



*Improving Water Quality in Matagorda Bay/Powderhorn Lake,
Tres Palacios Bay/Turtle Bay, Carancahua Bay, and Conn Brown Harbor*

Assessing Aquatic Life Uses

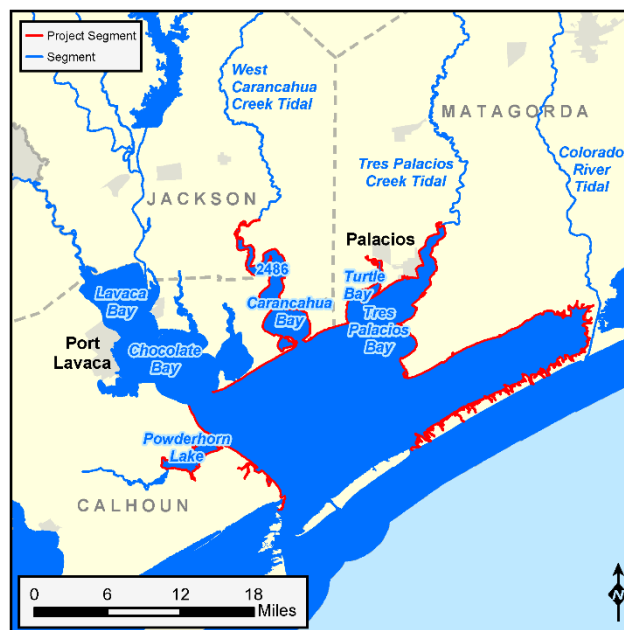
The state of Texas requires water quality in Matagorda Bay/Powderhorn Lake (Segment 2451), Tres Palacios/Turtle Bay (Segment 2452), and Carancahua Bay (Segment 2456) to be suitable for exceptional aquatic life, contact recreation, and the harvest and consumption of fish and oysters. Water quality in Conn Brown Harbor (Segment 2483A) must be suitable for intermediate aquatic life use, contact recreation, and the consumption of fish. Preliminary water quality testing found that prior to 2004:

- Dissolved oxygen concentrations were occasionally lower than the criterion established to assure optimum conditions for aquatic life in Matagorda Bay/Powderhorn Lake, Tres Palacios Bay/Turtle Bay, and Conn Brown Harbor.
- pH levels in Carancahua Bay appeared to be higher than the criterion established for general uses.
- Bacteria levels exceeded criteria established for the harvest of oysters in all segments except Conn Brown Harbor.

In response to these conditions, the TCEQ Total Maximum Daily Load (TMDL) Program initiated a project to confirm the impairments, determine the extent and severity of the low dissolved oxygen and high pH values, and determine the measures necessary to restore water quality in these bays and harbor. The bacteria impairment associated with the harvesting of oysters was addressed in a different project.

Oxygen gas, which dissolves in water, is essential for the survival of aquatic life. While the amount of dissolved oxygen in water fluctuates naturally, various human activities can cause unusually or chronically low dissolved oxygen levels, which may harm fish and other aquatic organisms.

The pH values for water bodies are equally important to the survival of aquatic life, since all biological processes are dependent on pH. pH is a measure of the hydrogen ion activity in a solution. pH values not within the range of the criterion are an indicator that there may be loadings to the system causing the water to become unbalanced (that is, too acidic or basic), which could cause harm to aquatic organisms.



Learn more about water quality standards, monitoring, and TMDLs by reading [Preserving and Improving Water Quality](#)¹, available on our website and in print.

Description of the Watersheds

The segments included as part of this project lie within the bays and estuaries basin, adjacent to two distinct coastal basins, the Colorado-Lavaca and the San Antonio-Nueces basins. Matagorda Bay/Powderhorn Lake, Tres Palacios Bay/Turtle Bay, and Carancahua Bay are all located within the Colorado-Lavaca Coastal Basin. This basin covers 939 square miles and is located in the coastal plain between the Colorado and Lavaca Rivers. Tres Palacios Creek is the primary source of freshwater to this area.

Conn Brown Harbor lies within the San Antonio-Nueces Coastal Basin. This basin drains a 2,652 square mile area and lies in the coastal plain between the San Antonio and Nueces Rivers. The primary sources of freshwater to this coastal area are the Mission and Aransas rivers.

The Colorado-Lavaca Coastal Basin includes portions of Matagorda, Wharton, Jackson, and Calhoun counties. Cities within this basin include Palacios, Point Comfort, and La Ward. The San Antonio-Nueces

¹ <https://www.tceq.texas.gov/publications/gi/gi-351>

Coastal Basin includes portions of Aransas, Refugio, Goliad, Bee, and San Patricio counties. Cities within this basin include Rockport, Refugio, Ingleside, Aransas Pass, Beeville, Portland, Sinton, Taft, and Bay-side.

These bays are an ecologically important part of the Texas coast that includes both freshwater and saltwater marshes, along with open estuaries. They are home to a diverse assemblage of flora and fauna, including several species of shrimp, fish, crabs, and oysters used by commercial and sport fishermen. The quality of water in these bays is an important component of this natural system and plays a vital role in the productivity of the area.

This area of Texas has many additional recreational uses including boating, birding, and swimming. Other uses in the watershed include production of oil and gas; cultivation of rice, sorghum, and cotton; livestock grazing of pastureland; and commercial and residential developments.

Project Development

TCEQ initiated this project in May 2004 through a contract with the University of Texas Marine Science Institute (UTMSI) in Port Aransas. Tasks included the review of existing data, development of a detailed water quality monitoring plan and quality assurance

project plan, and the implementation of those plans. The monitoring was completed in October 2006.

The results of the detailed monitoring showed that dissolved oxygen and pH levels in the bays and harbor were at or above the range necessary to support a healthy aquatic ecosystem. As a result of this new data, Bay/Powderhorn Lake (Segment 2451), Tres Palacios/Turtle Bay (Segment 2452), Carancahua Bay (Segment 2456) and Conn Brown Harbor (Segment 2483A) were removed from the state's list of impaired water bodies.

Public Participation

TCEQ, UTMSI, and Texas A&M University-Corpus Christi (TAMUCC) project staff sought to include comments and opinions from all interested parties. Stakeholders were identified and included in the planning, implementation, and deliberations throughout the duration of the project.

For More Information

Email us at tmdl@tceq.texas.gov or call us at 512-239-6682. Or visit the project webpage at:

www.tceq.texas.gov/waterquality/tmdl/62-mata-gorda.html

Highlights

- Monitoring for 24-hour dissolved oxygen, pH, and other routine field parameters began at seven stations in June 2004. The monitoring was conducted monthly throughout the index period (April-October) for assessment and continued through October 2006.
- Five public participation meetings were held between October 2005 and February 2007: four in Palacios and one in Corpus Christi. TCEQ, UTMSI, and TAMUCC project staff informed stakeholders of the results of the monitoring and discussed possible next steps.
- Monitoring results through October 2006 indicated that water quality standards were being met at all stations in the bays and harbor. Concerns remain for stations located in Palacios Harbor.
- Based on the monitoring results, the following segments were removed from the state's impaired waters list in 2006: Tres Palacios/Turtle Bay (2452), Matagorda Bay (2451), and Conn Brown Harbor (2483A) for dissolved oxygen; and Carancahua Bay (2456) for pH.

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