

Sabine River Authority of Texas



Sabine River Near Orange, Texas

Sabine River Basin Highlights 2006



www.sratx.org

- *Prepared in Cooperation with
the Texas Commission on Environmental Quality
Under the Authorization of the Texas Clean Rivers Act*
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2006 Sabine Basin Highlights

The Sabine River Authority of Texas (SRA-TX) has maintained a proactive role in water quantity and quality matters since initial operational activities began in 1954 and has expanded its services to meet increasing needs throughout the Sabine River Basin. The SRA-TX water quality management program, established in 1972, is reviewed annually to help protect and manage the water resources in the Sabine Basin.

The Texas Clean Rivers Program (TCRP) is a collaborative effort between Texas Commission on Environmental Quality (TCEQ), Texas Parks & Wildlife Department (TPWD), the TCRP Partners, agencies, local entities, and the public. This integrated approach to water quality management reduces duplication of effort and provides for the best use of limited resources. The goal is to maintain and improve the quality of water resources within each river basin in Texas through regional assessments of watersheds. The SRA-TX collects and analyzes water quality data in the Sabine Basin to identify and prioritize water quality concerns and the causes of pollution. The SRA-TX is the planning agency for all TCRP activities in the Sabine Basin.

Sabine River Watershed Management Program

SRA-TX takes a holistic approach to water management and recognizes that quality and quantity are inherently interdependent. The subwatershed inventory, data analysis, and screening studies supplement routine monitoring and are used to help identify areas of water quality concerns or possible concerns, allowing the focus of additional monitoring resources on problem areas. Encouraging public participation increases the awareness of the impact of human activities on water quality, fosters watershed ownership, and provides an additional communication path for the public to provide local insight to the SRA-TX. Other issues in the Sabine Basin include water supply planning, water conservation, and environmental flows.

Summary of Current Water Quality Conditions

The keys below illustrate the symbols used in the following pages:

<p>Station ID Station Name</p> <p>SO4 pH Cl- DO E. coli Chl a Entero. NH4 TDS OP NOx</p>	— Regulatory Parameters	
	pH – Acid Balance	Screening Results
	DO – Dissolved Oxygen	Not Applicable (N/A)
	TDS – Total Dissolved Solids	Insufficient Data (ID) Count < 10
	Entero. – Enterococci	Fully Supporting Designated Use (FS) % Exceedances <=10%
	<i>E. coli – Escherichia coli</i>	Partially Supporting Designated Use (PS) % Exceedances > 10% and <= 25%
	Cl – Chloride	Not Supporting Designated Use (NS) % Exceedances > 25%
	SO4 – Sulfate	
	- - - Non-Regulatory Parameters	
	Chl a – Chlorophyll a	Screening Criteria
	NH4 – Ammonia	Insufficient Data (ID) Count < 10
	NOx – Nitrate & Nitrite	No Concern % Exceedances <= 25%
	OP – Orthophosphate	Concern % Exceedances > 25%

Sabine Basin water quality conditions were summarized using the most recent five years of water quality data from long-term, routine monitoring sites and compared to the Texas Surface Water Quality Standards established by the TCEQ (Stream Standards) and screening criteria also developed by the TCEQ. The Clean Water Act Section 303(d) requires that water bodies not meeting established water quality standards be listed as impaired. Support for the designated uses of the water bodies was determined by calculating the percent of compliance with the Stream Standards. A minimum of ten samples for a parameter is required to perform the comparison. Regulatory parameters include pH, dissolved oxygen, total dissolved solids, *E. coli*, Enterococci, chloride, and sulfate. Non-regulatory parameters include chlorophyll a, ammonia, nitrate, nitrite, and orthophosphate. These non-regulatory parameters do not have established limits, but screening criteria have been set by the TCEQ and standards are being developed for at least some of the parameters to be included in the next revision of Stream Standards.

Most of the routine monitoring sites in the Sabine Basin have excellent water quality. The primary water quality issues identified in the Sabine Basin are elevated bacteria levels and low dissolved oxygen. These conditions tend to be in small streams, often with low elevation gradients. In most cases the exceedances are localized or occur infrequently and do not appear to significantly impact the designated use of the water body. Some of the impacts are due to excessive loading from point sources, but many of the concerns are the result of non-point source pollution or natural conditions.

