

Resilient Navigation Mission through Partnerships

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Chief, Navigation Branch

GALVESTON DISTRICT

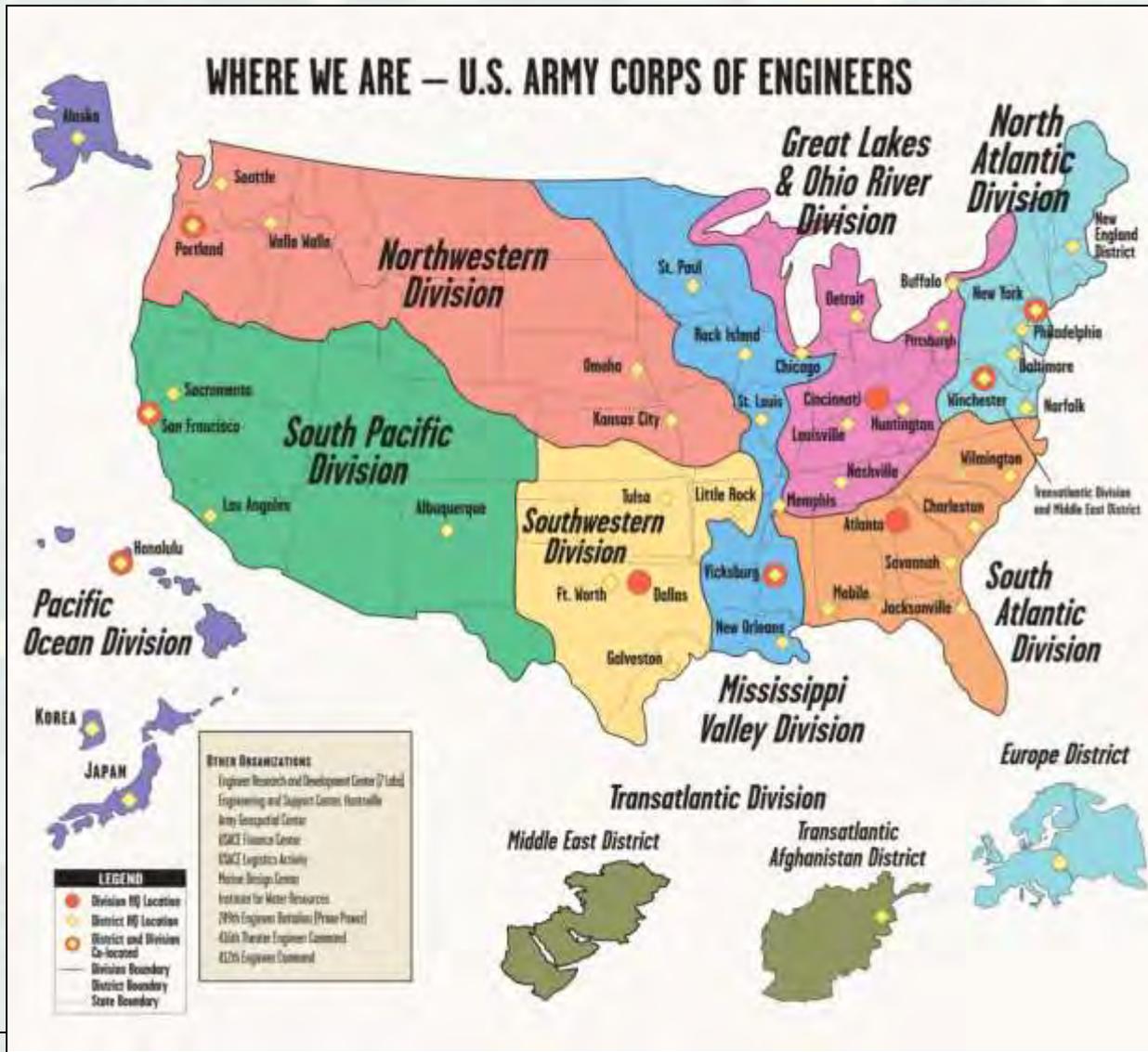
March 16, 2016



US Army Corps of Engineers
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USACE Overview



GALVESTON DISTRICT – OVERVIEW



- **~300 full time employees**
- **50,000 sq-mile district boundary**
- **Galveston District Missions**
 - **Navigation**
 - **Flood Risk Management**
 - **Regulatory**
- **18 Counties – Coastal Bay Estuaries**
- **Texas Ports and Waterways moved 600M+ tons of Commercial Cargo during 2014**
- **3 Strategic Ports**
- **Maintenance Dredge 20MCY / YR**



NAVIGATION MISSION

Provide safe, reliable, efficient and environmentally sustainable waterborne transportation systems (channels, harbors, and waterways) for movement of commerce, national security needs, and recreation.



FLOOD RISK MANAGEMENT MISSION

The USACE Flood Risk Management Program (FRMP) works across the agency to focus the policies, programs and expertise of USACE toward reducing overall flood risk. This includes the appropriate use and resiliency of structures such as levees and floodwalls, as well as promoting alternatives when other approaches (e.g., land acquisition, flood proofing, etc.) reduce the risk of loss of life, reduce long-term economic damages to the public and private sector, and improve the natural environment.



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GALVESTON DISTRICT – NAVIGATION PROGRAM



Coastal Navigation:
Value to the Nation



Texas is the number two state in the nation for waterborne commerce. Texas ports generate over \$5 billion in local and state tax revenue, and over \$9 billion in federal import tax revenue each year.

