

CITY OF LLANO, TEXAS

WATER CONSERVATION AND DROUGHT CONTINGENCY PLAN ORDINANCE NO. 1377

**MAY 2014 DROUGHT PLAN
REVISED JULY 10, 2018**

CITY OF LLANO

**WATER CONSERVATION
AND
DROUGHT CONTINGENCY PLAN
ORDINANCE NO. XXXX**

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WATER CONSERVATION PLAN

INTRODUCTION

The City of Llano (the “City” or “Llano”) has prepared and adopted this Water Conservation and Drought Contingency Plan (WCDC Plan Ordinance No. 1035) pursuant to the requirements of Texas Administrative Code Chapter 288, Water Conservation Plans, Guidelines, and Requirements. This WCDC Plan will be submitted to the Texas Water Development Board (TWDB), Texas Commission on Environmental Quality (TCEQ) and the Lower Colorado River Authority (LCRA) for review and approval. This WCDC Plan may be amended in the future as required by State law and/or by the City.

WATER CONSERVATION PLAN GOALS

The purpose of this water conservation plan is to comply with the requirements contained in the Texas Administrative Code Chapter 288, Water Conservation Plans, Guidelines and Requirements:

- Long-term reductions in overall water demands by 10 % per capita over the next ten years;
- Reductions in the magnitude of seasonal water demands by 5% per capita over the next five years; and
- Reductions in wastewater flow volumes by 1% per capita over the next five years.

Given current and projected water and wastewater service requirements and issues; specific water conservation objectives are:

- To reduce waste and promote conservation habits of the residents of City of Llano.
- To reduce seasonal water demands such that future expansions of water treatment facilities can be deferred; and
- To continue to investigate the feasibility of reusing wastewater for suitable non-potable uses (i.e., irrigation of public green space and private landscaping).

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WATER CONSERVATION GOALS:

Water Conservation Plan				
5- and 10-yr Goals for Water Savings				
	Historic 5yr Average	Baseline	5-yr Goal For year 2019	10-yr goal for year 2024
Total GPCD	216	216	205	194
Residential GPCD	101	101	96	91
Water Loss (GPCD)	27	27	24	20
Water Loss (Percent)	13%	13%	12%	10%

2014 Goals Update	2009	2010	2011	2012	2013
Population	3177	3232	3232	3244	3245
Pumping Total	261680000	232507000	225762000	210448000	195592000
Average / capita (gpcd)	226	197	191	178	165
Seasonal / capita (gpcd)	317	269	205	294	234
Wastewater / capita (gpcd)	97	93	82	84	83
Water loss (percent)	16	11	15	12	9
Percent Reduction		11.15	2.90	6.78	7.06

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UTILITY PROFILE

The City of Llano gets its raw water supply from the Llano River (the “River”). The Llano River originates from springs near Edwards, Sutton and Kimble Counties west of Junction, Texas, and flows east to the Colorado River. The City has two dams constructed on the River creating two lakes known as Robinson Lake and Llano Lake. The City holds two Water Rights Permits totaling 1,700 Ac-Ft/Yr.

The raw water is removed from Llano Lake and treated by a 3MGD Water Treatment Plant placed into service in June 2000. The water is stored in one of four tanks.

- Clear Well – 500,000 gal.
- Tank #1 – 1,000,000 gal.
- Tank #2 – 300,000 gal.
- Elevated Tank #3 – 200,000 gal.
- Elevated Tank #4 – 200,000 gal.

The service area is 4.5 square miles serving approximately 3,325 people. See Appendix A for service area map.

The estimated population growth for Llano is expected to be slow according to studies performed by various groups. For example, the Senate Bill 1 Planning Group estimates the population in Llano will not exceed 3,500 people until the year 2040. However, this region of the State of Texas is growing faster than had been expected and the City is planning for a faster growth rate. The City is using a population of 4,008 people by the year 2023 for its projected growth.

CURRENT WATER AND WASTEWATER STATISTICS

Total Unaccounted for Water

<i>Year</i>	<i>Amount (gal.)</i>	<i>%</i>
2009	40965866	16
2010	27655966	11
2011	37060395	15
2012	28994735	12
2013	21650285	9

Municipal Water Average Per Capita (gpcd)

<i>Year</i>	<i>Total Treated</i>	<i>Population</i>	<i>Per Capita Use</i>
2009	261680000	3177	226
2010	232507000	3232	197
2011	225762000	3232	191
2012	210448000	3244	178
2013	195592000	3245	165

Summer Water Average (gpcd)

<i>Year</i>	<i>Summer Total Treated</i>	<i>Population</i>	<i>Summer Per Capita Use</i>
2009	91783000	3177	317
2010	79205000	3232	269
2011	60154000	3232	205
2012	86686000	3244	294
2013	69023000	3245	234

Winter Water Average (gpcd)

<i>Year</i>	<i>Winter Total Treated</i>	<i>Population</i>	<i>Winter Per Capita Use</i>
2009	169,897,000	3177	195
2010	153,302,000	3232	173
2011	165,608,000	3232	187
2012	123,762,000	3244	139
2013	126,569,000	3245	142

Annual Peak-to-Average Daily Use Ratio

<i>Year</i>	<i>Average MGD</i>	<i>Peak MGD</i>	<i>Ratio (peak/avg)</i>
2009	0.678	1.435	2.12
2010	0.636	1.376	2.16
2011	0.619	1.247	2.01
2012	0.575	1.08	1.88
2013	0.565	1.187	2.1

Municipal Wastewater Average Per Capita (gpcd)

