Trinity River Authority of Texas

Lake Livingston and Wallisville Saltwater Barrier Projects

Water Conservation Plan

Lake Livingston Project, Wallisville Saltwater Barrier Project, Huntsville Regional Water Supply System, Livingston Regional Water Supply System and Trinity County Regional Water Supply System

Drought Contingency Plan

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Prepared
by
Trinity River Authority of Texas

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Trinity River Authority of Texas
Lake Livingston and Wallisville Saltwater Barrier Projects
Water Conservation Plan and Drought Contingency Plan

1. INTRODUCTION

The Trinity River Authority of Texas (Authority) is a governmental agency of the State of Texas created as a conservation and reclamation district under Article XVI, Section 59 of the Constitution pursuant to Chapter 518, Acts of the 54th Legislature of Texas, Regular Session, 1955, as amended. The Authority is empowered to construct, own and operate wholesale water supply, treatment, and distribution facilities and wholesale sewerage gathering, transmission, treatment, and disposal facilities, to charge for such services, and to make contracts in reference thereto with municipalities and others.

The Authority's defined territory includes all of Dallas, Tarrant, Ellis, Navarro, Chambers Counties, and the principal watershed portions of Anderson, Freestone, Henderson, Houston, Kaufman, Leon, Madison, Polk, San Jacinto, Trinity, Walker, and Liberty Counties. The Authority is governed by a Board of 25 directors who are appointed by the Governor with the advice and consent of the Texas Senate. The first directors were appointed for staggered terms, and directors thereafter have served six-year terms. Three of the directors are appointed from the area-at-large; three directors are from Tarrant County; four are from Dallas County; and one director is from each of the other 15 counties.

This Water Conservation Plan and Drought Contingency Plan pertains to the use of water by the contracting parties of the Authority's Lake Livingston Project (LLP) and any future purchasers of municipal water from the LLP or Wallisville Saltwater Barrier Project. The plans are intended to meet the requirements of the Texas Commission on Environmental Quality (TCEQ) and the Texas Water Development Board (TWDB).

2. Water Conservation Plan

2.1 Introduction

The Authority currently provides wholesale raw water from Lake Livingston to four cities and several unincorporated rural areas in the vicinity of Lake Livingston. As the contracting parties' retail utility systems are separate from the Authority's raw water system, the Authority does not have the ability to implement most of the water conservation measures discussed in this Plan. The contracting parties will be able to implement these measures as a part of their

respective retail water supply operations. The Authority's role in this program will include the administration and promotion of the Plan, and public education and information.

2.2 Planning Area Description

The Authority owns, operates, and maintains Lake Livingston, which is located on the main stem of the Trinity River in Polk, San Jacinto, Walker, and Trinity Counties. The Wallisville Saltwater Barrier is owned and operated by the U.S. Army Corps of Engineers (USACE) in Chambers County. The Planning Area is depicted in Appendix A and Appendix B. The City of Houston owns 70% of the combined water rights in these two projects and the Authority owns the remaining 30% of these water rights. The Authority currently holds Certificate of Adjudication No. 08-4248 for Lake Livingston and the Wallisville Project. That Certificate of Adjudication provides for the following Authority water rights in acre-feet/year:

Type of Use	Livingston	Wallisville	Total (AF/Yr)
Municipal, Irrigation, and Industrial	351,600	N/A	351,600
Municipal	N/A	10,000	10,000
Irrigation	N/A	30,000	30,000
Industrial	N/A	11,600	11,600
Total	351,600	51,600	403,200

The planning area includes the wholesale customers listed in the table below. The Authority supplies raw water by contract to four municipalities and several unincorporated areas around Lake Livingston. The amount of municipal water the Authority is currently obligated to provide to these wholesale customers is summarized as follows:

City of Huntsville (HRWSS)	22,403 acre-feet/year
City of Livingston (LRWSS)	5,601 acre-feet/year
Cities of Trinity and Groveton (TCRWSS)	1,680 acre-feet/year
Waterwood MUD	336 acre-feet/year
Trinity Rural WSC	640 acre-feet/year
L. Liv. Water Supply & Sewer Service Corp.	859 acre-feet/year

The following table provides the amount of raw water diverted from Lake Livingston for municipal use by the wholesale customers of the Authority for the past five years in acre-feet/year:

Year	Huntsville RWSS (AF)	Livingston RWSS (AF)	Trinity County RWSS (AF)	Waterwood MUD (AF)	Trinity Rural WSC (AF)	Lake Livingston Water Supply & Sewer (AF)	Total (AF)
2014	6,595	2,105	784	0	294	NA	9,778
2015	8,017	2,090	691	0	314	NA	11,111
2016	7,712	2,397	568	0	295	60	10,736
2017	7,416	2,421	406	0	310	398	10,641
2018	7,654	2,465	500	0	365	530	11,150

Source: LLP Monthly Diversion Report

The Planning Areas of the Huntsville Regional Water Supply System (HRWSS), the Livingston Regional Water Supply System (LRWSS) and Trinity County Regional Water Supply System (TCRWSS) are depicted in Appendices D-F.

2.3 Conservation Goals

The Authority's water conservation goals are to: (1) provide an adequate supply of suitable raw water to meet the needs of its wholesale customers; and to (2) encourage its wholesale customers to adopt and implement water conservation plans that will reduce per capita and peak use demands.

The Authority's water conservation program is predicated on the fact that the implementation of conservation measures must occur largely at the local retail level. The Authority's program is focused on encouraging and supporting initiatives by wholesale customers and their retail customers.

TCEQ regulations state that all municipal water right holders set goals in gallons per capita per day (gpcd). The gpcd calculation, as defined by TCEQ, is the total average daily amount of water diverted or pumped for treatment divided by the population served.

In order to set a wholesale water supplier goal for municipal water conservation, baseline per capita water use must first be determined. It was determined to use the Year 2016 Water Use Data from the TWDB Water User Group Entity Detailed gpcd report as inputs for a system-wide calculation of municipal gpcd. It is important to note that the annual water usage amounts in the following table include some water from sources other than Lake Livingston.

Population figures for the rural unincorporated areas in Trinity County, Waterwood MUD, and Westwood Shores MUD are not available. All of these areas are in a rural setting near Lake Livingston and have a significant weekend or seasonal population. It is assumed that per capita water usage in these areas is similar to the Cities of Trinity and Groveton. Using population estimates from the TWDB, these four cities had a combined population of 50,598. However, HRWSS provides municipal water to the TDCJ Ellis and Estelle Units (estimated population is 5,980 in total), and the City of Huntsville provides water purchased from HRWSS to other five prison units (the estimated total population is 9,140). In addition, LRWSS provides municipal water to the TDCJ Polunsky Unit (estimated population is 2,984). Therefore, additional inmate population of 18,104 was included into these two cities' estimated populations.

Using these data, the population and water use data for the Cities of Huntsville, Livingston, Trinity and Groveton are summarized in the following table:

TRA Project	Wholesale Customer	Estimated Population	Total Net Water Use (Gallons)	Total Net Water Use (AF)	GPCD
LLP	City of Huntsville	40,938	4,642,103,310	14,246	223
	City of Livingston	5,316	765,176,000	2,348	
	City of Trinity	3,346	135,264,366	415	
	City of Groveton	998	44,744,042	137	
	Inmates	18,104	NA	NA	

Source: Regional Water Planning Water User Group (WUG) Utility – Detailed GPCD Report 2016 (http://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/index.asp)

The estimated gpcd usage for the Lake Livingston customers was calculated using 2016 population estimates from the TWDB database to which inmate populations were added. This resulted in an estimated water use of 223 gpcd. This number is significantly higher than the 144 gpcd in the TWDB 2014 report, which appears to be driven by a significant increase in the reported Net Water Use for the City of Huntsville, which increased from 7,902 AF reported in the 2011 TWDB database to 14,246 AF in the 2016 TWDB database. The discrepancy is suspected of being caused by a change in the method used to report water usage by the TWDB. Specifically, it appears that water use in 2016 was expanded to include ground and surface water, while in the 2014 report, the water use was from Lake Livingston. Additionally, this appears to be unique to Huntsville, as other cities saw only slight increase despite a population growth of approximately 2,000 people. Projecting a five and ten-year per capita water use forward from 2019 results in per capita goals for 2024 and 2029. **The per capita goal**

for 2024 is 206 gpd and the goal for 2029 is 196 gpd. This was determined by reducing the per capita use rate by 1% per year.

The long-term goal for conservation is to increase water use efficiency and reduce the waste of water. However, the Authority only has limited control of water use because it is a wholesale provider. Achievement of significant water conservation savings can only occur if each retail water user sets and implements its own water conservation programs.

In addition to the per capita water use goal above, the Authority has set a maximum unaccounted-for water goal of 10% for the affected municipal systems. This goal represents an acceptable level of unaccounted for water loss.

2.4 Metering Water Diverted from the Source of Supply

In the Raw Water Sales Agreements between the Authority and all its customers, the Authority requires the customers to provide, operate, and maintain meters that are approved by the Authority to record the amount of water diverted on a weekly and monthly basis and keep records of same. The Authority also reads and inspects the meters on a monthly basis. On or before the fifth day of each month, each customer is required to furnish water diversion data for the prior month to the Authority.

Each customer may be required by the Authority to periodically calibrate its meter(s). The Authority may have a representative present during the meter calibration. If a meter is found to be inaccurately registering the flow in excess of 2 percent, the meter must be repaired or replaced, and the diversion records corrected for a period extending back to the time when such inaccuracy began, but no further back than a period of six months. The Authority reserves the right to install a check meter.

2.5 Monitoring and Record Management Program

Water diversion reports from the contracting parties are submitted to the Authority and maintained in the Authority's files.

Each year the Authority's records, including water sales, deliveries, and losses are audited by an independent auditor. In addition, flow records and reports are routinely audited by the Authority's internal auditor.

2.6 Metering/Leak Detection and Repair Program

The contracting parties should meter all retail water uses and will be encouraged to provide a master meter as well as metering of all utility, city and other public facilities. The

contracting parties should manage their ongoing leak detection, location and repair programs. Waterline leaks can be detected by utility personnel while reading meters, maintaining their water and wastewater systems, and while performing other routine surveillance programs. Periodic water audits should be utilized to determine if leaks exist that have gone undetected.

