# City of League City

# Water Conservation Plan

Prepared for:

**The City of League City**

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Prepared by:

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# FOREWORD

This Water Conservation Plan was prepared for the City of League City by Freese and Nichols, Inc., pursuant to Texas Commission on Environmental Quality rules. For the purposes of regional coordination, the 2014 Water Conservation Plan for the City of Houston (Houston) and the 2012 Water Conservation Plan for the Gulf Coast Water Authority (GCWA) were consulted.

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This Water Conservation Plan is based on the Texas Administrative Code in effect on January 31, 2019 and considers water conservation best management practices from Texas Water Development Board (TWDB) Report 362, *Water Conservation Best Management Practices Guide*. In 2007, the state legislature created the Water Conservation Advisory Council (WCAC) as a council with expertise in water conservation with one of their charges to regularly review existing Best Management Practices (BMPs) and add additional new BMPs as appropriate. The draft WCAC BMPs available as of January 31, 2019 have also been considered in the preparation of this plan.

[1] Superscripted numbers match references listed in Appendix A

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# 1.0 INTRODUCTION AND OBJECTIVES

Water supply has always been a key issue in the development of Texas and the Houston region. In recent years, the increasing population and economic development of the Houston area have led to growing demands for water supplies. At the same time, local and less expensive sources of water supply are largely already developed. Additional supplies to meet future demands will be expensive and difficult to secure. Severe drought conditions in recent years have highlighted the importance of efficient use of our existing supplies to make them last as long as possible. Extending current supplies will delay the need for new supplies, minimize the environmental impacts associated with developing new supplies, and delay the high cost of additional water supply development.

Recognizing the need for efficient use of existing water supplies, the Texas Commission on Environmental Quality (TCEQ) has developed guidelines and requirements governing the development of water conservation and drought contingency plans.[2] The TCEQ guidelines and requirements are included in Appendix B. The City of League City (League City) has developed this Water Conservation Plan in accordance with TCEQ guidelines and requirements. Since League City is a wholesale water customer of the Gulf Coast Water Authority (GCWA) and the City of Houston (Houston), GCWA's *2012 Water Conservation Plan*[3] and Houston's *2014 Water Conservation Plan*[4] were consulted during the development of this Plan to ensure consistency. In addition, coordination was also performed with GCWA and Houston staff in regard to the plans for completion of their upcoming 2019 plan. This Water Conservation Plan replaces the City of League City's 2014 Water Conservation Plan, which was passed by resolution on May 27, 2014.

The City of League City also recognizes that in order to achieve its goals of maximizing water conservation and efficiency, it is necessary to develop and implement a water conservation plan that goes beyond basic compliance with TCEQ guidelines and requirements. This plan reflects the City of League City's commitment to enhanced water conservation and efficiency strategies – particularly those best management practices established by the Water Conservation Implementation Task Force[5] and the Water Conservation Advisory Council (WCAC), which were incorporated, where appropriate, in the development of these water conservation measures. The Water Conservation Implementation Task Force developed the Texas Water Development Board Report 362 Water Conservation Best Management Practices Guide in partial fulfillment of the Texas Legislature's charge to the TCEQ and Texas Water Development Board (TWDB) to develop recommendations for optimum levels of water use efficiency and conservation in the

State. The WCAC has furthered the efforts of the Task Force by updating existing BMPs and creating new BMPs as new technologies and programs arise.

The objectives of this Water Conservation Plan are as follows:

- To reduce water consumption from the levels that would prevail without conservation efforts.
- To reduce the loss and waste of water.
- To improve efficiency in the use of water.
- To encourage efficient outdoor water use.
- To document the level of recycling and reuse in the water supply.
- To extend the life of current water supplies by reducing the rate of growth in demand.

# 2.0 DEFINITIONS

1. ATHLETIC FIELD means a public sports competition field, the essential feature of which is turf grass, used primarily for organized sports practice, competition or exhibition events for schools; professional sports and league play sanctioned by the utility providing retail water supply.

2. COOL SEASON GRASSES are varieties of turf grass that grow best in cool climates primarily in northern and central regions of the U.S. Cool season grasses include perennial and annual rye grass, Kentucky blue grass and fescues.

3. CUSTOMER means any person, corporation, or organization using water supplied by the City of League City.

4. DRIP IRRIGATION is a type of micro-irrigation system that operates at low pressure and delivers water in slow, small drips to individual plants or groups of plants through a network of plastic conduits and emitters; also called trickle irrigation.

5. EVAPOTRANSPIRATION (ET) represents the amount of water lost from plant material to evaporation and transpiration. The amount of ET can be estimated based on the temperature, wind, and relative humidity.

6. ET/SMART CONTROLLERS are irrigation controllers that adjust their schedule and run times based on weather (ET) data. These controllers are designed to replace the amount of water lost to evapotranspiration.

7. IRRIGATION SYSTEM means a permanently installed, custom-made, site-specific system of delivering water generally for landscape irrigation via a system of pipes or other conduits installed below ground.

8. LANDSCAPE means any plant material on a property, including any tree, shrub, vine, herb, flower, succulent, ground cover, grass or turf species, that is growing or has been planted out of doors.

9. MULTI-FAMILY PROPERTY means a property containing five or more dwelling units.

10. MUNICIPAL USE means the use of potable water provided by a public water supplier as well as the use of treated sewage effluent for residential, commercial, industrial, agricultural, institutional, and wholesale uses.

11. REUSE WATER means reclaimed municipal wastewater that has been treated to a quality that meets or exceeds the minimum standards of the 30 Texas Administrative Code, Chapter 210 and is used for lawn irrigation, industry, or other non-potable purposes

12. REGULATED IRRIGATION PROPERTY means any property that uses 1 million gallons of water or more for irrigation purposes in a single calendar year or is greater than 1 acre in size.

13. RESIDENTIAL GALLONS PER CAPITA PER DAY (Residential GPCD) is the total gallons sold for residential use by a public water supplier divided by the residential population served and then divided by the number of days in the year.

14. TOTAL GALLONS PER CAPITA PER DAY (Total GPCD) is the total amount of water purchased, diverted and/or pumped for potable use divided by the total permanent population divided by the number of days in the year. Diversion volumes of reuse as defined in TAC Chapter 288.1 shall be credited against total diversion volumes for the purposes of calculating GPCD for targets and goals.

15. WATER CONSERVATION PLAN means this water conservation plan approved and adopted by the City Council of League City on August 13, 2019.

**Abbreviations**

| Abbreviation | Full Nomenclature |
|---|---|
| AMI | Advanced Metering Infrastructure |
| AWWA | American Water Works Association |
| BMP | Best Management Practices |
| GCWA | Gulf Coast Water Authority |
| GPF | Gallons Per Flush |
| GPM | Gallons Per Minute |
| HGSD | Harris-Galveston Subsidence District |
| TCEQ | Texas Commission on Environmental Quality |
| SCADA | Supervisory Control and Data Acquisition |
| TWDB | Texas Water Development Board |
| ULFT | Ultra Low Flow Toilet |
| WCAC | Water Conservation Advisory Council |
| WCP | Water Conservation Plan |

# 3.0 REGULATORY BASIS FOR WATER CONSERVATION PLAN

## 3.1 TCEQ RULES GOVERNING CONSERVATION PLANS

The TCEQ rules governing development of water conservation plans for public water suppliers are contained in Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.2 of the Texas Administrative Code, which is included in Appendix B. For the purpose of these rules, a water conservation plan is defined as "A strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water." The elements in the TCEQ water conservation rules covered in this conservation plan are listed below.

