GALVESTON DISTRICT

GIWW Setback Initiative

US Army Corps of Engineers
BUILDING STRONG®

Background

Inititiation: GIWW Real Estate and Setback Initiative was initiated on August 21st, 2012 at the Galveston District. The Project Delivery Team consisted of stakeholders of the GIWW consisting of:

Operations Manger (SWG)
Civil Engineer Technician (GIS Expert)(SWG)
Regulatory Specialist (SWG)
Realty Specialist (SWG)
USCG (Corpus Christi and Houston Sectors)
TX-GLO
TXDOT
GICA
Industry Experts

Purpose: Establish a regulatory program policy that defines local setbacks for activities adjacent to federal navigation channels as well as provide the Galveston District with a comprehensive GIS-based tool for managing public and private development within the easemented boundaries of the GIWW.

Goals: Analyze the GIWW for hazards that adversely impact commercial navigation to include environmental conditions, terrain and marine structures within the GIWW boundaries. The PDT would then use a scientific approach to amend the setback policy to account for these hazards and then geographically update the changes to the policy. The PDT would subsequently collect and compile all existing GIWW easements in order to re-record, digitally file and ensure the geographic projection of the easements in GIS are correct.

Authorities: Section 10 of the Rivers and Harbor Act of 1899 &
Section 404 of the Clean Water Act.

Similar Studies

Report 0-6225-1: Analysis and Recommendations on protecting waterways from encroachment (TTI; SEP08-AUG09)

Purpose: Investigate and determine hazards to navigation in the Texas Portion of the GIWW that originate from shore, and to make recommendations for mitigating these hazards in the future.

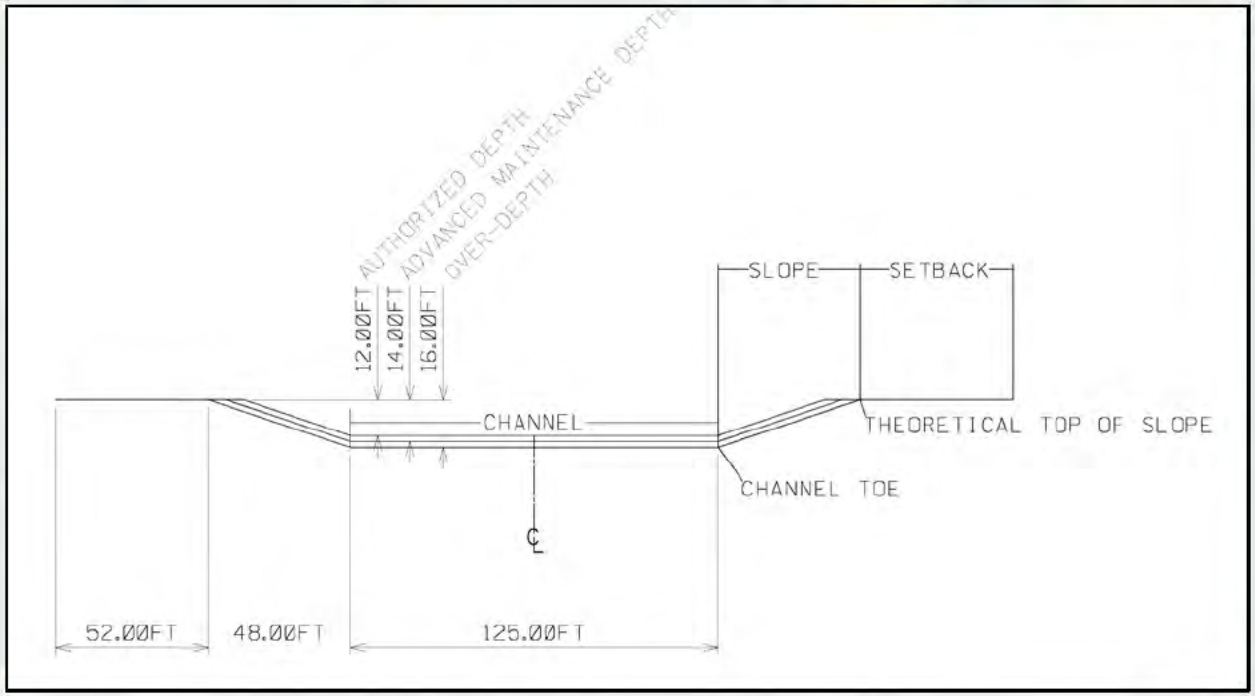
Goal: Protect the navigation corridor for commercial traffic for the industries vital to the Texas economy that rely on the GIWW for the transport of raw materials and finished products.

