



# GULF INTRACOASTAL WATERWAY LEGISLATIVE REPORT

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87th Texas Legislature





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# INTRODUCTION

*This report is submitted by the Texas Department of Transportation (TxDOT) on behalf of the Texas Transportation Commission to the 87th Texas Legislature as required by Chapter 51 of the Texas Transportation Code. The report's purpose is to evaluate the impact of the Gulf Intracoastal Waterway (GIWW) on the state by assessing the importance of the GIWW. This includes an examination of the direct and indirect beneficiaries, identifying principal problems on the GIWW and their solutions, evaluating the need for significant modifications to the GIWW and specifying recommendations for legislative action.*

The Gulf Intracoastal Waterway (GIWW) runs parallel to the Gulf of Mexico's coastline, stretching more than 1,100 miles from St. Marks, Florida, to the southernmost tip of Brownsville, Texas. This shallow-draft, man-made channel is only 12-feet deep and 125-feet wide but it is an integral part of the inland waterway transportation system in the United States.

The GIWW is the third-busiest inland waterway in the United States. Nearly 285,000 vessels carrying more than 110 million short tons of cargo traveled on the waterway in 2018.<sup>1</sup> The GIWW is uniquely positioned to link the ports along the Gulf Coast to major inland ports, such as Memphis, Chicago and Pittsburgh, via the Mississippi River and her tributaries. It also provides a means to connect domestic barge traffic with ocean-going

vessels making this waterway central to both intrastate and foreign trade in the United States.

The GIWW's location on the Gulf of Mexico has a tremendous impact on the types of commodities that are shipped on the waterway. The Gulf Coast is home to 45 percent of U.S. refining capacity, as well as 51 percent of total U.S. natural gas processing capacity.<sup>2</sup> Consequently, more than 60 percent of the commodities that transit the GIWW are classified as petroleum or petroleum-products and an additional 20 percent are classified as chemicals and related products. Other commodities include crude materials, primary manufactured goods, coal and food and farm products.<sup>3</sup>

The movement of these commodities is a vital component of Texas' economy. In 2016, freight movement in Texas contributed to 2.2 million full-time jobs, \$145 billion in wages and \$215 billion in Gross State Product.<sup>4</sup> Though the percentage of freight that travels on the GIWW is small when compared to other modes of transportation, such as truck or rail, the waterway plays an important role in reducing landside congestion and increasing safety. It contributes to an efficient and cost-effective multimodal transportation system that connects rural regions with urban population centers, provides for the delivery of raw materials and the shipment of finished goods and links areas of economic activity and production with centers of consumption.



The GIWW stretches 1,100 miles from St. Marks, Florida to Brownsville, Texas.

<sup>1</sup> (U.S. Army Corps of Engineers, 2018)

<sup>2</sup> (U.S Energy Information Administration, 2020)

<sup>3</sup> (U.S. Army Corps of Engineers, 2018)

<sup>4</sup> (Texas Department of Transportation, 2018)

# 1 ASSESSMENT OF IMPORTANCE OF THE GIWW-T

In Texas, the main channel of the Gulf Intracoastal Waterway (GIWW-T) stretches 379 miles along the coastline from the Sabine River at the border with Louisiana to Brownsville, Texas. The 12-foot channel serves as the backbone of the state's inland water transportation system connecting Texas' 11 deep-draft and eight shallow-draft public ports, as well as numerous private facilities via its many tributaries and intersecting ship channels. Though only about one-third of the total length of the GIWW, the Texas segment handled more than 70 percent of all GIWW traffic in 2018—more than 77.7 million shorts tons.<sup>5</sup>

