Drought Contingency Plan

for

San Jacinto River Authority
Lake Conroe Division

Prepared by

San Jacinto River Authority

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(only Section 3.6 revised)

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Section 1. Introduction

In 1996, severe drought conditions affected every region of the State. Water systems throughout the State were forced to cope with water shortages or system capacity problems. In response to the 1996 drought, the 75th Texas Legislature enacted Senate Bill 1, which directed the State to take a regional approach to water planning. One of the provisions of the legislation required the Texas Commission on Environmental Quality (TCEQ) to adopt rules requiring wholesale and retail public water suppliers to develop water conservation and drought contingency plans.[1]

Water conservation and drought contingency plans work together to help Texans manage short-term and long-term water shortages. The goal of a water conservation plan is to achieve lasting, long-term improvements in water use efficiencies using strategies to reduce the amount of water withdrawn from a particular source, and to ensure that the water withdrawn is used in an efficient manner. Drought contingency plans are short-term in nature, using temporary supply and demand management measures in response to temporary and potentially recurring water shortages and other emergencies.

The San Jacinto River Authority (SJRA), as a water right holder and wholesale water supplier, is required to submit a Water Conservation and Drought Contingency Plan to the TCEQ and Texas Water Development Board (TWDB). SJRA was created by the Texas Legislature in 1937 to:

> *"Provide water for domestic, municipal, commercial, industrial and mining purposes within and without the watershed of [the San Jacinto River], including water supplies for cities, towns and industries, and in connection therewith to construct or otherwise acquire water transportation, treatment and distribution facilities and supplemental sources of water."*[2]

The SJRA service area includes all of Montgomery County and portions of Waller, Grimes, Walker, San Jacinto, and Liberty Counties (Figure 1-1). The SJRA also serves customers in the Houston area and is authorized to operate in east Harris County through an agreement with the City of Houston.

SJRA is governed by a seven-member board. The General Manager oversees approximately 170 employees and all facilities across five divisions: Lake Conroe, Highlands, Groundwater Reduction Plan (GRP), Woodlands, and Flood Management Divisions. The following is provided as the Drought Contingency Plan (including utility description, service area description, and drought measures) for the Lake Conroe System Division (the Division). The Division's Water Conservation Plan is provided under separate cover.

[1] Senate Bill 1, 75th Legislature, Section 12.1272 of the Texas Water Code.
[2] House Bill No. 832, 45th Legislature, Regular Session, Austin, TX, 1937.

