

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 exceed 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.