Minimum Conservation Plan Requirements

The minimum requirements in the Texas Administrative Code for Water Conservation Plans for Public Water Suppliers are covered in this report as follows:

- 288.2(a)(1)(A) – Utility Profile – Section 4.0 and Appendix C
- 288.2(a)(1)(B) – Record Management System – Section 6.1.2
- 288.2(a)(1)(C) – Specific, Quantified Goals – Section 5.0
- 288.2(a)(1)(D) – Accurate Metering – Section 6.1
- 288.2(a)(1)(E) – Universal Metering – Section 6.1
- 288.2(a)(1)(F) – Determination and Control of Water Loss – Section 6.1
- 288.2(a)(1)(G) – Public Education and Information Program – Section 6.2
- 288.2(a)(1)(H) – Non-Promotional Water Rate Structure – Section 6.3
- 288.2(a)(1)(I) – Reservoir System Operation Plan – Section 6.4
- 288.2(a)(1)(J) – Means of Implementation and Enforcement – Section 6.5
- 288.2(a)(1)(K) – Coordination with Regional Water Planning Group – Section 6.6 and Appendix D
- 288.2(c) – Review and Update of Plan – Section 9.0

Conservation Additional Requirements (Population over 5,000)

The Texas Administrative Code includes additional requirements for water conservation plans for drinking water supplies serving a population over 5,000:

- 288.2(a)(2)(A) – Leak Detection, Repair, and Water Loss Accounting – Section 6.1.3

Additional Conservation Strategies

The Texas Administrative Code lists additional conservation strategies, which may be adopted by suppliers but are not required. Additional strategies adopted by the City of League City include the following:

- 288.2(a)(3)(A) – Conservation Oriented Water Rates – Section 6.3
- 288.2(a)(3)(B) – Ordinances, Plumbing Codes or Rules on Water-Conserving Fixtures – Section 7.2
- 288.2(a)(3)(D) – Reuse and Recycling of Wastewater – Section 7.1
- 288.2(a)(3)(F) – Considerations for Landscape Water Management Regulations – Section 7.3, Section 8.1, and Section 8.5

## 3.2 GUIDANCE AND METHODOLOGY FOR REPORTING ON WATER CONSERVATION AND WATER USE

In addition to TCEQ rules regarding water conservation, this plan also incorporates elements of the Guidance and Methodology for Reporting on Water Conservation and Water Use developed by TWDB and TCEQ, in consultation with the Water Conservation Advisory Council (the "Guidance").[6] The Guidance was developed in response to a charge by the 82nd Texas Legislature to develop water use and calculation methodology and guidance for preparation of water use reports and water conservation plans in accordance with TCEQ rules. The City of League City has considered elements of the Guidance in preparation of this Plan.

# 4.0 WATER UTILITY PROFILE AND DESCRIPTION OF THE CITY OF LEAGUE CITY SERVICE AREA

League City is geographically located in the Harris-Galveston Subsidence District's (HGSD) Regulatory Area 1 and is required to limit its use of groundwater to 10 percent of annual usage, due to the effects that subsidence has had on the region. Groundwater usage greater than 10 percent of the total annual volume can be utilized but will result in disincentive fees of $8.75 per thousand gallons from the HGSD. As such, League City receives the majority of its treated water from surface water treatment facilities. One facility is the City of Houston's Southeast Water Purification Plant (SEWPP) and the other from the Thomas Mackey Surface Water Treatment Plant in Texas City that is owned and operated by the Gulf Coast Water Authority (GCWA).

League City provides treated potable water to local customers of League City only. The City of League City provided retail water service to approximately 106,000 people in 2018. The service area consists of residential, commercial and industrial developments as well as open spaces such as community parks, golf courses and cemeteries. Commercial use areas are concentrated along I-45, State Highway 3, FM 518, FM 646, and FM 2094. League City does not have any wholesale customers.

In 2018, League City purchased an average of 310 million gallons of treated water from the City of Houston on a monthly basis, purchased an average of 42 million gallons of treated water from the GCWA on a monthly basis, as well as produced an average of 3 million gallons of self-supplied groundwater on a monthly basis. **Figure 4-1** shows the League City service area.

League City has no water treatment plants, as treated water is purchased from the City of Houston and GCWA. League City's two wastewater treatment plants are permitted to discharge up to 16 MGD total. Appendix C contains League City's most recent water utility profile based on the format recommended by TCEQ for retail suppliers.

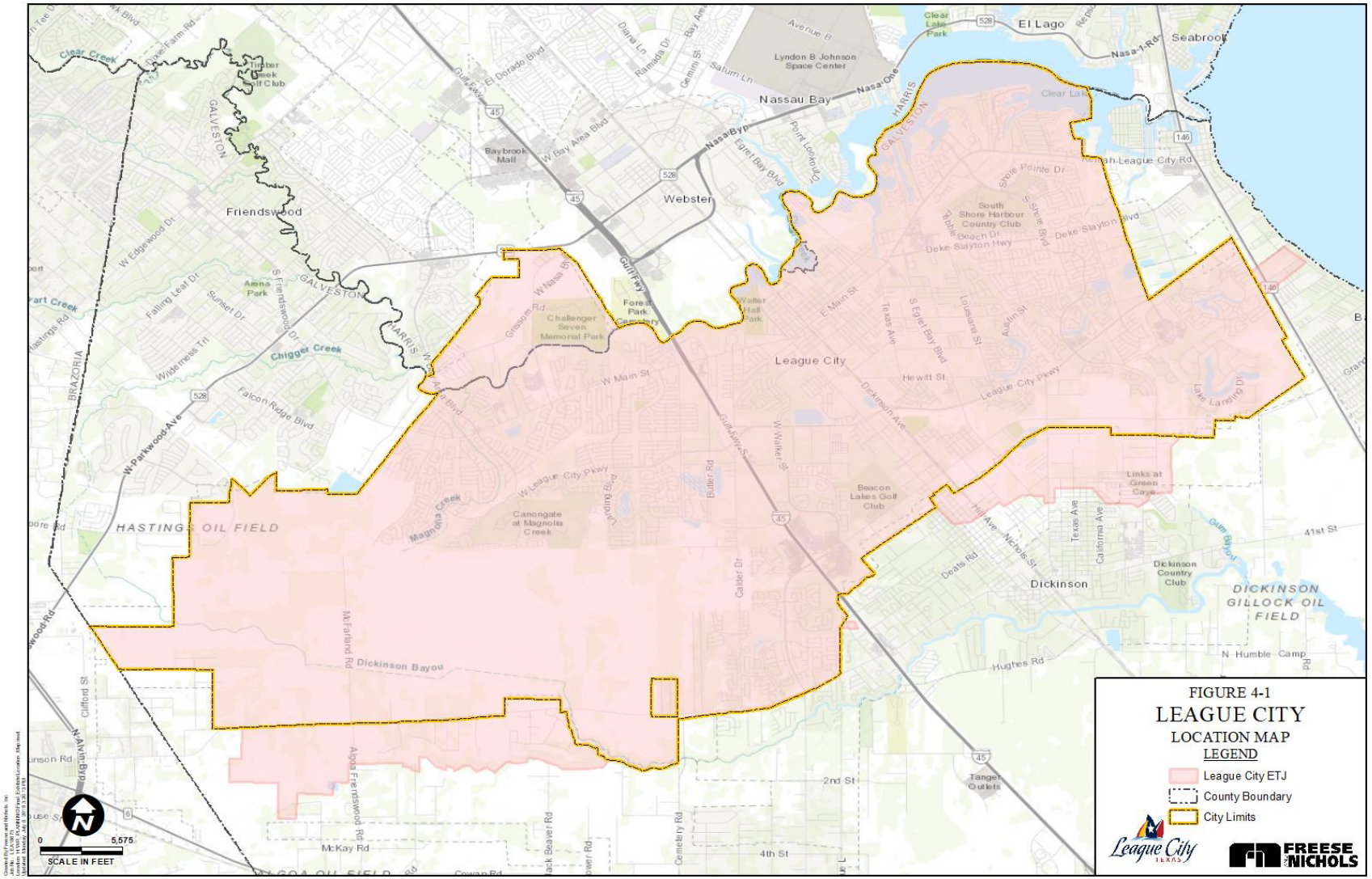


**Figure 4-1: City of League City Retail Water Service Area**

# 5.0 SPECIFICATION OF WATER CONSERVATION GOALS

TCEQ rules require the adoption of specific water conservation goals for a water conservation plan. League City has developed 5-year and 10-year goals for total and residential per capita use. The goals for this water conservation plan include the following:

- Maintain the 5-year average total and residential per capita water use below the specified amount in gallons per capita per day, as shown in the completed **Table 5-1**.
- Maintain the level of water loss percentage in the system below the specified amount in percentage and gallons per capita per day, as shown in the completed **Table 5-1** and as discussed in Section 6.1.2.
- Raise public awareness of water conservation and encourage responsible public behavior by a public education and information program, as discussed in Section 6.2.
- Develop a system specific strategy to conserve water during peak demands, thereby reducing the peak use.
- Delay and decrease capital expenditures required to serve League City's future growth.