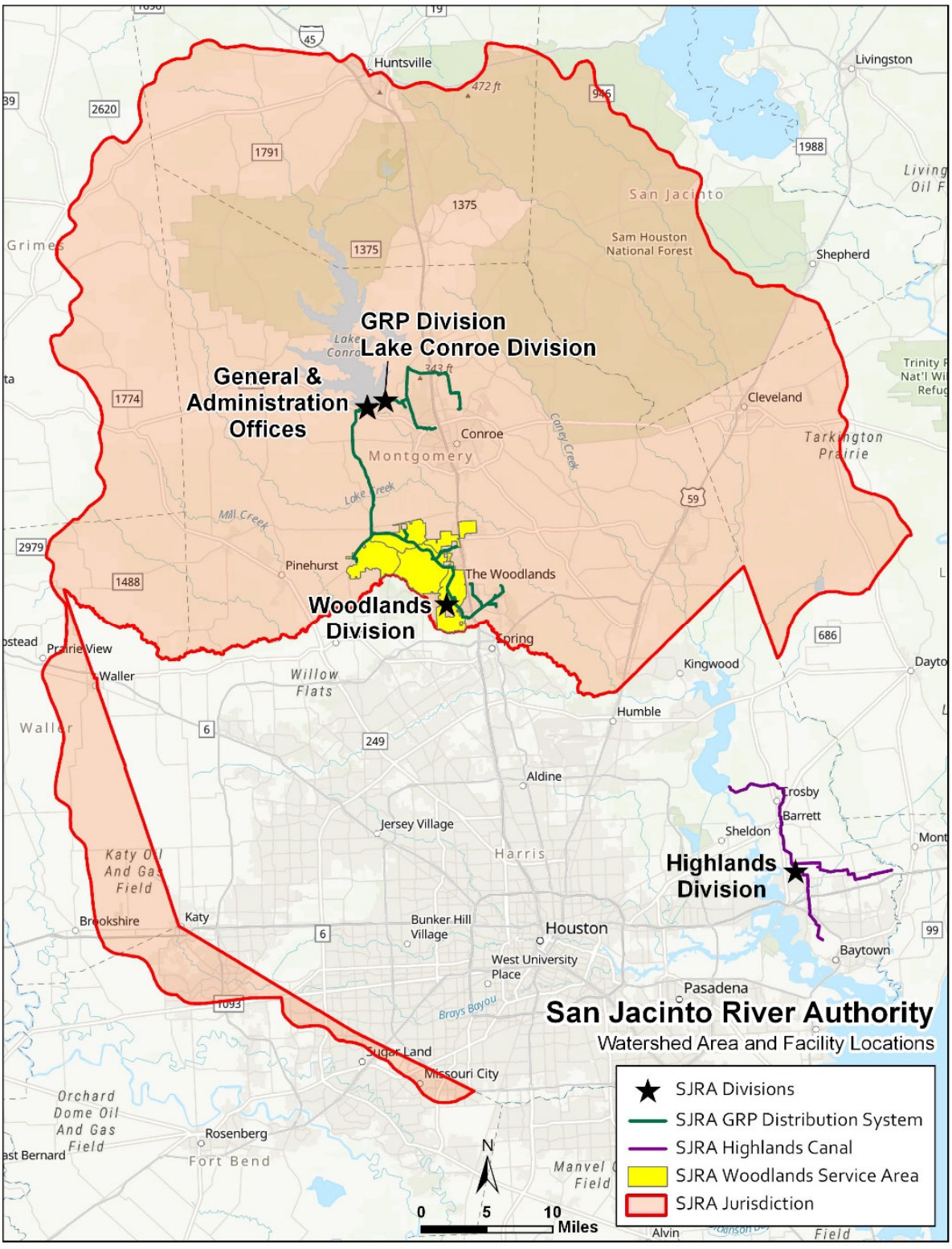

Figure 1-1. Watershed Area and Facility Locations

Section 2. Utility and Service Area Description

2.1 Utility Description

SJRA operates Lake Conroe, one of two major surface water supply reservoirs located in the San Jacinto River Basin. Completed in 1973, Lake Conroe is owned by SJRA and the City of Houston. SJRA owns one-third (33,333 ac-ft/year) and the City of Houston owns two-thirds (66,667 ac-ft/yr) of the total 100,000 ac-ft/yr of permitted water rights from the lake under Certificate of Adjudication (COA) 10-4963. Lake Houston is owned by the City of Houston and the water rights for yield from the reservoir are shared by the City of Houston and SJRA. SJRA also holds an option contract for the purchase of the Houston portion of water in Lake Conroe.

The Lake Conroe water right is used by SJRA to meet the needs of its customers, some of whom are in close proximity to the Lake. In addition to raw water customers in the immediate vicinity of Lake Conroe, the reservoir also serves as the source of water for the participating members of the GRP Division. The GRP began delivering water to its customers in June 2015. The SJRA's water right for Lake Conroe (33,333 ac-ft/yr) is permitted for multiple uses.

2.2 Service Area Description

The approximately 2,453 square mile area of SJRA's jurisdiction within the San Jacinto River Basin is bounded on the north and the east by the Trinity River Basin and the Trinity-San Jacinto Coastal Basin, on the west by the Brazos River Basin, and on the south by Harris County. A map of Lake Conroe, showing the location of the surrounding golf courses and power generating facility served by SJRA, is provided below (Figure 2-1). These customers take their water directly from Lake Conroe. In 2018, there were approximately 21,325 ac-ft diverted from Lake Conroe (Table 2-1). The Division does not own or operate wastewater infrastructure.