<i>Year</i>	<i>Total Treated</i>	<i>Population</i>	<i>Per Capita Use</i>
2009	112,242,973	3177	97
2010	109,550,222	3232	93
2011	96924658	3232	82
2012	99846658	3244	84
2013	98629829	3245	83

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Summer Wastewater Average (gpcd)

<i>Year</i>	<i>Summer Total</i>	<i>Population</i>	<i>Summer</i>
<i>Per</i>	<i>Treated</i>		<i>Capita Use</i>
2009	26,659,365	3177	92
2010	26,990,763	3232	92
2011	23,822,551	3232	81
2012	26,016,070	3244	88
2013	24583168	3245	83

Winter Wastewater Average (gpcd)

<i>Year</i>	<i>Winter Total</i>	<i>Population</i>	<i>Winter Per</i>
	<i>Treated</i>		<i>Capita Use</i>
2009	85,583,607	3177	98
2010	82,559,459	3232	93
2011	73,102,107	3232	83
2012	73,830,750	3244	83
2013	74,046,661	3245	83

WATER SYSTEM UTILITY PROFILE

In 2013, the per capita per day usage was 165 gallons per day. In 2013, the winter per capita per day use was 142 gallons per day. In 2013, the summer per capita per day use was 234 gallons per day. Residential meters represent 82% of the City of Llano's active water connections. Commercial connections represent 18% of the total connections.

The City's water treatment facilities' current capacity is rated at 2,083 gallons per minute (gpm) or 3.0 million gallons per day (mgd).

Total water storage capacity of the City is 2.2 million gallons, of which .400 million gallons are considered elevated storage. In 2013, average daily water demand for the City was .565 mgd. The peak daily water demand for 2013 was 1.187 mgd. The distribution capacity is 3,400 gpm and provides potable water to eight pressure zones within the City. In high pressure areas of the distribution system greater than 110 psi, pressure reducer valves have been installed. Pressure reducers can be installed on homes where service pressure is greater than 80 psi by a licensed plumber.

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WASTEWATER SYSTEM PROFILE

Eighty-eight percent (86%) of the City's water customers are also served by the City's wastewater system. The remaining twelve percent (14%) utilizes private on-site wastewater disposal systems (i.e., septic tank systems). The City operates its Activated Sludge wastewater treatment facility at the current permitted capacity 0.6 mgd. The average daily flow for 2013 was 0.270 mgd. The peak monthly wastewater flow for the 2013 period was 0.900 mgd. All the City's wastewater effluent is applied to irrigation for hay field production.

PUBLIC EDUCATION

The City will promote water conservation issues by informing the public in a variety of ways including:

- new customers will receive water conservation information;
- water conservation information will be available upon request;
- community educational program / school demonstrations and presentations;
- staff lectures, and professional presentations are provided to local civic groups and organizations;
- articles are published in the City's newsletter on water conservation;
- retrofitting older homes with new plumbing; and
- lawn and garden shows will be held in early spring to promote water conservation.

The City provides customers with information from American Water Works Association, Texas Water Development Board and other sources related to water conservation and environmental issues that affect our water on the City's website and through a newsletter.

Additionally, the City provides an opportunity for customers to learn about water conservation at an annual Lawn and Garden Show held in the City. Information, conservation related prizes, and hands-on demonstrations are provided at this event.

PLUMBING CODES

The City has adopted the 1997 Uniform Plumbing Code, which requires water saving fixtures to be installed in new construction and in the replacement of plumbing in existing structures.

RETROFIT PROGRAMS

The City shall educate the residents, plumbers, and contractors on the benefits of retrofitting existing facilities with water saving devices. This program will be included in the educational and informational programs utilized by the City. The City will contact all plumbing companies and hardware stores in the Llano area to encourage them to stock

water conserving fixtures including retrofit devices. In early spring, the City will post water conservation tips for the customers online and through newspaper articles.

UNIVERSAL METERING

All treatment facilities, irrigation, parks, and municipal structures operated by the City of Llano are now being metered.

The City is currently replacing all water meters with electronic radio read meters capable of reading water flow down to a tenth of a gallon.

WATER CONSERVING LANDSCAPE

The City of Llano will provide information, through the public education program, to homeowners, business owners, landscape architects, and irrigation contractors about the methods and benefits of water conserving landscaping practices and devices. The following methods will be encouraged:

- The use of low water consuming 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.
- The use of ornamental fountains that recycle water and use a minimum amount of water.

In addition, the City will encourage business and nurseries to offer for sale low water consuming plants and grasses along with efficient irrigation systems and promote their use through demonstrations and advertisements.

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RATE STRUCTURES OF WATER AND WASTEWATER

a) Water rates for all customers served by the City shall be as follows:

Consumption	0 to 3,000 gallons	3,000 to 12,000 gallons	12,000 to 50,000 gallons	> 50,000 gallons
Rate	included in base charge	\$2.30 per 1,000 gallons	\$4.03 per 1,000 gallons	\$5.75 per 1,000 gallons

Minimum base charges inside City Limits	
Meter Size	Rate
½" - ¾"	\$42.00
1"	\$51.00
1 1/2 "	\$60.00
2"	\$84.75
3"	\$267.00
4"	\$334.50
6"	\$492.00

One dollar (\$1.00) has been added to each customer's monthly charge for water for contributing to the Council Restricted Sinking Fund.

- b) Water rates for apartment units which have individual water meters shall be the same as Section 1. a) above.
- c) Water rates for apartment complexes which are metered as one customer shall be calculated as follows:

The minimum base charge for a ½" to ¾" meter size will be billed for each unit and the gallons included in the base charge will be determined by multiplying 3,000 gallons times the number of apartment units.

