

Water Conservation Plan



City of Boerne
Water Utility

April 2019

Water and Wastewater System Information

Water

The City of Boerne (City), located in Kendall County, Texas, operates and maintains a municipal water supply, treatment and distribution system for residents and businesses within the City's limits. The current total population of the City is 15,820 persons. The City's water service area population is approximately 16,000 persons. The City has approximately 7,344 customer connections with an average per capita consumption of 150 gallons per day based on total customer consumption and an approximate 200 gallons per day average for residential customer consumption. In 2018, the City produced a total of 2,705 acre-feet (881,411,000 gallons) of potable water.

Potable water is supplied from Boerne City Lake, wells in the Upper Glen Rose aquifer and water from the Canyon Lake Reservoir, purchased through the Guadalupe-Blanco River Authority (GBRA). Included in the City's water system are a water treatment plant, pumps, tanks, transmission and distribution piping and customer meters.

Boerne City Lake, a reservoir located on the Cibolo Creek, was designed to provide drinking water, as well as provide flood protection for the City. The City is permitted to withdraw 833 acre-feet (271,400,000 gallons) per year from the reservoir for drinking water purposes. The conservation pool capacity of the reservoir is 4,043 acre-feet (1,317,300,000 gallons) and a flood water storage capacity of 4,616 acre-feet (1,504,000,000 gallons). The level of the water in Boerne City Lake cannot be controlled via mechanical flood gates.

The City has contracted with the Guadalupe Blanco River Authority (GBRA) to purchase 1,300 acre-feet (423,606,857 gallons) of treated water from the Canyon Lake Reservoir annually. Another 2,311 acre-feet is available under our contract. The water is pumped from the Canyon Lake Reservoir as part of the Western Canyon Regional Water Supply Project and is treated by the GBRA using chemical addition and membrane filtration prior to the City's purchase.

In addition to the use of water from the two above-mentioned reservoirs, the City operates nine groundwater wells to fulfill the City's drinking water needs. The nine wells have a total pumping capacity of 1,840,000 gallons per day. The City currently holds a permit from the Cow Creek Groundwater Conservation District (CCGCD) to withdraw up to 1,850 acre-feet per year from wells. In extreme drought conditions, however, CCGCD rules can require that withdrawal be decreased.

The City's Water Treatment Plant uses chemical treatment, clarification and pressure filtration to treat the water from Boerne City Lake. The Water Treatment Plant has a peak design production rate of 1,500,000 gallons per day. Treated water is discharged from one of two storage tanks at the plant, with a total storage capacity of 3,000,000 gallons. Another 1,000,000 gallon storage tank is located at the purchase point where water from the Canyon Lake Reservoir from GBRA is received. High service pumps deliver water from the storage tanks into our potable water distribution system, which consists of varying sizes of mains and services in two service planes. The City has four potable water pressurization standpipes with a combined capacity of 3,675,000 gallons.

Wastewater

The City of Boerne's wastewater system is comprised of various sizes of mains that transport sewage via gravity. The City also has several wastewater lift stations that pump wastewater into the collection system from low points in the service area. From the collection system, the wastewater is transported to one of two Wastewater Treatment Plants. The original Wastewater Treatment Plant (WWTP) at Esser Road is permitted by the Texas Commission on Environmental Quality to discharge an annual average of 1,200,000 gallons of treated effluent per day. In 2013, the City completed construction of its

Wastewater Treatment and Recycling Center (WWTRC) on Old San Antonio Road. The Wastewater Treatment and Recycling Center is permitted by the Texas Commission on Environmental Quality to discharge an average of 1,400,000 gallons of treated effluent per day. The plant can be expanded to treat up to 5,200,000 gallons per day at this site.

The City's wastewater system currently services a population of approximately 16,000 via 5,813 service connections. Residential wastewater rates throughout the year are calculated by utilizing "winter averaging", which includes the average of metered water consumption for each individual residential customer for the preceding December, January and February. Where water consumption history does not exist, an "estimated winter average" is used. Commercial customers are billed for the volume of water that flows through their potable water meter all year long.

