Planning for Beneficial Use of Dredged Material for Marsh Restoration on the Texas Coast

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Introduction

- Project
  - Funded by Deepwater Horizon Natural Resource Damage Assessment (NRDA) Texas Trustee Implementation Group
  - Included in 2017 NRDA Restoration Plan

- Goal
  - Identify eight priority beneficial use (BU) sites
  - Develop up to 60% engineering designs
  - Prepare permit application packages

Vision

Launch the next wave of BU projects in Texas

Project Restrictions

- Restrictions relevant to site selection
  - Project expressly funded to meet trustee restoration approach of “create, restore, and enhance coastal wetlands”
    - Only tidal wetland BU sites considered
  - As a BU project, a likely and nearby source of sediment was necessary
  - Focus on BU meant we recorded but did not select possible sites that would require significant shoreline protection

Prioritization and Selection Overview

All professional judgment by team and stakeholders

Possible approaches for selecting sites

All quantitative suitability algorithms

This project relied primarily on input from stakeholders but also included GIS and other evaluations

Stakeholder Engagement

- NRDA Trustees
- Galveston Bay Estuary Program
  - Including regional stakeholders
- Coastal Bend area stakeholders
- USACE Galveston
- General Land Office
- State and federal natural resource agency staff
- Numerous individual calls
  - For example, NGOs and landowners

Primary Criteria

- Degrading estuarine marsh suitable for restoration
- Protected from erosive forces
- Held by willing property owners
  - Public land or single private landowner
- Tidal connection
- Located near dredged material source(s)
  - Little to no competition for material
  - Public or private material considered
- Limited natural and/or cultural resource concerns
- Site identified (positively) elsewhere