The Authority will monitor for leaks in any water transmission system components used to transport water to wholesale customers. Any reported leaks will be repaired in a timely manner.

2.7 Reservoir System Operations Plan

Lake Livingston and the Wallisville Saltwater Barrier are located on the lower Trinity River. Lake Livingston is owned and operated by the Authority. The Wallisville Saltwater Barrier is owned and operated by the USACE. A copy of the USACE's Operation Plan for Wallisville is included in Appendix C. This federal project provides conservation savings for Lake Livingston by preventing salt water intrusion up the Trinity River without requiring additional releases of stored water from Lake Livingston. Prior to the completion of Wallisville, the Authority was required to release in excess of 200,000 acre-feet/year of stored water from Lake Livingston during dry periods.

2.8 Water Supply Contracts

It is a mandatory requirement for the Authority, as a water rights holder who wholesales water, to require customers with any new or amended contracts or successor contracts to develop a water conservation plan.

All customer plans must be reviewed and approved by Authority staff prior to the diversion of raw water by the wholesale customer.

2.9 Ordinance/Resolution and Implementation

Resolution No. R-1163-3 adopts the Water Conservation Plan for Lake Livingston and Wallisville Saltwater Barrier Projects. The General Manager, or his designee(s), is authorized and directed to implement the applicable provisions of this Plan. The General Manager, or his designee(s), will act as the administrator of the Plan, oversee the execution and implementation of the Plan, and will be responsible for keeping adequate records for program verification.

2.10 Coordination with Regional Planning Groups

The water service area of the Authority, which may be affected by this Plan, is located within Region H and the Authority will provide a copy of the Plan to Region H planning group.

2.11 Education and Information Program

The Authority recognizes that water conservation significantly benefits individuals and communities in terms of long-term water availability and reduced costs. The most readily available and lowest cost method of promoting water conservation is to inform the retail water users about ways to save water in homes and businesses, in landscaping and lawn uses, and in recreational use.

The Authority will encourage the contracting parties to provide literature on conservation to their respective retail customers. Education materials are available from the TCEQ, American Water Works Association, TWDB, and others. The contracting parties will be encouraged to distribute the information to the public during the peak summer demand periods.

In addition to the above educational and information program to be carried out by the contracting parties, the Authority will be available to present water conservation programs to local schools, civic organizations, and other groups.

2.12 Review and Update of Water Conservation Plan

As required by TCEQ rules, the Authority will review and update this Water Conservation Plan by May 1, 2024, and every five years thereafter. The Plan will be updated as appropriate based on new or updated information.

3. Drought Contingency Plan

3.1 Declaration of Policy, Purpose, and Intent

In order to conserve the available water supply and to protect the integrity of water supply facilities, with particular 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 Authority adopts the following Drought Contingency Plan (the Plan).

3.2 Public Involvement

The Plan was presented, discussed, and adopted under the open meetings requirement of the TCEQ during the April 24, 2019, Board of Directors meeting.

3.3 Wholesale Water Customer Education

The Authority will periodically provide wholesale customers with information about the Plan, including information about the conditions under which each stage of the Plan 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 providing a copy of the Plan to each wholesale water customer.

3.4 Coordination with Regional Water Planning Groups

The water service area of the Authority, which may be affected by this Plan, is located within the Region H and the Authority will provide a copy of the Plan to Region H planning group.

3.5 Authorization

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

3.6 Application

The provisions of this Plan shall apply to all customers utilizing water provided by the Authority from Lake Livingston or the Wallisville Saltwater Barrier, including HRWSS, LRWSS, and TCRWSS. The terms “person” and “customer” as used in the Plan include individuals, corporations, partnerships, associations, and all other legal entities.

3.7 Triggering Criteria for Initiation and Termination of Drought Response Stages

The General Manager, or his designee(s), shall monitor water supply and demand conditions and shall determine when conditions warrant initiation or termination of each stage of the Plan. Customer notification of the initiation or termination of drought response stages will be made by email, mail or telephone. The news media will also be informed.

The triggering criteria described below are based on historical operating information and an assessment of Lake Livingston’s vulnerability under drought of record conditions.

The City of Huntsville purchases raw water from Lake Livingston for treatment at the HRWSS. The condition to be monitored for determining drought response stages for the HRWSS is the water surface elevation of Lake Livingston.

The City of Livingston purchases raw water from Lake Livingston for treatment at the LRWSS. The condition to be monitored for determining drought response stages for the LRWSS is the water surface elevation of Lake Livingston.

The Cities of Trinity and Groveton purchase raw water from Lake Livingston for treatment at the TCRWSS. The condition to be monitored for determining drought response stages for the TCRWSS is the water surface elevation of Lake Livingston.

(a) Stage 1 – MILD Water Shortage Condition

Requirement for initiation – The Authority will recognize that a mild water shortage condition exists when the following conditions occur:

The water surface elevation of Lake Livingston declines below 126.50 feet Mean Sea Level (msl) as measured by the USGS gage at the spillway (80% of normal conservation storage).

Requirement for termination – Stage 1 of the Plan may be rescinded when the Lake Livingston water level is at or above 126.50 feet msl for a period of fifteen consecutive days. The Authority will notify its wholesale customers and the media of the termination of Stage 1 in the same manner as the notification of initiation of Stage 1 of the Plan.

(b) Stage 2 – Moderate Water Shortage Condition

Requirement for initiation – The Authority will recognize that a moderate water shortage condition exists when the following conditions occur:

The water surface elevation of Lake Livingston declines below 124.00 feet msl as measured by the USGS gage at the spillway (70% of normal conservation storage).

Requirement for termination – Stage 2 of the Plan may be rescinded when the Lake Livingston water level is at or above 124.00 feet msl for a period of fifteen consecutive days. Upon termination of Stage 2, Stage 1 becomes operative. The Authority will notify its wholesale customers and the media of the termination of Stage 2 in the same manner as the notification of initiation of Stage 1 of the Plan.

(c) Stage 3 – Severe Water Shortage Condition

Requirement for initiation – The Authority will recognize that a severe water shortage condition exists when the following conditions occur:

The water surface elevation of Lake Livingston declines below 121.40 feet msl as measured at the USGS gage at the spillway (60% of normal conservation storage). Requirement for termination – Stage 3 of the Plan may be rescinded when the Lake Livingston water level is at or above 121.40 feet msl for a period of fifteen consecutive days. Upon termination of Stage 3, Stage 2 becomes operative. The Authority will notify its wholesale customers and the media of the termination of Stage 3 in the same manner as the notification of initiation of Stage 1 of the Plan. When flood inflows raise reservoir levels above more than one trigger level, multiple stages can be terminated concurrently.

(d) Emergency Water Shortage Condition

Requirements for initiation – The Authority will recognize that an emergency water shortage condition exists when any of the following occur:

- Natural or man-made contamination of the reservoir;
- Major equipment or facility failures, which cause loss of capability to provide water service; or
- An emergency drawdown of the reservoir for structural integrity purposes; or
- Any condition exists which prevents or imminently threatens to prevent Authority customers from withdrawing sufficient water from Lake Livingston.

Requirement for termination – The emergency water shortage condition may be rescinded when the General Manger or his designee(s) deems appropriate. The Authority will notify its wholesale customers and the media of the termination of emergency shortage condition in the same manner as the notification of initiation of Stage 1 of the Plan.

3.8 Drought Response Stages

The General Manager, or his designee(s), shall monitor water supply and demand conditions and, in accordance with the triggering criteria set forth in Section 3.7, shall determine that mild, moderate, or severe water shortage conditions exist or that an emergency condition exists and shall implement the following actions:

Stage 1 – Mild Water Shortage Condition

Target: Achieve a voluntary 5 % reduction in daily water demand for each retail utility utilizing Lake Livingston.

Best Management Practices for Supply Management:

- The Authority will encourage each wholesale water customer to utilize alternative water sources such as interconnections with another water system, temporary use of a non-municipal water supply, use of reclaimed water, etc.

Water Use Restrictions for Reducing Demand:

- The General Manager, or his designee(s), will contact wholesale water customers to discuss water supply and demand conditions and will request that wholesale water customers initiate voluntary measures to reduce water use (e.g. implement Stage 1 of the customer's drought contingency plan);
- The General Manager, or his designee(s), will provide periodic reports, as appropriate, to the news media with information regarding current water supply and demand conditions, projected water supply and demand conditions if drought conditions persist, and consumer information on water conservation measures and practices; and
- The Authority may notify, in writing, the Texas Parks and Wildlife Department that the reservoir is operating at less than 80 percent of its conservation pool volume and that a Stage 1 Drought Response level has been declared. The notice will indicate that future releases of water from the reservoir could be impacted if reservoir levels continue to decline.

Stage 2 – Moderate Water Shortage Condition

Target: Achieve a 15 % reduction in daily water demand for each retail utility utilizing Lake Livingston.

Best Management Practices for Supply Management:

- The Authority will encourage each wholesale water customer to utilize alternative water sources such as interconnections with another water system, temporary use of a non-municipal water supply, use of reclaimed water, etc.;
- The Authority may manage limited water supplies by modifying the gate operating procedures to conserve reservoir storage unless major flooding is anticipated; and

- The Authority will not approve new water sales contracts for low priority customers such as small water sales, or issue new permits for irrigation, and temporary construction permits.

Water Use Restrictions for Reducing Demand:

- The General Manager, or his designee(s), will initiate periodic contact with wholesale water customers to discuss water supply and demand conditions and the possibility of pro rata curtailment of water diversions and/or deliveries;
- The General Manager, or his designee(s), will request wholesale water customers to initiate mandatory measures to reduce non-essential water use (e.g. implement Stage 2 of the customer's drought contingency plan);
- The General Manager, or his designee(s), will initiate preparations for the implementation of pro rata curtailment of water diversions and deliveries by preparing a monthly water usage allocation baseline for each wholesale customer according to procedures specified in Section 3.9 of the Plan; and
- The General Manager, or his designee(s), will provide periodic reports to the news media, as appropriate, with information regarding current water supply and demand conditions, projected water supply and demand conditions if drought conditions persist, and consumer information on water conservation measures and practices.

Stage 3 – Severe Water Shortage Condition

Target: Achieve a 25 % reduction in daily water demand for each retail utility utilizing Lake Livingston.