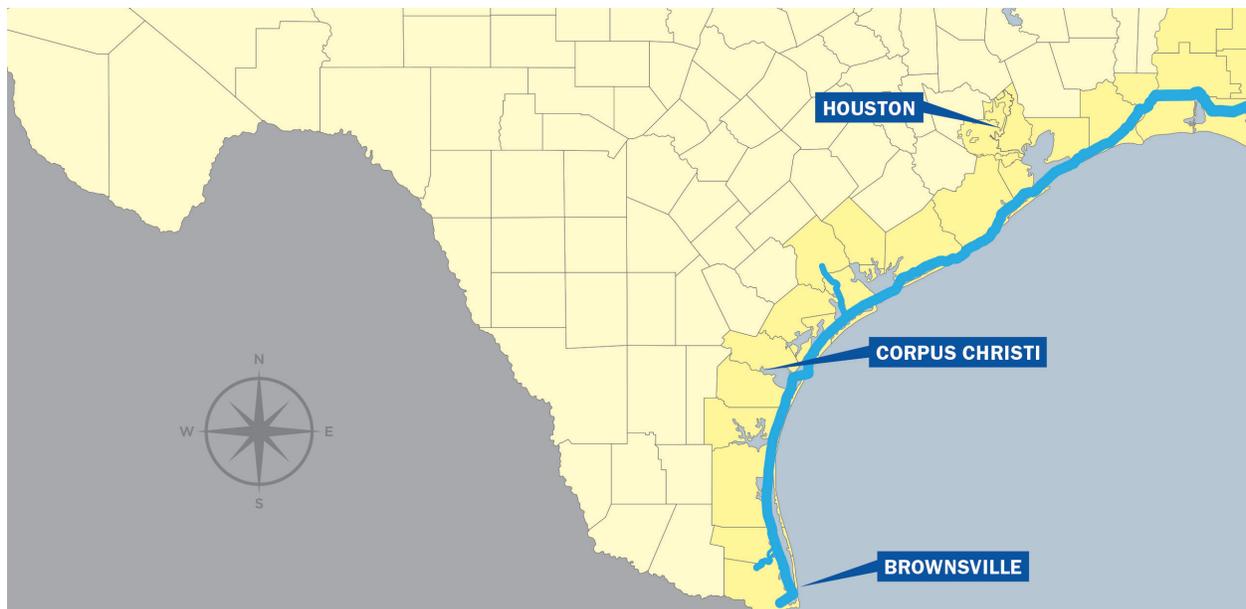
## BRIEF HISTORY <sup>6</sup>

The GIWW-T has been an important part of Texas' infrastructure since World War II, though construction on the waterway began much earlier. In 1873, the federal government enacted legislation that appropriated funding for a survey to "connect the inland waters along the margin of the Gulf of Mexico." This marked the beginning of the waterway's formal development. The Rivers and Harbors Act of 1925 authorized a continuous Louisiana-Texas waterway from New Orleans to Galveston for the first time. Two years later, Congress authorized construction of an extension of this canal to Corpus Christi.



Though only about one-third of the total length of the GIWW, the Texas segment handled more than 70 percent of all GIWW traffic in 2018—more than 77.7 million shorts tons."

After two decades of inactivity, World War II catalyzed the growth of the main channel as the presence of German submarines along the eastern and Gulf Coasts of the United States highlighted the vulnerability of open-water shipping. For the purposes of national defense, Congress authorized the extension and enlargement of the waterway to its current length and dimensions. The Brazos River Floodgates and the Colorado River Locks, two important pieces of infrastructure along the waterway, were also authorized and constructed during this time.



The GIWW-T stretches 379 miles along the Texas coastline.

<sup>5</sup> (U.S. Army Corps of Engineers, 2018)

<sup>6</sup> (Kruse, 2014)

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## ROLES & RESPONSIBILITIES

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In 1975, the Texas Coastal Waterways Act (codified as Chapter 51 in the Texas Transportation Code) established the state of Texas as the non-federal sponsor of the Texas segment of the GIWW and provided specific guidance on the roles and responsibilities of TxDOT and the Texas Transportation Commission as they relate to the GIWW-T. By statute, TxDOT must acquire real estate for use by the U.S. Army Corp of Engineers (Corps) as dredged material placement areas (DMPAs) for dredging activities required to maintain the waterway. TxDOT may also participate financially in projects to beneficially use dredged material, such as marsh creation for fish and wildlife habitat development, beach nourishment or for industrial and commercial use.

As the federal sponsor, the Corps is responsible for the planning and execution of all construction, maintenance and major rehabilitation on the GIWW to ensure that the waterway remains open for commerce. The Corps is also tasked with monitoring channel conditions, usually through hydrographic surveys and maintaining it to its authorized depth and width through periodic maintenance dredging. The federal government funds this work in its entirety with funds from both the General Treasury and the Inland Waterway Trust Fund. The Galveston District of the Corps oversees about \$25 million in GIWW contracts annually to dredge an average five million cubic yards each year.<sup>7</sup>

The Corps also operates and maintains the Brazos River Floodgates and the Colorado River Locks.

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## MARINE HIGHWAY 69 DESIGNATION

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In June 2016, after several years of collaboration with TxDOT, the U.S. Maritime Administration designated the GIWW-T as Marine Highway 69 (M-69). The national Marine Highway system currently consists of 25 all-water routes that run parallel to the nation's most important inland highways. By promoting inland waterway transportation, they serve as extensions of the surface transportation system and can accommodate the waterborne movement of people and goods between two points that would have otherwise been connected only by road or rail.

To receive the M-69 designation, TxDOT demonstrated that the GIWW-T provides additional capacity to landside corridors serving freight and passenger movements, thereby decreasing congestion in areas with high traffic and lessening air emissions. This designation allows TxDOT and Texas ports to apply for federal grant funding for projects that increase waterborne transportation along the corridor. Prior to the M-69 designation, the GIWW-T was part of the larger M-10 Corridor, which encompasses the entire length of the GIWW from Florida to Brownsville. The GIWW-T is now dually designated which makes it eligible for federal grant funding for both M-69 specific projects as well as M-10 projects that address overarching challenges along the entire GIWW.



