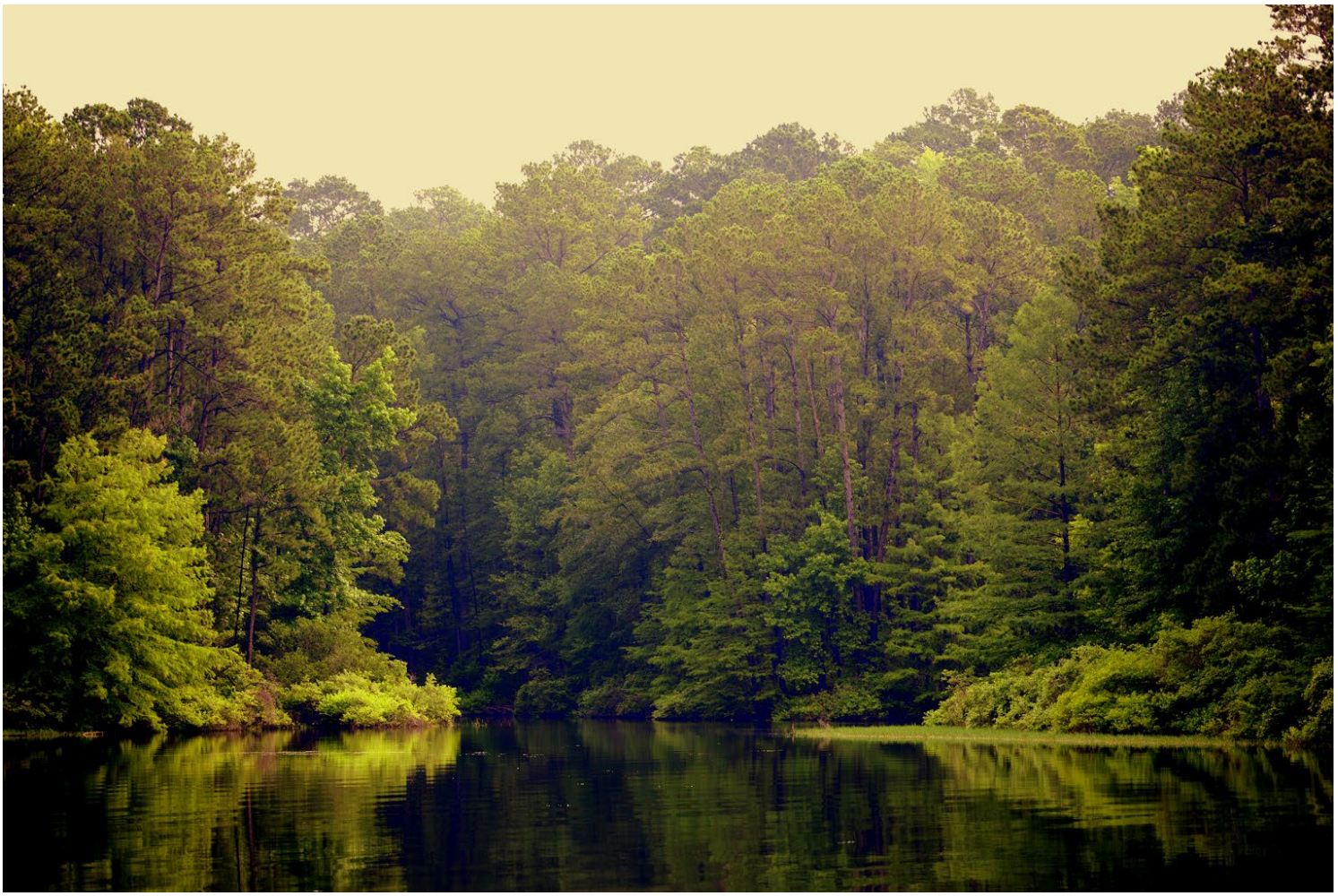

Sabine River Basin Highlights 2021

Prepared in Cooperation with the Texas Commission on Environmental Quality under the Authorization of the Texas Clean Rivers Act

www.sratx.org

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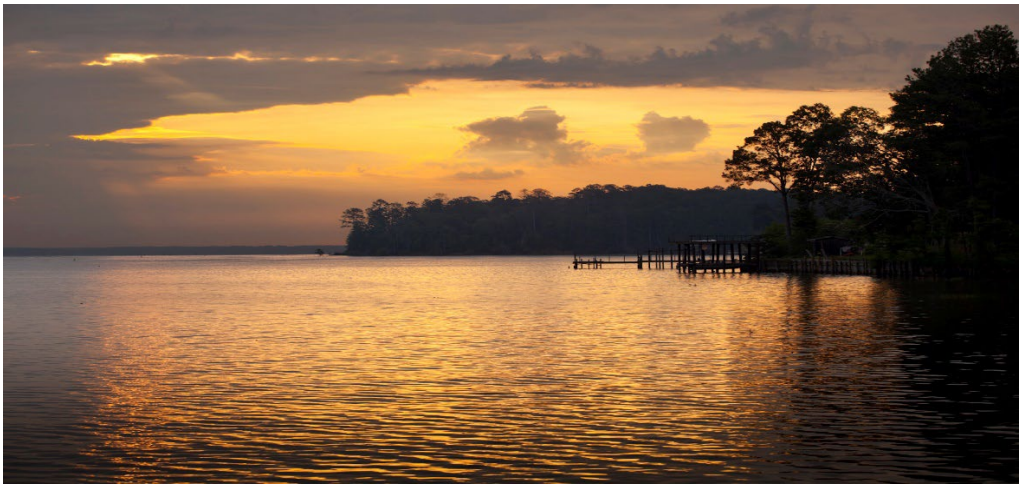
Introduction

The Sabine River originates in Hunt County, near Celeste, TX, and empties into Sabine Lake near Bridge City in Orange County. The crescent shaped basin drains approximately 10,000 square miles of watershed, is approximately 300 miles long and 48 miles wide, and encompasses three major reservoirs: Lake Tawakoni, Lake Fork and Toledo Bend. The Sabine River basin serves as the state line between Texas and Louisiana near the headwaters of Toledo Bend Reservoir down to the mouth of the river. The state of Texas has jurisdiction to the midstream boundary for the state line reach of the Sabine River. Texas contains 75% of the basin area with 25% lying in Louisiana. In Texas, the basin includes all or part of 21 counties (Figure 1).

The Sabine River Authority of Texas (SRA-TX) water quality monitoring program was established in 1972 and reinforced by the Texas Clean Rivers Program (CRP) in 1991. The SRA-TX collects water quality data in the Sabine River Basin to identify and track trends, prioritize water quality concerns, and ensure the protection of the resource while supporting the mission of SRA-TX. With CRP's goal of improving surface water quality across the state of Texas, the Texas Commission on Environmental Quality (TCEQ) partners with regional water authorities to coordinate and conduct water quality monitoring, assessment, and stakeholder participation in the river and coastal basins of Texas.

To ensure the resource is optimally managed while satisfying goals of the CRP, SRA-TX coordinates an annual review process with various state and local water monitoring entities. Water quality data obtained through the CRP is collected in accordance with a TCEQ-approved Quality Assurance Project Plan (QAPP) and evaluated under the Texas Surface Water Quality Standards (TSWQS).

This report provides an overview of water quality data collected under the CRP within the Sabine Basin from September 2020 through August 2021[1] and addresses the TCEQ 2020 Texas Integrated Report (IR) of Surface Water Quality. Data in this report is pending acceptance into SWQMIS contingent on full review and validation by TCEQ.



Toledo Bend Reservoir

[1]Water quality monitoring results may be found using Clean Rivers Program Data Tool.

Figure 1. General Map showing the Sabine River Basin

Water Quality Highlights

The Sabine Basin maintains good water quality with the majority of water bodies meeting the TSWQS. An exceedance occurs when a parameter value surpasses the TSWQS numeric criteria or screening level for any single sample event. The number of exceedances over the course of multiple sampling events within the Integrated Report period of record determines if a water body has a concern or an impairment for a particular parameter. Bacteria (*Enterococcus* or *Escherichia coli (E. coli.))* was the most frequently exceeded TSWQS parameter throughout the basin. Elevated bacteria levels often occur with significant rainfall events that produce surface runoff. When samples are taken during the quick and short-lived rise in river levels immediately following heavy rain events, bacteria levels typically increase. As runoff subsides and river levels return to base flow, bacteria levels decrease. Storm water runoff from both natural and urban areas are potential non-point sources of bacteria. Possible additional sources include industrial and municipal point source discharges, on-site treatment systems, sanitary sewer overflow discharges, and package plant or other permitted small flow discharges. Depressed dissolved oxygen (DO) was the most frequently observed parameter of concern throughout the basin. Low dissolved oxygen is a natural occurrence in small, forested, intermittent, low gradient streams. Forested creeks that flow seasonally through low gradient terrain typically experience long periods of little to no velocity and become a series of small, isolated pools of water. Since the majority of the Sabine Basin is heavily forested, these pools of water are seasonally loaded with leaf litter. The predominately humid sub-tropical climate throughout the basin facilitates the rapid decomposition of organic matter in the water, which in turn, lowers the DO. During hot, dry periods, isolated pools can become nearly anoxic. When a large runoff event occurs, these pools of extremely low DO water are flushed down the watershed, resulting in short-lived isolated sections of low DO water moving through larger stream systems.

