

COASTAL TX PROTECTION AND RESTORATION FEASIBILITY STUDY

Name of Briefing
Study Update

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Date Here

"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."



US Army Corps
of Engineers.





Study Name: Coastal Texas Protection & Restoration Feasibility Study

Authorization: Sec. 4091, Water Resources Development Act (WRDA) of 2007
Public Law 110-114

Appropriation: 2014-2019 yr increments thru public law
2020-2021 thru Bipartisan Budget Act of 2018

Budget: \$20.18 Million (\$12.282 Federal: \$7.898 Cost-shared)

Non-Federal Sponsor: Texas General Land Office

Schedule: Recon: 2014-2015
Feasibility Study Start: Nov 2015
Scheduled Completion: May 2021

Multi-Purpose: Coastal Storm Risk Management and Ecosystem Restoration

Scope:

Develop a **comprehensive plan** to determine the feasibility of carrying out projects for flood damage reduction, **hurricane** and **storm damage reduction**, and **ecosystem restoration** in the coastal areas of the State of Texas.

The comprehensive plan shall provide for the **protection, conservation**, and **restoration** of wetlands, barrier islands, shorelines, and related lands and features that **protect critical resources, habitat, and infrastructure** from the impacts of coastal storms, hurricanes, erosion, and subsidence





Population Centers

- >\$125B assets at risk, growing to \$200B
- 18 coastal counties
- 6.1 million residents, growing to 9M in 50 yrs
- >24% of the TX population



Critical Infrastructure

- Nationally ranked deep-draft ports
- 450 miles of Gulf Intracoastal Waterway (GIWW)
- 40% of the Nation's petrochemical industry
- 25% of national petroleum-refining capacity
- NASA
- UTMB – Level 4 Viral Laboratory



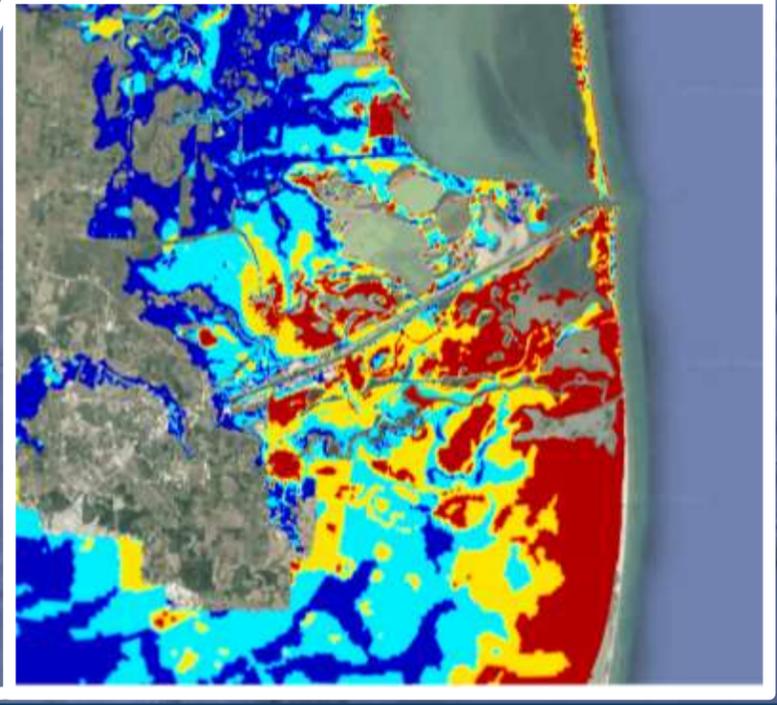
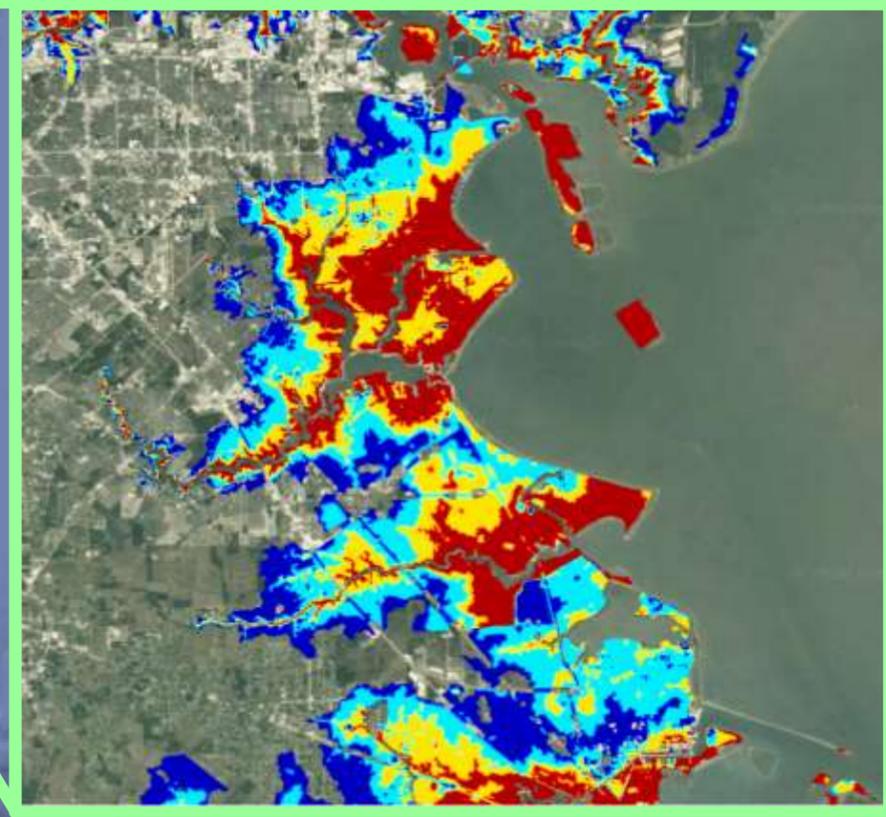
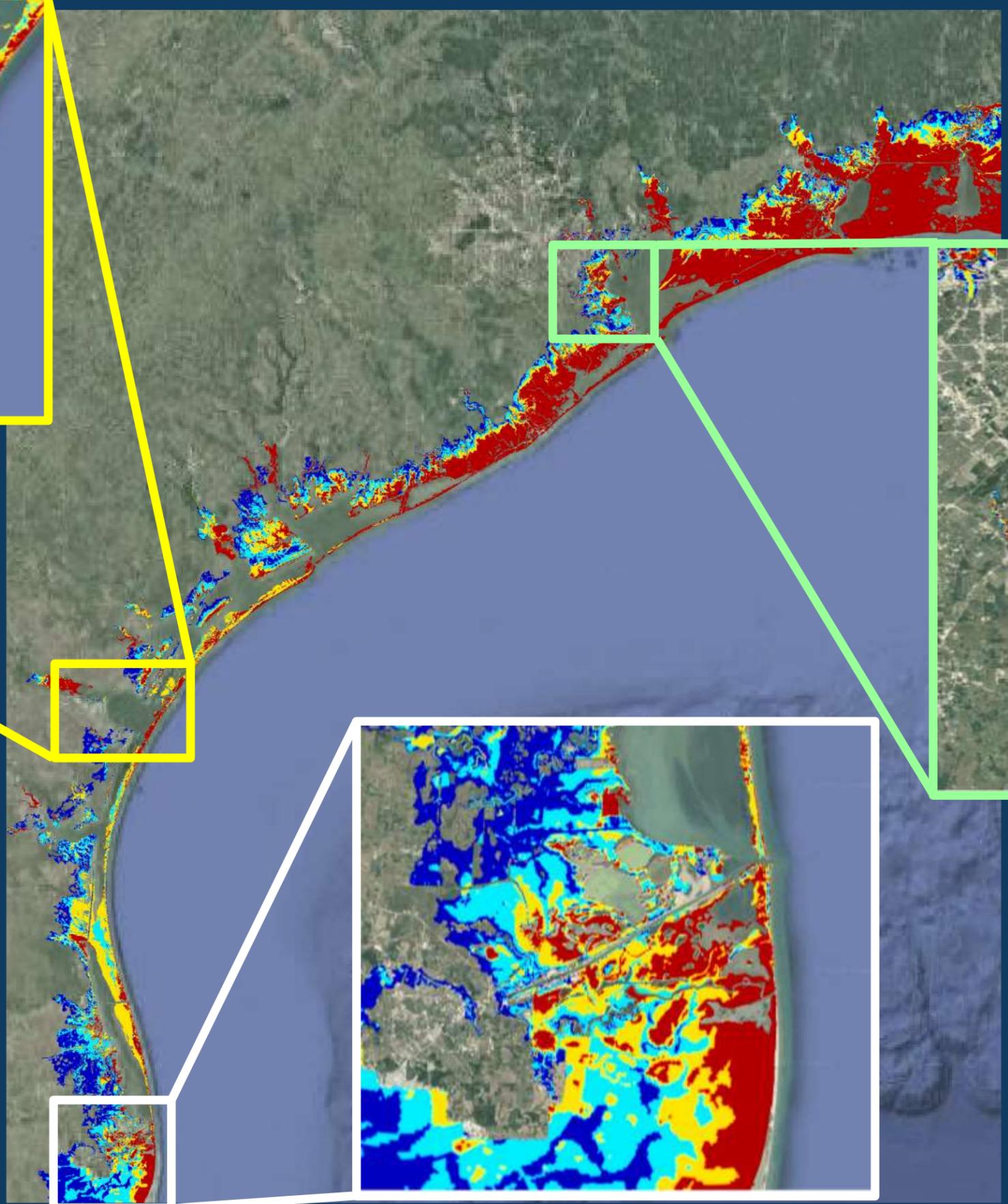
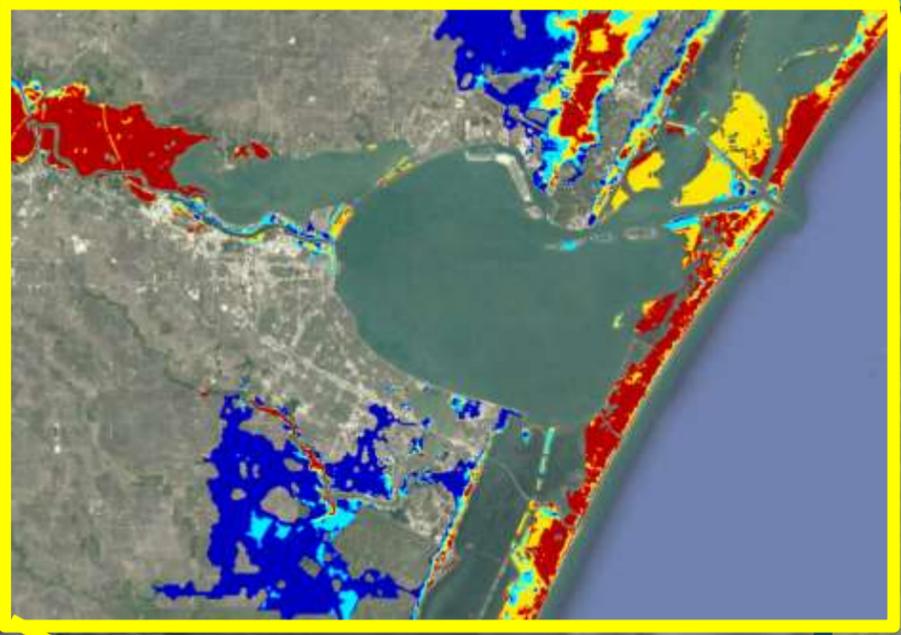
Coastal Ecosystems

