Water Quality

The Southeast Texas region is home to various bodies of water that are essential to the lives of its residents. It is crucial to ensure the long-term preservation of these bodies of water.

The South East Texas Regional Planning Commission was awarded funding through the Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (TCEQ) to develop a SETRPC Water Quality Action and Outreach Plan.

Why is water quality important?

Clean water is essential for life as we know it. It is necessary for drinking, cooking, and sanitation purposes. Water also plays a critical role in various industries, including agriculture, manufacturing, and energy production. Water affects population and economic growth more than any other resource.

Historically, water quality standards have improved in the US. Since the passing of the Clean Water Act [1]in 1972, there have been great strides to clean up our Nation's waterways and prevent further contamination.

[1]https://www.epa.gov/laws-regulations/summary-clean-water-act

The Clean Water Act of 1972 established the basic structure for regulating discharges of pollutants into waterways and set regulations on water quality standards for surface waters.

The Clean Water Act provides the following protections:

- Gave the EPA the authority to implement pollution control programs such as setting wastewater standards for industries.
- Maintained existing requirements to set water quality standards for all contaminants in surface waters.
- Made it unlawful for any person to discharge any pollutant from a point source into navigable waters (unless a permit was obtained under its provisions).
- Funded the construction of sewage treatment plants under the construction grants program.
- Recognized the need for planning to address the critical problems posed by nonpoint source pollution.

Southeast Texas Water Resources

Southeast Texas has a variety of water sources, including rivers, lakes, and groundwater. However, the water quality in these sources can vary depending on various factors, such as pollution and natural contaminants. Major rivers that run through the region are the Neches and Sabine Rivers, and the primary Aquifer in the area is the Gulf Coast Aquifer System.

The Neches River is a 416-mile-long river that flows entirely within Texas before emptying into Sabine Lake near the city of Port Arthur. The Neches River's tributaries in Southeast Texas are the Angelina River, Village Creek, Pine Island Bayou, and B.A. Steinhagen Reservoir. Along the Angelina River is the Sam Rayburn Dam and Reservoir, located northwest of Jasper. The purposes of the Sam Rayburn Dam and Reservoir are flood control, hydroelectric power generation, and conservation of water for municipal, industrial, agricultural, and recreational uses. The purposes of B. A. Steinhagen Lake are to reregulate the intermittent power releases of Sam Rayburn Dam, provide a head for hydroelectric power and diversion into a water supply canal, and provide some water storage for flood control. Parts of Jefferson, Orange, Hardin, and Jasper Counties are in the Neches River Basin, commonly called the Lower Neches River Basin. Most of Jefferson County is also in the Neches-Trinity Coastal Basin. The Lower Neches Valley Authority provides for the present and long-term freshwater needs of municipal, agricultural, and industrial customers, and protects water quality in the Neches River and the Neches-Trinity Coastal Basin. The Neches Basin is the third largest river basin whose watershed area is entirely within Texas and the fourth largest by average flow volume.

The Sabine River, which is a 360-mile-long river that forms part of the boundary between Texas and Louisiana, flows into Sabine Lake before making its way into the Gulf of Mexico. The Sabine River has the second-largest average flow volume of any river in Texas and shares surface water use with Louisiana. Most of Orange County and eastern Jasper County are located within the Sabine River Basin. The region's high precipitation and low evaporation rates make the Sabine Basin the second-largest average watershed yield of any major river basin in Texas.

The Sabine and Neches Rivers are undeniably among the most significant waterways in Texas. Their invaluable contribution to the state's economy and the endless outdoor recreation opportunities they offer make them an integral part of the landscape. Both rivers are known for their excellent fishing, especially for catfish and bass. The Sabine River is also popular for boaters and water skiers, while the Neches River offers scenic canoe and kayak trips. Besides their recreational value, the Sabine and Neches Rivers are critical transportation routes for transporting goods and commodities, including petroleum and agricultural products, making them a vital component of Texas's natural and economic landscape.

The primary Aquifer in the area is called the Gulf Coast Aquifer System, which includes the Chicot, Evangeline, and Jasper aquifers. It runs along the Gulf of Mexico coast, stretching from the Louisiana border to the Mexican border. Covering an area of 41,970 square miles, it spans fifty-six counties in Texas.