The Sabine Basin experienced slightly above average rainfall last year with 72 and 48 inches of rain in the southern and northern reach of the basin, respectively. Annual rainfall averages range from 60 inches in the southern basin to 40 inches in the northern basin.[2] Most of the rain fell during the late spring, as expected. There was an unusually wet summer last year, with more summer rains than fall or winter.

The SRA-TX continues to partner with the Texas Parks and Wildlife Department (TPWD) in control efforts and education campaigns aimed at reducing the spread of giant Salvinia, water hyacinth, and zebra mussels within the Sabine Basin. The United States Geological Survey (USGS) monitors Lake Fork and Lake Tawakoni Reservoirs for the presence of zebra mussels. The USGS classified Lake Fork Reservoir and Lake Tawakoni Reservoir as inconclusive. No adults, veligers, or any other evidence of a reproducing population of zebra mussels have been found, but there has been a consistent positive eDNA detection since 2019.

The first discovery of giant Salvinia was reported in Lake Fork Reservoir on the Chaney Branch arm in November 2015. The Chaney Branch infestation was successfully eradicated with a quick and proactive response from SRA-TX and TPWD and remains one of the few success stories across the state, as Lake Fork currently remains free and clear of giant Salvinia.

An isolated occurrence of common Salvinia in the White Oak branch of Lake Fork is contained and actively controlled by TPWD. Water hyacinth remains present on Lake Fork with ongoing control efforts implemented by TPWD. On Toledo Bend Reservoir, efforts to control and manage giant Salvinia have been ongoing since it was first reported in 1998. Additional information concerning Texas invasive species can be found at. http://www.texasinvasives.org/ and https://tpwd.texas.gov/huntwild/wild/species/exotic/

The Sabine Basin Native Mussel Survey field work was completed in August 2021 by SRA-TX. Once analyzed, this survey will be used to inform United States Fish and Wildlife Services (USFWS) understanding of mussel populations and distributions in the Sabine River and its tributaries.

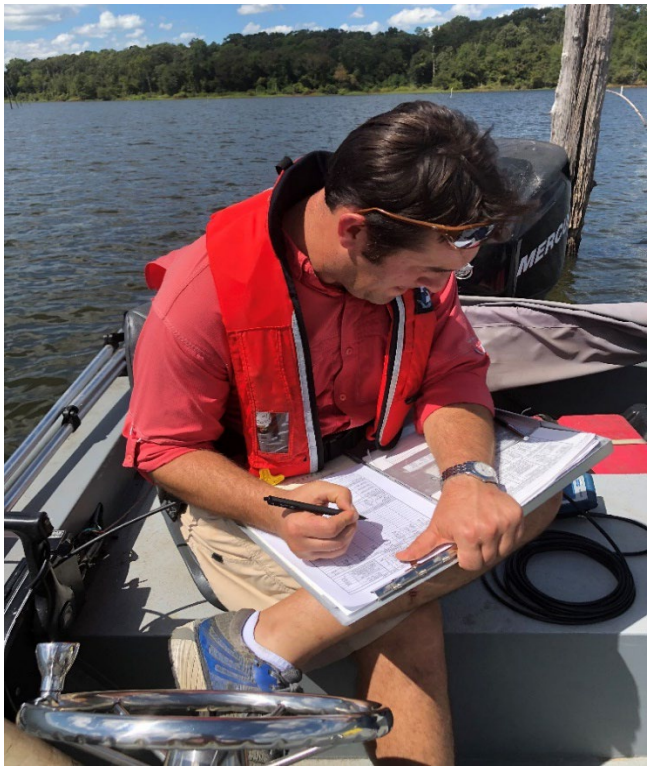
Mussel Survey on the Sabine River

Water Quality Monitoring

The SRA-TX monitored 37 sites monthly within the Basin in FY2021. This included 23 sites in the lower basin (Figure 2) and 14 sites in the upper basin (Figure 3). An additional 12 sites were monitored by the TCEQ and 1 site by the City of Longview (Table 1). The FY2021 Sabine Basin coordinated monitoring schedule can be found here: https://cms.lcra.org/schedule.aspx?basin=5&FY=2021

Table 1. 2021 Sabine River Basin Water Quality Monitoring Entities and Frequency

FY2021 Sabine River Basin Water Quality Monitoring				
Sampling Entity	**Field**	**Conventional**	**Bacteria**	**Metals in Water**
Sabine River Authority of Texas	37 sites monthly			32 sites annually
TCEQ Region 5	10 sites quarterly, and 2 site 10 months a year for field, flow and bacteria			
City of Longview	1 site, 9 months per year			1 site annually