With the Panama Canal Expansion opening in 2016, ports must expand their capacity via land- and water-side improvements to accept these ships. The Texas navigation system has post-Panamax projects ready for construction and studies are completed for deepening Port Freeport, Corpus Christi Ship Channel and the Sabine-Neches Waterway to depths that would allow post-Panamax ships to call.

LEADING U.S. PORTS

(2014 Tonnage)

- Houston (#2 - 234.3 million tons)**
#1 Foreign Tonnage & #2 Total Tonnage
- Beaumont (#4 - 87.3 million tons)**
#1 Military Port in World
- Gulf Intracoastal Waterway (79 million tons - Texas portion)**
#3 Inland Waterway
- Corpus Christi (#6 - 84.9 million tons)**
America's Energy Gateway
- Texas City (#15 - 47.9 million tons)**
Services Largest Petrochemical Complex
- Port Arthur (#20 - 36.7 million tons)**
Vital Break-Bulk Port
- Freeport (#32 - 22.3 million tons)**
Connecting Global Services Via Caribbean Relay Port
- Matagorda to include Port of Port Lavaca and Port of Point Comfort (#48 - 11.3 million tons)**
Generates Annual Business Revenues of Nearly \$2 Billion
- Galveston (#52 - 10.7 million tons)**
#4 Cruise Ship Port
- Brownsville (#67 - 6.9 million tons)**
#1 Ship Recycling Port
- Victoria (#70 - 6.5 million tons)**
#2 Shallow-Draft Port for Domestic Crude Petroleum



GALVESTON DISTRICT - PORTS & WATERWAYS

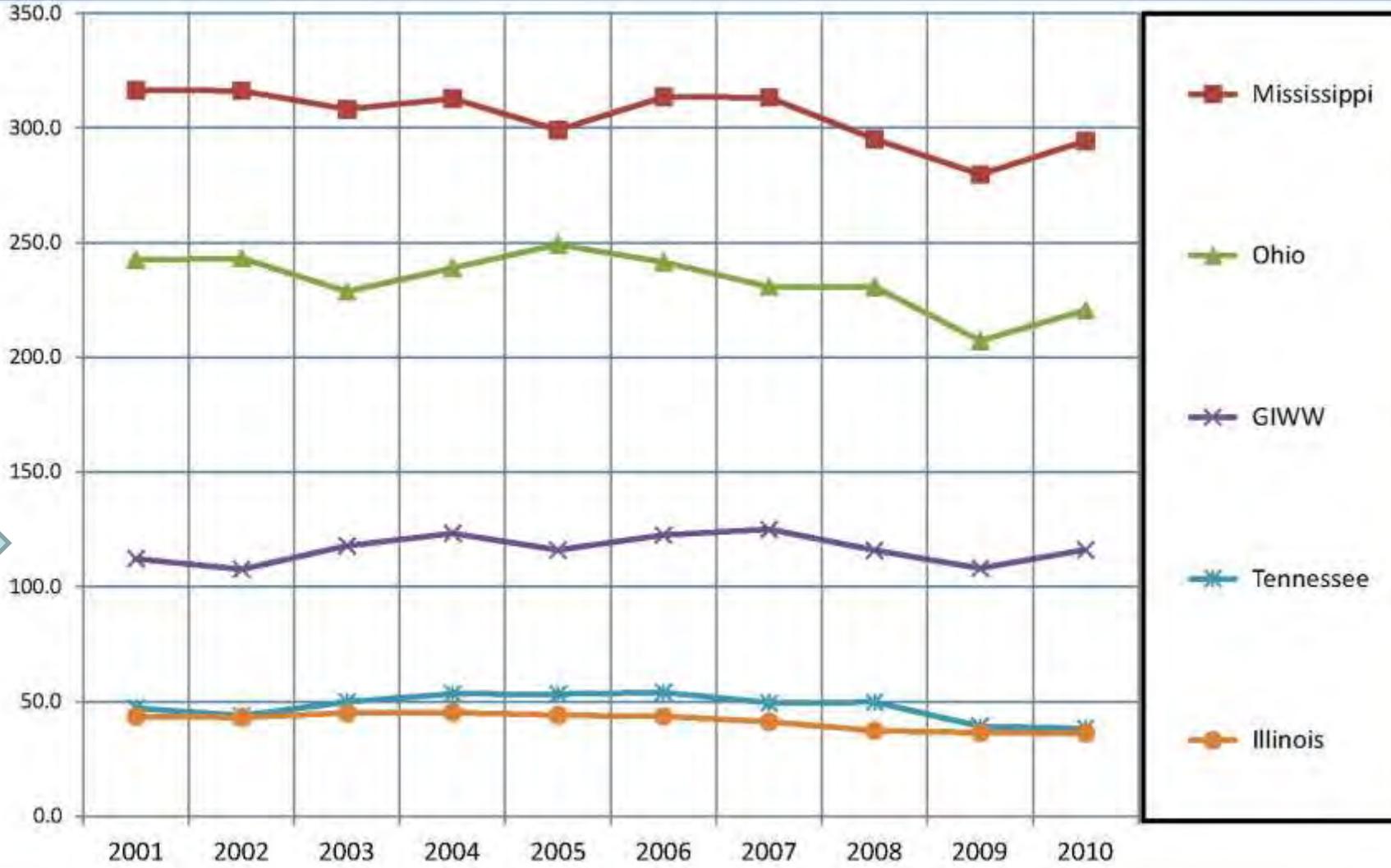
- ✓ Texas #2 in Nation in Maritime Commerce
- ✓ Texas Ports moved 538M+ tons at \$320B in 2013
- ✓ Galveston District Ports National Rank
 - ✓ Houston (2)
 - ✓ Beaumont (4)
 - ✓ Corpus Christi (6)
 - ✓ Texas City (15)
 - ✓ Port Arthur (20)
 - ✓ Freeport (32)
 - ✓ Matagorda (48)
 - ✓ Galveston (52)
 - ✓ Brownsville (67)
 - ✓ Victoria (70)
- ✓ Gulf Intracoastal Waterway (3)
- ✓ GIWW-TX 73M+ tons at \$43B in 2013
- ✓ 21.3% Nation's Import/Export/Domestic Tonnage
 - ✓ 24.8% of Nation's Total Export tonnage
 - ✓ 27.5% of Nation's Total Import tonnage