- Wetlands, seagrass beds, oyster reefs, dunes, and beaches
- Critical threatened and endangered species habitat
- Nursery habitat and significant commercial fisheries for oysters, shrimp, and finfish

Critical Natural Features

- 2 National Estuary Program sites
- Central Flyway Migration Corridor
- The Laguna Madre - a rare hypersaline lagoon
- Padre Island National Seashore
- 12 National Wildlife Refuges

THE THREAT

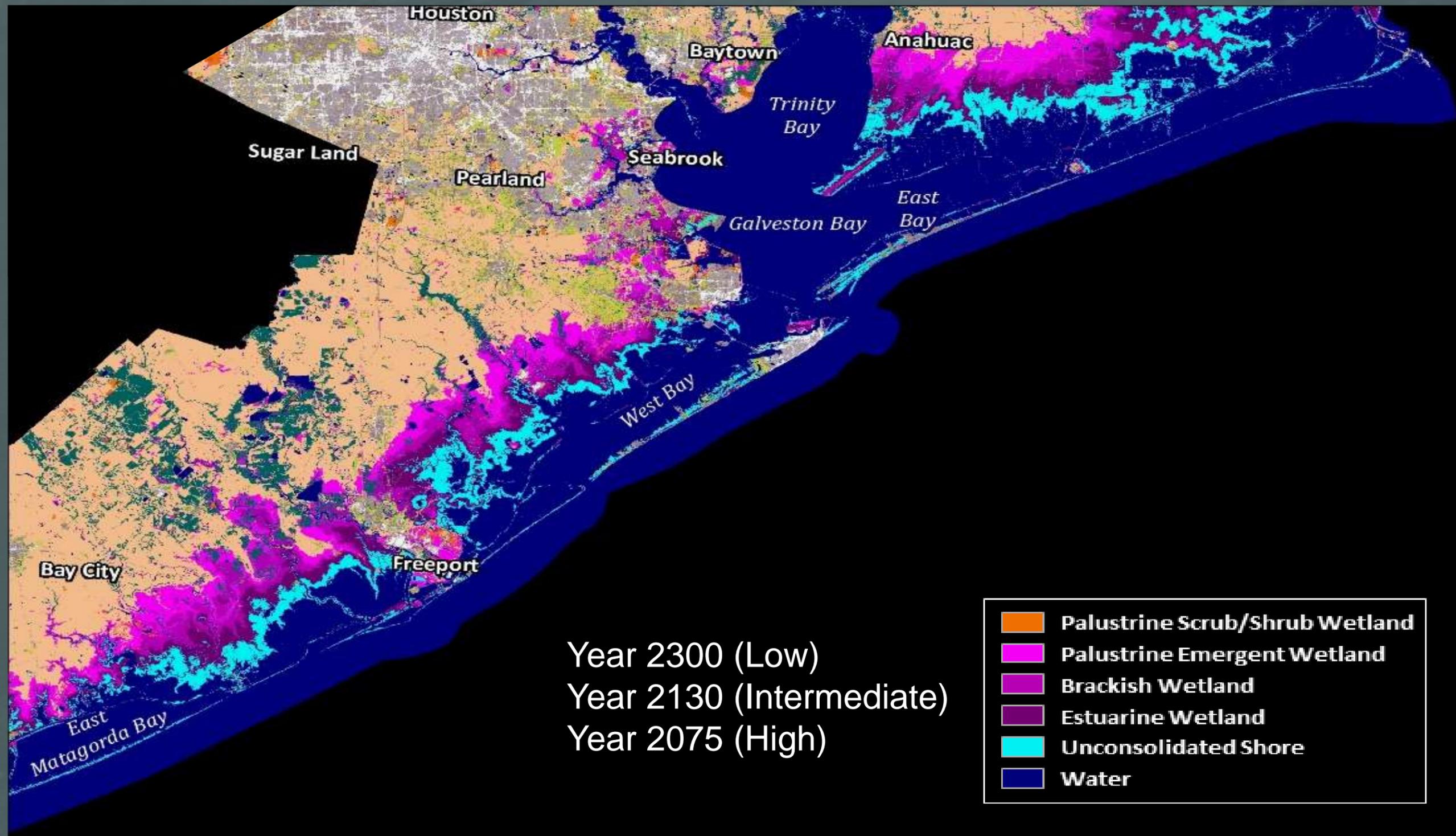


*Source:
C-STORM Modeling -
Maximum of Maximum
Storm Surge
Inundation*

-  < 3 ft above ground
-  3-6 ft above ground
-  6-9 ft above ground
-  > 9 ft above ground



Upper Texas Coast Break Point in Sea Level Change (about 3.5 feet)

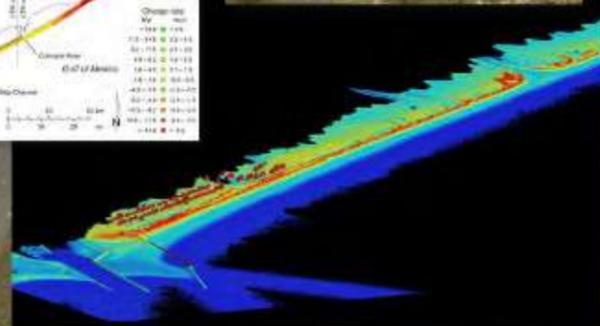
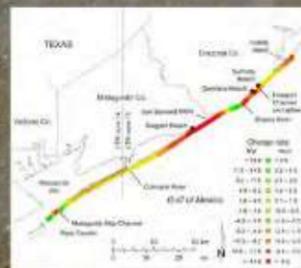
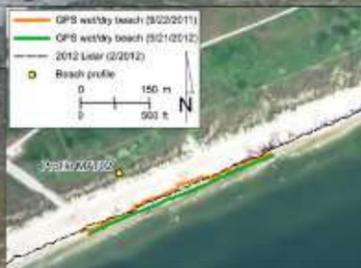




Final Report

Shoreline Movement along the Texas Gulf Coast, 1930's to 2012

Jeffrey G. Paine, Tiffany Caudle, and John Andrews



Bureau of Economic Geology

Scott W. Tinker, Director
Jackson School of Geosciences
The University of Texas at Austin
Austin, Texas 78713-8924

GLO Contract Number 09-074-000
CEPRA Project No. 1563
Work Order No. 7776.

Final Report Prepared for
General Land Office under
contract no. 09-074-000.