Water quality sampling in the Sabine Basin

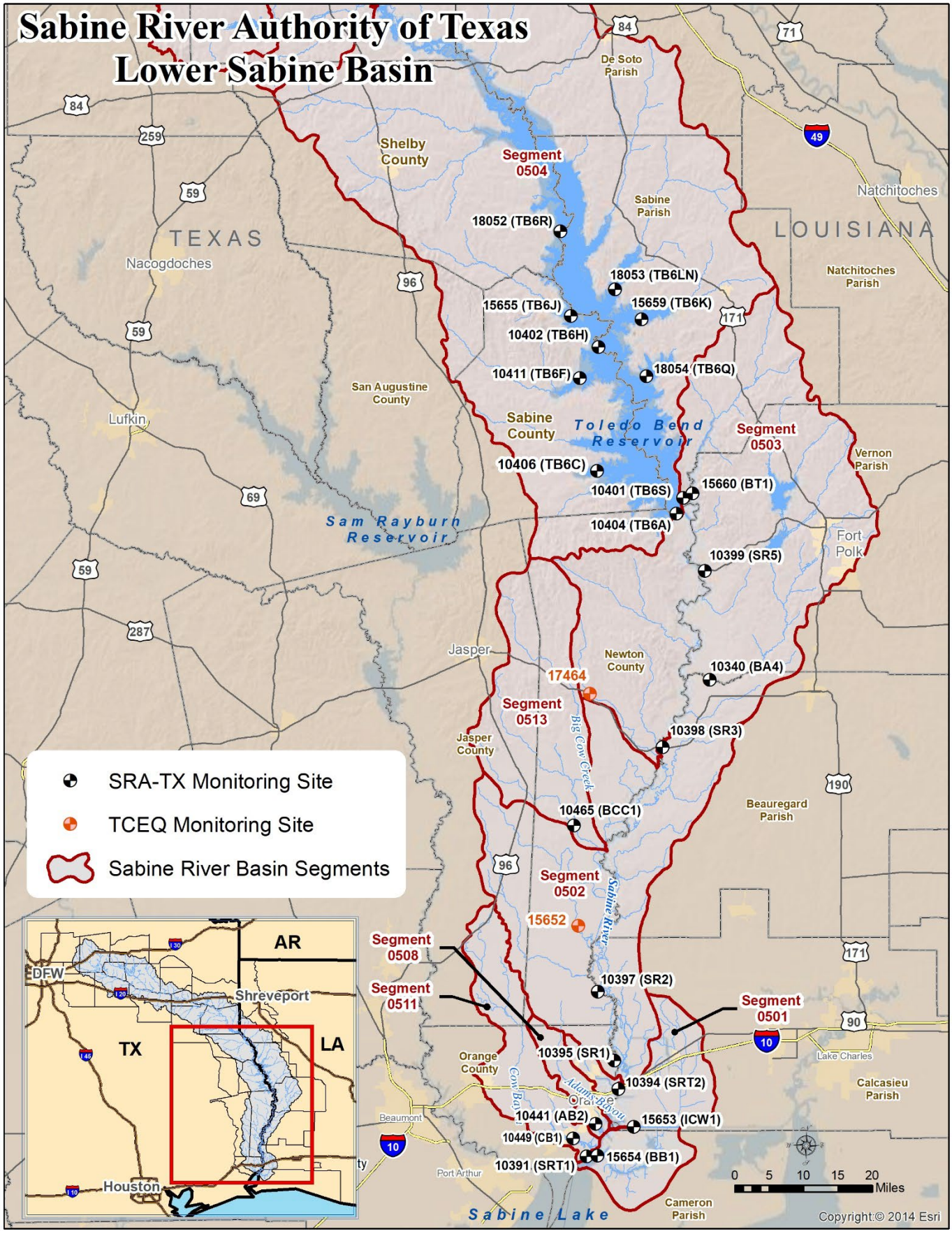


Figure 2. FY2021 Lower Sabine Basin Coordinated Monitoring Sampling Sites

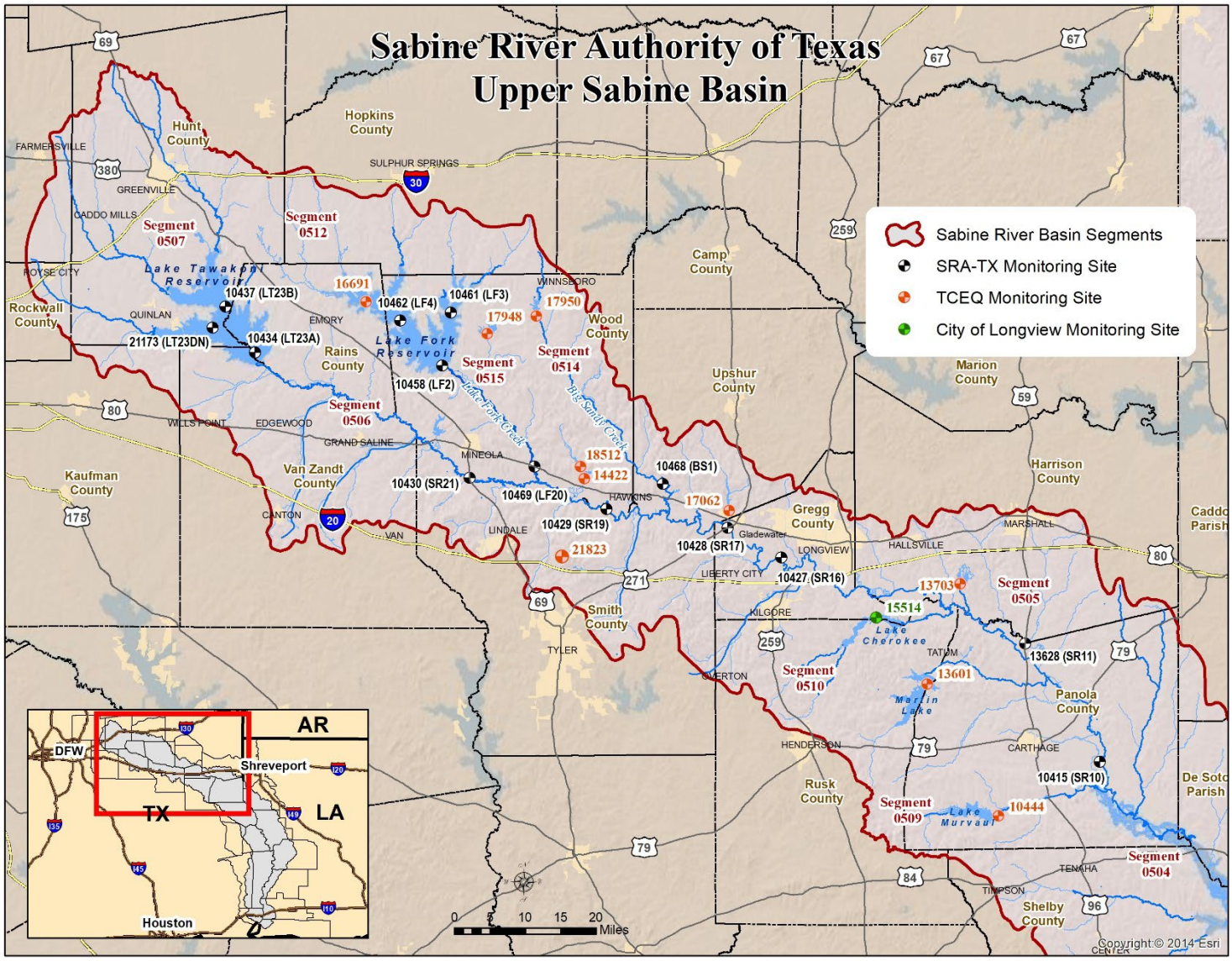


Figure 3. FY2021 Upper Sabine Basin Coordinated Monitoring Sites

Water Quality Parameters

The water quality parameters used to measure physical and chemical water quality characteristics are found in Table 2. Water quality parameters and definitions can be found in Table 3.

Table 2. Water quality parameters used to measure physical and chemical water quality characteristics

Water Quality Group	Water Quality Parameters
Field	Temperature, pH, Dissolved Oxygen (DO), Specific Conductance, Salinity, Weather Conditions, Odor, Flow, Secchi Depth, Flow Severity, Days Since Last Precipitation
Conventional	Ammonia, Chloride, Chlorophyll a, Nitrate, Nitrite, Sulfate, Total Hardness, Total Dissolved Solids, Turbidity, Total Kjeldahl Nitrogen, Total Organic Carbon, Total Alkalinity, Total Phosphorus
Metals	Dissolved – Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Zinc Total - Selenium
Bacteria	*Enterococcus* and *Escherichia coli (E. coli)*

Table 3. Water Quality Parameters and Definitions

Parameter	Definition
Temperature	**Temperature is the most common physical measurement of water quality. Temperature impacts both the chemical and biological characteristics of surface water.**
pH	**A measurement of hydrogen ion concentration used to describe the acidity or alkalinity of a solution. The pH scale is from 0 to 14, with the neutral point at 7.0. Values lower than 7 indicate acidic conditions and greater than 7 indicate alkaline conditions.**
Dissolved Oxygen	**The amount of oxygen gas dissolved in a given quantity of water at a given temperature and atmospheric pressure. Dissolved oxygen is one of the most important parameters in aquatic systems.**
Specific Conductance	**Measures how well water conducts an electrical current. Because conductance increases with increasing amount and mobility of ions, it is used to indicate the amount of dissolved material in water**
Total Dissolved Solids (TDS)	**The amount of inorganic and organic material dissolved in water measured by laboratory analysis or estimated using specific conductance multiplied by a conversion factor, typically 0.65.**
Enterococcus **and** **Escherichia coli (E. coli)**	**These bacteria groups are used as indicators of possible contamination by the fecal material of warm-blooded animals. Although generally not harmful themselves, they indicate the possible presence of pathogenic (disease-causing) bacteria, viruses, and protozoans that also live in human and animal digestive systems. Enterococcus testing is used in tidal and high saline waters. E. coli testing is used in freshwater areas.**

…Table 3 Continued. Water Quality Parameters and Definitions

Sulfate	**Sulfates are salts of sulfuric acid that occur naturally and are often the result of the breakdown of leaves that fall into a stream, water passing through rock or soil containing gypsum, and other common minerals, or from atmospheric deposition. Sulfates can also come from agricultural runoff and municipal or industrial discharges.**
Chlorophyll-a	**Chlorophyll-a is a green pigment found in most plants, algae, and cyanobacteria. Excessive amounts of chlorophyll-a can indicate algal blooms, which can cause dissolved oxygen levels to fluctuate and deteriorate to harmful levels.**
Chloride	**Chloride is the ionic form of chlorine usually in the form of salts. Some common chlorides include sodium chloride and magnesium chloride. High chloride concentrations can affect osmoregulation and treatability of water.**
Secchi Disk Depth	**Secchi depth is a measure of the depth to which light is transmitted through the water column.**
Turbidity	**Turbidity is a measure of the water clarity or light transmitting properties. It may be caused by naturally occurring suspended material or plankton and other microscopic organisms.**
Ammonia Nitrogen	**Ammonia is excreted by animals and is produced during the decomposition of plants and animals. It is also present in sewage, storm water run-off, and industrial wastewaters.**
Total Organic Carbon	**Total organic carbon is a measure of the amount of organic compounds contained in a water sample. Organic carbon-containing compounds can either be dissolved in water or exist in water as undissolved, suspended material, or liquid. This organic matter can enter water naturally and through man-made sources/processes.**
Total Alkalinity	**Alkalinity is the capacity of water to neutralize acids, which is known as the buffering capacity of water. Alkalinity helps moderated swings in pH**
Nitrate Nitrogen	**Nitrate-nitrogen containing compounds act as nutrients in streams, rivers, and reservoirs. These nutrients can be found in wastewater treatment plant effluent, fertilizers, and agricultural runoff.**
Total Phosphorus	**Total phosphorus is an essential nutrient required for growth of organisms. Excessive amounts of total phosphorus increase primary productivity and algal growth.**
Total Hardness	**Water hardness is a measure of multivariant cations in water; in general, it is a measure of dissolved calcium and magnesium in water**
Turbidity	**Turbidity is a measure of the water clarity or light transmitting properties. It may be caused by naturally occurring suspended material or plankton and other microscopic organisms.**
Ammonia Nitrogen	**Ammonia is excreted by animals and is produced during the decomposition of plants and animals. It is also present in sewage, storm water run-off, and industrial wastewaters.**

Water Quality Conditions

Every two years, TCEQ assesses water quality data using TSWQS to produce the State of Texas Integrated Report (IR), which is required by Sections 305(b) and 303(d) of the federal Clean Water Act. This assessment enables the public, local governments, state agencies, the Texas Legislature, the US Environmental Protection Agency (EPA), and Congress to make decisions about water quality management. The 2020 IR uses water quality data collected from 12/1/2011 through 11/30/2018. A body of water is considered impaired when it exceeds surface water quality standards for one or more water quality parameters. The impaired water body is placed on the 303(d) list until an EPA approved total maximum daily load is developed for the watershed. A water body that has a concern for one or more parameters is close to exceeding, but still satisfies the surface water quality standards. To learn more concerning the assessment process or to view the IR go to: https://www.tceq.texas.gov/waterquality/assessment/20twqi/20txir

The following is a description of Sabine Basin segments and sampling sites, along with summaries of the water quality conditions and recommendations within each segment.

Tidal Segments

Segment 0501 – Sabine River Tidal – From the confluence with Sabine Lake in Orange County to Morgan's Bluff in Orange County.

Station 10395 (SR1) – Sabine River 12.0 kilometers upstream of IH-10
Station 10391 (SRT1) – Sabine River at Channel Can 3
Station 15654 (BB1) – Blacks Bayou in Cameron Parish (LA)
Station 15653 (ICW1) – Intracoastal Waterway at Perry Ridge (LA)
Station 10394 (SRT2) – Sabine River at IH-10

In FY 2021, the *Enterococcus* geomean had exceedances in all the Tidal Stations. DO exceedances were noted at two tidal stations in FY 2021. Station 15654 recorded two DO exceedances while Station 15653 had one. Segment 0501 in the 2020 IR has an impairment for bacteria in water as well as PCBs in edible tissue.