**Table 5-1 Five-Year and Ten-Year Total GPCD Goals**

| Description | Current Average (2014-2018) | 5-Year Goal (2024) | 10-Year Goal (2029) |
|---|---|---|---|
| ***Total Per Capita Use (GPCD)***[a] | 115 | 112 | 109 |
| ***Residential Per Capita Use (GPCD)***[b] | 72 | 70 | 69 |
| ***Water Loss (GPCD)***[c] | 13.3 | 11.7 | 9.8 |
| ***Water Loss (Percentage)***[d] | 12.0% | 10.5% | 9.0% |
| ***Infrastructure Leakage Index (ILI)***[e] | 2.3 | 2.2 | 2.2 |

a. Total GPCD = (Total Gallons Purchased from Houston, GCWA, and Self-Supplied Water, plus reuse ÷ Population) ÷ 365
b. Residential GPCD = (Gallons Used for Residential Use ÷ Population) ÷ 365
c. Water Loss GPCD = (Total Water Loss ÷ Population) ÷ 365
d. Water Loss Percentage = (Total Water Loss ÷ Total Gallons in System) x 100; or (Water Loss GPCD ÷ Total GPCD) x 100
e. Infrastructure Leakage Index = Real Loss Volume ÷ Unavoidable Real Losses Volume

These goals are for a 5-year average, and therefore some years (dry years) will see higher per capita usage than these average goals. A series of dry years might lead to an average exceeding the goal.

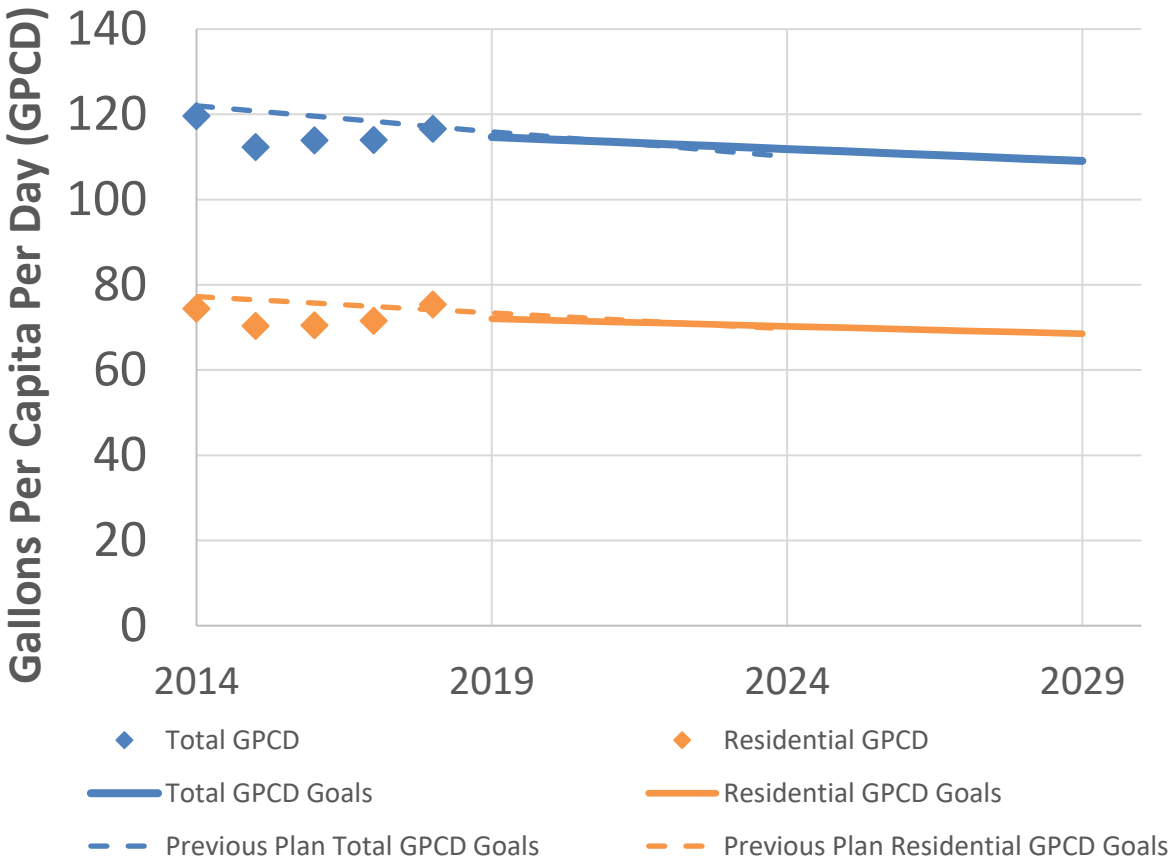


**Figure 5-1: Gallons Per Capita Per Day (GPCD) Goals (Total and Residential)**

# 6.0 BASIC WATER CONSERVATION STRATEGIES

## 6.1 METERING, WATER USE RECORDS, CONTROL OF WATER LOSS AND, LEAK DETECTION AND REPAIR

One of the key elements in water conservation is careful tracking of water use and control of losses. Accurate metering of water deliveries, detection and repair of leaks in the raw water delivery and potable water distribution systems and regular monitoring of water loss are important elements of the City of League City's program to control losses.

### 6.1.1 Practices to Measure and Account for the Amount of Water Delivered from Houston and GCWA

City of Houston and GCWA supply surface water used by League City and monitors all deliveries using meters with an accuracy of at least ±5 percent. Meter testing, repair, and replacement programs for City of Houston and GCWA are based on American Water Works Association (AWWA) standards.

### 6.1.2 Monitoring and Record Management Program for Determining Deliveries, Sales, and Losses

League City meters all of its water uses, including retail sales and public and governmental users. League City estimates the water used by the fire department for fire suppression and hydrant flushing based on the length of time the water flows and the water pressure.

Water and wastewater utilities increasingly face challenges associated with population growth that cannot be offset by reduced per capita consumption, and aging infrastructure that will require significant investment. Advanced Metering Infrastructure (AMI) is one tool in the toolbox of a smart and effective utility which can serve to reduce per capita consumption and therefore delay the need for major capital expenses and rate adjustments, improve customer service, detect potential leaks, and streamline operational decision making and reduce operational costs.

Since implementing its AMI system, League City's capability to track water use and manage the operations of its water distribution system have improved. In addition to increased accuracy, AMI also provides water use data in real time. Information from the meters can be gathered in hourly or 15-minute intervals in most cases, rather than on what is usually a monthly schedule. This gives League City the capability of locating leaks at a customer's location, thereby informing the customer of potential leaks for the customer to repair and reducing the amount of water losses.

Supervisory Control and Data Acquisition (SCADA) allows League City to monitor water pressure in various sections of the distribution system and make pressure adjustments quickly.

As required by Texas Administrative Code Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.2 (a)(1)(B), League City's record management system allows for the separation of water sales and uses into residential and non-residential classes. The non-residential water use can be tracked by the use of codes into the required categories of commercial, public/institutional, and industrial use categories. League City's record management system allows water sales and uses to be tracked as separate categories and includes water sales to multi-family housing in the residential sales category. This information is included in the TCEQ required Water Conservation Implementation Report, as described in Section 6.5.

To track its progress in reducing water losses, the City will perform a monthly water audit, comparing the amount of water purchased from Houston and GCWA and self-supplied with that distributed through metered sales. A report is prepared outlining the monthly variance in percentage of water loss. The City also performs an annual audit comparing the same data on a calendar year basis.

Total water loss is the difference between water delivered from GCWA, City of Houston and self-supplied groundwater, minus authorized consumption by League City's customers. Authorized consumption includes billed metered uses, unbilled metered uses, and unbilled unmetered uses such as firefighting and releases for flushing of lines. Water losses include two categories:

- Apparent losses such as inaccuracies in customer meters. (Customer meters tend to run more slowly as they age and under-report actual use). Unauthorized consumption due to illegal connections and theft.
- Real Losses due to water main breaks and leaks in the water distribution system and unreported losses.

Measures to control water losses are part of the routine operations of the City of League City. Maintenance crews and personnel are asked to look for and report evidence of leaks in the water distribution system. The leak detection and repair program is described in Section 6.1.3 below. Meter readers are asked to watch for and report signs of illegal connections, so they can be addressed quickly.

**Table 6-1** shows League City's annual water loss percent from 2014-2018. This Plan considers the average from 2014-2018 to be representative of current water loss conditions in League City. The average water loss percent during 2014-2018 is approximately 12 percent, which is slightly above the goals of the City of Houston for its retail system (11 percent)[3]. However, as seen in Section 5 above, League City's 10-year goal is to reduce its water loss percent to 9 percent by 2029.