August 2014

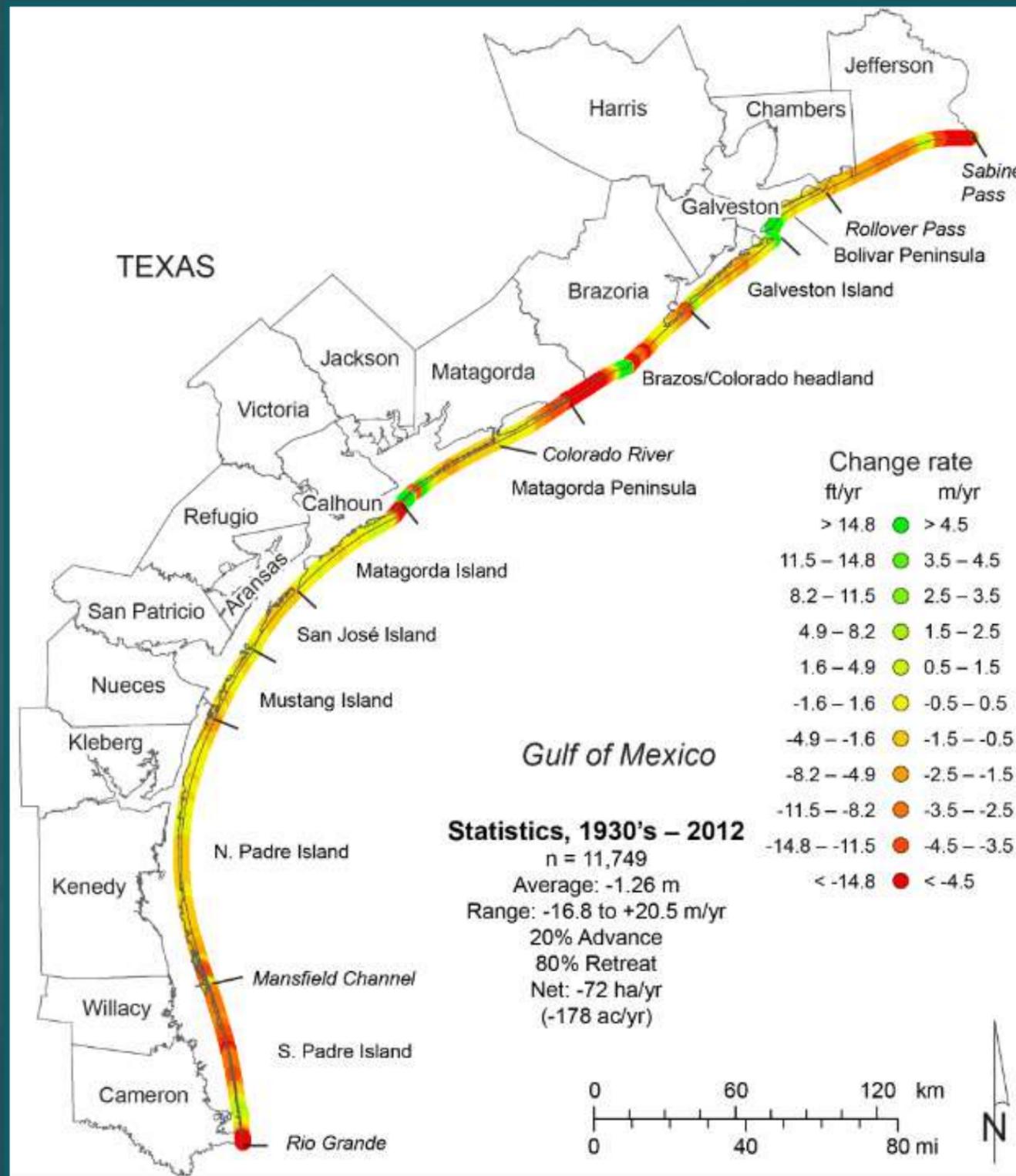
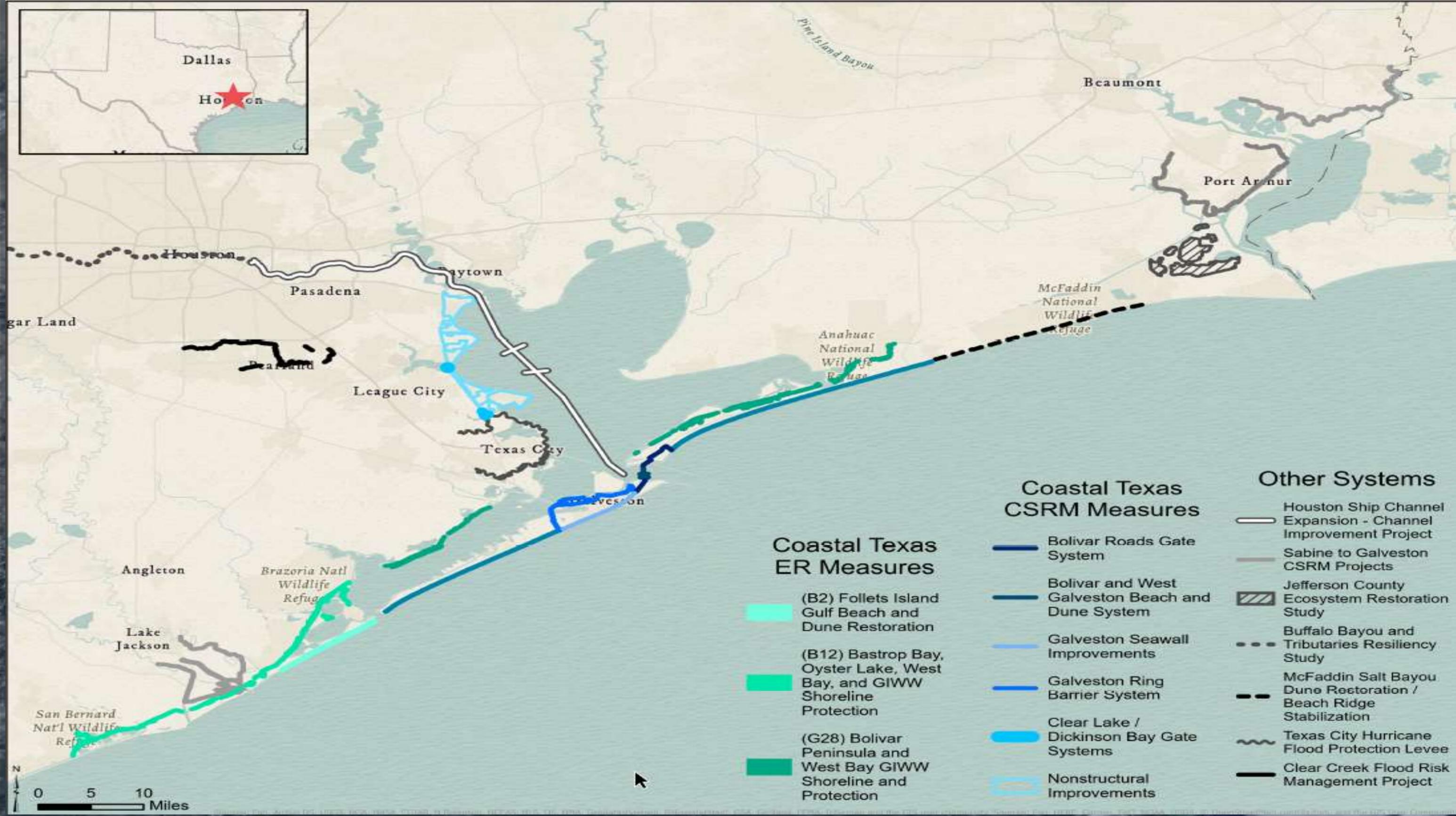


Figure 14. Net rates of long-term change for the Texas Gulf shoreline between Sabine Pass and the Rio Grande calculated from shoreline positions between the 1930's and 2012. Change rates at 11,749 measurement sites are available on the accompanying data CD in GIS-compatible format.



Coastal Texas ER Measures

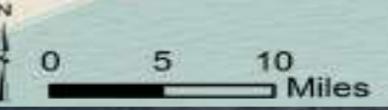
- (B2) Follets Island Gulf Beach and Dune Restoration
- (B12) Bastrop Bay, Oyster Lake, West Bay, and GIWW Shoreline Protection
- (G28) Bolivar Peninsula and West Bay GIWW Shoreline and Protection

Coastal Texas CSRM Measures

- Bolivar Roads Gate System
- Bolivar and West Galveston Beach and Dune System
- Galveston Seawall Improvements
- Galveston Ring Barrier System
- Clear Lake / Dickinson Bay Gate Systems
- Nonstructural Improvements

Other Systems

- Houston Ship Channel Expansion - Channel Improvement Project
- Sabine to Galveston CSRM Projects
- Jefferson County Ecosystem Restoration Study
- Buffalo Bayou and Tributaries Resiliency Study
- McFaddin Salt Bayou Dune Restoration / Beach Ridge Stabilization
- Texas City Hurricane Flood Protection Levee
- Clear Creek Flood Risk Management Project





ALT A: COASTAL BARRIER



ALT B: MODIFIED BARRIER (TX CITY)



ALT C: MID-BAY BARRIER

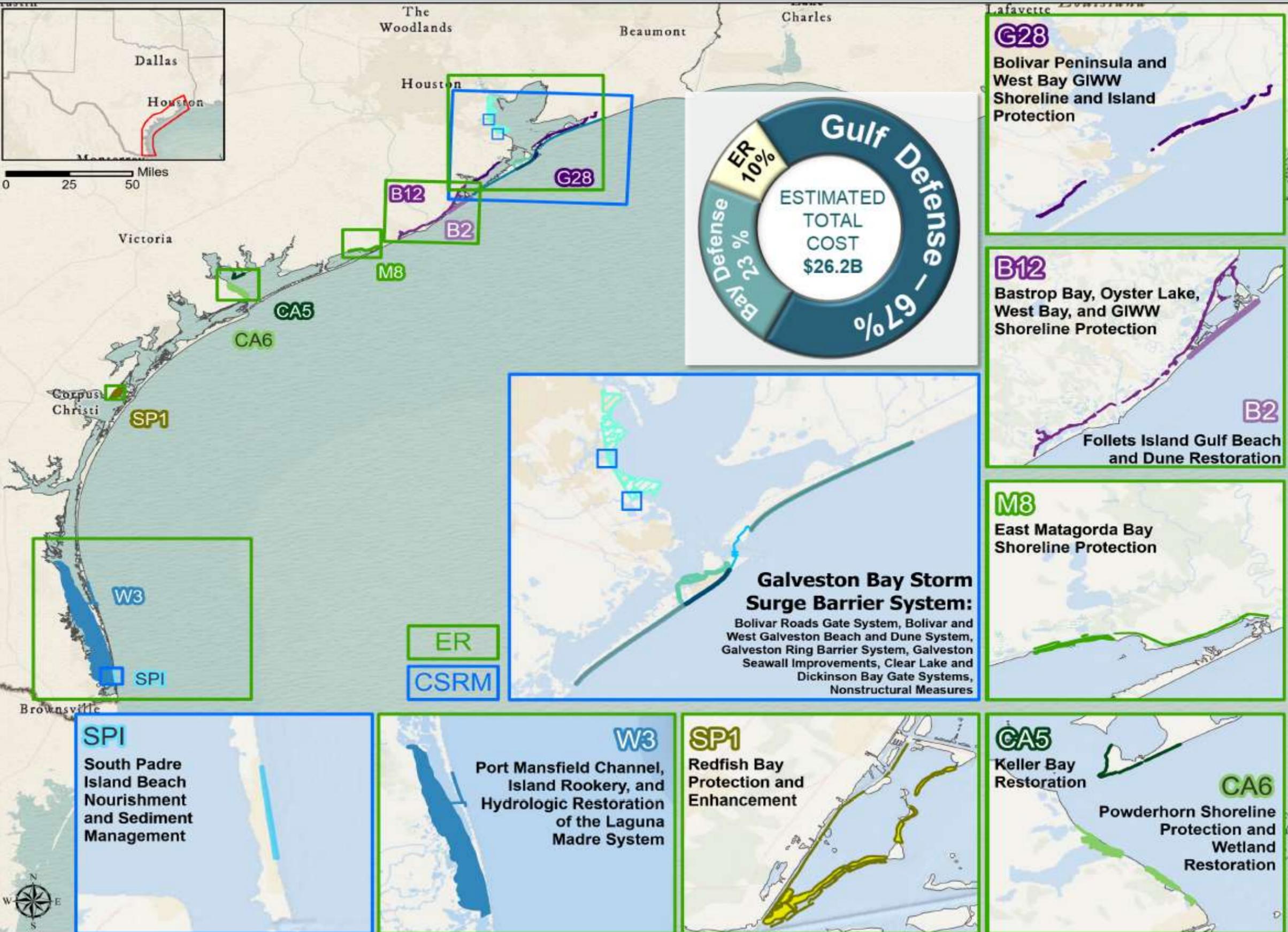
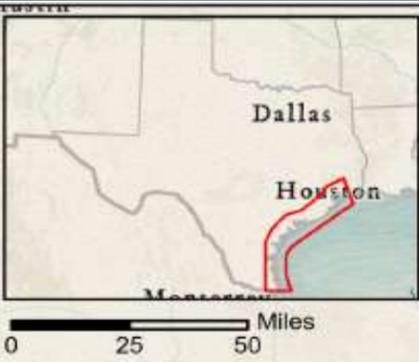


ALT D1: UPPER BAY (SH 146)



ALT D2: BAY RIM





- ### Coastal Storm Risk Management
- 2 large & 4 small sector gates
 - 15 vertical lift gates
 - 16 shallow water environmental gates
 - 1 mi combi-wall tie-in
 - 3 mi levee tie-in
 - 43 mi of gulf-side dune/beach barrier
 - 15.8 mi of ring barrier
 - 8 pumping stations
 - 16+ drainage structures
 - 4-ft high extension of the seawall
 - 150+ gated closures (roads & rail)
 - Non-structural measures anticipated
 - 2.9 mi beach/dunes on South Padre
 - 1,342 ac mitigation



- ### Ecosystem Restoration (6,600+ ac)
- 114 mi of breakwaters
 - 15.2 mi of bird rookeries
 - 2,052 ac of marshes
 - 12.3 mi of oyster reefs
 - 19.5 mi of dunes/beaches





