



Improving Water Quality in Upper Oyster Creek A TMDL Project for Bacteria and Dissolved Oxygen

High concentrations of bacteria such as *E. coli*, which are found in both human and animal waste, indicate a possible health risk to people who swim or wade in Upper Oyster Creek—activities called “contact recreation” in the state’s standards for water quality. In addition, low dissolved oxygen concentrations in some areas of the creek indicate that conditions are not optimal for aquatic life.

The TCEQ is conducting a total maximum daily load project to determine the measures necessary to restore water quality in necessary to restore and maintain water quality in Upper Oyster Creek. 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 then allocated among categories of sources within the watershed, and stakeholders work with the state to develop measures that reduce pollutant loads.

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.

Bacteria are commonly found in the intestines of warm-blooded organisms such as humans, livestock, poultry, cats, and dogs. Bacteria from human and animal waste often indicate the presence of disease-causing microorganisms, which can pose a health threat to people who engage in contact recreation.

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/.

Upper Oyster Creek Watershed

Upper Oyster Creek is located within the Brazos River Basin, immediately southwest of Houston in northern Fort Bend County. Segment 1245, though named Upper Oyster Creek, also includes parts of Jones Creek, Oyster Creek, Flat Bank Creek, a diversion canal, and Steep Bank Creek. Upper Oyster Creek has been highly modified, and serves as a portion of a water conveyance system for the Gulf Coast Water Authority (GCWA). Water is pumped seasonally



nally into Upper Oyster Creek from the Brazos River to serve agricultural and industrial water needs along the segment, and is also pumped outside the Brazos River Basin by GCWA.

Segment 1245 begins at the Shannon Pump Station on the Brazos River and is impounded within the city of Sugar Land for transfer by GCWA. The segment extends below this impoundment before ending at its confluence with the Brazos River. Upper Oyster Creek is affected by municipal and industrial wastewater discharges and by stormwater runoff from agricultural, industrial, and urban areas.

The Upper Oyster Creek watershed (approximately 278 square kilometers) is rapidly becoming urbanized. Its estimated population increased more than 70 percent between 1990 and 2000. The watershed is located within the Coastal Plain, a region characterized by gently rolling to level terrain. It includes portions of Fort Bend County and the cities of Fulshear, Missouri City, Stafford, and Sugar Land.

TMDL Development

The Upper Oyster Creek TMDL project was initiated by the TCEQ in June 2001 through a contract with the Texas Institute for Applied Environmental Research (TIAER). Tasks in the project included review of existing water quality data for the segment,

selection of water quality models 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. Initially, two years of monitoring were planned for both bacteria and dissolved oxygen. The monitoring began in October 2002, and the bacteria monitoring concluded in December 2004. However, because the dissolved oxygen data showed pronounced differences between the two years, a third year of dissolved oxygen monitoring was conducted in 2005.

Development of an implementation plan for the TMDLs was initiated through an agreement with the Houston-Galveston Area Council. H-GAC will coordinate public participation in plan development.

Public Participation

During the development of the TMDLs, the Upper Oyster Creek TMDL Steering Committee provided advice and comment on the project. Committee members represented government, permitted facilities, business, environmental, and community interests in the Upper Oyster Creek watershed.

TMDL Development Status

Start Date: June 2001

Projected End Date: 2010

Bacteria TMDL

TCEQ Adoption: August 2007

EPA Region 6 Approval: September 2007

DO TMDL

TCEQ Adoption: July 2010

EPA Region 6 Approval: September 2010

I-Plan Development Status

Projected End Date: August 2012

TCEQ Approval:

A new coordinating committee is leading development of the implementation plan in concert with the H-GAC. This committee includes members who represent diverse interests in the watershed. Everyone is welcome to participate in meetings about the implementation plan.

For More Information

Contact one of the people listed below, or visit our website at <www.tceq.texas.gov/waterquality/tmdl/25-oystercreek.html>.

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TMDL: Percent Complete

	10	20	30	40	50	60	70	80	90	100
TCEQ Adoption										

I-Plan: Percent Complete

	10	20	30	40	50	60	70	80	90	100
Plan Development										
Stakeholder Review										
TCEQ Approval										

Project Highlights

- Sampling of bacteria and dissolved oxygen was initiated in October 2002.
- Bacteria sampling concluded in September 2004; dissolved oxygen sampling concluded in September 2005.
- Sampling to track sources of bacteria was conducted from March 2004 through December 2004.
- Following the conclusion of project sampling, the Brazos River Authority agreed to continue routine monitoring in Upper Oyster Creek.
- The TMDL for bacteria was adopted on August 8, 2007 and the TMDL for dissolved oxygen on July 28, 2010.
- The H-GAC is leading public participation in development of the implementation plan for all the TMDLs. The stakeholders formed a coordinating committee for the plan development on March 8, 2011.
- The Coordinating Committee formed four workgroups, which have begun developing a list of activities that will address the bacteria and dissolved oxygen issues in the creek.

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