In FY 2021, freshwater Station 10395 had one single grab exceedance for DO and one for bacteria.

The Texas Department of State Health Services (TDSHS) issued a fish consumption advisory in December 2011 for the Gafftopsail catfish (PCBs in edible tissue) for all Texas waters of Sabine Lake and all contiguous Texas waters. Additional information regarding fish consumption advisories can be found at http://www.dshs.texas.gov/seafood/advisories-bans.aspx.

Little Cypress Bayou (Segment 0501B) is on the 2020 IR 303(d) list for DO, bacteria, and toxicity in water. These parameters were first listed in 2006 and 2004 respectively.

Segment 0511 – Cow Bayou Tidal – From the confluence with the Sabine River in Orange County to a point 4.8 kilometers (3.0 miles) upstream of IH-10 in Orange County.

Station 10449 (CB1) – Cow Bayou at Roundbunch Rd.

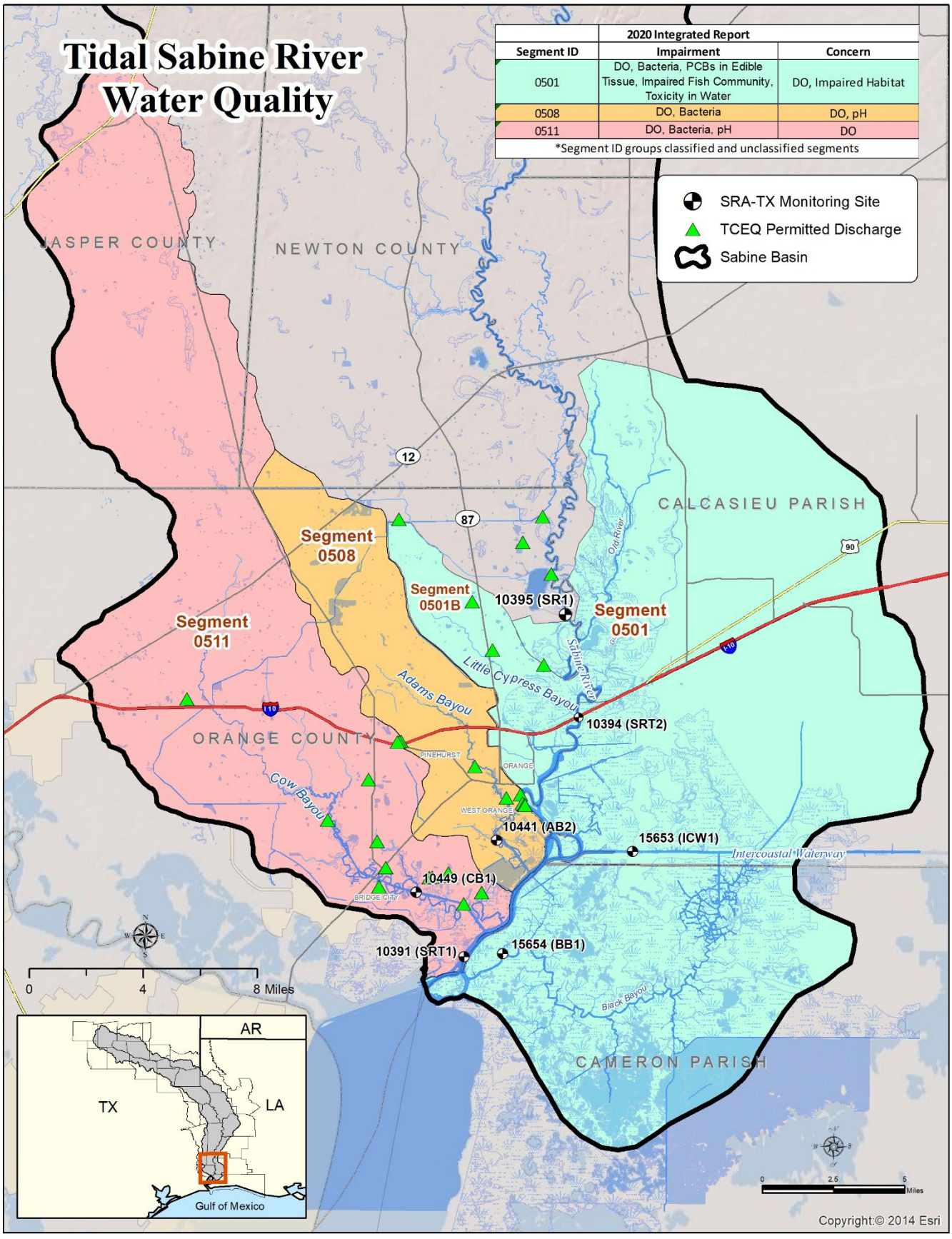
This segment is included in the Orange County Total Maximum Daily Load Project (OCTMDL) due to impairments for bacteria, DO and low pH. In FY 2021, Station 10449 had one exceedance for DO and nine for bacteria. In the 2020 IR, Segment 0511 has an impairment for DO and pH. There is also a screening level concern and impairments for DO in Cow Bayou Above Tidal (0511A), Coon Bayou (0511B), Cole Creek (0511C), and Terry Gully (0511E). Potential bacteria sources in this segment include channelization, point source discharge, natural and municipal runoff, residential districts, and on-site sewage treatment systems.

Cow Bayou in Orange, TX

Segment 0508 – Adams Bayou Tidal – From the confluence with the Sabine River in Orange County to a point 1.1 kilometers (0.7 mile) upstream of IH-10 in Orange County.

Station 10441 (AB2) – Adams Bayou at FM 1006

This segment is included in the OCTMDL Project due to impairments for bacteria and DO. In FY 2021, Station 10441 had five DO exceedances and eight exceedances for bacteria. In the 2020 IR, Segment 0508 has a concern for low pH and DO. There is also a screening level concern and impairment for DO in Adams Bayou Above Tidal (0508A), Gum Gully (0508B), and Hudson Gully (0508C). Segments 0508B and 0508C also have a screening level concern and impairment for bacteria as well. Potential bacteria sources include channelization, point source discharges, municipal runoff, residential districts, and upstream sources.


Tidal Sabine River Water Quality
2020 Integrated Report
Segment ID | Impairment | Concern
0501 | DO, Bacteria, PCBs in Edible Tissue, Impaired Fish Community, Toxicity in Water | DO, Impaired Habitat
0508 | DO, Bacteria | DO, pH
0511 | DO, Bacteria, pH | DO
*Segment ID groups classified and unclassified segments
SRA-TX Monitoring Site
TCEQ Permitted Discharge
Sabine Basin
JASPER COUNTY
NEWTON COUNTY
CALCASIEU PARISH
ORANGE COUNTY
CAMERON PARISH
Segment 0508
Segment 0501B
Segment 0511
Segment 0501
10395 (SR1)
10394 (SRT2)
10441 (AB2)
15653 (ICW1)
10449 (CB1)
10391 (SRT1)
15654 (BB1)
Old River
Sabine River
Little Cypress Bayou
Adams Bayou
Cow Bayou
Black Bayou
Intercoastal Waterway
PINEHURST
ORANGE
WEST ORANGE
BRIDGE CITY
12
87
90
10
110
0 4 8 Miles
0 2.5 5 Miles
AR
TX
LA
Gulf of Mexico
Copyright:© 2014 Esri

Lower Basin Segments

Segment 0502 – Sabine River above Tidal – From West Bluff in Orange County to the confluence with Caney Creek in Newton County.

Station 10397 (SR2) – Sabine River at SH 12 north of Deweyville, TX

Sabine River – Segment 0502

In FY 2021 Station 10397 had no exceedances. In Segment 0502 in the 2020 IR, there is a screening level concern for DO in Segment 0502_01.

Nichols Creek (Segment 0502A), first listed in 2002, is on the 2020 IR 303(d) list for bacteria and DO. An RUAA has been completed on this creek to address these impairments. The RUAA findings support the revision of Nichols Creek from primary contact recreation (PCR) to secondary contact recreation 1 (SCR1).

Caney Creek (Segment 0502B), first listed in 2006, is on the 2020 IR 303(d) list for bacteria. An RUAA has been completed on this creek to address these impairments. The RUAA identified the presumed use of PCR for Caney Creek is appropriate.

Cypress Creek (Segment 0502E), first listed in 2010, is on the 2020 IR 303(d) list for DO. A concern is also listed in this segment for impaired habitat and macrobenthic community.

Segment 0503 – Sabine River above Caney Creek - From a point immediately upstream of the confluence with Caney Creek in Newton County up to Toledo Bend Dam in Newton County.