The Infrastructure Leakage Index (ILI) is the ratio of annual real losses divided by Unavoidable Annual Real Losses, and is useful for comparisons between systems. The Infrastructure Leakage Index provides a ratio of current leakage relative to the best level obtainable with current Best Management Practices for leakage.[6] Generally speaking, an ILI of between 2.0 and 3.0 is considered acceptable.

**Table 6-1 League City Water Loss**

| Year | Percent Water Loss | ILI |
|---|---|---|
| 2014 | 7.9% | 1.1 |
| 2015 | 13.3% | 2.7 |
| 2016 | 14.9% | 3.0 |
| 2017 | 14.1% | 2.8 |
| 2018 | 9.9% | 2.0 |
| **Average** | **12.0%** | **2.3** |

### 6.1.3 Leak Detection and Repair

With AMI, a daily leak notification report is produced for the Utility Billing Department. This daily report notes continuous water usage for the previous twenty-four hours. Utility Billing Representatives note accounts with abnormal usage and notify customers. This more efficient and effective method will expedite leak repairs, decreasing water loss.

City crews and personnel look for and report evidence of leaks in the water distribution system. Areas of the water distribution system in which numerous leaks and line breaks occur are targeted for replacement as funds are available.

## 6.2 PUBLIC EDUCATION PROGRAM

The continuing public education and information campaign on water conservation includes the following elements:

- Educate the public through the use of a local municipal channel to provide coverage of water conservation issues, reporting on the importance of water conservation, and encouraging and promoting water re-use.
- Staff created a water conservation mascot, Captain H2O, who accompanies staff to schools, daycares, and public events to educate on the importance of water conservation.
- The City holds an annual water conservation poster and essay contest for students in grades K though 12 from schools within League City, during AWWA's National Drinking Water Week.
- Staff attends statewide events with TWUA, AWWA, and WEAT to learn more about conservation applications and programs. Our city was awarded the TWUA Public Education Award in 2011 and the AWWA National Drinking Water Week Video Award in 2013.
- Make information on water conservation available on the Water Production webpage located in the City of League City's website, and include links to the *Texas Smartscape* website and link to information on water conservation on the TWDB and TCEQ websites.
- The Harris-Galveston Coastal Subsidence District will continue to present the specially tailored version of the National Waterwise program in area schools.
- Support the State-initiated Water Conservation Awareness and Education Campaign.
- Continue to provide water saving devices for kitchen and bathroom along with water conservation materials to the public during the annual public outreach events.

## 6.3 WATER RATE STRUCTURE

The City of League City applies a water rate structure that is intended to encourage water conservation and discourage excessive use and waste of water. The water and wastewater rate structure is broken down into residential rates, commercial rates, and irrigation rates. Rates are set to generate the revenues needed to operate and maintain the system and to meet debt service requirements. League City utilizes a rate structure that includes a base rate for water service and four tiers of increasing prices for increased water usage for residential and commercial customers. Irrigation customer classes have a base rate for water service and one tier for water usage.

## 6.4 RESERVOIR SYSTEM OPERATION PLAN

The City of League City purchases water from Houston and GCWA and does not have surface water supplies for which to implement a reservoir operation plan.

## 6.5 WATER CONSERVATION IMPLEMENTATION AND ENFORCEMENT

The City of League City completes the TCEQ required *Water Conservation Implementation Report* by May 1 of each year. The report includes various water conservation strategies that have been implemented, including the date of implementation. Additionally, the report includes progress made on the five- and ten-year per capita water use goals from this Plan. If the goals are not being met, League City must document the reasons why. The amount of water saved is also documented in this report.

Appendix E contains a copy of the resolution adopted by the City Council regarding this *Water Conservation Plan*. The resolution designates responsible officials to implement and enforce the *Water Conservation Plan*.

## 6.6 COORDINATION WITH REGIONAL WATER PLANNING GROUPS

The service area of the City of League City is located within the Region H Water Planning Group and is a wholesale customer of Houston and GCWA, and League City will provide a copy of this *Water Conservation Plan* to both groups. Appendix D includes copies of the letters sent to the Chair of the Region H Water Planning Group, the Deputy Director of the City of Houston, and the General Manager of GCWA with copies of the Plan.

# 7.0 ENHANCED WATER CONSERVATION STRATEGIES

The City of League City has implemented a number of enhanced water conservation measures which are outlined below.

## 7.1 REUSE AND RECYCLING OF WASTEWATER

- The City completed the expansion and improvements of its largest wastewater treatment facility, Dallas Salmon Wastewater Treatment Plant (DSWWTP). Improvements included tertiary filtration to provide Type 1 reuse effluent quality and enhance UV disinfection performance. The City has provided irrigation water to its largest golf course for 32 years, pumping over 188 million gallons of irrigation water in 2011.

- The Southwest Water Reclamation Facility (SWWRF) was completed and online in November 2012. The facility is designed to treat 4 million gallons per day (ultimately 12 million gallons per day) and serves the City's west service area. This facility is designed to discharge Type 1 effluent quality (Title 30 TAC Chapter 210) for irrigation of large public green spaces and amenity water features.

- The City amended the Reuse Authorizations for DSWWTP and SWWRF in 2013 to provide overlapping service areas, allowing city-wide coverage and added flexibility to serve future customers.

- The City continues to explore opportunities to expand reuse distribution infrastructure and associated customer base. Period studies are utilized and updated to provide guidance on identifying potential users that can be effectively incorporated with consideration of City-wide infrastructure priorities.

## 7.2 ORDINANCES, PLUMBING CODES, OR RULES ON WATER-CONSERVING FIXTURES

The City operates under the International Plumbing Code. This code has been formally adopted by the City Council and is included in the Code of Ordinances. The City routinely inspects new construction, remodeling, add-ons, etc., through building permits to ensure installation of fixtures adheres to current codes.

The state standards call for flows of no more than 2.5 gallons per minute (gpm) for faucets, 2.5 gpm for showerheads, and 1.28 gallons per flush for toilets and 0.5 gallons per flush for urinals. Similar standards are now required nationally under federal law. These state and federal standards assure that all new construction and renovations will use water-conserving fixtures.

## 7.3 LANDSCAPE WATER CONSERVATION MEASURES

The City of League City has considered various strategies for landscape water management:

- In 2009/2010, the City took steps to remove various developments' amenity lake systems off of irrigation meters to stop the use of potable water to fill lakes.
- The City encourages the use of xeriscaping and rain water harvesting. Beginning in 2014, the City is offering a rain barrel sale and rebate program. Future initiatives to encourage residents to utilize these and other water saving devices will be forthcoming.

## 7.4 VOLUNTARY WATER CONSERVATION MEASURES

The City recommends the following voluntary year-round water use restrictions:

1. **Landscape Water Management Regulations**

- Discourage overseeding, sodding, sprigging, broadcasting or plugging with cool season grasses or watering cool season grasses, except for golf courses and competition athletic fields.
- Encourage that irrigation systems be inspected at the same time as the initial backflow preventer inspection.
- Require that all new irrigation systems be in compliance with state design and installation regulations (TAC Title 30, Part 1, Chapter 344).
- Encourage the owner of a regulated irrigation property to obtain an evaluation of any permanently installed irrigation system on a periodic basis. The irrigation evaluation shall be conducted by a licensed irrigator in the state of Texas and be submitted to the City.
- Native, drought tolerant or adaptive plants should be encouraged.
- Drip irrigation systems should be promoted.
- Evapotranspiration (ET) / Smart controllers that only allow sprinkler systems to irrigate when necessary should be promoted.

**2. Additional Water Management Measures**

- Encourage the limited use of treated water to fill or refill residential, amenity, and any other natural or manmade ponds. A pond is considered to be a still body of water with a surface area of 500 square feet or more, filled with non-potable water and not a swimming pool.
- Non-commercial car washing is encouraged to be done only using a water hose with a shut-off nozzle.
- Hotels and motels are encouraged to offer a linen reuse water conservation option to customers.
- Encourage restaurants, bars, and other commercial food or beverage establishments to consider not providing drinking water to customers unless a specific request is made by the customer for drinking water.
- Encourage commercial clothes washer to purchase and install high efficiency card- or coin-operated commercial clothes washers.

## 7.5 ADDITIONAL PRACTICES, METHODS, AND TECHNIQUES

### 7.5.1 GIS tools

GIS is a powerful analysis tool to analyze data with a spatial component. City staff will begin working with GIS staff to build a database for water conservation (including program participation, water use, violations etc.). GIS could be used to identify the locations of older homes within League City to target for retrofit incentives. As the amount of data continues to increase with League City's Advanced Metering Infrastructure Program, GIS is a potential tool to manage the data and identify where water conservation, leak detection and meter replacement programs should be targeted to achieve the greatest savings.

