ORDINANCE TO ADOPT THE CITY OF CORPUS CHRISTI WATER CONSERVATION PLAN REVISED 2020 EDITION

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CORPUS CHRISTI, TEXAS:

SECTION 1. That the City of Corpus Christi hereby adopts the City of Corpus Christi Water Conservation Plan Revised 2020 edition, which is attached and incorporated as Exhibit A. The 2020 edition replaces the prior edition of the Water Conservation Plan.

SECTION 2. That City Code of Ordinances, Chapter 55, Article XII Water Resource Management, Section 55-150 (a) is revised to replace the Water Conservation Plan approved on May 28, 2013 with the Water Conservation Plan Revised 2020 edition as follows:

Sec. 55-150. - Scope, purpose, authorization, and definitions.

(a) *Scope.* There is hereby established a City of Corpus Christi Water Conservation Plan and Drought Contingency Plan. The City of Corpus Christi Water Conservation Plan ~~approved on May 28, 2013~~ Revised 2020 edition, and the Drought Contingency Plan Revised 2018 edition, approved January 30, 2018, as amended by ordinance, a true copy of each which is on file in the office of the city secretary, ~~is~~ have been adopted, and shall be followed in matters concerning water conservation, drought management, and water supply enhancement programs.

SECTION 3. This Ordinances takes effect upon publication.

The foregoing ordinance was read for the first time and passed to its second reading on this the _____ day of _____, 2020, by the following vote:

Joe McComb _____	Michael Hunter _____
Roland Barrera _____	Ben Molina _____
Rudy Garza _____	Everett Roy _____
Paulette M. Guajardo _____	Greg Smith _____
Gil Hernandez _____	

The foregoing ordinance was read for the second time and passed finally on this the _____day of_____, 2020, by the following vote:

Joe McComb _____ Michael Hunter _____

Roland Barrera _____ Ben Molina _____

Rudy Garza _____ Everett Roy _____

Paulette M. Guajardo _____ Greg Smith _____

Gil Hernandez _____

PASSED AND APPROVED _____ day of _____, 2020.

ATTEST:

_____ _____

Rebecca Huerta
City Secretary

Joe McComb
Mayor

City of Corpus Christi

WATER CONSERVATION *Plan*

REVISED 2020

Water Conservation Plan

2020

City of Corpus Christi, Texas

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Appendices

Water Conservation Plan

1. Introduction

This Water Conservation Plan (WCP) is a guidebook and reference manual for the City of Corpus Christi Water Utilities, its partners and customers. This chapter outlines the background of the City of Corpus Christi's Water Utilities, the purpose and reasoning of the WCP, expected results, and an overview of its layout and organization.

1.1 Background of the Water Utilities Department

The City of Corpus Christi Water Utilities has been in operation for over 100 years. It serves nearly 500,000 residents in Corpus Christi and the Coastal Bend Region.

Its mission is to effectively manage the City's water supply, production, and distribution system through the operation and maintenance of the water supply system in order to meet water supply needs; to provide safe drinking water; to review design and construction of water facilities that will ensure water system quantity and reliability to meet projected growth; and to identify and meet consumer needs and expectations.

The Water Utilities supplies water for municipal and industrial use in a seven-county service area. Major raw (untreated) water customers include municipalities such as Alice Water Authority, Beeville Water Supply District, City of Mathis, and San Patricio Municipal Water District and industries such as Celanese and Flint Hills Resources. Treated water customers include Nueces County Water Improvement District No. 4 (Port Aransas), San Patricio Municipal Water District, South Texas Water Authority, and the Violet Water Supply Corporation. The Water Utilities operates a water laboratory and water maintenance activity that oversees the repair and replacement of transmission and distribution water lines.

The Water Utilities also has a well-established conservation program. The City was the first in Texas to develop a Drought Contingency Plan in 1986, which served as a guide for state officials. Since 1988 there has been a conservation coordinator and/or team of professionals developing and implementing outreach programs to help reduce water waste and improve efficiency. Conservation outreach includes everything from school education to the Xeriscape Garden and is explained in detail in Chapter 5.

1.2 Purpose of the Plan

The purpose of this WCP is to ensure long-term water security and efficiency for the residents and businesses served by the City of Corpus Christi Water Utilities. This long-term planning and management is critical so that supplies of water will always meet and exceed the demands of Coastal Bend customers. It allows water supplies to be sustainable as the region grows. Short- term water security and planning during dry times is explained in a separate Drought Contingency Plan, which can be found in the City Water Utilities website .

As a water supplier, the City of Corpus Christi's Plan must adhere to Title 30 of the Texas Administrative Code (TAC) Chapter 288 (30 TAC § 288). This Plan contains all the provisions required in 30 TAC § 288 including conservation plans for municipal users, wholesale providers, a model plan for industrial users, and a drought contingency plan.

General and specific goals of the Plan are explained in Chapter 4.

1.3 Public Involvement

The City provided citizens opportunity to learn about the plan during the Council meeting on September 29, 2020, citizens were also given an opportunity to become informed, ask questions, and provide feedback about the plan. The notice was posted on the official electronic bulletin board in the atrium of Corpus Christi City Hall.

1.4 Organization of the Water Conservation Plan

This revised WCP is organized in a way to make information easy to find and understand. This Plan is a separate document from the Drought Contingency Plan (DCP). The chapters guide the reader through the most important issues and are shown below. Supporting documents are in the appendix section to assist the reader in understanding the plans contents.

- **Chapter 1:** Introduction – the basics of the Water Utilities Department, purpose of the Plan, and organization of the Plan.
- **Chapter 2:** Supply Profile – details on the supply of the Water Utilities Department including the water sources, distribution system, and water treatment plant.
- **Chapter 3:** Demand Profile – details on the current customer population and demand, and estimated projections of future population and demands. Demands are provided in totals and divided into sectors.
- **Chapter 4:** Goals – benefits of conservation; overall water planning and conservation goals; quantifiable five- and ten-year conservation goals and water loss goals based on per capita consumption.
- **Chapter 5:** Water Conservation Practices – efforts that encourage and/or enforce the conservation of water, or that increase the efficiency of water use.
- **Chapter 6:** Wholesale Customer Conservation – goals that the City encourages its wholesale customers to adopt.
- **Appendices:** include the Utility Profile, Summary of Texas Commission on Environmental Quality (TCEQ) 2001 Agreed Order, Water Rates, Reservoir Operating Plan, Water Resource Management Code of Ordinance, Model Industrial Water Conservation Plan, and a supplemental document to the Corpus Christi Water Conversation Plan to address TAC 288.7.
- ***Note: Model Industrial Water Conservation Plan*** *– This water conservation model highlights best management practices that could be implemented for industrial customers who are required to submit an individual water conservation plan to the TCEQ.*

2. Supply Profile

This Chapter explains the four sources from which the City gets water supply to its customers in the Coastal Bend region. In addition to the supply sources, the distribution system, water treatment plant, and the wastewater utility profile are briefly explained.

2.1 Supply Sources

The City of Corpus Christi Water Utilities obtains its raw water solely from surface water sources. These surface water bodies are Lake Corpus Christi, Choke Canyon Reservoir, Lake Texana and the Colorado River of each of these water bodies are explained below.

Lake Corpus Christi

Lake Corpus Christi is a water storage reservoir located approximately 33 miles northwest of the City. It was completed on April 26, 1958 with the dedication of the Wesley Seale Dam. When full, the lake level is 94 feet above sea level and has a capacity of 256,339 acre-feet (83.5 billion gallons). The surface area of the reservoir is 19,748 acres (30.8 mi^2).

Lake Corpus Christi is part of the Nueces River Basin (or watershed). It receives inflow from the Nueces, Frio, and Atascosa Rivers. Inflow from the Frio River also goes through the Choke Canyon Reservoir. Supply in Lake Corpus Christi relies on rainfall in the Nueces/Frio River basins. These two watersheds covers a combined area of 16,764 square miles and reach as far north as Rocksprings in Edwards county, and west close to Eagle Pass in Maverick County.

Choke Canyon Reservoir

Choke Canyon Reservoir is located approximately 70 miles northwest of Corpus Christi. It has a capacity of 662,821 acre-feet (215 billion gallons). When it is full, the water level is 220.5 feet above sea level, and the surface area is 25,989 acres (39.7 mi^2).

The United States Bureau of Reclamation financed, designed, and built the reservoir, which was dedicated on June 8, 1982. The City operates and maintains the facility.

Choke Canyon Reservoir receives inflow from the Frio River Watershed. This watershed covers an area of 5,529 square miles from Three Rivers in the south to Kerr County in the north. Water from the reservoir travels down into the Frio River, which flows into the Nueces River and then Lake Corpus Christi.

Lake Texana

The third surface source of water for the City is Lake Texana in Jackson County, located approximately 90 miles northeast of Corpus Christi. When full, the lake has a capacity of 161,085 acre-feet (52.5 billion gallons) and the water level is 44 feet above sea level. Its surface area when full is 9,727 acres (15.2 mi^2).

Lake Texana was formed with the completion of the Palmetto Bend Dam in 1980 by the U.S. Bureau of Reclamation. It is on the Navidad River, which is part of the Lavaca River Basin and mainly flows through Lavaca and Jackson Counties. The Lake is currently owned and operated by the Lavaca-Navidad River Authority (LNRA).

The City contracted 41,840 acre-feet from LNRA in the 1990s after a severe drought between 1993 and 1996. During that time, Nueces River Basin stream-flows were the lowest recorded, even lower than the much-remembered 1950s Drought. The City is currently contracted to divert 31,440 acre-feet after the LNRA recalled 10,400 acre-feet.

The City of Corpus Christi, the City, the Nueces River Authority, the Port of Corpus Christi, and the Lavaca-Navidad River Authority worked together to deliver water via a new pipeline from Lake Texana to the City. The 101-mile-long pipeline was named for the late Mary Rhodes, mayor of Corpus Christi from 1991 to 1997, in recognition of her special contribution to the development of water resources for the residents and industries of the Coastal Bend. The pipeline came online in September 1998. It pumps water through a 64-inch pipeline from Lake Texana directly to the O.N. Stevens Water Treatment Plant in Calallen. Approximately 40 to 70 percent of the water used by Corpus Christi comes from Lake Texana through the Mary Rhodes Pipeline.

Colorado River

On September 22nd, 1992 the City of Corpus Christi entered into a contract with the Garwood Irrigation Company to purchase a portion of the Garwood's watertight. The City can purchase up to 35,000 acre-foot per year of the168,000 acre-foot per year. In 2010 the City of Corpus Christi began the initial steps of planning and designing Mary Rhodes Pipeline Phase II and construction of the 42-mile pipeline started in April 2014. The project consisted of a pipeline, a pump station, and a sedimentation basin that starts at the Colorado River near Bay City and connects to Phase I of the pipeline at Lake Texana.

A map of the regional water supply system and watershed is shown in Figure 2.1.

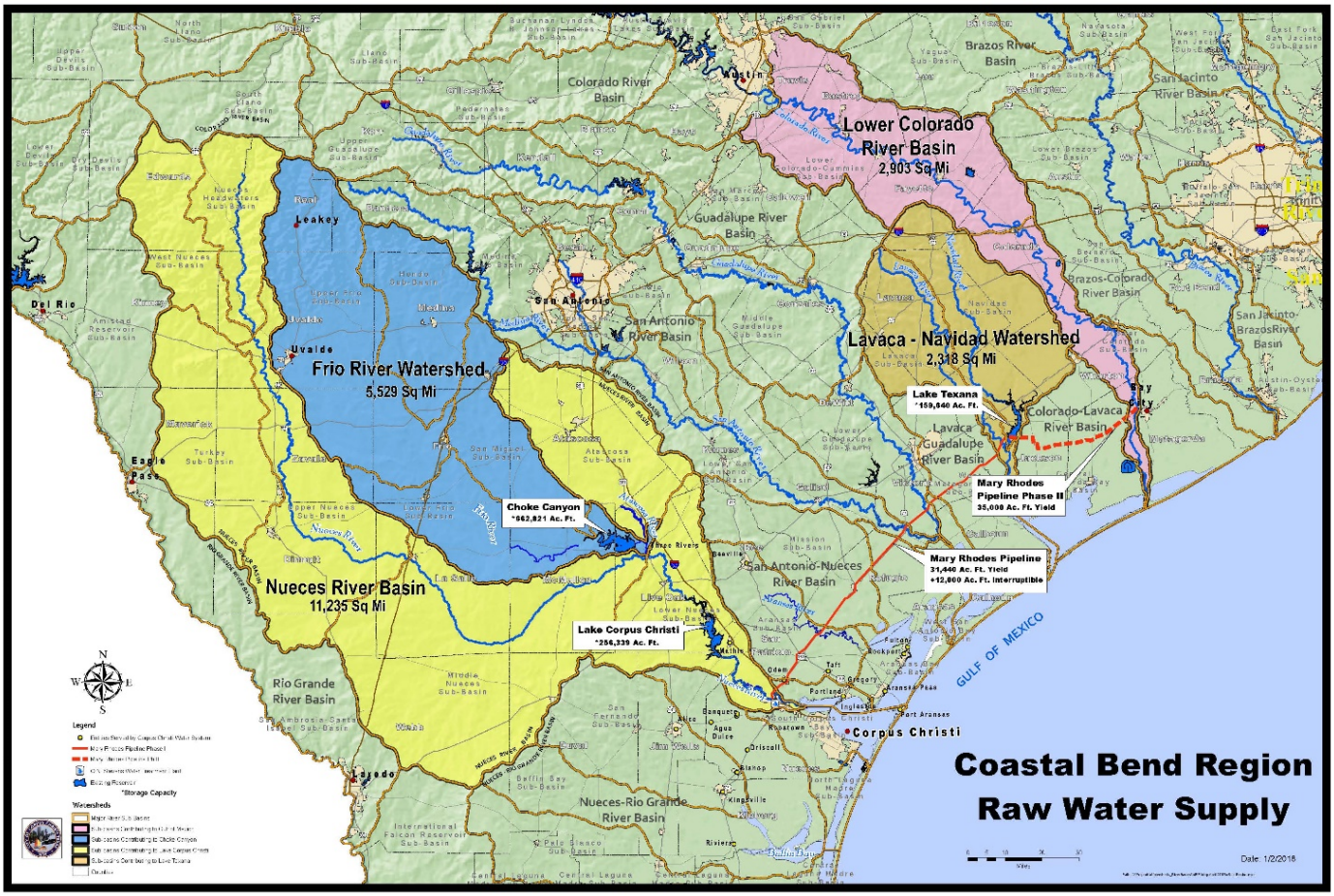


Figure 2.1. Map of the Coastal Bend Regional Water Supply, including the three surface water supply reservoirs

2.2 Potential Future Sources (Undeveloped Sources)

To meet the demands of a growing community, the City has been taking steps to ensure future water supplies.

The City is involved with the Corpus Christi Aquifer Storage and Recovery Conservation District (CCASRCD). This groundwater conservation district was formed in 2005 by the 79th Texas Legislature and is:

> *"…dedicated to protecting groundwater supplies within the District, developing and maintaining an aquifer storage and recovery program, providing the most efficient use of groundwater resources to supplement existing supplies, while controlling and preventing waste of groundwater."*

The CCASRCD explored the possibility of using groundwater aquifers as storage for extra supply for the City. During wetter-than-normal years, the City would pump excess, partially-treated water into the aquifer storage area, which is not subject to water loss from

evaporation. Water from the storage area could then be used during drought periods. A similar project by the San Antonio Water System stores over 90,000 acre-feet of water as an emergency supply.

The City of Corpus Christi is also working on activities for a procurement of a Seawater Desalination plant with a base design output of 20 MGD (million gallons a day) expandable to 30 MGD located on the Corpus Christi Inner Harbor while simultaneously working on acquiring permits for a future plant in the La Quinta Channel area for the Coastal Bend Region.

Other potential sources of water supply are still being researched and explored. A detailed list of water management strategies for the Coastal Bend Region can be found in the Region N Regional Water Plan, located at:

https://www.twdb.texas.gov/waterplanning/rwp/regions/n/index.asp

2.3 Water Customers

The City has both wholesale and retail customers who purchase water from the supply system.

2.3.1 Wholesale Customers

The wholesale customers are water utilities or businesses who purchase the water in bulk, and then bill their own respective customers. The City provides both raw and treated water to wholesale customers. Those wholesale customers receiving raw water can pump it directly from the source or divert from the Mary Rhodes Pipeline. The following wholesale customers receive raw water: Alice, Beeville, Mathis, Robstown, and San Patricio Municipal Water District (MWD). In addition, Celanese, and Flint Hills Resources receive raw water, but are industrial, not wholesale customers. Those utilities/companies have their own water treatment facilities. Other wholesale customers purchase the water from the City after it has been treated at the O.N. Stevens Water Treatment Plant (explained in next section). These customers include: Port Aransas, San Patricio MWD, South Texas Water Authority, and Violet Water Supply.

2.3.2 Retail Customers

The remaining customers receive their water directly from the City. These retail customers are billed individually. They receive their water after it has been treated at the O.N. Stevens Water Treatment Plant.

2.4 Water Treatment Plant

The O.N. Stevens Water Treatment Plant, located in Calallen, is the only water treatment facility for the City. All raw water is pumped directly to the Plant from either the Nueces River intake, or via the Mary Rhodes Pipeline. In the Plant, Nueces River water is blended with water from the pipeline and then treated to meet Texas Commission for Environmental Quality drinking water standards. After being treated to potable standards, large pumps distribute water to the

City's distribution system and to its wholesale water customers.
Approximately 23 billion gallons of water are treated each year. The O. N. Stevens Water Treatment Plant has a rated capacity of 167 MGD, well above the current peak summer demand of around 100 MGD.

2.5 Distribution

The City has an extensive distribution network that transports water from the O.N. Stevens Water Treatment Plant throughout the City to every customer, both retail and wholesale. The Water Utilities Department operates five pumping stations and four elevated storage tanks and maintains over 1,700 miles of potable water pipeline.

2.6 Master Meter

In order to keep track of diverted water, the City uses a series of Master Meters from its points of diversion. The City itself uses meters to track water use from the Nueces River system and Mary Rhodes Pipeline. In addition, City staff keeps monthly meter records of seven other wholesale and industrial customers who divert raw water from City's water supply.

2.7 Wastewater Utility Profile

The Utility Profile, a detailed summary of the City's water and wastewater systems is included in Appendix A.

3. Demand Profile

This chapter explains demands placed on the City's water supply system. Water demand is a measure of how much water is being used. Knowing current demand is critical for the City's daily operations. Projecting future demands helps City workers plan for future growth.

The region's population provides the basis of its water demands. Therefore, this chapter will provide an overview of current population figures of Corpus Christi and the Coastal Bend Region.

The water demands in the Coastal Bend area are complex because of the various customers that the City serves. Besides its own retail customers in and around Corpus Christi, the City provides wholesale water to utilities that serve 18 o*ther* cities and 2 businesses. These people and businesses have their own unique water demands. In addition, there are other demands on the supply system, including evaporation from the reservoirs and environmental inflows into the Nueces Bay and Delta.

Because the demands on the supply system are so complex, the next sections are divided as follows: Section 3.2 will discuss demands based on *raw water* diversions, or water taken directly from the supply source. Section 3.3 will include evaporation and environmental inflows. Section 3.4 will discuss demand on *treated water*, or water that is consumed in the City. This section will

also look at demand based on customer type. Section 3.5 will discuss seasonal demand, including summertime peaks. In Section 3.6, projected demands and populations will be discussed.

3.1 Current Population

According to the Texas Demographic information the regional population's total customers was close to a half a million people. The majority of this was in the City of Corpus Christi communities with a population of 325,406. The other 20 that depend on Corpus Christi for their water and their estimated 2020 populations are show in Table 3.1.

Table 3.1 Estimated 2020 populations for the communities and cities in the Coastal Bend serviced by the City of Corpus Christi Water Utilities Department.

City	Population (2020)	City	Population (2020)
Alice	18,591	Kingsville	24,959
Agua Dulce	889	Mathis	4,623
Aransas Pass	7,957	Odem	2,392
Banquete	389	Port Aransas	4,277
Beeville	12,489	Portland	18,418
Bishop	3,006	Ricardo WSC	648
Driscoll	745	Robstown	11,107
Fulton	1,601	Rockport	10,969
Gregory	1,998	Taft	2,798
Ingleside	9,990	Three Rivers	1,990

3.2 Raw Water Diversions

The raw water demand is the amount of water taken directly (diverted) out of the water supply system. It provides demand information of the system and gives an overview of which entities are using water. As explained in Chapter 2, the City has several raw water customers in addition to diverting water for its own needs.

After raw water has been diverted from either the Nueces River System or Mary Rhodes Pipeline, it is pumped to the O.N.S. plant. All raw water customers operate their own water treatment facilities in order to comply with drinking water standards for their customers they also each have their own demands, based on their retail customer characteristics (Treated water demands are explained in Section 3.4).

In 2019, the total amount of raw water diverted from the City's water supplies was 103,984 acre-feet (approximately 33.9 billion gallons). This included water from both the Nueces River System and the Mary Rhodes Pipeline. The raw water demands of each customer from the Nueces River System are shown in Table 3.2.

Table 3.2 Raw water demands (diversions) in 2019 from Nueces River System by customer (acre- feet and million gallons).

Raw Water Customer	Diversion Amount (ac-ft)	Diversion Amount (MG)
Alice	6,273	2,044
Beeville	4,212	1,373
Mathis	802	261
Celanese	1,486	484
Flint Hill Resources	3,658	1,192
San Patricio MWD	11,503	3,748
Corpus Christi	30,409	9,909
Total	**58,343**	**19,011**

The raw water demands of the San Patricio MWD and the city of Corpus Christi from Mary Rhodes Pipeline are shown below in Table 3.3.

Table 3.3. Raw water demand (diversions) in 2019 from Mary Rhodes Pipeline by Customer (acre-ft and million gallons).

Raw Water Customer	Diversion Amount (ac-ft)	Diversion Amount (MG)
San Patricio MWD	10,794	3,517
Corpus Christi	34,767	11,329
Total	**45,561**	**14,846**

In 2019, the City of Corpus Christi received 56% of its raw water from the Nueces River System and 44% from the Mary Rhodes Pipeline.

Table 3.4 Raw water demand (diversions) in 2019 from Nueces River System, and Mary Rhodes Pipeline by Customer (acre-feet and million gallons)

Raw Water Customer	Diversion Amount (ac-ft)	Diversion Amount (MG)
Alice	6,273	2,044
Beeville	4,212	1,373
Mathis	802	261
Celanese	1,486	484
Flint Hill Resources	3,658	1,192
San Patricio MWD	22,297	7,265
Corpus Christi	65,176	21,238
Total	**103,904**	**33,857**

3.3 Other Raw Water Demands

One uncontrolled demand of water placed on the supply system is evaporation. As mentioned in Chapter 2, the two reservoirs of the Nueces River supply system cover a large surface area of 45,186 acres when full. Because of this large area, combined with high evapotranspiration rates, water loss to evaporation is high, especially in recent hot, dry years.