Multi – Family units or Apartments may, with permission of the City, install City specified locking cut-offs for individual units. Rates shall be calculated as noted in this section with the minimum base charge calculated using the number of occupied units. Service fees for lockable cut offs shall be the same as if metered.

- d) Water rates for customers outside the city limits shall calculated as the sum of the "minimum base charges inside city limits" for a ½" to ¾" meter size plus the "minimum base charges inside city limits" for the applicable meter size.

All rates are to be considered net. Gross rates are 10% higher. If the current monthly bill is not paid within ten (10) days from the date of billing, the gross rate shall apply.

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Wastewater Rates:

- a) Wastewater rates for residential customers shall be based on the average water consumption of individual customers for the months of December, January, and February, to be recalculated each March. Rates shall be:
 \$68.00 per first 2,000 gallons of water consumed per month, plus
 \$01.81 per 1,000 gallons for the next 2,001-25,000 gallons consumed per month
 \$02.16 per 1,000 gallons for the next 25,001-50,000 gallons consumed per month
 \$02.52 per 1,000 gallons for the next 50,001-100,000 gallons consumed per month
 \$02.88 per 1,000 gallons for the next 100,001-200,000 gallons consumed per month
 \$03.25 per 1,000 gallons for the next 200,001-300,000 gallons consumed per month
 \$03.60 per 1,000 gallons consumed over 300,000 gallons.
- b) Wastewater rates for apartment complexes which are metered as one customer shall be calculated as follows:
 \$68.00 times the number of apartment units, plus
 \$01.81 per 1,000 gallons for the next 2,001-25,000 gallons consumed per month
 \$02.16 per 1,000 gallons for the next 25,001-50,000 gallons consumed per month
 \$02.52 per 1,000 gallons for the next 50,001-100,000 gallons consumed per month
 \$02.88 per 1,000 gallons for the next 100,001-200,000 gallons consumed per month
 \$03.25 per 1,000 gallons for the next 200,001-300,000 gallons consumed per month
 \$03.60 per 1,000 gallons consumed over 300,000 gallons.
- d) Commercial and Industrial wastewater rates shall be based on the average water consumption of individual customers for the months of December, January and February, to be recalculated each March. The average shall be used to define rates as follows:

Minimum Charge per first 2,000 gallons	\$84.00
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\$01.81 per 1,000 gallons for the next 2,001-25,000 gallons consumed per month
 \$02.16 per 1,000 gallons for the next 25,001-50,000 gallons consumed per month
 \$02.52 per 1,000 gallons for the next 50,001-100,000 gallons consumed per month
 \$02.88 per 1,000 gallons for the next 100,001-200,000 gallons consumed per month
 \$03.25 per 1,000 gallons for the next 200,001-300,000 gallons consumed per month
 \$03.60 per 1,000 gallons consumed over 300,000 gallons

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LEAK DETECTION AND WATER AUDITS

The City of Llano has aggressively pursued a leak detection and repair program and has in inventory all necessary repair materials needed to ensure prompt repairs of all leaks detected or reported.

A monthly water loss report provides an effective tracking system of metered production, metered consumption, accounted water losses, and unaccountable water loss. The City maintains an annual unaccountable rate of equal to or less than sixteen percent (16%) of the purchased water.

IMPLEMENTATION AND ENFORCEMENT

An Ordinance adopting the Water Conservation Plan shall authorize the City to implement, enforce, and administer the Ordinance. The City Council adopted the Ordinance on _16_th day of _July_, 2018.

CONTRACTS WITH OTHER POLITICAL SUBDIVISIONS

The City will, as part of the contract to wholesale water to any other entity that will re-sell water, require that entity to adopt a water conservation and drought contingency plan in accordance to the LCRA's current water conservation and drought contingency plan rules or have a plan in effect currently adopted by the LCRA (Lower Colorado River Authority) or TCEQ (Texas Commission on Environmental Quality).

ANNUAL EVALUATION AND REVISIONS

This Ordinance will be revised at least every five (5) years to provide updates and changes as appropriately required.

Revisions were made in August 2000, March 2006, May 2009, May 2012, May 2014, including system profile and goal updates and currently July 2018. Next revision will be made May 2019.

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DROUGHT CONTINGENCY PLAN

INTRODUCTION

It is necessary for the City of Llano to have in place a plan that will deal with emergency water demand situations. There are several scenarios where the public water supply could be adversely affected and the public's health jeopardized. Normal service can be interrupted by such uncontrollable circumstances as drought, hurricanes, tornadoes, vandalism, floods, or equipment failure. This Ordinance also has been developed to be initiated when the water demand is significantly higher than normal conditions due to persistent drought periods leading to higher than normal stress on the City's water system and supply. This Ordinance follows the Texas Commission on Environmental Quality regulations and LCRA's Drought Management Plan rules as adopted April 2005.

This Ordinance will provide the necessary indicators and control measures to temporarily abate water demand in emergency situations. These provisions are designed to be in place only as long as an emergency exists. To be effective the plan must have the following elements:

- Trigger conditions that will signal the existence of an emergency;
- Emergency control measures;
- Methods to relay information and notify the public;
- Enforcement procedures;
- Method of implementation of plan; and
- Procedure for plan termination notification.

SYSTEM DESCRIPTION

The City's water treatment facilities current capacity is rated at 2,083 gallons per minute (gpm) or 3.0 million gallons per day (mgd). Total water storage capacity of the City is 2.2 million gallons, of which .400 million gallons are considered elevated storage. In 2013, average daily water demand for the City was .565 mgd. The peak daily water demand for 2013 was 1.187 mgd. The distribution capacity is 3,400 gpm and provides potable water to eight pressure zones within the City. In high pressure areas of the distribution system greater than 110 psi, pressure reducer valves have been installed. Pressure reducers can be installed on homes where service pressure is greater than 80 psi by a licensed plumber.