# 8.0 POTENTIAL FUTURE CONSERVATION PROGRAMS

## 8.1 LANDSCAPE WATER CONSERVATION MEASURES

The City of League City is in the process of exploring a mandatory no more than twice per week watering schedule, either year-round or seasonal. Implementing such an ordinance could save a utility in the Houston area between 2 percent and 7 percent from their total municipal demand.[7] In order to estimate the potential savings that the City of League City might realize, a study specific to League City would need to be conducted. The City of League City will engage its community in the future, for the purpose of getting feedback that would improve the appropriateness of a potential ordinance related to mandatory no more than twice per week watering. During the development of this potential watering schedule, the City will use the following public involvement tools to gain feedback:

- Public meeting facilitated by public relations professionals
- Social media outreach
- Informational handouts

The City of League City staff supports consideration of a potential future implementation of a water schedule which prohibits watering between 10:00 AM and 6:00 PM, limited to days that align with League City customers' trash days. Those days are summarized in **Table 8-1** below:

**Table 8-1 Potential League City Mandatory Twice Per Week Watering Schedule**

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|
| Yellow Zone of Trash Pick-Up | Green Zone of Trash Pick-Up | Blue Zone of Trash Pick-Up | Yellow Zone of Trash Pick-Up | Green Zone of Trash Pick-Up | Blue Zone of Trash Pick-Up | No Outdoor Watering |

## 8.2 RESIDENTIAL TOILET REPLACEMENT PROGRAM

Ultra low flow toilet (ULFT) replacement programs provide some of the most proven savings of all of the residential programs, when applied and implemented appropriately. ULFTs are toilets that use 1.6 gallons per flush (gpf) or less, including dual flush toilets that can flush at either 1.6 gpf or 0.8-1.0 gpf. Under this conservation measure, League City would develop and implement a program to replace existing toilets using 3.5 gpf or more in single-family and multi-family residences. As mentioned in Section 7.2, the City of League City has adopted the International Plumbing Code, which prohibits the installation of new toilets using more than 1.28 gpf and urinals using more than 0.5 gpf, so this program would be targeted to older

homes. Prior to implementation of this measure, League City would first need to analyze what percentage of its homes were built prior to 1995, and if a sufficient percentage fit that criteria, they would be targeted for this program.[5] As a wholesale customer of the City of Houston, League City might be able to partner with Houston to achieve economies of scale for the price of ULFTs.

## 8.3 SHOWERHEAD, AERATOR, AND TOILET FLAPPER RETROFIT PROGRAM

Replacing old showerheads, kitchen and bathroom faucet aerators, and toilet flappers with newer more efficient models can achieve meaningful water savings. Studies have shown that many 1.6 gpf toilets that have been installed are actually flushing at more than 1.6 gpf due to deteriorated flappers. Modern showerheads and aerators are considerably more efficient than older models. Modern showerheads achieve 2.0 gallons per minute (gpm) or less, kitchen faucet aerators 2.2 gpm or less, and bathroom faucet aerators 1.5 gpm or less. As mentioned in Section 7.2, the City of League City has adopted the International Plumbing Code, which prohibits the installation of faucets and showerheads of greater than 2.5 gpm, so this program would be targeted to older homes. Prior to implementation of this measure, League City would first need to analyze what percentage of its homes were built prior to 1995, and if a sufficient percentage fit that criteria, they would be targeted for this program.[5] As a wholesale customer of the City of Houston, League City might be able to partner with Houston to achieve economies of scale for the price of these fixtures.

## 8.4 LANDSCAPE ORDINANCES

The City of League City is projected to have substantial population growth in the next fifty years. The additional population will require additional housing. Review of existing landscape ordinances may be conducted through an inter-departmental process with regular meetings between departments. The process may include:

- Review of the existing ordinances for alignment with the goals of this Plan.
- Benchmarking of the current landscape ordinance with ordinances from other cities promoting water conservation.
- Identification of drought tolerant turf, groundcover, shrubs and trees that are allowed to be planted at new homes.

- Integrating landscape ordinances and other outdoor conservation strategies into land use planning.
- Providing opportunity for feedback from interested parties and citizens.

## 8.5 LANDSCAPE AND IRRIGATION SYSTEM INCENTIVES

City staff have identified a few potential landscape and irrigation incentive programs to reduce discretionary and peak usage.

Landscape Replacement

Expenditures and water savings vary across utilities that utilize landscape replacement programs. Transforming landscapes from turf to native, water-efficient landscaping and/or patioscape (flagstone, pavers, stepping stones, etc.) can achieve cost-effective water savings. Potential incentives include conversion to xeriscaping, patioscape, and/or mulch.

Irrigation System Incentives

Recent research has indicated a strong relationship between irrigation system flow capacity (total gallons per minute) and total water use. As irrigation system flow capacity increases, total water use tends to increase linearly. Based on this research, programs or incentives that reduce the flow capacity of the irrigation system should be effective in reducing outdoor water use. Potential incentives exist, and they are as follows:

- Irrigation nozzle replacement – converting traditional spray nozzles to MP Rotators which have a lower gallon per minute distribution rate.
- Irrigation zone retrofits – changing irrigation zones from spray nozzles to drip irrigation with associated changes in landscaping from turf to landscaped beds.
- Removing irrigation zones – capping and removing a zone from the irrigation system since that area has been converted and no longer requires irrigation.
- Pressure Reducing Valves – these can be utilized for area with high pressure that cause misting and irrigation nozzles to operate outside of the specified pressure.

- Smart irrigation controllers – these can reduce excessive irrigation by automatically adjusting watering schedules on the basis of site conditions.

## 8.6 ADVANCED COMMUNITY ENGAGEMENT

As the City of League City embarks on expanding the portfolio of conservation initiatives, community support will be essential. City staff intends to engage as many stakeholders as possible as early as possible to ensure success. Below is a list of potential new ways to stimulate conversation, although the City intends to continue running its current outreach programs, and consider other new engagement opportunities not listed below.

Homebuilder/HOA Coordination

Cultivating positive relationships with homebuilders and HOAs will be essential to potential ordinance changes identified in Section 8.1 and Section 8.5. During the conceptualization and development of the potential ordinance changes, early collaboration with this industry will help craft regionally appropriate language, and foster buy-in within the regulated sector. Establishing these connections will not only break down silos, but will also streamline the process of enforcing and refining the regulations.

Demonstration Gardens

City of League is exploring free seminars designed to educate the community on ways to reduce discretionary usage. A potential future implementation of this program would further awareness within the community.

Leverage Community Organizations

Utilities are increasingly recognizing that their Conservation staff cannot be in the community as often as needed. For this reason, the WCAC adopted the Partnerships with Nonprofit Organizations BMP, which recommends taking advantage of volunteer organizations with diverse memberships to bolster staff efforts. Contracts with County Master Gardeners, the Audubon Society, and many other organizations would help raise awareness within the community. These groups may be compensated for the amount of outreach they perform via “performance agreements” and are expected to deliver their results. They are paid a pre-approved amount that is modified according to event attendance. By activating knowledgeable members of the community, a utility can increase the number of customer interactions, reduce the unit

cost of those interactions, and the partner organizations benefit from greater exposure with the community.

## 8.7 IRRIGATION DESIGN CRITERIA

As part of the requirement that all new irrigation systems be in compliance with state design and installation regulations (Texas Administrative Code Title 30, Chapter 344) the City of League City reviews irrigation design during development reviews. The reviews verify that the landscape design meets state and City standards. In the future, it is possible that the City may align their design criteria with best practices identified in Section 8.5. The City of League City may evaluate these design standards in an effort to align them with water conservation program goals.

## 8.8 ADVANCED LEAK DETECTION AND REPAIR

The City of League City is pursuing a contract with the provider of satellite-based leak detection services. This solution can accurately locate water loss over thousands of square kilometers, representing a more efficient use of human and financial resources. Areas of the water distribution system in which numerous leaks and line breaks occur are targeted for replacement as funds are available. To track its progress in reducing water losses, the City will perform a monthly water audit, comparing the amount of water purchased from Houston and GCWA and self-supplied with that distributed through metered sales. A report is prepared outlining the monthly variance in percentage of water loss. The City also performs an annual audit comparing the same data on a calendar year basis. Since implementing its AMI system, League City's capability to track water use and manage the operations of its water distribution system have improved. This gives League City the capability of locating leaks at a customer's location, thereby informing the customer of potential leaks for the customer to repair and reducing the amount of water losses. Supervisory Control and Data Acquisition (SCADA) allows League City to monitor water pressure in various sections of the distribution system and make pressure adjustments quickly. All of these programs over the next few years are in an effort to achieve the water loss goals identified in Section 5 of this Plan.