Another raw water demand is environmental flow. After the impoundment of Choke Canyon Reservoir in 1982, freshwater flowing in the Nueces River Delta decreased dramatically. In order to maintain an ecosystem balance in the Delta, the City worked with TCEQ, the Nueces River Authority, and the City of Three Rivers to develop an Agreed Order in 1995. This document, revised in 2001, outlines required monthly freshwater inflows by the City into the Delta (Table 3.5). The 2001 Agreed Ordered is included in Appendix B.

Table 3.5. Target Inflows to Nueces Bay from the 2001 Agreed Order (*When lake levels are above 70%)

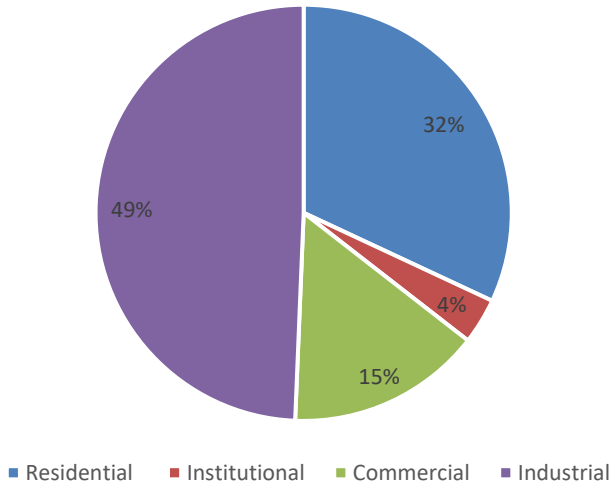
Month	Target Inflows (ac-ft)	**Month**	Target Inflows (ac-ft)
January	2,500	July	6,500
February	2,500	August	6,500
March	3,500	September	28,500
April	3,500	October	20,000
May	25,500	November	9,000
June	25,000	December	4,500

3.4 Treated Water Demands

In 2019, the Corpus Christi Utility Business Office billed a total of 67,635 ac-ft (approximately 24 bil gal) of water, coming from the O.N. Stevens Water Treatment Plant in Calallen.

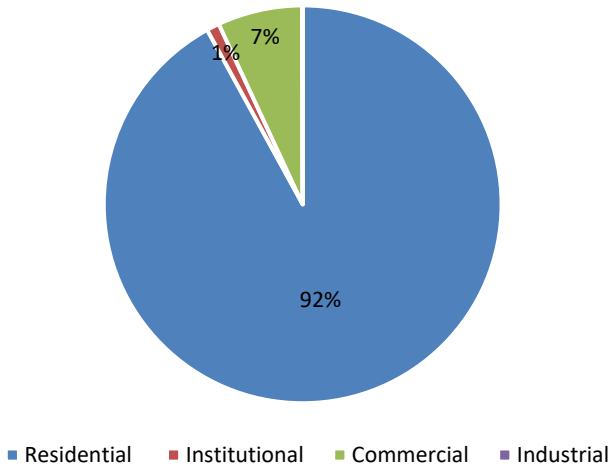
Separating treated demand by customer class, industrial customers represent the highest demand. Of the 67,635 ac-ft billed usage in 2019, industrial customers used just over 33,000 ac-ft or 49 percent of the total. Residential customers consumed 21,610 ac-ft, representing 32 percent of the total. See Figure 3.5 below.

Figure 3.5. Treated Water Use by Customer Class



In 2019, there was approximately 110,217 treated water connections. These connections can be divided into the customer classes of residential, multi-family, commercial, industrial, wholesale, and institutional. Figure 3.5.1. shows a breakdown of connections by customer type. The total of institutional (1,307 connections) and industrial (31 connections) customers constitute far less than the total for all connections. Residential Single-Family customers make up the largest percentage of connections at over 90 percent.

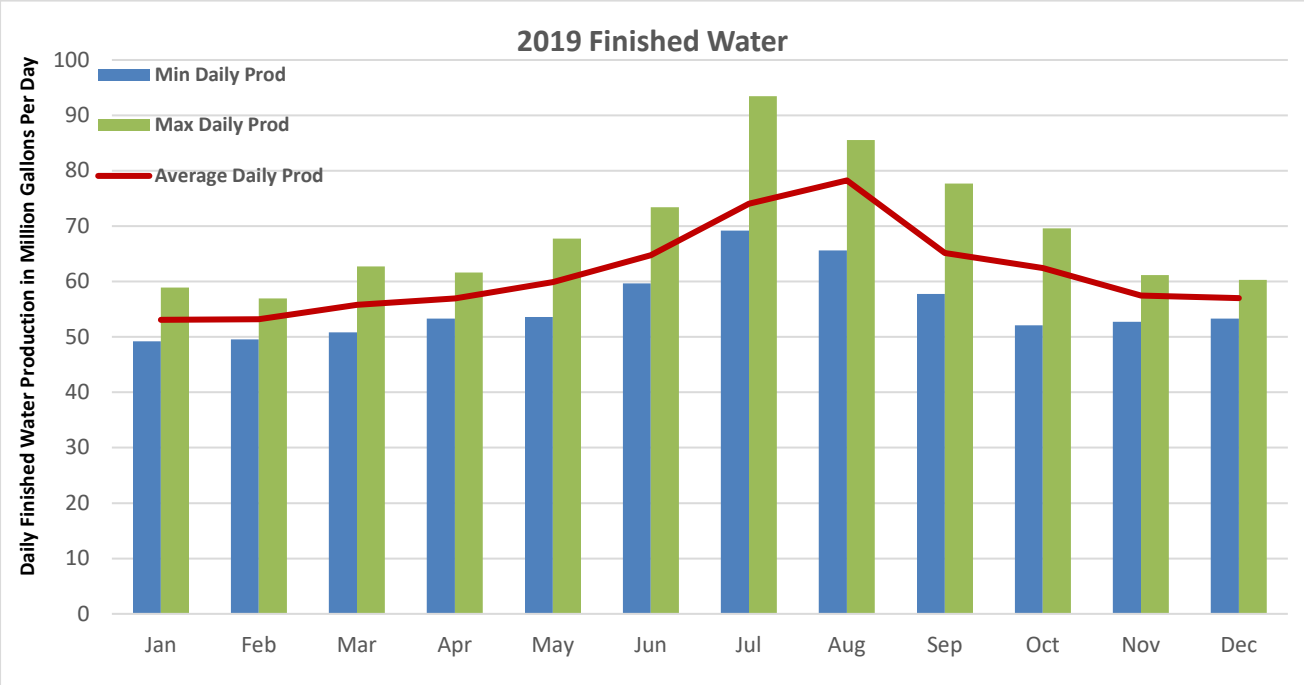
Figure 3.5.1 Connections by Customer



3.5 Seasonal Demands

Seasonal demands by customers lead to “peak demands.” These peak demands put the most stress on operations, including distribution and treatment. It is extremely important that peak demand for the cap remains under 167 million gallons per day, which is the maximum volume that the O.N. Stevens Water Treatment Plant can treat. Figure 3.6 below shows daily treatment plant production volumes for each month of 2019 as minimums, maximums, and averages. The maximum values of each month (in green) represent the peak demand volume for that month. Despite the fact that 2019 was a dry year, maximum production never reached above 100 MGD.

Figure 3.6. Daily production volumes of the O.N. Stevens Water Treatment Plant, showing seasonal demand as minimums, maximums, and averages for each month of 2019.



3.6 Projected Populations and Demands

The Texas Water Development Board estimates population projections for regional water planning groups. For Corpus Christi, they estimate that the population could reach 403,638 by the year 2060. This increase in population will result in an increase in water demand.

The TWDB estimates that municipal water demand (residential and commercial) for Corpus Christi will increase 40% by 2060, reaching 86,962 ac-ft per year. These projections are for the City of Corpus Christi only. Other cities that rely on Corpus Christi for water will also have increases in population and demand, resulting in an even higher demand on the supply system.

However, these projections only factor in a minor decrease in per capita water use from conservation measures. A more aggressive conservation program could help municipal demand level off or decrease, even with an increase in population. A goal of 1% annual reduction in municipal consumption (greater than the 0.9% population growth) would defer the need for additional supplies. This goal, along with others, is explained in Chapter 4.

Projecting industrial consumption, which comprises over 40% of the City's water use, is challenging considering the large volumes that one additional customer can demand. The Region N Water Planning Group projects treated industry water demand could increase by 5,422 acre-feet by 2060. Other industrial demands are expected to increase by 29,000 acre-feet by 2060.

4. Goals

This Chapter explains the water conservation goals of the City. These goals are what the City aims to achieve by the implementation of this Plan. Included in these goals are both qualitative goals and measurable, quantifiable goals. Before these goals are discussed, the first section (4.1) explains the benefits of conservation. This will give reason and justification for the City's conservation efforts and provide a driving factor for the goals.

4.1 Benefits of Conservation

There are several benefits to having a strong conservation program for Corpus Christi. These benefits not only include maintaining the City's water supply, but also include saving the City and residents money by deferring capital expenses. Other benefits may be more difficult to quantify or may take years to materialize, but that does not lessen their importance. Each benefit of conservation listed below will help the City of Corpus Christi grow and thrive at a sustainable rate. The benefits of conservation include:

- **Sustainable Water Supply** – By reducing per capita water use, the City can grow without compromising supplies for future generations.
- **Reduces Peak Demand –** Peak demand puts the most stress on the Water Utilities Department's operations. Conservation measures would help to reduce this peak demand.

- **Reduces Energy Costs** – The City spends a significant portion of its electric bill on moving water through its distribution system. Conservation would reduce the amount of water pumped, thus reducing electric costs.
- **Reduces Wastewater Costs** – Less water being used by customers equals less wastewater that needs to be treated. Having less wastewater will save the City in treatment costs.

4.2 Water Planning/Conservation Goals and Objectives

The main, overall goal of this Plan is to *reduce total per capita consumption by one percent annually over the next decade*. This goal is based on the 2019 figure of 201 gallons per capita per day (gpcd). A secondary related goal is to reduce summertime peak demand. To achieve these goals, the City has specific conservation objectives which are:

- Reduce water loss by one percent annually
- Educate the public on water conservation practices
- Educate the public on the City's water resources
- Implement incentives and/or rebate programs to encourage conservation
- Convert certain drought restrictions into regular conservation measures
- Adopt new water conservation city ordinances
- Enforce the conservation city ordinances
- Strengthen conservation measures at City-owned facilities

4.3 Five and Ten-Year Quantifiable Conservation Goals

As mentioned in the previous section, the goal of the Plan is to decrease total per capita water consumption by one percent each year. To track the progress of the goal, the City records the gpcd every year and sets five and ten year goals. The gpcd is measured by taking the volume of water produced by the O.N. Steven Water Treatment Plant, excluding water sold to treated wholesale customers, and dividing it by the permanent population and then dividing it by 365 days. Because industry uses close to 50% of the treated water, Corpus Christi's gpcd is greater than most Texas cities. In addition, there is high variability in annual consumption due to changes in weather. Residents tend to use much more water in dry years to keep landscape vegetation alive. The total gpcd, residential gpcd, and water loss are show in Tables 4.1-4.3 below. The five and ten year goals listed below in Table 4.4, and are based on a 1% annual reduction from the 2019 consumption of 201 gpcd.

Table 4.1. Total Gallons Per Capita Per Day (gpcd) in 2019

Total System Input in Gallons Water Produced + Wholesale Imported - Wholesale Exported	Retail Population[1]	Total GPCD (System Input / Retail Population) / 365
23,980,034,792	326,554	201

[1]Retail Population is the total permanent population of the service area, including single family, multi-family, and group quarter populations

Table 4.2. Residential Gallons Per Capita Per Day (gpcd) in 2019

Residential Use in Gallons (Single Family + Multi-family)	Residential Population[2]	Residential GPCD (Residential Use / Residential Population) / 365
7,041,510,000	326,554	59

[2]Residential Population is the total residential population of the service area, including only single family and multi-family populations

Table 4.3. Total Water Loss Per Capita Per Day (gpcd) in 2019

Total Water Loss in Gallons Apparent + Real = Total Water Loss	Retail Population	Water Loss GPCD[3]	Water Loss Percent
1,770,594,834	326,554	15	7.38%

[3](Total Water Loss / Residential Population) / 365 = Water Loss GPCD (Total Water Loss / Total System Input) *100 = Water Loss Percentage

Table 4.4. Targets and Goals

Achieve Date	Target for Total GPCD	Current Total GPCD	Target for Residential GPCD	Current Residential GPCD	Target for Water Loss GPCD	Current Water Loss GPCD	Target for Water Loss Percentage	Current Water Loss Percentage
Five-year Target Date 2024	195	201	60	59	13	15	6.67 %	7.38 %
Ten-year Target Date 2029	184	201	56	59	12	15	6.52 %	7.38 %

4.4 Schedule for Implementing Plan

In order to achieve the targets and goals of the plan, the City will use the schedule below in Table 4.5 to gradually introduce new or strengthen existing conservation measures and programs. These programs will utilize all and possibly additional measures as detailed in Chapter 5. The measures aim to reduce per capita water use through changes in habit, improvements in efficient devices, decreases in water waste, and smart planning. This schedule is not all inclusive and is a living document and is therefore subject to change.

Conservation Measures	Purpose	Target Date
Plumbers to people	Reduce leaks in homes of lower income residents	Planning
School education	Educate youth about water resources and the importance of conservation	Ongoing
Public information	Educate the public about water conservation through several media outlets	Ongoing
Xeriscape education	Educate the public about Xeriscaping through the Xeriscape garden, fliers and the annual symposium	Ongoing
Use of Reclaimed Water	Reduce potable demand by increasing the number of golf courses parks etc. that are using reclaimed water for irrigation	Ongoing
System Water Audit and Water Loss	Identifying areas of water loss to target remediation efforts	Annually
Park Water Conservation	Reduce consumption by the City by improving irrigation	Ongoing
Prohibition on wasting water	Reduce consumption by prohibiting the wasting of water regardless of drought conditions	Ongoing
Irrigation Timing	Reduce evaporative loss and waste by prohibiting sprinkler irrigation between 10am and 6pm regardless of drought conditions	Ongoing
Restaurant water saving	Reduce water waste by requiring restaurants to only serve water upon request	Ongoing
Rainwater harvesting rebate	Reduce potable demand by encouraging rainwater harvesting	Ongoing
Changes to Unified Development Code	Make change in the UDC to include certain requirements in new construction for rainwater harvesting condensate collection car washes cooling towers, laundry facilities and site appropriate turf grass	Ongoing

5. Water Conservation Practices

Water conservation is any practice that reduces the use of water, whether through changes or improvements in the efficiencies of water devices. Reducing the use of water reduces the stress placed on water supplies and their ecosystems. It also frees up water supplies to allow for population and economic growth without having to search for "new" water. Conservation is a cost-effective and commonsense approach to ensuring a sustainable water supply for generations to come.

The City has a long-standing commitment to promoting water conservation in the community. It has adopted several practices, ranging from public education to conservation pricing, that encourage a reduction in excessive water use. As was mentioned in Chapter 4 (Goals), the long term goal of the conservation program is to *reduce per capita water use by one percent per year over the next decade*. This Chapter highlights all of the ways that the City intends to reach that goal.

Chapter 5 begins with conservation measures (5.2). These are regulated best-management practices that are in effect year-round, regardless of the drought condition or the levels of the City's reservoirs. Section 5.3 explains planned changes to development and building codes that would make buildings and landscapes more water efficient, while Section 5.4 explains the current code related to landscaping. Section 5.5 explains Rebates and Incentives, which include Plumbers to People, Rainwater Harvesting Rebate, and an Irrigation Consultation Program. Section 5.6 discusses City-led Programs, including reclaimed water use, improvements to City-Owned properties, park water conservation, metering, system audits, and a water conservation staff. This is followed by Section 5.7 which highlights the educational efforts by the City, including both schools and public programs, and Section 5.8 on water conservation pricing. The last two parts of Section 5 explain coordination with the Region N Water Planning Group, methods to monitor the effectiveness of the various conservation practices, and means of implementation and enforcement.

5.1 Water Conservation Measures

As water demands increase and water supplies become less available, it is critical that water conservation measures become regular, year-round best management practices. They are common sense approaches that reduce water waste and improve efficiency. This section lists those water conservation measures that are regulated and enforceable. They are the only measures in the WCP that are enforceable. The Water Resource Management Ordinance (Section 55) gives the City the authority to enforce these measures and is included in Appendix A. Explanations of each of these conservation measures are shown in the next page.

5.2.1 Prohibition on Wasting Water

Under the Prohibition on Wasting Water Conservation Measure, it is unlawful to wastewater. Actions leading to the wasting of water are prohibited and will be enforced. No person shall:

1. Allow water to run off property into gutters or streets.

2. Permit or maintain defective plumbing in a home, business establishment or any location where water is used on the premises. Defective plumbing includes out-of-repair water closets, underground leaks, defective or leaking faucets and taps.

3. Allow water to flow constantly through a tap, hydrant, valve, or otherwise by any use of water connected to the City water system.

4. Use any non-recycling decorative water fountain.

5. Allow irrigation heads or sprinklers to spray directly on paved surfaces such as driveways, parking lots, and sidewalks in public right-of-ways;

6. Operate an irrigation system at water pressure higher than recommended, causing heads to mist, or to operate with broken heads.

5.2.2 Irrigation Timing

Landscape irrigation is most efficient during early-morning or nighttime hours, when there is less potential for evaporation from the sun. This conservation measure prohibits irrigation by spray or sprinklers between the hours of 10 am and 6 pm. It is still permissible to water by hand or by drip irrigation at any time of the day.

5.2.3 Restaurant Water Saving

Under this conservation measure, commercial dining facilities must only serve water upon request. In addition, any hand-held dish-rinsing wand must have an automatic shut-off.

5.2.4 Conservation Measures

When the combined storage in the Choke Canyon/Lake Corpus Christi reservoir system falls below 40% of the total system storage capacity, the City of Corpus Christi shall issue public notice advising and informing the water users of the region of voluntary conservation measures that are requested immediately and required drought management measures to be taken should the Reservoir System Storage fall to under 40% and/or 30% of the total system storage capacity.

5.3 Future Updates to Codes

Additional water conservation practice that will help to conserve water in the long term is updates and improvements to codes. The City has adopted several codes for development and construction, which are updated on a regular basis. There are several codes which could be

updated or amended to include requirements for water conservation. A list of *potential* updates to codes is included below. The process of updating these codes is ongoing and will be included in the WCP as an amendment when complete. *These bulleted items are proposed updates only and are listed here as a placeholder.*

- **Car Wash Water Conservation** – Many commercial car washes in the region do not recycle water in their operations. Under this proposed measure, new car washes using an automatic system would need to reuse a minimum of fifty (50) percent of water from vehicle rinses in subsequent washes. All car washes that are self-service would be required to have spray wands that do not emit more than three (3) gallons of water per minute.
- **Water Saving Plumbing Fixtures** – This proposed conservation measure would require plumbing fixtures to meet or exceed the standards set by the WaterSense label of the Environmental Protection Agency (EPA). The fixtures would include gravity flush toilets, bathroom aerators, showerheads, and urinals. This measure would apply to new plumbing installations
- **Laundry Facility Conservation** – Under this proposed measure, any new installation of a coin-operated washing machine would have to meet or exceed the standards for the most current Energy Star label of the EPA and Department of Energy. This measure applies to any location that may have a coin operated facility, such as laundromats, apartment communities, or university residential buildings.
- **Cooling Tower Recycling** –This proposed conservation measure would require newly constructed cooling towers to utilize recycled water for a minimum of four (4) cycles.
- **Rainwater Harvesting** –This proposed conservation measure would require any new building construction with a minimum roof surface area of ten-thousand (10,000) square feet to install a rainwater collection system. The stored water could be used for non-potable indoor use and/or outdoor irrigation.
- **Condensate Collection** –Under this proposed measure, any new commercial building with an air conditioning system would be required to divert and collect the condensate water. This water could be used in cooling tower operation or landscape irrigation.
- **Xeriscape Landscaping** –This proposed measure would allow xeriscaping as an option for landscaping in any residential neighborhood or subdivision, regardless of deed restrictions. It also would require homebuilders and/or developers who are constructing new, single-family residential homes to offer a xeriscaping option.
- **Turfgrass Species Requirement**–This proposed conservation measure would promote the use of turfgrass appropriately suited for a particular site in order to save on irrigation water. For any new construction, the turfgrass species/variety installed on a property would have to be chosen from a list of approved species. In addition, irrigated turfgrass would not be able to exceed 50% of the landscaped area.

5.4 Landscaping Standard

The City adopted a Landscaping Standard as part of its Unified Development Code (Section 7.3 of the UDC). This standard requires landscape plantings within commercial developments to enhance the beauty of the City. The ordinance assigns points to the various plant materials. To encourage the use of water-wise landscaping, drought-tolerant and low-water-use species are assigned a higher point value. To comply, a landscape design must surpass an established threshold number of points, which is achieved more easily with the water-wise and drought- tolerant plants.

5.5 Rebates and Incentive Programs

This section explains the programs that the City offers or plans to offer to provide assistance to customers who wish to implement water conserving practices. These programs include the Plumbers to People program and is planning an Irrigation Consultation Program. Additional rebate and incentive options are being researched.

5.5.1 Plumbers to People

Plumbers to People would be an affordability program to provide plumbing assistance to low- income residential customers seeking to repair plumbing fixtures in their homes. The intent of the program is two-fold: (1) to eliminate the cycle of uncollected high water bills resulting from water leaks; (2) to promote water conservation.

Persons eligible for the program must contact the Utility Business Office (UBO) to identify their eligibility for the program. Eligibility is based on the individual's income limits and need for assistance.

The UBO office arranges for a contracted plumber to do repairs at the individual's home. The plumber will fix minor leaks or other issues, then send a report and invoice back to the UBO office.

5.5.2 Rainwater Harvesting

The City has developed a rainwater harvesting program. Under this program, customers of the Water Utilities will be eligible to purchase a rain barrel from the City.

5.5.3 Irrigation Consultation Program

The City plans to develop an Irrigation Consultation Program to reduce water waste and improve efficiency on large, existing irrigation systems. The service will be free to commercial sites and would provide feedback to property owners about how they can make meaningful changes to their irrigation system. It would begin with a consultation request from the property owner of a large irrigation system. The Water Utilities Department will coordinate a consultation with a contracted, licensed irrigator for that property. The licensed irrigator would perform a thorough inspection of the irrigation system's performance.

A report with recommendations would be provided to the property owner and the Water Utilities Department. The recommendations may include ways that the property owner can drastically reduce water consumption. The Water Utilities Department will analyze each report and may provide assistance with the recommended changes, depending on the cost and benefits. One year after the inspection, a follow-up would be performed to see if recommendations were implemented and determine how much water consumption was decreased.

5.6 City-led Water Conservation Programs

This section explains the programs that the City has initiated in order to improve its own efficiency and promote conservation. These programs include the use of reclaimed water, improvements in City-owned properties, park water conservation, accurate water metering, and a system to audit water loss. It also includes the use of a permanent, full- time water conservation staff.

