

ORDINANCE NO. 2016-08

AN ORDINANCE OF THE CITY OF BASTROP, TEXAS ADOPTING A WATER CONSERVATION PLAN IN ACCORD WITH TEXAS COMMISSION ON ENVIRONMENTAL QUALITY AND TEXAS WATER DEVELOPMENT BOARD REGULATIONS; PROVIDING SEVERABILITY AND AN EFFECTIVE DATE.

WHEREAS, the City of Bastrop, Texas recognizes that the amount of water available to the City and its water utility customers is limited and subject to depletion during periods of extended drought; and

WHEREAS, the City recognizes that natural limitations due to drought conditions and other acts of God cannot guarantee an uninterrupted water supply for all purposes; and

WHEREAS, Section 288.2 of the Texas Administrative Code sets forth Texas Commission on Environmental Quality guidelines and requirements governing the development of water conservation plans for public water suppliers; and

WHEREAS, in accord with Section 288.2 of the Texas Administrative Code the City has devised a strategy or combination of strategies for reducing the volume of water withdrawn from its water supply source, for maintaining and improving the efficiency in the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water; and

WHEREAS, as authorized under law, and in the best interests of the citizens of Bastrop, Texas, the City Council adopts the attached Water Conservation Plan, dated April 26, 2016.

NOW THEREFORE, BE IT ORDAINED BY THE CITY OF BASTROP TEXAS:

PART 1:

That the City of Bastrop Texas Water Conservation Plan attached hereto as Exhibit "A" and made part hereof for all purposes be, and the same is hereby, adopted as the official policy of the City. In addition to filing with the Texas Water Development Board, a copy of this Water Conservation Plan shall be maintained in the City's files and placed on the City website in order that the public may have ready access to the Plan.

PART 2:

That all ordinances that are in conflict with the provisions of this ordinance be, and the same are hereby, repealed and all other ordinances of the City not in conflict with the provisions of this ordinance shall remain in full force and effect.

PART 3:

Should any paragraph, sentence, subdivision, clause, phrase, or section of this ordinance be adjudged or held to be unconstitutional, illegal or invalid, the same shall not affect the validity of this ordinance as a whole or any part or provision thereof, other than the part so declared to be invalid, illegal or unconstitutional.


PART 4:

This Ordinance shall take effect upon the date of final passage noted below, or when all applicable hearing and publication requirements, if any, are satisfied in accordance with the City's Charter, Code of Ordinances, and the laws of State of Texas.

READ and ACKNOWLEDGED on the first reading on the 12th day of April, 2016.

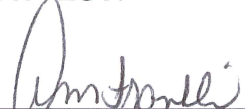
PASSED AND APPROVED on the second reading on the 26th day of April, 2016.

APPROVED:




Mayor Ken Kesselus

ATTEST:



Ann Franklin, City Secretary

APPROVED AS TO FORM:



Jo-Christy Brown, City Attorney

Exhibit A
[2016 Water Conservation Plan]

CITY OF BASTROP WATER CONSERVATION PLAN

Prepared For:



City of Bastrop
1311 Chestnut Street
Bastrop, Texas 78602

Adopted _____ 2016
City Ordinance No. _____

Prepared By:



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APPENDIX	B. 5 and 10-year Goals Table (TWDB Form No. 1964)
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CITY OF BASTROP WATER CONSERVATION PLAN

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 the Texas Water Development Board Lower Colorado Regional Water Planning Group (Region K) have led to growing demands for water. Additional supplies to meet higher demands are becoming increasingly expensive and difficult to develop. Therefore, it is imperative that we make efficient use of existing supplies and make them last as long as possible. This will delay the need for new supplies, minimize the environmental impacts associated with developing new supplies, and delay the high cost of additional water supply development.