The Gulf Coast Marine Highway System.

<sup>7</sup> (U.S. Army Corps of Engineers, 2020)

<sup>8</sup> (U.S. Army Corps of Engineers, 2018)

# GIWW-T Benefits to Texas

**87.7 MILLION LBS.** commercial seafood caught

valued at  
**\$223 MILLION**

**15,000 DIRECT JOBS** in Texas coastal counties

**\$5 BILLION** in direct labor income



**1 GALLON** fuel to move 1 ton of cargo

**647 WATERWAY MILES** compared to 477 miles by rail, 145 miles by truck



**45,000** vessels traveled down the GIWW-T

**70** million tons of goods were shipped on the GIWW

**BARGES PRODUCE**

The equivalent of at least  
**5.2** million trucks



**26%** less CO<sup>2</sup> than rail  
**AND**  
**90%** less CO<sup>2</sup> than trucks

## DIRECT & INDIRECT BENEFICIARIES

The GIWW-T is a critical part of the complex supply chains of the Texas petrochemical and manufacturing industries. In 2018, more than two-thirds of the cargo transiting the GIWW-T—54.6 million short tons—were classified as petroleum or a petroleum product.<sup>9</sup> This included 22 million tons of distillates, 16 million tons of chemicals and 11 million tons of crude petroleum. In sharp contrast to other inland waterways in the United States that move millions of tons of agricultural products, only 380,000

tons of cargo transiting GIWW-T in 2018 was classified as a ‘food or farm product’.

The GIWW-T also benefits the commercial fishing industry by providing a safe inland waterway route during windy or severe weather. In some cases, the GIWW-T may also provide shorter travel distances between fishing waters and processing plants.<sup>9</sup> In 2017, Texas commercial fisherman caught 87.7 million pounds of seafood valued at \$223 million. Shellfish accounted for most of the weight and value of all seafood landed.<sup>10</sup>

<sup>9</sup> (U.S. Army Corps of Engineers, 1974)

<sup>10</sup> (National Ocean Economics Program, 2020)

Cargo movement along the GIWW-T generates economic activity and job growth. A 2018 study showed that the GIWW-T creates nearly 15,000 direct jobs in Texas coastal counties and contributes \$5 billion in direct labor income. When indirect and induced economic impacts are included, the GIWW in Texas supports almost 65,000 jobs, providing \$8.7 billion in labor income and \$31.7 billion in economic output.



In 2018, more than two-thirds of the cargo transiting the GIWW-T—54.6 million short tons—were classified as petroleum or a petroleum product.”

The GIWW-T provides indirect benefits to Texans across the state, including:

**1. An alternate means of transporting 77.7 million tons of goods that would have otherwise moved on the surface transportation:**

Waterborne transportation is the most efficient way to move large amounts of cargo like petroleum products or grains. The capacity of one typical tanker is equivalent to 46 rail cars or 144 tanker trucks—enough to fuel 2,500 automobiles for an entire year. Similarly, one dry cargo barge is equivalent to 16 bulk rail cars or 70 tractor trailers or enough grain to make almost 2.5 million loaves of bread.<sup>11</sup> In 2018, more than 45,000 barges, tankers and towboats traveled down the GIWW-T, which is the equivalent of at least 5.2 million trucks.<sup>12</sup> The GIWW-T provides an alternate mode of transit for this cargo that does not contribute to additional traffic on already

congested highways and local coastal roads. Less traffic also leads to decreased road maintenance and rehabilitation needs and expenses.

**2. Producing fewer emissions than moving the same amount of cargo via roads or rail:**

Barge transportation is a much cleaner and more fuel-efficient mode of transportation than truck or rail. Barges produce about 90 percent less greenhouse gas emissions (carbon dioxide and particulate matter) than trucks and about 25 percent less than rail when moving the same amount of goods over the same distance.<sup>13</sup> Viewed another way, with only one gallon of fuel, you can move one ton of cargo 647 miles via inland waterway but only 477 miles on rail and 145 miles by truck.

**3. Increasing safety in the transportation system:**

Transportation via inland waterway is much safer than via truck or rail. When comparing fatalities from vehicle crashes (truck), derailments (rail) and collisions, allisions, grounding and capsizing (barge), the fatality rate for trucks per million ton miles is nearly 80 times greater than for barges. Rail is more than 20 times greater than barges. When comparing spills of hazardous materials per ton-mile, trucks and rail had both more spills and larger spills than barge transportation. Truck spills were about 12 times more frequent than barge spills, while rail spills were almost four times more frequent.