Best Management Practices for Supply Management:

- The Authority will encourage each wholesale water customer to utilize alternative water sources such as interconnections with another water system, temporary use of a non-municipal water supply, use of reclaimed water, etc.;
- The Authority will manage limited water supplies by modifying the gate operating procedures to conserve reservoir storage unless major flooding is anticipated; and
- The Authority will terminate water supply to low-priority customers such as small non-essential water sales, and will not issue new permits for irrigation, or temporary construction permits.

Water Use Restrictions for Reducing Demand:

- The General Manager, or his designee(s), will contact wholesale water customers to discuss water supply and demand conditions and will request that wholesale water

customers initiate additional mandatory measures to reduce non-essential water use (e.g. implement Stage 3 of the customer's drought contingency plan);

- The General Manager, or his designee(s), will initiate pro rata curtailment of water diversions and deliveries for each wholesale customer according to the procedures specified in Section 3.9 of the Plan; and
- The General Manager, or his designee(s), will provide periodic reports to the news media, as appropriate, with information regarding current water supply and demand conditions, projected water supply and demand conditions if drought conditions persist, and consumer information on water conservation measures and practices.

Emergency Water Shortage Condition

Whenever emergency water shortage conditions exist as defined in Section 3.7 of the Plan, the General Manager shall:

- Assess the severity of the problem and identify the actions needed and the time required to solve the problem;
- Inform the utility director or other responsible official of each wholesale water customer and suggest actions, as appropriate to alleviate problems (e.g., notification of the public to reduce water use until service is restored);
- If appropriate, notify city, county, or state emergency response officials for assistance;
- Undertake necessary actions, including repairs and clean-up as needed; and
- Prepare a post-event assessment report on the incident including an evaluation of emergency response procedures and actions.

3.9 Pro Rata Water Allocation

In the event that the triggering criteria specified in Section 3.7 of the Plan for Stage 3 Severe Water Shortage Conditions have been met, the General Manager is hereby authorized to initiate allocation of water supplies on a pro rata basis in accordance with Texas Water Code Section 11.039. A provision will be included in every wholesale water contract entered into or renewed after adoption of the Plan, including contract extensions, that in case of a shortage of water resulting from drought, the water to be distributed shall be divided in accordance with Texas Water Code Section 11.039.

3.10 Enforcement

During any period when pro rata allocation of available water supplies is in effect, the General Manager is authorized to impose mandatory water use restrictions that will be enforced by warnings and penalties as follows:

- On the first violation, the wholesale water customer will be given a written warning that they have violated one or more of the mandatory water use restrictions;
- The Authority will require that the customer implement a more comprehensive public education and outreach program in a manner that increases the public's awareness of the mandatory water use restrictions and the current drought status. The customer will also be required to submit documentation to the Authority of the steps it has taken to ensure compliance with this Water Conservation and Drought Contingency Plan; and
- The Authority may petition the Texas Commission on Environmental Quality to initiate formal enforcement action against wholesale water customers that fail to comply with pro rata allocation consistent with Texas Water Code Section 11.039.

3.11 Variances

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

(1) Compliance with this Plan cannot be technically accomplished during the duration of this water supply shortage or other condition for which the Plan is in effect; and

(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 Plan shall file a petition for variance with the General Manager within 5 days after pro rata allocation has been invoked. All petitions for variances shall be reviewed by the Authority and shall include the following:

(1) Name and address of the petitioner(s);

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

(3) Description of the relief requested;

(4) Period of time for which the variance is sought;

(5) Alternative measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date; and

(6) Other pertinent information.

Variances granted by the Authority shall be subject to the following conditions, unless waived or modified by the Authority:

(1) Variances granted shall include a timetable for compliance with allocation requirements; and

(2) Variances granted shall expire when the Plan 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 Plan occurring prior to the issuance of the variance.

3.12 Review and Update of Drought Contingency Plan

As required by TCEQ rules, the Authority will review and update this Drought Contingency Plan by May 1, 2024, and every five years thereafter. The Plan will be updated as appropriate based on new or updated information.

3.13 Severability

It is hereby declared to be the intention of the Authority that the sections, paragraphs, sentences, clauses, and phrases of this Plan are severable and, if any phrase, clause, sentence, paragraph, or section of this Plan shall be declared unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such declaration shall not affect any of the remaining phrases, clauses, sentences, paragraphs, and sections of this Plan, since the same would not have been enacted by the Authority without the incorporation into this Plan of any such unconstitutional phrase, clause, sentence, paragraph, or section.

Appendix A

Lake Livingston Project

Utility Profile and Water Conservation Plans Requirements for Wholesale Public Water Suppliers

(Form 20162)

&

Water Conservation Implementation Report

Form and Summary of Updates/Revisions to Water Conservation Plan

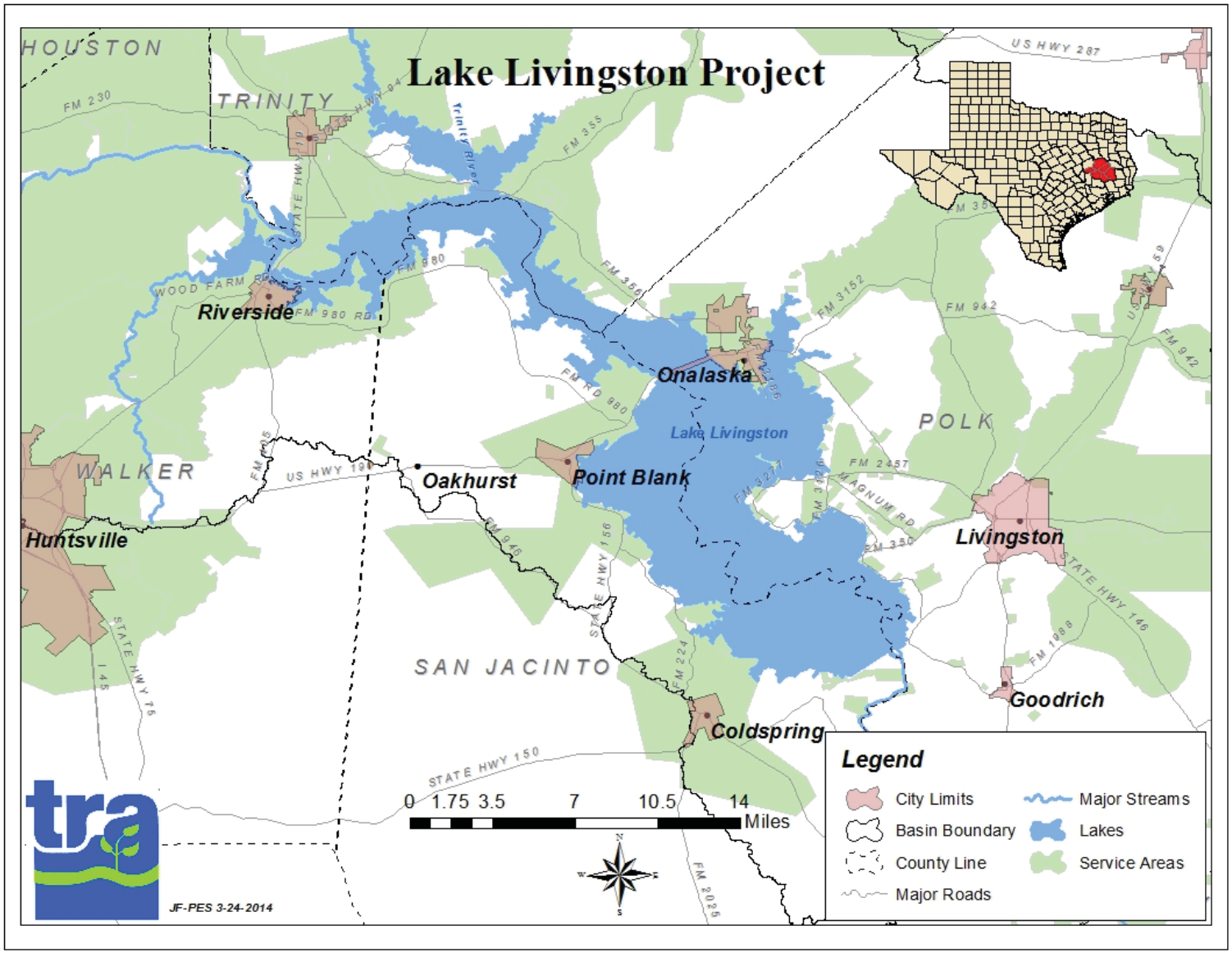
(Form 20645)

&

System Inventory and Water Conservation Plan for Agricultural Water Suppliers Providing Water to More Than One User

(Form 10244)

Lake Livingston Project Service Area



Projected Populations and Water Demands for 2020 - 2070 for TRA Lake Livingston Project Customer Cities

WUG	Projected Water Demand for					
	2020	2030	2040	2050	2060	2070
Huntsville (Trinity Basin)	1,336	1,369	1,390	1,419	1,448	1,474
Trinity	420	435	425	406	419	438
Groveton (Trinity Basin)	67	69	67	64	66	69
Livingston	2,594	2,865	3,076	3,263	3,423	3,553

Source: http://www.twdb.texas.gov/waterplanning/data/projections/2022/demandproj.asp

WUG	Projected Population for					
	2020	2030	2040	2050	2060	2070
Huntsville (Trinity Basin)	6,903	7,234	7,473	7,697	7,871	8,012
Trinity	3,807	4,117	4,149	4,032	4,175	4,368
Groveton	629	680	685	665	689	721
Livingston	6,183	6,908	7,477	7,963	8,359	8,678

Source: http://www.twdb.texas.gov/waterplanning/data/projections/2022/popproj.asp

Texas Commission on Environmental Quality

Water Availability Division
MC-160, P.O. Box 13087 Austin, Texas 78711-3087
Telephone (512) 239-4691, FAX (512) 239-2214

Utility Profile and Water Conservation Plan Requirements for Wholesale Public Water Suppliers

This form is provided to assist wholesale public water suppliers in water conservation plan development. If you need assistance in completing this form or in developing your plan, please contact the Conservation staff of the Resource Protection Team in the Water Availability Division at (512) 239-4691.

Water users can find best management practices (BMPs) at the Texas Water Development Board's website http://www.twdb.texas.gov/conservation/BMPs/index.asp. The practices are broken out into sectors such as Agriculture, Commercial and Institutional, Industrial, Municipal and Wholesale. BMPs are voluntary measures that water users use to develop the required components of Title 30, Texas Administrative Code, Chapter 288. BMPs can also be implemented in addition to the rule requirements to achieve water conservation goals.

