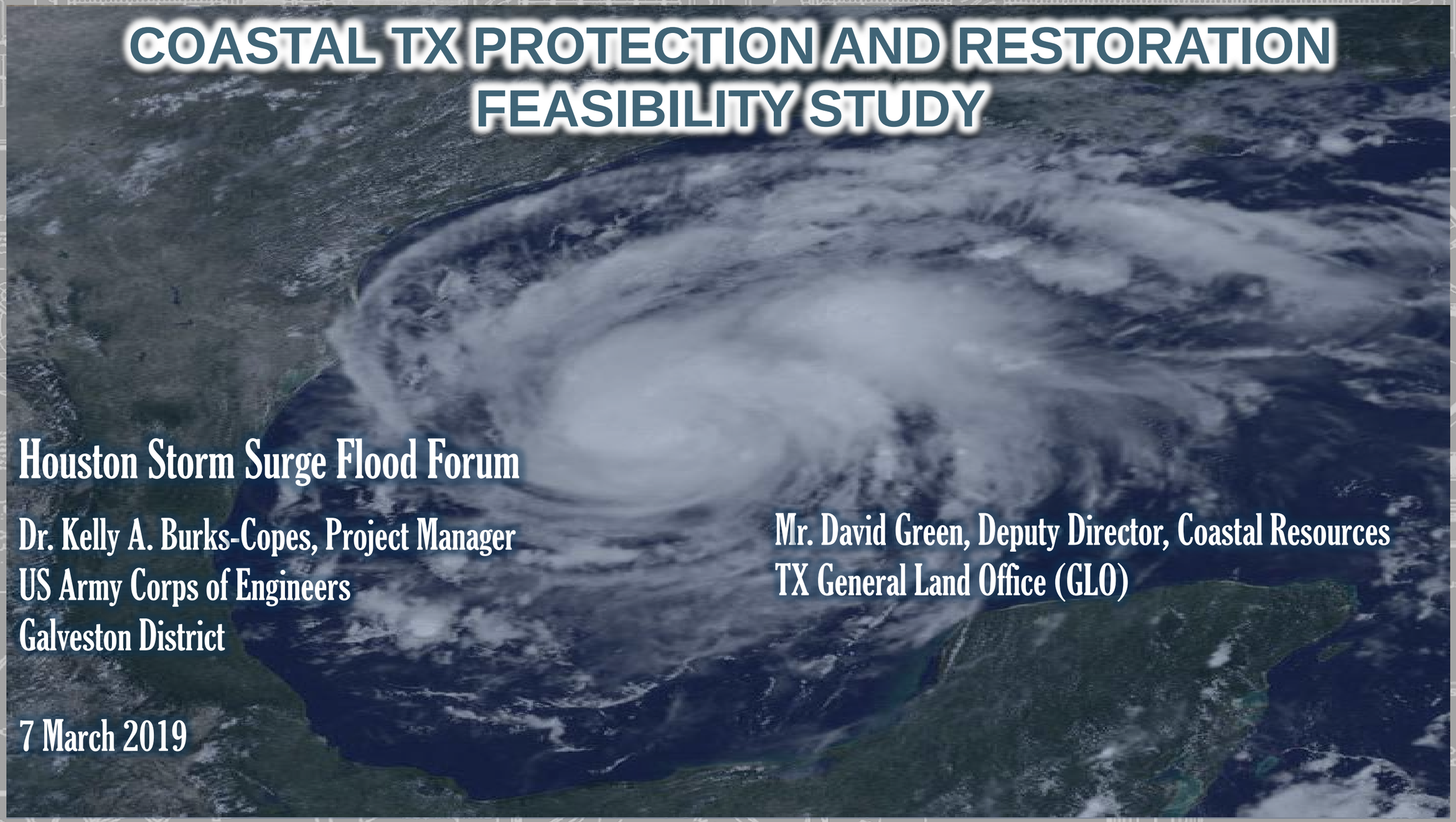
COASTAL TX PROTECTION AND RESTORATION FEASIBILITY STUDY



Houston Storm Surge Flood Forum

Dr. Kelly A. Burks-Copes, Project Manager
US Army Corps of Engineers
Galveston District

Mr. David Green, Deputy Director, Coastal Resources
TX General Land Office (GLO)

7 March 2019

"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."

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PROJECT GOALS & OBJECTIVES

Goals

Coastal Storm Risk Management (CSRM)

Develop and evaluate **coastal storm damage risk reduction** measures for coastal Texas residents, industries and businesses which are critical to the nation's economy.

Ecosystem Restoration (ER)

Increase the net quantity and quality of coastal ecosystem resources by maintaining, **protecting, and restoring coastal Texas ecosystems** and fish and wildlife habitat

Objectives

- **Reduce economic damage** from coastal storm surge flooding to business, residents and infrastructure through 2085
- **Reduce risk to critical infrastructure** (e.g. medical centers, government facilities, universities, and schools) from coastal storm surge flooding to the maximum extent practical and reduce emergency costs
- **Reduce risk to public health and safety** from storm surge
- **Increase the resilience** of communities, the economy, coastal ecosystems, and infrastructure, including existing coastal storm risk reduction systems, from sea level rise and coastal storm surge
- **Enhance and restore coastal landforms** along Galveston Island and Bolivar Peninsula that contribute to reducing the risks of coastal storm surge damages
- **Improve hydrologic connectivity** of area wetlands in the Texas-Louisiana coastal marshes, mid-coast barrier islands and coastal marshes
- **Improve and sustain coastal marshes and bay shorelines** on barrier island and estuarine systems

THE TENTATIVELY SELECTED PLAN (TSP)

Coast-wide system of ecosystem restoration and storm-risk management features

TSP supports the resilience of coastal communities and natural habitats in Coastal Texas

Coastwide:

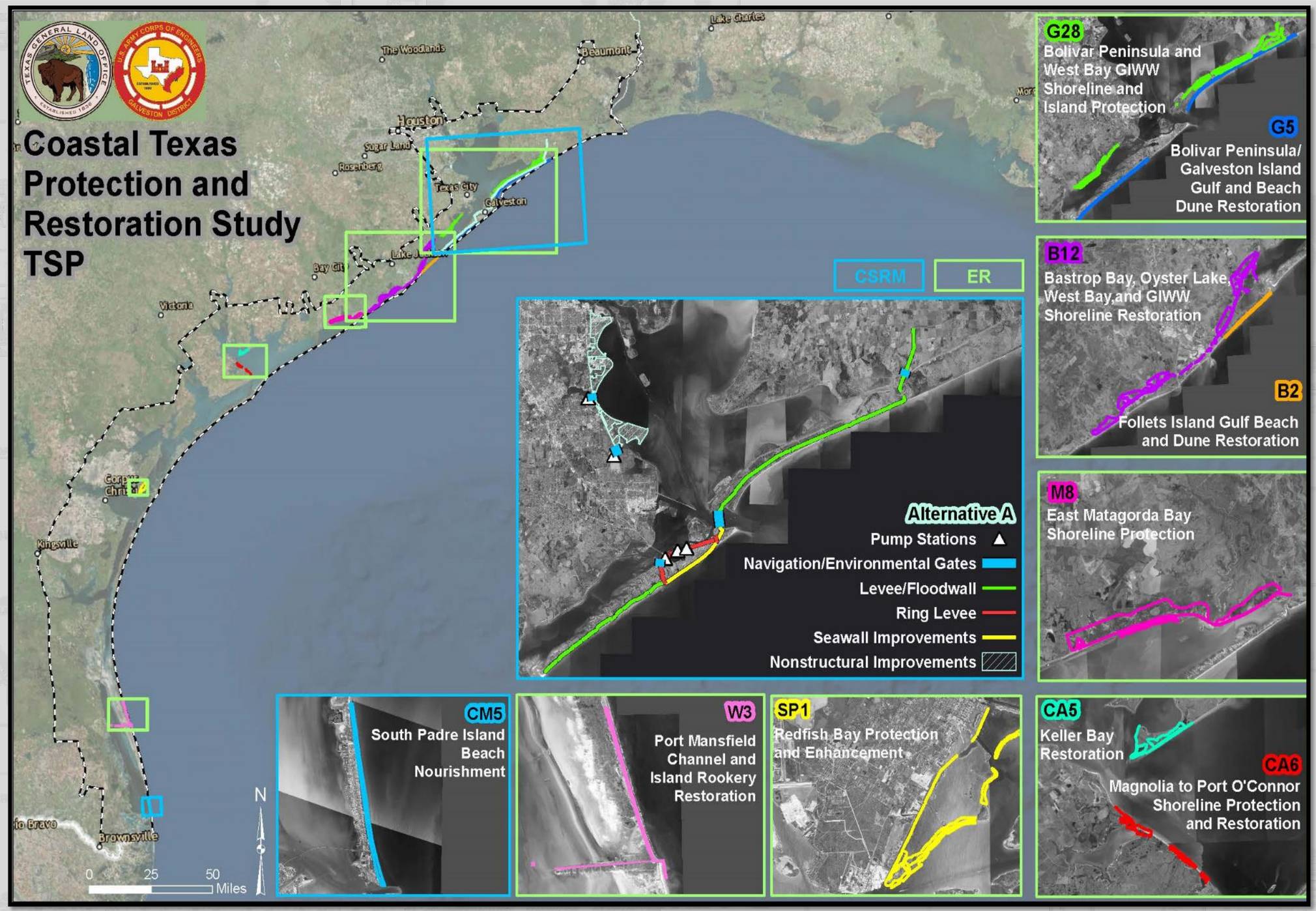
Large scale ER features which focus on critical landscape features and areas of threatened biologically diverse ecosystems

Lower Coast:

CSRM Dune and beach restoration project on South Padre Island

Upper Coast:

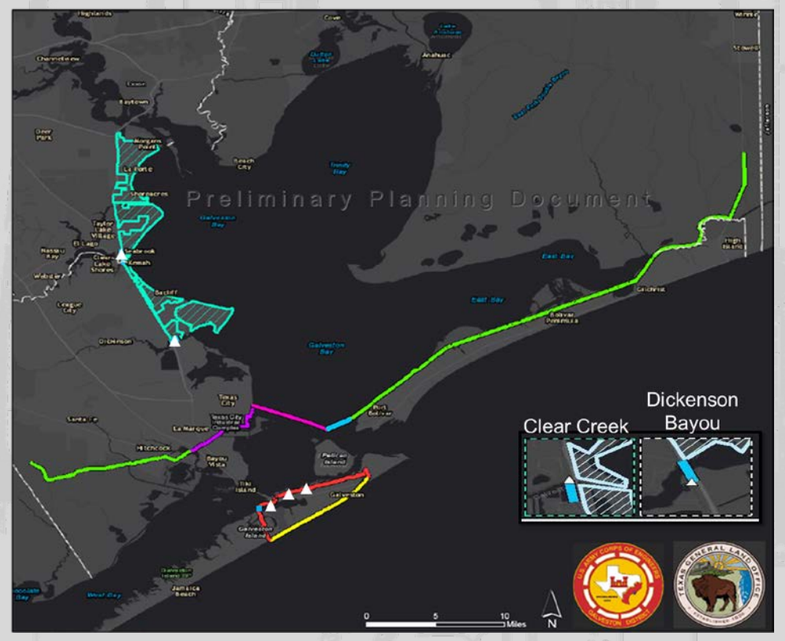
CSRM surge barrier system to protect the Houston-Galveston Region (Coastal Spine)