In short, the GIWW-T plays a significant role in facilitating waterborne commerce in the state, which directly benefits those who use the waterway to move their cargo. It also provides an indirect benefit to Texas across the state because of the increased economic activity that the GIWW enables. By reducing congestion and pollution, the GIWW lowers road maintenance costs while increasing safety on Texas roads.

<sup>11</sup> (The American Waterways Operators, 2020)

<sup>12</sup> (U.S. Army Corps of Engineers, 2018)

<sup>13</sup> (The American Waterways Operators, 2020)

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# IDENTIFICATION OF PRINCIPAL PROBLEMS AND POSSIBLE SOLUTIONS

### MAINTAINING THE AUTHORIZED DEPTH OF THE GIWW

The Corps is responsible for maintaining the GIWW-T to its authorized 12-foot depth and 125-foot width—an ongoing and expensive obligation. Sediment is continuously deposited in the channel from rivers and streams that intersect the GIWW-T and from wind and wave action in the Gulf of Mexico. Irregular weather events—such as inland flooding, tropical storms or hurricanes—can increase sedimentation in the GIWW-T and can cause significant shoaling in a few days or even hours.

Although there has been a rapid escalation of dredging costs over the last several years, the Corps' budget has not increased to offset these costs.<sup>14</sup> Inadequate federal funding to consistently maintain channel depth—along with a cumbersome federal letting process, limits on the U.S. dredge fleet and environmental restrictions on when dredging can be performed—results in dredging projects being deferred or downsized. As a result, the Corps is unable to consistently maintain the authorized dimensions along the entire length of the channel. Past studies have shown that certain segments of the channel are periodically shoaled to depths of less than 10 feet which makes the waterway impassable to fully laden barges.<sup>15</sup>

Because of the difference between the authorized and actual depth of the GIWW, barge operators routinely “light load” their vessels. This means that vessels are not loaded to capacity so that they sit higher in the water. It has become standard practice for vessel operators to leave an additional two feet of draft beyond the known channel depth when loading barges.<sup>16</sup> This practice, known as “light-loading” raises transportation costs for shippers, increases fuel consumption and produces more air emissions. A 2013 study (the most recent data available) found that each foot of lost draft increases costs for barge operators by \$58.7 million each year.<sup>17</sup>

An increase in federal appropriations for dredging on the GIWW-T to approximately \$56 million per year would ensure adequate funding to meet the average annual dredging needed on the waterway.<sup>18</sup>

<sup>14</sup> (Fritelli, 2019)

<sup>15</sup> (Bomba, 2019)

<sup>16</sup> (Bomba, 2019)

<sup>17</sup> (Kruse, 2014)

<sup>18</sup> (Kruse, Gulf Intracoastal Waterway 86th Legislative Report, 2018)

<sup>19</sup> (Jones, 2020)

### DREDGING DISPOSAL AND PLACEMENT AREA ACQUISITION

In 2019, the Corps dredged approximately 3.6 million cubic yards of material from the GIWW-T.<sup>19</sup> After sediment is dredged from the GIWW, it is frequently deposited into a Dredged Material Placement Area (DMPA), either in an open-water disposal site or in one of about 240 inland sites that run the length of the GIWW. Inland DMPA sites are frequently improved by building levees to increase their capacity, but levees can only be raised about 25 feet meaning that there is finite capacity within each DMPA. In areas with high rates of shoaling, DMPA availability may be limited.



The PA 88 acquisition marked the first DMPA acquisition since 2001, but TxDOT anticipates that other acquisitions will be necessary over the next several years as DMPA capacity decreases.”

#### Placement Area 88

As the non-federal sponsor of the GIWW-T, one of TxDOT's primary duties is to provide real estate, easements and rights-of-way for dredged material placement areas to accommodate the ongoing needs of the Corps' dredging program. In 2017, the Secretary of the Army, through the Galveston Corps District, determined a need for additional capacity to dispose of dredged material in Brazoria County near the Brazos River. This section of the GIWW-T has high shoaling rates and requires regular maintenance dredging which increases the need for DMPAs. TxDOT developed an acquisition plan for this area that necessitates the purchase of several existing DMPAs for Corps use. In Sept. 2019, TxDOT acquired Placement Area (PA) 88, a 355-acre site in Brazoria County previously owned by Texas Parks and Wildlife, for \$1.8 million.



A barge moves cargo in South Texas.

The PA 88 acquisition marked the first DMPA acquisition since 2001, but TxDOT anticipates that other acquisitions will be necessary over the next several years as DMPA capacity decreases. The Texas legislature generally appropriates \$650,000 per year, or \$1.3 million per biennium, for the acquisition of DMPAs sites. Funding is lost if it is not expended by the end of the biennium. However, as coastal properties increase in price, additional funds are needed to ensure the timely acquisition of DMPAs.