Station 10398 (SR3) – Sabine River at US 190 east of Bon Wier, TX
Station 10340 (BA4) – Anacoco Bayou at LA Hwy 111 crossing southwest of Knight, LA
Station 10399 (SR5) – Sabine River at SH 63 east of Burkeville, TX

Station 10401 (TB6S) – Sabine River below Toledo Bend Reservoir at right abutment of spillway for dam (LA)
Station 15660 (BT1) – Bayou Toro at LA SH 392 in Sabine Parish SW of Hornbeck, LA

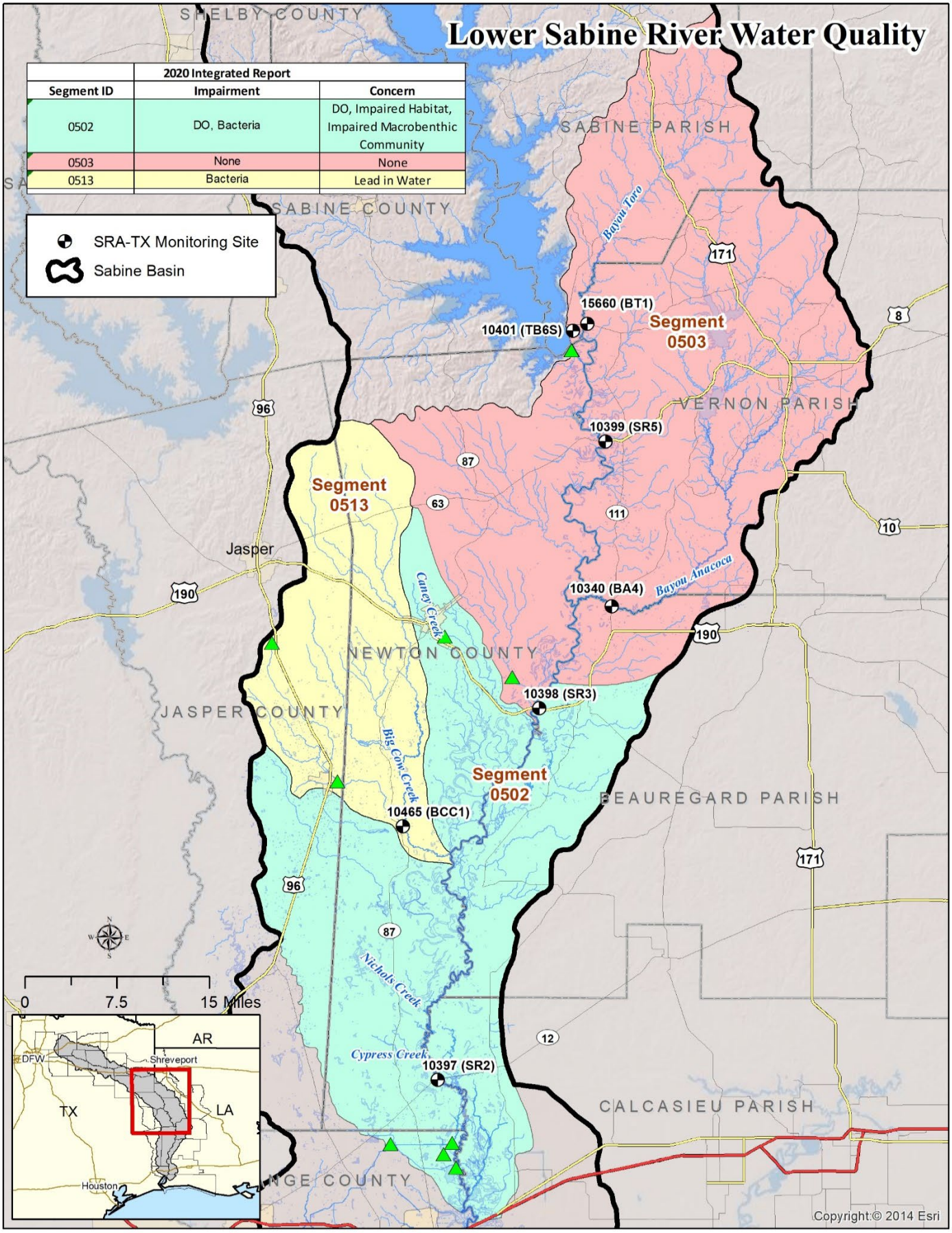
The 2020 IR indicates no impairments in this segment. In FY 2021, there was one pH exceedance and four bacteria exceedances at Station 15660. Station 10401 could not be sampled twice due to spillway release.

Segment 0513 – Big Cow Creek – From the confluence with the Sabine River in Newton County to a point 4.6 kilometers (2.9 miles) upstream of R 255 in Newton County.

Station 10465 (BCC1) – Big Cow Creek at FM 1416 south of Bon Wier, TX

In FY2021, Station 10465 had three bacteria exceedances. In the 2020 IR, Segment 0513 has an impairment for bacteria in water and a screening level concern for lead in water. Potential sources for lead in water include non-point and upstream sources.

Big Cow Creek at FM 1416


Lower Sabine River Water Quality
2020 Integrated Report
Segment ID | Impairment | Concern
0502 | DO, Bacteria | DO, Impaired Habitat, Impaired Macrobenthic Community
0503 | None | None
0513 | Bacteria | Lead in Water
SRA-TX Monitoring Site
Sabine Basin
SHELBY COUNTY
SABINE COUNTY
SABINE PARISH
VERNON PARISH
NEWTON COUNTY
JASPER COUNTY
BEAUREGARD PARISH
CALCASIEU PARISH
Jasper
Segment 0513
Segment 0503
Segment 0502
15660 (BT1)
10401 (TB6S)
10399 (SR5)
10340 (BA4)
10398 (SR3)
10465 (BCC1)
10397 (SR2)
Bayou Toro
Bayou Anacoca
Caney Creek
Big Cow Creek
Nichols Creek
Cypress Creek
96
87
63
111
171
8
10
190
12
0
7.5
15 Miles
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DFW
Shreveport
Houston
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Segment 0504 – Toledo Bend Reservoir – From Toledo Bend Dam in Newton County to a point immediately upstream of the confluence of Murvaul Creek in Panola County, up to the normal pool elevation of 172 feet (impounds the Sabine River).

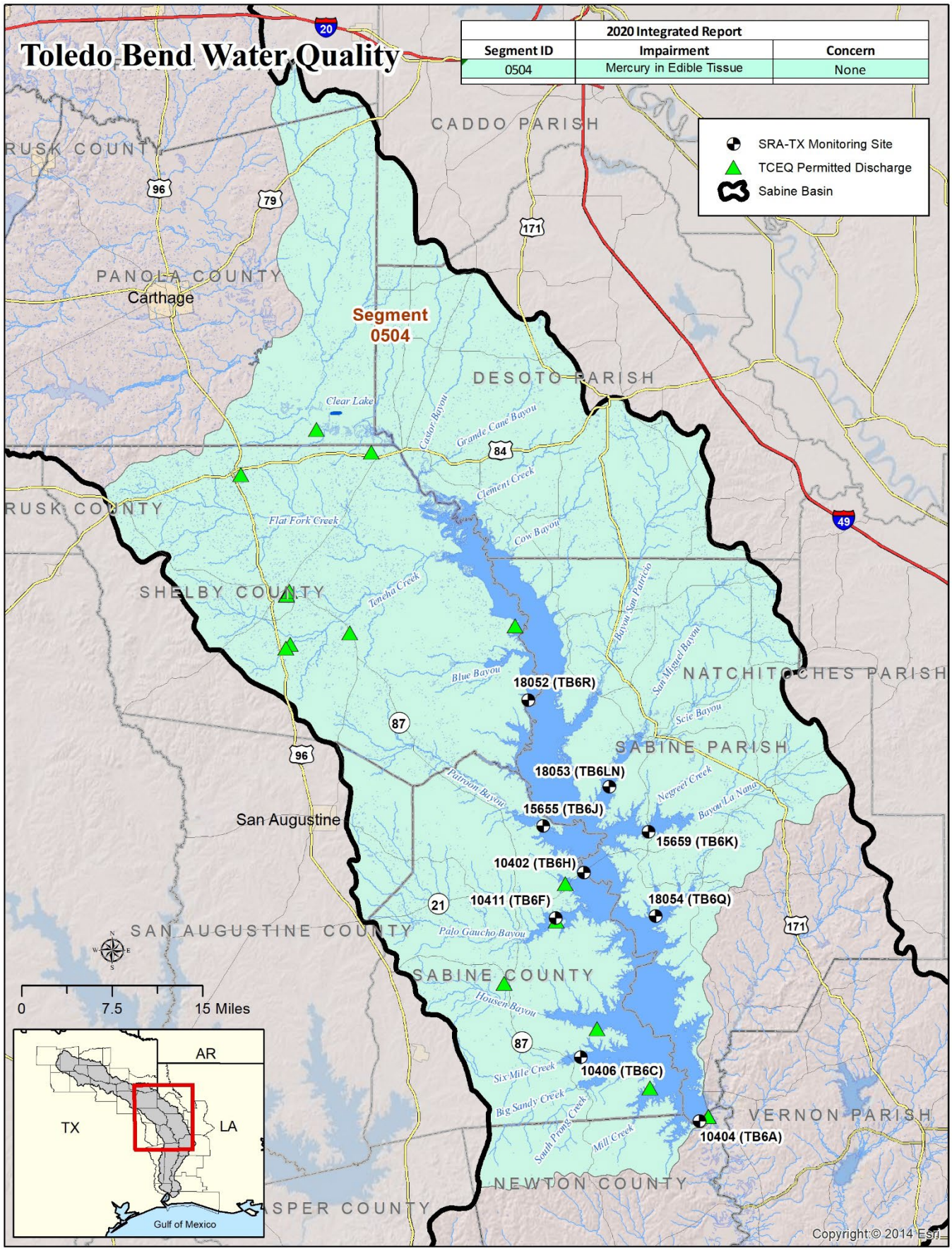
Station 10404 (TB6A) – Toledo Bend Reservoir main lake above the dam at the old river channel.
Station 10406 (TB6C) – Toledo Bend Reservoir in Six Mile boat lane 0.8 kilometers east of SH 87.
Station 18054 (TB6Q) – Toledo Bend Reservoir in Negreet Bayou (LA)
Station 10411 (TB6F) – Toledo Bend Reservoir in Sunshine Bay near FM 3121 bridge
Station 10402 (TB6H) – Toledo Bend Reservoir at SH 21 northeast of Milam, TX
Station 15659 (TB6K) – Toledo Bend Reservoir Lanana Bayou at LA SH 191 in Sabine Parish west of Many, LA
Station 15655 (TB6J) – Toledo Bend Reservoir in Patroon Bayou Branch at FM 276
Station 18053 (TB6LN) – Toledo Bend Reservoir in San Miguel arm boat lane (LA)
Station 18052 (TB6R) – Toledo Bend Reservoir at Ragtown recreation area

In FY2021, Station 15659 and Station 18053 each had one exceedance for pH. There were no bacteria exceedances.