Gulf Defense: Hardened Perimeter at the Gulf Inlet

- ✓ Storm Surge Gates
- ✓ Dune Flanks
- ✓ Seawall Improvements

Bay Defense: Lateral and Interior Features

- ✓ Ring Barrier
- ✓ Upper West Bay – Clear Lake, Dickinson Bay & Non-Structural Improvements
- ✓ GIWW Breakwaters
- ✓ Oyster Reefs
- ✓ ER Site-specific restoration features (e.g., marsh creation)

MULTIPLE LINES OF DEFENSE ON THE TEXAS COAST

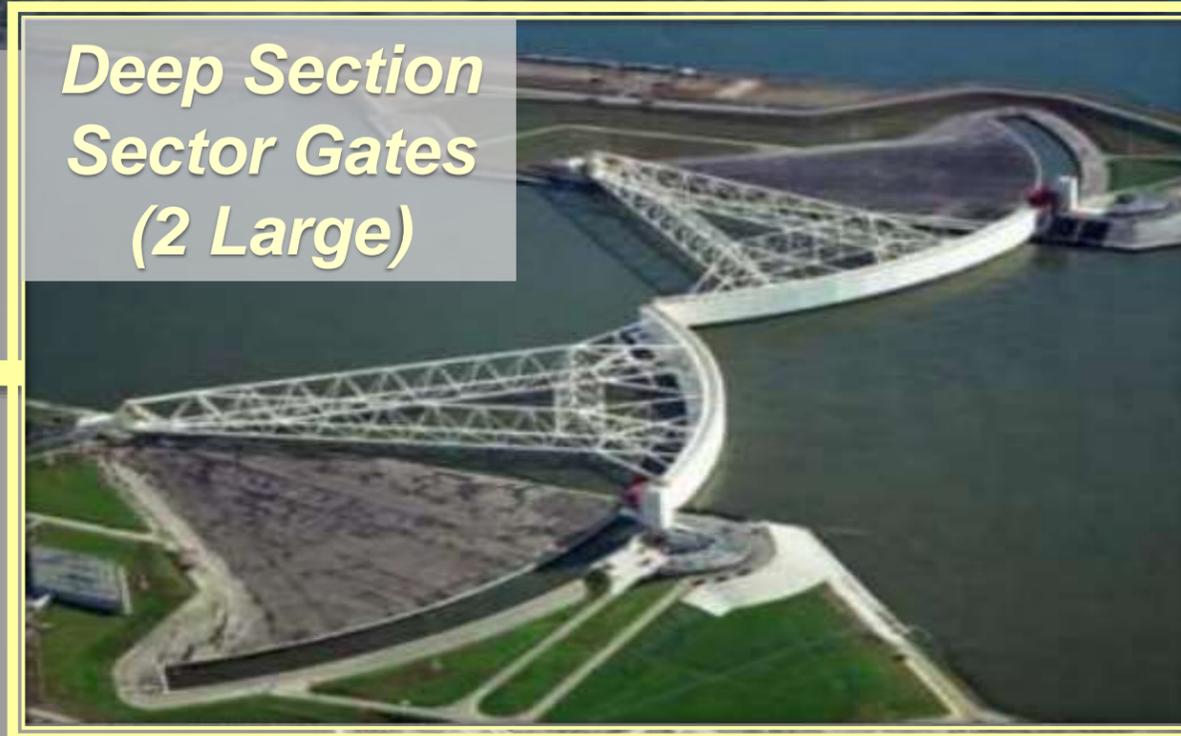
The Recommended Plan includes a combination of ER and CSRM features that function as a system to reduce the risk of coastal storm damages to natural and built infrastructure and to restore degraded coastal ecosystems through a comprehensive approach employing multiple lines of defense. Focused on redundancy and robustness, the proposed system provides increased resiliency along the Bay and is adaptable to future conditions.





Galveston Island

Smaller Sector Gates (2 Small)



Deep Section Sector Gates (2 Large)



Intermediate Sections (15 Vertical Lift Gates)



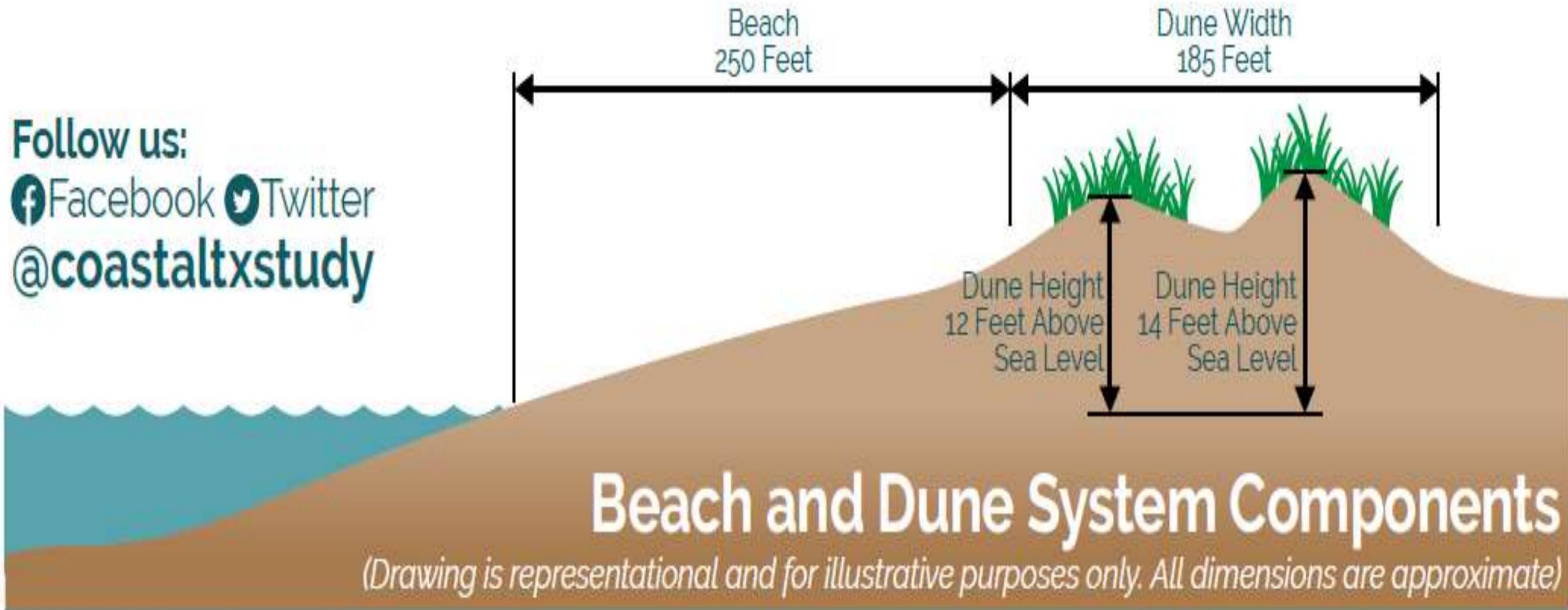
Shallow Section (16 Environmental Gates)

Gulf of Mexico

Bolivar Peninsula



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Beach and Dune System Components

(Drawing is representational and for illustrative purposes only. All dimensions are approximate)

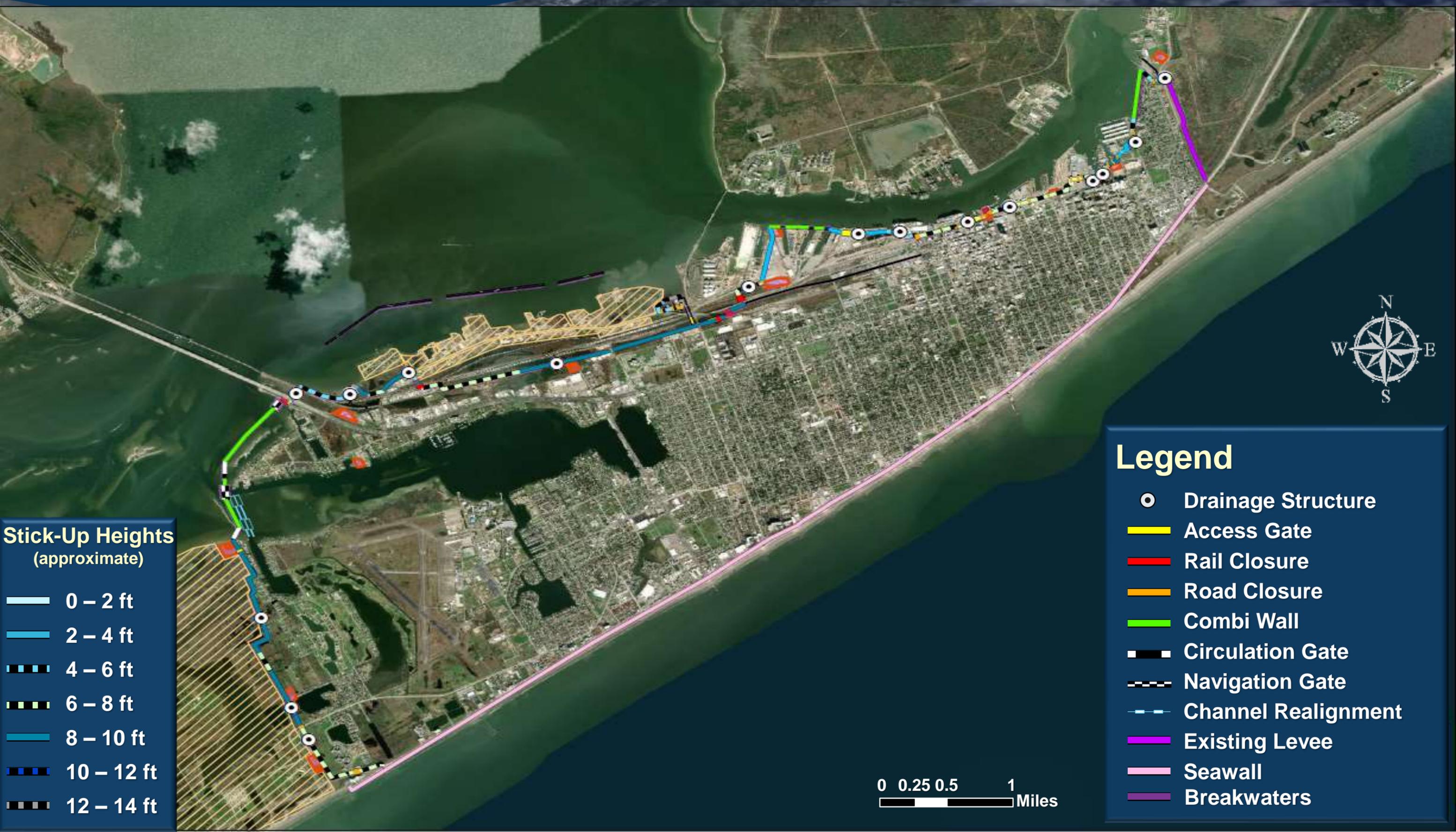
More information is available online at: coastalstudy.texas.gov