#### [Dredge Material Placement Area Assessment](#)

While preparing to acquire PA 88, TxDOT became aware that comprehensive records documenting property ownership, placement area size, capacity and frequency of use were either difficult to obtain or simply did not exist. Because this information is necessary to inform future planning efforts related to DMPA acquisition, TxDOT contracted with a consultant to perform an assessment of existing DMPAs for the main channel of the GIWW-T. The consultant developed a database that identifies each placement area and includes information relating to property ownership, property size, total and available capacity, frequency of use and site condition. This database will expedite the planning process for DMPA acquisition.

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#### [REGIONAL SEDIMENT MANAGEMENT](#)

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One TxDOT initiative is to develop, promote and implement a Regional Sediment Management (RSM) program. RSM is a system-based approach to solve sediment-related problems by designing sustainable solutions that takes local needs into account.<sup>20</sup> RSM views sediment as a resource and encourages the development of ways to keep sediment in the system. RSM programs can reduce the need for dredging and DMPAs, help maintain channel dimensions and increase water quality.

One form of RSM is the beneficial use of dredged material (BUDM), which utilizes dredged material to revitalize sediment-starved environments in lieu of placing the material in disposal areas that have a finite capacity. For example, BUDM can include projects to develop marshes, use dredged material to nourish eroding beaches, create or maintain bird rookeries and protect or enhance natural habitats.

#### [Beach Nourishment on the Bolivar Peninsula](#)

With the cost of coastal property at a premium, TxDOT actively seeks opportunities to develop BUDM projects by partnering with other agencies or non-governmental organizations that conduct coastal restoration activities. In the summer of 2020, TxDOT partnered with the Texas General Land Office (GLO) and the Corps to provide dredged material for a renourishment project at

<sup>20</sup> (Regional Sediment Manager: A Primer, 2020)



A beneficial use project to restore Pierce marsh.

Caplen Beach. During the Corps' routine maintenance dredging of the GIWW near Rollover Pass, sandy dredged material that would have normally been placed in DMPA 36 was diverted to revitalize the eroding beaches on Bolivar Peninsula. Over 162,000 cubic yards of sand was placed at Caplen Beach which helped to restore over 4,000 linear feet of beach for recreation.

Such projects demonstrate that dredged material can be effectively used as a resource to enhance the coastal environment. Dredged material is not simply a waste product to be disposed of. However, current federal regulation typically mandates that the Corps only fund the least expensive dredge disposal option. Frequently, this is not the beneficial-use option.

#### [Texas Master Plan for the Beneficial Use of Dredged Materials](#)

TxDOT is also working with Ducks Unlimited to develop a comprehensive Master Plan for the Beneficial Use of Dredge Material. The plan's main objective is to identify uses for dredged material across the state and to allow entities conducting coastal restoration projects access to a database and a decision-support tool to evaluate

alternative uses for dredged material. The Master Plan will increase access and use of dredge material by facilitating the early identification and prioritization of potential use sites.

In 2016, Ducks Unlimited and TxDOT submitted a RESTORE Act grant application to implement this plan. The RESTORE Act program allocates up to \$8.8 billion from a settlement with British Petroleum for natural resource injuries stemming from the Deepwater Horizon spill, including \$238 million for Texas restoration efforts. The Master Plan was selected in the 2017 Multi-year Implementation Plan but, as of July 2020, has yet to receive funding.

In 2017, the Deepwater Horizon Natural Resource Damage Assessment Texas Trustee Implementation Group (TIG) adopted a Restoration Plan and Environmental Assessment that included coastal wetland restoration through the BUDM on the Texas coast. The Texas TIG funded a small portion of the overall Beneficial Use Master Plan, which consisted of developing eight beneficial use sites.



An aerial view of Dredged Material Placement Area 38 in Galveston County.



The Texas TIG funded eight beneficial use sites as part of the overall Beneficial Use Master Plan.

This project will result in 60 percent engineering and design plans and permit packages at each of the following locations:

- ▶ LNWMA Old River Unit (Orange County)
- ▶ Texas Point National Wildlife Refuge (Jefferson County)
- ▶ McFaddin National Wildlife Refuge – Willow Lake Terraces (Jefferson County)
- ▶ Anahuac National Wildlife Refuge – Robert Mueller Tract (Chambers County)
- ▶ San Bernard National Wildlife Refuge – Sargent Oil Field (Matagorda County)
- ▶ Schicke Point (Calhoun County)
- ▶ Guadalupe River Old Delta (Refugio County)
- ▶ Goose Island State Park Cells (Aransas County)

### INSUFFICIENT MOORING AND FLEETING FACILITIES

The Corps maintains 18 mooring basins or places along the waterway where operators may stop and safely tie up their vessel for a variety of reasons. These include waiting for inclement weather to pass, waiting for berthing space to become available or to assemble and disassemble a tow before transiting a lock or floodgate.