The 2020 IR indicates no water quality impairments in Segment 0504, although the TDSHS issued a fish consumption advisory for Toledo Bend Reservoir since 1998 for largemouth bass and freshwater drum due to elevated levels of mercury in fish tissue. Additional information regarding fish consumption advisories can be found at http://www.dshs.texas.gov/seafood/advisories-bans.aspx.

Clear Lake (Segment 0504E) also has a TDSHS fish consumption advisory due to elevated levels of mercury in fish tissue that was first issued in 2006.

Toledo Bend Reservoir


Toledo Bend Water Quality
2020 Integrated Report
Segment ID
Impairment
Concern
0504
Mercury in Edible Tissue
None
SRA-TX Monitoring Site
TCEQ Permitted Discharge
Sabine Basin
CADDO PARISH
RUSK COUNTY
PANOLA COUNTY
Carthage
Segment 0504
DESOTO PARISH
Clear Lake
Castor Bayou
Grande Cane Bayou
Clement Creek
Flat Fork Creek
Cow Bayou
SHELBY COUNTY
Tenaha Creek
Bayou San Patricio
San Miguel Bayou
NATCHITOCHES PARISH
Blue Bayou
18052 (TB6R)
Scie Bayou
SABINE PARISH
18053 (TB6LN)
Patroon Bayou
Negreet Creek
Bayou La Nana
15655 (TB6J)
15659 (TB6K)
San Augustine
10402 (TB6H)
10411 (TB6F)
18054 (TB6Q)
SAN AUGUSTINE COUNTY
Palo Gaucho Bayou
SABINE COUNTY
Housen Bayou
10406 (TB6C)
Six Mile Creek
Big Sandy Creek
South Prong Creek
Mill Creek
10404 (TB6A)
VERNON PARISH
NEWTON COUNTY
JASPER COUNTY
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TX
LA
Gulf of Mexico
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Upper Basin Segments

Segment 0505 - Sabine River Above Toledo Bend Reservoir - From a point immediately upstream of the confluence of Murvaul Creek in Panola County to a point 100 meters (110 yards) downstream of US 271 in Gregg County.

Station 10415 (SR10) – Sabine River at FM 2517
Station 13628 (SR11) – Sabine River at US 59
Station 10427 (SR16) – Sabine River at SH 42

Sabine River at FM 2517

Water quality parameters measured during FY2021 satisfy the TSWQS with the exception of bacteria. While all stations were well below the geomean criteria for bacteria (126 MPN/100 mL), stations 10415 and 13628 exceeded single grab TSWQS numeric criteria twice for bacteria, while station 10427 had one single grab exceedance. The single grab exceedances all coincided with increased flows due to runoff following rain events. Potential bacteria sources, such as urban runoff, wildlife waste, on-site sewage treatment systems, and municipal point source discharges are flushed through the river by watershed runoff following heavy rain.

The Sabine River from Hatley Creek upstream to Grace Creek in Gregg County (AU 0505_04) was first listed in 2002 and remains on the IR 303(d) List for bacteria.

Grace Creek (Segment 0505B) was first listed in 2000 and remains on the IR 303(d) List for bacteria. Following the results of a joint TCEQ and SRA-TX 24-hour DO Study at site 21590, that was completed in October 2015, Grace Creek was removed from the list for DO impairment. The Grace Creek watershed is located in the largest urban area in the basin. Findings from a completed RUAA to address elevated bacteria levels support the revision of Grace Creek from a PCR to SCR1.

Rabbit Creek (Segment 0505D), an unclassified water body first listed in 2000 and delisted in 2004, has a concern for bacteria in the 2020 IR.

Ward's Creek (Segment 0505G) first listed in 2000, remains on the IR 303(d) List for DO and has a concern for impaired habitat. Intermittent, low gradient streams in east Texas such as Ward's Creek often have periods of depressed DO as a natural process.

Hills Lake (Segment 0505O), an oxbow lake 13 miles east of Carthage, was first listed in 2006 and remains on the 2020 Texas IR 303(d) List due to a TDSHS fish consumption advisory for mercury in edible fish tissue for freshwater drum and largemouth bass.

Segment 0509 Murvaul Lake – From Murvaul Dam in Panola County up to the normal pool elevation of 266.3 feet (impounds Murvaul Bayou).

SRA-TX does not monitor on this segment.

The TCEQ IR indicates no impairments to the reservoir's designated uses and no screening level concerns.

Segment 0510 – Lake Cherokee – From Cherokee Dam in Gregg/Rusk County up to the normal pool elevation of 280 feet (impounds Cherokee Bayou).

Lake Cherokee was first listed in 2014 on the IR 303(d) List for low pH and has a screening level concern for depressed DO. Low pH is typically observed during times of extreme drought. Local geology and natural conditions such as acidic soils are potential sources for depressed pH in Lake Cherokee. Segments 0510_01 and 0510_02 were removed from the 2020 IR for sulfate in water.

The City of Longview monitored Station 15514 nine months in FY2021 under the SRA-TX Quality Assurance Project Plan (QAPP).

Segment 0506 - Sabine River below Lake Tawakoni - From a point 100 meters (110 yards) downstream of US 271 in Gregg County to Iron Bridge Dam in Rains County.

Station 10428 (SR17) – Sabine River at US 271
Station 10429 (SR19) – Sabine River at SH 14 south of Hawkins
Station 10430 (SR21) – Sabine River at US 69

Water quality parameters measured in this segment during FY2021 meet the TSWQS with the exception of bacteria. Stations 10428 and 10430 each exceeded the bacteria single grab TSWQS numeric criteria three times and Station 10429 had two single grab exceedances.

Harris Creek (Segment 0506A), first listed in 2000, remains on the IR 303(d) List for depressed DO and a use concern was noted for bacteria.

Wiggins Creek (Segment 0506C) remains on the IR with a screening level concern for ammonia and depressed DO.

Big Sandy Creek at White Oak Rd.

Segment 0514 – Big Sandy Creek – From the confluence with the Sabine River in Upshur County to a point 2.6 kilometers (1.6 miles) upstream of SH 11 in Hopkins County.

Station 10468 (BS1) – Big Sandy at SH 155

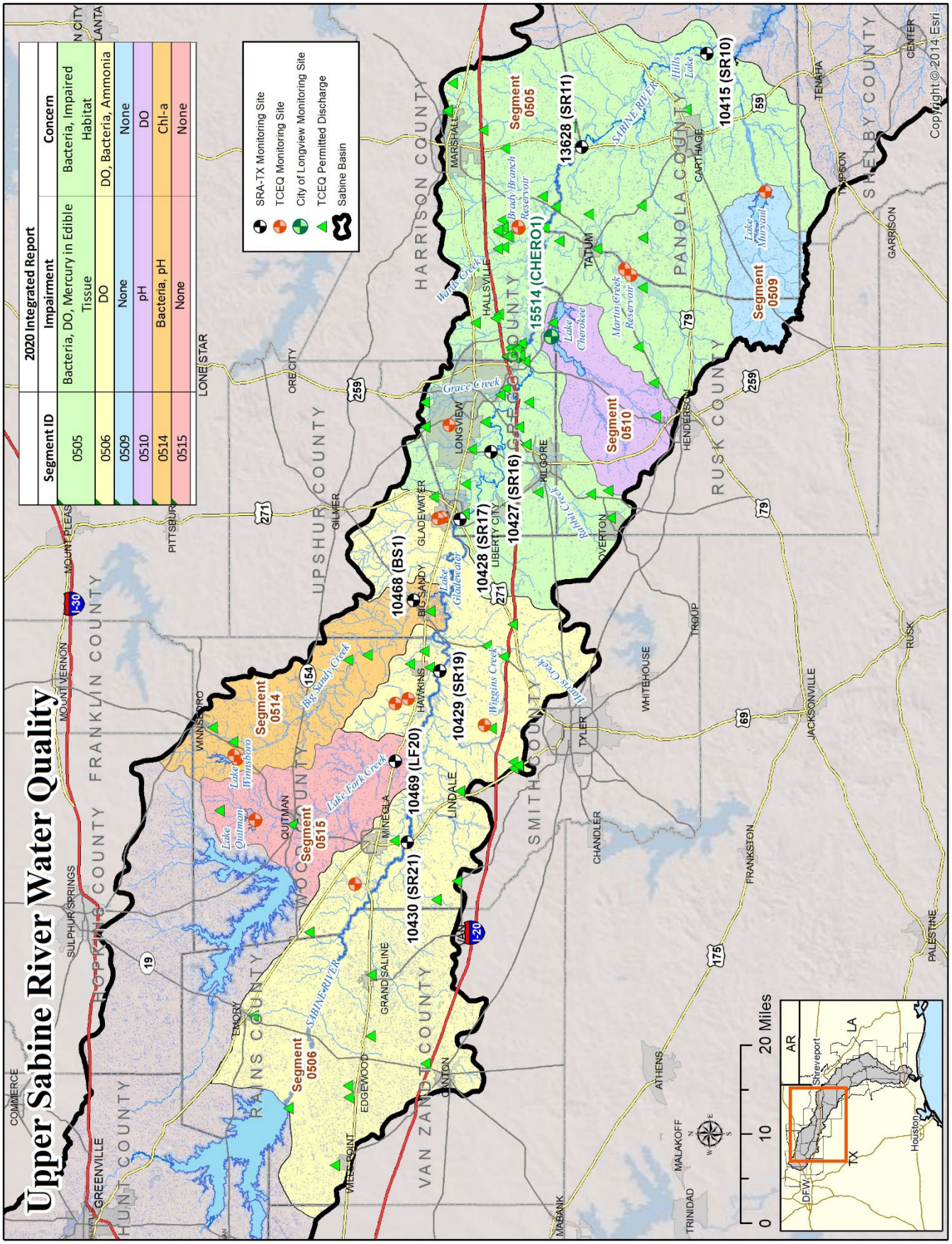
Water quality parameters measured in this segment during FY2021 meet the TSWQS except for bacteria, with three exceedances of the TSWQS single grab numeric criteria.