OPTIONAL ALIGNMENTS

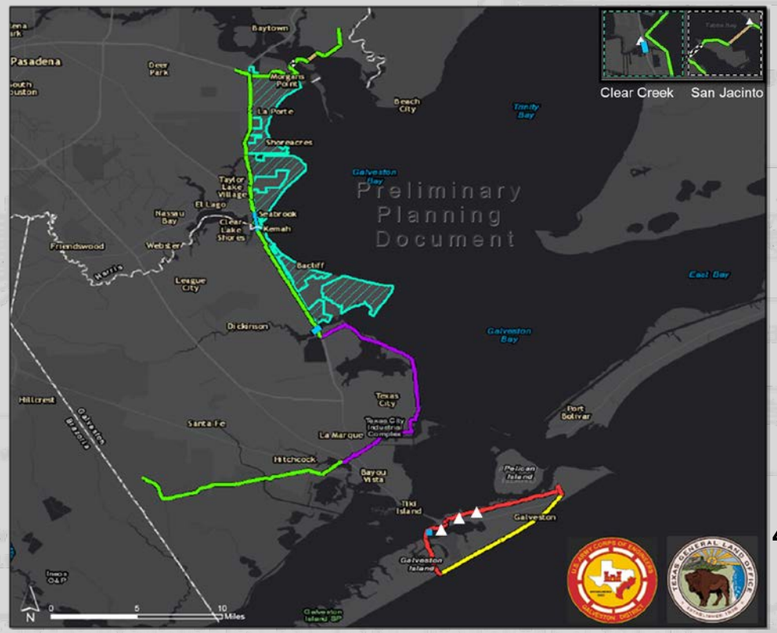
ALT A: COASTAL BARRIER

ALT B: MODIFIED BARRIER (TX CITY)

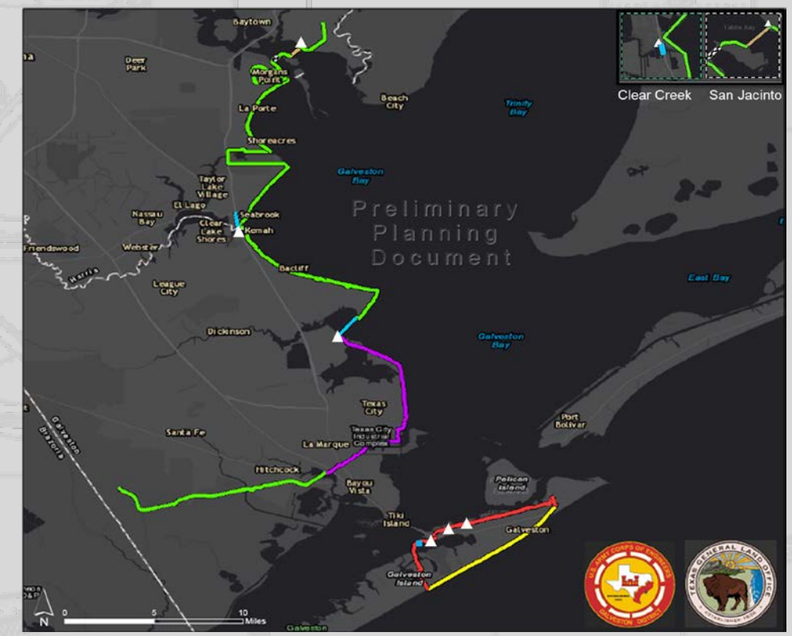


ALT C: MID-BAY BARRIER

ALT D1: UPPER BAY (SH 146)