Top 5 U.S. Inland Waterways

(million tons)

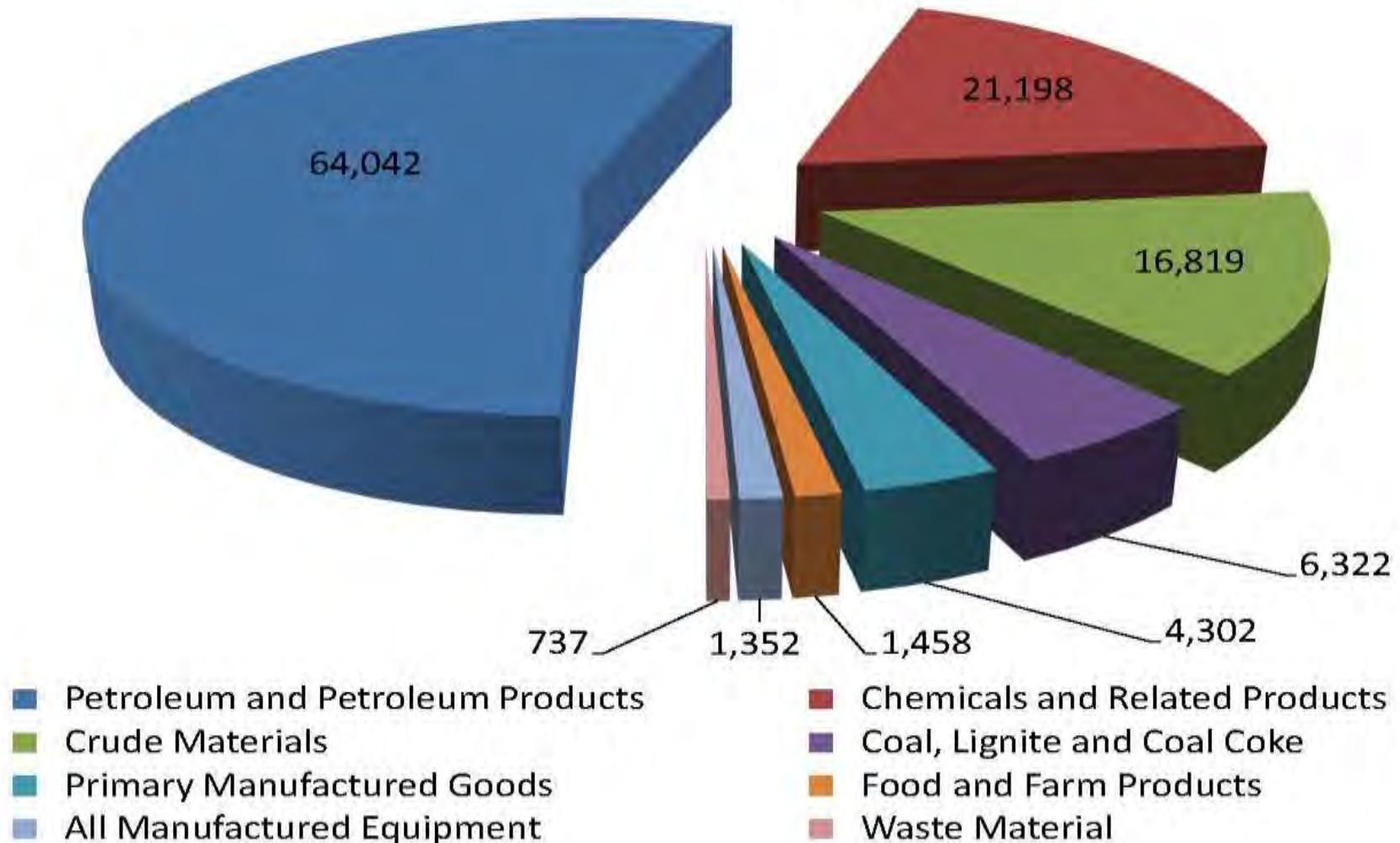
Millions of Short Tons



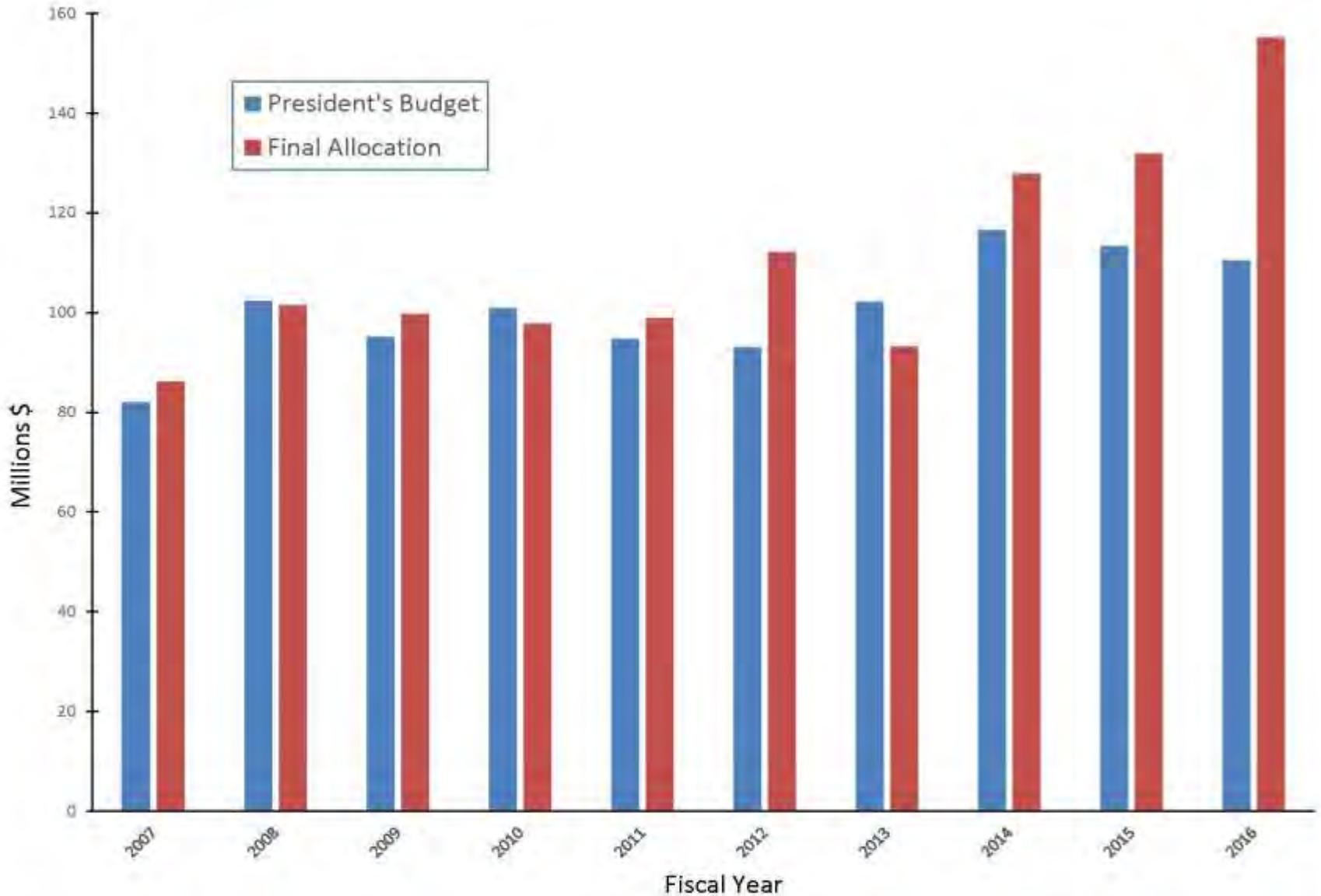
VALUE TO THE NATION

GULF INTRACOASTAL WATERWAY

Commodity by Tonnage



Navigation Operations & Maintenance Funding



GALVESTON DISTRICT NAVIGATION OPERATIONS AND MAINTENANCE FUNDING

Fiscal Year 2016: **\$155,150,000**

- Maintenance Dredging & Associated Activities
- Placement Areas Improvements & Beneficial Use Applications
- Hydrographic Surveying
- Repair Coastal Structures
- Reporting Channel Conditions
- Removal of Hazards to Navigation
- Coordination with other Institutions & Agencies



PARTNERSHIPS

New Work & Maintenance Dredging

Texas Coastal Ocean Observation Network - TCOON

Gulf Coast Joint Hurricane Response Protocol

USACE eHydro Webpage & NOAA Online Charts

Beneficial Use of Dredged Material

Hurricane Flood Protection Systems



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New Work & Maintenance Dredging

Channel Deepening & Widening

20+ MCY / YR of Maintenance Material



The Texas performs rock dredging on the Wilmington Harbor Deepening Project.



