



# Project Summary

Texas Department of Transportation

## 0-6225: Protecting Waterways from Encroachment

### *Background*

This project investigated and determined hazards to navigation (encroachments) in the Texas portion of the Gulf Intracoastal Waterway (GIWW) that originate from shore and made recommendations for mitigating these hazards in the future. Under the 1975 Texas Coastal Waterways Act, the Texas Department of Transportation (TxDOT) is the state agency charged with fulfilling the non-federal sponsorship of the GIWW in Texas by providing the safe, effective, and efficient movement of goods along the Texas portion of the GIWW.

This project sought to provide guidance to TxDOT by identifying criteria to evaluate shoreline proposals along the GIWW. The goal was to protect the navigation corridor for commercial traffic for industries vital to the Texas economy that rely on the GIWW for the transport of raw materials and finished products.

### *What the Researchers Did*

Through recommendations of project advisors, actual site visits, and United States Coast Guard incident data, the research team identified and determined the magnitude of stakeholder issues and the identity of major stakeholders. Additionally, the team focused on identifying sensitive issues with stakeholders—issues that interfere with navigation on the GIWW—and explored them through physical inspection and interviews of what shoreline stakeholders consider factors that interfere with navigation on the GIWW.

Identification of appropriate stakeholders was a key element in developing the right guidelines. In identifying stakeholders, the researchers looked broadly for those parties impacting navigation in the GIWW. The parties impacting navigation were primarily those that affect the process of planning, recording, and controlling movement of a vessel along the waterway. On the advice of the project advisors, the team identified two categories of stakeholders as relevant to determining the impact of shoreline development/encroachment on commercial navigation in the GIWW (although the categories overlap):

- those that use, regulate, maintain, and police the waterway, and
- those that use and regulate the shoreline.

### *Research Performed by:*

Texas A&M University at Galveston (TAMUG)

Texas Transportation Institute (TTI),  
The Texas A&M University System

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Based on those categories, stakeholders include real estate developers and the economic development organizations in the coastal areas, coastal county governments, port authorities, barge operators, coastal waterborne shippers, the Texas Department of Transportation, the Texas General Land Office, the United States Army Corps of Engineers, and the United States Coast Guard.

The research team collected various types of data from stakeholders to identify encroachment hazards and understand how and where obstacles are built. First, the team collected incident data from the Coast Guard to review where navigation incidents such as allisions, collisions, or other problems occur in the Texas portion of the GIWW. Next, the team used a survey to collect information from vessel operators on the locations of concern and types of structures considered problematic. The team physically inspected the waterway, noting areas of concern of vessel operators and location of previous incidents reported by the Coast Guard. The team surveyed developers, economic development corporations, shippers in the areas of concern, and county and local officials in all coastal counties on potential development and their concerns. Finally, the research team collected information on permitting procedures data from the various federal, state, and local jurisdictions involved with shoreline development.

## What They Found

The study concluded that Calhoun County is an area of high concern for development, although all counties should continue to be monitored for development along the GIWW. Two conclusions are prominent from all the data sources:

- The accumulated effect of development on the GIWW has a dramatic impact on the ability of barge operators to navigate the waterway.
- The type of shoreline structure also has a profound impact on navigation.

The accumulated effect of development can lead to the lack of strategic mooring places needed in inclement weather as well as congestion caused by inexperienced recreational boaters attracted to the waterway by increased development. These types of structures can cause narrowing of the channel. Construction material and design of these structures may contribute to hazards to navigation in the waterway.

## What This Means

Researchers recommend that there should be increased cooperation between developers, governmental agencies, and the barge industry in maintaining the GIWW for its primary use of moving goods effectively and efficiently to promote and support Texas and U.S. commerce.

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