GALVESTON RING BARRIER AND SEAWALL IMPROVEMENTS



<http://CoastalStudy.Texas.gov>

CoastalTXStudy



Stick-Up Heights (approximate)

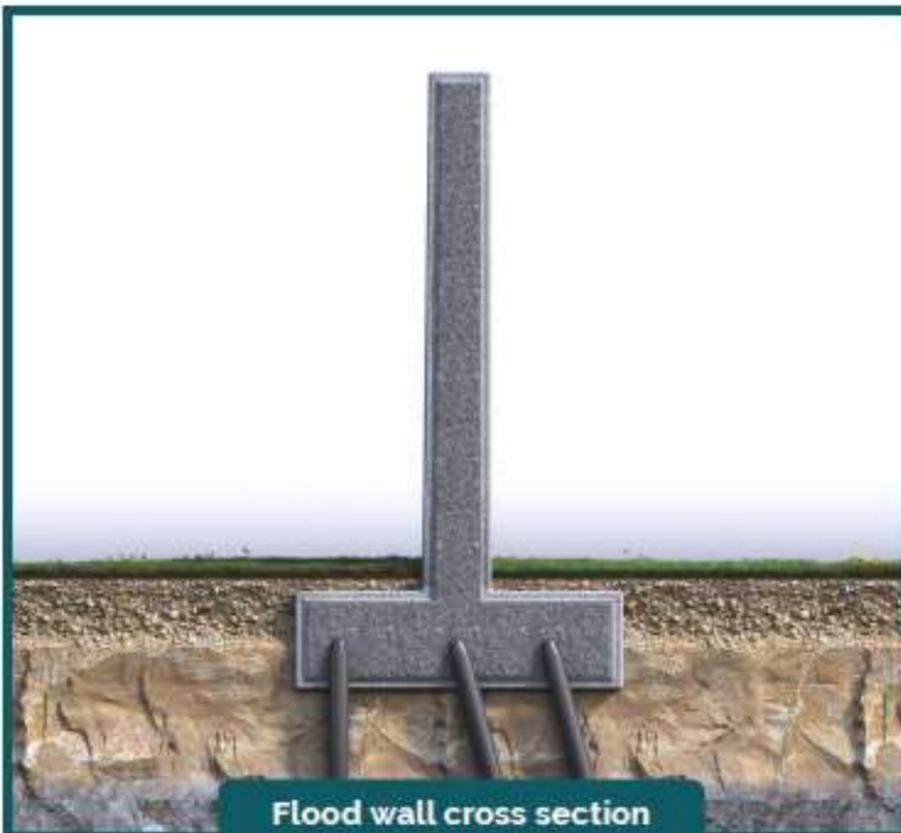
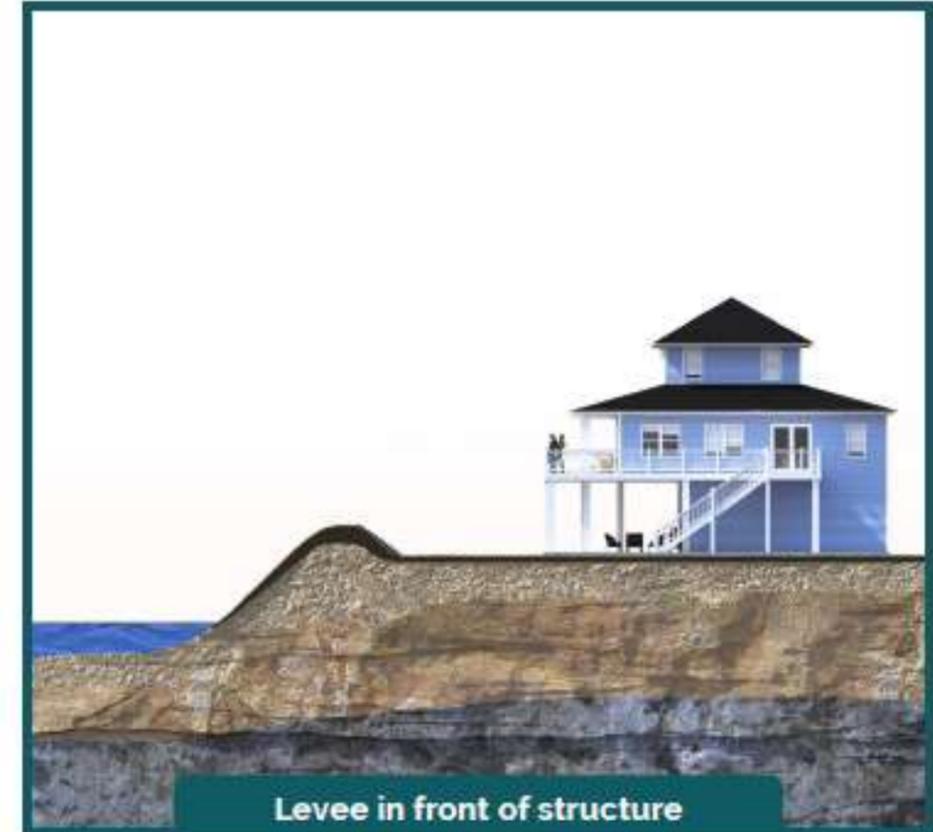
0 – 2 ft
2 – 4 ft
4 – 6 ft
6 – 8 ft
8 – 10 ft
10 – 12 ft
12 – 14 ft

Legend

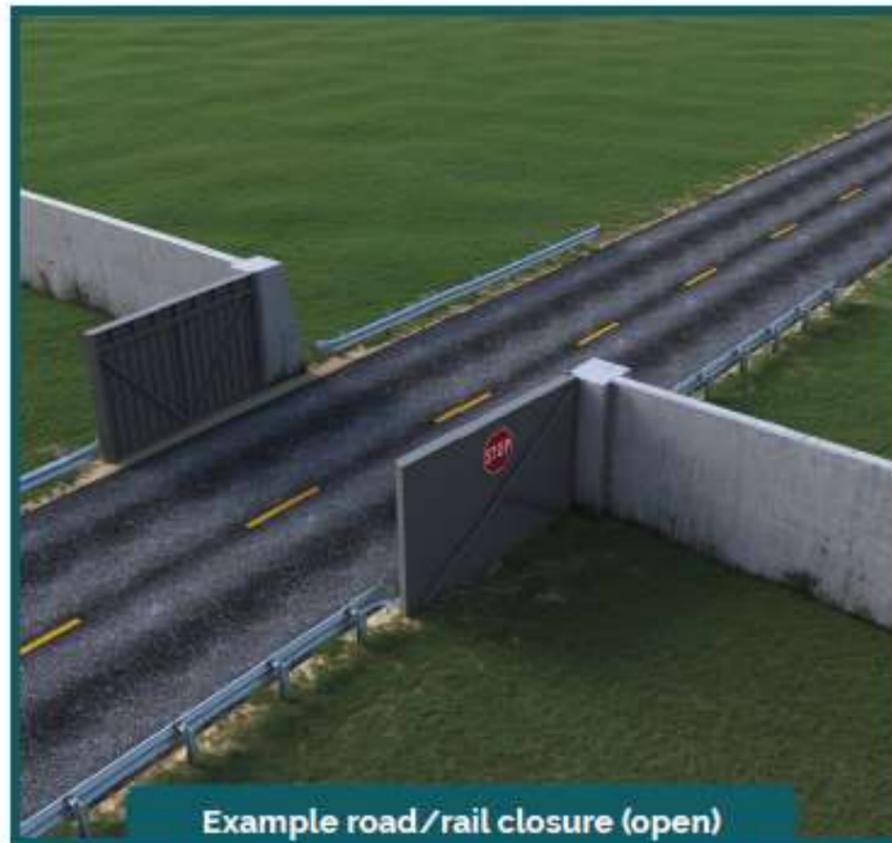
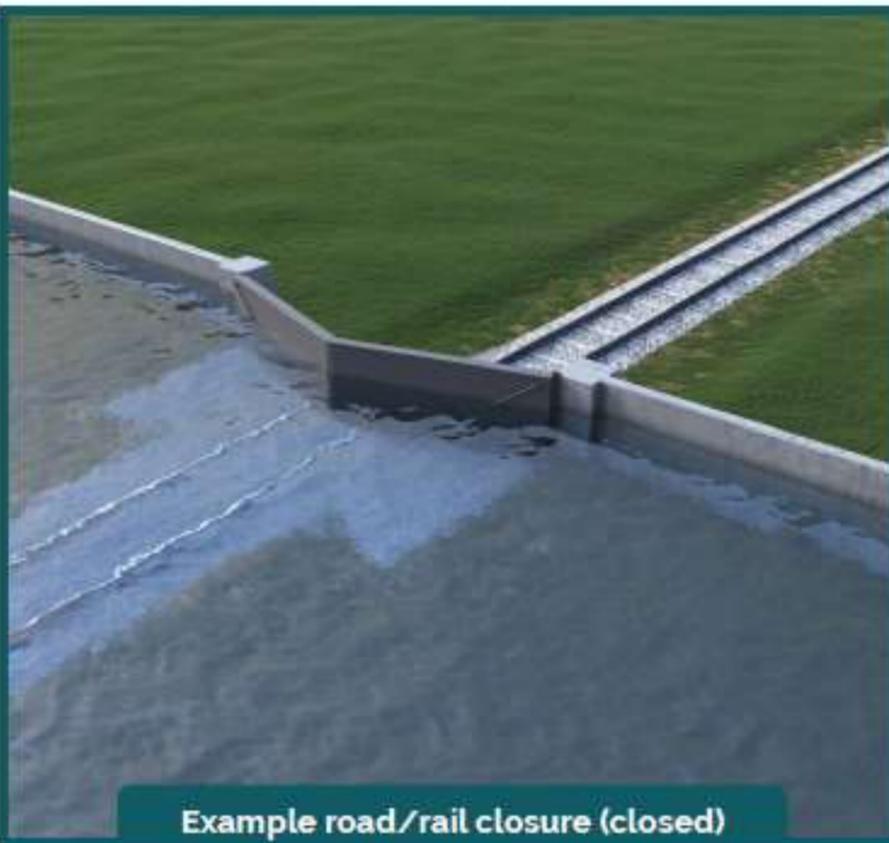
○	Drainage Structure
—	Access Gate
—	Rail Closure
—	Road Closure
—	Combi Wall
—	Circulation Gate
—	Navigation Gate
—	Channel Realignment
—	Existing Levee
—	Seawall
—	Breakwaters