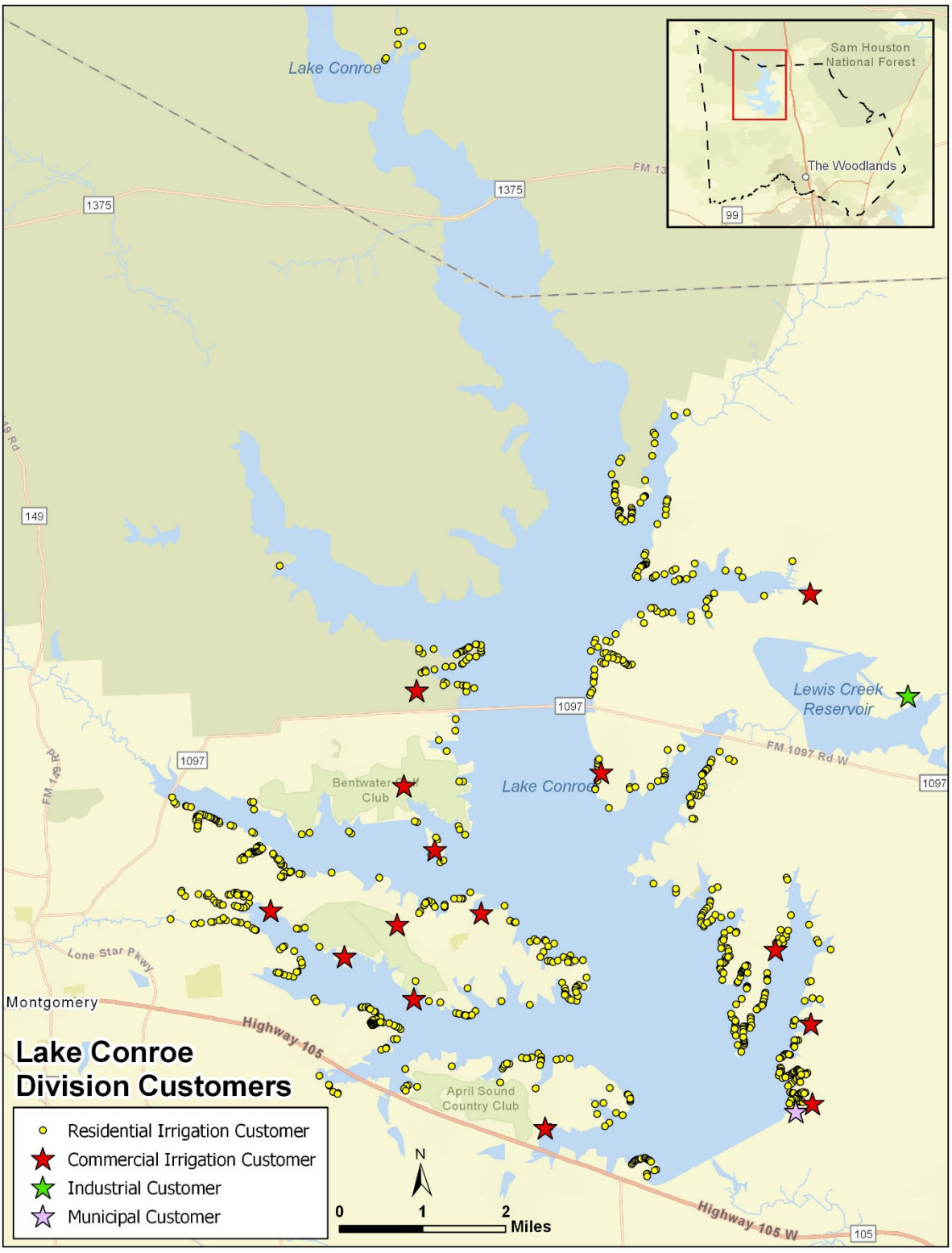

Figure 2-1. Lake Conroe Division Customers

Table 2-1. 2018 Surface Water Diversion

Municipal	14,639 ac-ft
Industrial	5,727 ac-ft
Irrigation	959 ac-ft
Total	21,325 ac-ft

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The Division serves a power generating facility that uses surface water primarily for cooling purposes. In 2018, there were 5,727 ac-ft diverted from Lake Conroe to provide wholesale water to the power generating facility.