The Texas Commission on Environmental Quality (TCEQ) as well as the Texas Water Development Board through 30 Texas Administrative Code, Part 1, Chapter 288.2 and the Texas Water Code Section 16.403, requires all public water purveyors that provide water service to 3,300 or more retail water connections to develop and implement a Water Conservation Plan. Furthermore, the implemented plan shall be reviewed and updated every five years. The following plan serves to update the previous plan which was implemented by Ordinance No. 2010-8 on May 11, 2010. This plan addresses the following requirements as listed in the Texas Administrative Code for water conservation plans for public drinking water suppliers:

- Utility Profile;
- Records management system to record water pumped, water deliveries, water sales and non-revenue water which allow for the desegregation of water sales and uses in the following user classes: (i) residential; (ii) multi-family; (iii) commercial; (iv) industrial; (v) institutional and (vi) wholesale;
- Five-year and ten-year specific and quantified targets and goals for water use and loss;
- A schedule for implementing plan to meet the goals and targets;
- Method for tracking the effectiveness and efficiency of the plan;
- Accurate source water metering;
- Universal metering of both customer and public uses of water, meter testing and repair, and periodic meter replacement;
- Measures to determine and control water loss;
- A program for leak detection, repair and water loss accounting for the water transmission, delivery and distribution system;
- Program for continuing public education and information regarding water conservation;
- Non-promotional water rate structure;
- Means of implementation and enforcement;
- Requirements for wholesale water contracts to contain water conservation plans;
- Coordination with the Regional Water Planning Group;
- Formal adoption of plan by city council;
- Requirements for annual reporting.

A. UTILITY PROFILE

The following is a brief summary of the City of Bastrop's Utility Profile. A detailed summary may be found in Appendix A.

Water System

The City of Bastrop's Water and Wastewater Department manages a water distribution service area covering over 11 square miles in area and serves a population of approximately 8,230 people via roughly 3,800 connections. Water usage is divided between single family residential (64%), multi-family residential (19%) and commercial (17%). The City provides drinking water from a total of seven (7) groundwater wells capable of producing up to 3.06 million gallons per day (MGD). Customers are served through a network of approximately 70 miles of transmission and distribution lines ranging in size from 2-inch in diameter through 16-inch.

The 5-year historic average water use for the City is 493 million gallons with an average gallons per capita per day (GPCD) of 178. The GPCD has varied and decreased yearly from a high of 212 GPCD in 2011 to a low of 156 GPCD in 2015. Based on a Technical Memorandum prepared by CH2M Hill, "City of Bastrop, Water Demand Projections – Final," dated May 13, 2014, the 10 year (Year 2025) population is anticipated to be 12,743 with a water demand of approximately 833 million gallons.

Wastewater Collection and Treatment System

Raw wastewater in Bastrop travels through a network of over 54 miles of wastewater collection lines and numerous lift stations to two wastewater treatment plants permitted through TCEQ under permit number WQ0011076001. The two plants are located on one site on the south end of Water Street. The City is also under contractual obligation to treat up to 200,000 gallons per day (GPD) of wastewater flows from Bastrop County Water Control and Improvement District #2 (BCWCID #2). The average daily flow in 2015 from BCWCID #2 was approximately 85,000 GPD. In total for 2015, the wastewater treatment plants treated an average daily flow of approximately 0.85 MGD at design capacity of 1.4 MGD.

In January of 2015, the City of Bastrop received authorization allowing the reuse of Type I and Type II wastewater effluent from their two wastewater treatment plants. By way of this authorization, the City provided just over 300,000 gallons of reuse water for local construction projects instead of utilizing treated drinking water.

B. RECORDS MANAGEMENT SYSTEM

In 2015, the City of Bastrop completed a city wide upgrade to an Advanced Metering Infrastructure (AMI) system. This has allowed the city to begin tracking information in real time and has increased the accuracy of reporting data. The pumpage and meter reading records are compiled daily, monthly and annually on spreadsheets which are reviewed daily by city representatives, and are used to compile annual reports required by state agencies.

The water records include:

- Raw water pumpage;
- Backwash recycle waters;
- Treated water pumped to the distribution system;
- Water pumped into each zone;
- Water sold by user classifications:
 - Single family residential;
 - Commercial;

- Industrial;
- Multi-family residential;
- Institutional;
- Wholesale water;
- Total water sold;
- Water metered but not billed;
- Miscellaneous accounted for water.