GALVESTON RING BARRIER AND SEAWALL IMPROVEMENTS



GALVESTON RING BARRIER AND SEAWALL IMPROVEMENTS





- Dickinson Bay Gate & Pumps
- Clear Lake Gate & Pumps
- Non-structural Improvements – flood proofing, raisings & buyouts

Clear Lake

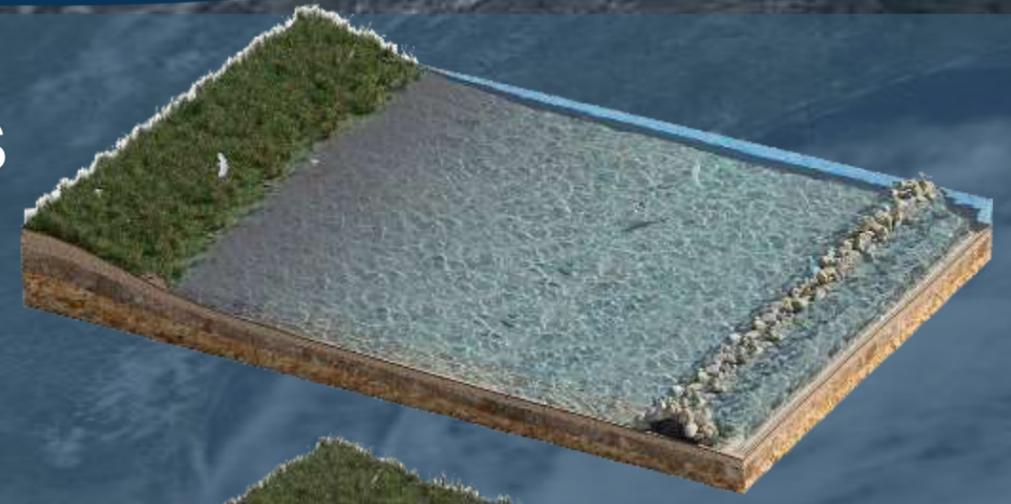


Dickinson Bay





Breakwaters



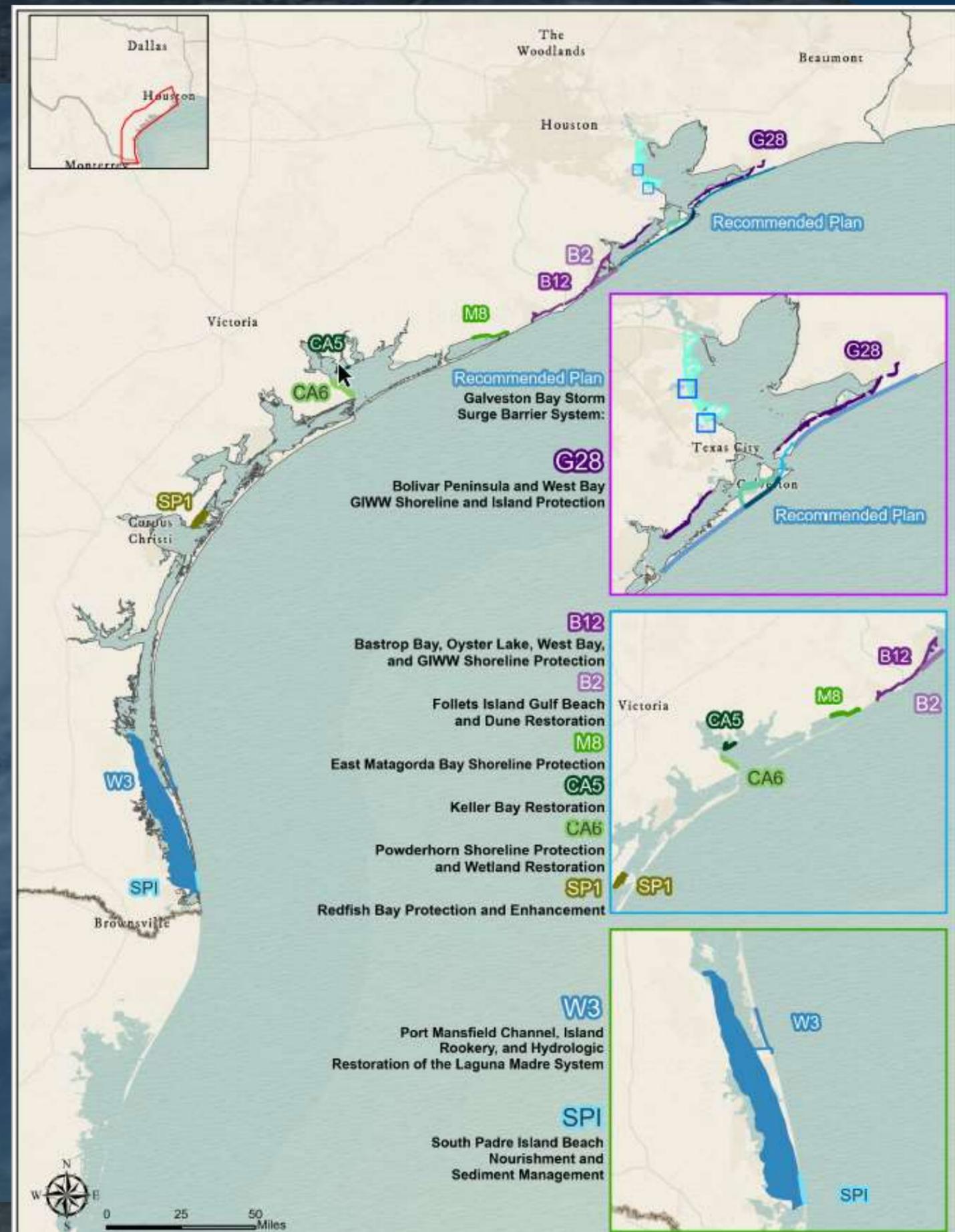
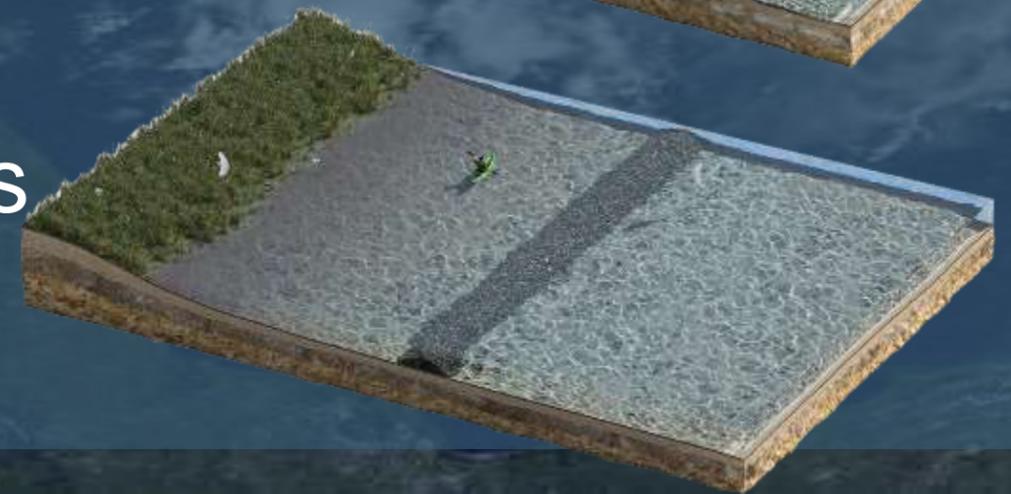
Marshes



Beaches



Oyster Reefs





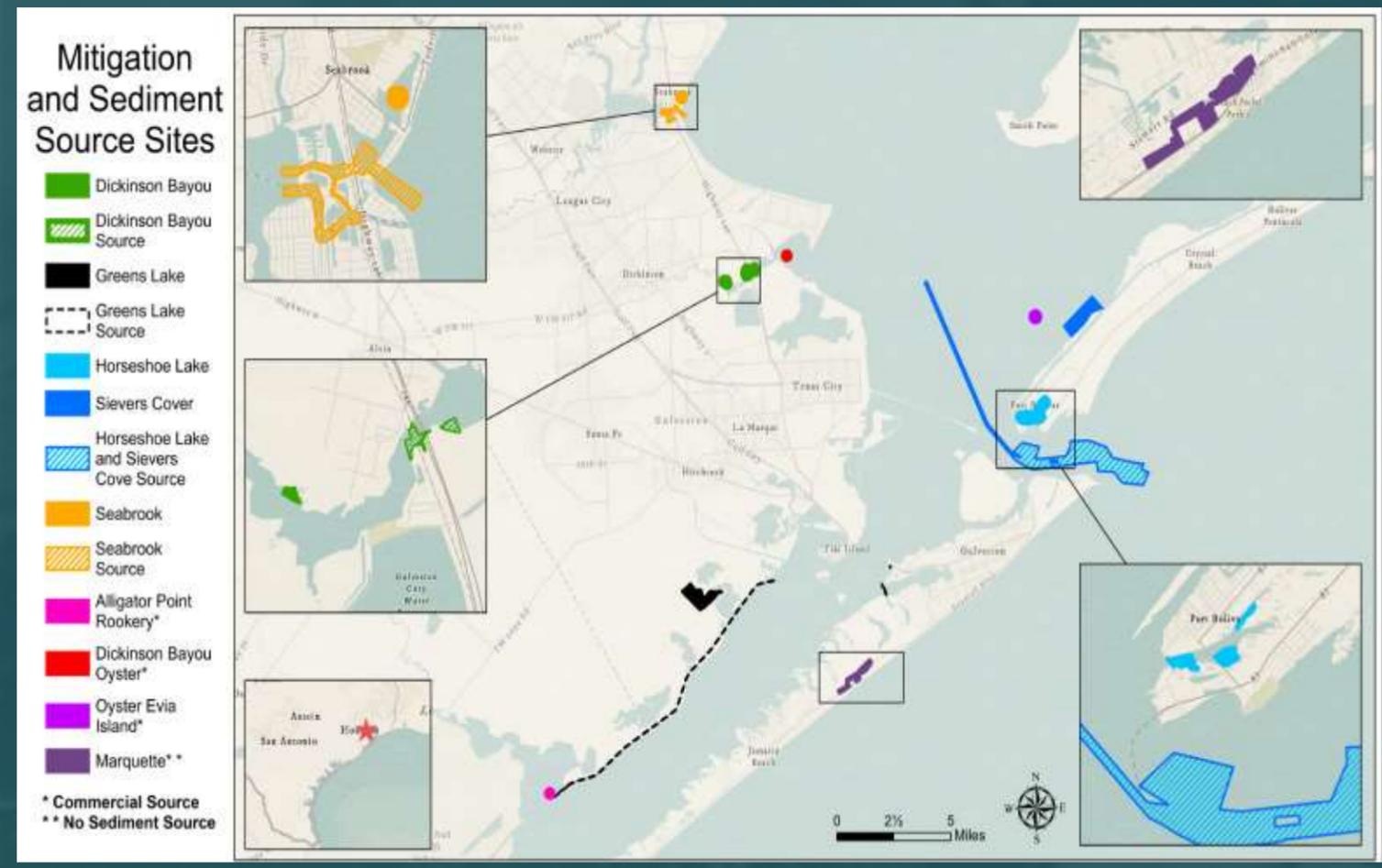
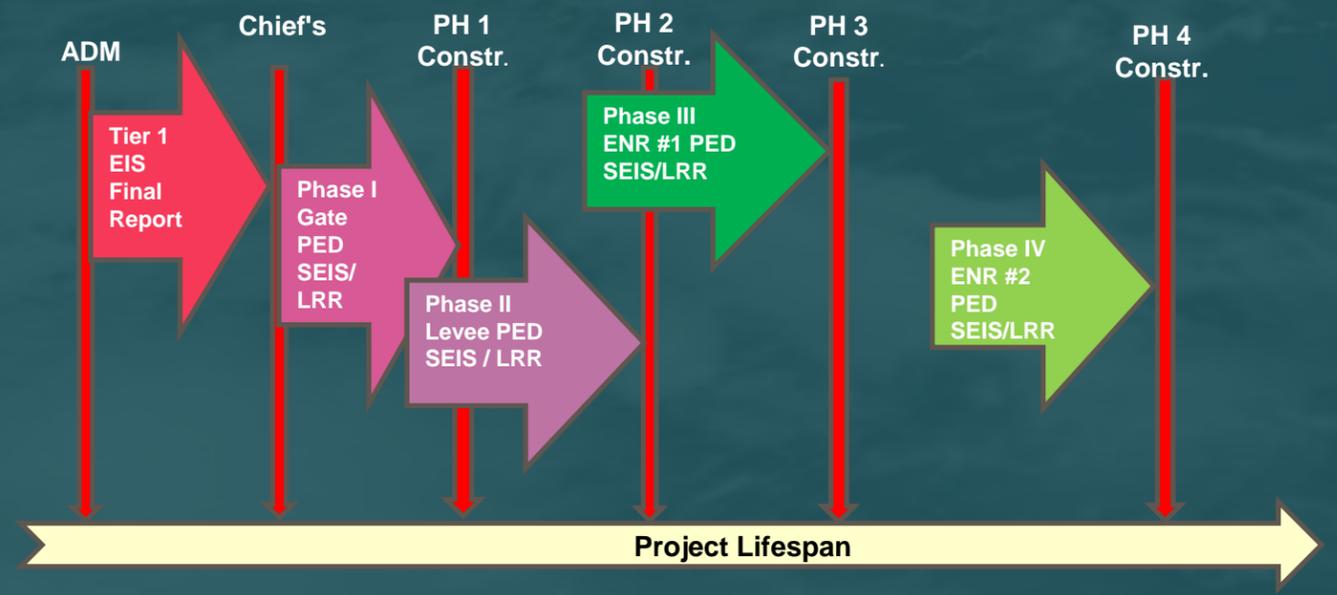
MOUs were updated to include agency-specific details and transmitted by 1 July