Project Conclusion: The major problems caused by development of structures that encroach into the waterway are the narrowing of the channel, lack of strategic mooring or push-in (hold up) places needed in inclement weather, and congestion caused by additional inexperienced recreational boaters.

Project Recommendations: (Those applicable to District Initiative)

1. (USACE) Create master plan to create zones of non-development in order to allow for strategic mooring locations for traffic, weather issues, and safe bridge approaches.
2. (USACE) Sufficient undeveloped areas around bridges to allow for a safe approach for barges or other navigational vessels.
3. (USACE) Establish an effective mechanism for policing of permits after they are issued.
4. (Developers) No vessel mooring areas should be placed in GIWW navigable waters.
5. (Developers) Avoid all further development near bridge approaches or bends in the waterway.

Set Back Frame-Work



Setback: GIWW Navigational Channel, piers, docks, fill or other waterfront structures should not extend any closer to the near bottom edge of the GIWW Federal channel than 100 feet.

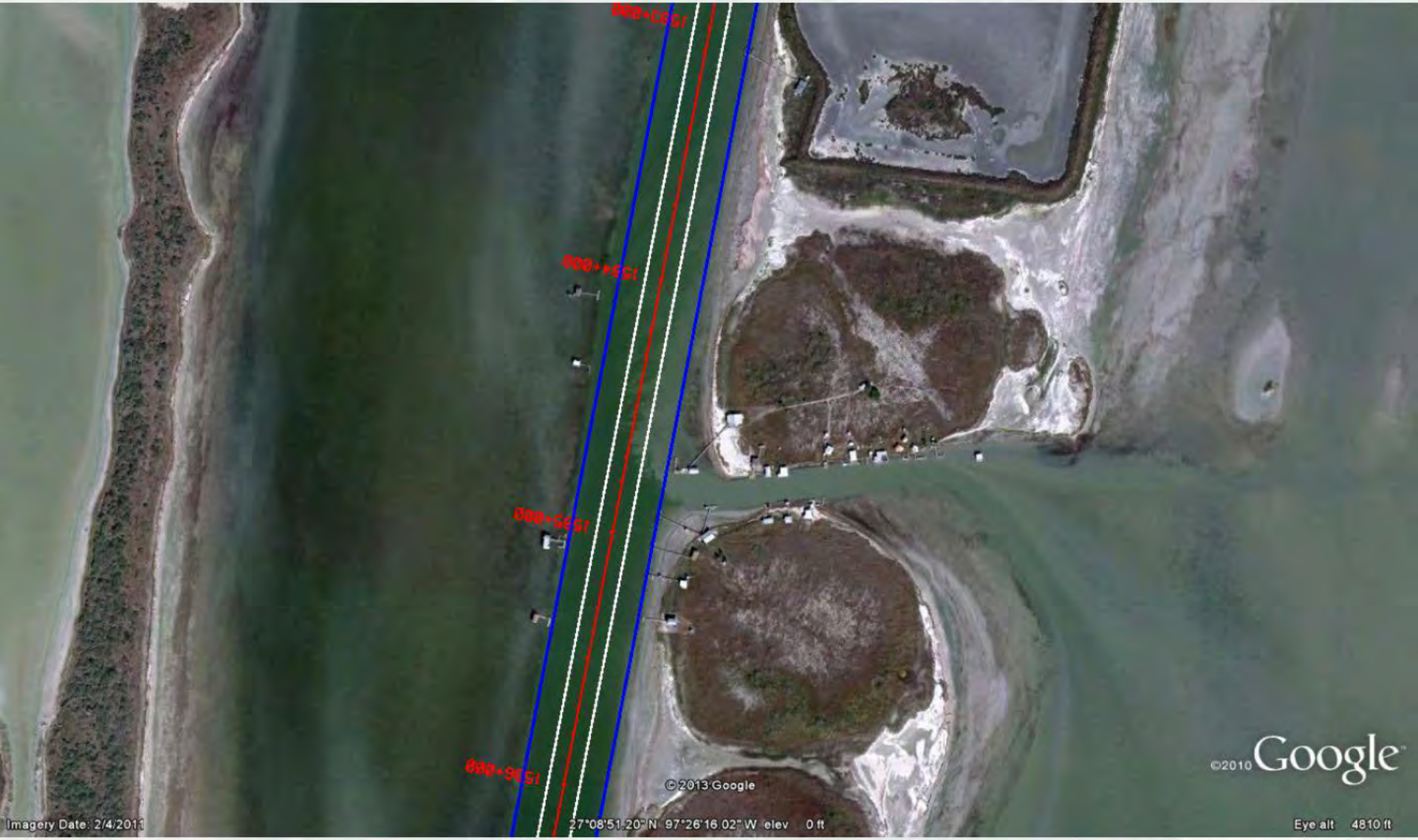
Metrics:
- Measurements based off of authorized over-depth(16 feet)
- Measurements based off of an average 3:1 slope ratio
- 52 feet safety offset based on best practices for safety