Miscellaneous accounted for water includes such categories as tank overflows, pump testing, water leak repairs summary reports, fire hydrant flushing, flush valve usage, fire department usage, etc. The non-revenue water and water loss is compiled and reviewed on a monthly and annual basis.

C. WATER CONSERVATION PLAN FIVE AND TEN YEAR GOALS

The objective of the city’s Water Conservation Plan is to:

1. Establish water conservation strategies to achieve efficient use of water and reduce the gallons per capita per day (GPCD) consumption of water to meet specified goals; and,
2. Establish a program to reduce unaccounted for water in the system and improve the quality of data in water loss estimates expressed in percentage and GPCD to meet specific and quantified goals.

The City of Bastrop is situated in a high-growth corridor and anticipates experiencing continued economic growth. The total gallon per capita per day (GPCD) water use for the past five (5) years averaged 178 gpcd, which is good considering the Texas Water Development Board projects a 181 gpcd in the year 2020. Additionally, the gallons per capita per day has decreased every year the last five years from a high of 212 gpcd in 2011 to a low of 156 gpcd in year 2015.

5 and 10 Year Goals for Water Savings				
City of Bastrop				
2015 Water Conservation Plan				
	Historic 5-yr Average	Baseline	5-yr Goal Year 2020	10-yr Goal Year 2025
Total GPCD	178	178	169	161
Residential GPCD	95	95	94	93
Water Loss (GPCD)	21	21	18	16
Water Loss (Percentage)	12%	12%	11%	10%

In any system, water loss may occur due to leaks, line breaks, meter inaccuracies, theft, and other issues. Over the last five years the City’s water loss has varied between 6 and 16 percent. The installation of the Advanced Metering Infrastructure in 2015 will provide city staff with more accurate and timely data which should assist in reducing unaccounted for water.

The goals outlined above are designed to be achieved within 5 to 10 years of the date of adoption of this plan. A copy of TWDB Form No. 1964 has been included in Appendix B. The City will periodically evaluate the plan in accordance with state and federal regulations to determine the extent, if any, that the plan needs modification.

D. METHOD OF MONITORING THE EFFECTIVENESS OF THE PLAN

The effectiveness and efficiency of the water conservation program will be monitored on an ongoing basis by the City of Bastrop staff via data collection from their Advanced Metering Infrastructure. The City of Bastrop will continue to track total gpcd and residential gpcd water usage, on an annual basis as well as water loss in gpcd and percentage on a monthly basis to determine whether reduction targets are being achieved.

E. ACCURATE SOURCE WATER METERING

Ground water from the city's seven (7) water wells are individually metered at the wellhead. These readings are taken daily by the City of Bastrop staff at the City's water treatment plant. The master meter calibrations are performed at least annually and more frequently if needed, by an outside firm specializing in this type of work with copies of the calibration log sheets maintained by the utility department. The source water meters will be maintained within a plus/minus 2.0% of 100% accuracy.

At least annually, surveillance of the groundwater transmission line routes from each wellhead to the water treatment plant are made to check for leaks that may be present. Repairs are performed in a timely manner.

F. UNIVERSAL METERING

The ability to meter all water distribution and consumption uses allows the city to closely monitor actual water use, water losses, and prevent unauthorized use. Beginning in late 2015 all service connections in the City are metered via an Advanced Metering Infrastructure (AMI). All residential, commercial, swimming pools, parks, and municipal structures operated by the City are also metered via AMI.

The City will continue to provide a preventive maintenance program for its water meters, wherein regular scheduled testing, repairs, and replacement are performed as follows:

- A representative number of 2-inch and smaller residential meters are tested annually to insure continued accuracy;
- Meter meters 3-inch in diameter and larger are tested once per year;
- Residential water meters shall be tested in accordance with AWWA recommendations found in Standard C700 and AWWA M6, *Water Meters – Selection, Installation, Testing, and Maintenance Manual*.