Contact Information

Name:	Trinity River Authority - Lake Livingston Project	
Address:	P. O. Box 60, Arlington, TX 76004	
Telephone Number:	(817)4674343	Fax: (817) 4170367
Water Right No.(s):	CA 08-4248	
Regional Water Planning Group:	Region H	
Person responsible for implementing conservation program:	Kevin Ward	Phone: (817) 4674343
Form Completed By:	Glenn Clingenpeel	
Title:	Planning and Environmental Services Manager	
Signature:	[redacted]	Date: 4/24/2019

A water conservation plan for wholesale public water suppliers must include the following requirements (as detailed in 30 TAC Section 288.5). If the plan does not provide information for each requirement, you must include in the plan an explanation of why the requirement is not applicable.

Utility Profile

I. WHOLESALE SERVICE AREA POPULATION AND CUSTOMER DATA

A. *Population and Service Area Data:*

1. Service area size (in square miles):

   (Please attach a copy of service-area map)

   The project area includes all or a portion of the cities of Houston, Huntsville, Livingston, Gorveton, Trinity County, as well as industrial (Tenaska) and agricultural users downstream. For these reasons, the service area is not definable.

2. Current population of service area:

   50,094 (estimated based on Texas Demographic Center Texas data)

3. Current population served for:

   a. Water 50,094

   b. Wastewater na

4. Population served for previous five years:

Year	*Population*
2014	49,918
2015	50,247
2016	50,490
2017	50,235
2018	50,094

5. Projected population for service area in the following decades:

Year	*Population*
2020	51,224
2030	54,259
2040	56,270
2050	57,936
2060	59,524

6. List source or method for the calculation of current and projected population size.

   Estimated population from Texas Demographic Center-Texas Population Estimates Program (Total Population By Place 2014-2018)

   Projected population from TWDB 2021 regional water plan population projections database (Huntsville+Trinity+Livingston+Groveton)

B. *Customer Data*

List (or attach) the names of all wholesale customers, amount of annual contract, and amount of annual use for each customer for the previous year:

Wholesale Customer	*Contracted Amount (Acre-feet)*	*Previous Year Amount of Water Delivered (acre-feet)*
Huntsville (municipal only)	22403	7654
Livingston	5601	2465
City of Trinity and Groveton	1680	500
Waterwood MUD	336	0
Trinity Rural WSC	640	365

II. WATER USE DATA FOR SERVICE AREA

A. *Water Delivery*

Indicate if the water provided under wholesale contracts is treated or raw water and the annual amounts for the previous five years (in acre feet):

Year	*Treated Water*	*Raw Water*
2014	9,484(from SR three plants)	19,473
2015	10,798	19,314
2016	10,676	17,860
2017	10,243	20,995
2018	10,619	16,085
Totals	51,820	93,727

B. *Water Accounting Data*

1. Total amount of water diverted at the point of diversion(s) for the previous five years (in acre-feet) for all water uses:

Year	2014	2015	2016	2017	2018
Month					
January	1,536 (from SR monthly diversion report-All Uses)	1,646	1,653	1,617	1,708

February	1,157	1,143	1,202	922	1,075
March	823	1138	1212	1016	1013
April	859	1007	1072	1133	1210
May	1,532	1,154	1,303	2,614	1,550
June	1,218	1,160	1,042	2,046	1,555
July	1,860	2,017	2,050	1,918	1,751
August	2,824	2,860	2,565	2,453	1,723
September	2,599	2,603	1,983	3,372	1,328
October	1,785	2,152	1,303	1,746	965
November	1,817	1,270	1,283	1,118	1,069
December	1,458	1,158	1,186	1,032	1,132
Totals	19,473	19,314	17,859	20,994	10,085

2. Wholesale population served and total amount of water diverted for **municipal use** for the previous five years (in acre-feet):

Year	*Total Population Served*	*Total Annual Water Diverted for Municipal Use*
2014	49,918 (TWDB 4WUGs)	10,510(SR diversion report-MUN+DOM)
2015	50,247	11,836
2016	50,490	11,764
2017	50,235	11,679
2018	50,094	12,228

C. Projected Water Demands

If applicable, project and attach water supply demands for the next ten years using information such as population trends, historical water use, and economic growth in the service area over the next ten years and any additional water supply requirements from such growth.

III. WATER SUPPLY SYSTEM DATA

A. Projected Water Demands

List all current water supply sources and the amounts authorized (in acre feet) with each.

Water Type	*Source*	*Amount Authorized*

Surface Water	Lake Livingston+Wallisville	403,200 (Water right permit)
Groundwater		
Other		

B. Treatment and Distribution System (if providing treated water)

1. Design daily capacity of system (MGD):

   16+6(Huntsville); 7.5(Livingston); 1.35(Trinity County) TRA -Total production)

2. Storage capacity (MGD):

   a. Elevated 3(Huntsville); 1.8(Livingston); 0.65(Trinity County) - Total Storage)

   b. Ground

3. Please attach a description of the water system. Include the number of treatment plants, wells, and storage tanks

IV. WASTEWATER SYSTEM DATA

A. Wastewater System Data (if applicable)

1. Design capacity of wastewater treatment plant(s) (MGD):

   na

2. Briefly describe the wastewater system(s) of the area serviced by the wholesale public water supplier. Describe how treated wastewater is disposed. Where applicable, identify treatment plant(s) with the TCEQ name and number, the operator, owner, and the receiving stream if wastewater is discharged.

   na

B. Wastewater Data for Service Area (if applicable)

1. Percent of water service area served by wastewater system: na%

2. Monthly volume treated for previous five years (in 1,000 gallons):

Year	na	na	na	na	na
Month					
January	na	na	na	na	na
February	na	na	na	na	na

March	na	na	na	na	na
April	na	na	na	na	na
May	na	na	na	na	na
June	na	na	na	na	na
July	na	na	na	na	na
August	na	na	na	na	na
September	na	na	na	na	na
October	na	na	na	na	na
November	na	na	na	na	na
December	na	na	na	na	na
Totals	na	na	na	na	na

Water Conservation Plan

In addition to the description of the wholesaler's service area (profile from above), a water conservation plan for a wholesale public water supplier must include, at a minimum, additional information as required by Title 30, Texas Administrative Code, Chapter 288.5. Note: If the water conservation plan does not provide information for each requirement an explanation must be included as to why the requirement is not applicable.

A. *Specific, Quantified 5 & 10-Year Targets*

The water conservation plan must include specific, quantified 5-year and 10-year targets for water savings including, where appropriate, target goals for municipal use in gallons per capita per day for the wholesaler's service area, maximum acceptable water loss, and the basis for the development of these goals. Note that the goals established by a wholesale water supplier under this subparagraph are not enforceable. These goals must be updated during the 5-year review and submittal.

B. *Measuring and Accounting for Diversions*

The water conservation plan must include a description as to which practice(s) and/or device(s) will be utilized to measure and account for the amount of water diverted from the source(s) of supply.

C. *Record Management Program*

The water conservation plan must include a monitoring and record management program for determining water deliveries, sales, and losses.

D. *Metering/Leak-Detection and Repair Program*

The water conservation plan must include a program of metering and leak detection and repair for the wholesaler's water storage, delivery, and distribution system.

E. *Contract Requirements for Successive Customer Conservation*

The water conservation plan must include a requirement in every water supply contract entered into or renewed after official adoption of the water conservation plan, and including any contract extension, that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements of Title 30 TAC Chapter 288. If the customer intends to resell the water, then the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with the provisions of this chapter.

F. *Reservoir Systems Operations Plan*

The water conservation plan must include a reservoir systems operations plan, if applicable, providing for the coordinated operation of reservoirs owned by the applicant within a common watershed or river basin. The reservoir systems operations plan shall include optimization of water supplies as one of the significant goals of the plan.

G. *Enforcement Procedure and Official Adoption*

The water conservation plan must include a means for implementation and enforcement, which shall be evidenced by a copy of the ordinance, rule, resolution, or tariff, indicating official adoption of the water conservation plan by the water supplier; and a description of the authority by which the water supplier will implement and enforce the conservation plan.

H. Coordination with the Regional Water Planning Group(s)

The water conservation plan must include documentation of coordination with the regional water planning groups for the service area of the wholesale water supplier in order to ensure consistency with the appropriate approved regional water plans.

Example statement to be included within the water conservation plan:

The service area of the _____ (name of water supplier) is located within the _____ (name of regional water planning area or areas) and _____ (name of water supplier) has provided a copy of this water conservation plan to the _____ (name of regional water planning group or groups).

I. Plan Review and Update

A wholesale water supplier shall review and update its water conservation plan, as appropriate based on an assessment of previous 5-year and 10-year targets and any other new or updated information. A wholesale water supplier shall review and update the next revision of its water conservation plan no later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. The revised plan must also include an implementation report.

V. ADDITIONAL CONSERVATION STRATEGIES

Any combination of the following strategies shall be selected by the water wholesaler, in addition to the minimum requirements of 30 TAC §288.5(1), if they are necessary in order to achieve the stated water conservation goals of the plan. The commission may require by commission order that any of the following strategies be implemented by the water supplier if the commission determines that the strategies are necessary in order for the conservation plan to be achieved:

1. Conservation-oriented water rates and water rate structures such as uniform or increasing block rate schedules, and/or seasonal rates, but not flat rate or decreasing block rates;

2. A program to assist agricultural customers in the development of conservation, pollution prevention and abatement plans;

3. A program for reuse and/or recycling of wastewater and/or graywater;

4. Any other water conservation practice, method, or technique which the wholesaler shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

VI. WATER CONSERVATION PLANS SUBMITTED WITH A WATER RIGHT APPLICATION FOR NEW OR ADDITIONAL STATE WATER

Water Conservation Plans submitted with a water right application for New or Additional State Water must include data and information which:

1. support the applicant's proposed use of water with consideration of the water conservation goals of the water conservation plan;

2. evaluates conservation as an alternative to the proposed appropriation; and

3. evaluates any other feasible alternative to new water development including, but not limited to, waste prevention, recycling and reuse, water transfer and marketing, regionalization, and optimum water management practices and procedures.

