



## Improving Water Quality in Adams and Cow Bayous A TMDL Project for Bacteria, Dissolved Oxygen and pH

### Water Quality in Adams and Cow Bayous

The state of Texas requires that most streams, lakes, and bays be suitable for swimming, wading, fishing, and a healthy aquatic environment. However, in two bayous in Orange County—Adams Bayou (Segment 0508) and Cow Bayou (Segment 0511) and most of their associated tributaries—low dissolved oxygen levels and elevated bacteria concentrations do not meet the water quality standards. In Cow Bayou, pH values are also occasionally lower than the criteria established to protect general water uses.

In response to these conditions, a total maximum daily load (TMDL) project has been initiated to determine the measures necessary to restore water quality in these 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 is allocated among all the potential sources of pollution within the watershed, and measures to reduce pollutant loads are developed.

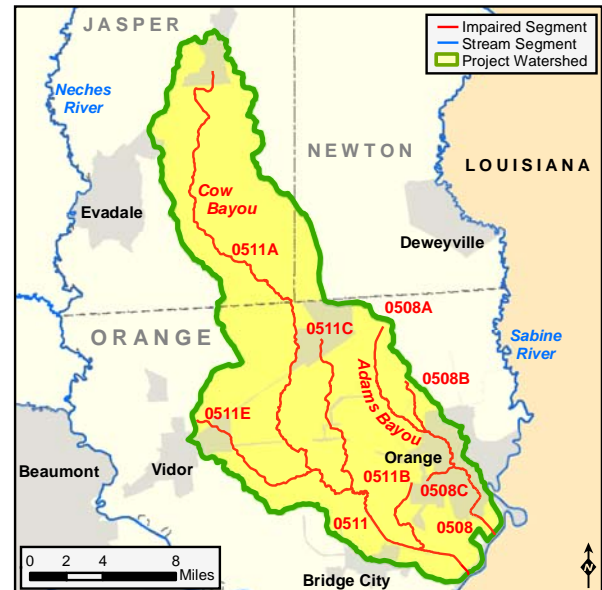
Oxygen, which dissolves in water, is essential for the survival of aquatic life. While the amount of dissolved oxygen in water fluctuates naturally, various human activities can cause unusually or chronically low dissolved oxygen levels.

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.org/goto/tmdl/](http://www.tceq.org/goto/tmdl/).

### Description of the Adams Bayou and Cow Bayou Watersheds

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



includes 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.

## Project Development

This project was initiated by the TCEQ in August 2002 through contracts with Parsons Corporation and the Sabine River Authority of Texas (SRA-TX). Project tasks included review of existing water quality data for the segment; selection of water quality models for determining permissible pollutant loadings and for allocating loadings for bacteria and dissolved oxygen; and the development of a monitoring plan to outline additional sampling strategies necessary to complete the TMDL. The results of additional sampling were used to determine the sources and causes of water quality impairments and to calibrate and verify the water quality models chosen to study the fate and transport of constituents of concern. Finally, the modeling results were used to determine the total maximum daily load of the constituents that cause the various impairments.

## Implementation Planning

The stakeholders are actively involved in development of the Implementation Plan. Meetings are being held to develop the best possible approach to improve the water quality of the bayous.

## Public Participation

The Orange County TMDL Stakeholder Advisory Group was formed to provide advice and comment on the project. Members represent government, permitted facilities, agriculture, business, environmental, and community interests in the Adams Bayou and Cow Bayou watersheds.

## TMDL Development Status

**Start Date:** August 2002

**Projected End Date:** August 2006

**TCEQ Adoption:** June 13, 2007

**EPA Region 6 Approval:** August 28, 2007

## For More Information

To find out more about upcoming meetings and progress of the project, contact one of the people listed below. Or visit the TCEQ Web site at <[www.tceq.org/goto/tmdl/](http://www.tceq.org/goto/tmdl/)>, or the SRA Web site at <[www.sra.dst.tx.us/srwmp/octmdl/default.asp](http://www.sra.dst.tx.us/srwmp/octmdl/default.asp)>.

### TCEQ Project Manager

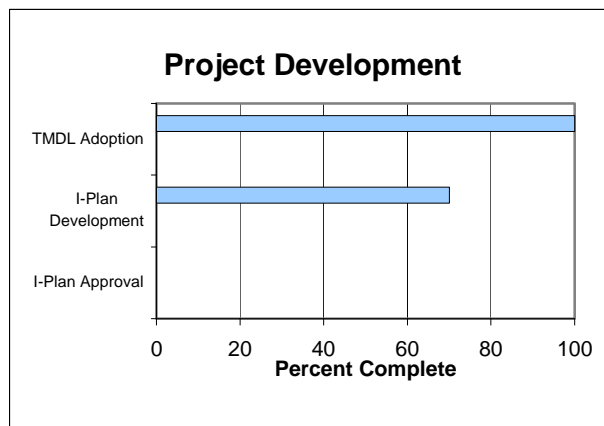
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## TMDL Project Highlights

- The first ever Clean Bayous Fair was held in Orange in January 2005. More than 400 attendees learned about the project and water quality issues in the area while having a fun time.
- The TMDL document identified point and nonpoint sources of pollution that contribute to the impairments. Sources include municipal wastewater treatment facilities, failing onsite sewage facilities, and other nonpoint sources.
- Work on the Implementation Plan is currently underway.
- Orange County Health Department is using 319 grant funds to replace failing on-site septic systems in the area.