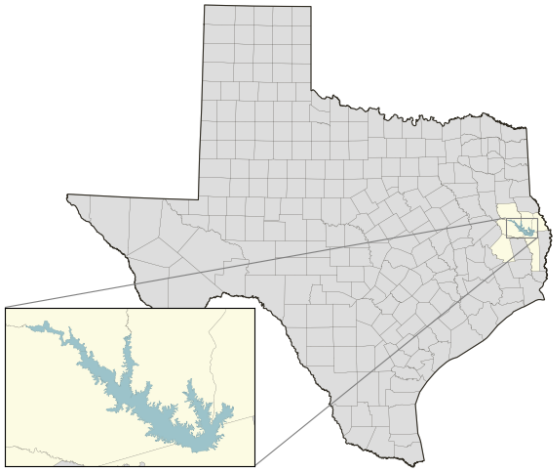
Texas Water Development Board Data

Reservoirs in Southeast Texas:

B. A. Steinhagen Lake[2]

[2] https://waterdatafortexas.org/reservoirs/individual/b-a-steinhagen

Sam Rayburn Reservoir[3]



Best Practices

Water Conservation

- Use less water! One easy step is to take shorter showers. Also, instead of letting the water run while shaving or brushing your teeth, run it just to wet and rinse your razor or toothbrush. Turning off the tap can save up to 200 gallons of water a month.
- Check for leaks! The most common types of leaks are worn toilet flappers, dripping faucets, and other leaking valves both inside and outside the home. Fixing household water leaks can save around 10% on water bills.
- Avoid watering in the middle of the day. Watering in the morning allows for the water to be absorbed before evaporating in midday heat. If using sprinklers, use larger drops close to the ground. The water in misters can evaporate quickly. Watering too heavily or too often weakens your lawn and causes erosion and runoff pollution.

Visit both the TCEQ[4] *and* EPA[5] *on ways to conserve water.*

Nonpoint Source (NPS) Pollution

"Nonpoint source" refers to pollutants that do not have a specific point of origin. These pollutants are generally carried by runoff. As the runoff flows over the land, it might pick up nutrients, oxygen-demanding substances, sediments, toxic substances, bacteria, and other pollutants. Nonpoint source pollution includes runoff that contains:

NPS Pollution include:

- Excess fertilizers, herbicides, or insecticides from agricultural lands and residential areas

[3] https://waterdatafortexas.org/reservoirs/individual/sam-rayburn
[4] https://www.tceq.texas.gov/response/drought/conservation.html
[5] https://www.epa.gov/watersense

- Motor oil, grease, or toxic chemicals from urban areas (roadways, parking lots, etc.)
- Sediment from poorly managed construction sites, agricultural lands, or logging sites
- Bacteria from a faulty septic system, livestock waste, or pet waste
- Household chemicals that were improperly disposed of

To learn more about NPS pollution, please visit the TCEQ[6]*.*

Water Quality Resources

Federal Resources

The United States Environmental Protection Agency (EPA) is the federal agency that handles most water quality issues.

About the EPA [7]

The Office of Water (OW) is a division under the EPA that ensures drinking water is safe, and restores and maintains oceans, watersheds, and their aquatic ecosystems to protect human health, support economic and recreational activities, and provide healthy habitat for fish, plants, and wildlife.

About the OW [8]

Drinking Water Regulations Overview: EPA sets legal limits on over ninety contaminants in drinking water. The legal limit for a contaminant reflects the level that protects human health and that water systems can achieve using the best available technology. EPA rules also set water-testing schedules and methods that water systems must follow.

Drinking Water Regulations Overview [9]

Schools and Childcare Facilities Technical and Case Study Presentations on Reducing Lead in Drinking Water in Schools and Childcare Facilities: EPA host webinars on lead testing and reduction in drinking water in schools and childcare facilities. These webinars include presentations from federal agencies, states, school districts, and/or water systems on best practices, lessons learned, challenges, funding, and available resources.

Schools and Childcare Facilities Technical and Case Study Presentations on Reducing Lead in Drinking Water in Schools and Childcare Facilities[10]

State Resources

The Texas Commission on Environmental Quality (TCEQ) is the environmental agency for the state. The TCEQ maintains water quality and availability for municipalities, businesses, and homeowners.