ALT D2: BAY RIM



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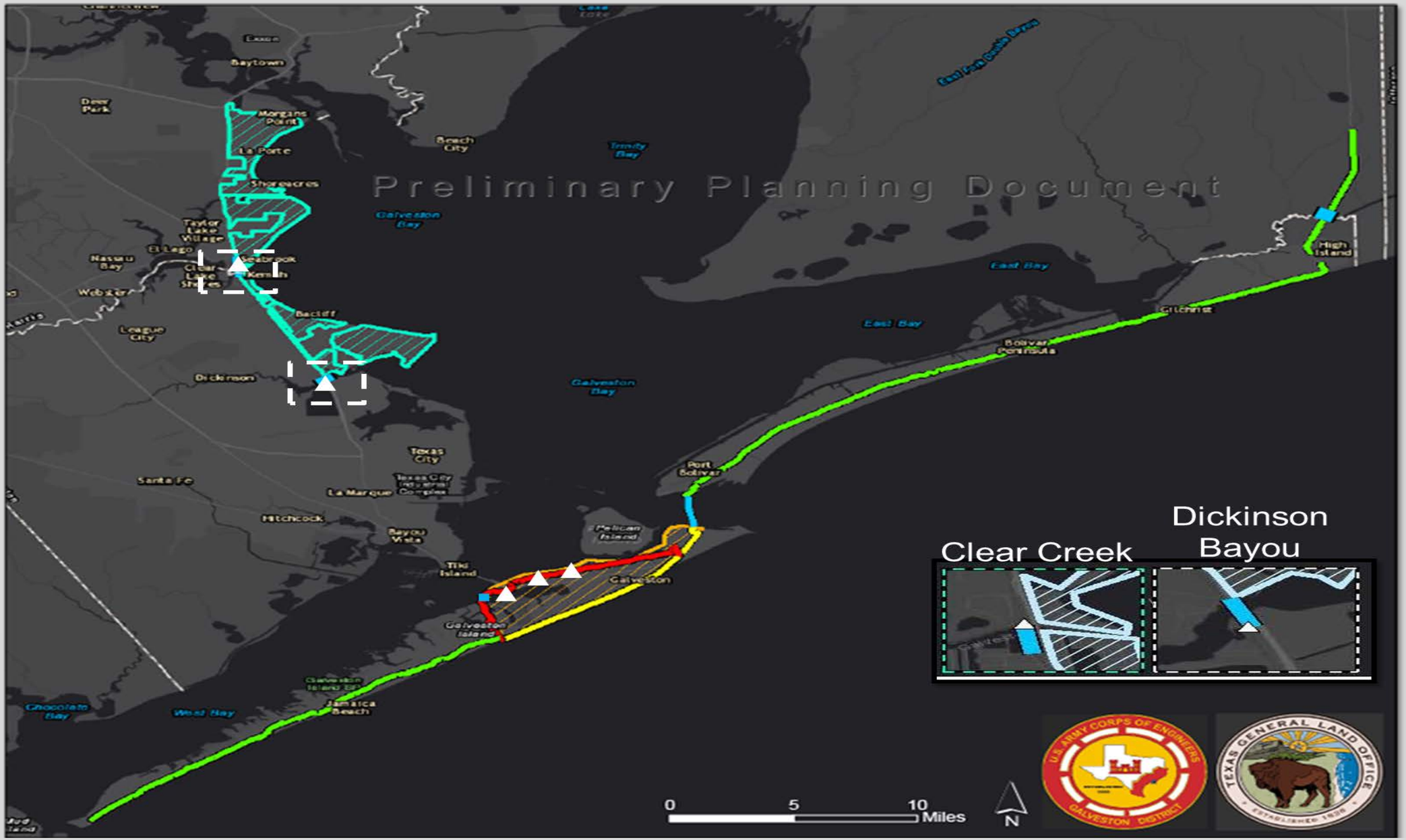
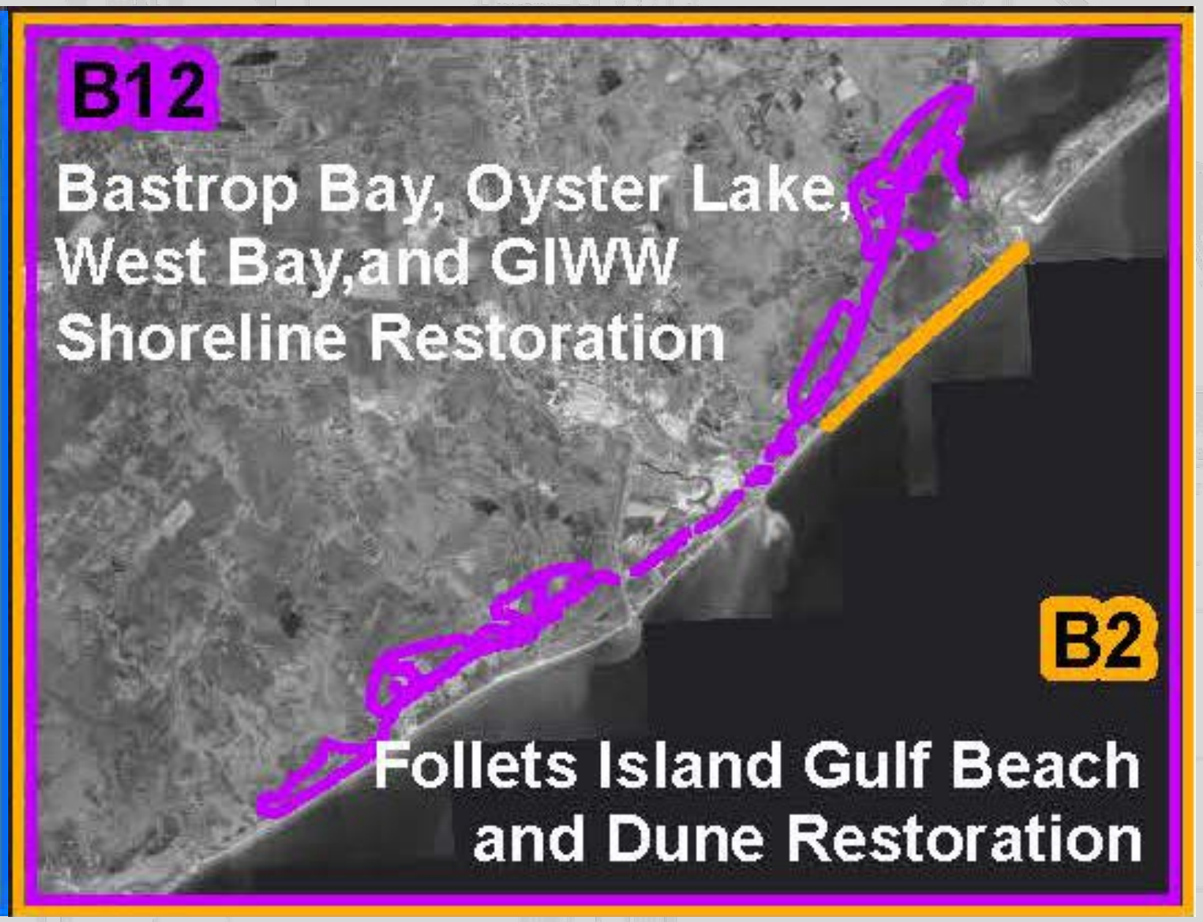
OPTIONAL ALIGNMENTS

ALT A: COASTAL BARRIER