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TRIGGER CONDITIONS

Section I: Declaration of Policy, Purpose and Intent

To conserve the available water supply and protect the integrity of water supply facilities, with regard for domestic water use, sanitation, and fire protection, and to protect and preserve public health, welfare, and safety and minimize the adverse impacts of water supply shortage or other water supply emergency conditions, the City of Llano hereby adopts the following regulations and restrictions on the delivery and consumption of water.

Water uses regulated or prohibited under this Drought Contingency Plan (the Plan) are non-essential and continuation of such uses during times of water shortage or other emergency water supply conditions are deemed to constitute a waste of water which subjects the offender(s) to penalties as defined in Section XI of this Ordinance.

Section II: Public Involvement

Opportunity for the public to provide input into the preparation of the Ordinance was provided by the City of Llano by means of a public hearing.

Section III: Public Education

The City of Llano will annually provide the public with information about the Ordinance, including information about the conditions under which each state of the Ordinance is to be initiated or terminated and the drought response measures to be implemented in each stage. This information will be provided by means of press releases in local newspaper, public events, and utility bill inserts.

Section IV: Coordination with Regional Water Planning Group

The service area of the City of Llano is located within the boundaries of the Lower Colorado River Authority and the City of Llano has provided a copy of this Ordinance to the LCRA.

Section V: Authorization

The Mayor or City Manager is hereby authorized and directed to implement the applicable provisions of this Ordinance upon determination that such implementation is necessary to protect public health, safety and welfare. The Mayor or City Manager shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Ordinance.

Section VI: Application

The provisions of this Ordinance shall apply to all persons, customers, and property utilizing water provided by the City of Llano. The terms “person” and “customer” as used in the Ordinance include individuals, corporations, partnerships, associations, and all other legal entities.

Section VII: Definitions

For the purposes of this Ordinance, the following definitions shall apply:

Aesthetic water use: water use for ornamental or decorative purposes such as fountains, reflecting pools, and water gardens.

Average Daily Flow: calculated average of gauge reading from LCRA Hydromet from reading nearest to 12:00 AM, 4:00 AM, 8:00 AM, 12:00 PM, 4:00 PM, and 8:00 PM.

Commercial and institutional water use: water use that is integral to the operations of commercial and non-profit establishments and governmental entities such as retail establishments, hotels and motels, restaurants, and office buildings.

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

Customer: any person, company, or organization using water supplied by City of Llano.

Domestic water use: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry or institution.

Even number address: street addresses or rural postal route numbers ending in 0, 2, 4, 6 or 8 and locations without addresses.

Industrial water use: the use of water in processes designed to convert materials of lower value into forms having greater usability and value.

Landscape irrigation use: water used for the irrigation and maintenance of landscape areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, and rights-of-way and medians.

Non-essential water use: water uses that are neither essential nor required for the protection of public, health, safety, and welfare, including:

1. Irrigation of landscape areas including parks, athletic fields and golf courses, except otherwise provided under this Ordinance;
2. Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle;
3. Use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
4. Use of water to wash down buildings or structures for purposes other than immediate fire protection;
5. Flushing gutters or permitting water to run or accumulate in any gutter or street;
6. Use of water to fill, refill, or add to any indoor or outdoor swimming pools or Jacuzzi-type pools;
7. Use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;
8. Failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and
9. Use of water from hydrants for construction purposes or any other purposes other than firefighting.

Odd numbered address: street addresses or rural postal route numbers ending in 1, 3, 5, 7 or 9.

Section VIII: Criteria for Initiation, Response and Termination of Drought Response States

The flow of the Llano River is greatly dependent on base flow from springs. During periods of low baseflow, the Llano River is capable of great fluctuations, even daily. Setting and implementing drought trigger levels with such fluctuation can be difficult and confusing to all parties involved. Using a 7 consecutive day moving average of discharge helps smooth the fluctuations of the River and facilitates the operation of the Drought Plan. State agencies such as TCEQ and Texas Parks and Wildlife utilize such a moving average.

In addition, during periods of low baseflow, large rainfall events may increase discharge rapidly, only to fall back to low levels in a short period. In 1955, the flow of the Llano River at Llano was 23,900 cfs on May 19th, and 28 cfs on May 30th. As a result, criteria for terminating drought stages are set at levels above the criteria for implementing drought stages.

The trigger criteria are based on an evaluation of average daily discharge records for the Llano River at Llano for the period 1939-2004. These selected criteria attempt to limit the frequency of movement between stages, reduce the occurrence of more severe stages, and limit increased costs associated with treating source water diminished in quality by lower flows.

The triggering criteria described below are based on the flow of water in the Llano River, water consumption rates, and water pressure within the system. The City of Llano's Water Conservation and Drought Contingency Plan is segmented into 5 stages. Stage 1 Mild Water Shortage Conditions will be a voluntary conservation plan from June 1 through 2014 Water Conservation and Drought Contingency Plan – Amended 07-10-18

September 30. The remaining 4 stages shall be mandatory and triggered based on any one or a combination of high consumption rates, low water pressure in system, low flow in Llano River, and/or any situation deemed an emergency by the City Manager.

The City Manager, or his/her designee, shall monitor water supply and/or demand conditions daily and, in accordance with the triggering criteria set forth in Section VIII of this Ordinance, shall determine that a mild, moderate, severe, critical, emergency or water shortage condition exists and shall implement the following notification procedures:

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STAGE 1 TRIGGERS – MILD WATER SHORTAGE CONDITIONS

Requirements for initiation:

Customers shall be requested to voluntarily conserve water and adhere to the prescribed restrictions on non-essential water use, defined in Section VII – Definitions of this Ordinance, annually beginning on June 1 through September 30. However, the Mayor or City Manager may implement Stage 1 of the Ordinance at any time if conditions prior to June 1st warrant concerns for the City of Llano water supply.