PDT proposed review by phone with agencies to assess necessary updates

Once feedback is received, MOUs will be forwarded for action to our VT

Signed MOU's after Draft Report Release – Nov 2020

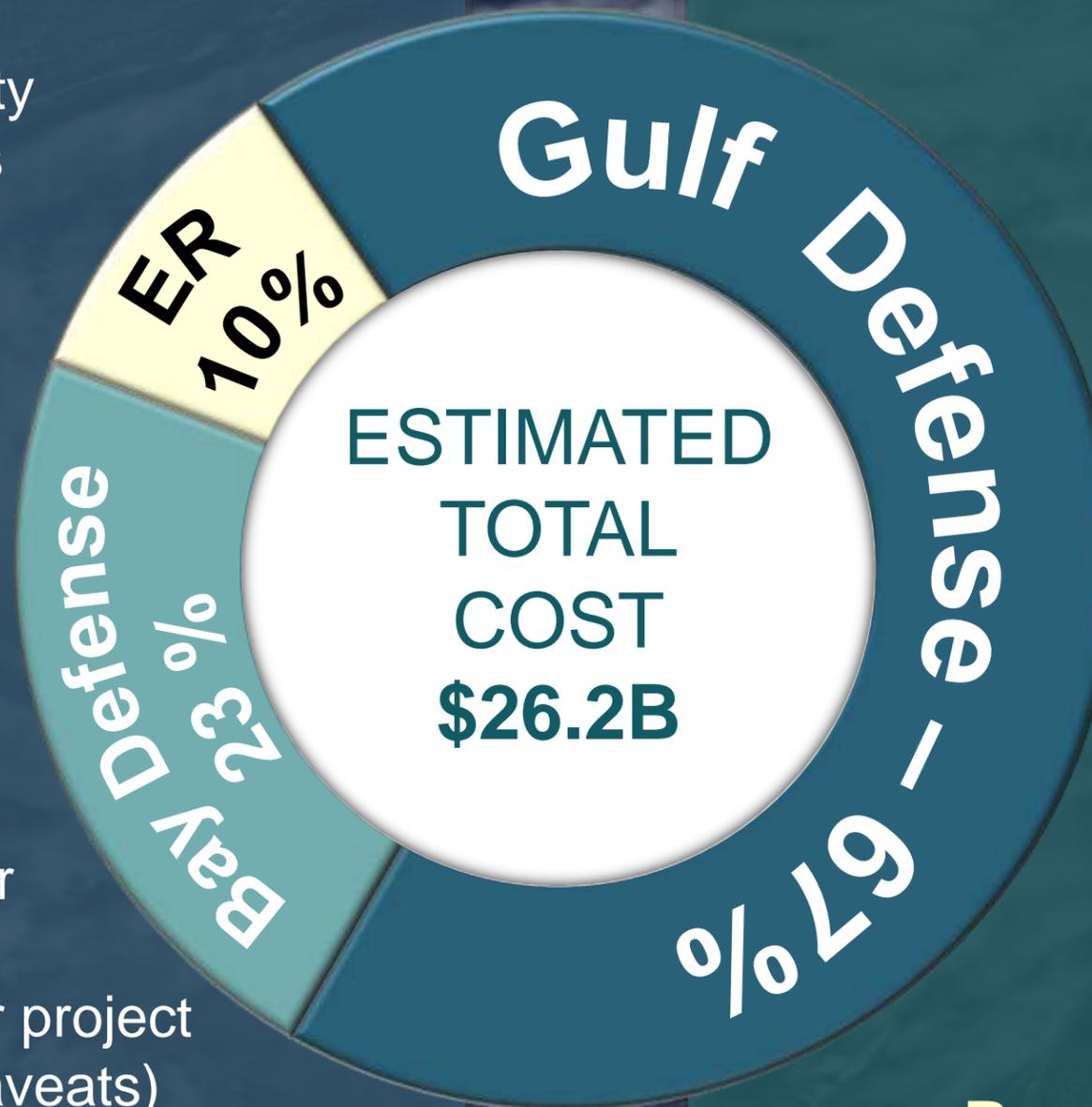
Conceptual Tiered NEPA Approach





The NED/NER Plan must balance:

- ✓ Engineering soundness
 - ✓ Environmental acceptability
 - ✓ Economically justifications
- Unity: Benefits Equal Cost
 - Benefits include quantitative, qualitative, monetized & non-monetized units
 - Locally Preferred Plan (LPP) is a plan that is preferred by the non-Federal sponsor over the NED/NER plan, and is sometimes recommended for project authorization instead (with caveats)
 - LPPs must be evaluated just as the Federal Plan (costs, impacts, benefits)



Projected Costs

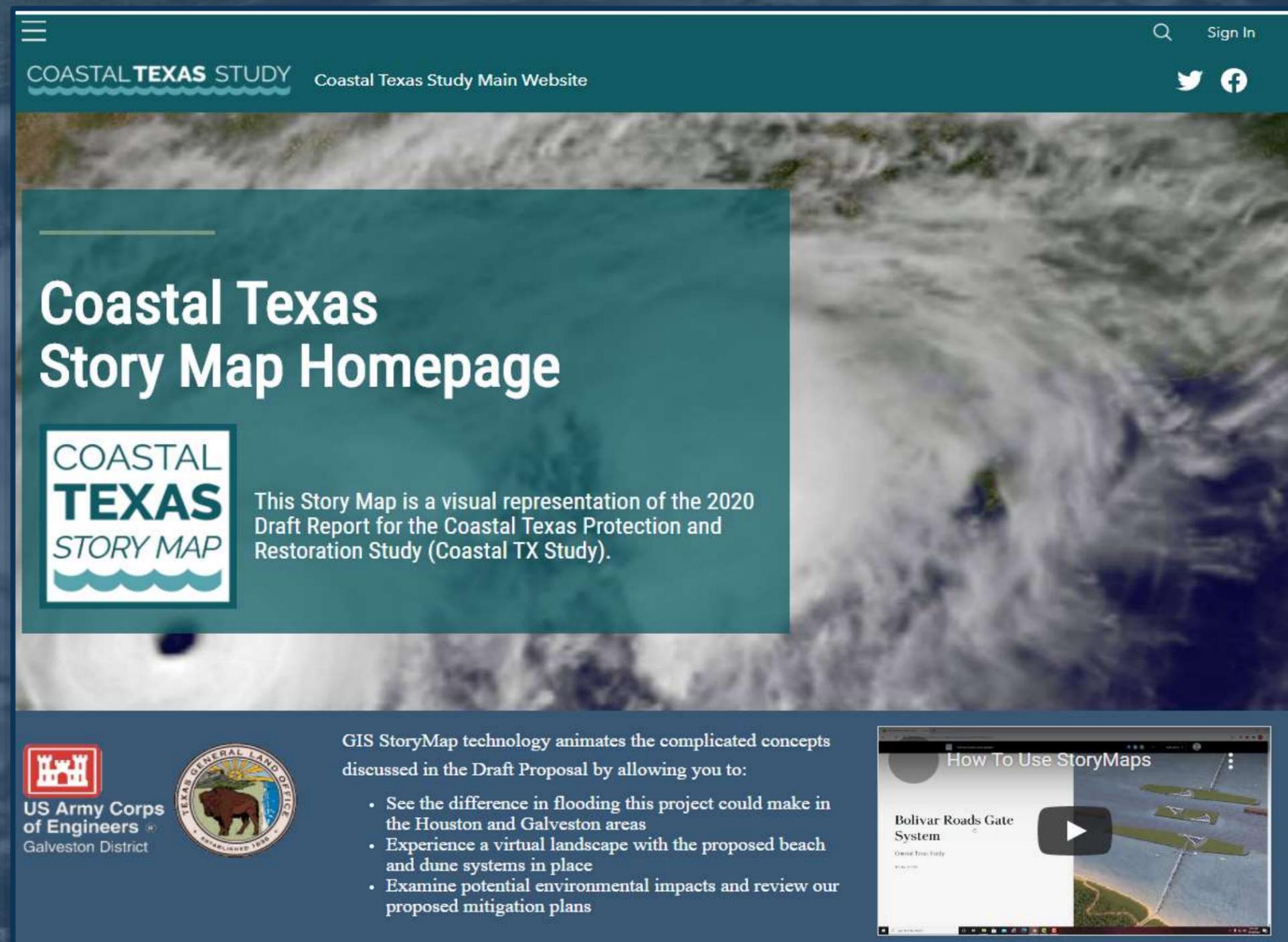
Gulf Defense:	\$17.6B
(Bolivar Roads Gate System + Bolivar/West Galveston Beach & Dune Systems + SPI + Mitigation)	
Bay Defense:	\$ 5.9B
(Galveston Ring Barrier + Seawall Improvements + Clear Lake + Dickinson Bay + Non-Structural Improvements)	
Ecosystem Restoration:	\$ 2.7B
TOTAL:	\$26.2B

Recovery Costs for Storms of the Past:

Hurricane Ike (2008):	\$38B
Hurricane Harvey (2017):	\$125B

- Formal Comment Period (45 days)
- Formal Meetings (NEPA Required)
- Public Open Houses
- CWGs
- Social Media
- Tech Talks
- Newsletters
- Email lists
- Stakeholder Briefings

More opportunities to engage are on the project horizon
.remember Tiered NEPA!

