



## Improving Water Quality in Chocolate Bayou A TMDL Project for Bacteria

Since 2010, high levels of bacteria have been found in Chocolate Bayou (Segments 1107 and 1108). High concentrations of bacteria, which are found in both human and animal waste, 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.

To address these concerns, people who have a stake in the watershed are working with the TCEQ to develop a total maximum daily load (TMDL) and a plan to implement it (I-Plan). A TMDL is like a budget—it determines the amount (or load) of bacteria that the bayou can receive and still support recreational safety. The allowable load is then allocated among categories of sources within the watershed. The I-Plan outlines the measures that will be used to reduce pollution.

Learn more about water quality standards, monitoring, and TMDLs by reading *Preserving and Improving Water Quality*, available on our website at [www.tceq.texas.gov/goto/tmdl/](http://www.tceq.texas.gov/goto/tmdl/).

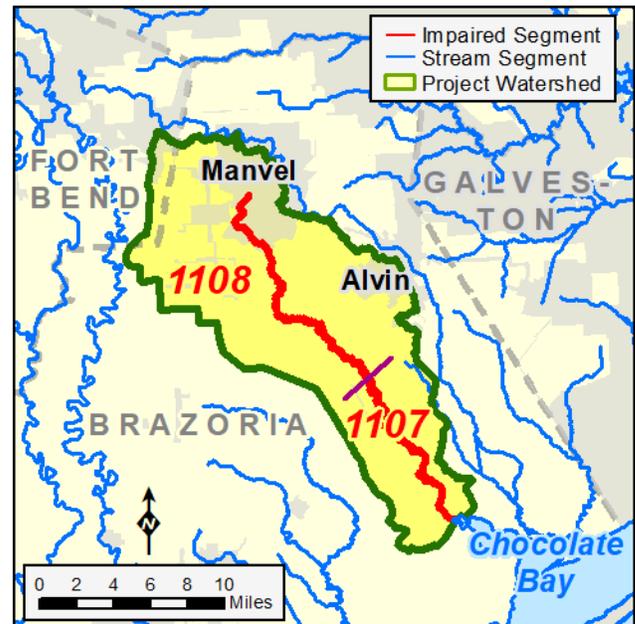
### The Chocolate Bayou Watershed

The Chocolate Bayou watershed lies in southeast Texas near the Houston-Galveston area and includes the cities of Manvel, Alvin, Arcola, and Village of Iowa Colony. Most of the watershed is within Brazoria County, with a small area in Fort Bend County. The bayou travels southeastward in eastern Brazoria County before emptying into Chocolate Bay, an embayment of West Galveston Bay.

There are two segments of Chocolate Bayou, the Tidal (1107) and Above Tidal (1108). The Tidal segment begins northwest of the city of Liverpool in Brazoria County and traverses sixteen miles southeastward to the mouth of Chocolate Bay. The Tidal segment has a watershed area of 37 square miles.

The Above Tidal segment begins approximately 1.4 miles west of the City of Manvel in Brazoria County and flows for 22 miles to the boundary with the Tidal segment, which is 2.6 miles downstream of State Highway 35. The Above Tidal segment has a watershed area of 110 square miles.

The bayou and its tributaries are generally sluggish due to the gentle sloping relief found on the coastal plain. Riparian vegetation is still common along portions of the bayou. Natural hydrology in the study area



has been altered by instream channel modifications, the construction of supplemental drainage canals like ditch C-1 near Manvel, and irrigation and supply canals.

The Chocolate Bayou Above Tidal watershed had a population of 29,552 in 2015. That amounts to over twenty times the population of the Tidal segment watershed, which had a population of 1,278 in 2015.

Land uses in the region range from moderately dense urban developments to the north, northeast, and northwest, to less dense and more rural development found to the south and west. Agriculture production remains a large economic base for the watershed, with about 54 percent of the land cover. Heavy industrial development is found near Chocolate Bay.

### Project Development

The TCEQ began this project in 2016. The Houston-Galveston Area Council (H-GAC) has been providing support for the technical work as well as stakeholder engagement.

The tasks of H-GAC personnel include compiling and analyzing all available bacteria data and considering sources of the bacteria and their relative contributions, along with stakeholder outreach and development. H-

GAC staff have completed a technical report of their investigations, as well as a draft TMDL document. The documents identified both regulated and unregulated sources of pollution contributing to the impairments.

### Public Participation

In all its projects, the TCEQ seeks to gather opinion and information from people who represent government, permitted facilities, agriculture, business, environmental, and community and private interests in the watershed. The TCEQ solicits advice from the public at meetings and through print and electronic media notices. The H-GAC has been coordinating public participation in the project. Stakeholders have formed a Coordination Committee to guide development of the I-Plan.

### For More Information

Contact the project manager listed below, or visit the project website at:

[www.tceq.texas.gov/waterquality/tmdl/nav/chocolate-bayou/](http://www.tceq.texas.gov/waterquality/tmdl/nav/chocolate-bayou/)

#### TCEQ Project Manager

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### TMDL Status

**Start Date:** September 2016

**TCEQ Adoption:**

**EPA Region 6 Approval:**

### I-Plan Development Status

**Projected End Date:**

**TCEQ Approval:**

### Project Highlights

- The H-GAC completed a technical report of their investigations in June 2017, and has since completed a draft TMDL document.
- Stakeholder meetings began in 2017. A Coordination Committee was formed in late 2017 to guide development of the I-Plan.

Visit our website at: [www.tceq.texas.gov/goto/tmdl/](http://www.tceq.texas.gov/goto/tmdl/)