Historically, a lack of sufficient mooring space led to “pushing in” or intentionally mooring a barge in non-designated places such as mud banks or shorelines. This practice damages the banks of the GIWW and generates tremendous emissions as vessels must leave

their engine running to maintain their position. Vessels sometimes stay “pushed-in” for hours or even days. To rectify this, the Corps conducted a formal study of the mooring basins in 2012 and determined that it was both feasible and cost-effective to expand mooring capacity. The Corps has added an additional 61 new buoys and 8,115 linear feet of mooring space; these improvements totaled \$7 million in Corps O&M funds.

Buoy procurement and maintenance continues today. In Sept. 2018, the Corps awarded a contract for 50 new buoys that were delivered from Jan. 2019 to April 2019. The agency also has a Buoy Maintenance Service contract, valid through 2020, that allows for faster reaction time when repairing damaged buoys and gives the Corps the ability to concurrently address repairs in multiple mooring basins.<sup>21</sup>

Like mooring areas, fleeting areas provide a space for barge operators to stop to perform necessary business or maintenance. This includes refueling, repairing the vessel, changing the crew or even receiving mail. Fleeting areas are typically private operations that may be used for an owner’s fleet of vessels or as an enterprise that charges for services rendered.

Barge operators have reported that a lack of mooring and fleeting facilities have a significant negative impact

<sup>21</sup> U.S. Army Corps, November 2018



An satellite image shows movement of a moored vessel in the Lydia Ann Channel near Corpus Christi. Insufficient mooring spaces can lead to vessels mooring in non-designated areas, such as mud banks and shorelines.

on the safety and efficiency of barge operations on the GIWW-T. This problem is particularly acute near Corpus Christi where activity related to Eagle Ford Shale development has led to an increase in vessels. Recent attempts to develop new fleeting areas, however, have been the source of considerable controversy. In 2016, the Corps revoked a permit for the Lydia Ann Channel Moorings, LLC in response to a lawsuit filed by a group of concerned citizens alleging that the permit violated state and federal law. However, the U.S. District Court for the Southern District of Texas dismissed the lawsuit in March 2020 and the fleeting area is now fully operational.<sup>22</sup> Similarly, a permit requested for the proposed Thousand Foot Cut fleeting area near Orange, Texas was withdrawn after strong local opposition.

These cases demonstrate the difficulty in determining where to locate fleeting areas. The Corps is considering whether research is needed to analyze barge activity and identify locations where fleeting areas might facilitate safer and cleaner barge operations. As part of this effort, the Corps would also assess environmental or operational concerns that may affect the development of fleeting areas in various locations.

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## BRIDGES

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Bridges over the GIWW-T are necessary so that the public can cross from the mainland to islands, peninsulas and beaches on the other side; however, bridges also increase hazards to navigation. While the bridge itself limits vertical clearance for passing vessels, bridge pilings and their fender systems that are built in the channel increase the risk of allisions from vessels navigating around the structures. Allisions can cause tremendous damage and may require costly repairs, which can force the closure of the GIWW-T and bridge for limited periods.

From Port Arthur to Port Isabel, there are thirteen bridges that span the GIWW-T. Eleven of these are located on TxDOT roadways, one serves rail traffic to and from Galveston Island and one serves vehicle traffic for a private island in Cameron County. Two of these bridges have presented significant challenges for vessel operators. In recent years, TxDOT has resolved issues at the Galveston Causeway Rail Bridge and is currently working to replace the swing bridge on FM 457 (also known as the Caney Creek Bridge or the Sargent Swing Bridge).

<sup>22</sup> (Vinson & Elkins, 2020)



A barge passes through the former Sargent swing bridge.

The FM 457 Swing Bridge, located near the city of Sargent, spans the GIWW-T and connects the mainland with Sargent Beach. The bridge serves as the only entry and exit point for residents of and visitors to the island. Barge operators often cite this bridge as the one of the biggest obstacles to safe navigation on the waterways, second only to the Brazos River Floodgates. The bridge is frequently struck because of the inadequate space between the bridge columns in the channel and the high level of development in the area which prevents barges from being able to pull over to wait out inclement weather or difficult situations. Moreover, when barge

traffic passes underneath, the swing bridge is open for about 15 minutes which prevents vehicular traffic from crossing.

In 2018, TxDOT began replacing the FM 457 Swing Bridge because of its age, its high maintenance costs and the navigation safety hazard. The new bridge will be a clear span bridge with “corkscrew” approaches on both ends. This design will minimize the amount of land needed while allowing clearance for vessels on the waterway and for vehicles to cross. The anticipated completion date for the bridge is Aug. 2021.



A rendering of the Sargent swing bridge replacement project.