# 9.0 ADOPTION OF WATER CONSERVATION PLAN; PERIODIC REVIEW AND UPDATE OF PLAN

Appendix E contains a copy of the minutes of the August 13, 2019 City Council meeting at which this Water Conservation Plan was adopted. The resolution designates responsible officials to implement the Water Conservation Plan.

TCEQ requires that water conservation plans be reviewed and, if necessary, updated every five years to coincide with the regional water planning process. This Water Conservation Plan will be updated as required by TCEQ, and in addition, will be continually reassessed for opportunities to improve water efficiency and conservation based on new or updated information.

# *Appendix A*

# *List of References*

# Appendix A

## List of References

1. Texas Commission on Environmental Quality Annual Report. https://www.tceq.texas.gov/assets/public/permitting/forms/20645.pdf

2. Title 30 of the Texas Administrative Code, Part 1, Chapter 288, Subchapter A, Rules 288.1 and 288.5, and Subchapter B, Rule 288.22, downloaded from http://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=4&ti=30&pt=1&ch=288, January 2019.

3. Gulf Coast Water Authority, "Water Conservation Plan for Gulf Coast Water Authority", prepared by Freese and Nichols, October 2012

4. City of Houston, "Water Conservation Plan", prepared by City of Houston, September 2014.

5. Water Conservation Implementation Task Force: "Texas Water Development Board Report 362, Water Conservation Best Management Practices Guide," prepared for the Texas Water Development Board, Austin, November 2004

6. Texas Water Development Board, Texas Commission on Environmental Quality, Water Conservation Advisory Council. "Guidance and Methodology for Water Conservation Reporting."

7. Texas Living Waters Project. "Water Conservation By The Yard: A Statewide Analysis of Outdoor Water Savings Potential.", March 2018

# *Appendix B*

# *Texas Commission on Environmental Quality Rules*

Appendix B

Texas Commission on Environmental Quality Rules on Municipal Water Conservation and Drought Contingency Plans

**TITLE 30** ENVIRONMENTAL QUALITY

**PART 1** TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

**CHAPTER 288** WATER CONSERVATION PLANS, DROUGHT CONTINGENCY PLANS, GUIDELINES AND REQUIREMENTS

**SUBCHAPTER A** WATER CONSERVATION PLANS

**RULE §288.1** **Definitions**

---

The following words and terms, when used in this chapter, shall have the following meanings, unless the context clearly indicates otherwise.

(1) Agricultural or Agriculture--Any of the following activities:

(A) cultivating the soil to produce crops for human food, animal feed, or planting seed or for the production of fibers;

(B) the practice of floriculture, viticulture, silviculture, and horticulture, including the cultivation of plants in containers or non-soil media by a nursery grower;

(C) raising, feeding, or keeping animals for breeding purposes or for the production of food or fiber, leather, pelts, or other tangible products having a commercial value;

(D) raising or keeping equine animals;

(E) wildlife management; and

(F) planting cover crops, including cover crops cultivated for transplantation, or leaving land idle for the purpose of participating in any governmental program or normal crop or livestock rotation procedure.

(2) Agricultural use--Any use or activity involving agriculture, including irrigation.

(3) Best management practices--Voluntary efficiency measures that save a quantifiable amount of water, either directly or indirectly, and that can be implemented within a specific time frame.

(4) Conservation--Those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses.

(5) Commercial use--The use of water by a place of business, such as a hotel, restaurant, or office building. This does not include multi-family residences or agricultural, industrial, or institutional users.

(6) Drought contingency plan--A strategy or combination of strategies for temporary supply and demand management responses to temporary and potentially recurring water supply shortages and other water supply emergencies. A drought contingency plan may be a separate document identified as such or may be contained within another water management document(s).

(7) Industrial use--The use of water in processes designed to convert materials of a lower order of value into forms having greater usability and commercial value, and the development of power by means other than hydroelectric, but does not include agricultural use.

(8) Institutional use--The use of water by an establishment dedicated to public service, such as a school, university, church, hospital, nursing home, prison or government facility. All facilities dedicated to public service are considered institutional regardless of ownership.

(9) Irrigation--The agricultural use of water for the irrigation of crops, trees, and pastureland, including, but not limited to, golf courses and parks which do not receive water from a public water supplier.

(10) Irrigation water use efficiency--The percentage of that amount of irrigation water which is beneficially used by agriculture crops or other vegetation relative to the amount of water diverted from the source(s) of supply. Beneficial uses of water for irrigation purposes include, but are not limited to, evapotranspiration needs for vegetative maintenance and growth, salinity management, and leaching requirements associated with irrigation.

(11) Mining use--The use of water for mining processes including hydraulic use, drilling, washing sand and gravel, and oil field re-pressuring.

(12) Municipal use--The use of potable water provided by a public water supplier as well as the use of sewage effluent for residential, commercial, industrial, agricultural, institutional, and wholesale uses.

(13) Nursery grower--A person engaged in the practice of floriculture, viticulture, silviculture, and horticulture, including the cultivation of plants in containers or nonsoil media, who grows more than 50% of the products that the person either sells or leases, regardless of the variety sold, leased, or grown. For the purpose of this definition, grow means the actual cultivation or propagation of the product beyond the mere holding or maintaining of the item prior to sale or lease, and typically includes activities associated with the production or multiplying of stock such as the development of new plants from cuttings, grafts, plugs, or seedlings.

(14) Pollution--The alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any water in the state that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property, or to the public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.

(15) Public water supplier--An individual or entity that supplies water to the public for human consumption.

(16) Residential use--The use of water that is billed to single and multi-family residences, which applies to indoor and outdoor uses.

(17) Residential gallons per capita per day--The total gallons sold for residential use by a public water supplier divided by the residential population served and then divided by the number of days in the year.

(18) Regional water planning group--A group established by the Texas Water Development Board to prepare a regional water plan under Texas Water Code, §16.053.

(19) Retail public water supplier--An individual or entity that for compensation supplies water to the public for human consumption. The term does not include an individual or entity that supplies water to itself or its employees or tenants when that water is not resold to or used by others.

(20) Reuse--The authorized use for one or more beneficial purposes of use of water that remains unconsumed after the water is used for the original purpose of use and before that water is either

disposed of or discharged or otherwise allowed to flow into a watercourse, lake, or other body of state-owned water.

(21) Total use--The volume of raw or potable water provided by a public water supplier to billed customer sectors or nonrevenue uses and the volume lost during conveyance, treatment, or transmission of that water.

(22) Total gallons per capita per day (GPCD)--The total amount of water diverted and/or pumped for potable use divided by the total permanent population divided by the days of the year. Diversion volumes of reuse as defined in this chapter shall be credited against total diversion volumes for the purposes of calculating GPCD for targets and goals.

(24) Water conservation plan--A strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water. A water conservation plan may be a separate document identified as such or may be contained within another water management document(s).

(24) Water conservation plan--A strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water. A water conservation plan may be a separate document identified as such or may be contained within another water management document(s).

(25) Wholesale public water supplier--An individual or entity that for compensation supplies water to another for resale to the public for human consumption. The term does not include an individual or entity that supplies water to itself or its employees or tenants as an incident of that employee service or tenancy when that water is not resold to or used by others, or an individual or entity that conveys water to another individual or entity, but does not own the right to the water which is conveyed, whether or not for a delivery fee.

(26) Wholesale use--Water sold from one entity or public water supplier to other retail water purveyors for resale to individual customers.

Source Note: The provisions of this §288.1 adopted to be effective May 3, 1993, 18 TexReg 2558; amended to be effective February 21, 1999, 24 TexReg 949; amended to be effective April 27, 2000, 25 TexReg 3544; amended to be effective August 15, 2002, 27 TexReg 7146; amended to be effective October 7, 2004, 29 TexReg 9384; amended to be effective January 10, 2008, 33 TexReg 193; amended to be effective December 6, 2012, 37 TexReg 9515; amended to be effective August 16, 2018, 43 TexReg 5218

| | |
|---|---|
| **TITLE 30** | ENVIRONMENTAL QUALITY |
| **PART 1** | TEXAS COMMISSION ON ENVIRONMENTAL QUALITY |
| **CHAPTER 288** | WATER CONSERVATION PLANS, DROUGHT CONTINGENCY PLANS, GUIDELINES AND REQUIREMENTS |
| **SUBCHAPTER A** | WATER CONSERVATION PLANS |
| **RULE §288.2** | **Water Conservation Plans for Municipal Uses by Public Water Suppliers** |

(a) A water conservation plan for municipal water use by public water suppliers must provide information in response to the following. If the plan does not provide information for each requirement, the public water supplier shall include in the plan an explanation of why the requirement is not applicable.