The SJRA maintains 16 small commercial irrigation contracts, which allow nearby golf courses, resorts, and lakeside communities to pump water directly from Lake Conroe for landscape irrigation purposes. The acreage irrigated by these users varies but is estimated at 1,000 total acres. In 2018, there was 495 ac-ft diverted for commercial irrigation uses. There are also a small number of private individual property owners who pump raw water directly from Lake Conroe for landscape irrigation of their lakeside property through use of short-term contracts. The Division estimates usage for these customers by applying an approach developed by Texas A&M's Water Management Department which generates water budgets using a crop-specific coefficient for standard turf and incorporates irrigable area and environmental climate data. In 2018, the Division contracted with 751 households and delivered an estimated 464 ac-ft of water for private irrigation use.

Use of Lake Conroe as a municipal supply for the GRP Division began in June 2015. Most of the GRP Participant's population continues to be served by groundwater, but some of the larger users receive surface water. Therefore, part of the GRP Participant's population is served by a combination of treated surface water and treated groundwater, while other GRP Participants use groundwater exclusively. The GRP Participant's population currently served by SJRA from Lake Conroe as of 2018 was 246,626.

A full description of the Lake Conroe Division's raw water customer information can be found under separate cover in the Lake Conroe Division's Water Conservation Plan.

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Section 3. Drought Contingency Plan

Drought, or a number of other uncontrollable circumstances, can disrupt the normal availability of water supply. Even though an area may have an adequate water supply, the supply can become contaminated, or a disaster can disrupt or destroy the supply. During drought periods, consumer demand is often significantly higher than normal. The failure or inadequacy of raw water delivery system also can present a utility with an emergency demand management situation.

It is important to distinguish between drought contingency planning and water conservation planning. As detailed in the Division's Water Conservation Plan, water conservation involves implementing permanent water use efficiencies or reuse practices. Drought contingency planning establishes temporary methods or techniques to be used only if drought and/or emergency conditions persist.

The SJRA has developed a drought contingency plan with regard to the wholesale supply of water from Lake Conroe to its customers.

3.1 Drought Contingency Plan – Lake Conroe Division

SJRA provides raw surface water from Lake Conroe to its raw water customers in the vicinity of the lake and supplies treated water to the GRP Division. In order to conserve the available water supply and/or protect the integrity of water supply facilities during water supply shortages or other supply emergency conditions that can have adverse effects on its customers, SJRA has developed the following drought contingency plan elements.

3.2 Trigger Conditions – Initiation and Termination

As discussed in Section 2 of this drought contingency plan, the Lake Conroe water right is used by SJRA to meet the needs of its customers, some of whom are in close proximity to the Lake. In addition to these customers, the reservoir also serves as the source of water for the participating members of the GRP Division.

The General Manager of the SJRA or a designated representative will monitor water supply and/or demand conditions on a monthly basis or more frequently as conditions warrant and will determine when conditions warrant initiation or termination of each drought stage. Because SJRA utilizes supplies from Lake Conroe, initiation of drought stages for the Division is based on the water surface elevation in Lake Conroe[3]. The trigger points listed below have been selected through a hydrologic modeling process to work conjunctively with the measures identified in Section 3.4 to extend the availability of critical water supplies while simultaneously achieving the highest practicable level of efficiency in water use from a social and