ECOSYSTEM RESTORATION MEASURES IN REGION 1



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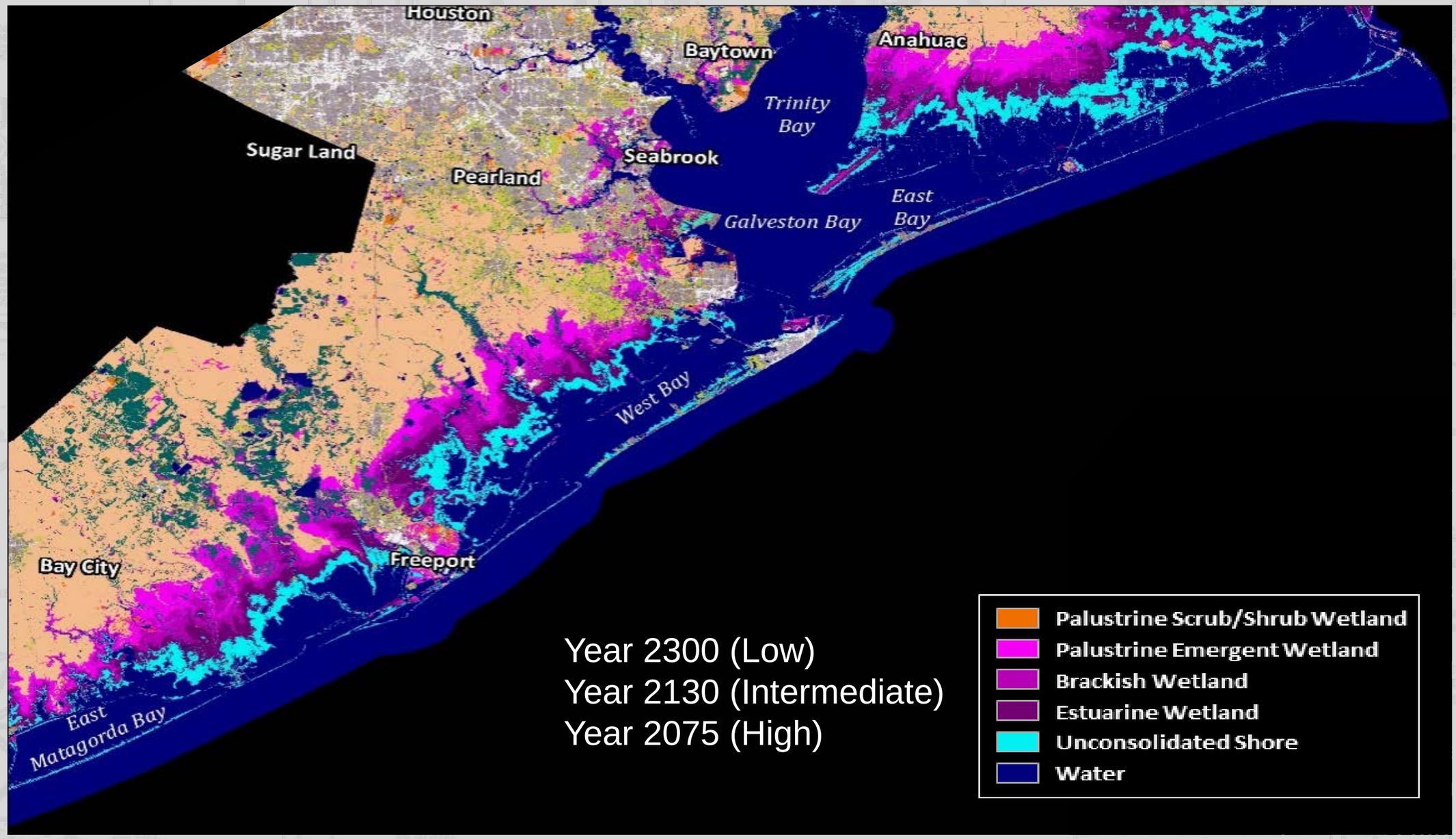
ANTICIPATED RELATIVE SEA LEVEL CHANGES