5.6.1 Use of Reclaimed Water

Reclaimed water by definition is, "domestic or municipal wastewater which has been treated to a quality suitable for a beneficial use, pursuant to the provisions of this chapter and other applicable rules and permits" (30 TAC §210.3(24)). The City currently has five reclaimed water use customers and recognizes that the direct use of reclaimed water is an effective method of reducing potable water usage. Corpus Christi reclaimed water is used primarily for irrigating recreational tracts.

Historically, Corpus Christi began its reuse program in the early 1960s when it began delivering reclaimed effluent to its first customer, the Gabe Lozano Golf Course. Over the next several decades, the City acquired additional reuse customers which include other golf courses, parks, and recreational areas.

In 2019, the City supplied 5 million gallons of reclaimed water to its irrigation customers, saving 100% of the amount in potable water.

To facilitate future expansion of its reuse program, the City will identify and rank industrial, commercial, and institutional (ICI) customers according to volume of water use, and investigate the feasibility of using reclaimed water. The City will also investigate reuse opportunities within its own accounts or with third parties outside its service area. The City owns several public areas that are candidates for reuse.

5.6.2 Improvements in City-owned Properties

In order to be a representative of its conservation message, the City has pushed for increased Xeriscape landscaping of City-owned properties. This includes water-wise landscaping at the Water Utilities Department building, and the Xeriscape Design Garden and Learning Center adjacent to the Museum of Science and History in downtown Corpus Christi (see Section 5.6.3). The Water Utilities Department will encourage the future conversion of City landscaping to more water-wise design.

In addition, the City has been proactive in replacing out-dated, inefficient plumbing fixtures in its buildings. The City plans to install a rainwater harvesting system at the Water Utilities building to be used for on-site irrigation.

5.6.3 Identifying and Repairing Leaks

The Water Utilities Department has a full team of employees committed to identifying and repairing leaks in the water distribution system throughout the City. A crew of round-the-clock responders follow the procedure below to find and fix a leak:

1. The initial responder, called a first responder is sent to the location to identify and mark the priority of the leak. Response time can be 30 minutes to an hour.
2. On site crews may need to close valves to isolate the leaking line. Line locates are called in to mark all other utility lines in the area of the leak prior to repairs. Depending on the severity of the leak these locates can take up to approx. 24 hours
3. After line locates are complete, Distribution Leak crews respond to the leak and make all needed repairs.
4. After repairs are complete, the dirt and dressing crews back fill the area and replace grass as needed.

5.6.4 Park Water Conservation

The City of Corpus Christi Parks and Recreation Department manages golf courses, large City-wide parks, recreation centers, decorative fountains, public swimming pools, and close to 200 neighborhood parks, some with irrigated athletic fields.

Because many of the parks in the City require irrigation, it is critical that proper conservation measures are in place so the City demonstrates and promotes those measures to the public. The Water Utilities Department works with the Parks and Recreation Department to implement several water conservation practices within the park system. Some of these measures include:

1. Converting manual irrigation systems to automatic irrigation systems.
2. Including the park properties in the water system audit.
3. Voluntarily adopting landscape ordinance provisions of the Corpus Christi Zoning Ordinance (explained in Section 5.2.12).
4. Replacing several spray irrigation heads with drip irrigation.

Some of the conservation measures that the City is pursuing for the future include:

1. Updating automatic irrigation systems with a “smart” Baseline Controller, which can remotely control up to 50 irrigation zones with 10 different programs. These include moisture sensors in the soil.
2. Implementing an irrigation consultation program to target specific areas where water efficiency improvements can be made.
3. Converting turfgrass species to more appropriate varieties to reduce water use.

To track the progress of water conservation in the parks, the Water Utilities Department will gather the following:

1. Water savings resulting from the offset of potable water use by irrigating with reclaimed wastewater.
2. Water savings attributable to the repairs of leaks
3. Changes to irrigation systems, retrofits, or upgrades; regular leak detection; maintenance policies, and estimated water savings from conservation practices.
4. Estimated water savings attributable to changes implemented.
5. Costs of repairs, equipment upgrades, or new equipment installed.

The Water Utilities Department will evaluate data from sites before and after significant irrigation system changes or upgrades. The City maintains performance measure software to monitor the progress of leaks repaired. The Maximo software will identify individual categories to estimate the volume of water savings attributable to repairs of leaks.

5.6.5 Metering All Connections

Metering is a critical aspect in water conservation. It provides a method for customers to relate their water usage to their utility bill. For the City, meters help keep track of water use in order to target areas of inefficiency or locate areas where there may be potential leaks. New technology allows the city to track water use remotely and alert employees when there are spikes in water use among customers.

The following elements are part of the City's on-going metering program:

1. Required metering of all connections.
2. A policy for installation of adequate, proper-sized meters as determined by a customer's current water use patterns.
3. Direct utility metering of each duplex, triplex, and four-plex unit, whether each is on its own separate lot or there are multiple buildings on a single commercial lot.
4. Metering of all utility and publicly owned facilities.
5. Use of construction meters and access keys to account for water used in new construction.
6. Implementation of the State requirements in HB 2404, passed by the 77th Legislature Regular Session and implemented through Texas Water Code 13.502, which requires all new apartments be either directly metered by the utility or submetered by the owner.
7. Regular replacement of 5/8" and 3/4" meters after 15 years of service.
8. An accounting of water savings and revenue gains through the implementation of the Water Utilities Department's meter repair and replacement procedures.

Each year the Water Utilities Department estimates its annual water savings from the program. Savings can be estimated based upon a statistical sample analyzed as part of the meter repair and replacement program.

The City maintains a meter replacement policy based upon a customer's concern about the accuracy of their meter. Annual records of replaced meters are maintained through the City's Maximo software. Meter replacement takes precedence over meter repair due to the cost of repairing old meters. The City has improved efficiency and cut water loss by purging old meters and converting standard meters to automated meter reading (AMR.). The AMR program is a metering system that remotely records usage and accurately integrates that data into the billing system. Around 99 percent of the City's water meters have been installed with the AMR, benefiting the City by improving meter accuracy and reducing the cost of reading meters manually.

5.6.6 Record Management

The City has a system of record management to classify customers by sector for billing purposes and to keep track of water consumption by class. The billing system has the ability to categorize customers into sectors that can be summarized into those required by the Texas Water Development Board and the Texas Commission on Environmental Quality. These sectors include: residential (including single-family and multi-family); commercial; institutional; industrial; and wholesale (the City does not have any agricultural customers).

5.6.7 System Water Audit and Water Loss

As with any aging infrastructure system, the City does have water loss between the treatment plant and the point of use. In order to reduce this water loss, the City performs an annual system water audit. This estimate of system water efficiency is achieved by comparing the quantity of water delivered to the treatment plant, potable water produced, and water sold. The Water Utilities Department tracks numerous leak detection and repair activities and is able to evaluate its success using the asset management software to compile and track work orders. Using this data from the audit, the City is able to focus on specific areas where improvements in efficiency can be achieved.

5.6.8 Water Conservation Staff

The Water Utilities Department has two staff members who coordinate and implement water conservation programs for the City and its service area. These employees include the Water Resource Manager and the Utilities Compliance Superintendent. They are critical to ensuring the success of the City’s overall conservation program.

The *Water Resource Manager* is responsible for planning conservation programs; public relations; seeking and identifying new opportunities in conservation and water supply; program analysis; contributions as a member of regional workgroups (BBACS, GMAs, Region N, Nueces Feasibility, CCASRCD); assistance with educational/promotional material; planning Irrigation Consultation Program; meetings with stakeholders; assistance with marketing strategies for conservation programs; assistance with annual conservation budget; preparation and submittal of annual conservation status reports to Water Utilities Department management.

The *Utilities Compliance Superintendent* is responsible for implementing conservation programs; conservation education and marketing; coordinating with other departments and wholesale customers; coordinating programs within the Water Utilities Department; development of marketing strategies for conservation programs; management of consultants, and contractors, when appropriate; preparation of annual conservation budget.

This conservation team takes part in several educational events and programs, which are explained in detail in section 5.7.

5.7 Education

One of the most effective ways to improve conservation and water-use efficiency is through education. The Water Utilities Department is very active in educating its customers and has several programs to do so. The Water Utilities Department has two purposes for its educational programs: to disseminate information and to change behavior. Information dissemination is education that makes the public aware of something timely, such as a current drought stage and its implications. A change in behavior occurs when education teaches the public practices that should be permanently adopted. Behavioral changes take place over a longer span of time than information dissemination, but both purposes are critical to a well-informed public.

This section highlights the educational programs that the Water Utilities Department plans, manages, and implements. These programs include school education, public information, and the water- wise landscape and conservation program.

5.7.1 School Education

School education programs increase the viability of water conservation efforts, enhance the utility's public image, contribute to the attainment of Texas state education goals by students, and increase customer goodwill. The message conveyed by students to their families based upon greater knowledge of water sources and conservation can lead to behavioral changes resulting in both short- and long-term water savings.

The Water Utilities Department offers various educational programs to all grade levels throughout the City of Corpus Christi. These programs include:

- Learning to be Water Wise – This program is used in 5th grade classrooms to connect science, math, language arts, and social studies with water conservation activities. Boxed kits, which include a toilet water displacement bag, toilet leak detector tablets, showerhead and faucet aerators, and instructions for repairing common toilet leaks, are given to each student.
- Water Source Book – The Water Source Book, developed by the Water Environment Federation, reinforces water resource issues with hands-on classroom activities and experiments for grades 6 through 8. The classroom activities feature water, wastewater, and stormwater experiments. This book is provided by the City to all local school resource libraries. Continuing education

workshops introduce local classroom teachers to the Water Source Book. Teachers can utilize this teaching aid to satisfy certain TEKS objectives as established by the Texas Education Agency.

- Coastal Bend Teacher Resource – the City Water Utilities Department sponsors events, which brings environmental resources to teachers throughout the Texas Education Agency Region 2 area. The City Water Utilities Department also participates in annual event, offering valuable opportunities and resources for teachers, students and the general public.
- Xeriscape Learning Center and Design Garden – Adjacent to the Corpus Christi Museum of Science and History, Water Utilities has an educational gazebo targeted to children, featuring various showcases and an 8-foot interactive topographic map of the Nueces River Basin. The touch of a button activates lights and sound to explain the area's water resources. Displays throughout the Xeriscape Learning Center and Design Garden are used as teaching tools for children and adults.
- Other educational materials – The Water Utilities Department keeps a stock of *Splash Activity Book, My Book About Water and How to Use it Wisely*, and *The Story of Drinking Water*. Spanish material is also available upon request.

The Water Utilities Department continues to offer the programs mentioned above, being sure to stay up-to-date on any changing information related to water. They also continue to stay connected to local schools in order to identify any new potential opportunities.

To keep track of the impact of these various programs, the Water Utilities Department records:

- The number of presentations made
- The number and type of curricula materials developed and/or provided
- The number and percent of students reached by presentations and by curriculum
- Annual budget related to conservation.

5.7.2 Public Information

The Water Utilities Department employs several types of media resources and modes of mass communication to present a compelling and consistent message about the importance of conservation and water use efficiency. The overall goal of the public information program is to raise awareness among customers of the regional water resources and the importance of conservation. The public information is also used to convey urgent messages, such as those about drought or emergencies. Each year, the Water Utilities Department mails a Consumer Confidence Report to every customer. This report is available online to anyone including new customers. It explains water quality and provides details to customers where they can get more information on water conservation.

The Water Utilities Department employs the following methods to raise water resources awareness and to instill the importance of conservation in the community:

- Multi-tiered media campaign – Annual television, radio, and print campaigns promoting water use efficiency. Agreements with radio and television stations provide for matching airtime for each ad purchased by the City.
- Billboard advertisement – Ads on billboards, bus benches, and other public spaces are used to promote water conservation and water quality.
- Website – The department's Water Conservation website includes tips on outdoor and indoor conservation, Xeriscape landscaping, irrigation regulations, and educational materials for youth.
- Printed brochures – The City provides the public with printed brochures on various topics ranging from Xeriscaping to indoor water conservation. They are produced by several entities, including the Water Utilities Department, the Texas Water Development Board, and Texas A&M AgriLife Extension and are available at multiple City locations and programs.
- School Education – Programs targeted to grade schools.
- Xeriscape Learning Center and Design Garden – As part of the Corpus Christi Museum of Science and History, the Xeriscape Corpus Christi Steering Committee, in partnership with the City, maintains a Xeriscape demonstration garden with more than 100 plant varieties. Within the garden an educational gazebo, The Water Story Exhibit, showcases an 8-foot interactive topographic map of the Nueces River Basin. A second gazebo named the Learning Center features practical landscape ideas and photographs. Educational Walk 'n' Talk Tours are held annually to enhance public education.
- City Call Center and Request Line – The City's Call Center (361 826-CITY) was created to encourage customers to report water line breaks and to request service calls. Customers may also utilize a dedicated Water Hotline number (361 826-1600) to request water conservation kits and other information.

To track the progress and effectiveness of this educational effort, the Water Utilities Department tracks the following information when possible:

- Number of activities, pieces of information distributed, and number of customers at an activity or program;
- Number of public school children who received instruction in water resources or water conservation;
- Number of news programs or advertisements that featured the water conservation message and how many customers had the opportunity to receive each message;
- Total budget by category for public information; and
- Results of annual or biannual customer survey and/or focus groups to determine the reach and impact of the program.

Water savings due to public information efforts are difficult to quantify. Water savings for other public information programs that result in specific actions by customers, such as changes in irrigation scheduling or reduction in water waste occurrences, may be quantified through surveys or analysis of water waste reporting in future years.

5.7.3 Water-Wise Landscape Design and Conservation Program

The use of water for outdoor irrigation can often account for over 50% of a customer's consumption. The purpose of this program is to decrease both peak summertime water consumption and overall water use through the installation of water-wise landscapes at residential and commercial properties, and through improved efficiency of existing landscapes. Water-wise landscaping involves not only plant selection, but continued attention to appropriate irrigation and landscape maintenance. The program is multifaceted, implemented through a landscape standard (Section 5.4), school education (Section 5.7.1), public outreach (Section 5.7.2), and city-implemented measures (Section 5.6).

Below are some public-outreach programs explained in more detail that specialize in water-wise landscaping or emphasize the importance of using less outdoor water.

- *Xeriscape To-Go: Planning and Designing a Gardener's Dream* – This brochure, available in both print and online and was designed to educate local residents on how to design and maintain a water-wise garden. It features a list of plants suitable for the Coastal Bend and an explanation of the seven principles of Xeriscaping.
- Purple Water-Wise Plant Labels – A brochure produced in cooperation with Xeriscape Corpus Christi, commercial nurseries, and Texas A&M AgriLife Extension to bring public awareness to lists of plants that are proven performers in the Coastal Bend since 2004. Water-wise plants are labeled with purple tags at commercial nurseries for easy identification. Purple labels are affixed to water- wise and drought-tolerant plants offered at retail nurseries.

To encourage the seven principles of Xeriscape landscaping, the non-profit organization, Xeriscape Corpus Christi, was formed. The organization built and maintains a demonstration Xeriscape garden at the Museum of Science and History. The steering committee's members include the City of Corpus Christi Water Utilities Department, Public Works Department, Park and Recreation Department, Nueces County Master Gardeners, and Texas A&M AgriLife Extension of Nueces County.

5.8 Water Conservation Pricing

One of the most effective methods to influence water consumption is through changes in price structure. Water conservation pricing is a type of structure that promotes conservation by making the water rate higher as consumption increases. Another term for this type of structure is increasing block rate. The City has an increasing block rate structure for residential customers which is not "promotional." It ensures that residents receive their most basic needed water at a reasonable price, which covers the fixed costs of the Water Utilities Department. They are billed on actual metered water use. As consumption goes into discretionary amounts, the price per gallon increases, resulting in a higher bill. A copy of the current water rate structure

is attached as Appendix C.

At least annually, the Water Utilities Department staff will review consumption patterns (including seasonal use) and the income and expense levels to determine if the conservation rates are effective. They then make appropriate, regular rate structure adjustments as needed. In the past, such studies resulted in an elimination of the decreasing block rate for industrial accounts and increasing block rates for residential customers. In order to further encourage conservation, the Water Utilities Department will examine the follow potential pricing measures:

1. Seasonal rates to reduce peak demands during summer months.
2. Increasing block rates for other customer classes.
3. Restructuring of commercial rate structure to an increasing block rate.

The successful transition to a new rate structure will include public input and a process to educate the community about the new rate structure. Public involvement in the development and implementation of conservation rates helps to assure that the goals of the conservation pricing initiatives are met and accepted by local constituents. Public meetings, advisory groups, and public announcements are among ways to generate public involvement.

5.9 Coordination with Region N (Coastal Bend) Regional Water Planning Group

The service area of the City of Corpus Christi is located within the Coastal Bend, designated as Region N Planning area, and the City has provided a copy of its Water Conservation and Drought Contingency Plan to the Coastal Bend Regional Water Planning Group (RWPG). The Region N Planning Group was initially appointed by the Texas Water Development Board (TWDB), under the authority of Senate Bill 1, and includes representatives from 12 interests including the public, counties, municipalities, industries, agriculture, the environment, small businesses, electric-generating utilities, port authorities, river authorities, water districts, and water utilities from across the region. This Plan is consistent with the City's role as a leader in water supply planning in Region N, and meets the standards for water conservation planning in TAC Chapter 288.

5.10 Method to Monitor the Effectiveness of Conservation Measures

The best way to monitor to the effectiveness of the conservation measures of this chapter is to track the per capita water use. As was mentioned in Chapter 4, the goal of this Plan is to reduce per capita water use (gcpd) by one percent each year over the next decade. Successful water conservation measures will result in a reduction of that per capita water use. Because water use can vary each year due to weather conditions, the City will consider rainfall amounts when analyzing water use.

5.11 Means of Implementation and Enforcement

This Water Conservation Plan was approved by the Corpus Christi City Council on September 29, 2020. The passage of this WCP provides the Water Utilities the authority and guidance to implement the included conservation measures and programs.

The Water Resource Management Ordinance provides the legal authority for the City of Corpus Christi to enforce certain conservation measures and all drought contingency measures. A copy of the Water Resource Management Ordinance (Section 55) is attached as a supporting document.

5.12 Reservoir System Operating Plan

Because all customers rely on the reservoir systems for their supplies, they are subject to the Reservoir Operating Plan. A copy of this is included in Appendix D.

6. Wholesale Customer Conservation

6.1 Introduction

The City of Corpus Christi serves four wholesale customers with treated water and seven wholesale customers with raw water. As part of the Water Conservation Planning Process, it is important to keep customers informed of the City's decision making processes.

This chapter explains the conservation goals that the City encourages its wholesale customers to adopt. Although wholesale customers outside of the city limits are not legally bound by the ordinances of Corpus Christi, the City requires wholesale customers to adopt conservation measures outlined in the Plan. It helps to ensure the region's water security and also ensures that customers, both inside and out of the City, are treated equitably. Section 6.5 explains the contractual requirements between the City and its wholesale customers.

6.2 Wholesale Customer Targets and Goals

The best way to reduce water waste and increase conservation is to set targets and goals. As mentioned in Chapter 4, the City of Corpus Christi has set a water conservation goal of one percent annual reduction in consumption which translates to 184 gpcd in 2029. The City, though it has no authority to require it, suggests to each of its wholesale customers to achieve a one percent annual reduction in consumption. The Coastal Bend Regional Water Planning Group recommends consumption reductions as shown below in Table 6.1. The gpcd of wholesale customers is shown with 5- and 10-year consumption goals. Though the group's targets are not as aggressive as the City's, they still help in conserving the region's water supplies.

Table 6.1 Wholesale Customer Consumption and Goals of Regional Water Planning Group (gcpd)

Wholesale Customer	5 – Year Goal	10 –Year Goal
Alice Water Authority	176	173
Beeville Water Supply District	110	100
Nueces County WCID 4 (Port Aransas)	396	376
San Patricio Municipal Water District	141	134
South Texas Water Authority	145	140

6.3 Metering, Monitoring, and Records Management

The City meters all water diverted from the raw water supply to its wholesale customers. The City also meters all treated water delivered to its wholesale customers. By contrast, these meters are calibrated on a semiannual basis, and must be accurate within 2 percent. The meters are read on a monthly basis for billing purposes.

A summary report is prepared, which aggregates all meter readings from wholesale raw water meters, wholesale treated water meters, and all retail customers, as well as the readings from the meters at the intake to the O. N. Stevens Water Treatment.

6.4 Leak Detection and Repair

The treated water wholesale customers are supplied from portions of the City's distribution system. The meter location is the point of sale at which the water enters the customer's system. From there, it is the customer's responsibility to operate and maintain. The portions of the City's distribution system that serve these wholesale customers are subject to the same leak detection and repair program described Section 5.4.5, System Water Audit and Water Loss.
All raw water delivery systems to the wholesale customers are owned and operated by those customers. Therefore, they are responsible for any leak detection and repair programs as well as for unaccounted-for water. Wholesale customers are encouraged to voluntarily report their results to the City in order to promote cooperative efficiency efforts. In addition, wholesale customers are encouraged to keep their water loss rates below ten percent.

6.5 Contractual Requirements

The City has raw water contracts with various wholesale customers including: Alice Water Authority, Beeville Water Supply District, City of Mathis, and San Patricio Municipal Water District. The city also has wholesale contracts for treated water which include Nueces County Water Improvement District No. 4 (Port Aransas), San Patricio

Municipal Water District, South Texas Water Authority, and the Violet Water Supply Corporation. Industrial wholesale customers include Celanese and Flint Hills Resources. All of these contracts contain language related to water use restrictions in drought situations. Each contract has a section requiring the customer to accept reduced volumes in the event of shortages in supply, whether due to natural or unforeseen circumstances which prevent the City from delivering the water. With the exceptions of the Beeville Water Supply District and San Patricio Municipal Water District contracts, the contracts further stipulate that should there be a shortage in the basic supply of water which requires the restriction or curtailing of any consumer of water within the city limits of Corpus Christi, *that the wholesale customer shall limit and restrict all of its customers to the same extent.*

The San Patricio Municipal Water District has the discretion to either implement water conservation and drought measures similar to those imposed by the City or to reduce the water it takes from the City's water supply system. If the district elects to reduce the amount of water it takes from the City's water supply system, the reductions are based on the average deliveries for the same month of the year over the three previous years. The percent of the reduction is based on the available water in the City's reservoir system. The required decrease in the amount of water that can be taken is 10% when the reservoirs fall below 40% (Stage 1), 20% when the reservoirs fall below 30% (Stage 2), 30% when the reservoirs fall below 20% (Stage 3), and Stage 4 would be an emergency condition such as a system outage or contamination event separate from lake levels. The San Patricio Municipal Water District contract includes provision for year-round conservation. As the need to renegotiate other contracts arises, the City will include contract language requiring conformance with applicable state and federal regulations concerning water conservation.

