applicable)

1. Percent of water service area served by wastewater system: 91.83%

2. Monthly volume treated for previous five years (in 1,000 gallons):

Year	2023	2022	2021	2020	2019
Month					
January	3,965,025	3,853,447	3,713,731	3,889,067	4,407,296
February	3,746,499	3,680,047	3,734,514	3,635,398	3,804,524
March	4,143,006	3,896,512	3,890,772	3,927,219	4,072,893
April	4,320,611	3,948,010	3,867,879	3,780,991	4,036,765
May	4,735,769	4,189,293	4,668,177	4,099,492	4,468,450
June	4,389,963	4,004,375	4,406,964	3,911,402	4,464,110
July	4,421,367	4,211,891	4,797,222	3,967,438	4,291,007
August	4,422,512	4,308,986	4,379,372	3,949,008	4,093,067
September	4,225,623	4,084,203	3,991,509	3,872,314	3,896,969
October	4,278,572	4,055,120	4,379,068	3,769,768	3,972,649
November	4,127,228	3,928,979	3,905,503	3,624,256	3,713,882
December	4,142,134	4,033,946	3,983,912	3,658,819	3,787,388
Totals	50,918,309	48,194,807	49,718,625	46,085,171	49,008,999

Water Conservation Plan

In addition to the utility profile, please attach the following as required by Title 30, Texas Administrative Code, §288.2. Note: If the water conservation plan does not provide information for each requirement, an explanation must be included as to why the requirement is not applicable.

A. *Record Management System*

The water conservation plan must include a record management system which allows for the classification of water sales and uses in to the most detailed level of water use data currently available to it, including if possible, the following sectors: residential (single and multi-family), commercial.

B. *Specific, Quantified 5 & 10-Year Targets*

The water conservation plan must include specific, quantified five-year and ten-year targets for water savings to include goals for water loss programs and goals for municipal use in gallons per capita per day. Note that the goals established by a public water supplier under this subparagraph are not enforceable. These goals must be updated during the five-year review and submittal.

C. *Measuring and Accounting for Diversions*

The water conservation plan must include a statement about the water suppliers metering device(s), within an accuracy of plus or minus 5.0% in order to measure and account for the amount of water diverted from the source of supply.

D. *Universal Metering*

The water conservation plan must include and a program for universal metering of both customer and public uses of water, for meter testing and repair, and for periodic meter replacement.

E. *Measures to Determine and Control Water Loss*

The water conservation plan must include measures to determine and control water loss (for example, periodic visual inspections along distribution lines; annual or monthly audit of the water system to determine illegal connections; abandoned services; etc.).

F. *Continuing Public Education & Information*

The water conservation plan must include a description of the program of continuing public education and information regarding water conservation by the water supplier.

G. *Non-Promotional Water Rate Structure*

The water supplier must have a water rate structure which is not "promotional," i.e., a rate structure which is cost-based and which does not encourage the excessive use of water. This rate structure must be listed in the water conservation plan.

H. *Reservoir Systems Operations Plan*

The water conservation plan must include a reservoir systems operations plan, if applicable, providing for the coordinated operation of reservoirs owned by the applicant within a common watershed or river basin in order to optimize available water supplies.

I. Enforcement Procedure and Plan Adoption

The water conservation plan must include a means for implementation and enforcement, which shall be evidenced by a copy of the ordinance, rule, resolution, or tariff, indicating official adoption of the water conservation plan by the water supplier; and a description of the authority by which the water supplier will implement and enforce the conservation plan.

J. Coordination with the Regional Water Planning Group(s)

The water conservation plan must include documentation of coordination with the regional water planning groups for the service area of the public water supplier in order to ensure consistency with the appropriate approved regional water plans.

K. Plan Review and Update

A public water supplier for municipal use shall review and update its water conservation plan, as appropriate, based on an assessment of previous five-year and ten-year targets and any other new or updated information. The public water supplier for municipal use shall review and update the next revision of its water conservation plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. The revised plan must also include an implementation report.

VI. ADDITIONAL REQUIREMENTS FOR LARGE SUPPLIERS

Required of suppliers serving population of 5,000 or more or a projected population of 5,000 or more within the next ten years:

A. Leak Detection and Repair

The plan must include a description of the program of leak detection, repair, and water loss accounting for the water transmission, delivery, and distribution system in order to control unaccounted for uses of water.

B. Contract Requirements

A requirement in every wholesale water supply contract entered into or renewed after official adoption of the plan (by either ordinance, resolution, or tariff), and including any contract extension, that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements in this chapter. If the customer intends to resell the water, the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with the provisions of this chapter.