Requirements for termination:

The Mayor or City Manager may rescind Stage 1 of the Ordinance at any time.

STAGE 1 RESPONSE – MILD WATER SHORTAGE CONDITIONS

Goal: Limit the daily pumpage at the water treatment plant to 1.2 million gallons per day.

Voluntary Water Use Restrictions:

1. Water customers are requested to voluntarily limit the irrigation of landscaped areas with automatic irrigation systems and hose-end sprinklers to twice per week on the designated water day during the hours of 12 Midnight to 10 AM and 7 PM to 12 Midnight.

Designated Watering Days

Odd Numbered Addresses	Wednesday and/or Saturday
Even Numbered Addresses	Thursday and/or Sunday
Commercial, Multi-family	Tuesday and/or Friday

The schedule for Designated Watering Days follows the same schedule presented on Austin, Texas news broadcasts.

Irrigation of landscaped areas is permitted at any time if it is by means of a hand-held hose, a faucet filled bucket or water can of five (5) gallons or less, or drip irrigation system.

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STAGE 2 TRIGGERS – MODERATE WATER SHORTAGE CONDITIONS

Requirements for initiation:

Customers shall be required to comply with the requirements and restrictions on non-essential water use, defined in Section VII – Definitions of this Ordinance when:

1. The 7-day moving average daily discharge of the Llano River at Llano is equal to or less than 40 cubic feet per second (cfs) and the Stage 2 pumpage goal is exceeded for 4 consecutive days.

The trigger level of 40 cfs is based on the 7Q2 calculation for the Llano River at Llano from 1939-2004. The minimum 7-day, 2-year discharge (based on a moving 30-year average) is used by the State of Texas to analyze permit applications for water allocation, water supply planning, aquatic maintenance (instream flow) requirements, and waste-load allocation for point and non-point source discharges. For purposes of this drought planning exercise, the 7Q2 value for the period of record (1939-2004) was utilized to characterize the drought of record in the 1950s.

(The 7Q2 calculation is obtained by determining the lowest 7-day running average for each hydrologic year (October 1st-September 30th). The median of all these annual values is the 7Q2 value.)

Requirements for termination:

Stage 2 of the Ordinance may be rescinded after September 30th or when average daily discharge of the Llano River at Llano exceeds 150 cfs for five (5) consecutive days. The Mayor or City Manager may rescind Stage 2 of this Ordinance at any time. Upon termination of Stage 2, Stage 1 becomes operative.

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STAGE 2 RESPONSE – MODERATE WATER SHORTAGE CONDITIONS

Goal: Limit the daily pumpage at the water treatment plant to 1.0 million gallons per day.

Water Use Restrictions: Under threat of penalty for violation, the following water use restrictions shall apply to all persons:

1. Water customers shall limit the irrigation of landscaped areas with automatic irrigation systems or hose-end sprinklers to twice per week on the designated water day during the hours of 12 Midnight to 10 AM and 7 PM to 12 Midnight.

Designated Watering Days

Odd Numbered Addresses	Wednesday and/or Saturday
Even Numbered Addresses	Thursday and/or Sunday
Commercial, Multi-family	Tuesday and/or Friday

The schedule for Designated Watering Days follows the same schedule presented on Austin, Texas news broadcasts.

2. Irrigation of landscape is permitted at any time if by means of hand-held hose, a faucet-filled bucket or water can of five (5) gallons or less, or drip irrigation system.
3. Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is prohibited except on designated watering days between the hours of 12:00 Midnight and 10:00 AM and between 7:00 PM and 12:00 Midnight. Such washing, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shutoff. Vehicle washing may be done at any time on the immediate premises of a commercial car wash or commercial service station. Further, such washing may be exempted from these regulations if the health, safety, and welfare of the public are contingent upon frequent vehicle cleansing, such as garbage trucks and vehicles used to transport food and perishables.
4. Use of water to fill, refill, or add to any indoor or outdoor swimming pools, wading pools, or Jacuzzi-type pools is prohibited except on designated watering days between the hours of 12:00 Midnight and 10:00 AM and between 7:00 PM and 12:00 Midnight.
5. Operation of any ornamental fountain or pond for aesthetic or scenic purposes is prohibited except where necessary to support aquatic life or where such fountains or ponds are equipped with a recirculation system. Refilling of fountains or ponds equipped with a recirculation system is prohibited except on designated watering days between the hours of 12:00 Midnight and 10:00 AM and between 7:00 PM and 12:00 Midnight.

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6. 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 or those purposes mandated by public health programs or the State of Texas may be allowed under special permit from the City of Llano.
7. Use of water for the irrigation of golf course tees and fairways is prohibited except on designated watering days between the hours of 12:00 Midnight and 10:00 AM and between 7:00 PM and 12:00 Midnight. Greens may be watered on an as needed basis.
8. The following uses of water are defined as non-essential and are prohibited:
 - a. Wash down of any sidewalks, driveways, parking lots, tennis courts, or other hard-surfaced areas;
 - b. Use of water to wash down buildings or structures for purposes other than immediate fire protection;
 - c. Use of water for dust control;
 - d. Flushing gutters or permitting water to run or accumulate in any gutter or street; and
 - e. Failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s).