Reach 7

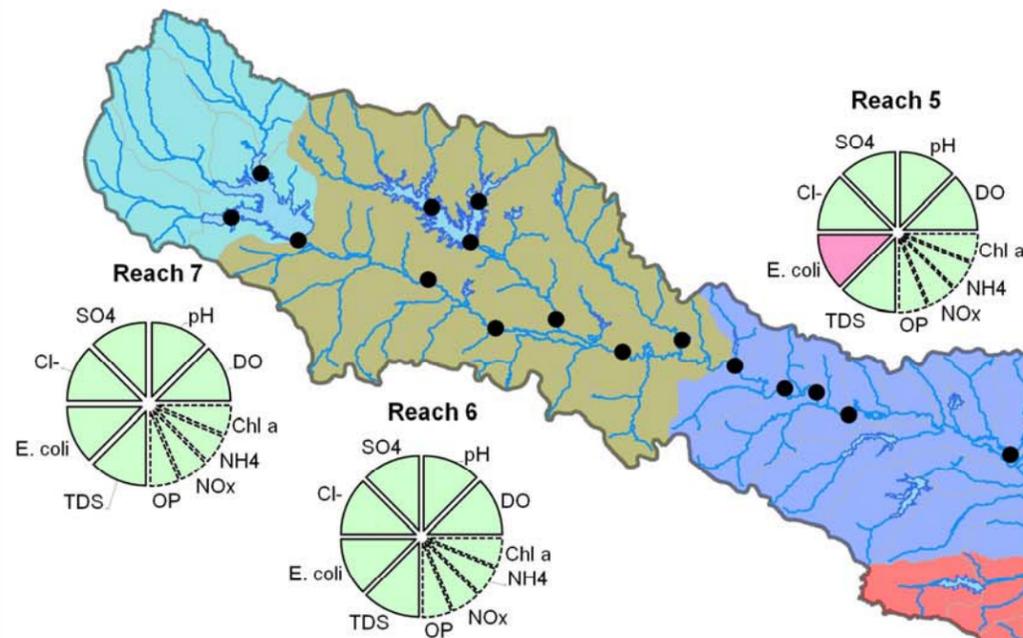
All of Reach 7 subwatersheds drain into Lake Tawakoni (Segment 0507), a public water supply reservoir. Although much of Reach 7 is rural, it contains one of the four largest cities in the Sabine Basin.

Water Quality

Elevated levels of bacteria and depressed dissolved oxygen have been detected in some tributaries to the reservoir, but no impacts to the reservoir have been detected. The conditions appear to be related to the intermittent nature of the streams and perhaps non-point sources. Lake Tawakoni was listed as impaired, but 24-hour dissolved oxygen sampling has shown no depressed levels and the depressed dissolved oxygen listing for the reservoir is slated to be removed.

Lake Tawakoni Watershed Protection Programs

The SRA-TX is continuing to develop an Environmental Response and Watershed Protection Plan for Lake Tawakoni and its watershed. The TCEQ also developed a Source Water Assessment and Protection program to assist the thirteen local public water supply systems that draw from Lake Tawakoni in preventing contamination of drinking water supplies. The initiative was funded by the TCEQ and authorized by the Safe Drinking Water Act. For more information please see: http://www.tceq.state.tx.us/permitting/water_supply/pdw/SWAP/index_swp.html



Reach 5

Reach 5 includes Segment 0505 (Sabine River Above Toledo Bend Reservoir), which is used extensively for water supply. Also included is Segment 0510 (Lake Cherokee, a water supply reservoir). Reach 5 has the highest concentration of population in the Sabine Basin and contains a large section of the East Texas Oilfield. There are numerous industries in this reach as well as six cities with populations above 5,000.

Water Quality

Elevated bacteria levels and low dissolved oxygen have been observed periodically over the last five years downstream from the City of Longview and in the Grace Creek Subwatershed. One main-stem site has been included on the 303(d) List for elevated bacteria levels. The site is located at Highway 149 near Longview and the causes have not been identified.

Wards Creek is also included on the 303(d) List for low dissolved oxygen, but the sample site was not sampled under the SRA-TX QAPP and is not representative of the stream.



Reach 6

This reach includes Segments 0506 (Sabine River Below Lake Tawakoni), 0514 (Big Sandy Creek), 0515 (Lake Fork Creek), and Lake Fork Reservoir (Segment 0512), which is a public water supply reservoir. Reach 6 is largely a rural area, but Segment 0512 historically had numerous dairies.