Equation: *52 ft (safety) + {3 (side slope ratio) x 16 (over-depth)} = 100 feet*

Sample

© 2013 Google
Imagery Date: 2/4/2011
27°08'53.56" N 97°26'14.38" W elev 0 ft
©2010 Google
Eye alt 4810 ft

Sample


©2010 Google
© 2013 Google
Imagery Date: 2/4/2011
27°08'51.20" N 97°26'16.02" W elev 0 ft
Eye alt 4810 ft

Hazard Identification

Workshops: Workshops were conducted in coordination with USCG, TX-GLO, GICA, USACE and Industry experts. The following hazards were identified:

All USCG reported incidents from 2001-2008
TTI Report 0-6225-1

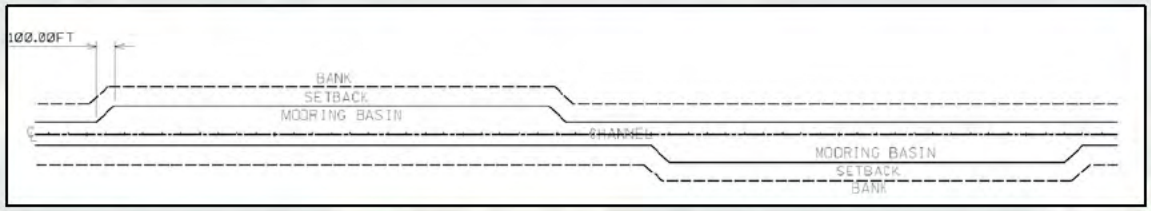
Bends

Waterfront Congestion

Bridges

Mooring Facilities

Hazards – Mooring Facility



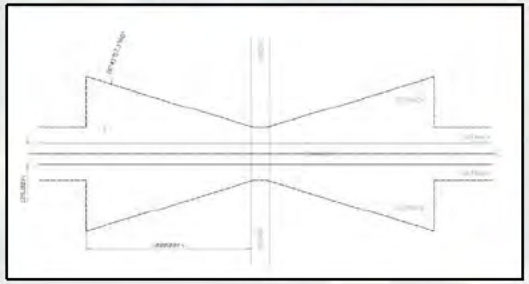
Hazard Description: Waterfront structures developed in vicinity of the mooring facility would present a hazard in the event that a vessel becomes detached from the mooring buoy.