VII. ADDITIONAL CONSERVATION STRATEGIES

Any combination of the following strategies shall be selected by the water supplier, in addition to the minimum requirements of 30 TAC §288.2(1), if they are necessary in order to achieve the stated water conservation goals of the plan. The commission may require by commission order that any of the following strategies be implemented by the water supplier if the commission determines that the strategies are necessary in order for the conservation plan to be achieved:

1. Conservation-oriented water rates and water rate structures such as uniform or increasing block rate schedules, and/or seasonal rates, but not flat rate or decreasing block rates;

2. Adoption of ordinances, plumbing codes, and/or rules requiring water conserving plumbing fixtures to be installed in new structures and existing structures undergoing substantial modification or addition;

3. A program for the replacement or retrofit of water-conserving plumbing fixtures in existing structures;

4. A program for reuse and/or recycling of wastewater and/or graywater;

5. A program for pressure control and/or reduction in the distribution system and/or for customer connections;

6. A program and/or ordinance(s) for landscape water management;

7. A method for monitoring the effectiveness and efficiency of the water conservation plan; and

8. Any other water conservation practice, method, or technique which the water supplier shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

VIII. WATER CONSERVATION PLANS SUBMITTED WITH A WATER RIGHT APPLICATION FOR NEW OR ADDITIONAL STATE WATER

Water Conservation Plans submitted with a water right application for New or Additional State Water must include data and information which:

1. support the applicant's proposed use of water with consideration of the water conservation goals of the water conservation plan;

2. evaluates conservation as an alternative to the proposed appropriation; and

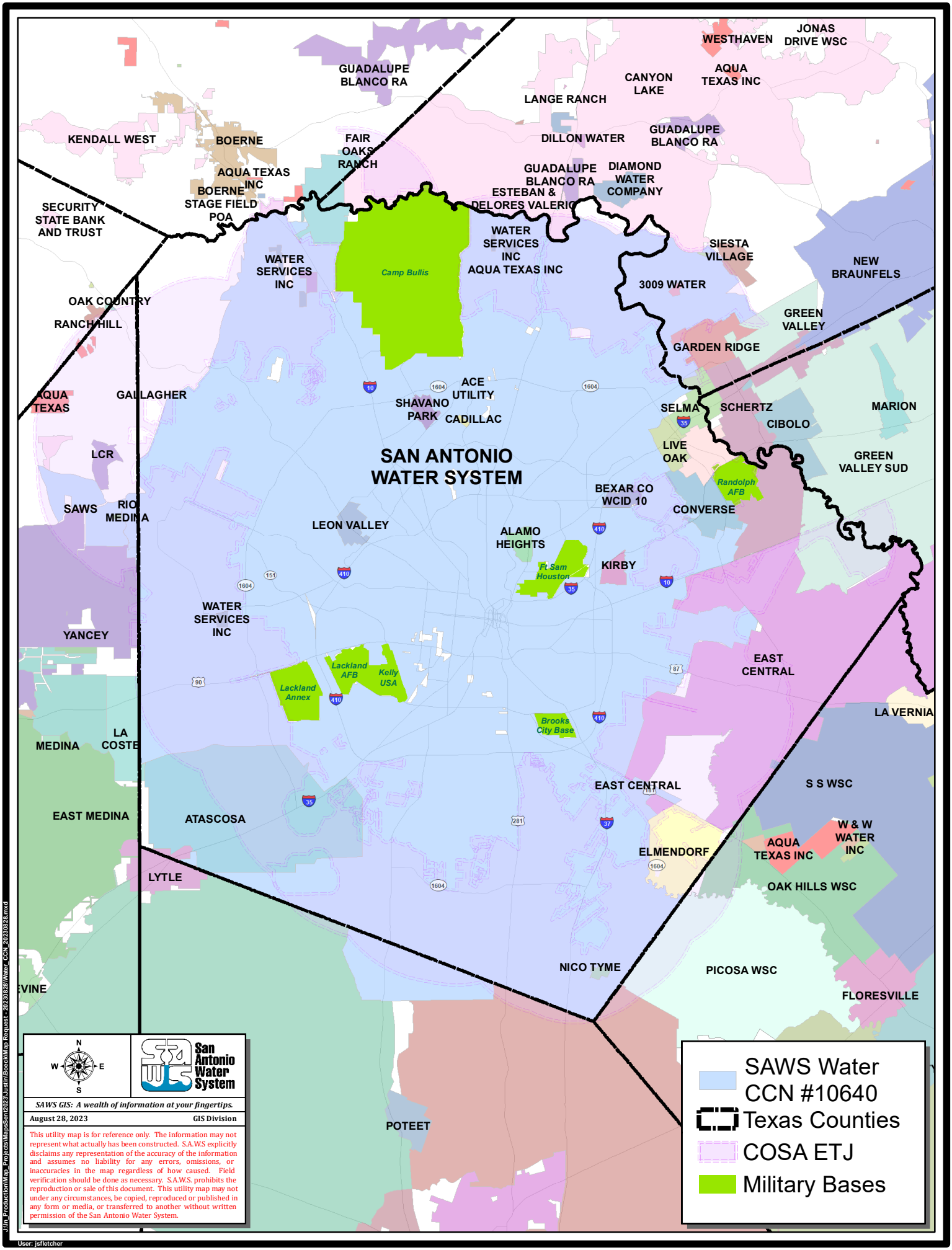
3. evaluates any other feasible alternative to new water development including, but not limited to, waste prevention, recycling and reuse, water transfer and marketing, regionalization, and optimum water management practices and procedures.