Upper Texas Coast

Break Point in Sea Level Change (about 3.5 feet)



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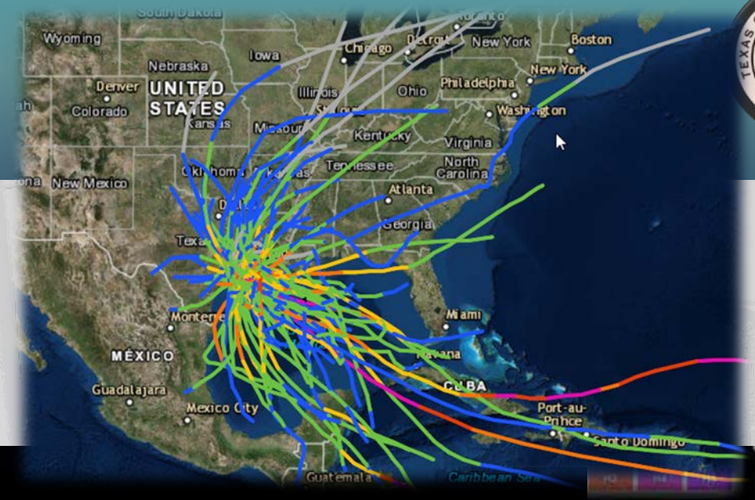
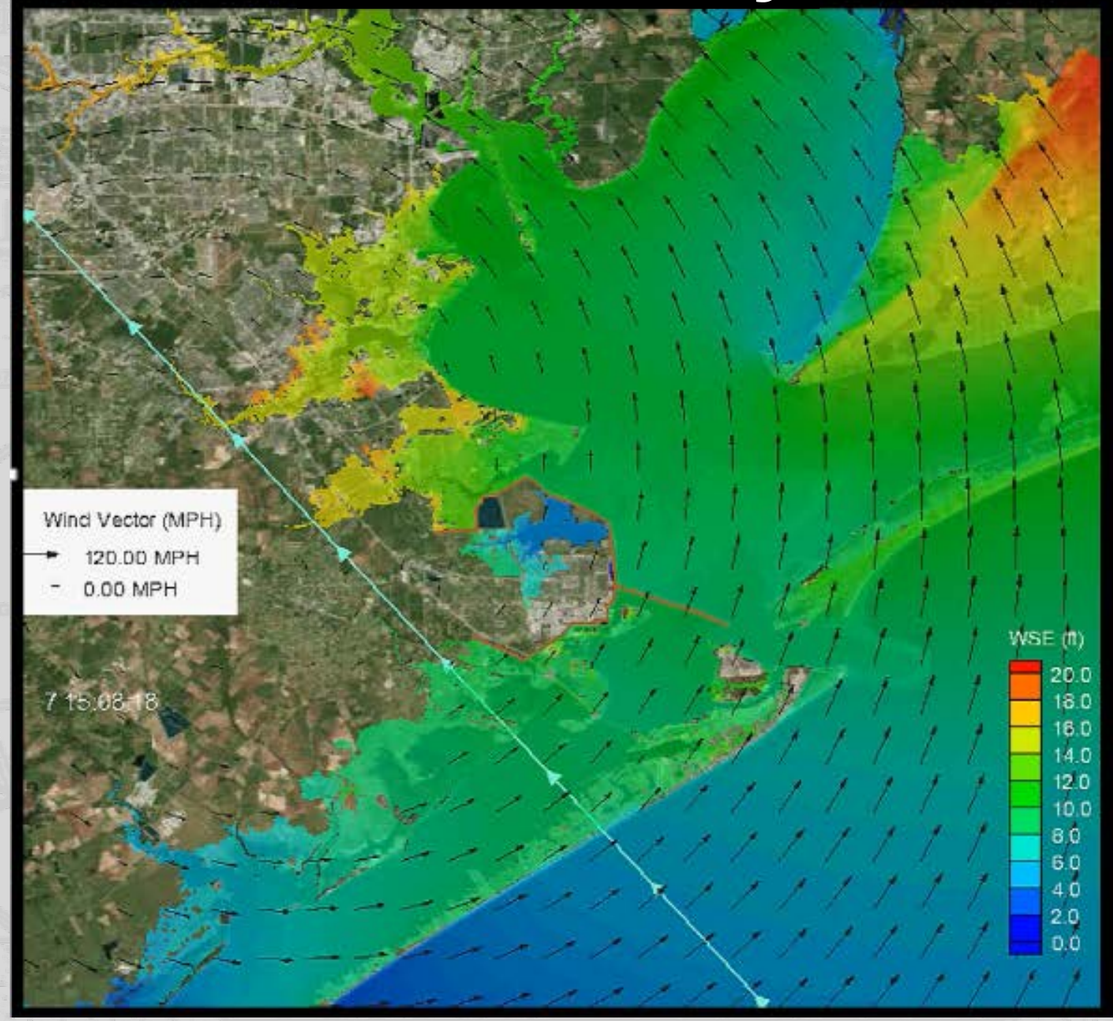
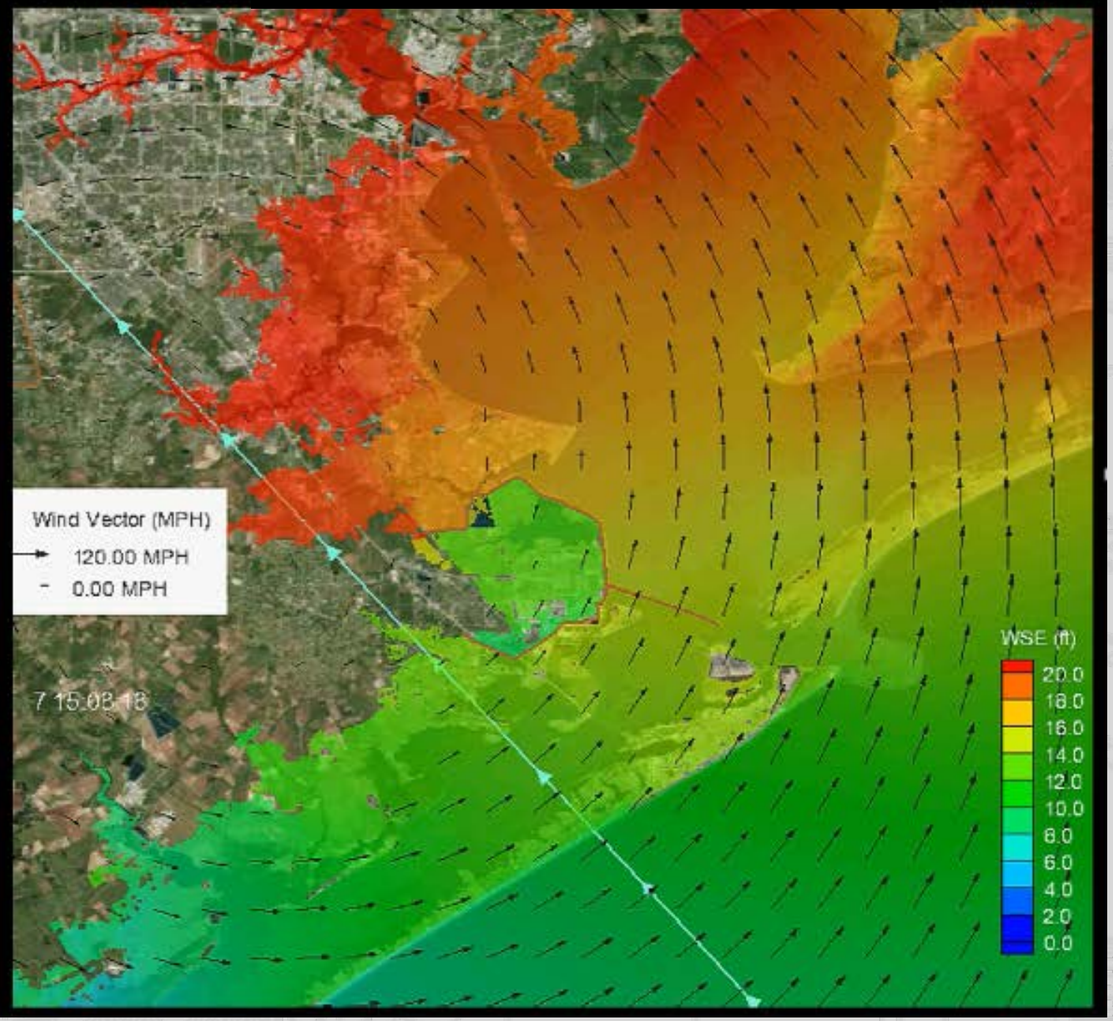
COASTAL STORM RISKS