The City will require in every wholesale water supply contract entered into or renewed after official adoption of this Plan (by either ordinance, resolution, or tariff), including any contract extension, that each wholesale customer develop and implement a water conservation plan and drought contingency plan or water management measures using the applicable elements in this Plan and City’s Drought Contingency Plan (City Ordinance 55-151). 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 and drought contingency requirements so that each customer in the resale of the water will be required to implement water conservation measures and drought contingency measures in accordance with the provisions of this Plan and the Drought Contingency Plan.

Appendix A

Texas Water Development Board

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

CONTACT INFORMATION

Name of Utility: City of Corpus Christi

Public Water Supply Identification Number (PWS ID): TX1780003

Certificate of Convenience and Necessity (CCN) Number: 10554

Surface Water Right ID Number: 1947, 2345, 2464-A, 3214-C, 5434-F, 5655, 5736

Wastewater ID Number: 20207

Contact: First Name: Maria Last Name: Corona

Title: Utilities Compliance Superintendent

Address: 2726 Holly Rd City: Corpus Christi State: TX

Zip Code: 78413 Zip+4:

Email: mariacr@cctexas.com

Telephone Number: 3618261826 8/27/2019

Is this person the designated Conservation Coordinator? (•) Yes ( ) No

Regional Water Planning Group: N

Groundwater Conservation District:

Our records indicate that you:

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

☑ Have 3,300 or more retail connections

☑ Have a surface water right with TCEQ

A. Population and Service Area Data

- Current service area size in square miles: 205

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

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

Year	Historical Population Served By Retail Water Service	Historical Population Served By Wholesale Water Service	Historical Population Served By Wastewater Water Service
2019	326,554	0	
2018	325,733	0	
2017	324,074	0	
2016	320,435	229,565	
2015	320,231	180,000	

3. Projected service area population for the following decades.

Year	Projected Population Served By Retail Water Service	Projected Population Served By Wholesale Water Service	Projected Population Served By Wastewater Water Service
2030	362,388	565,243	362,388
2040	381,044	589,035	381,044
2050	391,967	607,332	391,967
2060	400,094	621,759	400,094
2070	405,536	632,862	405,536

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

Attached file(s):

File Name	File Description
TWDB supplied pop_Region_N_2021_plan.xlsx	2021 Regional Water Plan Population Projections

Texas Water Development Board

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

B. System Input

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

Year	Water Produced in Gallons	Purchased / Imported Water in Gallons	Exported Water in Gallons	Total System Input	Total GPCD
2019	22,038,810,651	0	436,220,522	22,475,031,173	201
2018	24,053,096,907	0	1,284,475,258	22,768,621,649	192
2017	22,903,189,691	0	1,344,741,237	21,558,448,454	182
2016	25,064,414,141	0	1,327,069,388	23,737,344,753	203
2015	23,269,618,947	15,099,738,852	12,668,445,835	25,700,911,964	220
Historic Average	23,465,826,067	3,019,947,770	3,412,190,448	23,248,071,599	200

C. Water Supply System

1. Designed daily capacity of system in gallons: 120,000,000

2. Storage Capacity

   2a. Elevated storage in gallons: 5,000,000

   2b. Ground storage in gallons: 8,600,000

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

D. Projected Demands

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

Year	Population	Water Demand (gallons)
2020	332,709	34,122,925,486
2021	337,367	34,426,619,523
2022	342,090	34,733,016,437
2023	346,879	35,042,140,283
2024	351,736	35,354,015,332
2025	356,660	35,668,666,068
2026	361,653	35,986,117,196
2027	366,716	36,629,520,542
2028	371,850	36,955,523,275
2029	382,335	37,284,427,432
2030	416,439	40,610,198,359

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

The population projections were estimated with a 0.0892% population growth. Water Demand was projections were estimated with 0.0892%

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

E. High Volume Customers

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

Customer	Water Use Category	Annual Water Use	Treated or Raw
Valero Corporation	Industrial	5,238,887,000	Treated
Citgo Corporation	Industrial	1,359,335,000	Treated
Flint Hills Resources	Industrial	1,191,964,548	Raw
Lyondell Besell	Industrial	1,774,217,000	Treated
Corpus Christi Cogeneration	Industrial	590,475,000	Treated

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

Customer	Water Use Category	Annual Water Use	Treated or Raw
San Patricio Municipal Water District	Municipal	7,265,639,154	Raw
City of Alice	Municipal	2,044,012,513	Raw
City of Beeville	Municipal	1,372,501,548	Raw
South Texas Water Authority	Municipal	546,900,000	Treated
Nueces County WCID #4	Municipal	334,332,000	Treated

F. Utility Data Comment Section

Additional comments about utility data.

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

Section II: System Data

A. Retail Water Supplier Connections

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

Water Use Category Type	Total Retail Connections (Active + Inactive)	Percent of Total Connections
Residential - Single Family	100,282	90 %
Residential - Multi-Family	1,148	1 %
Industrial	27	0.02 %
Commercial	7,612	7 %
Institutional	1,245	1.1 %
Agricultural	0	0.00 %
Total	110,314	100.00 %

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

	Net Number of New Retail Connections						
Year	**Residential - Single Family**	**Residential - Multi-Family**	**Industrial**	**Commercial**	**Institutional**	**Agricultural**	**Total**
2018							
2017							
2016							
2015							
2014							

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

B. Accounting Data

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

Year	Residential - Single Family	Residential - Multi-Family	Industrial	Commercial	Institutional	Agricultural	Total
2019	5,651,208,796	1,390,300,939	10,875,599,656	3,336,176,829	785,524,431	0	22,038,810,651
2018	5,546,113,000	1,362,233,000	11,148,298,000	3,471,732,000	1,546,572,000	0	23,074,948,000
2017	6,034,448,450	1,494,068,000	8,188,363,000	3,043,424,000	678,662,000	0	19,438,965,450
2016	5,589,095,000	1,591,016,000	10,794,585,000	3,077,473,000	606,886,000	0	21,659,055,000
2015	6,058,677,000	1,655,549,000	10,927,064,000	3,150,832,000	928,322,000	0	22,720,444,000

C. Residential Water Use

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

Year	Residential - Single Family	Residential - Multi-Family	Total Residential
2019	30	29	59
2018	33	33	66
2017	32	32	64
2016	30	31	61
2015	33	33	66
2014	52	21	73
Historic Average	36	30	66

Texas Water Development Board

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

D. Annual and Seasonal Water Use

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

Month	Total Gallons of Treated Water				
	2019	2018	2017	2016	2015
January	1,645,700,000	1,739,185,225	1,799,185,225	1,817,185,225	1,769,185,225
February	1,488,988,768	1,432,185,225	1,628,185,225	1,747,185,225	1,469,185,225
March	1,729,265,346	1,786,185,225	1,771,185,225	1,722,185,225	1,804,185,225
April	1,707,664,225	1,757,185,225	1,804,185,225	1,573,185,225	1,894,185,225
May	1,857,007,342	2,029,185,225	1,968,185,225	1,694,185,225	1,960,185,225
June	1,942,713,283	2,178,185,225	1,912,185,225	1,755,185,225	2,003,185,225
July	2,296,315,566	2,143,185,225	2,174,185,225	1,991,185,225	2,198,185,225
August	2,425,930,079	2,192,185,225	2,131,185,225	2,078,185,225	2,311,185,225
September	1,954,393,912	1,770,185,225	1,854,185,225	1,859,185,225	2,038,185,225
October	1,935,354,061	1,770,185,225	1,854,185,225	1,751,185,225	1,923,185,225
November	1,724,464,548	1,640,185,225	1,832,185,225	1,635,185,225	1,855,185,225
December	1,767,234,042	1,673,185,225	1,726,185,225	1,665,185,225	1,870,185,225
Total	22,475,031,173	22,111,222,700	22,455,222,700	21,289,222,700	23,096,222,700

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

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

Month	Total Gallons of Raw Water				
	2019	2018	2017	2016	2015
January	174,510,000	115,828,400	184,678,400	96,608,900	45,776,200
February	133,850,000	150,378,000	147,539,000	68,863,800	143,190,200
March	125,150,000	135,481,000	187,304,000	114,625,900	100,729,600
April	105,880,000	181,971,500	153,458,360	120,504,600	73,477,016
May	72,450,000	184,758,200	143,048,640	94,475,200	125,432,194
June	98,440,000	60,706,000	36,786,400	53,759,600	55,820,390
July	143,880,000	120,239,019	60,681,400	183,442,900	148,819,200
August	171,430,000	99,710,406	103,786,000	119,090,200	158,387,000
September	164,520,000	67,777,008	90,382,900	79,231,000	130,416,700
October	172,940,000	153,475,821	146,291,000	145,655,397	145,981,248
November	149,260,000	104,272,320	93,214,400	136,531,569	29,978,292
December	163,990,000	119,913,168	103,185,400	126,756,039	37,147,014
Total	1,676,300,000	1,494,510,842	1,450,355,900	1,339,545,105	1,195,155,054

3. Summary of seasonal and annual water use.

	Summer RETAIL (Treated + Raw)	Total RETAIL (Treated + Raw)
2019	7,078,708,928	24,151,331,172
2018	6,794,211,100	23,605,733,542
2017	6,418,809,475	23,905,578,600
2016	6,180,848,375	22,628,767,805
2015	6,875,582,265	24,291,377,754
2014	7,104,872,381	39,969,442,019
Average in Gallons	6,674,864,719.20	26,880,179,944.00

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

E. Water Loss

Water Loss data for the previous five years.

Year	Total Water Loss in Gallons	Water Loss in GPCD	Water Loss as a Percentage
2019	1,770,594,834	15	7.38 %
2018	1,968,883,749	17	8.65 %
2017	1,945,982,363	16	9.02 %
2016	1,679,428,947	14	7.08 %
2015	2,597,051,964	22	10.10 %
Average	1,992,388,371	17	8.45 %

F. Peak Day Use

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

Year	Average Daily Use (gal)	Peak Day Use (gal)	Ratio (peak/avg)
2019	61,502,348	69,099,887	1.1235
2018	64,673,242	73,850120	1.1419
2017	65,494,735	69769668	1.0653
2016	61,996,624	67183134	1.0837
2015	66,551,719	74734589	1.1230

G. Summary of Historic Water Use

Water Use Category	Historic Average	Percent of Connections	Percent of Water Use
Residential - Single Family	5,775,908,449	90.92 %	25.63 %
Residential - Multi-Family	1,498,633,388	1.04 %	6.30 %
Industrial	10,386,781,931	0.02 %	49.34 %
Commercial	3,215,927,566	6.90 %	15.16 %
Institutional	909,193,286	1.12 %	3.55 %
Agricultural	0	0.00 %	0.00 %

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

H. System Data Comment Section

Attached file(s):

File Name	File Description

Section III: Wastewater System Data

A. Wastewater System Data

1. Design capacity of wastewater treatment plant(s) in gallons per: 42,700,000

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

Water Use Category	Metered	Unmetered	Total Connections	Percent of Total Connections
Municipal	95,638	0	95,638	92.89%
Industrial	14	0	14	0.01%
Commercial	6,644	0	6,644	6.45%
Institutional	657	0	657	0.64%
Agricultural	0	0	0	0%
Total	102,953	0	102,953	100%

3. Percentage of water serviced by the wastewater system:

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

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

Month	Total Gallons of Treated Water				
	2019	2018	2017	2016	2015
January	812,260,000	850,000,000	749,000,000	861,000,000	809,000,000
February	726,370,000	724,000,000	693,000,000	721,000,000	738,000,000
March	771,710,000	831,000,000	892,000,000	946,000,000	1,070,000,000
April	803,420,000	757,000,000	770,000,000	806,000,000	1,045,000,000
May	914,150,000	795,000,000	857,000,000	1,054,000,000	1,325,000,000
June	838,350,000	1,030,000,000	878,000,000	898,000,000	937,000,000
July	808,670,000	967,000,000	820,000,000	833,000,000	888,000,000
August	795,930,000	834,000,000	783,000,000	866,000,000	824,000,000
September	823,980,000	1,358,000,000	829,000,000	852,000,000	836,000,000
October	800,470,000	978,000,000	828,000,000	807,000,000	917,000,000
November	795,990,000	889,000,000	765,000,000	770,000,000	833,000,000
December	824,620,000	794,000,000	878,000,000	767,000,000	820,000,000
Total	9,715,920,000	10,807,000,000	9,742,000,000	10,181,000,000	11,042,000,000

5. Could treated wastewater be substituted for potable water?

Yes ○ No ◉

UTILITY PROFILE FOR RETAIL WATER SUPPLIER

B. Reuse Data

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

Type of Reuse	Total Annual Volume (in gallons)
On-site Irrigation	
Plant wash down	
Chlorination/de-chlorination	
Industrial	
Landscape irrigation (park,golf courses)	5,858,863
Agricultural	
Discharge to surface water	
Evaporation Pond	
Other	
Total	5,858,863

C. Wastewater System Data Comment

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

Appendix B

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

AN AGREED ORDER Amending the operational procedures and continuing an Advisory Council pertaining to Special Condition 5.B., Certificate of Adjudication No. 21-3214; Docket No. 2001-0230-WR

On April 4, 2001, came to be considered before the Texas Natural Resource Conservation Commission ("Commission") the Motion by the City of Corpus Christi and Nueces River Authority for the adoption of an amendment to the Agreed Order issued April 28, 1995, establishing operating procedures pertaining to Special Condition 5.B., Certificate of Adjudication No. 21-3214, held by the City of Corpus Christi, the Nueces River Authority, and the City of Three Rivers" (the two cities and river authority shall be referred to herein as "Certificate Holders"). The Certificate Holders and the Executive Director of the Texas Natural Resource Conservation Commission have agreed to the provisions of this Agreed Order.

The City of Corpus Christi (managing entity) requests that Section 2 of this Agreed Order be amended to add further detail to the provisions regarding the use of water for bays and estuaries and to make changes in the required passage of inflows for the bays and estuaries automatic at 40 percent and 30 percent of total reservoir system capacity upon institution of mandatory outdoor watering restrictions. Additionally, Certificate Holders request the most recent bathymetric surveys be used for determining reservoir system storage capacity. The Certificate Holders request details be added regarding provisions for two projects to enhance/augment the amount of freshwater going into the receiving estuary and timelines for those projects.

After considering the proposals and the presentations of the parties, the Commission finds that it has authority to establish operational procedures under Special Condition 5.B. of Certificate of Adjudication No. 21-3214, and that operational procedures previously established should be amended. The Commission finds that, because of the need to continue to monitor the ecological environment and health of related living marine resources of the estuaries to assess the effectiveness of freshwater inflows provided by requirements contained in this Agreed Order relating to releases and spills from Choke Canyon Reservoir and Lake Corpus Christi (collectively referred to as the Reservoir System), as well as return flows, and to evaluate potential impacts which may occur to the reservoirs as well as to the availability of water to meet the needs of the Certificate Holders and their customers which may result from those operational procedures, the existing advisory council should be maintained to consider such additional information and related issues and to formulate recommendations for the Commission's review.

The Commission additionally finds that based on the preliminary application of the Texas Water Development Board's Mathematical Programming Optimization Model, (GRG-2), 138,000 acre-feet of fresh water is necessary to achieve maximum harvest in the Nueces Estuary; and, therefore, when water is impounded in the Lake Corpus Christi-Choke Canyon Reservoir System to the extent greater than 70 percent of the system's storage capacity, the delivery of 138,000

acre-feet of water to Nueces Bay and/or the Nueces Delta, by a combination of releases and spills, together with diversions and return flows noted below, should be accomplished; and that during periods when the reservoir system contains less than 70 percent storage capacity, reductions in releases and spills, along with diversions and return flows, are appropriate in that a satisfactory level of marine harvest will be sustained and the ecological health of the receiving estuaries will be maintained.

The Commission finds that return flows, other than to Nueces Bay and/or the Nueces Delta, that are delivered to Corpus Christi Bay and other receiving estuaries are currently in the assumed amount of 54,000 acre-feet per annum (per calendar year), and that they shall be credited at this amount until such time as it is shown that actual return flows to Corpus Christi Bay and other receiving estuaries exceed 54,000 acre-feet per annum.

The Commission finds that by contractual relationships, the City of Corpus Christi is the managing entity for operating the Reservoir System.

The Commission finds that the Motion by the City of Corpus Christi and Nueces River Authority to Amend this Agreed Order is reasonable and should be granted. Benefits of the proposed diversion project and operating changes will include increased water supply, increased reservoir storage levels, increased positive flow events for Rincon Bayou and the upper Nueces Delta, increased sources of nitrogen for the upper delta, and lower salinity levels in the upper delta.

When the Commission uses the word "release" in this Order, release means spills, inflow passage, intentional releases, and return flows; provided, however, under this Order no release from storage is required to meet conditions of this Order.

By consenting to the issuance of this Agreed Order, no party admits or denies any claim, nor waives with respect to any subsequent proceeding any interpretation or argument which may be contrary to the provisions of this Agreed Order.

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS NATURAL RESOURCE CONSERVATION COMMISSION THAT:

1. a. The City of Corpus Christi, as operator of the Choke Canyon/Lake Corpus Christi reservoirs (the "Reservoir System"), shall provide not less than 151,000 acre-feet of water per annum (per calendar year) for the estuaries by a combination of releases and spills from the Reservoir System at Lake Corpus Christi Dam and return flows to Nueces and Corpus Christi Bays and other receiving estuaries (including such credits as may be appropriate for diversion of river flows and/or return flows to the Nueces Delta and/or Nueces Bay), as computed and to the extent provided for herein.

   b. When water impounded in the Reservoir System is greater than or equal to 70 percent of storage capacity, a target amount of 138,000 acre-feet is to be delivered to Nueces Bay and/or the Nueces Delta by a combination of releases and spills from

the Reservoir System as well as diversions and return flows. In accordance with the monthly schedule and except as provided otherwise in this Agreed Order, target inflows to Nueces Bay and/or the Nueces Delta shall be in the acre-foot amounts as follow:

January	2,500	July	6,500
February	2,500	August	6,500
March	3,500	September	28,500
April	3,500	October	20,000
May	25,500	November	9,000
June	25,500	December	4,500

It is expressly provided, however, that releases from Reservoir System storage shall not be required to satisfy the above targeted inflow amounts, as calculated in Subparagraph d.

c. When water impounded in the Reservoir System is less than 70 percent but greater than or equal to 40 percent of storage capacity, a targeted amount of 97,000 acre-feet is to be delivered to Nueces Bay and/or the Nueces Delta by a combination of releases and spills from the Reservoir System as well as diversions and return flows. In accordance with the monthly schedule and except as provided otherwise in this Agreed Order, target inflows to Nueces Bay and/or the Nueces Delta shall be in the acre-foot amounts as follows:

January	2,500	July	4,500
February	2,500	August	5,000
March	3,500	September	11,500
April	3,500	October	9,000
May	23,500	November	4,000
June	23,000	December	4,500

It is expressly provided, however, that releases from Reservoir System storage shall not be required to satisfy the above targeted inflow amounts as calculated in Subparagraph d.

d. The amounts of water required in subparagraphs 1.b. and 1.c. will consist of return flows, and intentional diversions, as well as spills and releases from the Reservoir System as defined in this subparagraph. For purposes of compliance with monthly targeted amounts prescribed above, the spills and releases described in this paragraph shall be measured at the U.S. Geological Survey stream monitoring station on the Nueces River at Calallen, Texas (USGS Station No. 08211500). Any inflows, including measured wastewater effluent and rainfall runoff meeting lawful discharge standards which are intentionally diverted to the upper Nueces Delta region, shall be credited toward the total inflow amount delivered to Nueces Bay and/or the Nueces

Delta. Inflow passage from the Reservoir System for the purpose of compliance with the monthly targeted amounts prescribed in subparagraphs 1.b. and 1.c. shall in no case exceed the estimated inflow to Lake Corpus Christi as if there were no impoundment of inflows at Choke Canyon Reservoir. The estimated inflow to Lake Corpus Christi as if there were no impoundment of inflows at Choke Canyon Reservoir shall be computed as the sum of the flows measured at the U.S. Geological Survey (USGS) STREAMFLOW GAGING STATIONS ON THE Nueces River near Three Rivers (USGS No. 08210000), Frio River at Tilden, Texas (USGS No. 08206600), and San Miguel Creek near Tilden, Texas (USGS No. 08206700) less computed releases and spills from Choke Canyon Reservoir.

e. The passage of inflow necessary to meet the monthly targeted allocations may be distributed over the calendar month in a manner to be determined by the City. Relief from the above requirements shall be available under subparagraphs (1) or (2) below and Section 2.(b) and 3.(c) at the option of the City of Corpus Christi. However, passage of inflow may only be reduced under one of those subparagraphs below, for any given month.

(1) Inflows to Nueces Bay and/or the Nueces Delta in excess of the required monthly targeted amount may be credited for up to fifty (50) percent of the targeted requirement for the following month, based on the amount received.

(2) When the mean salinity in Upper Nueces Bay (Lat. 27°51'02", Long. 97°28'52") for a 10-day period, ending at any time during the calendar month for which the reduction of the passage of inflow is sought, is below the SUB*, pass through of inflow from the reservoir system for that same calendar month may be reduced as follows:

(a) For any month other than May, June, September and October, if 5 parts per thousand (ppt) below the SUB for the month, a reduction of 25% of the current month's targeted Nueces Bay inflow;

(b) If 10 ppt below the SUB for the month, a reduction of 50 % of the current month's targeted Nueces Bay inflow except that credit under this provision is limited to 25 % during the months of May, June, September and October;

* "SUB" means "salinity upper bounds" as set forth more specifically in Section 3.b.

(c) If 15 ppt below the SUB for that month, a reduction of 75% of the current month's targeted Nueces Bay inflow.

f. The City of Corpus Christi shall submit monthly reports to the Commission containing daily inflow amounts provided to the Nueces Estuary in accordance with this Agreed Order through releases, spills, return flows and other freshwater inflows.

2. a. Certificate holders are to provide in any future contracts or any amendments, modifications or changes to existing contracts the condition that all wholesale customers and any subsequent wholesale customers shall develop and have in effect a water conservation and drought management plan consistent with Commission rule. The City of Corpus Christi shall solicit from its customers and report to the Commission annually the result of conservation under the City's plan, the customers' plans, and the feasibility of implementing conservation plans and programs for all users of water from the reservoir system. This report shall be submitted with the Certificate Holder's annual water use report as provided by 31 T.A.C. §295.202.

b. The Certificate Holders may reduce targeted Nueces Bay inflows during times of prolonged drought in accordance with this subparagraph 2.

(1) When the combined storage in the Choke Canyon/Lake Corpus Christi reservoir system (Reservoir System Storage) falls below 50% of the total system storage capacity, the City of Corpus Christi shall issue public notice advising and informing the water users of the region of voluntary conservation measures that are requested immediately and required drought management measures to be taken should the Reservoir System Storage fall to under 40% and/or 30% of total system storage capacity. To the extent of its legal authority, the City of Corpus Christi shall require its wholesale customers to issue public notice advising and informing the water users of the region of voluntary conservation measures that are requested immediately and required drought management measures to be taken should the Reservoir System Storage fall to under 40% and/or 30% of total system storage capacity.