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[6] https://www.epa.gov/nps/what-nonpoint-source
[7] https://www.epa.gov/aboutepa/our-mission-and-what-we-do
[8] https://www.epa.gov/aboutepa/about-office-water
[9] https://www.epa.gov/dwreginfo/drinking-water-regulations
[10] https://www.epa.gov/dwreginfo/technical-and-case-study-presentations-reducing-lead-drinking-water-schools-and-child

About the TCEQ [11]

Water Quality: Rivers, Lakes, and Estuaries: surface water quality standards for rivers, lakes, and estuaries; monitor and assess their status; and implement pollution control projects to protect or restore natural waterways.

Water Quality: Rivers, Lakes, and Estuaries[12]

Wastewater and Stormwater: Types of wastewaters and stormwater permits and registrations, and how to apply for them. Permitting requirements. Participating in the permitting process.

Wastewater and Stormwater[13]

Groundwater and Wells: Assessing and protecting groundwater, drinking water and its source. Operating groundwater-treatment plants and water wells.

Groundwater and Wells[14]

The TCEQ Total Maximum Daily Load (TMDL) Program works with communities to improve water quality in rivers, lakes, and estuaries in Texas.

TCEQ Total Maximum Daily Load (TMDL) Program[15]

Local Resources

The Lower Neches Valley Authority is one of the 23 River Authorities created by the State of Texas to develop and manage the waters of the State. Each of these River Authorities was granted powers to conserve, store, control, preserve, utilize, and distribute the waters of its respective area for the benefit of its residents.

LNVA Website[16]

The Sabine River Authority of Texas (SRA-TX) was created as a conservation and reclamation district with responsibilities to control, store, preserve, and distribute the waters of the Sabine River and its tributary system for useful purposes.

SRA-TX Website[17]

The Basics

General Information

United States Environmental Protection Agency (EPA) Basic Information about Your Drinking Water[18]

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[11] https://www.tceq.texas.gov/agency/about-the-tceq
[12] https://www.tceq.texas.gov/waterquality
[13] https://www.tceq.texas.gov/permitting/wastewater
[14] https://www.tceq.texas.gov/groundwater
[15] https://www.tceq.texas.gov/waterquality/tmdl/tmdlprogram.html
[16] https://lnva.dst.tx.us/
[17] https://www.sratx.org/
[18] https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-your-drinking-water

Infographic on how your water system works. Learn about how water gets to your drinking water tap every day, the different types of public water systems and the basics of a Consumer Confidence Report.

Infographic: How does your water system work?[19]

If you are looking to become more educated regarding Water Quality the Texas Commission on Environmental Quality (TCEQ) has a great document explaining key terms and important information regarding the programs in Texas.

Preserving & Improving Water Quality[20]

Regardless of whether you have your own water supply, get water from a public water system, or operate a public water system, you might have to take special steps to ensure that your drinking water is safe after the well or water treatment plant has been flooded.

After the Flood: Is Your Water Safe to Drink?[21]

Inform and educate Texans about the most precious natural resource Texas possesses, its water.

Texas Parks & Wildlife's Texas Waters: Exploring Water and Watersheds [22]

TPW Magazine Water Issues[23]

Ways to Protect Water

This brochure includes the definition of source water, how it can become contaminated, some easy things homeowners and individuals can do to help, and background and contact information for the Source Water Protection Program and the Drinking Water Inventory and Protection Team.

Protect Your Water Source[24]

Communities, citizen groups, and individuals can take an active role in protecting their drinking water sources from contamination. The resources below provide information about source water protection and steps you can take at the local level to protect your drinking water.

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[19] https://www.epa.gov/sites/default/files/2017-10/documents/epa-ogwdw-publicwatersystems-final508.pdf
[20] https://www.tceq.texas.gov/publications/gi/gi-351
[21] https://www.tceq.texas.gov/drinkingwater/homeland_security/flood_safewater.html
[22] https://tpwd.texas.gov/publications/pwdpubs/media/pwd_bk_k0700_1931_watershed_curriculum.pdf
[23] https://tpwd.texas.gov/education/water-education/stateofwater/magazine
[24] https://www.tceq.texas.gov/downloads/drinking-water/swap/gi-604-reader.pdf

How Can You Help Protect Source Water?[25]

Wise water conservation habits help people and wildlife in times of plenty and in drought. Including tips on how to cut your water bill, save your yard, and helping wildlife.

Drought Survival[26]

The State recognizes that private landowners are stewards of a natural resource in which many of the benefits are accrued to the public. Ninety-seven percent of Texas' land is privately owned and managed, and as such, management decisions on these lands are made by private landowners. Because economics often dictate what these management strategies will be, the Wetlands Assistance Guide for Landowners was developed as a comprehensive guide to federal, state, and private programs offering technical and/or financial assistance to private wetland owners within the State of Texas. The programs are designed to enhance, create, and conserve wetlands in Texas in exchange for technical, financial, and educational assistance to private landowners.