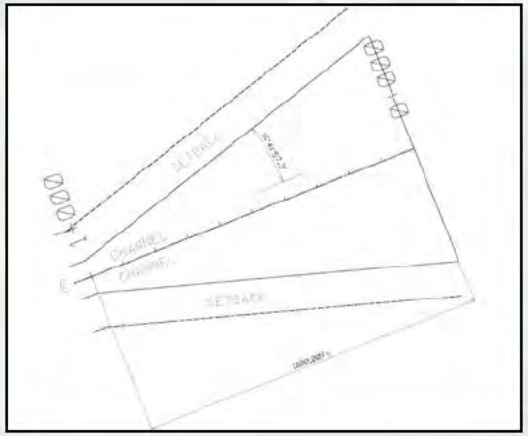
Applicability: All Mooring Facilities along the GIWW

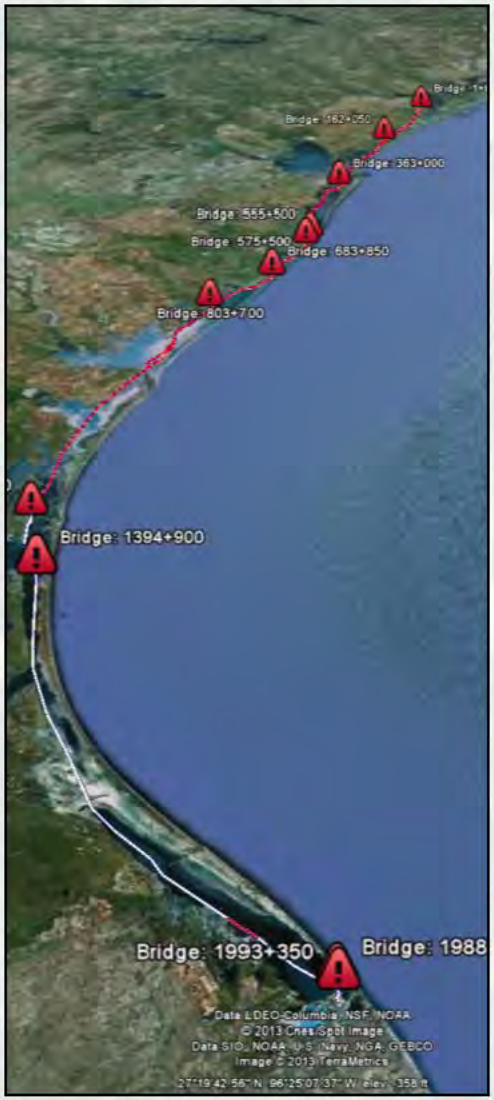
Setback: The setback will be expanded to the near bank for the entirety of the mooring facility.

Constraints: Expanded setback is confined to the authorized design for the mooring facility.

Hazards – Bridges







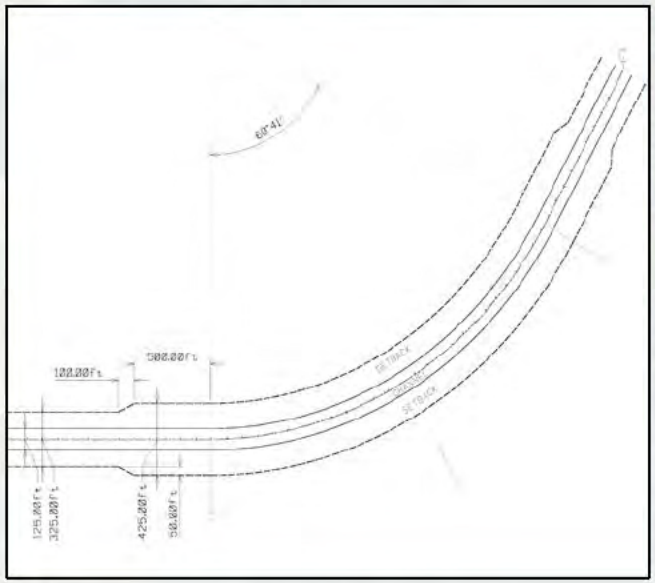
Hazard Description: Bridges, specifically the bumpers and pilings, are especially dangerous for vessels, especially those pushing barges. Large vessels negotiating the bumpers and pilings, particularly when currents are swift, require additional clearance to safely navigate through the bridges along the GIWW.