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## EVALUATION OF THE NEED FOR SIGNIFICANT MODIFICATIONS

### BRAZOS RIVER FLOODGATES & COLORADO RIVER LOCKS

On its path down the Texas coast, the GIWW intersects several bodies of water, including the Brazos River near Freeport, Texas and the Colorado River near Matagorda, Texas. Historically, sediment flowing down these rivers would accumulate in the GIWW resulting in the need for frequent maintenance dredging in these areas. To control the sediment and silt flows, the Corps built 75-foot gates at each river in the 1940s. When vessels were not in transit, these gates could be closed, allowing sediment to continue downstream rather than building up in the GIWW. In 1954, the Corps upgraded the gates on both sides of the Colorado River to a 1,200-foot earthen lock structure which increased the number of vessels that could cross. The Colorado River Locks are the oldest operating locks in Texas.



Tripping costs the industry more than \$11 million per year and contributes to 12-hour average delays at the Brazos River Floodgates and 3-hour average delays at the Colorado River Locks.”

Although the structural improvements on these two rivers helped reduce the accumulation of sediment in the GIWW, the two facilities now contribute to significant safety hazards and delays to navigation on the GIWW. The narrow gate openings and the high river flows cause swells and strong currents which makes passage difficult and contribute to allisions to the facilities. When the swell and currents reach certain levels or when the U.S. Army Corps District Engineer deems it necessary for protection of life and property, the floodgates and locks are closed, causing long delays on the waterway. Despite these precautions, around 56 vessels strike the floodgates each year and eight vessels strike the locks.

The annual cost to repair damage from these allisions is approximately \$2 million per year or more than \$31,000 per incident.<sup>23</sup>

Another cause of delays at the Brazos River Floodgates is the facility’s antiquated design which was built for smaller barges that were pulled on a tow-line. Current practice, however, involves a tugboat pushing a string of barges which makes navigation through the crossing unwieldy. Tows traveling on other sections of the GIWW-T are made up of an average of four barges, but those transiting the Brazos River Floodgates are less than two barges on average.<sup>24</sup> This indicates that tow operators move smaller loads than they otherwise would when transiting the floodgates which results in major shipping inefficiencies.

Moreover, a common practice today involves lashing two barges together side-by-side to transit the GIWW-T. The combined width of the barges is too wide to transit the floodgates, so tow operators must stop on one side of the floodgates, disassemble the barges and take each barge through one at a time. On the other side of the floodgates, the barges are reassembled back into their original tow configuration. This process, known as tripping, costs the industry more than \$11 million per year and contributes to 12-hour average delays at the Brazos River Floodgates and three-hour average delays at the Colorado River Locks.

### BRFG & CRL FEASIBILITY STUDY

To address these problems, TxDOT partnered with the Corps’ Galveston District to conduct the Gulf Intracoastal Waterway Brazos River Floodgates and Colorado River Locks System Final Integrated Feasibility Study and Final Environmental Impact Statement. The study analyzed various alternatives to determine whether and how to undertake modifications to the Brazos River and Colorado River crossings. It analyzes: hydraulic flows and channel geometry that present hazards to navigation; sedimentation, salinity, erosion and dredging requirements at the crossings and along the GIWW-T that impact industry; aging and outdated lock components and equipment that contribute to structural, electrical and mechanical maintenance issues; operational shutdowns during high-river periods and accident repairs that cause significant economic impacts to the industry; and environmental impacts.

<sup>23</sup> (U.S. Army Corps of Engineers, June 2019)

<sup>24</sup> (Kruse, 2014)



A barge transits the Colorado River Locks.

The feasibility study assessed 11 different alternative scenarios and one “no action” scenario with respect to how each would impact the four planning objectives, which were to:

1. Reduce navigation delays, tripping and allisions of vessels traveling through the structures.
2. Improve channel alignments and hydraulic flows for vessels approaching structures traveling through crossings during high river periods.
3. Improve overall operations/functions of the floodgate/lock structures which experience frequent mechanical failures due to age and outdated systems.
4. Manage sediment in the GIWW.

After several rounds of screening and evaluation, the study team selected a draft recommended plan, known as the “Tentatively Selected Plan” (TSP). At the Brazos River Floodgates, the TSP recommends maintaining the existing channel alignment, removing the gate from the west side to leave an open channel and widening the eastern gate from 75 feet to 125 feet. This action will significantly reduce the risk of allisions. The current cost estimate for construction at the floodgates is \$158.1 million.<sup>25</sup>

At the Colorado River Locks, the TSP maintains the existing channel alignment and removes the gates closest to the river. The gates will also be widened to 125 feet and a longer forebay will be created to

reduce the risk of allisions to the guide walls and gate structures. The current cost estimate for construction at the locks is \$251.6 million. The total project cost of the TSP for both structures is \$409.7 million.<sup>26</sup> Because this is a federal navigation project, the federal government will fund 100 percent of construction.