(2) In any month when Reservoir System Storage is less than 40%, but equal to or greater than 30% of total system storage capacity, the City of Corpus Christi shall implement time of day outdoor watering restrictions and shall reduce targeted inflows to Nueces Bay to 1,200 acre-feet per month (1,200 acre-feet per month represents the quantity of water that is the median inflow into Lake Corpus Christi during the drought of record). Time of day outdoor watering restrictions prohibit lawn watering between the hours of 10:00 o'clock a.m. and 6:00 o'clock p.m. and are subject to additional conditions as described in the City of Corpus Christi's approved "Water Conservation and Drought Contingency Plan ("Plan")." To the extent of its legal authority, the City of Corpus Christi shall require its wholesale customers to implement time of day outdoor watering restrictions similar to those of the City.

(3) In any month when Reservoir System Storage is less than 30% of total system storage capacity, the City of Corpus Christi shall implement a lawn watering schedule in addition to time of day outdoor watering restrictions (see subparagraph 2.b.(2)) and shall suspend the passage of inflow from the Reservoir System for targeted inflows to Nueces Bay. However, return flows directed into Nueces Bay and/or the Nueces Delta shall continue. The lawn watering schedule shall allow customers to water lawns no oftener than every five days, subject to the time of day restrictions described in subparagraph 2.b.(2) and any additional conditions as described in the City's Plan.

(4) Certificate Holders' may implement whole or partial suspension of the passage of inflow through the reservoir as described above when the City implements, and requires its customers to implement, water conservation and drought management measures at diminished Reservoir System levels, as set forth in subparagraphs b.(2) and b.(3).

c. For purposes of this Agreed Order, Reservoir System storage capacity shall be determined by the most recently completed bathymetric survey of each reservoir. As of 2001, completed bathymetric surveys of each reservoir reports conservation storage capacities of 695,271 acre-feet (below 220.5 feet mean sea level) for Choke Canyon Reservoir (Volumetric Survey of Choke Canyon Reservoir, TWDB September 23, 1993) and 241,241 acre-feet (below 94 feet mean sea level) for Lake Corpus Christi (Regional Water Supply Planning Study-Phase I Nueces River Basin, HDR, December, 1990).

d. Percentage of the Reservoir System capacity shall be determined on a daily basis and shall govern, in part, the inflow to be passed through the reservoir during the remaining days of the month.

e. Within the first ten days of each month, the City of Corpus Christi shall submit to the Commission a monthly report containing the daily capacity of the Reservoir System in percentages and mean sea levels as recorded for the previous month as well as reservoir surface areas and estimated inflows to Lake Corpus Christi assuming no impoundment of inflows at Choke Canyon Reservoir. The report shall indicate which gages or measuring devices were used to determine Reservoir System capacity and estimate inflows to Lake Corpus Christi.

f. Concurrent with implementing subparagraphs 2.b.(1) through 2.b.(3), the City shall proceed to:

1. Acquire land rights to properties necessary to re-open the Nueces River Overflow Channel and make the Nueces River Overflow Channel and Rincon Bayou Overflow Channel permanent features of the Rincon Bayou Diversion;

2. Construct and operate a conveyance facility to deliver up to 3,000 acre-feet per month of required Reservoir System "pass-throughs" directly from the Calallen Pool into the Upper Rincon Bayou by use of one or two of the five authorized points of diversion under Certificate of Adjudication No. 2464, being the existing San Patricio Municipal Water District point of diversion and/or a point on the North bank of the Calallen Pool located at Latitude 27.8823°N, Longitude 97.6254°W, also bearing S 27° 24' W, 4,739 feet from the southwest corner of the J.H.W. Ottman Survey, Abstract No. 212, San Patricio County, Texas, where the water will be pumped at the maximum rate of 45,000 gpm; and

3. Implement an on-going monitoring and assessment program designed to facilitate an "adaptive management" program for freshwater inflows into the Nueces Estuary.

4. Construction necessary to implement subparagraph 2.f.1. shall be accomplished by December 31, 2001 and work necessary to accomplish subparagraph 2.f.2. shall be accomplished by December 31, 2002.

5. In the event the City fails to timely complete the work set forth in subparagraphs 2.f.1. and 2.f.2., this amendment shall automatically terminate and the provisions of the Agreed Order of April 28, 1995 shall be reinstated and become operative despite this amendment, unless the Executive Director grants a modification after considering the recommendations of the Nueces Estuary Advisory Council.

g. The Executive Director is delegated authority to make modifications to subparagraph 2.f., after considering the recommendations of the Nueces Estuary Advisory Council. However, changes may be made through this process only with the City's consent if the changes result in increased costs to the City.

If the Executive Director makes modifications to subparagraph 2.f. as authorized in this paragraph, any affected person may file with the chief clerk a motion for reconsideration of the Executive Director's action no later than 23 days after the date the Executive Director mails notice of the modification to the City. This motion shall be considered under the provisions of 30 Texas Administrative Code § 50.39(d) and (e).

h. The City shall obtain all necessary permits from the Commission before beginning these projects. The deadlines set out above include time necessary to apply for, process and, if necessary, complete hearings on these permits.

3. a. The City of Corpus Christi, with the assistance and/or participation of federal, state and local entities, shall maintain a monitoring program to assess the effect of this

operating plan on Nueces Bay. The cornerstone of this program is the development of a salinity monitoring program. The program shall include at least two monitoring stations, one in upper Nueces Bay (Lat. 27°51'02", Long. 97°28'52") and one in mid Nueces Bay (Lat. 27°51'25", Long. 97°25'28") with the capability of providing continuous salinity and/or conductivity data, temperature, pH, and dissolved oxygen levels. Additional stations may be established at the recommendation of the Advisory Council (continued by paragraph 4 of this Agreed Order) to assess inflow effects throughout the estuarine system, but the City shall not be obligated to establish such additional stations except to the extent authorized by its City Council.

b. The City of Corpus Christi or its designated representatives shall monitor salinity levels in Upper and Mid-Nueces Bay. The lower (SLB) and upper (SUB) salinity bounds (in parts per thousand-ppt) developed for application of the Texas Estuarine Mathematical Programming Model and considered appropriate for use herein, are as follows:

	SLB	SUB		SLB	SUB
January	5	30	July	2	25
February	5	30	August	2	25
March	5	30	September	5	20
April	5	30	October	5	30
May	1	20	November	5	30
June	1	20	December	5	30

c. When the average salinity for the third week (the third week includes the seven days from the 15th through 21st) of any month is at or below the subsequent month's established SLB for upper Nueces Bay (Lat. 27°51'02", Long. 97°28'52"), no releases from the Reservoir System to satisfy targeted Nueces Bay inflow mounts shall be required for that subsequent month.

d. All data collected as a result of the monitoring program required by paragraph 3 of this Agreed Order shall be submitted monthly to the Commission within the first ten days of the immediately following month. The Nueces Estuary Advisory Council shall study the feasibility of developing a method of granting credits for inflows which exceed the required amounts to replace the credits that are set out in subparagraph 1.e.(l) and make recommendations to the Commission for possible implementation. That method shall have as its goal the maintenance of the proper ecological environment and health of related living marine resources and the provision of maximum reasonable credits towards monthly inflow requirements.

4. a. To assist the Commission in monitoring implementation of this Order and making recommendations to the Commission relating to any changes to this Agreed Order and the establishment of future operating procedures, the Nueces Estuary Advisory

Council shall be continued. Its members shall include, but are not limited to a qualified representative chosen by each of the following entities or groups: the Executive Director of the Texas Natural Resource Conservation Commission, whose representative shall serve as chair;the Texas Water Development Board; the Texas Parks and Wildlife Department; the Texas Department of Health; the General Land Office; the holders of Certificate of Adjudication No. 21-3214 (the Cities of Corpus Christi and Three Rivers and the Nueces River Authority; the University of Texas Marine Science Institute; Texas A&M University - Corpus Christi; Save Lake Corpus Christi; Corpus Christi Chamber of Commerce; the City of Mathis; Coastal Bend Bays and Estuaries Program, Inc.; a commercial bay fishing group; a conservation group (e.g. the Sierra Club and the Coastal Bend Bays Foundation); wholesale water suppliers who are customers of the Certificate Holders (e.g., the South Texas Water Authority and the San Patricio Municipal Water District); the Port of Corpus Christi Authority; and a representative of industry. The representatives should have experience and knowledge relating to current or future water use and management or environmental and economic needs of the Coastal Bend area.

b. No modification shall be made to this Order without the unanimous consent of the Certificate Holders, except to the extent provided by law.

c. Matters to be studied by the Nueces Estuary Advisory Council and upon which the Executive Director shall certify recommendations to the Commission shall include, but are not limited to:

(1) the effectiveness of the inflow requirements contained in this Agreed Order on Nueces Estuary and any recommended changes;

(2) the effect of the releases from the Reservoir System upon the aquatic and wildlife habitat and other beneficial and recreational uses of Choke Canyon Reservoir and Lake Corpus Christi;

(3) the development and implementation of a short and long-term regional water management plan for the Coastal Bend Area;

(4) the salinity level to be applied in Paragraphs 1.e. and 3.c., at which targeted inflows in the subsequent month may be suspended;

(5) the feasibility of discharges at locations where the increased biological productivity justifies an inflow credit computed by multiplying the amount of discharge by a number greater than one; and development of a methodology for granting credits for inflows which exceed the required amount to replace the credits that are set out in subparagraph 1.e. That methodology shall have as its goal the maintenance of the proper ecological

environment and health of related living marine resources and the provision of maximum reasonable credits towards monthly inflow requirements; and,

(6) any other matter pertinent to the conditions contained in this Agreed Order.

5. This Agreed Order shall remain in effect until amended or superseded by the Commission.

Issued date: APR 05 2001

TEXAS NATURAL RESOURCE
CONSERVATION COMMISSION

Robert J. Huston, Chairman

Appendix C

CITY OF CORPUS CHRISTI
UTILITY BUSINESS OFFICE
UTILITY RATE SCHEDULE
WATER SERVICE
Effective January 1, 2020

MINIMUM MONTHLY CHARGE (FOR FIRST 2,000 GALLONS)

INSIDE CITY LIMITS			OUTSIDE CITY LIMITS		
Meter Size		Minimum	Meter Size		Minimum
5/8" X 3/4"	Residential	$ 12.92	5/8" X 3/4"	Residential	$ 15.51
5/8" X 3/4"	Commercial	12.92	5/8" X 3/4"	Commercial	15.51
1"	. . . . .	19.39	1"	. . . . .	23.26
1 1/2"	. . . . .	32.31	1 1/2"	. . . . .	38.77
2"	. . . . .	64.60	2"	. . . . .	77.52
3"	. . . . .	103.36	3"	. . . . .	124.04
4"	. . . . .	206.72	4"	. . . . .	248.07
6"	. . . . .	323.00	6"	. . . . .	387.60
8" or larger	. . . . .	646.00	8" or larger	. . . . .	775.20

MONTHLY VOLUME CHARGES PER 1,000 GALLONS (above the minimum level)

INSIDE THE CITY LIMITS				OUTSIDE THE CITY LIMITS			
PER 1,000/GALLONS				PER 1,000/GALLONS			
Residential				Residential			
First	2,000	Gallons	Minimum	First	2,000	Gallons	Minimum
Next	4,000	. . . . .	$ 6.46	Next	4,000	. . . . .	$ 2.49
Next	9,000	. . . . .	7.42	Next	9,000	. . . . .	3.10
Over	15,000	. . . . .	8.09	Over	15,000	. . . . .	3.92
Commercial				Commercial			
First	2,000	Gallons	Minimum	First	2,000	Gallons	Minimum
Over	2,000	. . . . .	$ 7.17	Over	2,000	. . . . .	$ 3.36
Large Volume-				Large Volume-			
Minimum			Minimum		Minimum		Minimum
First	10,000,000	Gallons	$ 24,202.00	First	10,000,000	Gallons	$ 40,382.00
Over	10,000,000	. . . . .	5.90	Over	10,000,000	. . . . .	2.20
Residential Irrigation (Water on separate meter)				Residential Irrigation (Water on separate meter)			
First	2,000	Gallons	$ Minimum	First	2,000	Gallons	$ Minimum
Over	2,000	. . . . .	8.09	Over	2,000	. . . . .	3.92
Agency for Resale				Agency for Resale			
Metered at the site of treatment				Water delivered through City facilities			
First	2,000	Gallons	Minimum	First	2,000	Gallons	Minimum
Over	2,000	. . . . .	$ 1.464	Over	2,000	. . . . .	$ 2.096

Monthly charge for Raw Water (includes Raw Water Supply Dev)
Effective January 1, 2020
Raw water rate payers ICL &OCL $1.070/TGAL
Raw water non rate payers ICL & OCL $1.111/TGAL

Golf Course/Athletic Field Iirrigation			
First	2,000	Gallons	Minimum
Over	2,000	. . . . .	$ 3.45

Appendix D

OPERATIONS PLAN FOR THE

LAKE CORPUS CHRISTI-CHOKE CANYON RESERVOIR SYSTEM

The following operations plan for the Lake Corpus Christi –Choke Canyon Reservoir water system provides for the two reservoirs to be operated as a regional water supply with primary purpose to be furnishings a dependable supply to the people in the Coastal Bend area. The plan also recognizes the need for the recreational facilities for public use and the Texas Water Commission adjudicated water permit which requires a minimum flow of 151,000 acre-feet of water annually to bays and estuaries from return flows, spills, or fresh water releases from Lake Corpus Christi once Choke Canyon Reservoir fills.

The Plan consists of four phases of operation depending on the water levels in the two reservoirs.

PHASE I - This phase applies only to the initial filling period of Choke Canyon Reservoir. It is necessary that this reservoir be filled at the earliest opportunity so that all structures and mechanical equipment can be tested. Initial filling of the reservoir also triggers the requirement that minimal flows be made available for bays and estuaries.

1. During the initial period, only the releases requires required by agreement between the City of Corpus Christi and the Texas Parks and Wildlife Department, varying between 15 and 33 cubic feet per second depending on the reservoir level, will be made unless Lake Corpus Christi elevation falls below elevation 86 feet.

2. If water user demand is less than 200,000 acre-feet annually and Lake Corpus Christi is at elevation 86 feet, water will be released from Choke Canyon to maintain this elevation until Choke Canyon Reservoir falls to elevation 184 feet.

3. When Lake Corpus Christi has fallen to elevation 86 feet and Choke Canyon has fallen to elevation 184 feet, Lake Corpus Christi will be allowed to drop to elevation 76 feet, at which time water will be released from Choke Canyon to allow user's intake structures at Lake Corpus Christi to be used.

4. Should water user demand excess 200,000 acre-feet annually, the water level of Lake Corpus Christi will be allowed to drop to elevation 76 feet prior to releases from Choke Canyon Reservoir.

PHASE II - This phase applies after Choke Canyon Reservoir is filled and water user demand is less than 150,000 acre-feet annually.

1. A minimum of 2,000 acre-feet per month will be released from Choke Canyon Reservoir to meet conditions of the release agreement between City of Corpus Christi and the Texas Parks and Wildlife Department.

2. Whenever Lake Corpus Christ water surface falls to elevation 88 feet and Choke Canyon Reservoir surface elevation is above 204 feet, releases will be made from Choke Canyon Reservoir to maintain Lake Corpus Christi surface at elevation 88 feet.

3. Whenever Lake Corpus Christi water surface is at or below elevation 88 feet and Choke Canyon Reservoir surface elevation is below 204 feet, the Choke Canyon release for the current month is made equal to the Lake Corpus Christi release from the preceding month. This minimizes drawdown at Lake Corpus Christi for recreation purposes and promotes a more constant quality of water by mixing Choke Canyon Reservoir releases with Lake Corpus Christi content.

PHASE III - This phase applies after Choke Canyon Reservoir is filled and water user demand is between 150,000 and 200,000 acre-feet annually. During this period, water release plan prepared by the Bureau of Reclamation will be followed to produce a dependable yield of 252,000 acre-feet.

1. A minimum of 200,000 acre-feet per month will be releases from Choke Canyon Reservoir to meet conditions of the release agreement between the City of Corpus Christi and the Texas Parks and Wildlife Department.

2. Whenever Lake Corpus Christi water surface is at or below elevation 88 feet, and the ratio of Choke Canyon Reservoir content to Lake Corpus Christi content (both at the end of the preceding month) exceeds the corresponding ratio with 6-foot drawdown at both reservoirs, the Choke Canyon Reservoir release for the current month is made equal to the Lake Corpus Christi release during the preceding month. This equalizes drawdown at the two reservoirs for recreation purposes and promotes a more constant quality of water by mixing Choke Canyon Reservoir releases with Lake Corpus Christi content.

PHASE IV - This phase applies after Choke Canyon Reservoir is filled, water user demand exceeds 200,000 acre-feet annually, and developed long-term supply is less than 300,000 acre-feet annually.

1. A minimum of 2,000 acre-feet per month will be released from Choke Canyon Reservoir to meet conditions of the release agreement between the City of Corpus Christi and the Texas Parks and Wildlife Department.

2. In order to provide maximum dependable yield from the two reservoirs, the water level in Lake Corpus Christi will be allowed to drop top elevation 74.0 feet (Ordinance Changed #022661) before water is released from Choke Canyon Reservoir in excess of the 2,000 acre-feet per month requirement. When the elevation of Choke Canyon Reservoir drops to 155 feet, Lake Corpus Christi will be lowered to its minimum elevation.

LAKE CORPUS CHRISTI-CHOKE CANYON RESERVOIR STATISTICAL DATA

	Capacity, Acre-Feet*	Water Elevation When Full, Feet	Minimum Functional Elevation, Feet
Lake Corpus Christi	272,000	94.0	76.0
Choke Canyon Reservoir	692,000	220.5	147.5

Intake Structure Elevations of Customers Withdrawing Water Directly from Lake Corpus Christi:

	Elevation, Feet
City of Mathis	73.0
Beeville Water Authority	74.0
Alice Water Authority	67.0
City of Corpus Christi	55.0

Annual Lake Corpus Christi Withdrawals:

Fiscal Year	Total Withdrawn From Lake, Acre-Feet
1975-76	86,416
1976-77	86,408
1977-78	101,596
1978-79	96,029
1979-80	106,851
1980-81	104,657
1981-82	107,002
1982-83	107,348
1983-84	119,701
1984-85	90,226
1985-86	105,469

* 1 acre-foot = 325,850 gallons

Appendix E

ARTICLE XII. - WATER RESOURCE MANAGEMENT[7]

Footnotes:

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Editor's note— Ord. No. 24396, § 1, adopted Mar. 20, 2001, amended art. XII, in its entirety, to read as herein set out. Former art. XII pertained to similar subject matter. See the Code Comparative Table.

Sec. 55-150. - Scope, purpose, authorization, and definitions.

(a) *Scope.* There is hereby established a City of Corpus Christi Water Conservation Plan and Drought Contingency Plan. The City of Corpus Christi Water Conservation Plan approved on May 28, 2013 and the Drought Contingency Plan Revised 2018 edition, approved January 30, 2018, as amended by ordinance, a true copy of which is on file in the office of the city secretary, is adopted, and shall be followed in matters concerning water conservation, drought management, and water supply enhancement programs.

(b) *Declaration of policy.*

(1) It is hereby declared that the general welfare requires that the water resources available to the city be put to the maximum beneficial use to the extent to which they are capable, and that the waste or unreasonable use, or unreasonable method of use of water be prevented, and the conservation of such water is to be extended with a view to the reasonable and beneficial use thereof in the interests of the people of the area served by the city's water resources and for the public welfare.

(2) In making decisions under this article concerning the allocation of water between conflicting interests, highest priority will be given to allocation necessary to support human life and health; i.e., the minimum amount of water necessary for drinking, prevention of disease, and the like. Second highest priority will be given to allocations which will result in the least loss of employment to persons whose income is essential to their families.

(c) *Authorization.* The city manager, or his designee, upon the recommendation of the assistant city manager, public works and utilities, is hereby authorized and directed to implement the applicable provisions of this article upon their determination that such implementation is necessary to protect the public welfare and safety.

(d) *Definitions.* The following terms used in this article are defined as follows:

(1) *"City manager"* means the city manager or the city manager's designee.

(2) *"Drip irrigation"* means an irrigation system that applies water at a controlled low-flow levels directly to the soil.

(3) *"Fountain"* means an artificially created jet or stream of water; a structure, often decorative, from which a jet or stream of water issues.

(4) *"Industrial customers use of water for processing"* means the use of water in processes designed to convert materials of lower value into forms having greater usability.

(5) *"Non-essential purpose"* means water uses that are not essential or not required for the protection of public health, safety and welfare.

(Ord. No. 24396, § 1, 3-20-2001; Ord. No. 029846, § 3, 5-28-2013; Ord. No. 029946, § 1, 9-10-2013; Ord. No. 030545, § 1, 7-14-2015; Ord. No. 031355, § 1, 1-30-2018; Ord. No. 031533, § 1, 9-11-2018)

Sec. 55-151. - Water conservation measures at all times.

(a) The following measures are year-round water conservation best management practices that are in effect at all times, regardless of the reservoir levels or drought contingency levels:

(1) *Prohibition on wasting water:* Actions leading to wasting of water are prohibited and will be enforced. No person shall:

a. Allow water to run off property into gutters or streets.

b. Permit or maintain defective plumbing in a home, business establishment or any location where water is used on the premises. Defective plumbing includes out-of-repair water closets, underground leaks, defective or leaking faucets and taps.

c. Allow water to flow constantly through a tap, hydrant, valve, or otherwise by any use of water connected to the city water system.

d. Use any non-recycling decorative water fountain.

e. Allow irrigation heads or sprinklers to spray directly on paved surfaces such as driveways, parking lots, and sidewalks in public rights-of-way.

f. Operate an irrigation system at water pressure higher than recommended, causing heads to mist, or to operate with broken heads.

(2) *Time of irrigation:* Irrigation by spray or sprinklers is prohibited between the hours of 10:00 a.m. and 6:00 p.m. It is still permissible to water by hand or by drip irrigation at any time of day, unless the city enters Reservoir System Stage 3. However, the use of water is permitted at any hour for short periods of time for testing related to the installation, maintenance, and repair of sprinkler systems.

(3) *Restaurant water saving:* Commercial dining facilities must only serve water upon request.

(Ord. No. 24396, § 1, 3-20-2001; Ord. No. 24726, § 1, 1-8-2002; Ord. No. 026235, § 1, 4-26-2005; Ord. No. 026542, § 1, 11-15-2005; Ord. No. 028141, § 1, 4-28-2009; Ord. No. 029846, § 3, 5-28-2013; Ord. No. 029946, § 1, 9-10-2013; Ord. No. 031355, § 1, 1-30-2018)

Sec. 55-152. - Drought management: Reservoir system stages.