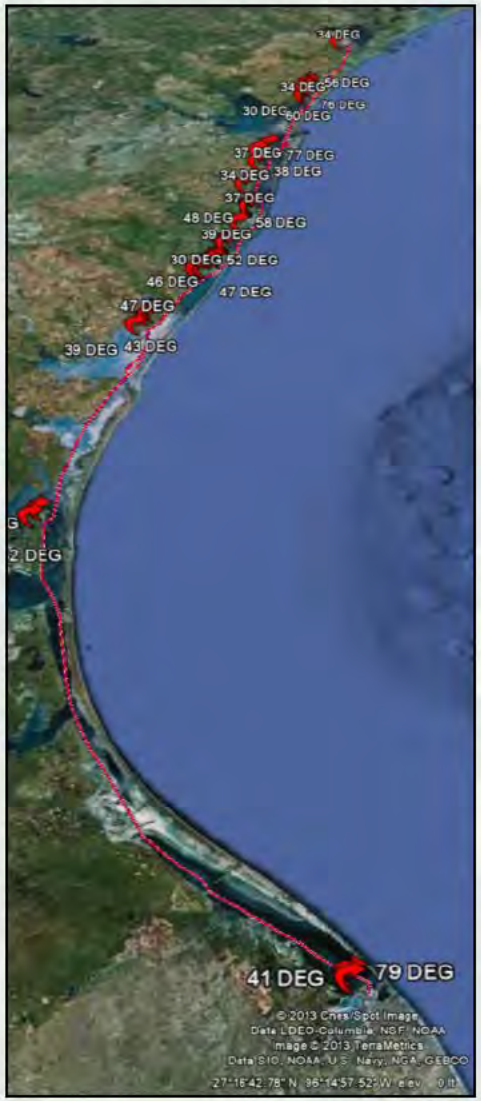
Applicability: All 11 Bridges along the GIWW

Setback: Setback is be expanded starting at the intersection of the base of the bridge and the pre-established 100 foot setback. The expanded setback will flare at an approximate 16 degree angle towards the near shore bank for 1000 feet.

Constraints: The setback will be limited to the bank and will parallel opening of inlets.

Hazards – Bends/Turns





Hazard Description: Bends are especially dangerous for vessels, especially those pushing barges. Large vessels negotiating turns, particularly when currents are swift, require additional clearance to safely navigate through bends in the GIWW.