Additionally, it shall be the burden of proof of the applicant to demonstrate that no feasible alternative to the proposed appropriation exists and that the requested amount of appropriation is necessary and reasonable for the proposed use.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Water Availability Division - MC-160, P.O. Box 13087 Austin, Texas 78711-3087
Telephone (512) 239-4691, FAX (512) 239-2214

WATER CONSERVATION IMPLEMENTATION REPORT FORM AND SUMMARY OF UPDATES/REVISIONS TO WATER CONSERVATION PLAN

(Texas Water Code §11.1271(b) and Title 30 Texas Administrative Code §288.30(1) to (4))

Please note, this form replaces the following forms: TCEQ-20645 (Non-Public Water Suppliers) and TCEQ-20646 (Public Water Suppliers)

This Form is applicable to the following entities:

1. **Water Right Holders of 1,000 acre-feet or more for municipal, industrial, and other non-irrigation uses.**
2. **Water Right Holders of 10,000 acre-feet or more for irrigation uses.**

The above noted entities are required by rule to submit updates to their water conservation plan(s) and water conservation implementation report(s) every five years. The most current five-year submittal deadline is **May 1st, 2019**. See 30 Texas Administrative Code (TAC) §288.30(1) to (4). Entities must also submit any revisions to their water conservation plan within 90 days of adoption when the plans are revised in between the five-year submittal deadlines. This form may be used for the five-year submittal or when revisions are made to the water conservation plans in the interim periods between five-year submittals. Please complete the form as directed below.

1. Water Right Holder Name: Trinity River Authority - Lake Livingston Project
2. Water Right Permit or Certificate Nos. CA 08-4248

3. Please Indicate by placing an 'X' next to all that Apply to your Entity:

Water Right Holder of 1,000 acre-feet or more for non-irrigation uses

_____Municipal Water Use by Public Water Supplier

X_____Wholesale Public Water Supplier

_____Industrial Use

_____Mining Use

_____Agriculture Non-Irrigation

Water Right Holder of 10,000 acre-feet or more for irrigation uses

_____Individually-Operated Irrigation System

X_____Agricultural Water Suppliers Providing Water to More Than One User

<u>Water Conservation Implementation Reports/Annual Reports</u>

4. Water Conservation Annual Reports for the previous five years were submitted to the Texas Water Development Board (TWDB) for each of the uses indicated above as required by 30 TAC §288.30(10)(C)? Yes x___ No_____

TCEQ no longer requires submittal of the information contained in the detailed implementation report previously required in Forms TCEQ-20645 (Non-Public Water Suppliers) and TCEQ-20646 (Public Water Suppliers). However, the Entity must be up-to-date on its Annual Report Submittals to the TWDB.

Water Conservation Plans

5. For the five-year submittal (or for revisions between the five-year submittals), attach your updated or revised Water Conservation Plan for each of the uses indicated in Section 3, above. Every updated or revised water conservation plan submitted must contain each of the minimum requirements found in the TCEQ rules and must be duly adopted by the entity submitting the water conservation plan. Please include evidence that each water conservation plan submitted has been adopted.

- Rules on minimum requirements for Water Conservation Plans can be found in 30 TAC 288. http://texreg.sos.state.tx.us/public/readtac%24ext.ViewTAC?tac_view=4&ti=30&pt=1&ch=288
- Forms which include the minimum requirements and other useful information are also available to assist you. Visit the TCEQ webpage for Water Conservation Plans and Reports. https://www.tceq.texas.gov/permitting/water_rights/wr_technical-resources/conserve.html

*Call **512-239-4691** or email to **wcp@tceq.texas.gov** for assistance with the requirements for your water conservation plan(s) and report(s).*

6. For each Water Conservation Plan submitted, state whether the five and ten-year targets for water savings and water loss were met in your *previous* water conservation plan.
Yes_____ No X_____
If the targets were not met, please provide an explanation.

The estimated gpcd usage for the Lake Livingston customers was calculated using 2016 population estimates from the TWDB database to which inmate populations were added. This resulted in an estimated water use of 223 gpcd. This number is significantly higher than the 144 gpcd in the TWDB 2014 report, which appears to be driven by a significant increase in the reported Net Water Use for the City of Huntsville, which increased from 7,902 AF reported in the 2011 TWDB database to 14,246 AF in the 2016 TWDB database. The discrepancy is suspected of being caused by a change in the method used to report water usage by the TWDB. Specifically, it appears that water use in 2016 was expanded to include ground and surface water, while in the 2014 report, the water use was from Lake Livingston. Additionally, this appears to be unique to Huntsville, as other cities saw only slight increase despite a population growth of approximately 2,000 people.

7. For each five-year submittal, does each water conservation plan submitted contain *updated* five and ten-year targets for water savings and water loss?
Yes X_____ No_____

If yes, please identify where in the water conservation plan the updated targets are located (page, section).

Page 5 Section 2.3

8. In the box below (or in an attachment titled "Summary of Updates or Revisions to Water Conservation Plans), please identify any other revisions/updates made to each water conservation plan that is being updated or revised. Please specify the water conservation plan being updated and the location within the plan of the newly adopted updates or revisions.

1. Contracted amounts of water for wholesale customers (under Section 2.2)
2. Amounts of raw water diverted to wholesale customers (Section 2.2)
3. Calculated GPCD and projected goals for 2024 and 2029 (Section 2.3)
4. Updated forms of 20162, 20645 and 10244 (Appendix A)
5. Updated Projected Populations and Water Demands for 2020-2070 (Appendix A)

9. Form Completed by (Point of Contact): Glenn Clingenpeel
(If different than name listed above, owner and contact may be different individual(s)/entities)

Contact Person Title/Position: Planning and Environmental Services Manager

Contact Address: PO Box 60, Arlington TX 76004

Contact Phone Number: 8174955117 Contact Email Address: ClingenpeelG@trinityra.org

Signature: [redacted] Date: 4-24-2019

Texas Commission on Environmental Quality
Water Availability Division
MC-160, P.O. Box 13087 Austin, Texas 78711-3087
Telephone (512) 239-4691, FAX (512) 239-2214

System Inventory and Water Conservation Plan for Agricultural Water Suppliers Providing Water to More Than One User

This form is provided to assist entities in developing a water conservation plan for agricultural water suppliers providing water to more than one user. If you need assistance in completing this form or in developing your plan, please contact the Conservation staff of the Resource Protection Team in the Water Availability Division at (512) 239-4691.

Additional resources such as best management practices (BMPs) are available on the Texas Water Development Board's website http://www.twdb.texas.gov/conservation/BMPs/index.asp. The practices are broken out into sectors such as Agriculture, Commercial and Institutional, Industrial, Municipal and Wholesale. BMPs are voluntary measures that water users use to develop the required components of Title 30, Texas Administrative Code, Chapter 288. BMPs can also be implemented in addition to the rule requirements to achieve water conservation goals.

Contact Information

Name:	Trinity River Authority of Texas - Lake Livingston Project
Address:	P.O. Box 60, Arlington, TX 76018
Telephone Number:	(817)4674343 Fax: (817)4170367
Form Completed By:	Glenn Clingenpeel
Title:	Planning and Environmental Services Manager
Signature:	[redacted] Date: 4/24/2019

A water conservation plan for agriculture use (for a system providing agricultural water to more than one user) must include the following requirements (as detailed in 30 TAC Section 288.4). If the plan does not provide information for each requirement, you must include in the plan an explanation of why the requirement is not applicable.

I. BACKGROUND DATA

A. *Structural Facilities (Supplier's water storage, conveyance, and delivery structures)*

1. Description of service area:

   Water is diverted directly from Lake Livinston by the water purchasers and the Trinity River Authority has no diversion or conveyance facilities.

2. Total miles of main canals and pipelines:

   NA

3. Total miles of lateral canals and pipelines:

   NA

4. Description of canal construction:

   a. Miles of unlined canals NA

   b. Miles of lined canals NA

   c. Miles of enclosed pipelines NA

   d. Other NA

5. Description of canal conditions and recent or planned improvements:

   NA

6. Reservoir capacity, if applicable:

   The storage capacity of Lake Livingston is 1,750,000 AF

7. Description of pumps and pumping stations:

   NA. The Trinity River Authority owns no irrigation pumps or pumping stations.

8. Description of meters and/or measuring devices:

   NA. The Trinity River Authority owns no irrigation meters or measuring devices.

9. Description of customer gates and measuring devices:

   Each irrigation waterpurchaser has installed a flow meter to measure the amount of water diverted or uses a pump run timer and pump rating curve to calculate the amount of water diverted.

10. Description of any other structural facilities not covered above:

    NA

B. Management Practices

1. Total water available to district (in acre-feet/year): Lake Livingston - 351,600 AF

   a. Maximum water rights allocation to district: Lake Livingston - 351,600 AF

   b. Water right number(s): CA 08-4248

   c. Other water contracted to be delivered by district: NA

2. Average annual water diverted by district (in acre-feet/year): None

3. Average annual water delivered to customers (in acre-feet/year): None

4. Delivery efficiency (percentage): NA

5. Historical diversion and deliveries for the previous three years (in acre-feet/year):

Year	*Total Water Diverted Annually*	*Irrigation Water Delivered Annually*	*Municipal Water Delivered Annually*	*Total Water Delivered Annually*	*Estimated Delivery Efficiency (%)*
2016	NA (Water is diverted directly from the Lake by purchaser. No water is diverted by TRA)	423 (from SR monthly divertion report)	11764	17860	NA
2017	NA	396	11680	20995	NA
2018	NA	398	12228	16085	NA
Average	NA	406	11891	18313	NA

6. Description of practices and/or devices used to account for water deliveries:

   Each irrigation water purchaser has installed a flow meter to measure the amount of water diverted or uses a pump run timer and pump rating curve to calculate the amount of water diverted.

7. Water pricing policy:

   Irrigation water is sold at the same flat cost per acre-foot as municipal and industrial water as established by the Authority's Board of Directors in Resolution No. R-1053 adopted in December 1999 and revised to Resolution No. 1403 adopted in June 2014.

8. Operating rules and policies which encourage water conservation (if a separate document, include it as an attachment to the Water Conservation Plan):

   Prior to 2000, irrigation water was sold using a declining block rate at significantly lower rates than municipal and industrial water. In 2000,the irrigation rate was increased to a much higher fixed rate per acre-foot and is the same rate as that charged for municipal and industrial water at $95/AF.