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STAGE 3 TRIGGERS – SEVERE WATER SHORTAGE CONDITIONS

Discharge information for the Llano River at Junction and the Llano River at Mason can be utilized to predict in March that the City of Llano is very likely to reach at least Stage 3 in this Drought Plan. Based on an analysis of historical monthly flow data for the Junction and Mason gauges, the following guidelines can be used to predict Stage 3 drought conditions: If 1) the average February monthly flow for Junction is 75 cfs or less; or 2) the average of the monthly flows from August to February at Junction is 85 cfs or less; or 3) the average February monthly flow for Mason is 130 cfs or less, than it can be predicted that the 7-day moving average daily discharge of the Llano River at Llano will be 21 cfs or less during the coming summer.

The utilization these guidelines since 1940 would have correctly predicted 17 of 19 low-flow (21 cfs or less) events for the Llano River at Llano, with no false predictions. The low-flow conditions of 1985 would not have been predicted due to high flows in December. It is not determined why the low-flow conditions of 1967 would not have been predicted.

If it becomes apparent from this predictive scenario, or from other observations, that Severe Water Shortage Conditions are likely to occur, the following is recommended:

LCRA or USGS be requested to calibrate the Llano River at Llano and Llano River at Mason, Texas stream flow gauge to ensure its accuracy.

The Emergency Water Shortage Plan (to be prepared) be evaluated to ensure that all planning options are available as needed.

Requirements for initiation:

Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses for Stage 3 of this Ordinance when:

1. The 7-day moving average daily discharge of Llano River at Llano is equal to or less than 21 cubic feet per second (cfs) and the Stage 3 pumpage goal is exceeded for 4 consecutive days.
 - If Stage 2 has not been initiated, the Stage 3 requirements for initiation shall initiate Stage 2 restrictions for 7 days prior to initiating Stage 3. If the Stage 3 pumpage goal can be met within those 7 days, Stage 2 restrictions remain in effect until both requirements for initiation of this section are met.

OR

2. The Goal for Stage 2 cannot be met under Stage 2 Restriction.

Requirements for termination:

Stage 3 of the Ordinance may be rescinded when the average daily discharge of the Llano River at Llano exceeds 75 cfs for seven (7) consecutive days or 150 cfs for five (5) consecutive days. The Mayor or City Manager may rescind Stage 3 of this Ordinance at

any time. Upon termination of Stage 3, Stage 2 becomes operative. *Important Note:* Care should be exercised not to move from Stage 3 to Stage 1, just because the discharge of the River exceeds 150 cfs for 5 days. Discharge data should be evaluated to ensure that discharge levels are stabilizing or increasing before Stage 2 is repealed. When baseflows are low, the River can quickly return to Stage 3 levels, even after a significant rainfall event that produces large discharge volumes.

STAGE 3 RESPONSE – SEVERE WATER SHORTAGE CONDITIONS

Goal: Limit the daily pumpage at the water treatment plant to 0.8 million gallons per day.

Water Use Restrictions: All requirements of Stage 2 shall remain in effect during Stage 3 except:

1. Irrigation of landscaped areas shall be limited to twice per week on designated watering days between the hours of 6:00 AM and 10:00 AM and between 8:00 PM and 12:00 Midnight, and shall be by means of a hand-held hose, a faucet-filled bucket or drip irrigation system only. The use of hose-end sprinklers or permanently installed automatic sprinkler systems are allowed once per week according to the following schedule:

Hand-held/Drip Irrigation

Even Addresses	Thursday	and/or	Sunday
Odd Addresses	Wednesday	and/or	Saturday
Commercial, Recreational, Multi-Family	Tuesday	and/or	Friday

Hose-end Sprinklers or Sprinkler Systems

<u>Addresses Ending in</u>	<u>Allowed Day</u>
0,2 or 4	Sunday
1 or 3	Saturday
6,8	Thursday
5,7,9	Wednesday
Commercial, Multi-family even address	Tuesday
Commercial, Multi-Family odd address	Friday

2. The watering of golf course fairways is allowed once per week on designated days. The watering of greens on an as need basis is limited to between the hours of 6:00 AM and 10:00 AM and between 8:00 PM and 12:00 Midnight by sprinkler system and hand-held hose between the hours of 10:00 AM and 8:00 PM.
3. The use of water for construction purposes from designated fire hydrants under special permit is to be discontinued.
4. Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle not occurring on the premises of a commercial car wash and commercial service stations and not in the immediate interest of public health, safety, and

welfare is prohibited. Further such vehicle washing at commercial car washes and commercial service stations shall occur only between the hours of 6:00 AM and 10:00 AM and between 8:00 PM and 12:00 Midnight.

5. Use of water to fill, refill, or add to any indoor or outdoor swimming pools, wading pools, or Jacuzzi-type pools is prohibited except on designated watering days between the hours of 6:00 AM and 10:00 AM and between 8:00 PM and 12:00 Midnight.
6. The operation of any ornamental fountain or pond for aesthetic or scenic purposes is prohibited except where necessary to support aquatic life or where such fountains or ponds are equipped with a recirculation system. Refilling of fountains or ponds equipped with a recirculation system is prohibited except on designated watering days between the hours of 6:00 AM and 10:00 AM and between 8:00 PM and 12:00 Midnight.

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STAGE 4 TRIGGERS – CRITICAL WATER SHORTAGE

The effects of low-flow on the biological and chemical processes of the Llano River have an impact on the water needs of the citizens of Llano. While water restrictions are certainly a burden to citizens, they are necessary to limit additional strain on the Llano River and the associated treatment facilities. As the flow of the Llano River decreases to very low levels, the temperature of the water increases and the amount of dissolved oxygen in the water decreases. Lower levels of dissolved oxygen result in increased costs associated with treatment of higher levels of nitrates and resulting changes in water taste. These higher temperatures and reduced dissolved oxygen can also have a significant negative impact on the aquatic habitat of the River.