G. TRACKING AND CONTROLLING WATER LOSS

Water Loss Control Measures

The goal of the City's water loss control program is to not exceed 15 percent and to ultimately reduce unaccounted-for water to a level of 10% or below. Unaccounted-for water includes unbilled authorized usage and unbilled unauthorized usage. Unbilled authorized usage includes water used for fighting fires, flushing lines, etc. Unbilled unauthorized usage includes water lost to leaks, theft, etc. In some cases, the age of some of the distribution lines may be contributing to both the unbilled authorized and unauthorized usages. Due to their age, these lines are typically scheduled for more frequent flushing; and because of their age, these lines generally have a higher probability of leaking. However, in order to meet the goals set forth, the City has several programs in place, including routine water audits, a program of leak detection and repair, and meter testing and accuracy.

The Water and Wastewater Department generates a monthly water loss report that compares metered production with metered consumption, as well as accounted-for and unaccounted-for losses. This report provides an effective tracking system of water loss. The City will also complete a detailed water system audit following Texas Water Development Board (TWDB) guidelines at least once each year. TWDB rules only require this audit to be

submitted once every five years. The water system audit determines the volume of actual water loss, the identification of water loss sources, the status and condition of primary water meters, an analysis of water line breaks, an evaluation of underground leakage potential, and provides recommendations for meter replacement.

Leak Detection and Repair

The City administers leak detection and repair programs for its water distribution system. Approximately 175 acoustic magnetic leak detection units are scattered throughout the City's distribution system and monitors the system nightly. The Utility Department then runs a report to evaluate the collected data and identify potential locations for leaks and dispatches repair crews as needed. Additionally, the City has a program that features a work order prioritization system for leaks needing repair and an inventory of equipment and materials needed to promptly repair all detected or reported leaks. The City also has a rehabilitation program to upgrade its aging water distribution system and address high volume leak areas. This program is based on findings in monthly water loss reports and the leak detection programs described above.

H. WATER CONSERVATION STRATEGIES

There are a number of benefits that water conservation can have on the City and its customers: extending the life of existing water supplies and infrastructure; delaying costs for water right purchases and infrastructure improvements such as pipelines, pump stations, water storage and plant expansions; and lowering operating costs by reducing chemical and electricity demands. The City currently has several water conservation strategies in effect and include:

- 1. Public Education Program** - The city public education program makes thousands of contacts, both direct and indirect, every year through presentations, community fairs, plant tours, utility bill inserts, newspaper and radio ads, and the City's website. The City promotes water conservation issues by informing the public in the following ways:
 - Making water conservation information available to new customers;
 - Making residential water audits available (hourly intervals available with AMI) to all customers upon request;
 - Providing water conservation information to all customers upon request, through the City's website and social media outlets;
 - Coordinating educational presentations, lectures, and demonstrations for schools, civic groups, and the general public;
 - Providing exhibits at public events held throughout the year;
 - Publishing water conservation information on a regular basis in the City's utility bill insert or other written form;
 - Participating in community environmental education activities with local organizations to promote water conservation education;
 - Supporting annual events and demonstrations relating to water conservation and environmental issues that affect water supply and quality.

- 2. Plumbing Code and Retrofit Program** - The City has adopted the International Plumbing code, which requires the use of water saving, Ultra-Low Flow (ULF) fixtures to be installed in new construction and in the replacement of plumbing in existing structures. The City educates the residents, plumbers, and contractors on the benefits of retrofitting existing facilities with water saving devices through its public education program.

3. **Landscape Water Management** – The City provides information about the methods and benefits of water conserving landscaping practices and devices through public education to homeowners, business owners, landscape architects and designers, and irrigation professionals. The following methods are encouraged:
 - The use of Xeriscape™ and “Water Wise” landscaping techniques, including drought tolerant plants and grasses for landscaping new homes and commercial areas
 - The use of drip irrigation systems when possible or other water conserving irrigation systems that utilize efficient sprinklers and considerations given to prevailing winds.
 - Making sure that ornamental fountains and similar water features are designed to recycle water and use minimal amounts of water
 - Working with area landscape supply businesses and nurseries to encourage them to sell locally adapted, drought tolerant plants and grasses along with efficient irrigation systems, and to promote use of the materials through demonstrations and advertisements

4. **Non-promotional Water Rate Structure** – The City of Bastrop has a conservation oriented rate structure. The existing rates have a six tier increasing block structure where customers are billed a higher rate as water usage increases.