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## NEXT STEPS

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A draft of the feasibility study was released on Feb. 26, 2018 and was followed by a 45-day public comment period that ended April 11, 2018. The Corps also held a public meeting on March 13, 2018 to solicit comments from the public. All public comments were reviewed and considered in preparation for the final feasibility study which was released in June 2019.

On Oct. 23, 2019, Lt. Gen. Todd Semonite signed the Chief’s Report for the feasibility study which states that the TSP is both economically justified and environmentally acceptable and recommends further continuation of the project. The signed Chief’s Report was sent to the Assistant Secretary of the Army for Civil Works for review and to Congress for project authorization and funding. Though the signed Chief’s Report is a vital step along the road to project completion, it is just a first step of a long process.

The standard process for Corps project delivery requires at least two separate congressional actions—one for project authorization and one for project funding.

<sup>25</sup> (Semonite, October 23, 2019)

<sup>26</sup> (Semonite, October 23, 2019)

Congress typically authorizes projects in a biennial omnibus Corps authorization bill titled a Water Resource and Development Act (WRDA). Since 2014, many authorizations have been based on a favorable chief's report and feasibility report which puts the BFRG and CRL project in an advantageous position for authorization. On July 29, 2020, the House of Representatives passed a WRDA 2020 bill that included the authorization of the BFRG and CRL project. As of August 2020, the Senate not yet passed the bill.

Funding for Corps projects is typically provided in Energy and Water Development appropriations acts. For the last several years, appropriations have ranged from about \$5 billion to \$7 billion annually.<sup>27</sup> These numbers include funds for both construction of authorized projects as well as funds for operations and maintenance. However, there is currently a \$98 billion backlog of construction projects that have been authorized but are awaiting construction funding. Congressional authorizations outpace appropriations at a rate that makes it highly unlikely that all authorized projects will ever receive funding.

In FY 2019, for example, the annual appropriations for construction funding was \$2.2 billion or a little more than two percent of the current backlog.<sup>28</sup>

To ensure that the list of authorized projects stays relevant to the country's water resource development needs, Congress enacts various deauthorization processes in WRDA and other bills. These include a General Deauthorization Authority which directs the Secretary of the Army to transmit to Congress a list of projects or project elements that have not received funding in the last five fiscal years. If funds are not obligated in the next fiscal year, projects or project elements are deauthorized. Additionally, Congress included provisions in each of the WRDA 2014, WRDA 2016 and WRDA 2018 bills that automatically deauthorizes projects if they have not been funded for 10 years after enactment. If this provision is included in future WRDA bills, it may apply to any BFRG and CRL project that becomes authorized. Thus, it is critical to secure timely funding for the project if it becomes authorized.



A barge transits the Brazos River Floodgates.

<sup>27</sup> (Congressional Research Service, 2019)

<sup>28</sup> (Congressional Research Service, 2019)

## 4 RECOMMENDATIONS FOR LEGISLATIVE ACTION

In accordance with Chapter 51 of the Texas Transportation Code, to support the state's non-federal sponsorship of the GIWW in Texas and to facilitate planning, maintenance, preservation and improvement of the waterway, the Texas Transportation Commission recommends the following actions for consideration by the 87th Texas Legislature:

**1. Increase appropriations in support of the GIWW-T maintenance strategy.**

State appropriations for support of the GIWW-T are used to fulfill the state's duties as the non-federal sponsor of the GIWW-T. These include sustaining existing placement areas, acquiring real estate for new placement areas and leveraging opportunities to beneficially use dredged material. TxDOT expended \$1.8 million in funding from FY 2018-2020 to acquire PA 88 in Brazoria County for use by the Corps.

Due to the increasing price of real estate along the coast, additional funds are needed for future land acquisitions for dredged material placement areas.

**2. Support additional federal funding for the USACE Operations and Maintenance budget to maintain the authorized dimensions of the GIWW in Texas.**

The Corps does not receive adequate funding to maintain the GIWW to its authorized dimensions. The FY 2020 Corps O&M Work Plan, which is based on total O&M appropriations by Congress, dedicated \$40.35 million for the operations and maintenance of the GIWW-T. However, the average annual need for dredging is \$56 million— about 40 percent more than FY 2020 appropriations. As a result, the Corps has not been able to maintain the waterway to its authorized depth leading to shipping inefficiencies on the GIWW.

**3. Support the authorization of the Brazos River Floodgates and Colorado River Locks project in the next Water Resources Development Act.**

The current design of the Brazos River Floodgates and Colorado River Locks is insufficient for today's transportation needs and contributes to hours-long delays that cost operators millions of dollars annually. The redesign of these two facilities, as described in the BRFG and CRL Feasibility Study, will modernize and enhance operations at the two facilities, reducing bottlenecks and the risk of allision. Congressional authorization of the BRFG and CRL project and subsequent Congressional appropriations are necessary before construction on this critical project can begin.



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