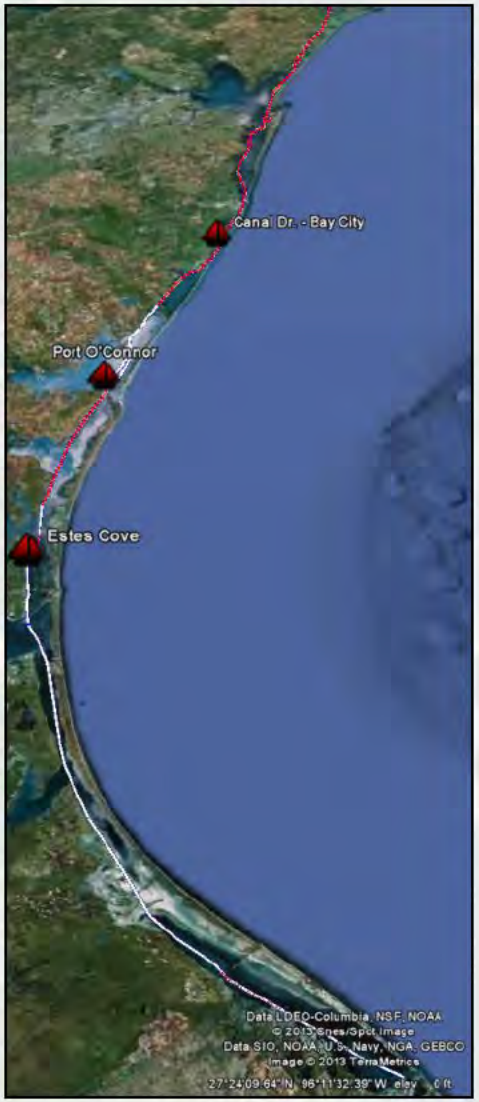
Applicability: 29 Curves along the GIWW

Setback: Where the angle of deflection of the centerline of the GIWW channel from straight is 30 degrees or more, the setback will be expanded to 150 feet on the inside of the bend and 150 feet on the outside of the bend from the near bottom edge of the Federal channel for 500 feet in length of the centerline of the channel, going both directions from the point of intersection at the channel bend.

Constraints: Two locations where waterfront structures have set a precedence.

Nautical Mile Marker 393 (Wiggles)
Nautical Mile Marker 419/420

Hazards – Congested Areas



Hazard Description: Waterfront structure encroachments are especially dangerous for vessels, especially when numerous encroachments have created congested areas.

Applicability: Four Occurrences

Setback: Setback is tied in to a reinforced bulkhead in each location. The equivalent setback distance lost by tying into the bulkhead is added to the opposite side of the channel in order to compensate.

Constraints: The following offsets were applied:

Canal Dr./Bay City: 29 ft offset
Port O'Connor (1): 49 ft offset
Port O'Connor (2): 39 ft offset
Estes Cove: 33 ft offset

Hazards – Land Encroachment

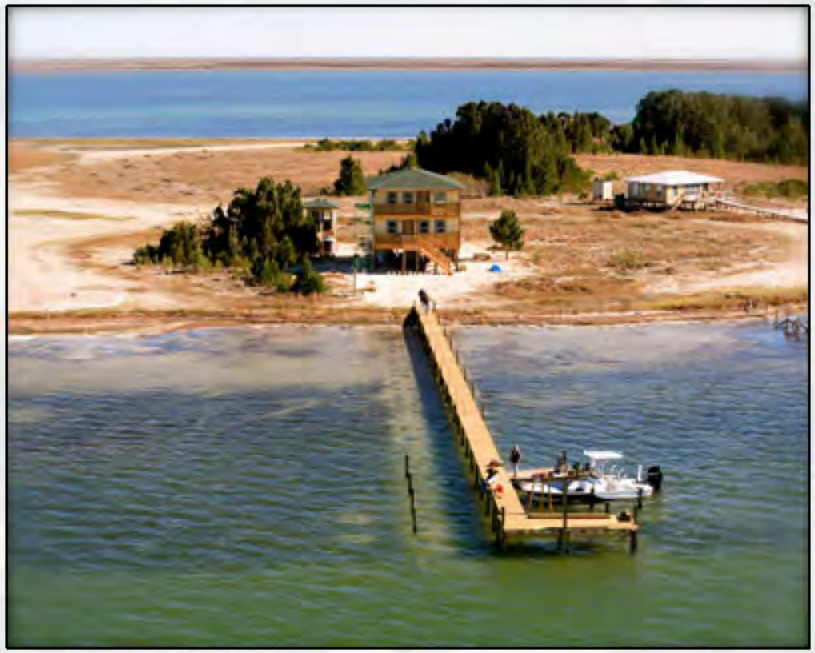
Hazard Description: Large vessels negotiating the land encroachments, particularly when currents are swift, require additional clearance to safely navigate around the land encroachment.