5. **Reuse Water** – In January of 2015, the City of Bastrop received authorization allowing the reuse of Type I and Type II wastewater effluent from their two wastewater treatment plants. By way of this authorization, the City provided just over 300,000 gallons of reuse water in 2015 for local construction projects instead of utilizing treated drinking water. Reuse water is also utilized in wastewater plant operations and basin wash downs.

6. **Advanced Metering Infrastructure (AMI)** – AMI allows for much more accurate accounting data which reduces non-revenue water issues. The following are some of the advantages of the AMI system:
 - Instant meter reading allows for concurrent pumped verse retail water record data which reduces accounting inaccuracies;
 - Allows for identification of potential water leaks on the customer side of each meter;
 - City provides post card mailers to customers with potential leaks;
 - Increased availability of data allows for additional customer support options.

7. **Water Pressure Reduction** – As required by location in system, each service connection incorporates pressure reducing valves where system pressures exceed 85 psi.

8. **Permanent Water Restrictions** – The city has implemented through its Drought Contingency Plan permanent water conservation regulations that apply year-round regardless of drought stages. Reference the Drought Contingency Plan for detail information.

I. NON-PROMOTIONAL WATER RATE STRUCTURE

The City utilizes an inclining water rate structure to encourage customers to reduce both peak and overall water usage, while fairly allocating cost of service to each customer class. Under an inclining rate structure, the rate per thousand increases as the amount of water used increases. The current rate structure charges a minimum monthly service charge based on meter size plus a fee based on consumption. The following is the current water rate structure as of November 2015 per Ordinance No. 2015-17:

Residential & Commercial		
	Within City Limits	Outside City Limits
Meter Size	Minimum Charge	Minimum Charge
3/4" (or smaller)	\$27.72	\$41.59
1"	\$47.13	\$70.69
1-1/2"	\$79.47	\$119.22
2"	\$118.28	\$177.43
3"	\$221.78	\$332.68
4"	\$255.07	\$507.34
6"	\$661.68	\$992.48
Plus the following consumption charger per 1,000 gallons:		
0 – 3,000 gallons	\$2.85	\$4.13
3,001 – 5,000 gallons	\$3.04	\$4.42
5,001 – 10,000 gallons	\$3.22	\$4.70
10,001 – 20,000 gallons	\$3.42	\$4.98
20,001 – 50,000 gallons	\$3.69	\$5.39
Over 50,000 gallons	\$3.87	\$5.66

This rate structure will be reviewed on a regular basis to ensure that the rates adequately recover cost of service and meet the goals of the plan.

J. MEANS OF IMPLEMENTATION AND ENFORCEMENT

The Water Conservation Plan was adopted by the Bastrop City Council and a copy of the ordinance has been included in Appendix D. The City Manager, or designee will be responsible for implementing the plan and educating all city staff personnel. Implementation of the plan by city staff shall begin immediately in 2016 upon adoption.

K. WHOLESALE WATER CONTRACTS

The City will, as part of contracts for sale of water to any other entity re-selling water, require that entity to adopt applicable provisions of the City’s water conservation plan or have a plan in effect previously adopted and meeting the basic requirements of 30 TAC §288. These provisions will be through contractual agreement prior to the sale of any water to the water re-seller. It should be noted that at this time the city does not have any wholesale water contracts.

L. COORDINATION WITH REGIONAL PLANNING GROUP

The water service area for the City of Bastrop is located within the Region K planning area and the city will be providing a copy of this plan to Region K Group. A copy of the submission letter can be found in Appendix E.

M. REPORTING REQUIREMENTS

30 TAC § 288 requires that each entity that is required to submit a water conservation plan to the Texas Water Development Board or the Texas Commission on Environmental Quality shall submit a Water Conservation Plan

Annual Report to the TWDB on the entity's progress in implementing each of the minimum requirements in their water conservation plan. This report will be submitted in accordance with the requirements.

N. PLAN UPDATE

At a minimum, the Water Conservation Plan shall be reviewed and updated every five years to coincide with the regional water planning group revision.