Currently, the Stage 4 Trigger level is recommended when the average daily discharge of the Llano River at Llano is equal to or less than 10 cubic feet per second (cfs). Should it be found that critical biological and chemical processes of the River could be maintained at lower flows, a lower trigger level can be considered. Should it be found that higher flows are necessary to maintain these critical processes, higher trigger levels can be considered.

Requirements for initiation:

Customers shall be required to comply with the requirements and restrictions on non-essential water uses for Stage 4 of this Ordinance when:

1. The 7-day moving average daily discharge of Llano River at Llano is equal to or less than 10 cubic feet per second (cfs) and the Stage 4 pumpage goal is exceeded for 4 consecutive days.
 - If Stage 3 has not been initiated, the Stage 4 requirements for initiation shall initiate Stage 3 restrictions for 7 days prior to initiating Stage 4. If the Stage 4 pumpage goal can be met within those 7 days, Stage 3 restrictions shall remain in effect until both requirements for initiation of this section are met.
 - If Stage 2 has not been initiated, the Stage 4 requirements for initiation shall initiate Stage 2 restrictions for 7 days. If the Stage 4 pumpage goal cannot be met within those 7 days, Stage 3 restrictions shall be initiated. If the Stage 4 pumpage goal cannot be met within 7 days, Stage 4 shall be initiated. If the Stage 4 pumpage goal can be met with the restrictions of Stage 2 or Stage 3, those restrictions shall remain in effect until both requirements for initiation of this section are met.

OR

2. The goal for Stage 3 cannot be met under Stage 3 Restriction

Requirements for termination:

Stage 4 of the Ordinance may be rescinded the 7-day moving average daily discharge of the Llano River at Llano is at least 15 cfs. The Mayor or City Manager may rescind Stage 4 of this Ordinance at any time. Upon termination of Stage 4, Stage 3 becomes operative.

STAGE 4 RESPONSE-CRITICAL WATER SHORTAGE

Goal: Limit the daily pumpage at the water treatment plant to .6 million gallons per day.

Meeting: The Mayor shall schedule weekly meetings to make any modifications to this plan.

Senior Water Right: Based on conditions from 2011 Drought, it is recommended that the Priority Call for Water Rights should be made at the initiation of Stage 4 of this plan as an effort to prevent 0 flow. Once conditions are met to terminate Stage 4 the determinations of when to terminate the Priority Call shall be made.

The mayor shall contact TCEQ and make a request for Priority Call claiming Water Rights.

- TCEQ Field Operations Program Support-512-239-0400
- TCEQ Region 11(Austin) Office-512-339-2929

Water use restrictions: All requirements for Stage 3 shall remain in effect during Stage 4 except:

1. Residents shall be allowed to hand water trees, gardens, shrub, potted plants and foundations twice per week, on designated watering days by use of hand held hose only.
2. Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is absolutely prohibited.
3. Filling or refilling of any pools and/or hot tubs is absolutely prohibited. The City of Llano City Pool and City Splash pad may be refilled to allow a safe alternative to the recreational use of the river.
4. If pumping goals cannot be maintained, the Mayor or his/her designee shall have the authority to further limit irrigation.
5. 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 or a higher-numbered stage shall be in effect.
6. Use of water for watering the JLK Event Center is prohibited.
7. Use of water for the irrigations of the golf course greens is allowed by hand-held hose only. After the Priority Call for Water Rights is made, the use of water for irrigations of the golf course from the Llano River shall be prohibited.
8. Due to potential biological growth due to low flow conditions, swimming in the Llano River at Robison Lake and Town Lake in Badu Park is strongly advised against. The city should make best efforts to notify the citizens of the potential hazards.

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STAGE 5 TRIGGERS - WATER ALLOCATION

The trigger levels established in this Ordinance are based on the condition that the Llano River is the only source of supply for the City of Llano. Should an additional backup source become established, the water allocations set in this section might need to be re-evaluated.

Requirements for initiation:

Customers shall be required to comply with the water allocation plan prescribed below and comply with the requirements and restrictions for Stage 5 of this Ordinance when:

1. Water ceases to naturally flow over the Llano Lake Dam in Llano, Texas; or
2. Poor raw water quality requiring less pumpage to maintain treatability; or
3. Water system fails from acts of God or man; or
4. Any mechanical failure of pumping equipment which will require more than twelve (12) hours to repair which causes unprecedented loss of capability to provide water service.

Requirements for termination:

Stage 5 of the Ordinance may be rescinded when all the conditions listed as triggering events have ceased to exist. The Mayor or City Manager may rescind Stage 5 of this Ordinance at any time. Upon termination of Stage 5, Stage 4 becomes operative.

STAGE 5 RESPONSE – WATER ALLOCATION

Water use restrictions: All requirements for Stage 4 shall remain in effect during Stage 5.

Single-Family Residential Customers

Water rates for all residential customers served by the City shall, for gallons consumed more than 8,000 gallons, be charged at 5 (five) times the regular rate for the first billing after Stage V is implemented and ten (10) times the regular rate for the second billing after Stage V is implemented. If Stage 5 of the Water Conservation and Drought Contingency Plan has been in effect for the majority of days during any billing cycle (the 1st of each month through the 31st of the same month), Stage 5 rates will be charged for the entire billing cycle.