Reclaimed Water

The City of Boerne prioritizes the use of reclaimed water and currently utilizes the supply for dust control, streamflow management, outdoor residential irrigation, and municipal irrigation.

The Esser Road WWTP produces Type 2 reclaimed water, which is currently used in relatively small quantities for construction dust control via water trucks and for streamflow maintenance. The plant discharges into Currey Creek which flows into Cibolo Creek. The WWTRC produces Type 1 reclaimed water, which is permitted for a variety of uses but is primarily intended for lawn and landscape irrigation via a separate reclaimed water distribution system being developed in the eastern portion of our water service territory. A chlorine residual is maintained in the reclaimed distribution system to help ensure treated water quality.

After treatment, reclaimed water is stored in a 500,000 gallon tank on the grounds of the WWTRC and pumped via high-service pumps to a 428,000 gallon elevated tank located on Esperanza Blvd. Aside from municipal use at the plant site, this water is supplied to residential irrigation individually metered services connected to automatic sprinkler systems. Large areas of street ROW and open space are also being irrigated using reclaimed water from the City of Boerne.

The City's reclaimed water system currently services approximately 311 customers (services), with an average demand of about 221,000 gallons per day. Ultimately, the City should serve at least 3,500 individual reclaimed water customers. This reclaimed demand replaces potable water demand for irrigation by automated sprinkler systems in the Ranches at Creekside and Esperanza developments.

Record Management System

The City utilizes INCODE, a software system which allows for the classification of water sales and uses for residential and commercial accounts to the most detailed level of water use data currently available to it.

Current Conservation Strategy

The City's current conservation program aims to reduce average annual per capita water consumption and unaccounted for water through several methods.

- ***Drought Management***
 - **Drought Contingency Plan** -The City currently has in effect a Drought Contingency Ordinance and is attached hereto as codified as Exhibit A. The ordinance includes criteria for the initiation and termination of drought response stages, outside watering day designations and penalties for violation of the ordinance.

- **Year-round Mandatory Conservation** -The City has in place an ordinance that prohibits landscape watering between the hours of 11:00 a.m. and 7:00 p.m. This prohibition is a year-round conservation measure. A copy of the codified ordinance, which also includes requirements for permitting of newly planted lawns and landscaping is included as Exhibit B.
- **Turf Management** -The City regulates the types of turf grasses allowed for new residential and commercial development. The ordinance also contains requirements related to irrigation systems, replacement of damaged turf and requirements for depth of soil. A copy of the amended and codified ordinance is attached as Exhibit C.
- ***Metering***
 - **Supply Meters** -All of the City's sources of water are metered. Wells are equipped with propeller-type meters that are read daily. A chart recorder meter is located at the Water Treatment Plant and records daily water production from the Boerne City Lake. A meter is also used to take daily measurements of the amount of water obtained from Canyon Lake. All supply meters are calibrated on an annual basis and have an accuracy of plus or minus 5.0% in order to measure and account for the amount of water diverted from the supply sources.
 - **Customer Meters and Public Use Meters** –Service meters include simple-positive displacement, compound and turbine meters and are tested at customer request. If testing shows meter error, the meter will be repaired or replaced. If testing shows the meter to be accurate, the customer will be required to pay for the testing fee. The type of meter that is used for each application is determined by the customer's planned usage requirements and the accuracy of the meter's consumption measurements. Meters are in place to measure customer, as well as public uses. All public water usage is metered. The City has completed the installation of Automated Meter Infrastructure technology and system-wide meter replacement. With the new metering technology, the City has real-time data to detect water leaks and other abnormal usage. Thereafter, the meter replacement schedule will be to replace meters approximately every 10 years.
- ***Public Education*** -The City communicates water saving tips and information using a variety of social media channels and through a monthly e-mail newsletter. Conservation information is also provided on the City's website, periodically in the local newspapers, to new customers upon application for service, and through fliers inserted with the utility bills as needed.
- ***Rate Structure*** -The City's rates are structured to discourage and charge higher rates for excessive water usage. The water rate ordinance is amended by City Council as necessary. Water rates are generally categorized as residential and general service. A copy of the ordinance is included in Exhibit D.
- ***Plumbing Code*** - The City has adopted the 2009 International Plumbing Code which requires the use of water saving toilets, showers, lavatories and other fixtures in new and remodeled homes and businesses.
- ***Reclaimed Water*** - The City has constructed a pump station at the Wastewater Treatment Plant that allows for the use of Type II Reclaimed Water for construction purposes. This system addition reduces the amount of potable water used for construction. The reclaimed water rate structure encourages the use of this recycled water alternative. Additionally, the City provides for the use of Type I Reclaimed Water from the Wastewater Treatment and Recycling Center to be distributed to residential subdivisions for irrigation purposes. Expansion of the customer base using that system continues to grow. Each home in the reclaimed water distribution system using automatic sprinklers is required to irrigate using reclaimed water. This has significantly decreased the use of potable water in the largest growth area of the City.
- ***Unaccounted-for Water*** - Reports are generated on a monthly basis that show the total amount of water produced vs. total amount of water sold or otherwise accounted for. The