(a) The level of reservoir system severity determines the extent of potential water use restrictions that shall be implemented. Following are the levels of reservoir system in the form of stages:

(1) Stage 1: Mild water shortage watch.

(2) Stage 2: Moderate water shortage condition.

(3) Stage 3: Critical water shortage condition.

(4) Stage 4: Emergency water shortage condition.

(b) Criteria for initiation and termination of reservoir system response stages:

(1) The city manager, or designee, shall monitor water supply and/or demand conditions on a weekly basis and shall determine when conditions warrant initiation or termination of each stage, that is, when the specified "triggers" are reached. However, the city manager, in the exercise of the city manager's discretion, may initiate or terminate any stage when the city manager deems necessary at any particular time.

(2) The triggering criterion to be monitored for determining reservoir system response stages is the combined reservoir storage levels of Choke Canyon Reservoir and Lake Corpus Christi.

(3) Whenever any of the stages listed below are triggered, the city manager shall publish a public notice of the particular stage, in the daily newspaper of general circulation in Nueces County.

(4) To the extent of city's legal authority, the city manager shall require the city's raw water and wholesale treated water customers to issue public notice advising their water customers of conservation and drought management activities consistent with the stages listed below.

(c) The triggering criterions are as follows:

(1) *Stage 1 - Mild water shortage watch:*

Requirements for initiation - The combined storage level for Choke Canyon Reservoir and Lake Corpus Christi declines to below forty (40) per cent.

Requirement for termination - Stage 1 of the plan may be rescinded when the combined storage level increases above fifty (50) per cent.

(2) *Stage 2 - Moderate water shortage condition:*

Requirements for initiation - The combined storage levels declines to below thirty (30) per cent.

Requirement for termination - Stage 2 of the plan may be rescinded when the combined storage level increases above forty (40) per cent. Upon termination of Stage 2, Stage 1 becomes operative.

(3) *Stage 3 - Critical water shortage condition:*

Requirements for initiation - The combined storage levels of Choke Canyon Reservoir and Lake Corpus Christi declines to below twenty (20) per cent.

Requirement for termination - Stage 3 of the plan may be rescinded when the combined storage level increases above thirty (30) per cent. Upon termination of Stage 3, Stage 2 becomes operative.

(4) *Stage 4 - Emergency water shortage condition:*

Requirements for initiation - When the city manager, or designee, determines that a water supply emergency exists based on:

- A major water line breaks, or pump or system failures occur, which causes unprecedented loss of capability to provide water service; or
- Water production or distribution system limitations; or
- Natural or manmade contamination of the water supply source occurs.

Requirement for termination - The emergency water shortage condition may be rescinded when the city manager, or designee, deems appropriate.

(Ord. No. 24396, § 1, 3-20-2001; Ord. No. 24576, § 1, 9-11-2001; Ord. No. 029846, § 3, 5-28-2013; Ord. No. 029946, § 1, 9-10-2013; Ord. No. 030545, § 1, 7-14-2015; Ord. No. 031160, § 1, 5-30-2017; Ord. No. 031355, § 1, 1-30-2018)

Sec. 55-153. - Drought management: Reservoir system best management practices per stage.

(a) In order to achieve water use reductions, a series of best management practices will be enacted and enforced at each reservoir system stage. These best management practices (BMP) are listed below by stage. During Stages 1, 2, and 3, requests for exceptions may be presented to the director of water operations or his designee.

(b) *Stage 1 response - Mild water shortage watch.*

(1) Target: During Stage 1, achieve a ten (10) per cent reduction in daily treated water demand relative to treated water demand with the water use restrictions below.

(2) The best management practices for supply management: The city will also do the following during Stage 1:

a. Use more repair crews if necessary to allow for a quicker response time for water-line leak repair; and

b. City crews (water and other departments) begin monitoring customers' compliance with Stage 1 restrictions during the course of their daily rounds.

(3) The following water use restrictions shall apply to all persons during Stage 1:

a. Irrigation of landscaped areas with hose-end sprinklers or automatic irrigation systems shall be limited to once per week. The watering schedule will be determined by the city manager or designee. Customers will be made aware of their designated watering day in accordance with drought contingency plan.

However, irrigation of landscaped areas is permitted on any day if it is by means of a hand-held hose (with positive shutoff nozzle), a faucet filled bucket or watering can of five (5) gallons or less, or drip irrigation system with a positive shutoff device. Exceptions for this restriction may be permitted, upon review and approval by the director of water operations or his designee for the following uses: new plantings (for up to sixty (60) days), vegetable gardens, athletic playing fields, and botanical gardens. In addition, this restriction does not apply to customers irrigating with well water or an aerobic septic system. Customers irrigating with well water or an aerobic septic system must apply for a permit from the city water department to be prominently posted on the premises within two (2) feet of the street number located on the premises.

b. Use of water from hydrants shall be limited to firefighting, related activities, or other activities necessary to maintain public health, safety and welfare, except that use of water from designated fire hydrants for construction purposes may be allowed under special permit from the City of Corpus Christi Water Department.

c. Use of water for the irrigation of golf course greens, tees, and fairways is prohibited except on designated watering days. However, if the golf course utilizes a water source other than that provided through City of Corpus Christi Water Department infrastructure, the facility shall not be subject to these regulations.

d. The use of water to maintain integrity of building foundations is permitted on any day at any time only by use of hand-held hose or drip irrigation.

e. Except for immediate fire protection or flushing of water lines, the use of water from a hydrant is only allowed with a permit granted by the director of water operation or his designee and a construction meter obtained from the utility business office.

(c) *Stage 2 response - Moderate water shortage conditions* .

(1) Target: During Stage 2, achieve a fifteen (15) per cent reduction in total daily treated water demand relative to treated water demand with the water use restrictions below.

(2) Best management practices for supply management: In addition to the best management practices for supply management listed under Stage 1, the city will also do the following during Stage 2:

a. Eliminate the flushing of water mains unless required for decontamination and/or public safety; and

b. Review customers' water usage for compliance based on the previous month's water use and notify violators verbally or in writing as the situation dictates.

(3) Water use restrictions for demand reduction: All requirements of Stage 1 shall remain in effect during Stage 2 except as modified below:

a. Irrigation of landscaped areas shall be limited to once every other week. The watering schedule will be determined by the city manager or designee. Customers will be made aware of their designated watering day. However, irrigation of landscaped areas is permitted on any day if it is by means of a hand-held hose (with positive shutoff nozzle), a faucet filled bucket or watering can of five (5) gallons or less, or drip irrigation system with a positive shutoff device. Exceptions for this restriction may be permitted, upon review and approval by the director of water operations or his designee, for the following uses: new plantings (for up to sixty (60) days), vegetable gardens, athletic playing fields, and botanical gardens. In addition, this restriction does not apply to customers irrigating with well water or an aerobic septic system. Customers irrigating with well water or an aerobic septic system shall still apply for a permit from the city water department to be prominently posted on the premises within two (2) feet of the street number located on the premises.

b. The watering of golf course fairways with potable water is prohibited. The watering of greens and tees are limited to once every other week unless the golf course utilizes a water source other than that provided through City of Corpus Christi Water Department infrastructure or done by means of hand-held hoses, hand-held buckets, or drip irrigation.

(4) During Stage 2, the following measures are optional water use restrictions that may be implemented by the city manager, or designee, with city council approval, as conditions warrant:

a. For residential and multi-unit customers, a drought surcharge of up to and including one hundred (100) per cent of the total monthly water bill over the monthly allocation may be added to the customers' bill to deter discretionary water use.

(d) *Stage 3 response - Critical water shortage conditions.*

(1) Target: During Stage 3, achieve a thirty (30) per cent or greater reduction in daily treated water demand relative to treated water demand with the water use restrictions below. An additional surcharge will be added to each utility bill during Stage 3 water shortage conditions to discourage discretionary water use, as described in section 55-154 for retail customers and section 55-159 for wholesale customers.

(2) Best management practices for supply management: In addition to the best management practices for supply management listed under Stage 2, the city will also do the following during Stage 3:

- Upon written notice, disconnect the water meters of willful violators if absolutely necessary to prevent the deliberate wasting of water.

(3) Water use restrictions for demand reduction: All requirements of Stages 1 and 2 shall remain in effect during Stage 3 except as modified below:

a. Irrigation of landscaped areas shall be prohibited at all times.

b. Use of water to wash any motor vehicle, motorbike, boat, trailer, or other vehicle not occurring on the premises of a commercial car wash and not in the immediate interest of public health, safety, and welfare is prohibited.

c. The filling, refilling, or adding of water to swimming pools, wading pools, and jacuzzi-type pools, and water parks (unless utilizing water from a non-city alternative source) is prohibited.

d. The use of water to maintain the integrity of a building foundation is still permitted on the designated Stage 2 watering day and shall be done by hand or drip irrigation method.

e. All fountains shall only operate to circulate water in order to maintain equipment.

f. The use of water for construction purposes from designated fire hydrants with a special permit will continue with a ten (10) per cent surcharge added to the water rate.

(4) During Stage 3, the following measures are optional water use restrictions that may be implemented by the city manager, or designee, with city council approval, as conditions warrant:

a. No application for new, additional, expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or water service facilities of any kind shall be approved, and time limits for approval of such applications are hereby suspended for such time as this drought response stage shall be in effect.

b. For residential and multi-unit customers, a drought surcharge of up to and including one hundred (100) per cent of the total monthly water bill over the monthly allocation may be added to the customers' bill to deter discretionary water use.

(e) *Stage 4 response - Emergency water shortage conditions.*

(1) Target: During Stage 4, achieve a fifty (50) per cent or greater reduction in daily treated water demand relative to treated water demand with the below water use restrictions. Surcharges and reduced allocations are enforceable during Stage 4 water shortage conditions, as described in section 55-154.

During emergency conditions such as system outage, supply source contamination, or supply sources draining empty, alternative water sources and/or alternative delivery mechanisms may be necessary with prior approval of the city manager. For emergency water shortage conditions associated with contamination of Nueces Basin stored supplies, the city, under the city manager's direction, will cease pumping from the Nueces River and will contact the LNRA to identify additional, temporary water that may be available from Lake Texana on a short-term basis to meet essential water needs. For emergency water shortage conditions associated with contamination of Lake Texana supplies, the city, under the city manager's direction, will cease pumping from the Mary Rhodes Pipeline.

(2) Best management practices for supply management: In addition to the best management practices for supply management listed under Stage 3, the city will also do the following:

- Call the ten (10) largest water customers in the area affected by the emergency condition, and if necessary, use runners in key areas to begin spreading the message of a major outage.

(3) Water use restrictions for demand reduction: During Stage 4, all requirements of Stages 1, 2, and 3 shall remain in effect except as modified below:

a. Irrigation of landscaped areas is absolutely prohibited.

b. Use of water to wash any motor vehicle, motorbike, boat, trailer, or other vehicle is absolutely prohibited.

c. Associated uses of water not related to business process which are discretionary, such as equipment washing, shall be deferred until the Stage 5 emergency has been terminated.

(4) During Stage 4, the following measures are optional water use restrictions that may be implemented by the city manager, or designee, with city council approval, as conditions warrant:

For residential and multi-unit customers, a drought surcharge of up to and including one hundred (100) per cent of the total monthly water bill over the monthly allocation may be added to the customers' bill to deter discretionary water use.

(Ord. No. 24396, § 1, 3-20-2001; Ord. No. 24576, § 2, 9-11-2001; Ord. No. 029846, § 3, 5-28-2013; Ord. No. 029946, § 1, 9-10-2013; Ord. No. 030545, § 1, 7-14-2015; Ord. No. 031160, § 1, 5-30-2017; Ord. No. 031355, § 1, 1-30-2018)

Sec. 55-154. - Surcharges for reservoir system stages 2, 3 and 4, and service measures.

(a) *General.*

(1) The surcharges established herein are solely intended to regulate and deter the use of water during a period of serious drought in order to achieve necessary water conservation. The city council expressly finds that the drought poses a serious and immediate threat to the public and economic health and general welfare of this community, and that the surcharges and other measures adopted herein are essential to protect said public health and welfare.

(2) This section, and the surcharges and measures adopted herein are an exercise of the city's regulatory and police power, and the surcharges and connection fees are conservation rates intended to meet fixed costs as a result of lost revenue.

(3) With city council approval, the city manager or designee is authorized to determine trigger points and surcharges during Stages 2, 3 and 4 emergency water shortage conditions.

(4) In this section, institutional customer means city utility customer which operates as a not-for-profit entity.

(5) A customer may appeal an allocation or drought surcharge triggering point established under this section to the director of water operations or his designee on grounds of unnecessary hardship through the process outlined in section 55-155.

(6) Reservoir system surcharge funds will first be applied towards annual debt service payments and operating and maintenance expenses of the water department as reflected in the city operating budget to offset revenue loss due to drought conditions. Additional funds will be reported to city council for city council direction.

(b) *Residential water customers, who are not billed through a master water meter.*

(1) A monthly base amount of three thousand (3,000) gallons shall be established as a trigger point for each customer. Water consumption up to and including this amount will not include a drought surcharge.

(2) Above the three thousand (3,000) gallon monthly consumption trigger point, with city council approval, a drought surcharge shall be added up to and including one hundred (100) per cent of the customer's total monthly water bill over the allocation.

(c) *Residential customers who are billed from a master water meter.*

(1) Once Stage 1 condition has been declared, property managers of multi-tenant units shall notify the city director of water operations of number of residential units in their facility for determination of allocations. Until so notified, the city shall calculate the allocation based on two (2) residential units per master water meter. A monthly base amount of three thousand (3,000) gallons shall be established as a trigger point for each residential unit.

(2) When consumption for the month is less than or equal to three thousand (3,000) gallons times the number of residential units, there will be no surcharge.

(3) With city council approval, when consumption is above the three thousand (3,000) gallons times the number of units, a drought surcharge shall be added up to and including one hundred (100) per cent of the customer's total monthly water bill over the allocation.

(d) *Commercial or institutional customer.*

(1) A monthly water usage allocation shall be established by the city manager or designee for each commercial or institutional customer.

(2) Method of establishing allocation:

a. When the combined reservoir capacity is less than twenty (20) per cent of total capacity (Stage 3), the commercial or institutional customer's allocation shall be ninety (90) per cent of the customer's usage for the corresponding month's billing period during the previous twelve (12) months prior to the implementation of Stage 1 condition.

b. If the customer's billing history is shorter than twelve (12) months, the monthly average for the period for which there is a record shall be used for any monthly period for which no history exists.

c. Provided, however, a customer, ninety (90) per cent of whose monthly usage is less than six thousand (6,000) gallons, shall be allocated six thousand (6,000) gallons.

d. The city manager shall give best effort to see that notice of each commercial or institutional customer's allocation is mailed to such customer.

e. If, however, the customer does not receive such notice, it shall be the customer's responsibility to contact the city' utilities billing office to determine the allocation, and the allocation shall be fully effective notwithstanding lack of receipt of written notice.

f. Upon request of the customer or at the initiative of the city manager, the allocation may be reduced or increased by the city manager:

1. If one (1) nonresidential customer agrees to transfer part of its allocation to another nonresidential customer; or

2. If other objective evidence demonstrates that the designated allocation is inaccurate under present conditions.

(e) *Industrial customers, who use less than one hundred thousand (100,000) gallons of water per day for processing.*

(1) A monthly water usage allocation shall be established by the city manager or designee for each industrial customer, which uses less than one hundred thousand (100,000) gallons of water per day for processing (e.g., an industrial customer).

(2) Method of establishing allocation.

a. When the combined reservoir capacity of Choke Canyon Reservoir and Lake Corpus Christi is less than twenty (20) per cent of total capacity (Stage 3), the industrial customer allocation shall be ninety (90) per cent of the customer's usage for the corresponding month's billing period during the previous twelve (12) months prior to the implementation of Stage 1 condition.

b. If the customer's billing history is shorter than twelve (12) months, the monthly allocation shall be one-twelfth of ninety (90) per cent of the customer's maximum annual contracted amount until twelve (12) months of billing history are established. However, if the industrial customer does not have a water contract and does not have at least twelve (12) months of billing history, then the new industrial customer will provide data regarding expected water use and city will determine allocation based on ninety (90) per cent of expected use to determine initial allocation until twelve (12) months of billing history are established.

c. The city manager shall give his best effort to see that notice of each industrial customer's allocation is mailed to such customer.

d. If, however, the industrial customer does not receive such notice, it shall be the customer's responsibility to contact the city utilities billing office to determine the allocation, and the allocation shall be fully effective notwithstanding lack of receipt of written notice.

e. Upon request of the industrial customer or at the initiative of the city manager, the allocation may be reduced or increased by the city manager, if:

1. The designated period does not accurately reflect the customer's normal water usage because customer had to shut down a major processing unit for overhaul during the period.

2. The customer has added or is in the process of adding significant additional processing capacity.

3. The customer has shut down or significantly reduced the production of a major processing unit.

4. The customer has previously implemented significant permanent water conservation measures.

5. The customer agrees to transfer part of its allocation to another industrial customer.

6. Other objective evidence demonstrates that the designated allocation is inaccurate under present conditions.

(f) *Commercial customers, institutional customers, and industrial customers who use less than one hundred thousand (100,000) gallons of water per day for processing shall pay the following reservoir system surcharges:*

(1) Customers whose allocation is six thousand (6,000) gallons through twenty thousand (20,000) gallons per month:

a. Five dollars ($5.00) per one thousand (1,000) gallons for the first one thousand (1,000) gallons over allocation.

b. Eight dollars ($8.00) per one thousand (1,000) gallons for the second one thousand (1,000) gallons over allocation.

c. Sixteen dollars ($16.00) per one thousand (1,000) gallons for the third one thousand (1,000) gallons over allocation.

d. Forty dollars ($40.00) for each additional one thousand (1,000) gallons over allocation.

(2) Customers whose allocation is twenty-one thousand (21,000) gallons per month or more:

a. One (1) times the block rate for each one thousand (1,000) gallons in excess of the allocation up through five (5) per cent above allocation.

b. Three (3) times the block rate for each one thousand (1,000) gallons from five (5) per cent through ten (10) per cent above allocation.

c. Five (5) times the block rate for each one thousand (1,000) gallons from ten (10) per cent through fifteen (15) per cent above allocation.

d. Ten (10) times the block rate for each one thousand (1,000) gallons more than fifteen (15) per cent above allocation.

e. The surcharges shall be cumulative.

f. As used herein, "block rate" means the charge to the customer per one thousand (1,000) gallons at the regular water rate schedule at the level of the customer's allocation.

(g) *Industrial customers, who use one hundred thousand (100,000) gallons or more of water per day for processing.*

(1) A monthly water usage allocation shall be established by the city manager or designee for each industrial customer, which uses water for processing (e.g., an industrial customer).

(2) Method of establishing allocation.

a. When the combined reservoir capacity of Choke Canyon Reservoir and Lake Corpus Christi is less than thirty (30) per cent of total capacity (Stage 2), the industrial customer allocation shall be eighty (80) per cent of the customer's usage for the corresponding month's billing period during the previous twelve (12) months prior to the implementation of Stage 1 condition.

b. If the customer's billing history is shorter than twelve (12) months, the monthly allocation shall be one-twelfth of eighty (80) per cent of the customer's maximum annual contracted amount until twelve (12) months of billing history are established. However, if the industrial customer does not have a water contract and does not have at least twelve (12) months of

billing history, then the new industrial customer will provide data regarding expected water use and city will determine allocation based on eighty (80) per cent of expected use to determine initial allocation until twelve (12) months of billing history are established.

c. The city manager shall give his best effort to see that notice of each industrial customer's allocation is mailed to such customer.

d. If, however, the industrial customer does not receive such notice, it shall be the customer's responsibility to contact the city utilities billing office to determine the allocation, and the allocation shall be fully effective notwithstanding lack of receipt of written notice.

e. Upon request of the industrial customer or at the initiative of the city manager, the allocation may be reduced or increased by the city manager, if:

1. The designated period does not accurately reflect the customer's normal water usage because customer had to shut down a major processing unit for overhaul during the period.

2. The customer has added or is in the process of adding significant additional processing capacity.

3. The customer has shut down or significantly reduced the production of a major processing unit.

4. The customer has previously implemented significant permanent water conservation measures.

5. The customer agrees to transfer part of its allocation to another industrial customer.

6. Other objective evidence demonstrates that the designated allocation is inaccurate under present conditions.

(h) *Industrial customers using one hundred thousand (100,000) gallons or more of water per day for processing shall pay the following drought surcharges:*

(1) Customers whose allocation is eighty thousand (80,000) gallons per month or more:

a. Three (3) times the block rate for each one thousand (1,000) gallons in excess of the allocation up through five (5) per cent above allocation.

b. Six (6) times the block rate for each one thousand (1,000) gallons from five (5) per cent through ten (10) per cent above allocation.

c. Nine (9) times the block rate for each one thousand (1,000) gallons from ten (10) per cent through fifteen (15) per cent above allocation.

d. Twelve (12) times the block rate for each one thousand (1,000) gallons more than fifteen (15) per cent above allocation.

e. The surcharges shall be cumulative.

f. As used herein, "block rate" means the charge to the customer per one thousand (1,000) gallons at the regular water rate schedule at the level of the customer's allocation.

(i) *Nonresidential customer is billed from a master meter.*

(1) When a nonresidential customer is billed from a master meter which jointly measures water to multiple residential dwelling units (for example: apartments, mobile homes), the customer may pass along any surcharges assessed under this plan to the tenants or occupants, provided that:

a. The customer notifies each tenant in writing:

1. That the surcharge will be passed along.

2. How the surcharge will be apportioned.

3. That the landlord must be notified immediately of any plumbing leaks.

4. Methods to conserve water (which shall be obtained from the city).

b. The customer diligently maintains the plumbing system to prevent leaks.

c. The customer installs water saving devices and measures (ideas for which are available from the city) to the extent reasonable and practical under the circumstances.

(j) *For residential customers, the following measures come into effect after city council approves a drought rate surcharge; for nonresidential customers, these measures come into effect at Stage 3. Water service to the customer may be terminated under the following conditions:*

(1) Monthly residential water usage exceeds trigger point by four thousand (4,000) gallons or more two (2) or more times (which need not be consecutive months).

(2) Monthly water usage on a master meter which jointly measures water usage to multiple residential dwelling units exceeds trigger point by four thousand (4,000) gallons times the number of dwelling units or more two (2) or more times (which need not be consecutive months).

(3) Monthly nonresidential water usage for a customer whose allocation is six thousand (6,000) gallons through twenty thousand (20,000) gallons exceeds its allocation by seven thousand (7,000) gallons or more two (2) or more times (which need not be consecutive months).

(4) Monthly nonresidential water usage for a customer whose allocation is twenty-one thousand (21,000) gallons or more exceeds its allocation by fifteen (15) per cent or more two (2) or more times (which need not be consecutive months).

(5) For residential customers and nonresidential customers, after the first disconnection, water service shall be restored upon request for a fee of fifty dollars ($50.00).