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Master-Metered Multi-Family Residential Customers

Water rates for all residential water customers residing in a master-metered multi-family residence served by the City shall, for gallons consumed more than 8,000 gallons, be charged at 5 (five) times the regular rate for the first billing after Stage V is implemented and ten (10) times the regular rate for the second billing after Stage V is implemented. If Stage 5 of the Water Conservation and Drought Contingency Plan has been in effect for the majority of days during any billing cycle (the 1st of each month through the 31st of the same month), Stage 5 rates will be charged for the entire billing cycle.

NOTIFICATION

Notification of the Public Regarding Initiation or Termination of Drought Response Stage:

The Mayor or City Manager shall notify the public by means of:

1. Publication in a newspaper of general circulation
2. Social media resources
3. Direct mail to each customer (use of full page billing for stage 4 and 5 only)
4. Public service announcements

Additional Notification:

The Mayor or City Manager shall notify directly, or cause to be notified directly, the following individuals and entities:

1. Mayor / Chairman and members of the City Council / Utility Board
2. TCEQ (required when mandatory restrictions are imposed)
3. Fire Chief
4. City and/or County Emergency Management Coordinator(s)
5. County Judge and Commissioner(s)
6. Major water users
7. Critical water users, i.e. hospitals
8. Parks / Street Superintendents & Public Facilities Managers

Section IX: Enforcement

1. No person shall knowingly or intentionally allow the use of water from the City of Llano for residential, commercial, industrial, agricultural, governmental or any other purpose in a manner contrary to any provision of this Ordinance, or in an amount more than that permitted by the drought response stage in effect at the time pursuant to action taken by the City Manager, or his/her designee, in accordance with provisions of this Ordinance.

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2. Any person who violates this Ordinance is guilty of a misdemeanor and, upon conviction shall be punished by a fine of not less than fifty dollars (\$50.00) and not more than five hundred dollars (\$500.00). Each day that one or more of the provisions in this Ordinance is violated shall constitute a separate offense. If a person is convicted of three or more distinct violations of this Ordinance, the Chief of Police or his/her designee shall, upon due notice to the customer, be authorized to discontinue water service to the premises where such violations occur. Services discontinued under such circumstances shall be restored only upon payment of a re-connection charge, hereby established at \$50.00, and any other costs incurred by the City of Llano in discontinuing service. In addition, suitable assurance must be given to the Mayor that the same action shall not be repeated while the Ordinance is in effect. Compliance with this Ordinance may also be sought through injunctive relief in the District Court.
3. Any person, including a person classified as a water customer of the City of Llano, in apparent control of the property where a violation occurs or originates shall be presumed to be the violator, and proof that the violation occurred on the person's property shall constitute a presumption that the person in apparent control of the property committed the violation, but any such person shall have the right to show that he/she did not commit the violation. Parents shall be presumed to be responsible for violations of their minor children and proof that a violation, committed by a child, occurred on property within the parents' control shall constitute a presumption that the parent committed the violation, but any such parent may be excused if he/she proves that he/she had previously directed the child not to use the water as it was used in violation of this Ordinance and that the parent could not have reasonably known of the violation.
4. Any employee of the City of Llano, Police Department, or other City employee designated by the Mayor, may issue a citation to a person he/she reasonably believes to be in violation of this Ordinance. The citation shall be prepared in duplicate and shall contain the name and address of the alleged violator, if known, the offense charged, and shall direct him/her to appear in the Municipal Court on the date shown on the citation for which the date shall not be less than three (3) days nor more than five (5) days from the date the citation was issued. The alleged violator shall be served a copy of the citation. Service of the citation shall be complete upon delivery of the citation to the alleged violator. The alleged violator shall appear in Municipal Court to enter a plea of guilty or not guilty for the violation of this Ordinance. If the alleged violator fails to appear in Municipal Court, a warrant for his/her arrest may be issued. A summons to appear may be issued in lieu of an arrest warrant. These cases shall be expedited and given preferential setting in Municipal Court before all other cases.

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Section X: Variances

The Mayor, or City Manager, may in writing, grant temporary variance for existing water uses otherwise prohibited under this Ordinance if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the person requesting such variance and if one or more of the following conditions are met:

1. Compliance with this Ordinance cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Ordinance is in effect.
2. Alternative methods can be implemented which will achieve the same level of reduction in water use.

Persons requesting an exemption from the provisions of this Ordinance shall file a petition for variance within the City of Llano within five (5) days after the Ordinance or a drought response stage has been invoked. All petitions for variances shall be reviewed by the Mayor, or City Manager, and shall include the following:

1. Name and address of the petitioner(s);
2. Purpose of water use;
3. Specific provision(s) of the Ordinance from which the petitioner is requesting relief;
4. Detailed statement as to how the specific provision of the Ordinance adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance;
5. Description of the relief requested;
6. Period for which the variance is sought;
7. Alternative water uses restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Ordinance and the compliance date; and
8. Other pertinent information.

Variances granted by the City of Llano shall be subject to the following conditions, unless waived or modified by the Mayor or City Manager:

1. Variances granted shall include a timetable for compliance; and
2. Variances granted shall expire when the Ordinance is no longer in effect, unless the petitioner has failed to meet specified requirements.

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

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ANNUAL EVALUATION AND REVISIONS

The trigger conditions shall be re-evaluated at least once a year for overall effectiveness and trigger conditions will be revised if necessary. This Ordinance will be revised at least every five years to provide updates and changes as appropriately required.

Revisions were made in August 2000, March 2006, May 2009, May 2012, May 2014, including system profile and goal updates and currently July 2018, removing the batter boards, rate updates to coincide with the master fee schedule, golf course irrigation clarification, trigger gauge readings, and updating the calling priority for Senior Water Rights. Next revision will be made May 2019.

Gail Lang Mayor

ATTEST:

Toni Milam, City Secretary

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