Water Quality

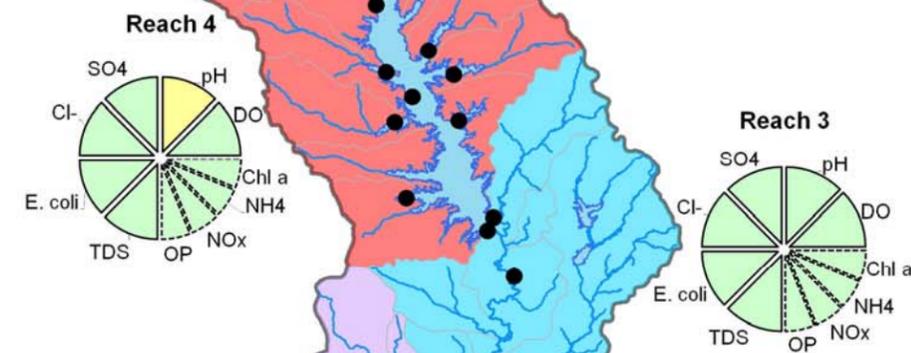
No impairments in water quality were found in the main-stem of the Sabine River in this reach, but concerns have been identified in three subwatersheds in Reach 6. Observations in the Harris Creek Subwatershed showed low dissolved oxygen levels. Elevated levels of bacteria were also observed in the Running Creek and Elm Creek Subwatersheds.

Reach 4

Reach 4 includes Segment 0504 (Toledo Bend Reservoir) and Segment 0509 (Murvaul Lake). This reach is dominated by Toledo Bend Reservoir and has no major cities or industries.

Water Quality

Concerns have been identified in Toledo Bend Reservoir associated with two subwatersheds in this Reach. Possible concerns for low dissolved oxygen were identified in a few isolated, small arms of the reservoir. The low dissolved oxygen levels were observed in the summer months, but the low values appear to be due to ambient conditions and no biological impairments were observed. Elevated pH values were observed in a few isolated areas of the reservoir, but these conditions do not appear to impair overall water quality in the reservoir. Toledo Bend Reservoir was included on the 303(d) List for mercury in fish tissue. The Texas Department of State Health Services (DSHS), fish consumption advisory is still in effect for largemouth bass and freshwater drum in Toledo Bend Reservoir due to elevated levels of mercury in fish tissue.



Reach 3

Reach 3 is largely a rural area with no major cities and few industries. Reach 3 includes Segment 0503 and is influenced by two major tributaries (Bayou Anacoco and Bayou Toro) from Louisiana.

Water Quality

The data analyses indicate no water quality problems in any subwatershed in Reach 3.

Reach 1

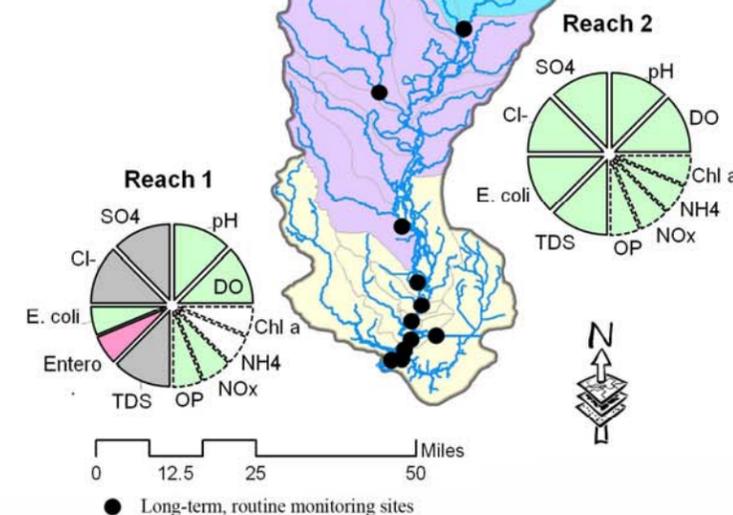
Includes Segments 0501 (Sabine River Tidal), 0508 (Adams Bayou Tidal), and 0511 (Cow Bayou Tidal). Although some areas are quite rural, this reach has two cities with populations greater than 5,000 and a variety of industries including petrochemical plants, a pulp and paper mill, and one electric generating plant.