Present Day

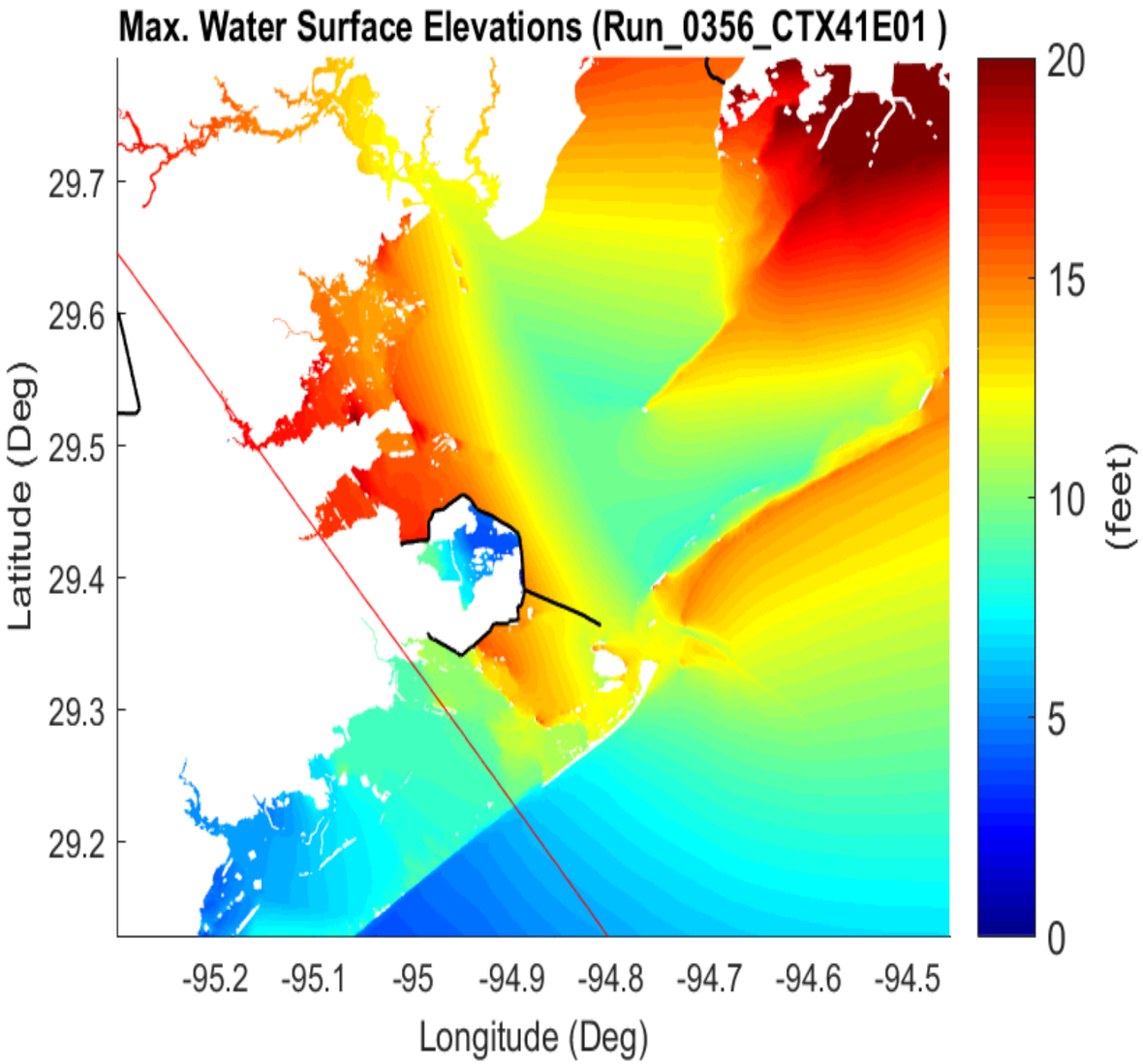


With Sea Level Rise

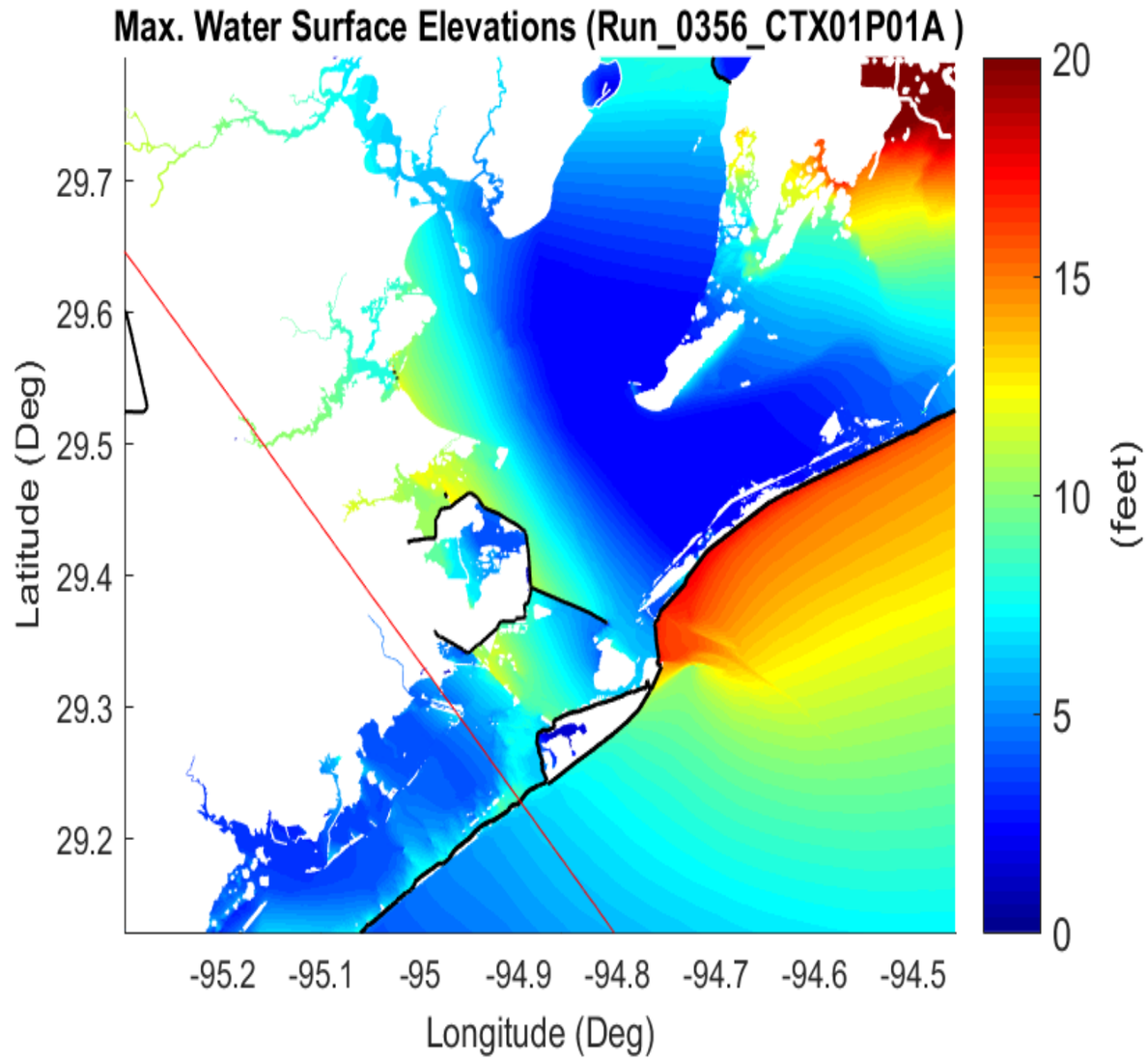


PLAN EVALUATION & COMPARISONS

Without Project



Plan A: Coastal Barrier



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TSP TOTAL PROJECT COST

COASTWIDE ER MEASURES
ER (ALT 1-2) =
$8.9B – $11.9B

LOWER COASTWIDE CSRM MEASURES
SOUTH PADRE ISLAND (REACHES 3 & 4) =
$71.6M – $83.1M

UPPER COASTWIDE CSRM MEASURES
ALTERNATIVE A (COASTAL BARRIER) =
$14.2B – $19.9B

ENVIRONMENTAL IMPACTS & MITIGATION

- **Direct Impacts**
  - Alt A (TSP): 4,525.3 acres
  - South Padre: 365.8 acres

- **Indirect Impacts:**
  - Altered tidal exchange
  - Reduced velocities in Galveston Bay