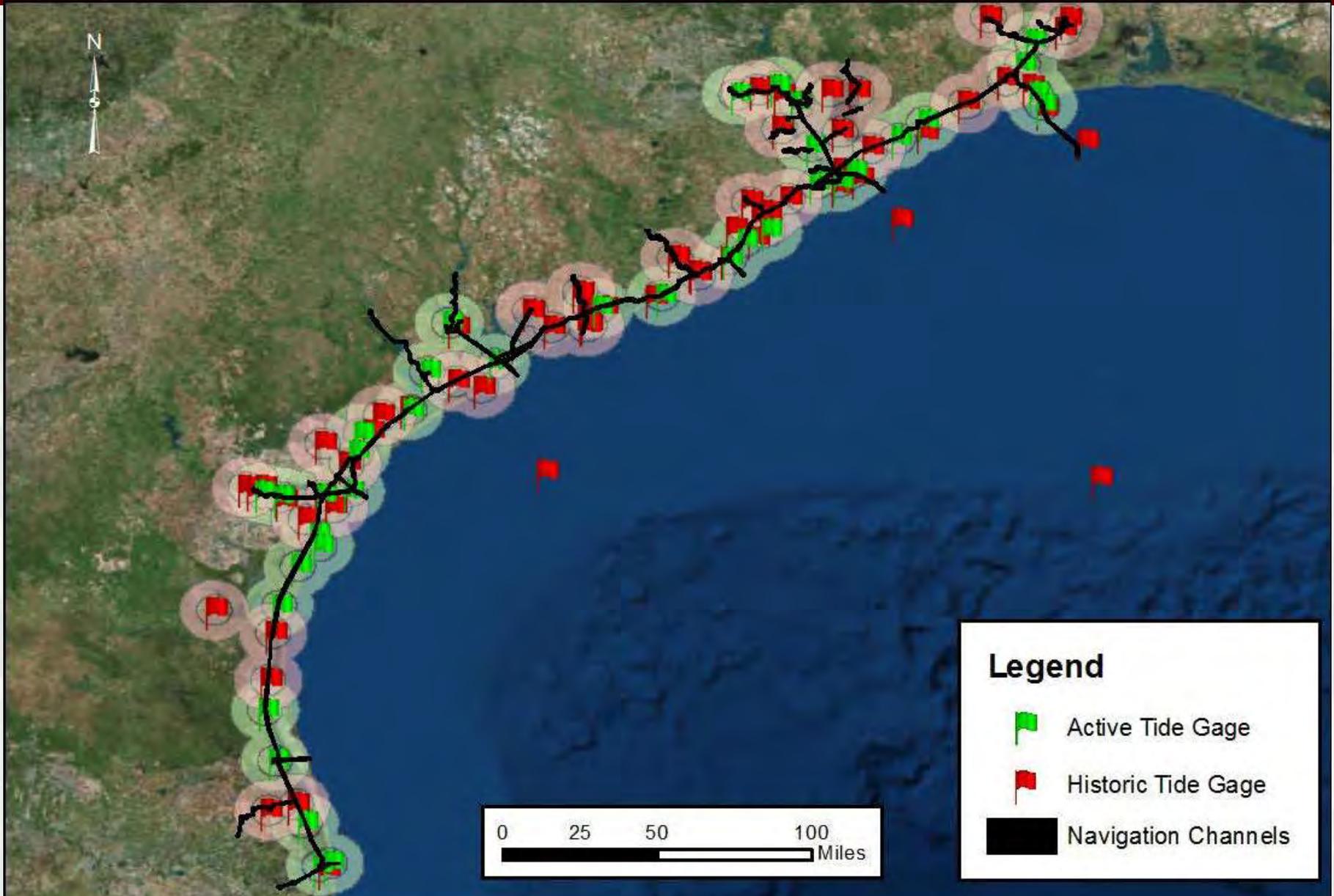
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Texas Coastal Ocean Observation Network

- U.S. Army Corps of Engineers
- National Oceanic & Atmospheric Administration
- Texas General Land Office
- Texas Water Development Board
- Texas A&M University – Corpus Christi
Conrad Blucher Institute for Survey & Science



Texas Coastal Ocean Observation Network TCOON



DATA COLLECTION PLATFORMS



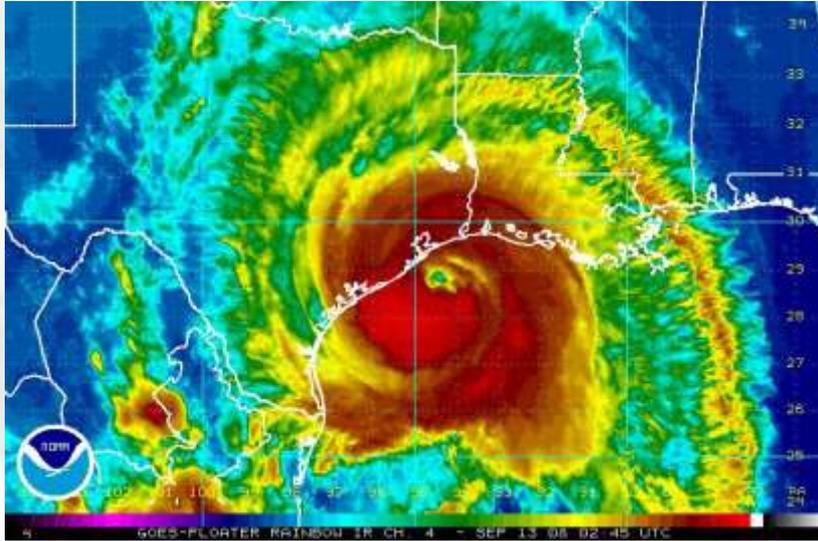
TCOON Sentinel Platform (Galveston, TX)



TCOON 4-Pile Platform (Packery Channel, TX)



GULF COAST JOINT HURRICANE RESPONSE PROTOCOL



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GULF COAST JOINT HURRICANE RESPONSE PROTOCOL

- USACE

- Hydrographic Surveying
- Maintenance Dredging
- Removal of Hazards to Navigation

- USCG

- District / Sector Commands
- Aids to Navigation (AtoNs)
- Bridge Management

- Brownwater Industry

- Gulf Intracoastal Canal Assn.