9. Provide specific, quantified 5-year and 10-year targets for water savings below in 9(a) and 9(b), including maximum allowable losses for the storage and distribution system. Water savings may be represented in acre-feet or in water use efficiency.

   Quantified 5-year and 10-year targets for water savings:

a. 5-year goal:
Savings in acre-feet or system efficiency as a percentage 90 %

b. 10-year goal:
Savings in acre-feet or system efficiency as a percentage 90 %

(Examples of Typical Efficiencies for Various Types of Irrigation Systems – Surface: 50-80%; Sprinkler: 70-85%; LEPA: 80-90%; Micro-irrigation: 85-95%)

10. Describe the practice(s) and/or device(s) which will be utilized to measure and account for the amount of water diverted from the source(s) of supply:

    The amount of water diverted will be determined by either flow meters or timers that record pump run time.

11. Describe the monitoring and record management program for water deliveries, sales, and losses:

    Each diverter provides a report of the amount of water diverted each month. Additionally, TRA personnel read all measuring devices each month to ensure the accuracy of the information provided by the diverters.

12. Describe any programs that will be used for water loss control, leak detection, and repair:

    There are no water losses or leaks associated with any TRA facility. All water is diverted directly from Lake Livingston by each purchaser.

13. Describe any program for customer assistance in the development of on-farm water conservation and pollution prevention plans and/or measures:

    There is no irrigation water diverted from Lake Livingston for on-farm use.

14. Describe any other water conservation practice, method, or technique which the supplier shows to be appropriate for achieving conservation (if applicable):

    NA

C. User profile

1. Total number of acres or square miles in service area: approx. 2,350 Acres

2. Average number of acres irrigated annually: approx. 1,175 acres

3. Projected number of acres to be irrigated in 10 years: approx. 1,175 acres

4. Number of active customers taking delivery of water by the system: 7 (diversion greater than 0 in 2018)

5. Total irrigation water delivered annually (in acre-feet): 441.6 AF (2014-18 annual average)

6. Types of crops grown by customers:

   There are no crops being irrigated. Only golf course greens and fairways, baseball/soccer fields and open spaces.

7. Types of irrigation systems used by customers:

   Water is either pumped directly from Lake into surface spray system or pumped directly from Lake into pond and repumped to surface spary system.

8. Types of drainage systems used by customers:

   Drainage is typically by open ditch with one location using a French drain system, then to open ditch.

9. Any additional relevant information on irrigation customers:

   Agricultural water use around Lake Livingston is currently limited to the irrigation of recreational areas.

10. List of municipal customers and number of acre-feet allocated annually:

    Top three in 2018, HRWSS - 22,403 AF; LRWSS - 5,601 AF; TCRWSS - 1,680 AF

11. List of industrial and other large customers and number of acre-feet allocated annually:

    In 2018, TX. Utilities - 20,000 AF; Tenaska Power Plant - 6,721 AF

D. Additional Requirements

In addition to the above information, please attach the following as required by Title 30, Texas Administrative Code, §288.4(3).

1. A requirement in every wholesale water supply contract entered into or renewed after official adoption of the plan (by either ordinance, resolution, or tariff), and including any contract extension, that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements in 30 TAC Chapter 288. If the customer intends to resell the water, then the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with applicable provisions of 30 TAC Chapter 288.

2. Evidence of official adoption of the water conservation plan and goals, by ordinance, rule, resolution, or tariff, indicating that the plan reflects official policy of the supplier.

3. Documentation of coordination with the Regional Water Planning Group(s) in order to ensure consistency with the appropriate approved regional water plan(s).

II. Water Conservation Plans submitted with a Water Right Application for New or Additional State Water

Water Conservation Plans submitted with a water right application for New or Additional State Water must include data and information which:

1. support the applicant's proposed use of water with consideration of the water conservation goals of the water conservation plan;

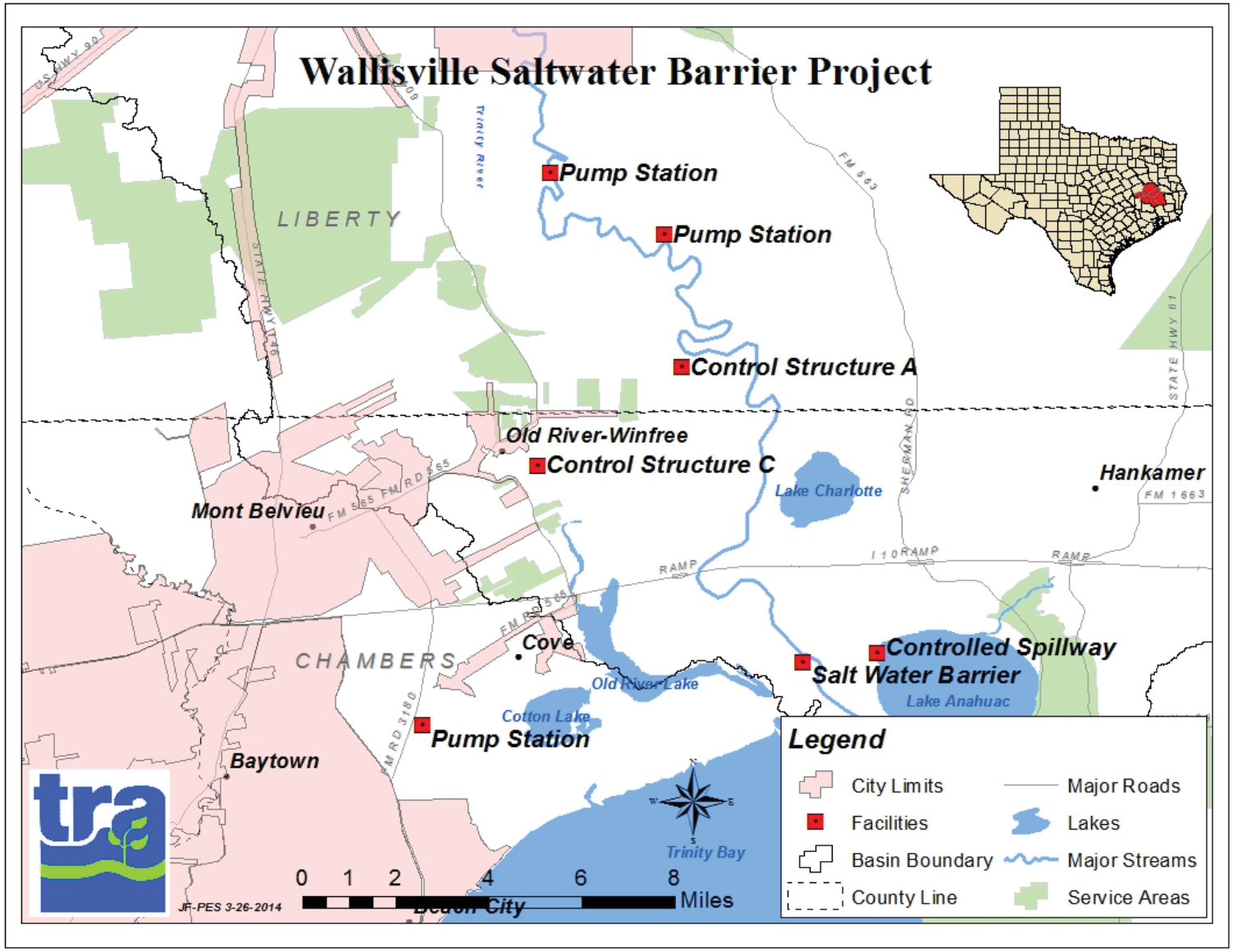
2. evaluates conservation as an alternative to the proposed appropriation; and

3. evaluates any other feasible alternative to new water development including, but not limited to, waste prevention, recycling and reuse, water transfer and marketing, regionalization, and optimum water management practices and procedures.

Additionally, it shall be the burden of proof of the applicant to demonstrate that no feasible alternative to the proposed appropriation exists and that the requested amount of appropriation is necessary and reasonable for the proposed use.

Appendix B

Wallisville Saltwater Barrier Project Service Area



Appendix C

Wallisville Project Operation Plan for Hydraulic Structures

August 2, 1999

The project will be operated to prevent salinity intrusion from impacting water supply withdrawals from the Trinity River system. For normal flow conditions the project structures will remain open so that river flows and stages are not influenced. For low flow conditions, the project gates will be closed to form a barrier to salinity intrusion. The barrier will not intentionally impound water or maintain pool levels above normal conditions to the extent practical. Upstream and downstream river level will be recorded and maintained as a permanent record documenting water level impacts.

A detailed description of each operational mode is shown below. Each mode will be in effect as long as the associated conditions persist. These descriptions are only provided as a guide. Actual operations will also depend on the judgment and experience of the operations staff.

1. Normal operation

Condition: The **Trinity River flow to Trinity Bay** is equal or greater than 2,000 cfs.
Operation: All spillway gates, lock gates, and Control Structure A will remain fully open so that flow and navigation are unimpeded. River flows will be monitored so that the **Trinity River flow to Trinity Bay** can be estimated and recorded. The value will normally be estimated from upstream gage reports at Romayor, less any downstream diversions. The daily diversion rate will be obtained from the Trinity River Authority.

2. Salinity monitoring

Condition: The **Trinity River flow to Trinity Bay** is less than 2,000 cfs.
Operation: All spillway gates, lock gates, and Control Structure A will remain fully open so that flow and navigation are unimpeded. Begin monitoring salinity levels at permanent gage sites and begin gathering additional portable measurements to detect salinity moving upstream toward the project. (Permanent salinity and water level gages are located immediately upstream and downstream of the spillway.)

3. Salinity control operation

Condition: Salinity measurements indicate salinity intrusion is threatening water supplies.
Operation: The spillway gates and lock gates are closed to form a salinity barrier. Limited gate openings are made as needed to pass remaining river flow. The lock is operated to pass boat traffic on a scheduled basis. Operations for salinity control are described in detail below: Passing remaining river flow – While the project is in salinity control operation, some gate openings will generally be required to pass any remaining river flow. An initial tainter gate setting of two gates at 4 feet is suggested for nominal flow conditions. Lock gate openings may be substituted for tainter gate openings. An increasing pool level will indicate the need for increased gate openings. A falling level will indicate the need for smaller openings or complete closure. In the long term, the gates will be adjusted so that the pool elevation tracks within a target range. The target range is as follows:

The **upper limit** is 0.5 feet above the average tide level.
The **lower limit** is 0.5 feet below the average tide level.