This segment was first listed on the 303(d) List in 2006 for bacteria. The upper reach from the Lake Winnsboro Dam upstream to a point upstream of SH 11 in Hopkins County (0514_02) was listed in 2018 for low pH. The lower reach of Big Sandy Creek from the confluence with the Sabine River in Upshur County upstream to the Lake Winnsboro Dam (0514_01) remains on the IR 303(d) List for bacteria. The upper reach was removed from the 2020 303(d) List for bacteria and remains on the list for low pH. Elevated bacteria levels coincide with runoff producing rain events. Non-point bacteria sources within this watershed include urban runoff, agriculture, silviculture, wildlife, and private septic systems. Low pH is naturally occurring in spring fed, sandy creeks in east Texas. Lake Winnsboro also had a screening level concern for Chl-a.

Segment 0515 – Lake Fork Creek - From the confluence with the Sabine River in Wood County to Lake Fork Dam in Wood County.

Station 10469 (LF20) – Lake Fork Creek at US80

The IR indicates no impairments in this segment and water quality parameters measured in this segment during FY2021 meet the TSWQS. Station 10469 exceeded the TSWQS single grab numeric criteria once for bacteria.


Upper Sabine River Water Quality
2020 Integrated Report
Segment ID | Impairment | Concern
0505 | Bacteria, DO, Mercury in Edible Tissue | Bacteria, Impaired Habitat
0506 | DO | DO, Bacteria, Ammonia
0509 | None | None
0510 | pH | DO
0514 | Bacteria, pH | Chl-a
0515 | None | None
SRA-TX Monitoring Site
TCEQ Monitoring Site
City of Longview Monitoring Site
TCEQ Permitted Discharge
Sabine Basin
10468 (BS1)
10469 (LF20)
10428 (SR17)
10427 (SR16)
10429 (SR19)
10430 (SR21)
15514 (CHERO1)
13628 (SR11)
10415 (SR10)
Segment 0505
Segment 0506
Segment 0509
Segment 0510
Segment 0514
Segment 0515
Lake Winnsboro
Lake Quitman
Lake Fork Creek
Big Sandy Creek
Lake Gladewater
Grace Creek
Lake Cherokee
Martin Creek Reservoir
Brady Branch Reservoir
Hills Lake
Lake Murvaul
Wiggins Creek
Hollis Creek
Rabbit Creek
Walls Creek
Sabine River
HUNT COUNTY
FRANKLIN COUNTY
TITUS COUNTY
WOOD COUNTY
RAINS COUNTY
VAN ZANDT COUNTY
UPSHUR COUNTY
GREGG COUNTY
HARRISON COUNTY
SMITH COUNTY
PANOLA COUNTY
RUSK COUNTY
SHELBY COUNTY
GREENVILLE
COMMERCE
SULPHUR SPRINGS
MOUNT VERNON
MOUNT PLEASANT
WINNSBORO
QUITMAN
EMORY
GRAND SALINE
EDGEWOOD
WILLS POINT
CANTON
PITTSBURG
GILMER
ORE CITY
LONE STAR
GLADEWATER
LONGVIEW
HALLSVILLE
MARSHALL
KILGORE
LIBERTY CITY
HAWKINS
MINEOLA
LINDALE
TYLER
CHANDLER
OVERTON
HENDERSON
TATUM
CARTHAGE
WHITEHOUSE
TROUP
JACKSONVILLE
FRANKSTON
ATHENS
MALAKOFF
TRINIDAD
MABANK
PALESTINE
TENAHA
GARRISON
CENTER
RUSK
I-30
I-20
19
154
271
259
79
69
175
59
179
0
10
20 Miles
AR
LA
TX
Shreveport
DFW
Houston
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Segment 0512 – Lake Fork Reservoir – From the Lake Fork Dam in Wood County up to the normal pool elevation of 403 feet (impounds Lake Fork Creek).

Station 10458 (LF2) – Lake Fork Reservoir near dam in creek channel
Station 10462 (LF4) – Lake Fork Reservoir mid-cove in Lake Fork Creek arm at FM 515
Station 10461 (LF3) – Lake Fork Reservoir mid-arm in Caney Creek arm at FM 515

Lake Fork Reservoir

Water quality parameters measured by SRA-TX during FY2021 meet TSWQS and fully support this segment's designated use. The IR indicated no impairments in Lake Fork Reservoir. The upper Lake Fork Creek arm (AU 0512_05), which was listed in 2016 for elevated pH, was removed from the IR 303(d) list.

Running Creek (Segment 0512A) and Elm Creek (Segment 0512B), first listed in 2002, are on the IR 303(d) List for bacteria. A RUAA to address elevated bacteria concerns has been completed on each of these creeks. The RUAA findings support the revision of Running and Elm Creeks from PCR to SCR1.

Running Creek has screening level concerns for ammonia, nitrate and DO. Elm Creek has screening level concerns for ammonia and DO.

Segment 0507 – Lake Tawakoni – From the Iron Bridge Dam in Rains County up to the normal pool elevation of 437.5 feet.

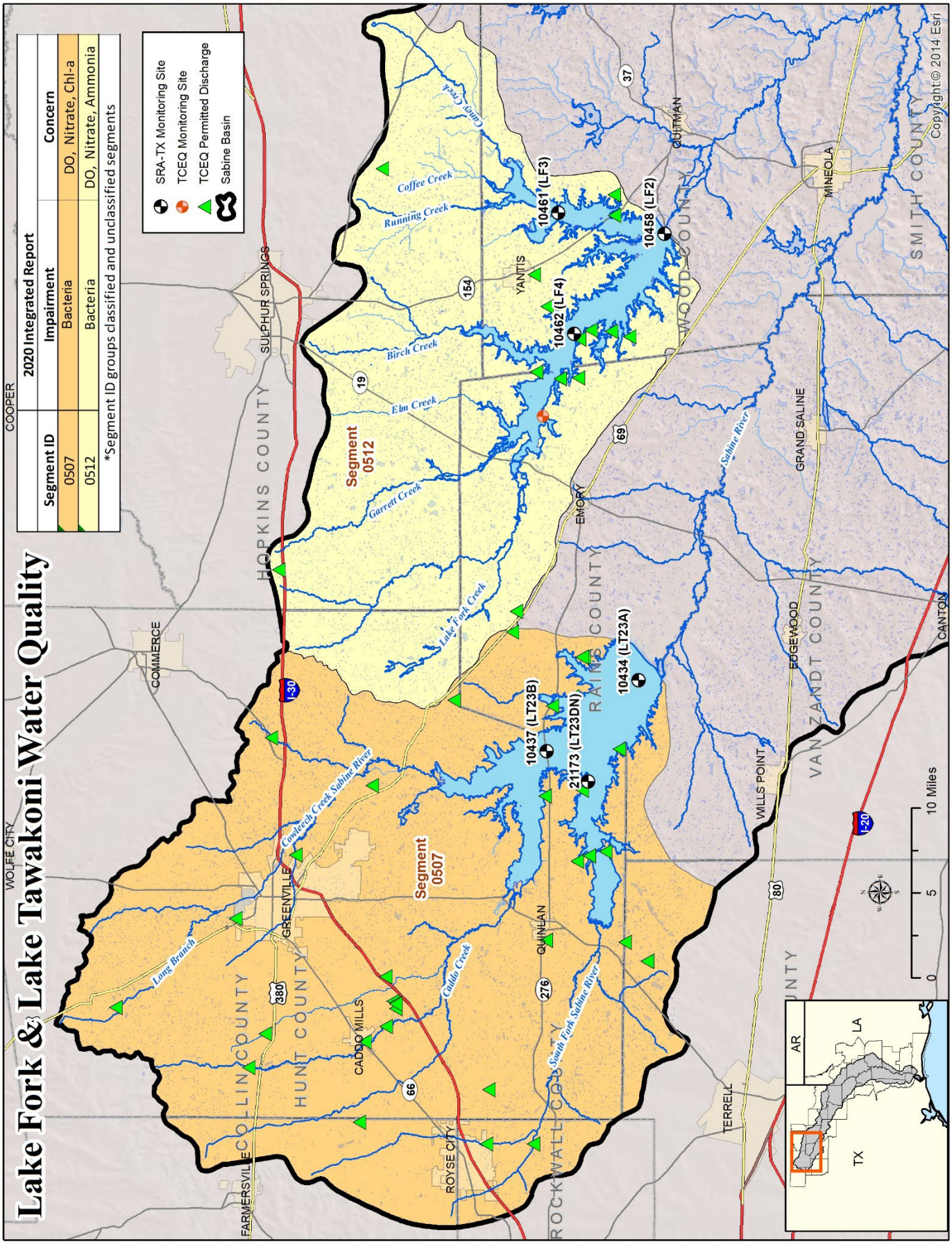
Station 10434 (LT23A) – Lake Tawakoni in the main lake near the dam
Station 21173 (LT23DN) – Lake Tawakoni in Waco Bay equidistant from finger and spring points
Station 10437 (LT23B) – Lake Tawakoni at SH 276

Water quality parameters measured by SRA-TX during FY2021 meet TSWQS.