(6) For such customers, after the second disconnection, water service shall be restored within twenty-four (24) hours of the request for a fee of five hundred dollars ($500.00).

(7) If water service is disconnected a third time for such customer, water service shall not be restored until the city re-enters a level of water conservation less than Stage 2. For master meter customers, the service restoration fees shall be the same as above times the number of dwelling units.

(8) The city manager is directed to institute written guidelines for disconnection of water service under this provision, which will satisfy minimum due process requirements, if any.

(k) It shall be a defense to imposition of a surcharge hereunder, or to termination of service, that water used over allocation resulted from loss of water through no fault of the customer (for example, a major water line break) for the following conditions:

(1) The customer shall have the burden to prove such defense by objective evidence (for example, a written certification of the circumstances by a plumber).

(2) A sworn statement may be required of the customer.

(3) This defense shall not apply if the customer failed to take reasonable steps for upkeep of the plumbing system, failed to reasonably inspect the system and discover the leak, failed to take immediate steps to correct the leak after discovered, or was in any other way negligent in causing or permitting the loss of water.

(l) When this section refers to allocation or water usage periods as "month," monthly," "billing period," and the like, such references shall mean the period in the city's ordinary billing cycle which commences with the reading of a meter one (1) month and commences with the next reading of that meter which is usually the next month.

(1) The goal for the length of such period is thirty (30) days, but a variance of two (2) days, more or less, will necessarily exist as to particular meters.

(2) If the meter reader system is prevented from timely reading a meter by any obstacle which is attributable to the customer, the original allocation shall apply to the longer period without modification.

(Ord. No. 24396, § 1, 3-20-2001; Ord. No. 029846, § 3, 5-28-2013; Ord. No. 029946, § 1, 9-10-2013; Ord. No. 031355, § 1, 1-30-2018; Ord. No. 031533, § 2, 9-11-2018)

Sec. 55-155. - Requests for exemptions and variances.

(a) The director of water operations or his designee, may, in writing, grant a temporary variance to any of the provisions for water users found in this article XII upon determination that failure to grant such variance would cause an emergency condition adversely affecting the public health, sanitation, or fire protection for the public or person requesting such a variance.

(b) A person requesting an exemption or variance from the provisions of this article shall file request on city-provided application for exemption/variance with the city water department within five (5) days after a particular reservoir system response stage has been invoked. All request forms shall be reviewed by the director of water operations or his designee, and shall include the following:

(1) Name and address of the water user(s).

(2) Purpose of water use.

(3) Specific provision(s) of the ordinance from which the water user is requesting relief.

(4) Detailed statement as to how the specific provision of the ordinance adversely affects the water user or what damage or harm will occur to the water user or others if water user complies with this plan.

(5) Description of the exemption or variance requested.

(6) Period of time for which the exemption or variance is sought.

(7) Alternative water use restrictions or other measures the water user is taking or proposes to take to meet the intent of this plan and the compliance date.

(8) Other pertinent information; or as required on permit application.

(c) No exemption nor variance shall be retroactive or otherwise justify any violation of this article occurring prior to the issuance of the exemption/variance.

(d) All requests for variances/exemptions shall be reviewed and determined within three (3) business days of receipt of complete application.

(e) The director of water operations or his designee shall consider requests of water users for special consideration to be given as to their respective particular circumstances and is hereby authorized to, in special cases, grant such variance from the terms of this plan if such compliance would cause an emergency condition adversely affecting the public health, sanitation, or fire protection for the public or person requesting such a variance as will not be contrary to the public interest, where, owing to special conditions, a literal enforcement of the provisions of this plan will result in unnecessary hardship, and so that the spirit of this plan shall be observed and substantial justice done.

(f) Should a permit for special exception be granted, it shall be in effect from the time of granting through the termination of the then current stage, unless revoked by the director of water operations for noncompliance; provided, that the permit is prominently posted on the premises within two (2) feet of the street number located on the premises.

(g) A person denied request for permit or exception from these rules may appeal the decision to the assistant city manager for public works, utilities and transportation by submitting written request for appeal to the assistant city manager within five (5) business days from issuance of denial. The decision of the assistant city manager shall be final.

(h) Violations of any permit condition may be enforced under section 55-156.

(Ord. No. 24396, § 1, 3-20-2001; Ord. No. 24576, § 3, 9-11-2001; Ord. No. 029846, § 3, 5-28-2013; Ord. No. 029946, § 1, 9-10-2013; Ord. No. 031355, § 1, 1-30-2018)

Sec. 55-156. - Violations, penalties, and enforcement.

(a) A violation under this article is a class C misdemeanor. Any person that violates any provision of this article shall be subject to a fine of not more than five hundred dollars ($500.00) per violation per day. The culpable mental state required by V.T.C.A., Penal Code § 6.02 is specifically negated and dispensed with and a violation of this article is a strict liability offense.

(b) The commission of a violation of each provision, and each separate violation thereof, shall be deemed a separate offense, in and upon conviction thereof, shall be fined as hereinabove provided.

(c) If any person or a second person in the same household or premises, is found guilty of a second violation of this article, the water superintendent shall be authorized to discontinue water service to the premises where such violation occurs.

(d) Cases filed under this section shall be expedited and given preferential setting in municipal court before all other cases.

(e) Any person whose name is on file with the utilities billing office as the customer on the water account for the property where the violation occurs or originates shall be presumed to be the violator, and proof that the violation occurred on said premises shall constitute prima facie evidence that the customer committed the violation, but said customer shall have the right to show that he did not commit the violation.

(f) If any person fails to respond to a citation or summons issued for a violation of this article within the time allowed, upon receipt of notice from the director or a judge of the municipal courts, the water superintendent is authorized to discontinue water service to the premises where such violation occurs.

(Ord. No. 24396, § 1, 3-20-2001; Ord. No. 24576, § 4, 9-11-2001; Ord. No. 029846, § 3, 5-28-2013; Ord. No. 029946, § 1, 9-10-2013)

Sec. 55-157. - Effluent distribution; permit and regulations.

(a) Upon implementation of the City of Corpus Christi Water Conservation Plan as provided in this section, the city may make available effluent water discharged from its sewage treatment plants for the purpose of watering lawns, grass, and other plants, dust control and similar uses.

(1) Such effluent water shall be made available only under the terms and conditions herein provided and only to such persons as are duly permitted as distributors as provided in this section.

(2) The city shall be under no obligation to provide such effluent and reserves the right to discontinue such service at any time and to limit the volume and to establish or alter loading procedures and/or locations as necessary for the efficient administration of the wastewater division.

(b) No effluent distribution permit shall be issued except upon application filed with the wastewater division of the city. Every such application shall contain the following information:

(1) Name of applicant.

(2) Name of authorized representative (e.g., president of corporation; partner, etc.) if applicant is other than an individual.

(3) Business address and phone number.

(4) Residence address and phone number of authorized individual representative.

(5) Description of each vehicle and container unit to be used in the transportation or distribution of effluent water, including the make, year, model, type, weight and gross vehicle weight, container capacity in gallons, vehicle registration number, and the state safety inspection certificate number and expiration date.

(6) Names and driver's license number of every proposed driver of such vehicles.

(7) Statement of previous use of container units and any proposed use after or concurrently with such units use for effluent distribution.

(8) Statement of the proposed uses of any effluent water, including whether the use is proposed for residential, commercial, or industrial purpose.

(c) Upon the filing of the required application, and payment of the permit fee specified herein for each container unit, the wastewater superintendent, or the superintendent's designee, shall upon his determination that the applicant and vehicles and container units are in compliance with all applicable provisions of this article, issue a permit for each such container unit.

(1) The permit shall identify the particular unit for which it is issued and shall be displayed in a prominent place upon the unit.

(2) Each unit shall be separately permitted.

(d) The permit fee shall be fifty dollars ($50.00) per month for each unit plus five dollars ($5.00) per month for each unit per one thousand (1,000) gallons of capacity (or portion thereof) over the first one thousand (1,000) gallons of capacity.

(e) Permits shall be issued on a quarterly basis from the effective date of this plan; fee proration shall be on a monthly basis.

(f) Notwithstanding subsection (g) of this section, a resident of the City of Corpus Christi may obtain effluent at no charge from a wastewater treatment plant, designated by the wastewater superintendent, for the irrigation of vegetation, dust control, or watering a foundation at the individual's personal residence.

(1) Any effluent received under this subsection may not be sold or transferred to another individual or used for commercial purposes.

a. Before receiving effluent the resident must obtain a permit from the wastewater superintendent, or the superintendent's designee.

b. Prior to receiving a permit, the resident must complete a course of instruction on the handling of wastewater effluent that has been developed by the city's health department.

c. Any container used to receive and transport effluent must have a lid or cap, be watertight, and be properly secured to the vehicle.

d. All containers are subject to inspection and approval of the city health department or wastewater department.

e. Any effluent received under this subsection must be immediately transported to the personal residence of the individual receiving the effluent and used for the irrigation of vegetation, dust control, or watering a foundation.

f. The effluent may not be stored for future use.

g. A resident using effluent for the irrigation of vegetation or dust control must post a sign on the property legible from the street stating that effluent is being used on the property.

h. Every resident obtaining effluent under this subsection must either:

1. Provide proof of and maintain in force a property liability insurance policy (homeowner/renter) in the amount of three hundred thousand dollars ($300,000.00) per occurrence; or

2. Sign a form provided by the superintendent that releases the City of Corpus Christi from any liability resulting from the resident's improper use or transportation of the effluent and agree to hold the city harmless, including reimbursing the city for the costs of defending itself.

(g) Every effluent distribution permit shall be subject to the following terms and conditions and no person shall receive or distribute effluent water except in compliance herewith:

(1) Container units or tanks shall have a minimum capacity of five hundred (500) gallons; shall be capable of being closed water-tight and shall be so closed during transport of effluent water; and shall be maintained in a leak-proof condition; provided, however, that special permits may be issued for container units with a capacity of less than five hundred (500) gallons upon the determination by the wastewater division superintendent that all other container unit specifications herein required have been met and that the particular container unit does not create an increased risk to the public health and safety.

(2) No vehicle may be used in connection herewith which has not been reported on the application and approved for such use.

(3) Every driver or handler must be certified by the wastewater division prior to receiving any effluent water from the city.

a. The wastewater division may certify a driver or handler who has completed a course of instruction on the handling of wastewater effluent that has been developed by the city's health department.

(4) Effluent water shall be used as soon as possible to prevent regrowth of bacteria.

a. Permittees shall check effluent water in their units not less than every four (4) hours for chlorine residual, except for effluent stored in fixed-site containers which shall be checked not less than every eight (8) hours.

(5) Chlorine residuals shall be maintained at one (1) milligram per liter (parts per million) [one (1) mg/one (l) (ppm)], consistent throughout the effluent container.

(6) The minimum quality of the effluent must not exceed conditions on the use of effluent set out in any permits or authorizations issued to the city by a federal or state regulatory agency or the applicable regulations of a federal or state regulatory agency.

(7) Effluent containers, including those used for storage, shall be subject to inspection and approval of the city health department or wastewater division, whose inspectors are hereby authorized to prohibit the use of any container or effluent water which is determined to be outside the parameters established in this section or is otherwise determined to present a danger to public health.

(8) Every permittee shall provide proof of, and shall maintain in force, a policy of comprehensive general liability insurance in the amount specified by the city's risk manager under section 17-19; or shall maintain a policy of general business liability insurance in the same or greater amount with a contractual liability endorsement; and shall maintain a policy of automobile liability insurance in the minimum amounts set by state law. The city shall be named as an additional insured on the general liability insurance policies.

(9) By acceptance of a permit under this section and/or receipt of effluent water from the city system, the permittee and/or recipient of such effluent agree to fully indemnify, save and hold harmless, the City of Corpus Christi, Texas, its agents and employees, from and against all claims and actions, and all expenses incidental to the investigation and defense thereof, based upon or arising out of damages or injuries to person or property in any way related to or in connection with the use or distribution of effluent water under this section.

(10) Permittees shall provide a written notice to every person to whom effluent is furnished which shall state in not less than 10-point type, substantially as follows:

"CAUTION"

"You are hereby advised that effluent water is the discharged water from a sewage treatment plant. The Director of Public Health has determined that improper use or handling could be harmful and recommends the following precautions:

1. Do not use effluent water for drinking, bathing, or personal hygiene purposes.
2. Do not use effluent water for washing autos, clothes, or other personal contact items.
3. Do not use effluent water in swimming pools or for similar recreational uses.
4. Do not allow children to play on grass wet with effluent water, wait until it dries.
5. Do not use effluent which has been stored for more than four (4) hours unless the chlorine residual level has been tested and is not less than one (1) part per million [one (1) mg/one (1)(p.m.)].
6. Application of effluent shall be by coarse stream and shall not be by fine spray."

(h) Violation of any of the cautions set forth in subsection (g)(10) of this section, by any person, is a violation of this section.

(i) Violation of any of the provisions of this section, in addition to the general penalties provided in this particle, shall result in denial or revocation of any such violator's effluent distribution permit.

(Ord. No. 24396, § 1, 3-20-2001; Ord. No. 24576, § 4, 9-11-2001)

Editor's note— Formerly numbered § 55-158.

Sec. 55-158. - Operations plan for reservoir system.

To maximize the amount of water reliably available to the city and its water customers, the city manager shall operate the Lake Corpus Christi/Choke Canyon Reservoir System as follows:

(1) A minimum of two thousand (2,000) acre-feet per month will be released from Choke Canyon Reservoir to meet conditions of the release agreement between the City of Corpus Christi and the Texas Parks and Wildlife Department.

(2) In order to provide maximum dependable yield from the two (2) reservoirs, the water level in Lake Corpus Christi will be allowed to drop to elevation seventy-four (74) feet before water is released from Choke Canyon Reservoir in excess of the two thousand (2,000) acre-feet per month requirement.

(3) Under the agreed order of the Texas Natural Resource Conservation Commission under Certificate of Adjudication No. 21-3214, city shall: (1) reduce targeted inflows of water to Nueces Bay to one thousand two hundred (1,200) acre-feet when reservoir system storage falls below forty (40) per cent of capacity; and (2) suspend targeted inflows when reservoir system storage falls below thirty (30) per cent of capacity.

(Ord. No. 24396, § 1, 3-20-2001; Ord. No. 24576, § 4, 9-11-2001; Ord. No. 029846, § 3, 5-28-2013; Ord. No. 029946, § 1, 9-10-2013)

Sec. 55-159. - Procedures for allocating water to raw water and wholesale treated water customers on a pro rata basis during a water shortage.

(a) In the event that the triggering criterion specified in section 55-152 for Stage 2 have been met, the city manager, or designee, is hereby authorized to initiate allocation preparations of water supplies on a pro rata basis to raw water and wholesale treated water customers in accordance with V.T.C.A., Water Code § 11.039.

(1) A raw water or wholesale treated water customer's monthly allocation shall be a percentage of the customer's water usage baseline. The percentage will be set by resolution of the city council based on the city manager's assessment of the severity of the water shortage condition and the need to curtail water diversions and deliveries, and may be adjusted periodically by resolution of the city council as conditions warrant. Once pro rata allocation is in effect, water diversions by or deliveries to each raw water or wholesale treated water customer shall be limited to the allocation established for each month.

(2) A monthly water usage allocation shall be established by the city manager, or the city manager's designee, for each raw water or wholesale treated water customer. The raw water or wholesale treated water customer's water usage baseline will be computed on the average water usage by month for the previous five-year period. If the raw water or wholesale treated water customer's billing history is less than five (5) years, the monthly average for the period for which there is a record shall be used for any monthly period for which no billing history exists.

(3) The city manager shall provide notice, by certified mail, to each raw water or wholesale treated water customer informing them of their monthly water usage allocations and shall notify the news media and the Executive Director of the Texas Commission on Environmental Quality upon initiation of pro rata water allocation.

(4) Upon request of the raw water or wholesale treated water customer or at the initiative of the city manager, the allocation may be reduced or increased if:

a. The designated period does not accurately reflect the raw water or wholesale treated water customer's normal water usage;

b. The customer agrees to transfer part of its allocation to another raw water or wholesale treated water customer; or

c. Other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation established under this section to the City Council of the City of Corpus Christi.

(b) *Pro rata surcharges and enforcement.*

(1) During any period when pro rata allocation of available water supplies is in effect, wholesale customers shall pay the following surcharges on excess water diversions:

a. Two (2.0) times the normal water charge per unit for water diversions and/or deliveries in excess of the monthly allocation up through five (5) per cent above the monthly allocation.

b. Two and one-half (2.5) times the normal water charge per unit for water diversions and/or deliveries in excess of the monthly allocation from five (5) per cent through ten (10) per cent above the monthly allocation.

c. Three (3.0) times the normal water charge per unit for water diversions and/or deliveries in excess of the monthly allocation from ten (10) per cent through fifteen (15) per cent above the monthly allocation.

d. Three and one-half (3.5) times the normal water charge per unit for water diversions and/or deliveries more than fifteen (15) per cent above the monthly allocation.

(c) *Variances.*

(1) The city manager, or the city manager's designee, may, in writing, grant a temporary variance to the pro rata water allocation policies provided by this section if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the public health, welfare, or safety, and if one (1) or more of the following conditions are met:

a. Compliance cannot be technically accomplished during the duration of the water supply shortage or other condition for which the plan is in effect.

b. Alternative methods can be implemented which will achieve the same level of reduction in water use.

(2) Raw water or wholesale treated water customers requesting an exemption from the provisions of this section shall file a petition for variance with the city manager within five (5) days after pro rata allocation has been invoked.

(3) All petitions for variances shall be reviewed by the city council, and shall include the following:

a. Name and address of the petitioner(s).

b. Detailed statement with supporting data and information as to how the pro rata allocation of water under the policies and procedures established in this section adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this section.

c. Description of the relief requested.

d. Period of time for which the variance is sought.

e. Alternative measures the petitioner is taking or proposes to take to meet the intent of this section and the compliance date.

f. Other pertinent information.

(4) Variances granted by the city council shall be subject to the following conditions, unless waived or modified by the city council:

a. Variances granted shall include a timetable for compliance.

b. Variances granted shall expire when the pro-rata allocation of water to raw water or wholesale treated water customers is no longer in effect, unless the petitioner has failed to meet specified requirements.

c. No variance shall be retroactive or otherwise justify any violation of this section occurring prior to the issuance of the variance.

(d) *Contractual remedies not affected.* Nothing in this section supersedes any remedies available to the city under any contract with a raw water or wholesale treated water customer due to the customer's failure to adopt or impose water conservation measures required by the contract.

(Ord. No. 24605, § 1, 10-9-2001; Ord. No. 029846, § 3, 5-28-2013; Ord. No. 029946, § 1, 9-10-2013; Ord. No. 031355, § 1, 1-30-2018)

Editor's note— Formerly numbered § 55-159.1.

Sec. 55-159.1. - Non-mandatory drought surcharge exemption fee.

(a) *Establishment of non-mandatory "drought surcharge exemption fee" effective October 1, 2018.* Large-volume industrial customers may voluntarily pay a non-mandatory and non-refundable" drought surcharge exemption fee" or "fee" of twenty-five cents ($0.25) per one thousand (1,000) gallons of water per month to be exempt from the applicable allocation surcharges of city Code section 55-154 during the month of billing. The city will begin to charge the fee as of October 1, 2018 to all large-volume industrial customers. The fee will be charged with the large-volume industrial customer's regular monthly water bill which is due as stated on the bill. By payment of the fee, the large-volume industrial customer has determined that the fee is fair, just, and reasonable.

Note— For purposes of this section 55-159.1 the term "large-volume industrial customer" shall mean a utility customer who uses water in minimum quantity of one hundred thousand (100,000) gallons a day in processes designed to convert materials of a lower order of value into forms having greater usability and commercial value, including the development of power by means other than hydroelectric, but does not include agricultural use.

(b) *Notice of opt-out.* A large-volume industrial customer may opt out of the drought surcharge exemption fee (or "fee") by providing written notice to the city manager. A large-volume industrial customer is deemed to have opted out of the fee as of the date payment of the fee remains delinquent after notice and opportunity to cure. A large-volume industrial customer who has opted out of said fee is subject to aforementioned allocation surcharges of city Code section 55-154 in addition to compliance with all applicable city ordinances.

(c) *Request to opt back into the drought surcharge exemption fee or "fee".* There is no right nor entitlement to opt back into the fee. The city manager or designee retains sole discretion to determine whether granting large-volume industrial customer's request to opt back into the fee is in the best interest of the city. At a minimum, the large-volume industrial customer will be required to comply with the following mandatory conditions:

(1) The large-volume industrial customer must submit a written request to the city manager to request to opt back into the drought surcharge exemption fee subject to city manager review.

(2) Upon receipt of invoice, the large-volume industrial customer must timely pay the drought surcharge exemption fees calculated on said customer's actual water usage from date of city's receipt of written request back to said customer's date of opt out, up to a maximum of ten (10) years.

(3) The large-volume industrial customer remains subject to compliance with the aforementioned allocation surcharge provisions of the city Code as may be amended and all other applicable ordinances, rules and regulations of the city for the mandatory reinstatement period of twenty-four (24) months. The mandatory reinstatement period begins upon date of notice from the city to said customer and continues for twenty-four (24) consecutive calendar months. During the reinstatement period, the large-volume industrial customer will timely pay a non-refundable reinstatement fee of twenty-five cents ($0.25) per one thousand (1,000) gallons of water upon receipt of invoice. By payment of said reinstatement fee, the large-volume industrial customer has determined that the fee is fair, just, and reasonable.

(4) Despite compliance with these conditions, the large-volume industrial customer will not be allowed to opt back into the fee when the combined storage level of the Choke Canyon Reservoir and Lake Corpus Christi declines below forty (40) per cent.

(d) *Dedicated use of the drought surcharge exemption fees.*

(1) The fee shall be dedicated by the city for development of a drought-resistant water supply and shall not be used for operation and maintenance costs of any water supply, treatment facility or distribution system.

(2) The fee paid to the city will be reserved in a separate account ("account") and used only for capital costs to develop and/or acquire an additional drought-resistant water supply including, but not limited to, payment of debt for an allowable capital project.

(3) The city manager may execute documents necessary for the establishment of a dedicated fund.

(e) *Review and adjustment of the drought surcharge exemption fee.* The fee shall be reviewed and adjusted by city council action no more frequently than every five (5) years. Any subsequent fee increase is limited to increases based upon changes to the following Consumer Price Index: CPI-All Urban Consumers (Current Series) for water and sewer and trash collection services in U.S. city average, all urban consumers.

(f) *Participation by wholesale water suppliers.* A wholesale water supplier with a water supply contract with the city may choose to establish an identical voluntary drought surcharge exemption fee and standard agreement for its large-volume industrial customers with said fee and agreement to be equivalent to the ordinance and standard agreement adopted by the City of Corpus Christi. Upon adoption of said identical voluntary drought surcharge exemption fee and standard agreement for its large-volume industrial customers, the wholesale water supplier shall assess and collect the fees from its large-volume industrial customers and then remit said fees to the city. In addition, the wholesale water supplier shall notify the city manager or designee of the volume of water used by its large-volume industrial customers each month.