The average tide level will be computed from readings taken every 6 hours for the previous 48-hour period.

Preventing backflow- While the project is in salinity control operation, any remaining gate openings must periodically be closed in response to rising tides to prevent back flow. A positive head of at least 0.1-foot is required to prevent salinity intrusion through tainter gate openings. A larger positive head (0.3-foot) is required for lock gate openings.

Conditions: Salinity measurements indicate intrusion is a threat at Structure A and
Operation: Close Structure A and leave closed until resumption of normal river flows.

Structure C is the temporary sheet pile barrier on the Old River just downstream of the confluence with The Cutoff. Structure C will be placed on a temporary basis during drought conditions to prevent salinity intrusion at the CWA pumping plant on the Old River. Placement will not be required until this plant is made operational, and the barrier will only be in place when required to prevent salinity intrusion. When Structure C is in place, Structure A will be opened as required to allow flow to the pump station.

4. **Special salinity control operations**

Condition: During sustained regular salinity control operations, salinity levels are increasing in the project.
Operation: To lower the rate of intrusion and decrease pool salinity levels, the following steps may be taken: (Listed in the order of preference. Conventional operations should be resumed as soon as possible.)

- Suspend lock operations during back flow tide conditions;
- Raise the target range for the pool by as much as 1 foot. Coordination and approval from the District's environmental staff will be required prior to changing the target range. Releases from Lake Livingston may be needed to fill the pool to the higher target; and
- Request special releases from Lake Livingston to flush salt from the project.

Condition: During regular salinity control operations the tide level rises to 4 feet NGVD or greater and gate overtopping is beginning to occur.
Operation: All four spillway gates and the lock gates will remain closed.

5. **Hurricane operations**

Condition: High winds and tides are eminent at the project, and an evacuation order has been issued to operation personnel by the District office.
Operation: Begin emergency operation procedures as follows:

Prior to evacuation – First, the lock gates and Structure A will be opened. Next, the spillway gates will be closed to protect them from storm conditions. The project should be re-staffed as soon as conditions allow. A shutdown plan should be coordinated with Emergency Management so that it may be included in the Districts overall hurricane plan;

Returning from evacuation – If the project has been flooded by tidal water or river flows, open all spillway gates to allow floodwater to exit. The gates should not be opened until hurricane wind conditions subside and the flood level at the project is less than +7.0 NGVD

(so that the initial gate opening sequence will not result in an overtopping condition). Gates will be opened in a rotational sequence starting with the inner most gates with each gate opened 4 feet in turn until all gates are fully open. All gates will remain open to allow exit of flood water until flooding conditions subside; and

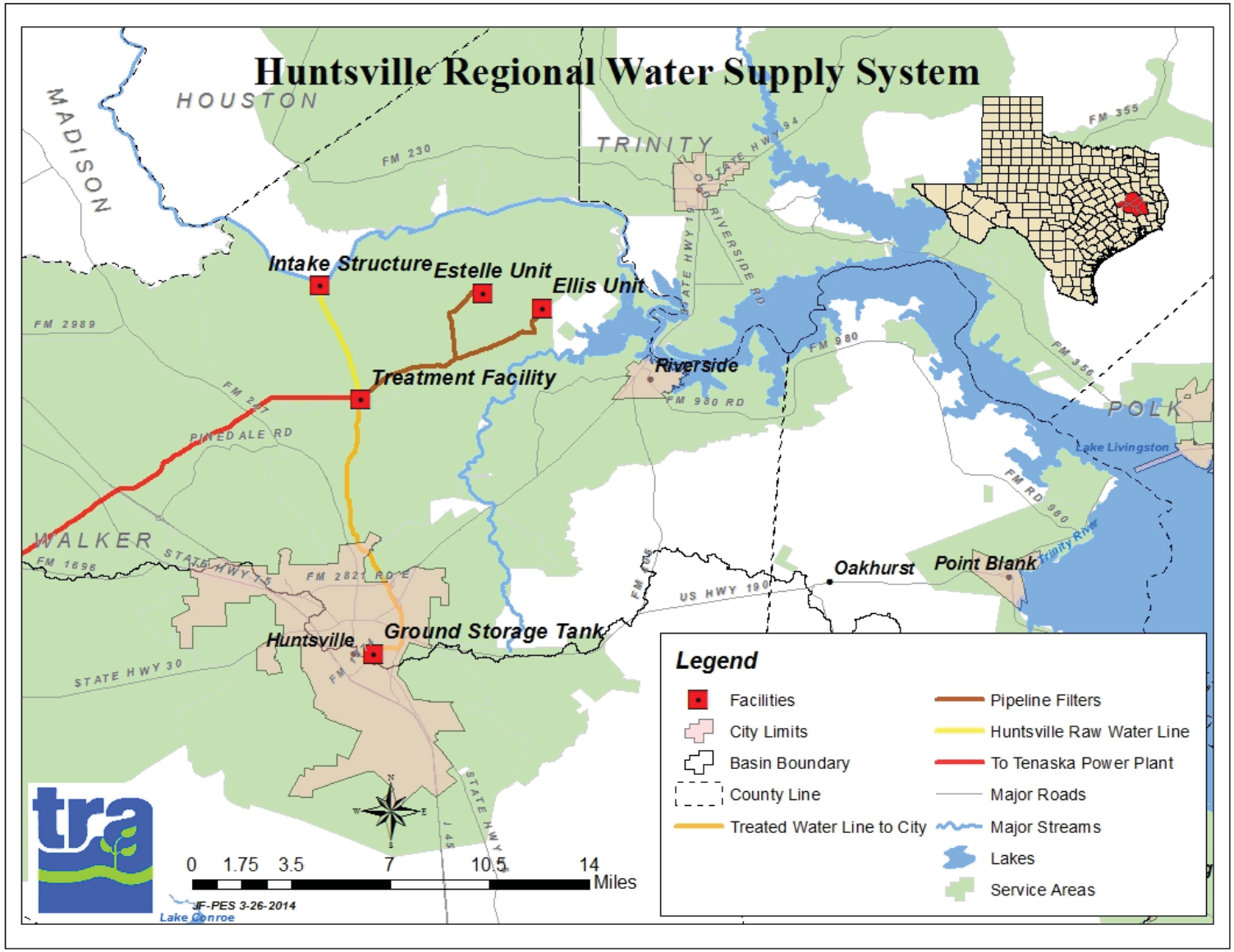
Subsequent operation – If the Trinity River flow to Trinity Bay is equal or greater than 2,000 cfs then resume normal operating status with all gates and lock open. If the Trinity River flow to Trinity Bay is less than 2,000 cfs then resume monitoring followed by salinity control operations if necessary.

6. **Other special operations**

Condition: Special gate operations are desired for wildlife or environmental management.
Operation: The District's environmental staff may direct special operations for wildlife or environmental management purposes provided that the project and its salinity control function are not compromised.