(1) Minimum requirements. All water conservation plans for municipal uses by public water suppliers must include the following elements:

(A) a utility profile in accordance with the Texas Water Use Methodology, including, but not limited to, information regarding population and customer data, water use data (including total gallons per capita per day (GPCD) and residential GPCD), water supply system data, and wastewater system data;

(B) a record management system which allows for the classification of water sales and uses into the most detailed level of water use data currently available to it, including, if possible, the sectors listed in

clauses (i) - (vi) of this subparagraph. Any new billing system purchased by a public water supplier must be capable of reporting detailed water use data as described in clauses (i) - (vi) of this subparagraph:

(i) residential;

(I) single family;

(II) multi-family;

(ii) commercial;

(iii) institutional;

(iv) industrial;

(v) agricultural; and,

(vi) wholesale.

(C) specific, quantified five-year and ten-year targets for water savings to include goals for water loss programs and goals for municipal use in total GPCD and residential GPCD. The goals established by a public water supplier under this subparagraph are not enforceable;

(D) 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;

(E) a program for universal metering of both customer and public uses of water, for meter testing and repair, and for periodic meter replacement;

(F) 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.);

(G) a program of continuing public education and information regarding water conservation;

(H) 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;

(I) 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; and

(J) a means of implementation and enforcement which shall be evidenced by:

(i) a copy of the ordinance, resolution, or tariff indicating official adoption of the water conservation plan by the water supplier; and

(ii) a description of the authority by which the water supplier will implement and enforce the conservation plan; and

(K) 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.

(2) Additional content requirements. Water conservation plans for municipal uses by public drinking water suppliers serving a current population of 5,000 or more and/or a projected population of 5,000 or more within the next ten years subsequent to the effective date of the plan must include the following elements:

(A) a program of leak detection, repair, and water loss accounting for the water transmission, delivery, and distribution system;

(B) 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.

(3) Additional conservation strategies. Any combination of the following strategies shall be selected by the water supplier, in addition to the minimum requirements in paragraphs (1) and (2) of this subsection, if they are necessary to achieve the stated water conservation goals of the plan. The commission may

require that any of the following strategies be implemented by the water supplier if the commission determines that the strategy is necessary to achieve the goals of the water conservation plan:

(A) 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;

(B) 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;

(C) a program for the replacement or retrofit of water-conserving plumbing fixtures in existing structures;

(D) reuse and/or recycling of wastewater and/or graywater;

(E) a program for pressure control and/or reduction in the distribution system and/or for customer connections;

(F) a program and/or ordinance(s) for landscape water management;

(G) a method for monitoring the effectiveness and efficiency of the water conservation plan; and

(H) 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.

(b) A water conservation plan prepared in accordance with 31 TAC §363.15 (relating to Required Water Conservation Plan) of the Texas Water Development Board and substantially meeting the requirements of this section and other applicable commission rules may be submitted to meet application requirements in accordance with a memorandum of understanding between the commission and the Texas Water Development Board.

(c) 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 every five years to coincide with the regional water planning group.

**Source Note:** The provisions of this §288.2 adopted to be effective May 3, 1993, 18 TexReg 2558; amended to be effective February 21, 1999, 24 TexReg 949; amended to be effective April 27, 2000, 25 TexReg 3544; amended to be effective October 7, 2004, 29 TexReg 9384; amended to be effective December 6, 2012, 37 TexReg 9515

# *Appendix C*

# *City of League City Water Utility Profile Based on TCEQ Form*

**Texas Commission on Environmental Quality**

**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 development. If you need assistance in completing this form or in developing your plan, please contact the conservation staff of the Resources Protection Team in the Water Availability Division at (512)239-4691.

## City of League City - Utility Profile Based on TCEQ Format

| | |
|---|---|
| Name: | City of League City |
| Address: | 300 W Walker |
| | League City, TX 77573 |
| Telephone Number: | 281-554-1321 |
| Water Right No.(s): | |
| Regional Water Planning Group: | Region H |
| Form Completed by: | Adam Conner |
| Title: | Freese and Nichols |
| Person responsible for implementing conservation program: | Jody Hooks |
| Signature: | Date: 8/14/2019 |

NOTE: If the plan does not provide information for each requirement, include 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.
   See figure of service area in WCP

2. Service area size (square miles): 54

3. Current population of service area: 106,244

4. Current population served for:
   a. water: 106,244
   b. wastewater: 106,244

5. Population served by utility for the previous five years:

| *Year* | *Population* |
|---|---|
| 2014 | 94,264 |
| 2015 | 98,149 |
| 2016 | 100,053 |
| 2017 | 102,635 |
| 2018 | 106,244 |

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

| *Year* | *Population* |
|---|---|
| 2020 | 109,408 |
| 2030 | 123,301 |
| 2040 | 133,984 |
| 2050 | 142,761 |
| 2060 | 147,813 |

7. List source or method for the calculation of current and projected population size.
   *Previous and current populations are based on the US Census Bureau. Projected population is from the draft 2021 Region H Water Plan.*

#### *B. Customers 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.
http://www.tceq.texas.gov/assets/public/ permitting/watersupply/water_rights/sb181_guidance.pdf

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

*Note: This represents retail connection count in 2018*

| *Treated Water Users* | *Metered* | *Non-Metered* | **Totals** |
|---|---|---|---|
| Residential - Single Family | 32,034 | | 32,034 |
| Residential - Multi Family | 189 | | 189 |
| Institutional | 0 | | 0 |
| Commercial | 1,869 | | 1,869 |
| Industrial | 0 | | 0 |
| Agriculture | 0 | | 0 |
| Total Unmetered | 0 | 0 | 0 |
| **TOTAL** | **34,092** | **0** | **34,092** |

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

| *Year* | *2016* | *2017* | *2018* |
|---|---|---|---|
| *Treated Water Users* | | | |
| Residential - Single Family | 745 | 778 | 680 |
| Residential - Multi Family | -10 | 1 | 9 |
| Institutional | -5 | -27 | 0 |
| Commercial | 144 | 70 | 15 |
| Industrial | 0 | 0 | 0 |
| Agriculture | 0 | 0 | 0 |
| Total Unmetered | 0 | 0 | 0 |
| **TOTAL** | **874** | **822** | **704** |

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

*Note: This represents highest retail customers in 2018*

| *Customer* | *Use (1,000 gal/year)* | *Treated or Raw Water* |
|---|---|---|
| 1. CCISD | 90,141 | Treated |
| 2. Tuscan Lakes CAI | 42,398 | Treated |
| 3. Westover Park Community Association | 23,386 | Treated |
| 4. Avana @ South Shore Apts | 20,635 | Treated |
| 5. Fairways @ SSH Apts | 20,132 | 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* / *Month* | *2014* | *2015* | *2016* | *2017* | *2018* |
|---|---|---|---|---|---|
| January | 281,613 | 261,236 | 267,432 | 279,816 | 300,030 |
| February | 252,019 | 243,354 | 264,963 | 257,991 | 253,317 |
| March | 283,438 | 246,301 | 296,347 | 306,135 | 327,659 |
| April | 304,028 | 269,221 | 293,292 | 334,219 | 347,343 |
| May | 360,001 | 315,363 | 319,799 | 409,515 | 456,917 |
| June | 385,767 | 327,216 | 334,729 | 363,356 | 430,444 |
| July | 394,006 | 464,171 | 453,568 | 413,431 | 462,855 |
| August | 417,251 | 455,578 | 396,144 | 383,836 | 488,792 |
| September | 341,241 | 340,422 | 358,580 | 381,471 | 318,438 |
| October | 343,316 | 366,096 | 397,279 | 373,647 | 310,939 |
| November | 277,683 | 274,100 | 340,616 | 329,705 | 281,961 |
| December | 265,342 | 265,926 | 275,370 | 290,220 | 277,597 |
| **Totals** | **3,905,705** | **3,828,984** | **3,998,119** | **4,123,342** | **4,256,292** |

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 enteres the treatment plant, or from water sales).