[3] Vertical datum NGVD 1929

economic standpoint across customer classes. If deemed appropriate by the General Manager or a designated representative, termination of a drought stage is followed by initiation of a lower drought stage. An Emergency Water Supply Condition may be initiated or terminated without subsequent enactment of other stages. The various drought contingency stages may be initiated or terminated at the discretion of the General Manager or a designated representative. Otherwise, initiation and termination of the stages shall be as follows:

Stage 1: Voluntary Reduction

Initiation:

- Lake Conroe is below an elevation of 198 feet; or
- Termination of a more severe drought condition, if deemed appropriate by the General Manager or a designated representative; or
- Monitoring of water demands/weather forecasts indicate earlier initiation is necessary.

Termination:

- Lake Conroe is above an elevation of 198 feet for seven consecutive days; or
- Termination of Stage 1 due to indications from monitoring of water demands/weather forecasts.

Stage 2: Moderate Conditions

Initiation:

- Lake Conroe is below an elevation of 196 feet; or
- Termination of a more severe drought condition, if deemed appropriate by the General Manager or a designated representative; or
- Monitoring of water demands/weather forecasts indicate earlier initiation is necessary.

Termination:

- Lake Conroe is above an elevation of 196 feet for seven consecutive days; or
- Termination of Stage 2 due to indications from monitoring of water demands/weather forecasts.

Stage 3: Advanced Conditions

Initiation:

- Lake Conroe is below an elevation of 193 feet; or
- Termination of a more severe drought condition, if deemed appropriate by the General Manager or a designated representative; or

- Monitoring of water demands/weather forecasts indicate earlier initiation is necessary.

Termination:

- Lake Conroe is above an elevation of 193 feet for seven consecutive days; or
- Termination of Stage 3 due to indications from monitoring of water demands/weather forecasts.

Stage 4: Severe Conditions

Initiation:

- Lake Conroe is below an elevation of 190 feet; or
- Monitoring of water demands/weather forecasts indicate earlier initiation is necessary.

Termination:

- Lake Conroe is above an elevation of 190 feet for seven consecutive days; or
- Termination of Stage 4 due to indications from monitoring of water demands/weather forecasts.

Emergency Water Supply Condition

Initiation:

- Anticipation of a drought condition beyond historical level of severity; or
- System failure in the Lake Conroe system; or
- Contamination of the water supply has occurred; or
- Enactment of Emergency Water Supply Condition initiation due to other factors at the discretion of the General Manager or a designated representative.

Termination:

- Restoration of the Lake Conroe system to operational status; or
- Containment or elimination of water supply contamination
- Termination of Emergency Water Supply Condition due to due to other factors at the discretion of the General Manager or a designated representative.

Each stage may also be initiated or terminated at the discretion of the General Manager or a designated representative.

3.3 Notification of Initiation and Termination

The General Manager of the SJRA or a designated representative will notify its wholesale customer representatives in writing by electronic mail when a trigger condition has been met. When the trigger

conditions that initiated the drought measures have subsided, the General Manager or a designated representative will inform the wholesale customer representatives in writing by electronic mail. Additionally, TCEQ will be notified within five business days of initiation or termination of drought stages beyond Stage 1. Notification of drought stage initiation or termination will also be posted on the SJRA website.

3.4 Drought Response Stages

The General Manager or a designated representative will monitor water supply and demand conditions and, in accordance with the triggering criteria set forth in Section 3.2, will determine that a water shortage exists or when an emergency condition exists. The reductions listed below have been selected through a hydrologic modeling process to work conjunctively with the trigger points identified in Section 3.2 to extend the availability of critical water supplies while simultaneously achieving the highest practicable level of efficiency in water use from a social and economic standpoint across customer classes. The following actions will be taken when a drought stage or Emergency Water Supply Condition is initiated:

Stage 1: Voluntary Reduction

Target: Achieve a voluntary 5% reduction in use.