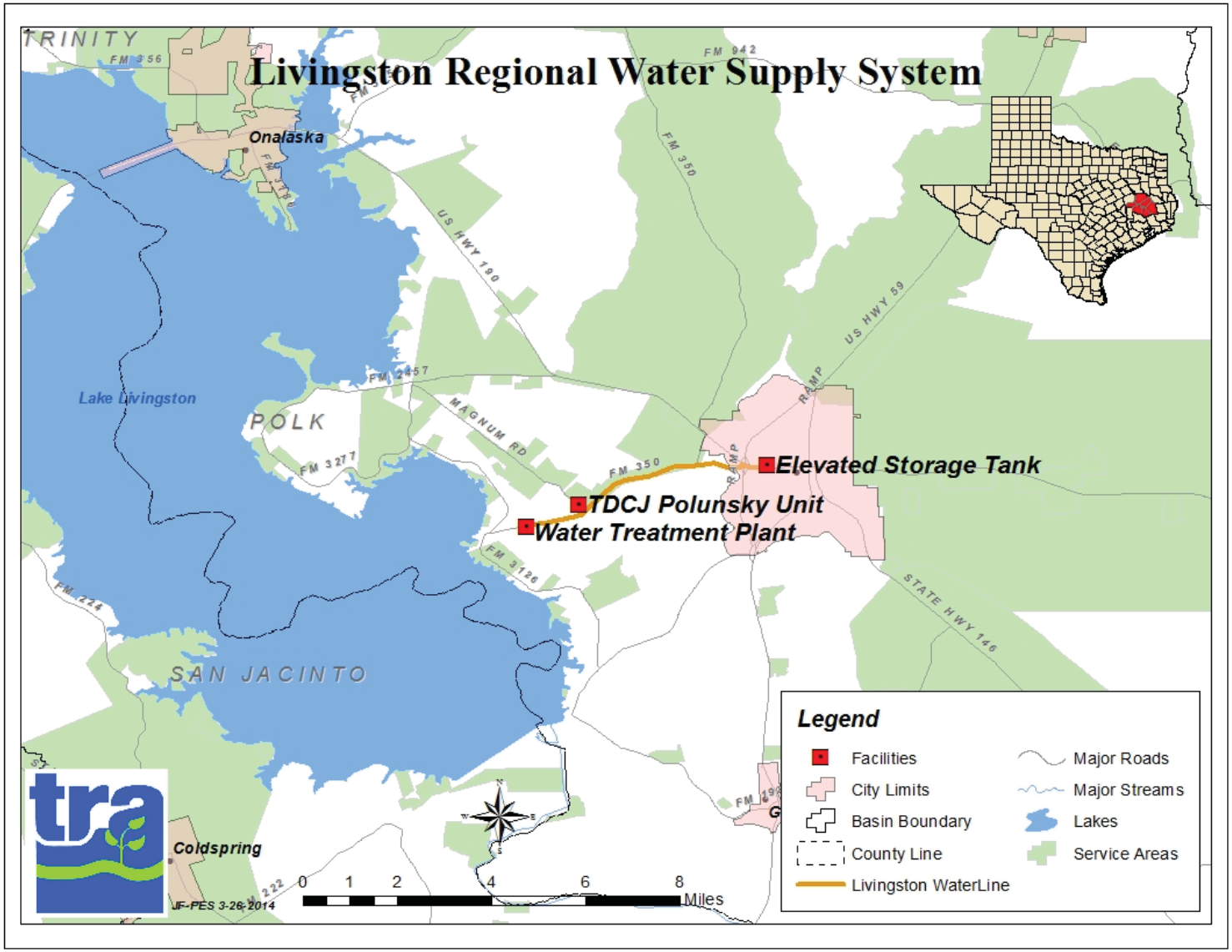
Appendix D

Huntsville Regional Water Supply System Service Area



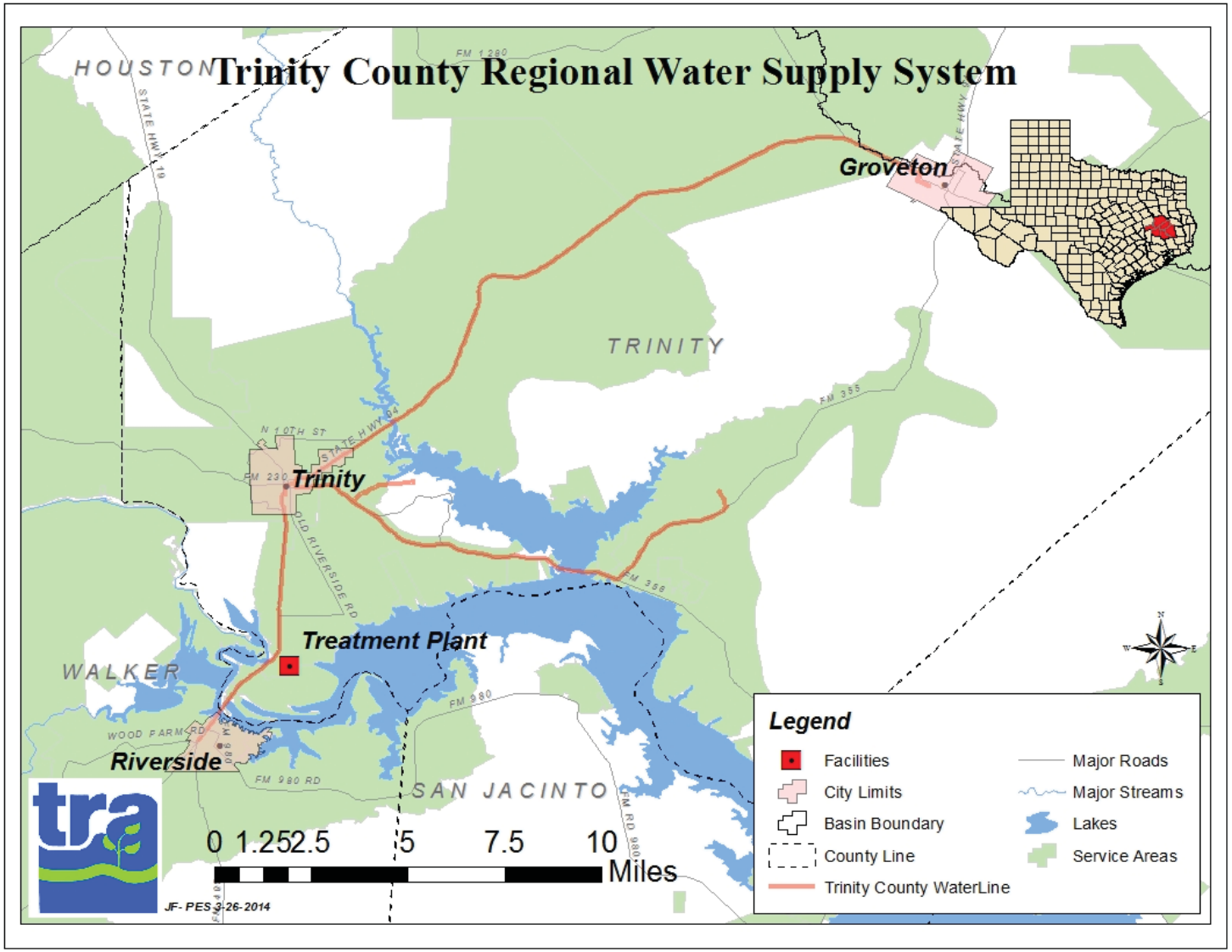
Appendix E

Livingston Regional Water Supply System Service Area



Appendix F

Trinity County Regional Water Supply System Service Area



RESOLUTION NO. R-1163-3

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE TRINITY RIVER AUTHORITY OF TEXAS ADOPTING A WATER CONSERVATION AND DROUGHT CONTINGENCY PLAN FOR THE LAKE LIVINGSTON AND WALLISVILLE SALTWATER BARRIER PROJECTS, THE HUNTSVILLE REGIONAL WATER SUPPLY SYSTEM, TRINITY COUNTY REGIONAL WATER SUPPLY SYSTEM AND LIVINGSTON REGIONAL WATER SUPPLY SYSTEM AND RESCINDING RESOLUTION NO. R-1163-2

WHEREAS, the Trinity River Authority (Authority) recognizes that the amount of water available to its water customers is limited; and

WHEREAS, the Authority recognizes that due to natural limitations and drought conditions, the Authority cannot guarantee an uninterrupted water supply for all purposes at all times; and

WHEREAS, the Texas Water Code and the regulations of the Texas Commission on Environmental Quality (TCEQ) require that the Authority adopt a water conservation plan and drought contingency plan; and

WHEREAS, the Board of Directors of the Authority desires to adopt the revised Water Conservation Plan and Drought Contingency Plan for the Lake Livingston and Wallisville Saltwater Barrier Projects and the Huntsville Regional Water Supply System, Trinity County Regional Water Supply System and Livingston Regional Water Supply System; and

WHEREAS, on the June 24, 2009, the Board of Directors of the Authority passed and approved Resolution No. R-1163-1 captioned as follows:

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE TRINITY RIVER AUTHORITY OF TEXAS ADOPTING A WATER CONSERVATION PLAN AND DROUGHT CONTINGENCY PLAN FOR THE LAKE LIVINGSTON AND WALLISVILLE SALTWATER BARRIER PROJECTS AND RESCINDING RESOLUTION NO. R-1163; and

WHEREAS, on June 24, 2009, the Board of Directors of the Authority passed and approved Resolution No. R-1164-1 captioned as follows:

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE TRINITY RIVER AUTHORITY OF TEXAS ADOPTING A DROUGHT CONTINGENCY PLAN FOR THE HUNTSVILLE REGIONAL WATER SUPPLY SYSTEM AND RESCINDING RESOLUTION NO. R-1164; and

WHEREAS, on June 24, 2009, the Board of Directors of the Authority passed and approved Resolution No. R-1165-1 captioned as follows:

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE TRINITY RIVER AUTHORITY OF TEXAS ADOPTING A DROUGHT CONTINGENCY PLAN FOR THE LIVINGSTON REGIONAL WATER SUPPLY SYSTEM AND RESCINDING RESOLUTION NO. R-1165; and

WHEREAS, on June 24, 2009, the Board of Directors of the Authority passed and approved Resolution No. R-1166-1 captioned as follows:

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE TRINITY RIVER AUTHORITY OF TEXAS ADOPTING A DROUGHT CONTINGENCY PLAN FOR THE TRINITY COUNTY REGIONAL WATER SUPPLY SYSTEM AND RESCINDING RESOLUTION NO. R-1166; and

WHEREAS, on June 24, 2009, the Board of Directors of the Authority passed and approved Resolution No. R-1172-1 captioned as follows:

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE TRINITY RIVER AUTHORITY OF TEXAS ADOPTING A WATER CONSERVATION PLAN FOR AGRICULTURAL WATER SUPPLIERS FOR THE LAKE LIVINGSTON PROJECT AND RESCINDING RESOLUTION NO. R-1172; and

WHEREAS, on April 23, 2014, the Board of Directors of the Authority passed and approved Resolution No. R-1163-2 captioned as follows:

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE TRINITY RIVER AUTHORITY OF TEXAS ADOPTING A WATER CONSERVATION AND DROUGHT CONTINGENCY PLAN FOR THE LAKE LIVINGSTON AND WALLISVILLE SALTWATER BARRIER PROJECTS, THE HUNTSVILLE REGIONAL WATER SUPPLY SYSTEM, TRINITY COUNTY REGIONAL WATER SUPPLY SYSTEM AND LIVINGSTON REGIONAL WATER SUPPLY SYSTEM AND RESCINDING RESOLUTION NOS. R-1163-1, R-1164-1, R-1165-1, R-1166-1 AND R-1172-1; and

WHEREAS, it is in the public interest that Resolution No. R-1163-2 be rescinded.

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE TRINITY RIVER AUTHORITY OF TEXAS:

(1) That Resolution No. R-1163-2 adopted by the Board of Directors of the Authority on April 23, 2014 is hereby rescinded;

(2) That the Board of Directors hereby adopts Resolution No. R-1163-3 approving and adopting the revised Water Conservation Plan and Drought Contingency Plan for the Lake Livingston and Wallisville Saltwater Barrier Projects, and the Huntsville Regional Water Supply System, Trinity County Regional Water Supply System and Livingston Regional Water Supply System, in substantially the form presented, and that the Authority commits to implement the requirements and procedures set forth in the adopted Plan;

(3) That the Board of Directors does hereby find and declare that sufficient written notice of the date, hour, place, and subject of the meeting adopting this Resolution was posted at a designated place convenient to the public for the time required by law preceding the meeting, that such place of posting was readily accessible at all times to the general public, and that all of the foregoing was done as required by law at all times during which this Resolution and the subject matter thereof has been discussed, considered and formally acted upon;

(4) That the General Manager or his designee is hereby directed to file a copy of the Plan and this Resolution with the TCEQ and the Texas Water Development Board in accordance with Title 30, Chapter 288 of the Texas Administrative Code and to the Region H Water Planning Group; and

(5) That should any paragraph, sentence, clause, phrase, or word of this Resolution be declared unconstitutional or invalid for any reason, the remainder of this Resolution shall not be affected.

ADOPTED this 24 day of April, 2019. [redacted]

Kevin Maxwell, Acting President
Board of Directors
Trinity River Authority of Texas

ATTEST: [redacted]

HOWARD S. SLOBODIN, Secretary

TRINITY RIVER AUTHORITY OF TEXAS