- Pilot Associations

- NOAA

- National Weather Service
- Navigation Response Teams

- Dredging Equipment

- Government Owned
- Contractor

- Salvage Equipment

- Government Owned
- Contractor

- Maritime Administration



USACE eHydro & NOAA Online Charts



GALVESTON DISTRICT



US Army Corps of Engineers

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Navigation on the Texas Coast



Coastal Custodians



The USACE Galveston District plays a key role in America's well-being by keeping waterways open for navigation and commerce. A priority is deepening and widening waterways, such as ports, ship channels, and the Gulf Intracoastal Waterway, for the safe and expeditious accommodation of commercial waterborne traffic. The Galveston District is directly responsible for maintaining more than 1,000 miles of channel, including 270 miles of deep draft and 750 miles of shallow draft. Dredges are constantly at work keeping vital marine arteries open for waterborne traffic carrying cargo ranging from crude oil to coffee. Other priorities include construction of jetties or breakwaters to protect harbor and inlet entrances and the locks along the Gulf Intracoastal Waterway at the crossing of the Brazos and Colorado rivers.

In the photo: The Port of Houston ranks first in the nation in foreign waterborne tonnage; first in

- Hydrographic Surveys
 - Channel Hydrographic Surveys
- Notice to Navigation
 - Dredging/Marine Construction
 - Deep Draft Condition Report
 - Shallow Draft Condition Report
- Navigation Links
 - Land Use
 - Notice to Navigation Interest
 - Institute for Water Resources



USACE eHydro & NOAA Online Charts



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Hydrographic Surveys Brief



MISSION STATEMENT
The U.S. Army Corps of Engineers' navigation mission is to provide safe, reliable, efficient and environmentally sustainable waterborne transportation systems (channels, harbors, and waterways) for movement of commerce, national security needs, and recreation.

The Mission of the Galveston District Navigation Branch is to manage federal navigation projects along the Texas coastal region.

SURVEY MAPS
The products are reproduced from geospatial information prepared by the U.S. Army Corps of Engineers. GIS data and product accuracy may vary. Data may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc. Using GIS products for purposes other than those for which they were created may yield inaccurate or misleading results. The Corps of Engineers reserves the right to correct, update, modify, or replace GIS products without notification.

The information depicted on the survey maps represent the results of surveys made on the dates indicated and can only be considered as indicating the general conditions existing at that time. These conditions are subject to rapid change due to shoaling events. A prudent mariner should not rely exclusively on the information provided here. Required by 33 cfr 209.325.

Hydrographic Survey

CLICK ICON(S) FOR MAP
DOWNLOAD PAGE LINK

Hydrographic Surveys

- Sabine Neches Waterway
- Galveston - Texas City - Houston
- Houston Ship Channel Tributaries
- Freeport Harbor & Brazos Harbor
- Matagorda Ship Channel & Port Lavaca
- Corpus Christi
- Brazos Island Harbor & Port Isabel Channel
- Gulf Intracoastal Waterway - North
- Gulf Intracoastal Waterway - South
- Gulf Intracoastal Waterway Tributaries

Corps Connections

Dredging/Marine Construction



USACE eHydro & NOAA Online Charts

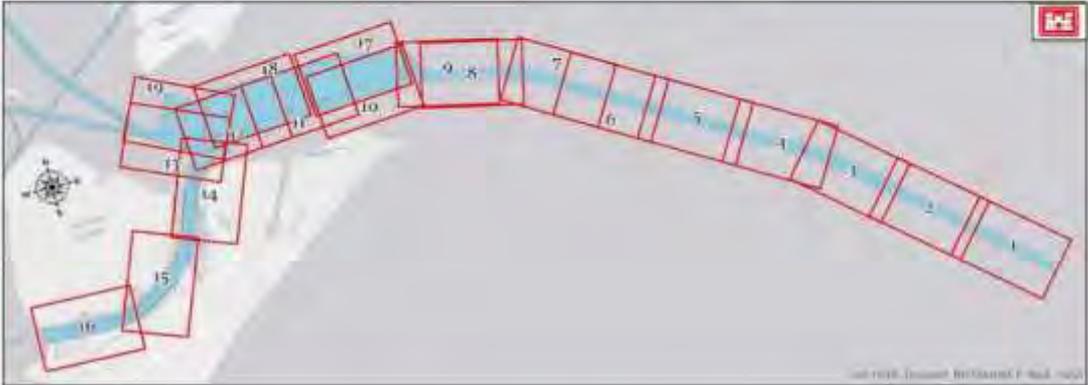


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Galveston Harbor/Channel Map Index



Galveston Harbor/Channel Maps

	Channel Reaches	Station to Station		Survey Date	Channel Maps	XYZ Data
Pages 1 - 3	Extended Entrance Channel	76+000	55+840.58	July 14, 2015	Survey Maps	XYZ
Pages 4 - 8	Entrance Channel	55+840.58	30+515.474	March 24, 2015	Survey Maps	XYZ
Page 7 - 8	Outer Bar Channel	30+515.474	21+752.821	June 2, 2015	Survey Maps	XYZ
Pages 10 - 12	Inner Bar Channel	21+752.821	4+490.072	July 29, 2015	Survey Maps	XYZ
Page 13	Bolivar Roads Channel	4+490.121	0+000	June 8, 2015	Survey Maps	XYZ
Page 14	Bolivar Roads to Exxon Oil Dock	0+000	7+879.53	January 8, 2016	Survey Maps	XYZ
Page 15	Exxon Oil Dock to Todds Shipyard	7+879.53	15+600	January 8, 2016	Survey Maps	XYZ
Page 16	Todds Shipyards to Pier B (43rd St.)	15+600 (7+000)	22+571 (13+900)	January 8, 2016	Survey Maps	XYZ
Page 17	Anchorage Basin "A"	23+200	12+200	April 6, 2015	Survey Maps	XYZ
Page 18	Anchorage Basin "B"	14+118.08	4+490.12	April 7, 2015	Survey Maps	XYZ