Additionally, it shall be the burden of proof of the applicant to demonstrate that no feasible alternative to the proposed appropriation exists and that the requested amount of appropriation is necessary and reasonable for the proposed use.

Water Supply Sources		
Project	**Source**	**Yield (AFY)**
Edwards Aquifer Best*	Edwards Aquifer	277,947
Edwards Aquifer Worst**	Edwards Aquifer	155,651
Regional Carrizo (includes SSLGC)	Carrizo Aquifer	11,533
Local Carrizo	Carrizo Aquifer	9,900
GBRA Western Canyon	Canyon Lake	6,600
Trinity - Oliver Ranch	Trinity Aquifer	2,000
Trinity - Timberwood	Trinity Aquifer	1,000
Trinity - TWS	Trinity Aquifer	2,000
Desal Phase I	Wilcox Aquifer	11,200
Canyon Regional Water Authority (Wells Ranch)	Carrizo Aquifer	6,300
Vista Ridge	Simsboro/Carrizo Aquifers	50,000
Future Supplies		
Expanded Local Carrizo Phase I	Carrizo Aquifer	7,000
Expanded Local Carrizo Phase II	Carrizo Aquifer	7,000
Expanded Local Carrizo Phase III	Carrizo Aquifer	7,000
Desal Phase II	Wilcox Aquifer	13,440
Desal Phase III	Wilcox Aquifer	8,960
Regional Wilcox Project (brackish)	Wilcox Aquifer	50,000

*Best: No critical period cutbacks

**Worst: Significant critical period cutbacks


SAN ANTONIO WATER SYSTEM
GUADALUPE BLANCO RA
WESTHAVEN
JONAS DRIVE WSC
AQUA TEXAS INC
CANYON LAKE
LANGE RANCH
KENDALL WEST
BOERNE
FAIR OAKS RANCH
DILLON WATER
GUADALUPE BLANCO RA
AQUA TEXAS INC
BOERNE STAGE FIELD POA
GUADALUPE BLANCO RA
DIAMOND WATER COMPANY
ESTEBAN & DELORES VALERIO
SECURITY STATE BANK AND TRUST
WATER SERVICES INC
AQUA TEXAS INC
Camp Bullis
WATER SERVICES INC
SIESTA VILLAGE
NEW BRAUNFELS
3009 WATER
OAK COUNTRY
RANCH HILL
GREEN VALLEY
GARDEN RIDGE
ACE UTILITY
SHAVANO PARK
CADILLAC
AQUA TEXAS
GALLAGHER
SELMA
SCHERTZ
MARION
CIBOLO
LCR
LIVE OAK
GREEN VALLEY SUD
Randolph AFB
BEXAR CO WCID 10
SAWS
RIO MEDINA
CONVERSE
LEON VALLEY
ALAMO HEIGHTS
Ft Sam Houston
KIRBY
WATER SERVICES INC
YANCEY
EAST CENTRAL
Lackland AFB
Kelly USA
Lackland Annex
LA VERNIA
Brooks City Base
MEDINA
LA COSTE
EAST CENTRAL
S S WSC
EAST MEDINA
ATASCOSA
W & W WATER INC
AQUA TEXAS INC
ELMENDORF
LYTLE
OAK HILLS WSC
NICO TYME
PICOSA WSC
FLORESVILLE
POTEET
SAWS Water CCN #10640
Texas Counties
COSA ETJ
Military Bases
N
W
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S
San Antonio Water System
SAWS GIS: A wealth of information at your fingertips.
August 28, 2023
GIS Division
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User: jsfletcher

Public Utility Commission

of Texas

By These Presents Be It Known To All That

San Antonio Water System

having obtained certification to provide water utility service for the convenience and necessity of the public, and it having been determined by this Commission that the public convenience and necessity would in fact be advanced by the provision of such service, San Antonio Water System is entitled to this

Certificate of Convenience and Necessity No. 10640

to provide continuous and adequate water utility service to that service area or those service areas in Atascosa, Bexar, Comal, Kendall, and Medina Counties as by final Order or Orders duly entered by this Commission, which Order or Orders resulting from Docket No. 52126 are on file at the Commission offices in Austin, Texas; and are matters of official record available for public inspection; and be it known further that these presents do evidence the authority and the duty of the San Antonio Water System to provide such utility service in accordance with the laws of this State and Rules of this Commission, subject only to any power and responsibility of this Commission to revoke or amend this Certificate in whole or in part upon a subsequent showing that the public convenience and necessity would be better served thereby.