amount produced that exceeds the amount sold or otherwise accounted for (i.e. line flushing, breaks, firefighting) is considered the unaccounted for water amount. The City's desire is to keep unaccounted for water at or below 13% of monthly water production. The unaccounted for water amount is closely monitored through careful supervision of water system operations and the City's leak detection program.

- ***Leak Detection Program*** -City staff members perform daily visual field observations in all areas of the City's service area and periodic inspection of AMI data in order to identify water leakage, unauthorized consumption, etc. Customer reports of leaks, unauthorized consumption and illegal water usage are also received and investigated. Additionally, the City uses sonic leak detection equipment when necessary to help identify leaks in mains and services. When leaks are discovered in the City's facilities, immediate steps are taken to repair the leaking facility. When leaks are discovered in customer facilities, the customer is promptly notified and required to remediate.
- ***Contract Requirements*** – The City does not have any current water supply contracts for wholesale water sales. If the City were to enter into or extend any contracts, each successive wholesale customer would be required to develop and implement a water conservation plan 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 be required to implement water conservation measures in accordance with the provisions of this chapter.
- ***Coordination with the Regional Water Planning Group*** – The service area of the City of Boerne is located within the South Central Texas Regional Water Planning Group (Region L). The City of Boerne will provide a copy of the water conservation plan to the Region L Water Planning Group as necessary to ensure consistency with the appropriate approved regional water plans.
- ***Plan Review and Update*** – The City 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 not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group.
- ***Reservoir Systems Operations Plan*** – the City obtains water from reservoirs, but does not operate (maintain storage volumes) for water supply purposes. If the City were to begin operating multiple reservoirs as a system to deliver water to customers, a Reservoir Systems Operations Plan would be developed to optimize the use of water from those reservoirs to insure conservation of the water.
- ***Enforcement Procedure and Plan Adoption*** – The City, as the water supplier, shall provide a copy of the ordinance, rule, and resolution, or tariff, indicating official adoption of the water conservation plan; and will be implemented and enforced by the authority of City Council.

Conservation Goals

Conservation efforts will be continuous and on-going. When determining the methods used to achieve the following goals, the City will take into consideration the effectiveness of past water conservation efforts, current and future technology and industry standards.

In our prior plan, our target goal was to reduce potable water consumption by 2 gallons per capita per day by 2019 and 7 gallons per capita by 2024. This would result in lost/unaccounted for water percentage below ten percent (10%) by 2019 and nine percent (9%) by 2024. Our figures for unaccounted for water in calendar years 2014-2018 were 9.7%, 9.0%, 8.8%, 16.8% and 14.0%, respectively. We were on track to meet or exceed our target goals until 2017, when the

lost/unaccounted for number increased dramatically.

In response, we studied/revised our record keeping practices and our methodology for comparing production to consumption. A few minor adjustments were made to improve accuracy.