- **Ecosystem Restoration Benefits**
  - 160,000 acres of marsh, islands, dunes, beaches & oyster reefs

<u>TOTAL MITIGATION COST RANGE:</u>

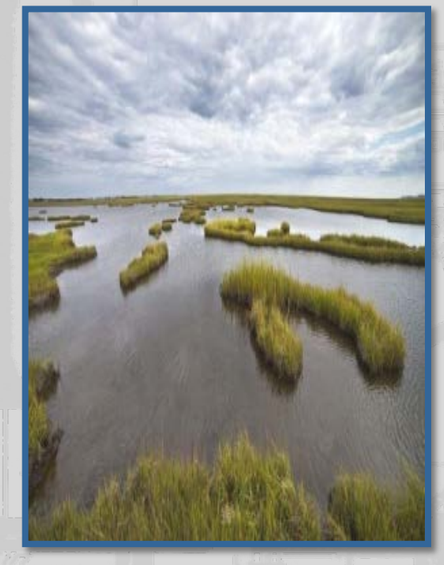
$676 M – $906 M

PATH FORWARD

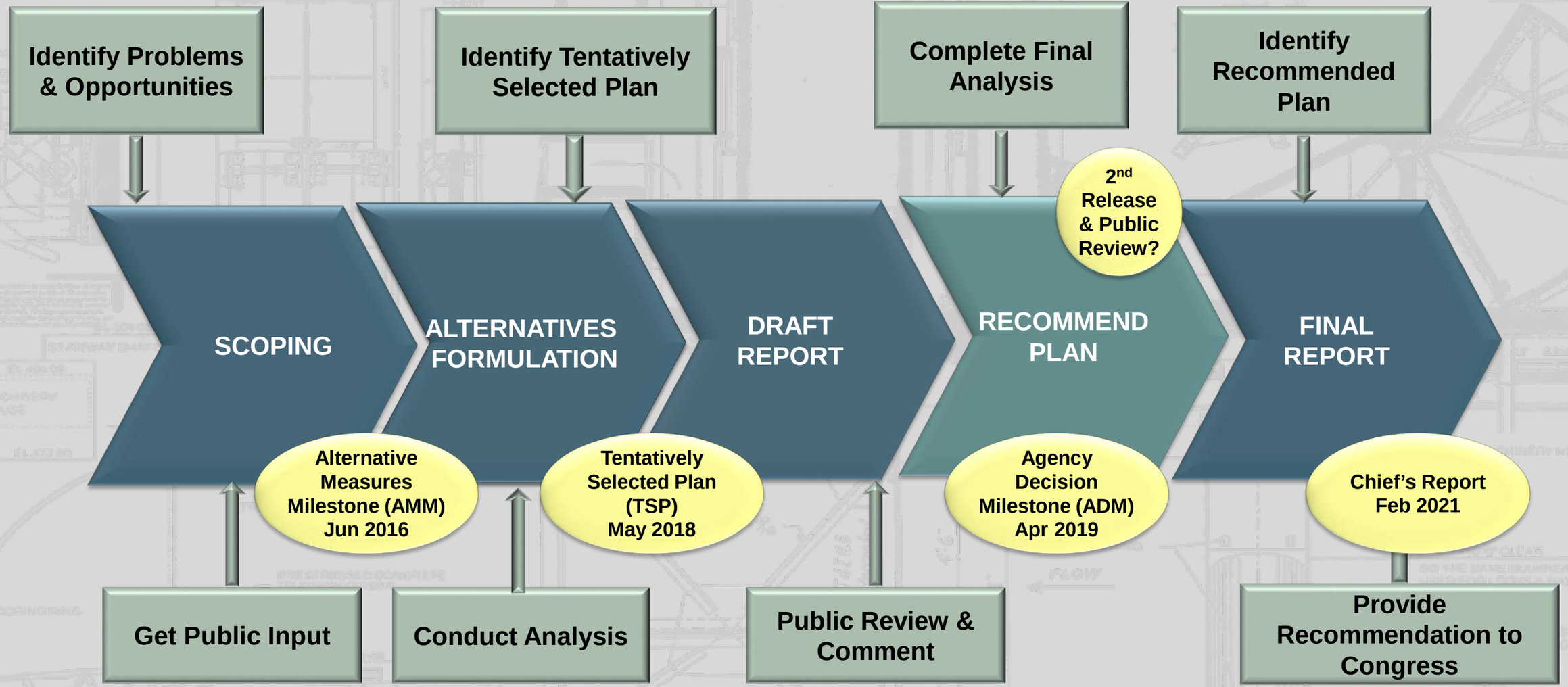
- **Based on public comments we are now:**
  - Evaluating moving the barrier to the beach and re-aligning the Galveston ring barrier
  - Exploring the utility of gates Clear Creek and Dickinson

- **In addition:**
  - We have met with Rice University (SSPEED Center) & Texas A&M at Galveston to understand the differences between the proposals
  - GLO is establishing Community Working Groups

- **Over the remaining study process we will:**
  - Host an International Gate Design Workshop
  - Conduct additional storm modeling
  - Evaluate non-structural measures on the west side of upper Galveston Bay
  - Continue Natural Resource Agency coordination
  - Evaluate a second Public Review and comment period



WHERE WE ARE IN THE STUDY PROCESS



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NEXT STEPS

ESTIMATED PROJECT SCHEDULE

Study Complete - Request Congressional Authorization for Project(s) 2021

Local Sponsor(s) Maintain Project

STUDY

WE ARE HERE

DESIGN

2-5 Years AFTER Authorization (Estimated)

BUILD

10-15 Years Dependent on Congress (Estimated)

MAINTAIN

50+ Years (Project Life)

Congressional Appropriations for Authorized Projects

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COASTALSTUDY.TEXAS.GOV