Orange County TMDL Project

The Orange County TMDL Project is addressing the water quality impairments in the Adams Bayou Subwatershed and the Cow Bayou Subwatershed. The impairments included low dissolved oxygen, elevated bacteria, and high nutrients from point and non-point sources. The non-point sources include large populated areas using on-site sewage treatment systems that have historically functioned poorly in this area.

Other Water Quality Issues

Elevated bacteria levels have been detected periodically at two main-stem freshwater sites and one Louisiana tributary in this tidal reach. Although this is a tidal segment, the salinity levels are usually less than 1 ppt. Samples for enterococci have exceeded the numerical criteria in Stream Standards, but samples for *E. coli* have exceeded the limits only rarely in the last five years. A rookery located in the Blue Elbow Swamp upstream of these locations is the probable source of the enterococci group of bacteria.



Reach 2

Includes Segment 0502 (Sabine River Above Tidal) and Segment 0513 (Big Cow Creek). This is largely a rural area with no major industries or cities.

Water Quality

Data analyses have shown water quality problems in one subwatershed in Reach 2. The Nichols Creek Subwatershed is included on the 303(d) List due to low dissolved oxygen and elevated bacteria levels. Nichols Creek is characterized by sluggish flow and the water quality conditions appear to be due to natural conditions. No biological impairments have been observed and there are no permitted discharges in this sparsely populated subwatershed.

Sabine River Watershed Management Program

Water Quality

➤ Public Participation and the Basin Steering Committee

The Sabine Basin Steering Committee allows stakeholders to have an active role in addressing water quality issues in the Sabine Basin. The Basin Steering Committee meetings are held throughout the Basin to encourage participation from all of the stakeholders.

➤ Quality Assurance Project Plan (QAPP)

This document includes all of the details about the SRA-TX monitoring programs, the project definition and background, and all of the quality assurance requirements to ensure the data collected are accurate. The QAPP also ensures that the data collected are representative of the water body being sampled.

➤ Data Collection, Management, and Analysis

The collection, management, and analysis of water quality data is accomplished through an integrated program that includes a comprehensive monitoring program, a data management plan, and statistical analyses of historical and current data.

➤ Geographic Information System (GIS)

The SRA GIS provides analysis and spatial representation of the multiple factors that influence water quality.

➤ Subwatershed Inventory

Inventories of factors that can impact water quality for the Sabine Basin are incorporated as GIS layers as they become available. Water quality monitoring data from each subwatershed are interpreted using GIS, and new monitoring is prioritized based on the specific factors within the subwatershed.

➤ World Wide Web Project

SRA-TX's World Wide Website, www.sratx.org, provides the Sabine Basin Steering Committee and other stakeholders with access to information and data regarding water resource issues within the Sabine River Basin.

Water Quantity

➤ Water Supply Planning

Management of the Basin's water resources is part of SRA-TX's legislative responsibility to ensure that high quality water is available to meet the needs of the population and the value of the resource is protected. After meeting the long-term needs of the Basin, the SRA is responsible to provide water for broader use by the State of Texas.

➤ Water Conservation and Drought Contingency Planning

SRA-TX views water conservation and drought contingency planning as an integral part of meeting near-term and long-term water supply needs. Water conservation and drought contingency planning is necessary to extend existing supplies, ensuring the wise use of available resources, but cannot be counted on alone to meet the growing demands of an expanding population and the associated economic development.

➤ Environmental Flows

Environmental flows encompass instream flows and estuarine freshwater needs. The SRA-TX has worked to achieve a leadership role in water management planning efforts in Texas through participation in water-related committees, workshops, development, and implementation of water quality monitoring programs within the watersheds of the Sabine River. SRA-TX is confident the balance between man's water supply needs and those of the environment can be achieved and that we have an excellent opportunity for a win/win long-term solution in meeting those needs.

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Water quality in the Basin is generally excellent, predominantly meeting Stream Standards for water supply and contact recreation. Impairments to water quality have been identified in isolated areas, primarily due to elevated bacteria levels and depressed dissolved oxygen levels. SRA-TX is working with the stakeholders in the Basin, the Texas Commission on Environmental Quality, the Texas Parks and Wildlife Department, the Texas Water Development Board, and other state and local entities to address water quality issues and ensure that the water resource needs of the Sabine Basin are met. Through the partnership in the Texas Clean Rivers Program, the SRA-TX continues to strengthen its ability to protect and conserve the vital water resources for all of the Sabine Basin Stakeholders.



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