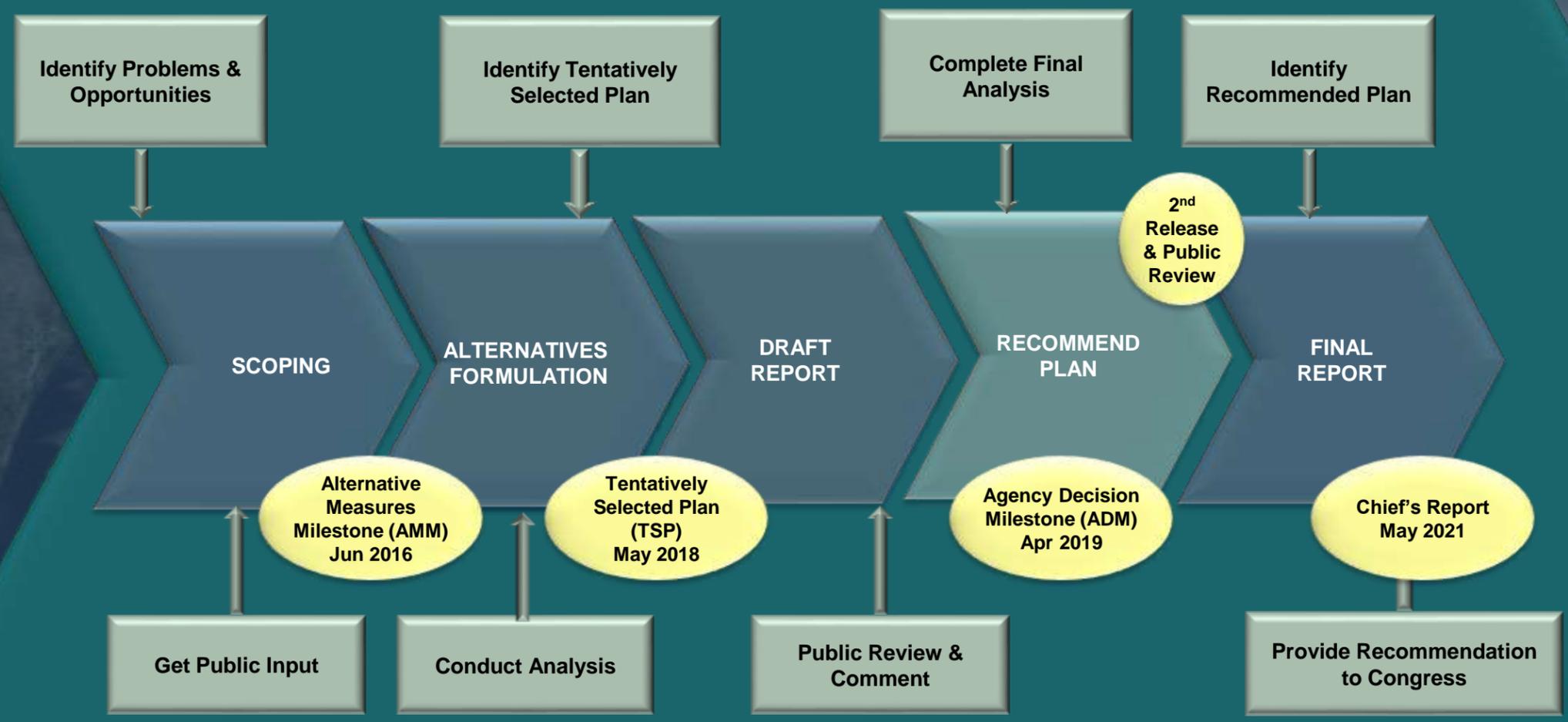


The screenshot shows the homepage of the Coastal Texas Story Map. At the top, there is a navigation bar with the text "COASTAL TEXAS STUDY" and "Coastal Texas Study Main Website". To the right of the navigation bar are search and sign-in icons, and social media icons for Twitter and Facebook. The main content area features a large teal box with the title "Coastal Texas Story Map Homepage" and a sub-header "COASTAL TEXAS STORY MAP". Below the sub-header is a description: "This Story Map is a visual representation of the 2020 Draft Report for the Coastal Texas Protection and Restoration Study (Coastal TX Study)". At the bottom of the page, there are logos for the US Army Corps of Engineers Galveston District and the Texas General Land Office. To the right of the logos is a section titled "GIS StoryMap technology animates the complicated concepts discussed in the Draft Proposal by allowing you to:" followed by a list of three bullet points: "See the difference in flooding this project could make in the Houston and Galveston areas", "Experience a virtual landscape with the proposed beach and dune systems in place", and "Examine potential environmental impacts and review our proposed mitigation plans". On the far right, there is a video player with the title "How To Use StoryMaps" and a play button icon.

<https://coastal-texas-hub-usace-swg.hub.arcgis.com/>



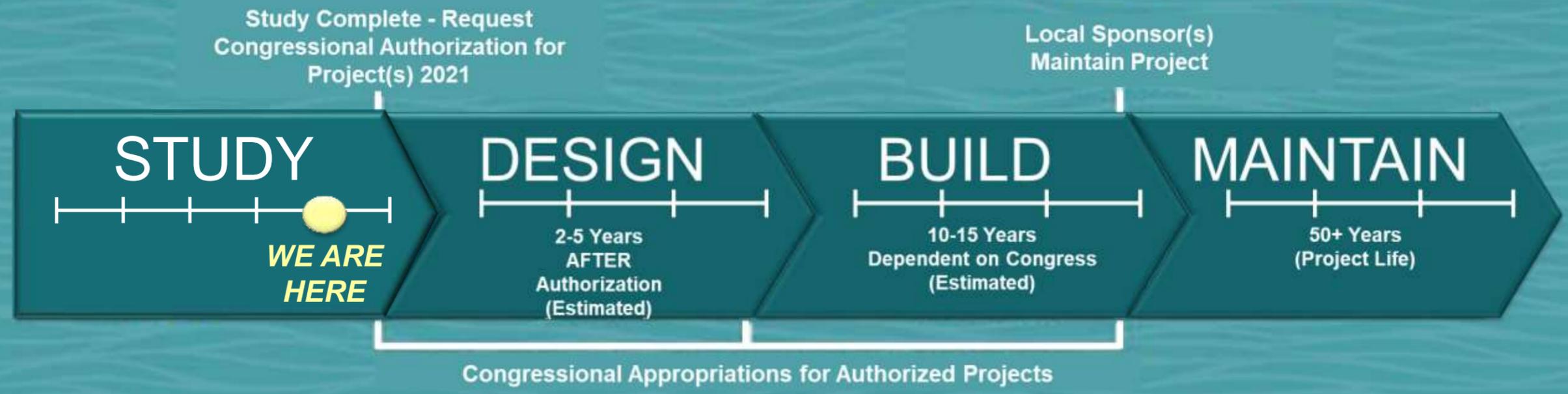
STUDY





STUDY

ESTIMATED PROJECT SCHEDULE



Comment

to Congress



Web: <http://CoastalStudy.Texas.gov>

Facebook: [CoastalTXStudy](https://www.facebook.com/CoastalTXStudy)

The screenshot shows the homepage of the Coastal Texas Study website. It features a navigation bar with links for 'About The Study', 'The Draft Proposal', 'Get Involved', 'Resources', and 'Contact'. The main content area is divided into several sections:

- The Need:** Understand the current problems and why this study was launched. Includes a 'LEARN MORE' button.
- Current Overview:** Discover more information about the proposed solutions in your area. Includes a 'LEARN MORE' button.
- What's Happening In My Area?:** View proposed features in my area. Includes a 'LEARN MORE' button.
- Fact Sheets:** Download fact sheets for a quick reference to key facts for parts of the proposed plan. Includes a 'LEARN MORE' button.
- Interactive StoryMap:** Use this interactive media product to better understand the project features, how they work, and their proposed location. Includes a 'VIEW STORYMAP' button.

COASTAL TEXAS STUDY

The screenshot shows the Facebook page for Coastal Texas Study. The page header includes the name 'Coastal Texas Study', a search bar, and navigation links for 'Home', 'Find Friends', and 'Create'. The main content area features a post from July 30 at 12:10 PM with the following text:

MISCONCEPTION: Rice University's SSPEED Center has proposed a less costly plan called the "Bay Park Plan" that can be built in less time and will have the same (or greater) level of protection with little or no environmental impacts.

While we believe the Bay Park Plan and our own Coastal Barrier Plan complement one another, more information is needed in order to make direct comparisons between them. Some key concerns include:

- 1) The Bay Park Plan is still in the concept pha... See More

The post has received likes and comments from users like Sharon Manzella Tirpak. Below the post is a comment box and a 'Write a comment...' field.

Another post from July 29 at 10:33 AM states: "We are utilizing a "multiple lines of defense" approach to develop a system of comprehensive, resilient, and sustainable coastal storm risk management solutions. For more information, please visit <http://coastalstudy.texas.gov/>."

At the bottom of the page, there is a diagram titled "MULTIPLE LINES OF DEFENSE ON THE TEXAS COAST" showing various coastal features and structures from the Gulf of Mexico to inland areas.

The right sidebar contains information about the page, including 'About', 'Page Transparency', and 'Related Pages' like Rick's Bar, Susan Criss for Senat..., and Texas Southern Colleg....