Beneficial Use of Dredged Material

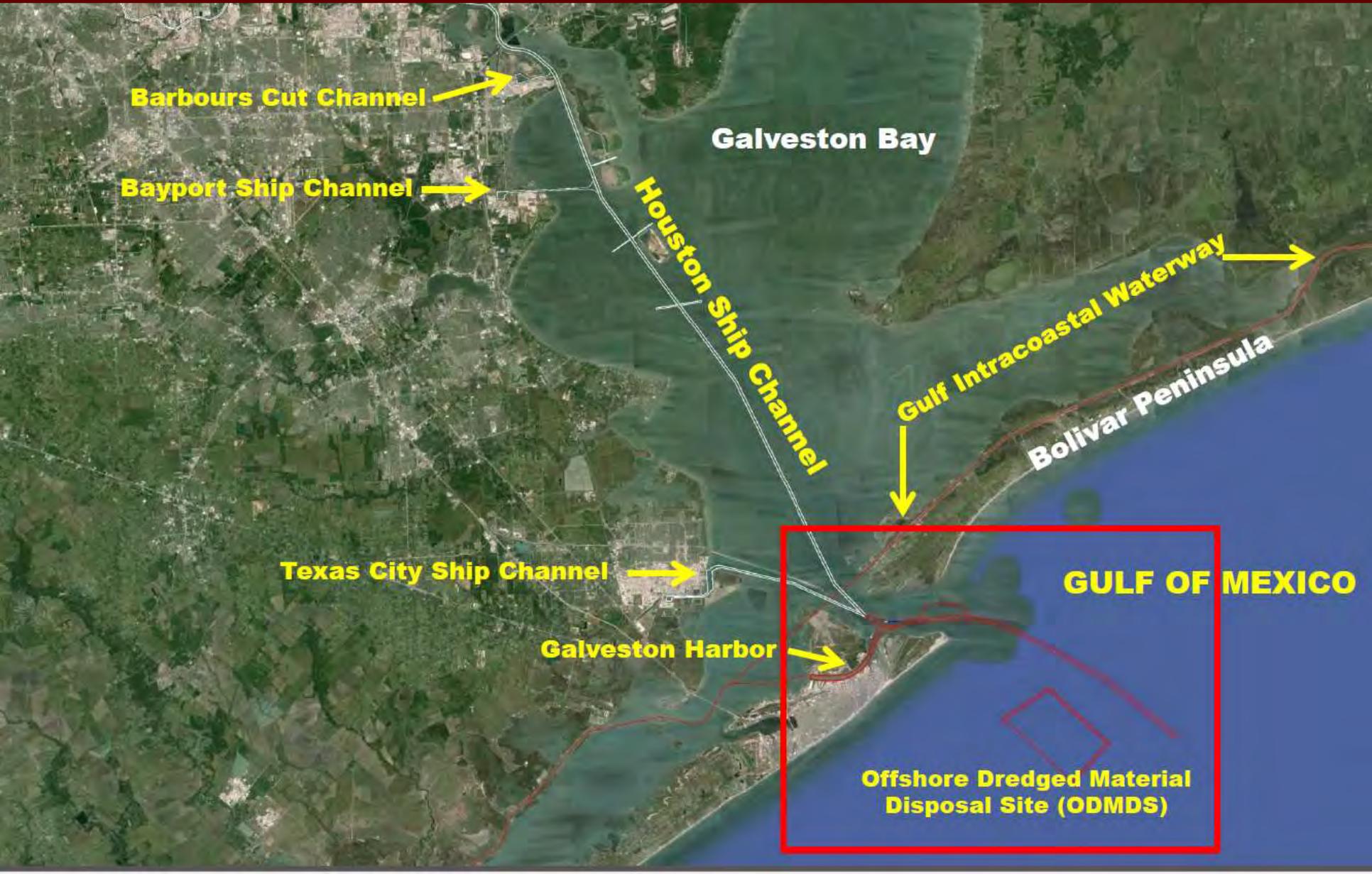
Texas General Land Office US Army Corp of Engineers Beneficial Use Partnership