- Contact municipal wholesale, industrial, and commercial landscape irrigation raw water customers of Lake Conroe to discuss situation.
- Request that municipal wholesale, industrial, and commercial landscape irrigation raw water customers of Lake Conroe initiate voluntary measures to reduce water use.
- Request that private irrigation raw water customers of Lake Conroe voluntarily reduce water use.

Stage 2: Moderate Conditions

Target: Achieve a 5 % reduction in non-industrial use (October through March)

Achieve a 10% reduction in non-industrial use (April through September)

- Contact municipal wholesale, industrial, and commercial landscape irrigation raw water customers of Lake Conroe to discuss situation.
- Notify private landscape irrigation raw water customers of Lake Conroe that no further private irrigation contracts will be issued until Stage 2 is terminated.
- Require that municipal wholesale and commercial irrigation raw water customers of Lake Conroe initiate mandatory measures to reduce monthly water use by a seasonal 5% or 10%.

Stage 3: Advanced Conditions

Target: Achieve a 10 % reduction in non-industrial use (October through March)
Achieve a 20% reduction in non-industrial use (April through September)
Achieve a 1% reduction in industrial use

- Contact municipal wholesale, industrial, and commercial landscape irrigation raw water customers of Lake Conroe to discuss situation and continue to do so on a weekly basis until termination.
- Notify commercial landscape irrigation raw water customers of Lake Conroe that no further commercial landscape irrigation contracts will be issued until Stage 3 is terminated.
- Require that municipal wholesale and commercial landscape irrigation raw water customers of Lake Conroe initiate mandatory measures to reduce monthly water use by a seasonal 10% or 20%.
- Require that industrial raw water customers of Lake Conroe initiate mandatory measures to reduce monthly water use by 1%.

Stage 4: Severe Conditions

Target: Achieve a 15 % reduction in non-industrial use (October through March)
Achieve a 30% reduction in non-industrial use (April through September)
Achieve a 5% reduction in industrial use

- Contact municipal wholesale, industrial, and commercial landscape irrigation raw water customers of Lake Conroe to discuss situation and continue to do so on a weekly basis until termination.
- Require that municipal wholesale and commercial landscape irrigation raw water customers of Lake Conroe initiate mandatory measures to reduce monthly water use by a seasonal 15% or 30%.
- Require that industrial raw water customers of Lake Conroe initiate mandatory measures to reduce monthly water use by 5%.

Emergency Water Supply Condition

Target: Subject to scope and nature of emergency

- If appropriate, notify city, county, and/or state emergency response officials for assistance.
- Assess the severity of the problem and identify actions needed and time required to solve the problem.
- Notify TCEQ within five days of initiation or termination of emergency conditions.

- Inform raw water customers of Lake Conroe and discuss possible actions, including but not limited to initiation of actions available under Stages 1 through 4.
- If deemed necessary by the General Manager or a designated representative, impose mandatory water rationing per Texas Water Code (TWC) §11.039 to reduce water demand to a level determined by the General Manager or a designated representative and notify TCEQ.
- Undertake necessary actions, such as repair or cleanup, to resolve issue.

3.5 Pro Rata Water Allocation

If deemed necessary by the General Manager or a designated representative due to a drought or Emergency Water Supply condition, SJRA will initiate allocation of water supplies on a pro rata basis in accordance with TWC §11.039 and the force majeure clause and other relevant terms of the contract in place with each raw water customer. TWC §11.039 directs that if a shortage occurs due to drought, accident, or other cause in a water supply covered by a TWDB-approved Water Conservation Plan, the entity controlling the supply shall divide the water to be distributed pro rata among all customers.