(g) The city manager may execute letters of commitment and standard agreements regarding payment and use of drought surcharge exemption fee with terms consistent with this section 55-159.1 (i.e., an "agreement"). The agreement may be terminated by the city upon five (5) years' notice to terminate the agreement. A copy of the standard agreement is attached as an exhibit to the ordinance which enacted this section 55-159.1. The city manager is authorized to adjust the terms of the standard agreement as long as said adjustments are consistent with the terms of this section 55-159.1 and said adjustment is made available to all large-volume industrial customers participating in the drought surcharge exemption fee.

(h) The drought surcharge exemption fee established by this section 55-159.1 continues to be billed and paid except during periods when the balance in the account exceeds one hundred fifty million dollars ($150,000,000.00), to be adjusted annually for inflation by the following Consumer Price Index: CPI-All Urban Consumers (Current Series) for water and sewer and trash collection services in U.S. city average, all urban consumers. While balance exceeds one hundred fifty million dollars ($150,000,000.00) the city will cease billing and collection of the fee and the large-volume industrial customer remains exempt from the allocation surcharges.

(i) The city may repeal this section 55-159.1 upon at least five (5) years' notice to the then participating large-volume industrial customers and participating wholesale water suppliers.

(j) Upon city's repeal of this section 55-159.1 or city's termination of the agreement, any unencumbered balance remaining in the account will be returned to the then-participating large-volume industrial customers and then-participating wholesale water suppliers on a pro-rata basis.

(k) The large-volume industrial customer paying the drought surcharge exemption fee established by this section 159.1 is exempt from city curtailment of water during reservoir system Stages 1, 2, and 3, except when such curtailment is required by V.T.C.A., Water Code § 11.039 or required by other applicable state laws and state regulations.

(Ord. No. 031533, § 3, 9-11-2018)

Appendix F

CITY OF CORPUS CHRISTI

MODEL INDUSTRIAL WATER CONSERVATION PLAN

2020

Prepared by:

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FOREWORD

This Model Industrial Water Conservation Plan was prepared by Freese and Nichols for the City of Corpus Christi as an addendum to the 2019 Water Conservation Plan. It is intended as a model water conservation plan for industrial customers highlighting best management practices that could be implemented for those industrial customers who are required to submit individual water conservation plans to the Texas Commission on Environmental Quality (TCEQ). The Model Industrial Water Conservation Plan was prepared pursuant to TCEQ rules.

The City of Corpus Christi has many industrial users with widely varying processes and water uses, and it is difficult to generate a model plan that is applicable for all industries. This model plan provides best managements practice that an industrial customer may implement to reduce water consumption.

Questions regarding this Model Industrial Water Conservation Plan should be addressed to the following:

Esteban Ramos
Water Resource Manager
City of Corpus Christi, Water Utilities Department
(361) 826-3294
estebanr2@cctexas.com

This Model Industrial Water Conservation Plan is based on the Texas Administrative Code in effect on October 16, 2019 and considers water conservation best management practices from the Texas Water Development Board's *Best Management Practices for Industrial Water Users*. Currently, the Water Conservation Advisory Council (WCAC) is reviewing additional Best Management Practices (BMPs) for industrial water users.

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APPENDICES

City of Corpus Christi

Model Industrial Water Conservation Plan
2020

1. INTRODUCTION AND OBJECTIVES

Water supply has always been a key issue in the development of Texas. In recent years, the increasing population and economic development in Corpus Christi have led to growing demands for water supplies. At the same time, local and less expensive sources of water supply are largely developed. Additional supplies to meet higher demands will be expensive and difficult to develop. It is therefore important that efficient use of existing supplies is emphasized to make them last as long as possible.

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 plans for industrial or mining uses (Appendix B) [1].

This Model Industrial Water Conservation Plan includes measures that are intended to result in ongoing, long-term water savings. Best management practices established by the Texas Water Development Board were also considered in the development of the water conservation measures[2].

This Model Industrial Water Conservation Plan addresses all of the elements required by TCEQ. Each industrial user should customize the details to match its unique situation. At a minimum, an industry's conservation plan should include:

- Setting five-year and ten-year goals for water use (Section 4).
- Completing a water conservation implementation report (Section 9).
- Adopting policies or regulations approving the model plan (Section 9).

The final adopted version should be provided to the City of Corpus Christi and the TCEQ.

The objectives of this model plan are:

- To reduce water consumption from the level that would prevail without conservation efforts.
- To reduce the loss and waste of water.
- To improve efficiency in the use of water.
- To document the level of recycling and reuse within the industrial processes and for non-potable uses.

The model plan lists the TCEQ rules; describes industrial customers for the City of Corpus Christi; provides recommendations for setting conservation goals; describes water measurement devices and methods; discusses leak detection, repair, and water loss accounting; and reports existing and future water use efficiency practices.

[1] Superscripted numbers match references listed in Appendix A.

2. TEXAS COMMISSION ON ENVIRONMENTAL QUALITY RULES

The TCEQ rules governing development of water conservation plans for industrial or mining use are contained in Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.3 of the Texas Administrative Code (TAC). Applicable TAC rules are presented in Appendix B. Holders of an existing permit, certified filing, or certificate of adjudication for the appropriation of surface water in the amount of 1,000 acre-feet a year or more for industrial uses must develop, submit, and implement a water conservation plan.

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. A water conservation plan may be a separate document identified as such or may be contained within another water management document(s)[3]."

Conservation Plan Requirements

The minimum requirements in the TAC Title 30, Part 1, Chapter 288 for water conservation plans for industrial or mining uses are shown below.

TAC Reference	Subject	Plan Location
30 TAC §288.3(a)(1)	Water Use in the Production Process	Section 3
30 TAC §288.3(a)(2)	Water Conservation Goals	Section 4
30 TAC §288.3(a)(3)	Accurate Metering	Section 5
30 TAC §288.3(a)(4)	Leak Detection, Repair, and Water Loss Accounting	Section 6
30 TAC §288.3(a)(5)	Water Use Efficiency Process and/or Equipment Upgrades	Section 7
30 TAC §288.3(a)(6)	Other Conservation Practices	Section 8
30 TAC §288.3(b)	Review and Update of Plan	Section 9
30 TAC §288.30(2)	Water Conservation Implementation Report	Section 9

TCEQ has also developed a Water Conservation Model Plan for Industrial Use[4] which is available on their website that meets the requirements listed above.

3. DESCRIPTION OF WATER USE IN THE PRODUCTION PROCESS

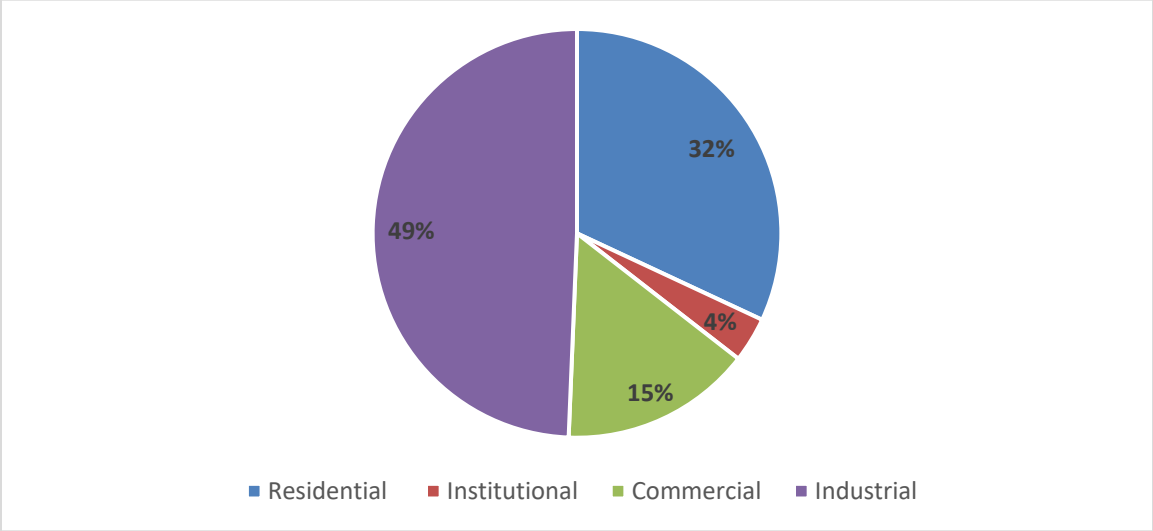
3.1 City of Corpus Christi Water Sources and Industrial Water Use Description

The City of Corpus Christi utilizes multiple sources from multiple river basins. Current sources include

- Lake Corpus Christi via the Nueces River (Nueces River Basin)
- Choke Canyon Reservoir via the Nueces River (Nueces River Basin)
- Lake Texana via the Mary Rhodes Pipeline (Lavaca River Basin)
- Colorado River via the Mary Rhodes Pipeline (Colorado River Basin)

All the current sources are treated at the O.N. Stevens Water Treatment Plant before distribution Separating treated demand by customer class, industrial customers represent the highest demand. accounting for 49 percent of the total. **Figure 3-1** below shows the 2019 water use percentage by customer class for the City of Corpus Christi.

Figure 3-1: Water Use Percentage By Customer Class



In 2019, there was approximately 110,217 treated water connections. These connections can be divided into the customer classes of residential, multi-family, commercial, industrial, wholesale, and institutional. Both institutional (1,307 connections) and industrial (31 connections) customers have so few connections that they constitute only a small percentage of the total connections. Residential Single-Family customers make up the largest percentage of connections with over 90 percent of the total.

Table 3-1: Annual Water Use for the Five Highest Volume Retail Customers

Customer	Water Use Category	Annual Water Use Gallons
Valero Corporation	Industrial	5,238,887,000
Citgo Corporation	Industrial	1,359,335,000
Flint Hills Resources	Industrial	1,191,964,548
Lyondell Besell	Industrial	1,774,217,000
Corpus Christi Cogeneration	Industrial	590,475,000

3.2 Model Industrial Water Conservation Plan Description of Water use in the Production Process

[Insert a description of water use in the production process. Show a schematic of the production process with all water use locations and flowrates.

This section must include a description of the use of the water in the production process, including how the water is diverted and transported from the source(s) of supply, how the water is utilized in the production process, and the estimated quantity of water consumed in the production process and therefore unavailable for reuse, discharge, or other means of disposal.]

4. SPECIFICATION OF WATER CONSERVATION GOALS

4.1 City of Corpus Christi Water Conservation Plan Goals

The City of Corpus Christi has set five and ten-year goals in the 2019 Water Conservation Plan as shown in **Table 4-1**. Reducing water consumption at industrial facilities will help to achieve this goal.

Table 4-1: City of Corpus Christi Targets and Goals

Achieve Date	Target for Total GPCD	Target for Water Loss (Gallons)	Target for Water Loss Percentage
Five-Year Target Date: 2024	195	1,611,000,000	6.6
Ten-Year Target Date: 2029	184	1,487,000,000	6.5

4.2 Model Industrial Water Conservation Plan Specification of Water Conservation Goals

This section must include specification of 5-year and 10-year water conservation goals and the basis for development of such goals. The goals established by an industrial user under this subparagraph are not enforceable.

To determine feasible water conservation goals, to provide the basis for these goals, and to identify a schedule for conservation savings, a four-step water conservation implementation process may be completed:

1. *The first step consists of a water audit for the industrial facility. A water audit consists of an inventory of all water supplied to the site and all on-site water uses, including the amount of water used for each purpose. A comparison of the water supplied to the water used will reveal the amount of water loss. Water loss should be no more than 6.0 percent of total water supplied.*

2. *The second step is to identify sources of water waste and to design procedures to reduce water waste and minimize water loss. Water waste reduction measures may include reducing flow to process equipment, installing pressure-reducing valves, installing control or limit switches, or other measures.*

3. *The third step is to identify methods to conserve water use in the industrial process, landscape irrigation, and other water uses. Emphasize water conservation methods that address the largest water uses identified in the audit step. Conservation methods could involve upgrading to water-efficient process equipment, water-wise landscaping, retrofit of domestic plumbing fixtures with water-efficient fixtures, employee education, and other methods.*

4. *The fourth step is to identify opportunities to reuse process water. At the end of the process, is the water quality suitable for other uses? Is it economical to provide water treatment to improve the water quality to make it suitable for other uses?*

Based on the findings of the first four steps, set five and ten-year goals similar to the example below.

The [Company/Facility Name] has set a five-year goal of reducing water use to ____ ac-ft/yr by _____ [five years from date of plan] and a ten-year goal of reducing water use to ____ ac-ft/yr by _____ [ten years from date of plan]. These goals will be achieved using the following water conservation methods:

In response to a charge by the 82nd Texas Legislature, the Texas Water Development Board and the TCEQ, in consultation with the Water Conservation Advisory Council, developed water use and calculation methodology for preparation of water use reports and water conservation plans in accordance with TCEQ rules. The guidance document[5] contains a chapter on developing and evaluating water use in the industrial sector, including identifying total water use, appropriate metrics for evaluating water use, factors that may affect industrial water use, establishment of water conservation goals, and measurement of water savings.

5. ACCURATE METERING TO MEASURE AND ACCOUNT FOR WATER

5.1 City of Corpus Christi Metering to Measure and Account for Water

One of the key elements in water conservation is careful tracking of water use and control of losses. In order to carefully track and control losses, the City of Corpus Christi meters water entering industrial facilities within an accuracy of plus or minus 5.0 percent. Meter type and sizing varies based on the industrial facility.

5.2 Model Industrial Water Conservation Plan Metering to Measure and Account for Water

[Insert a description of meter locations; meter types; meter calibration frequency; meter calibration tolerance; and meter data collection, tabulation, and storage. Refer to the water use diagram as necessary.

This section must include a description of the device(s) and/or method(s) within an accuracy of plus or minus five percent to be used to measure and account for the amount of water diverted from the source of supply.

To assist in tracking of water usage, consider installing additional meters at key locations in the industrial process, particularly if water loss is greater than 5 percent.]

6. LEAK DETECTION, REPAIR, AND WATER LOSS ACCOUNTING

6.1 City of Corpus Christi Leak Detection, Repair, and Water Loss Accounting

The Water Department has a full team of employees committed to identifying and repairing leaks in water distribution throughout the City. A crew of round-the-clock responders follow the procedure below to find and fix a leak:

1. A first responder is sent to the location to identify and mark the priority of the leak. Response time is 30 minutes to an hour.

2. Crews begin to turn the needed valves to isolate the leaking line. Line locates are called in to mark all other utility lines in the area of the leak prior to repairs. Depending on the severity of the leak these locates can take up to approx. 24 hours

3. After line locates are complete, Distribution Leak crews respond to the leak and make all needed repairs.

4. After repairs are complete, the D & D crews back fill the area and replace grass as needed.

As with any aging infrastructure system, the City does have water loss between the treatment plant and the point of use. In order to reduce this water loss, the City performs an annual system water audit. This estimate of system water efficiency is achieved by comparing water delivered to the treatment plant, potable water produced, and water sold. The Water Department tracks numerous leak detection and repair activities and is able to evaluate its success using the asset management software to compile and track work orders. Using this data from the audit, the City is able to focus on specific areas where improvements in efficiency can be achieved.

The City of Corpus Christi has five-year goal to maintain water loss below 6.5 percent and a ten-year goal to maintain water loss below 6.0 percent. The City encourages its industrial customers to adopt similar goals.

6.2 Model Industrial Water Conservation Plan Metering to Measure and Account for Water

[This section must include a description of leak-detection, repair, and water loss accounting in the water distribution system. Please amend the description below to match operations at your facility.

Plant personnel are encouraged to observe leaks as they operate and maintain facilities throughout the day. Inspection of aboveground piping and pump packing should be a normal part of employee duties. In addition, flow meter readings should be logged on a daily basis. If a water leak is indicated by any of the above means, the source of the leak should be investigated and a work order for repairs should be issued as necessary.

Consider implementing an active leak detection and repair program if water loss is greater than 6.0 percent which is consistent with the City's ten-year goal.]

7. WATER USE EFFICIENCY PROCESS AND/OR EQUIPMENT UPGRADES

7.1 Model Industrial Water Conservation Plan Water Use Efficiency Process and/or Equipment Upgrades

[This section must include a description of equipment and/or process modifications to improve water use efficiency.

It is suggested that each facility include a description of existing water-efficient equipment or processes to demonstrate any water conservation savings that is already being achieved.

Equipment upgrades or process modifications should be a result of the third step in the four-step process recommended in Section 4.]

8. OTHER CONSERVATION PRACTICES, METHODS, OR TECHNIQUES

8.1 Model Industrial Water Conservation Plan Other Conservation Practices, Methods or Techniques

[This section must include any other water conservation practice, method, or technique which the user shows to be appropriate for achieving the stated goal(s) of the water conservation plan.

Other sections emphasize process water usage, equipment upgrades, and process modifications. This section should report on proposed conservation practices, methods, or techniques that address other water uses, such as domestic water use, housekeeping water use, and landscape irrigation.

The water audit in Section 4 should include a survey of landscape irrigation water use. This includes measurement of the landscape area, measurement of the total irrigable area, irrigation system checks and distribution uniformity analysis, and review or development of irrigation system scheduling. The water use survey should identify currently irrigated areas where irrigation can be discontinued due to low visibility or the plant materials that do not need supplemental irrigation. The survey should also identify areas with the opportunity for process water reuse, stormwater reuse, and reuse of treated effluent for landscape irrigation.

Best management practices established by the Texas Water Development Board should also be considered in the development of the water conservation measures.[2]]

9. IMPLEMENTATION AND UPDATE OF THE MODEL WATER CONSERVATION PLAN

9.1 City of Corpus Christi Implementation and Update of the Model Water Conservation Plan

Appendix D contains a copy of the City of Corpus Christi City Council resolution adopting this Model Industrial Water Conservation Plan. The resolution designates responsible officials to implement the Model Plan.

Appendix E contains a copy of a letter to the chairman of the Region N Water Planning Group to inform the planning group of this Model Industrial Water Conservation Plan.

This Model Plan will be reviewed and updated every five years.

9.2 Model Industrial Water Conservation Plan Implementation and Updates

For facilities required to submit an industrial water conservation an annual implementation report is required. The implementation report for industrial use must include the following:

- *The list of dates and descriptions of the conservation measures implemented;*
- *Data about whether or not targets in the plans are being met;*
- *The actual amount of water saved; and*
- *If the targets are not being met, an explanation as to why any of the targets are not being met, including any progress on that particular target.]*

[Company/Facility] will submit a copy of their industrial water conservation plan to the City of Corpus Christi for their review and record.

A copy of the Board of Directors resolution adopting this industrial water conservation plan for [Company/Facility] is included as an attachment. The resolution designates responsible officials to implement and enforce the industrial water conservation plan.

A copy of a letter to the chairman of the Region N Water Planning Group to inform the planning group of this industrial water conservation plan is included.

This water conservation plan will be reviewed and updated every five years.

Appendix A
List of References

List of References

1. Texas Commission on Environmental Quality: "Water Conservation Plans for Industrial or Mining Use," *Texas Administrative Code* Title 30 Part I Subchapter A §288.3, effective December 6, 2012.

2. Texas Water Development Board: *Best Management Practices for Industrial Water Users*, Austin, [Online] Available URL: https://www.twdb.texas.gov/conservation/BMPs/Ind/doc/IndMiniGuide.pdf, February 2013.

3. Texas Commission on Environmental Quality: "Definitions," *Texas Administrative Code* Title 30 Part I Subchapter A §288.1, effective August 16, 2018.

4. Texas Commission on Environmental Quality TCEQ Form 20839 "*Industrial Water Conservation Plan",* Austin [Online] Available URL: *http://www.tceq.texas.gov/assets/public/permitting/forms/20839.docx,* Revised June 2019

5. Texas Water Development Board and Texas Commission on Environmental Quality in consultation with Water Conservation Advisory Council: *Guidance and Methodology for Reporting on Water Conservation and Water Use*, Austin, [Online] Available URL: http://www.twdb.texas.gov/conservation/doc/SB181Guidance.pdf, December 2012.

Appendix B

Texas Commission on Environmental Quality Rules on Water Conservation Plans for Industrial or Mining Water Use

Appendix C

TCEQ Industrial Water Conservation Plan

Appendix D

City Council Resolution Adopting the Model Water Conservation Plan

[Insert City Council resolution adopting the water conservation plan.]

Appendix E

Letter to the Region N Water Planning Group

[Insert letter to the Region N Water Planning Group.]

Appendix G

Supplement to Corpus Christi Water Conservation Plan
To Address TAC § 288.7

Water Conservation Plans Submitted with a Water Right Application for New or Additional State Water

This supplement to Corpus Christi's Water Conservation Plan addresses the requirement of §288.7 of the Texas Administrative Code that a water conservation plan submitted with an application for a new or additional appropriation of water must include data and information which:

1. Supports the applicant's proposed use of water with consideration of the water conservation goals of the WCP;
2. Evaluates conservation as an alternative to the proposed appropriation; and
3. Evaluates any other feasible alternative to new water development including, but not limited to, waste prevention, recycling and reuse, water transfer and marketing, regionalization, and optimum water management practices and procedures.

Applicant's proposed use of water. The applicant (City of Corpus Christi) proposes to use the water as requested from the Inner Harbor and La Quinta Channel by desalination and use for municipal purposes within Aransas, Kleberg, Nueces and San Patricio Counties. This water would be used to meet water supply needs within those counties, including retail sales to residential, commercial, manufacturing and institutional customers. Water needs were identified through the state water planning process, which considers reduced per capita water use that is consistent with the goals of Corpus Christi's WCP.

Conservation as an alternative to the requested appropriation. As part of the regional planning process, the planning groups are required to perform a comprehensive analysis of potentially feasibly water management strategies, including consideration of water conservation. The proposed water right application supports a recommended project in the 2016 Region N Water Plan and 2017 State Water Plan. The five-year and ten-year per capita goals outlined in Corpus Christi's WCP are consistent with the 2016 Region N projections. In addition, this project promotes regionalization and serves as an alternative to existing fresh water supplies that further promotes conservation of existing fresh water supplies.

Other feasible alternatives. The proposed amount of appropriation outlined in the application is consistent with the 2016 Region N Plan as evidenced by a letter attached with the water right application.

The 2016 Region N Plan identified additional potentially feasible alternatives to the proposed desalination project to meet needs in Nueces County which include:

- GBRA Lower Basin Off-Channel Reservoir
- Additional Reuse – Corpus Christi
- Manufacturing Water Conservation
- O.N. Stevens WTP Improvements

The 2016 Region N Plan identified additional potentially feasible alternatives to the proposed desalination project to meet needs in San Patricio County which include:

- GBRA Lower Basin Off-Channel Reservoir
- Manufacturing Water Conservation
- Portland Reuse Pipeline
- SPMWD Industrial WTP Improvements

Desalination is the only recommended strategy that has sufficient quantity to meet the projected needs in these counties.