



Improving Water Quality in Adams and Cow Bayous

A TMDL Project for Bacteria, Dissolved Oxygen and pH

In 2002, assessment by the Sabine River Authority and TCEQ found that in two bayous in Orange County—Adams Bayou (Segment 0508) and Cow Bayou (Segment 0511)—along with most of their associated tributaries, low dissolved oxygen levels were not optimal for supporting aquatic life. In addition, high concentrations of *E. coli* bacteria may indicate a health risk to people who swim or wade in the water body—activities called “contact recreation” in the state’s standards for water quality. In Cow Bayou, pH values are also occasionally lower than criteria established to protect general water uses.

In 2002, the TCEQ initiated a total maximum daily load (TMDL) project to determine the measures necessary to restore water quality in the bayous. The goal of a TMDL is to determine the amount (or load) of a pollutant that a body of water can receive and still support its designated uses. The allowable load was allocated among all the potential sources of pollution within the watershed. Stakeholders then developed and implemented a plan to reduce pollution to meet target levels specified in the TMDL.

Oxygen, 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.

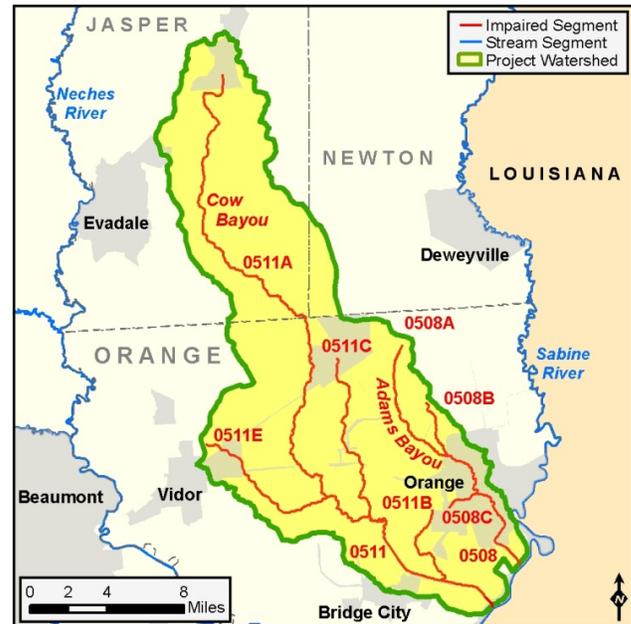
Bacteria from human and animal waste are associated with the presence of disease-causing microorganisms that may cause illness. Swimmers may have an increased risk of contracting gastrointestinal diseases.

Learn more about water quality standards and monitoring by reading *Clean Water for Texas: Working Together for Water Quality*, available on the Web at www.tceq.texas.gov/goto/tmdl/.

Adams and Cow Bayous Watershed

Adams Bayou and Cow Bayou are located in southeast Texas. Their combined watersheds cover almost 250 square miles in the coastal area of the Sabine River Basin. The topography of the region is relatively flat. The water flow in the bayous is intermittent, and periods of no flow are very common. The natural landscape is characterized by a heavy clay substrate and a mix of pine and deciduous trees.

The lower portion of the Adams Bayou watershed is urban, and includes most of the cities of Orange, West Orange, and Pinehurst. Although Segment 0508 in-



cludes only the lower, tidally-influenced portion of Adams Bayou, the area being evaluated in this project also includes the upper portion of Adams Bayou and two of its tributaries, Hudson Gully and Gum Gully. The lower portion of Adams Bayou has been dredged and channelized for navigation. Hudson Gully and Gum Gully have been channelized for drainage.

The Cow Bayou watershed is urban in some areas, and includes portions of the cities of Buna, Mauriceville, Vidor, and Bridge City. Large areas of the watershed are used for agriculture, including rangeland. Although Segment 0511 includes only the lower, tidally-influenced portion of Cow Bayou, the area being evaluated includes the upper portion of Cow Bayou and three of its tributaries, Cole Creek, Terry Gully, and Coon Bayou. The lower portion of Cow Bayou has been dredged and channelized for navigation. Several of its tributaries have been channelized for drainage.

Both watersheds are affected by municipal and industrial wastewater discharges and by storm water runoff from agricultural, industrial, and urban areas.

TMDL Development

The TCEQ contracted with Parsons Corporation and the Sabine River Authority of Texas (SRA-TX) to develop the TMDLs. Project tasks included review of ex-

isting water quality data; selection of water quality models; and the development of a monitoring plan.

The results of additional sampling were used to determine the sources and causes of water quality impairments and to model the fate and transport of constituents of concern. The modeling results were then used to determine the total maximum daily load of the constituents causing impairments. The TMDLs were completed and adopted by the TCEQ in June 2007 and approved by the EPA in August 2007.

I-Plan Development

Measures to reduce pollutant load are developed by stakeholders with support from the TCEQ. Stakeholders report the measures to the public in an implementation plan (I-Plan) for the watershed.

The Sabine River Authority and TWRI hosted public meetings in 2012 to get ideas and feedback from the public as they worked on the draft I-Plan. In 2013, stakeholders developed an initial draft I-Plan and collected informal feedback on it.

Public Participation

In all its projects, the TCEQ seeks to gather opinion and information from a variety of people with interest in the watershed. The Orange County TMDL Stakeholder Advisory Group provided advice and comment on development of the TMDL. The advisory group disbanded after the TCEQ adopted the TMDL.

The Sabine River Authority (SRA-TX) and the Texas Water Resources Institute (TWRI) coordinated stakeholder involvement in development of the implementation plan. The draft implementation plan was submitted for public comment in February of 2015. The implementation plan was given final approval by the commission on August 5, 2015.

For More Information

Contact one of the people listed below, or visit one of the project websites at:

<www.tceq.state.tx.us/goto/tmdl/>

or

<www.sra.dst.tx.us/srwmp/octmdl/default.asp>

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TMDL Status

Start Date: August 2002

TCEQ Adoption: June 13, 2007

EPA Region 6 Approval: August 28, 2007

I-Plan Status

TCEQ Approval: August 2015

Highlights

- The first ever Clean Bayous Fair was held in Orange in January 2005, with the support of the TMDL project. More than 400 attendees learned about the TMDL project and other water quality issues in the area while having a fun time.
- The TMDL report identified point and nonpoint sources of pollution as contributors to the impairments. Sources include municipal wastewater treatment facilities and failing onsite sewage facilities along with other nonpoint sources.
- The Orange County Health Department used 319 grant funds to replace 29 failing on-site septic systems in the area.
- The Sabine River Authority and TWRI hosted a series of public meetings during 2012 to get ideas and feedback from the public for use in developing a draft I-Plan.
- In 2013, stakeholders completed an initial draft I-Plan and collected informal feedback on it.
- In 2014, stakeholders continued to revise the plan based on local feedback and comments from the TCEQ.
- In February 2015, the draft I-Plan was submitted for public comment.
- On August 5, 2015, the commissioners approved the I-Plan.

Visit our website at: <www.tceq.texas.gov/goto/tmdl/>