Wetlands Assistance Guide for Landowners[27]

Conducting a water audit can help you save money by reducing your home water bill (and sewer bill if you are connected to a public sewer system). Conducting a water audit will make you aware of how you use your water and help to identify ways you can minimize water use by implementing certain conservation measures. It is possible to cut your water usage by as much as 30 percent by implementing simple conservation measures and without drastically modifying your lifestyle.

Conducting a Household Water Audit[28]

In the summer, outdoor water use can account for 50 to 80 percent of home water use.

Conserving Water Outdoors[29]

With rising costs of operations for many businesses, conserving water is one way to cut costs without compromising services.

Water Conservation for Industries, Businesses, and Institutions[30]

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[25] https://www.epa.gov/sourcewaterprotection/how-can-you-help-protect-source-water#everyday
[26] https://tpwd.texas.gov/education/water-education/stateofwater
[27] https://www.landcan.org/pdfs/pwd_bk_r0400_0020_11_00.pdf
[28] https://www.landcan.org/article/Conducting-a-Household-Water-Audit/145/
[29] http://www.twdb.texas.gov/publications/brochures/conservation/doc/Conserving_Water_Outdoors_brochure_2019.pdf?d=44582
[30] http://www.twdb.texas.gov/publications/brochures/conservation/doc/Industrialbrochure-final.pdf?d=44582

Texas farmers and ranchers are leading the way in agricultural water conservation and innovation, implementing regional water planning strategies to address future water needs.

Agricultural Water Conservation in Texas[31]

For Educators

Texas Parks & Wildlife: Water Education Overview[32]

Through the Texas Water Specialist program, you can become a part of a corps of well-informed volunteer specialists who provide education, outreach, and service dedicated to the beneficial management of aquatic resources and aquatic habitats within the community for the state of Texas.

Become a Texas Waters Specialist[33]

Texas Parks and Wildlife's documentaries explore the rich diversity of the Gulf's unique ecology, diverse flora and fauna and important habitats.

Texas: The State of Water[34]

Lesson Plans, Teacher Guides, and activities for Students K-12

Drinking Water Activities for Students and Teachers [35]

These trunks are available for loan free of charge to formal and informal educators, and youth leaders. Each trunk contains activities and materials appropriate for multiple age level groups.

Loaner Trunks[36]

Web site serves as the gateway to the agency's K-12 conservation education resources. The web site also features visualization, interactive games, and other activities to help students learn about key concepts.

The TWDB Kids [37]

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[31] http://www.twdb.texas.gov/publications/brochures/conservation/doc/Agricultural-Water-Conservation-in-Texas.pdf?d=44582
[32] https://tpwd.texas.gov/education/water-education
[33] https://tpwd.texas.gov/education/water-education/texaswatersprogram/texaswatersspecialist
[34] https://tpwd.texas.gov/education/water-education/stateofwater/vidlist
[35] https://www.epa.gov/ground-water-and-drinking-water/drinking-water-activities-students-andteachers
[36] https://tpwd.texas.gov/education/resources/resources/loaner-trunks
[37] http://www.twdb.texas.gov/conservation/education/kids/index.asp

In the "Water for Texas" coloring and activity book, Billy the Bull, Amanda Armadillo, Sally Mander, and Grandpa Lizard guide children through fun facts about water in Texas, teach them the names of aquifers and rivers through word finds, give them information on how to conserve water at home, and apply what they have learned to create a story and draw a picture. There is even a maze and a connect-the-dots page. This entertaining 16-page booklet is targeted for ages Kindergarten through third grade.

Water for Texas Coloring Book[38]

Conservation Educational Resources[39]

The popularity of STEM learning has the potential to aid water conservation efforts by engaging young people to make a difference in our current and future water usage.

Water Conservation and STEM[40]

Take Care of Texas[41]

[38] http://www.twdb.texas.gov/publications/brochures/conservation/doc/ColoringBook.pdf?d=44582
[39] https://www.twdb.texas.gov/conservation/resources/educational-resources.asp#interactive
[40] https://techbootcamps.utexas.edu/blog/water-conservation-and-stem/
[41] https://takecareoftexas.org/water