The South Fork of the Sabine River (Segment 0507G), first listed in 2006, is on the IR 303(d) List for bacteria. A completed RUAA supports the revision of the South Fork of the Sabine River from PCR to SCR1.

The Cowleech fork of the Sabine River (Segment 0507A) has screening level concerns for nitrate, DO and Chl-a. Long Branch (Segment 0507B) has a screening level concern for nitrate, and Caddo Creek (Segment 0507H) has a screening level concern for DO. The South Fork of the Sabine River, Cowleech Fork of the Sabine River, Long Branch, and Caddo Creek are all unclassified waterbodies.

Lake Tawakoni Spillway


Lake Fork & Lake Tawakoni Water Quality
2020 Integrated Report
Segment ID
Impairment
Concern
0507
Bacteria
DO, Nitrate, Chl-a
0512
Bacteria
DO, Nitrate, Ammonia
*Segment ID groups classified and unclassified segments
SRA-TX Monitoring Site
TCEQ Monitoring Site
TCEQ Permitted Discharge
Sabine Basin
Segment 0512
Segment 0507
10461 (LF3)
10458 (LF2)
10462 (LF4)
10437 (LT23B)
21173 (LT23DN)
10434 (LT23A)
Coffee Creek
Running Creek
Birch Creek
Elm Creek
Garrett Creek
Lake Fork Creek
Caney Creek
Cooleech Creek
Sabine River
Long Branch
Caddo Creek
South Fork Sabine River
COOPER
WOLFE CITY
COMMERCE
SULPHUR SPRINGS
YANTIS
QUITMAN
MINEOLA
GRAND SALINE
EMORY
WILLS POINT
EDGEWOOD
CANTON
GREENVILLE
QUINLAN
CADDO MILLS
ROYSE CITY
TERRELL
FARMERSVILLE
HOPKINS COUNTY
WOOD COUNTY
SMITH COUNTY
RAINS COUNTY
VAN ZANDT COUNTY
COLLIN COUNTY
HUNT COUNTY
ROCKWALL COUNTY
I-30
I-20
154
19
37
69
380
276
66
80
AR
LA
TX
0
5
10 Miles
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Stakeholder Participation and Public Outreach

SRA-TX annually coordinates the water quality monitoring plans of the TCEQ, basin entities, and interested participants. All entities are encouraged to participate under the SRA-TX QAPP.

Currently, CRP sampling of Lake Cherokee is performed by the City of Longview.

The Sabine Basin Steering Committee meetings allow for stakeholder input and concerns to help prioritize and implement water quality monitoring in the Sabine River Basin. The 2020 Sabine Basin Steering Committee and Coordinated Monitoring meeting was held virtually. Members of the public, water supply corporations, permitted dischargers, councils of government, SRA-TX laboratory customers, and city and county officials are invited annually to participate. Prior Steering Committee discussions have included the current TCEQ Texas IR assessment, water quality updates and concerns, the SRA-TX water conservation and contingency plans, the SRA-TX Community Assistance Program, special studies, future monitoring needs, and invasive species management. For more information about participating in the Sabine Basin Steering Committee meetings please contact Luke Sanders, Senior Biologist, at (903) 878-2262 or lsanders@sratx.org.

The SRA-TX continues to promote participation in the OCTMDL Project by publicizing and facilitating the annual stakeholder meetings. The first stakeholder meeting since the I-Plan was approved was held on September 22, 2016, at the SRA-TX offices in Orange. Stakeholders presented their activities over the previous year by email in lieu of an in-person meeting. The latest set of stakeholder activities was collected and sent to TCEQ on June 8, 2021. As a form of educational outreach, SRA-TX recently participated in a Watershed Stewardship Workshop held in Orange on October 21, 2021. The event was presented by Texas A&M AgriLife Extension and the Texas State Soil and Water Conservation Board in cooperation with SRA-TX.

In FY2021 SRA-TX began a multi-year process of collecting surface water quality data in several of the OCTMDL's impaired AUs to assess the current status of the impairments. The sampling incudes the collection of both bacteria and 24hr parameters. An additional component of the project is to collect monthly grab samples at Adams Bayou Above Tidal (0508_01) and Gum Gully (0508B_01) to assist in the evaluation of tidal influence in these areas. TCEQ conducted a TMDL Quality Systems Field Audit from August 23-30, 2021. The audit assessed the SRA-TX implementation of quality assurance activities related to the TMDL program.

The Sabine River Authority has a long history of supporting academic studies and cooperating with state and federal agencies to educate and inform the public while raising awareness of conservation issues in the Sabine Basin. For example, SRA-TX helps inform the public on the Alligator Snapping Turtle's (AST) protected status in Texas. SRA-TX continues to promote conservation efforts through posting educational signs at local boat ramps that also serve to collect sighting data of AST for researchers. Furthermore, SRA-TX helped coordinate and implement the re-patriating of approximately 30 ASTs back to East Texas in June 2021. These turtles were confiscated by federal game wardens over two years ago in a turtle poaching sting operation. The re-patriation was a resounding success that has furthered partnerships with state and federal resource agencies while also paving the way for continued research using radio telemetry to document AST movements and habitat use in the Sabine, Neches, and Big Cypress Basins in Texas. Additional public outreach efforts include providing presentations at area schools, civic groups, and environmental events as well as hosting school programs and various groups at the SRA-TX facilities.

How to Get Involved

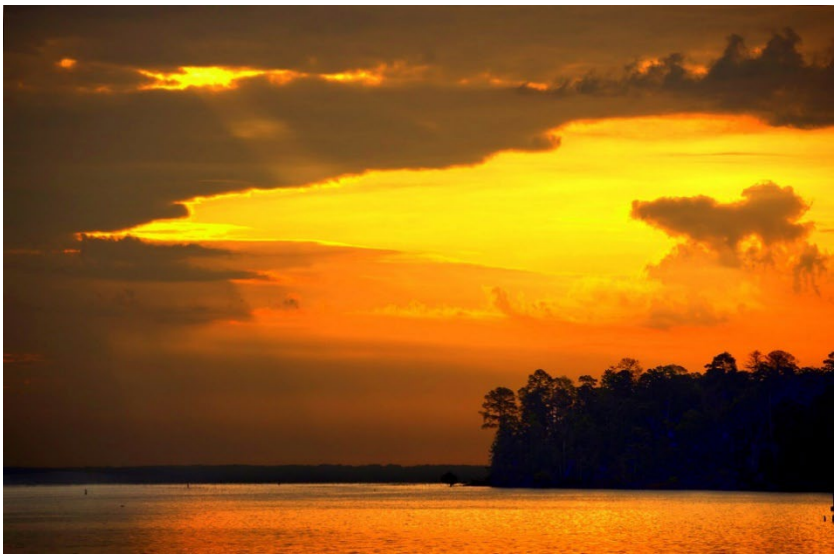
The SRA-TX continues to support the Texas Stream Team, a citizen monitoring program of The Meadows Center for Water and the Environment at Texas State University. This group is a cooperative partnership of TCEQ, Texas State University, and the United States Environmental Protection Agency (USEPA). For more information visit: https://www.meadowscenter.txstate.edu/Leadership/TexasStreamTeam.html

Spills, fish kills, or illegal dumping may be reported to the TCEQ at: https://www.tceq.texas.gov/p2/dont-mess-with-texas-water-a-way-to-report-illegal-dumping, or to the TPWD at https://tpwd.texas.gov/landwater/water/environconcerns/kills_and_spills/regions/ .

Web Site

The SRA-TX's website, http://www.sratx.org/, provides CRP stakeholders with access to information regarding water resource topics within the Sabine Basin including the following:

- CRP program, CRP meetings, and links to the TCEQ and other CRP Planning Partner websites are available at: http://www.sratx.org/srwmp/CRP/default.asp . The page also includes web links to the SRA-TX Coordinated Monitoring Schedule and the TCEQ CRP Data Tool.
- The latest water quality information for the Sabine River Basin can be found in the current monthly water quality monitoring program reports: https://www.sratx.org/conservation/water-quality/water-quality-monitoring/



Toledo Bend Reservoir