3.6 Compliance Metrics

The target of Stages 1 through 4 (and in some circumstances an Emergency Water Supply Condition) is to reduce water use by a certain percentage. Because water demands for SJRA customers change over time and may be impacted by weather conditions or application of drought response measures, a standard approach to defining a customer's demand must be applied in the absence of an agreed-upon contractual definition. Notably, SJRA has entered into water supply contracts with customers that divert water from Lake Conroe for commercial irrigation purposes (each a "Commercial Irrigator") and these contracts incorporate a monthly water demand schedule by exhibit. For the purposes of this drought contingency plan, the demand for each SJRA customer (other than a Commercial Irrigator) shall be determined as that customer's water use for the preceding two years, averaged for each month. These demand values will be provided to each SJRA customer (other than a Commercial Irrigator) at the beginning of each year. With respect to a Commercial Irrigator, the monthly water demand shall be as set forth in the Commercial Irrigator's water supply contract with SJRA. Customer requests for variances to the provided demand values will be considered at an administrative level through an appeal process as described in Section 3.8.

3.7 Public Involvement

Public involvement measures associated with this drought contingency plan shall include the following:

- Making proposed documents available to the public prior to adoption.
- Posting of notice of an SJRA Board of Directors meeting to include consideration of the plan for adoption.
- Consideration and adoption of the plan by the SJRA Board of Directors at a meeting to be open to the public.

Upon adoption of the plan, the completed drought contingency plan with relevant documentation reflecting adoption will be posted on the SJRA website.

3.8 Procedures for Granting Variances

The General Manager or a designated representative may grant a temporary variance to mandatory measures to reduce water use, to calculated customer demand as discussed in Section 3.6, or to pro rata water allocation policies if one or more of the following conditions are met:

- Failure to grant such variance would cause an emergency condition adversely affecting the public health, welfare, or safety.
- Compliance with this plan cannot be technically accomplished during the duration of the water supply shortage or other conditions for which the plan is in effect.
- Alternative methods can be implemented which will achieve the same level of reduction in water use.

The decision to grant or deny such a variance is at the discretion of the General Manager or a designated representative. Persons or entities requesting an exemption from the provisions of this plan shall file a written petition for variance with the General Manager or a designated representative within five business days after the mandatory measures to reduce water use or the pro rata allocation has been invoked. Once received, the General Manager or a designated representative will have five business days to respond, in writing, to a petition for variance.

3.9 Implementation and Enforcement

The SJRA General Manager or a designated representative will be responsible for implementation and enforcement of the drought contingency plan. During any period when pro rata allocation of available water supplies is in effect, the General Manager or a designated representative has the authority to discontinue service to any customer who fails to comply with the conditions of the allocation, declaring the customer in breach of contract. Prior to discontinuance of service, the General Manager or a designated representative will issue a warning to the wholesale customer, and work with the customer to ensure that they are complying with the restrictions. In the event the customer fails to voluntarily comply, a court injunction will be obtained for violation of the Texas Water Code and for breach of contract.

Once notified of initiation of a drought stage with mandatory demand reduction, SJRA's Lake Conroe raw water customers are required to reduce their water use in accordance with the appropriate stage as described above. In order to promote compliance with the drought contingency plan, the General Manager or a designated representative may enact a special temporary drought contingency rate structure with certain non-promotional rates for each drought stage. Customers failing to comply with mandatory demand reductions may also be subject to disincentive fees and be required to reimburse SJRA for any costs, fines, or penalties incurred by SJRA as a result of the customer's noncompliance. Enforcement actions, including penalties, will not be put into place until 30 calendar days after a drought stage is initiated.

3.10 Coordination with Regional Water Planning Group

SJRA is located within the Region H Regional Water Planning Area. In accordance with TCEQ rules, SJRA has provided a copy of the Lake Conroe Division drought contingency plan to the Region H Regional Water Planning Group. A copy of the transmittal letter is included in Appendix A.

3.11 Updating of the Plan

Every five years, SJRA will examine the Division operations to determine if trigger conditions need to be re-established. Updates may also be considered earlier than each five years in the case of any changes to operations that would warrant a re-examination of the trigger conditions. Any updates will result in a revised drought contingency plan.

The drought contingency plan for the Division has been adopted by a resolution of the Board of Directors of SJRA. A copy of the resolution is included in Appendix A.

Appendix A
Resolutions Passed by SJRA
Transmittal Letter to Region H RWPG

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