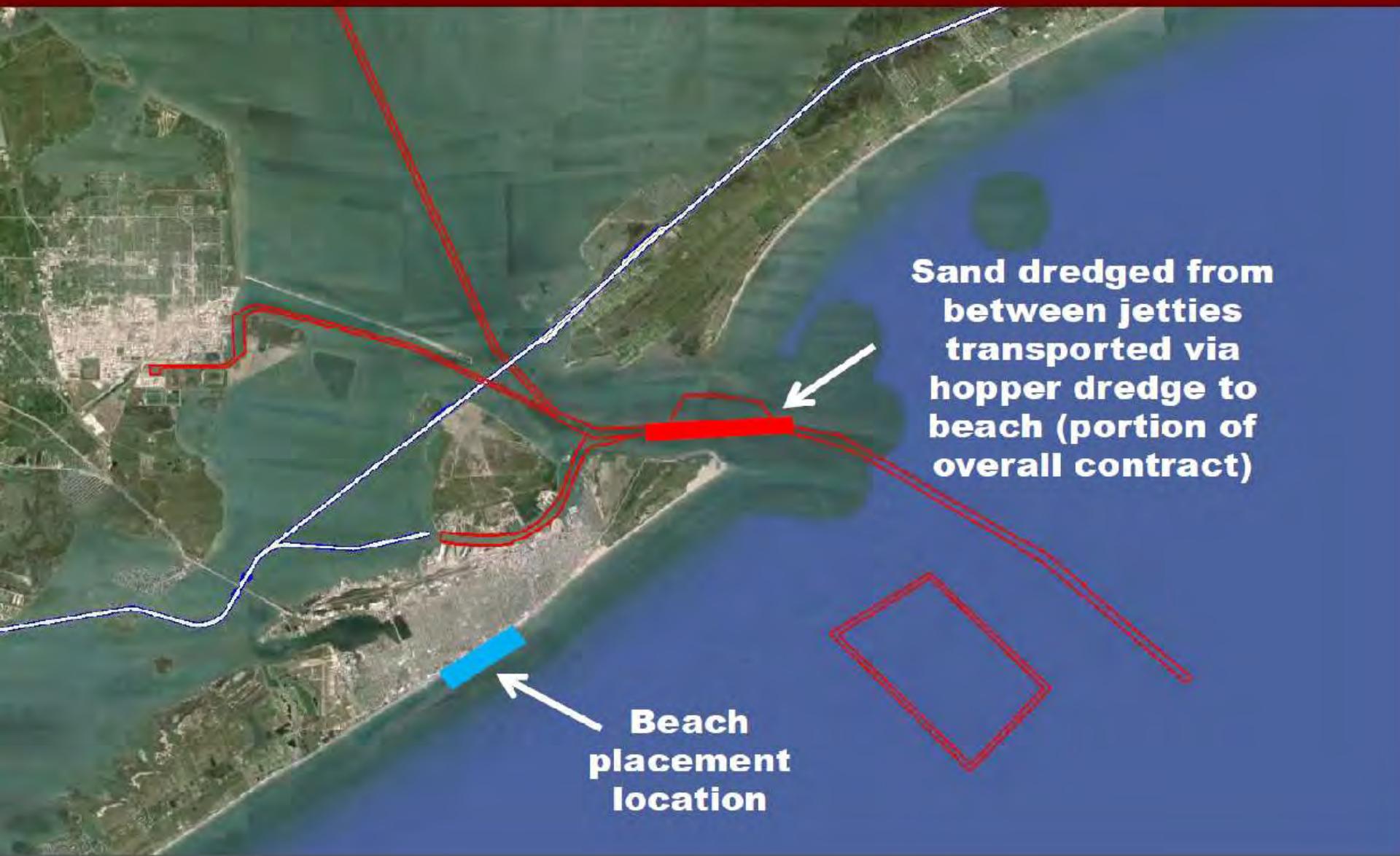
Beneficial Use of Dredged Material (BUDM), a Corps-GLO Partnership Success

- ▲ **Bessie Heights Marsh** – USACE, GLO and the Sabine Neches Navigation District partnered in 2006 to utilize dredged material beneficially from the Sabine Neches Waterway for marsh creation within Bessie Heights. Approximately 70-acres of marsh was constructed with 500,000 cubic yards of dredged material. There is opportunity for future marsh creation at Bessie Heights as this portion of the SNWW is dredged on a 5 to 7 year frequency.
- ▲ **Texas Point National Wildlife Refuge** – In 2000, USACE, GLO and the Texas National Wildlife Refuge partnered to restore approximately 40 acres of coastal wetlands and mudflats.
- ▲ **Rollover Beach** – USACE, GLO and Galveston County have been partnering for several decades to place between 100,000 and 200,000 of sand from the Gulf Intracoastal Waterway onto the shoreline of Rollover Beach. This beneficial use occurs on an annual basis. GLO and Galveston County finances the incremental cost for pumping the additional distance to the beach.
- ▲ **Pierce Marsh** – In 2015, USACE, GLO and several State and Federal resource agencies partnered to restore emergent estuarine marsh in the vicinity of West Galveston Bay with maintenance dredged material originating from the Gulf Intracoastal Waterway (GIWW). Additional beneficial use opportunities within Pierce Marsh will be available with future GIWW maintenance dredging requirements.
- ▲ **Galveston Beach** – In 2015, USACE, GLO and Galveston County Park Board (GCPB) forged a partnership to place approximately 500,000 cubic yards of sand from the Galveston Entrance Channel to Galveston Beach. GLO and GCPB financed the incremental cost to transport the material from the Ocean to the Beach. This partnership is anticipated to continue, provided that non-Federal funding is made available when channel maintenance dredging is required; 2-year frequency.
- ▲ **South Padre Island** – In 2000, USACE, GLO and the City of South Padre island began working in partnership to place between 300,000 – 600,000 cubic yards of dredged material originating from the Brazos Island Harbor (Brownsville) Entrance Channel onto the shoreline of South Padre Island. This beneficial use occurs every 12 – 24 month depending on shoaling conditions.
- ▲ Although GLO did not provide direct funding to the remaining beneficial use projects identified in the figure, GLO staff were active team members from project inception through project completion. GLO support in these project included: expertise in coastal processes, historical knowledge of projects, and approvals for real estate; as GLO owns submerged lands in Texas.

Beneficial Use of Dredged Material



Houston – Galveston Entrance Channel & Galveston Beach



Construction—Great Lakes Dredge & Dock Dredge Terrapin Island



Hurricane Flood Protection Systems



Texas City Hurricane Flood Protection





Questions?