A comprehensive leak survey also was performed on the City's distribution system by SAMCO using computer aided detection technology in 2018 and 2019. A total of 53 leaks were detected. These consisted of service line leaks, fire hydrant leaks, distribution valve leaks, air release valve leaks, customer side leaks, meter box leaks, meter vault leaks, and one backflow preventer leak. All leaks detected were repaired and customers were notified of the leaks that were detected on the customer side plumbing. The leaks that were detected through these surveys were minor and would not have been expected to significantly impact our unaccounted for water loss percentages.

A water wheeling contract we had with a neighboring utility expired recently. Under this contract we were receiving a significant flow of additional water into our Buckskin Drive ground storage tank from GBRA and pumping it through our system to a delivery point in the northwest portion of our system. The observed increases in unaccounted for water occurred near the end of that contract term. We suspect that a metering error at our delivery could have been to blame for some of our apparent water loss (as compared to the amount of water we received).

Target for Next 5 Years

The City of Boerne's goal for the next 5-year period remains to reduce per capita water consumption by 5 gallons per day. Again, this would result in a lost/unaccounted for water percentage of nine (9%).

10-year Targets

For the following 10-year period, the City's goal water consumption reduction will 2 gallons per capita per day. The lost/unaccounted for water reduction goal will be below nine percent (9%). We understand these goals are aggressive as compared to industry standard. However, it is our desire to continue to lead in this area.

Through the efforts of comprehensive leak detection surveys by consultants and the City of Boerne's continuous internal efforts in the leak detection and system maintenance, we expect our system loss reductions to diminish. We continue our practice of replacing billing meters on a 10 year cycle to minimize apparent (unmetered) losses from delivered flows. The increased production and delivery of retail reclaimed water as growth served by our reclaimed system will be an essential factor in reduction of per capita potable water use.

Implementation

Potential methods for reaching 5-year and 10-year targets may include, but are not limited to the following new programs and existing program enhancements. Program implementation and/or enhancement will be determined by the success of each conservation effort.

- ***Customer Education*** -Increase customer knowledge of water conservation techniques through additional information conveyed through the local newspaper public service announcements, social media to include the Boerne Utilities Facebook page, and distribution of other written informational brochures.
- ***Turf Management Education*** -Educate customers on efficient irrigation and turf dormancy, including how winter irrigation affects water consumption averaging used to calculate sewer charges.
- ***Special Events*** -Sponsor customer outreach activities during Drinking Water Week and other community special events.

- ***Fix a Leak Week*** -Participate in and promote EPA's Fix a Leak Week including customer outreach, advertisement and distribution of leak indicator tablets to water customers.
- ***Native Landscaping*** -Further encourage the installation of native, drought-tolerant landscapes, including creating a partnership with the Cibolo Nature Center to promote conservation as part of their Annual Mostly Native Plant Sale activities.
- ***Retrofit Kits*** -Distribute aerators, flapper valves, and other water saving devices at low cost or no cost to water customers.
- ***Reclaimed Water*** -Expand uses of reclaimed water to include irrigation for City and school athletic fields and parks. Continue to install residential reclaimed irrigation services to displace potable water usage for irrigation at those sites.
- ***Customer Water Use Audits*** -Conduct water use audits in homes and businesses that are connected to the City of Boerne's water system in order to provide valuable suggestions on water use reduction.
- ***Rebates*** -Allow rebates for customers who install certain high efficiency washing machines and water heating systems, water-saving toilets, and alternative landscape irrigation systems.

Program Monitoring

Water conservation efforts will be continuous and monitored monthly under the direction of the City Manager or his designee. The monthly monitoring efforts will include review of gallons of water produced, sold and lost, in addition to leak detection and repairs. These review efforts will be used to determine the regulation of response stages as outlined in the City's drought management ordinance.

The comprehensive Water Conservation Program will be reviewed on an annual basis to determine the adequacy of conservation efforts and to determine when additional conservation actions are necessary. The annual program review will include the examination of annual water production, sales and loss data, distribution of written materials provided to customers and by type and method used, number of special events held to promote water conservation, potential revision of rate structure, customer participation in special programs and overall effectiveness of the program efforts. The program review will be accomplished through the compilation of data used to complete the annual Water Use Survey, Water Loss Audit and Water Conservation Plan reports that are submitted to the Texas Water Development Board as required by statute.