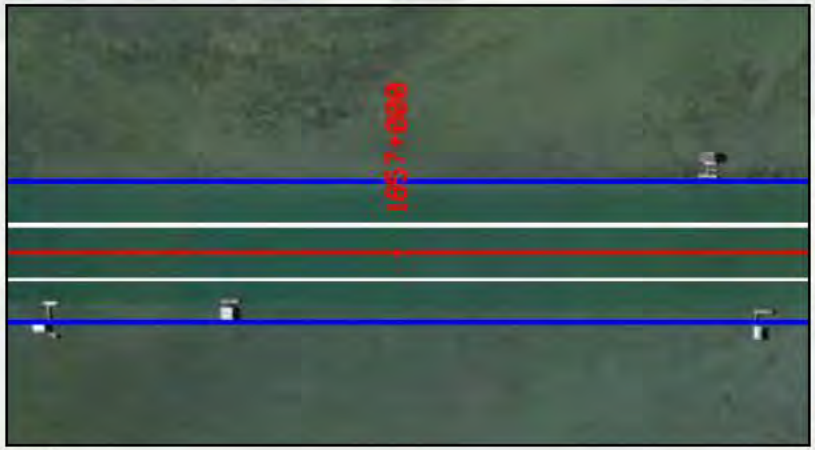
Applicability: One occurrence

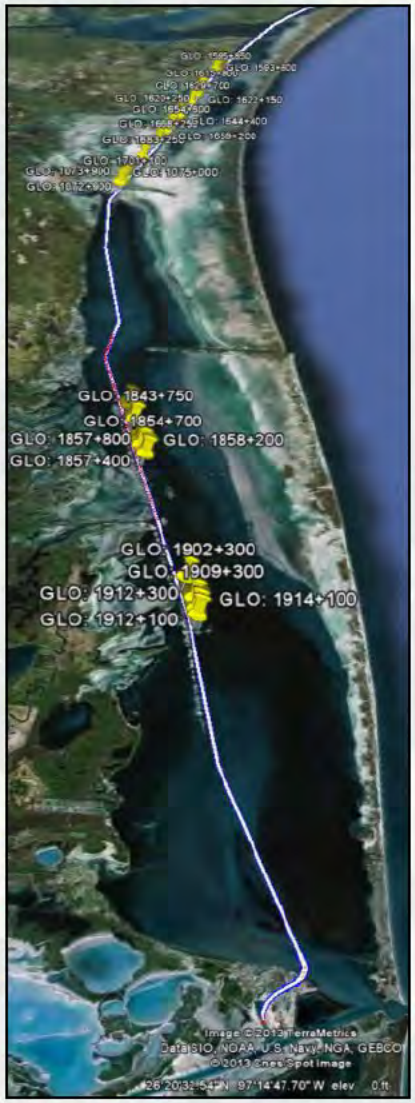
Setback: The setback is expanded to 150 feet on the opposite side of the land encroachment to provide additional clearance.

Constraints: The land encroachments will be analyzed no less than every decade to determine whether erosion/accretion has affected the area sufficiently to adjust the policy.

Hazards – Laguna Madre







Hazard Description: Waterfront structure encroachments are especially dangerous for vessels, especially when numerous encroachments have created congested areas.

Applicability: 66 Occurrences

Setback: No change to the setback

Constraints: No constraints

Note: USACE is working with GLO on identifying and notifying the property owners that in the event that the structure is damaged or destroyed that it will not be permitted to be rebuilt with the same design, and/or rebuilt in same location

Closing

Products Developed:

-GIS based graphics depicting the GIWW channel framework and updated setback.

-Signed Galveston District SOP for Setbacks along the GIWW

http://www.swg.usace.army.mil/Missions/Navigation.aspx

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