*Surface water purchased from the City of Houston and GCWA. Groundwater is self-supplied.*

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

| *Year* / *Account Types* | *2014* | *2015* | *2016* | *2017* | *2018* |
|---|---|---|---|---|---|
| Residential | 2,559,391 | 2,517,789 | 2,580,615 | 2,679,250 | 2,920,656 |
| *Single-Family* | *2,241,198* | *2,198,229* | *2,250,083* | *2,344,237* | *2,589,015* |
| *Multi-Family* | *318,193* | *319,560* | *330,532* | *335,013* | *331,641* |
| Commercial | 820,246 | 680,154 | 771,771 | 847,190 | 829,928 |
| Institutional | 0 | 61,407 | 70,079 | 0 | 0 |
| Industrial | 0 | 0 | 0 | 0 | 0 |
| Agriculture | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **3,379,637** | **3,259,350** | **3,422,465** | **3,526,440** | **3,750,584** |

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

| *Year* | *Amount (gallons)* | *Percent* |
|---|---|---|
| 2014 | 310,129,385 | 7.9% |
| 2015 | 519,688,292 | 13.3% |
| 2016 | 606,251,849 | 14.9% |
| 2017 | 589,094,222 | 14.1% |
| 2018 | 422,848,446 | 9.9% |

### *B. Projected Water Demands*

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.

| **Year** | **Projected Demand (AF/Y)** | **Source of data** |
|---|---|---|
| 2018 | 13,062 | Historical Demand |
| 2019 | 13,804 | *Interpolated* |
| 2020 | 14,545 | 2021 Region H Water Plan |
| 2021 | 14,695 | *Interpolated* |
| 2022 | 14,845 | *Interpolated* |
| 2023 | 14,995 | *Interpolated* |
| 2024 | 15,145 | *Interpolated* |
| 2025 | 15,295 | *Interpolated* |
| 2026 | 15,444 | *Interpolated* |
| 2027 | 15,594 | *Interpolated* |
| 2028 | 15,744 | *Interpolated* |

*Note: Projections include TWDB estimated reductions for plumbing fixtures. Projections are from the draft 2021 Region H Plan as approved by TWDB for the City of League City WUG.*

## III. WATER SUPPLY SYSTEM DATA

### *A. Water Supply Sources*

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

| *Water Type* | *Source* | *Amount Authorized* |
|---|---|---|
| Surface Water | | |
| Groundwater | Permit from Harris-Galveston Subsidence District | 1,230.62 AF/year (401 MG/year) |
| Contracts | Contract with Gulf Coast Water Authority Mackey WTP | 2,849.64 AF/year |
| Other | Contract with Gulf Coast Water Authority SEWPP | 25,203.24 AF/year |
| **Total** | | **29,283.5 AF/year** |

***B. Treatment and Distribution System***

1. Design daily capacity of system: 78.61 MGD

| Treatment Plant | Design Capacity (MGD) | Reliable Pumping Capacity (MGD) |
|---|---|---|
| South Shore BPS | | 1.81 |
| Northside BPS | | 2.16 |
| Calder BPS | | 2.88 |
| Dickinson BPS | | 0.59 |
| Walker Well Station | | 1.01 |
| Third Street Well Station | | 0.79 |
| Countryside Well Station | | 1.66 |
| Eastside EST | | 1.16 |
| Total | | 12.05 (see note below) |

*Note:* ***Treatment Plant Reliable Pumping Capacity above represents only treatment infrastructure that Leage City owns****, which are groundwater well sites. Design daily capacity of system represents the capacity of the distribution system, and is* ***78.61 MGD (or 54,590 gpm)****. Contractually, the City of League City purchases treated wholesale surface water from GCWA. Physically, the water comes from two different sources: the City of Houston's Southeast Water Purification Plant and the Thomas Mackey Water Treatment Plant that is owned by the GCWA.*

2. Storage capacity: 34.48 MG

a. Elevated 6 MG
b. Ground 28.48 MG
*Source: 2018 Water Master Plan*

3. If surface water, do you recycle filter backwash to the head of the plant?
☐ Yes ☐ No If yes, approximate amount (MGD):
*City of League City does not own or operate any water treatment plants.*

**IV. WASTEWATER SYSTEM DATA**

***A. Wastewater System Data (if applicable)***

1. Design capacity of wastewater treatment plant(s) (MGD): 48.0

2. Treated effluent is used for:
☑ on-site irrigation,
☑ off-site irrigation,
☑ plant wash-down, and or
☐ chlorination/dechlorination.
If yes, approximate amount (in gallons per month): 21.9 million
*Note: This represents estimated reuse volume in 2018 (golf course irrigation and plant wash down).*

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.

| Treatment Plant Name | TCEQ Number | Permitted Discharge (MGD) | Operator | Owner | Receiving Stream |
|---|---|---|---|---|---|
| Dallas Salmon WRF | WQ0010568005 | 12.0 | | City of League City | Outfall 001 to unnamed drainage ditch then Clear Creek Tidal (interim), Outfall 001 to Clear Creek Tidal in Segment No. 1101 (final) |
| Southwest WRF | WQ0010568008 | 4.0 | | City of League City | Manmade ditch, then to Magnolia Creek, then to Clear Creek Tidal in Segment No. 1101 |

***B. Wastewater Data for Service Area (if applicable)***

1. Percent of water service area served by wastewater system: 100%

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

| *Year* | *2014* | *2015* | *2016* | *2017* | *2018* |
|---|---|---|---|---|---|
| *Month* | | | | | |
| January | 211,587 | 294,215 | 292,299 | 294,928 | 313,386 |
| February | 183,402 | 199,618 | 232,220 | 237,522 | 295,094 |
| March | 211,785 | 303,649 | 279,617 | 273,077 | 258,724 |
| April | 189,881 | 278,008 | 297,617 | 282,093 | 218,892 |
| May | 229,205 | 321,306 | 288,276 | 246,255 | 219,052 |
| June | 213,554 | 285,338 | 325,114 | 271,578 | 239,029 |
| July | 217,803 | 206,089 | 241,331 | 245,493 | 263,445 |
| August | 203,592 | 251,696 | 311,151 | 423,176 | 248,315 |
| September | 258,908 | 287,801 | 254,290 | 237,472 | 431,567 |
| October | 219,089 | 290,481 | 222,991 | 241,602 | 370,631 |
| November | 232,149 | 291,858 | 220,033 | 217,548 | 305,089 |
| December | 262,027 | 265,478 | 313,688 | 299,953 | 330,518 |
| **Totals** | **2,632,982** | **3,275,537** | **3,278,627** | **3,270,697** | **3,493,742** |

# *Appendix D*

# *Letters to Region H Water Planning Group, City of Houston, and GCWA*

August 14, 2019

Mr. Mark Evans, Chair
Region H Water Planning Group
c/o North Harris County Regional Water Authority
3648 Cypress Creek Parkway, Suite 110
Houston, TX 77068

Dear Mr. Evans:

Enclosed please find a copy of the 2019 *Water Conservation Plan* for the City of League City. I am submitting a copy of this plan to the Region H Water Planning Group in accordance with the Texas Water Development Board and Texas Commission on Environmental Quality rules. The City Council of League City adopted the Plan on August 13, 2019.

Sincerely,

Jody Hooks
Director of Public Works
City of League City

August 14, 2019

Yvonne Forrest, Deputy Director
City of Houston
611 Walker, 21st Floor
Houston, TX 77002

Dear Ms. Forrest:

Enclosed please find a copy of the 2019 *Water Conservation Plan* for the City of League City. I am submitting a copy of this plan to the City of Houston in accordance with the Texas Water Development Board and Texas Commission on Environmental Quality rules. The City Council of League City adopted the Plan on August 13, 2019.

Sincerely,

Jody Hooks
Director of Public Works
City of League City

August 14, 2019

Ivan Langford, General Manager
Gulf Coast Water Authority
3630 FM 1765
Texas City, TX 77591

Dear Mr. Langford:

Enclosed please find a copy of the 2019 *Water Conservation Plan* for the City of League City. I am submitting a copy of this plan to the Gulf Coast Water Authority in accordance with the Texas Water Development Board and Texas Commission on Environmental Quality rules. The City Council of League City adopted the Plan on August 13, 2019.

Sincerely,

Jody Hooks
Director of Public Works
City of League City

# *Appendix E*

# *Adoption of the Water Conservation Plan*