Results

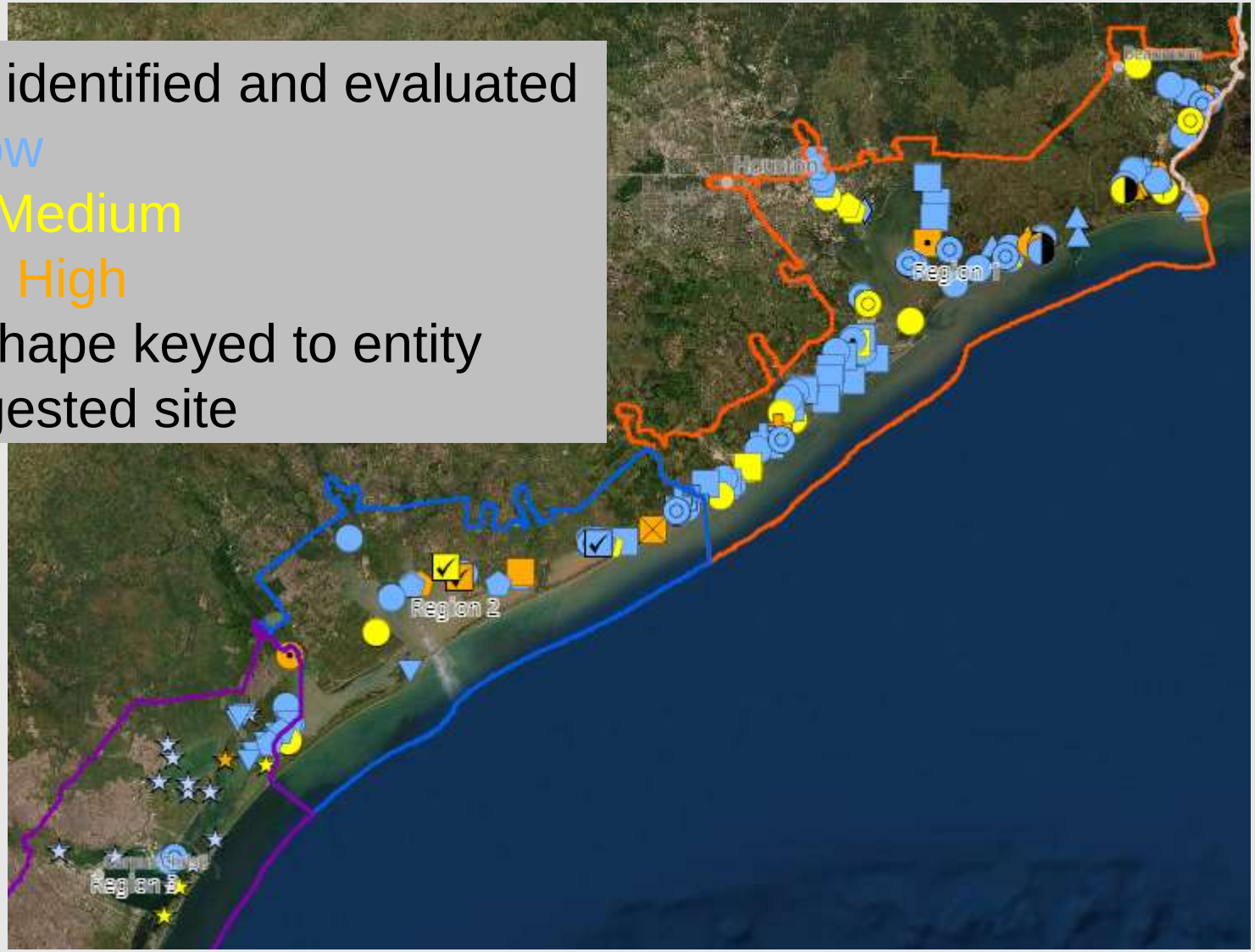
163 sites identified and evaluated

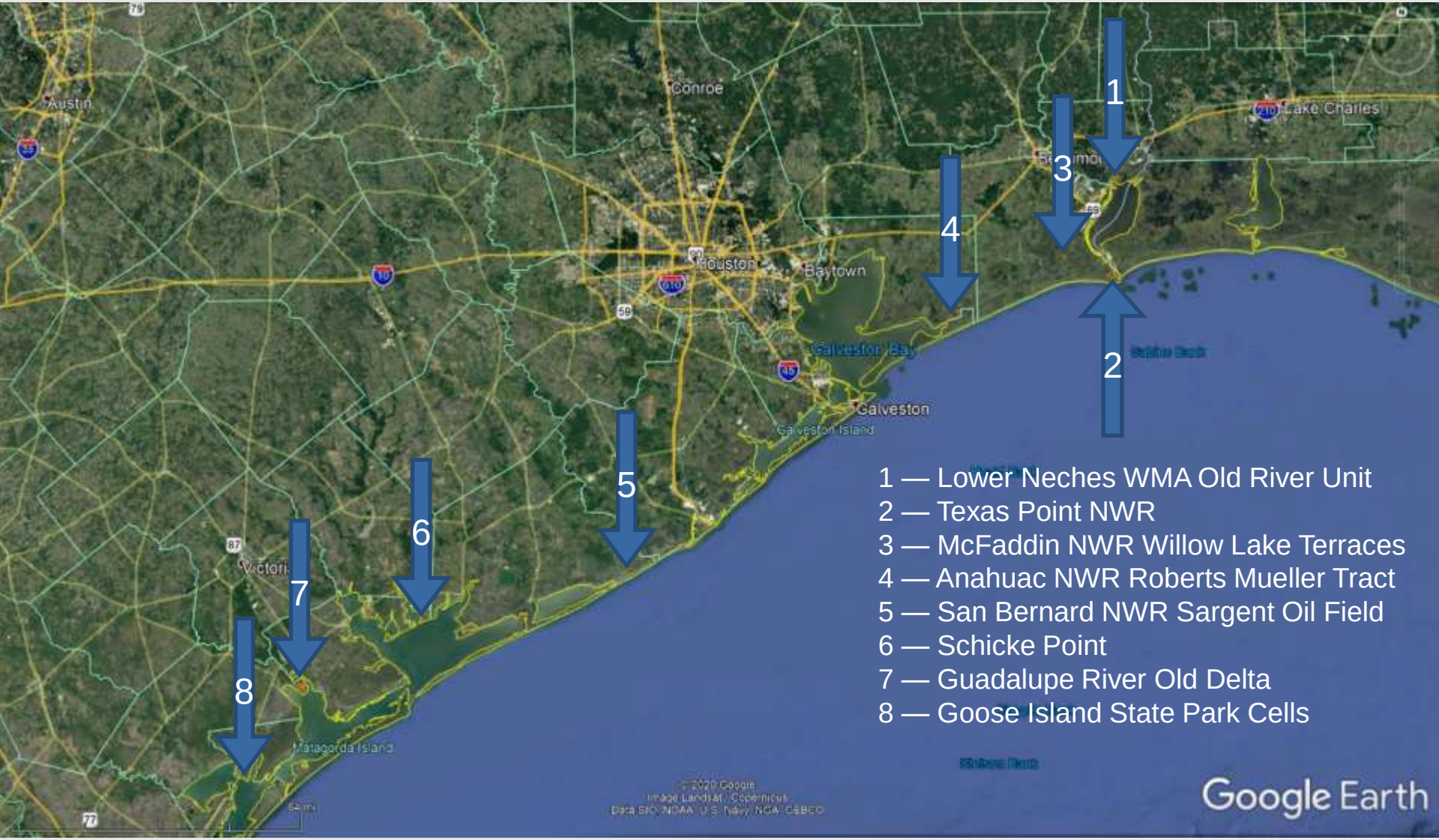
Blue = Low

Yellow = Medium

Orange = High

Symbol shape keyed to entity who suggested site





Locations of Selected Sites

Lower Neches WMA Old River Unit

Lower Neches WMA Old River Unit

Sediment Source

Sabine-Neches Waterway (SNWW)

Data Collected

- Topography/bathymetry
- Reference Vegetation Elevations

BENEFITS

- Large area
- Large sediment volumes available (1.5M cy every 3 years)
- Public land

CHALLENGES

- Potential pipeline conflicts

Texas Point NWR

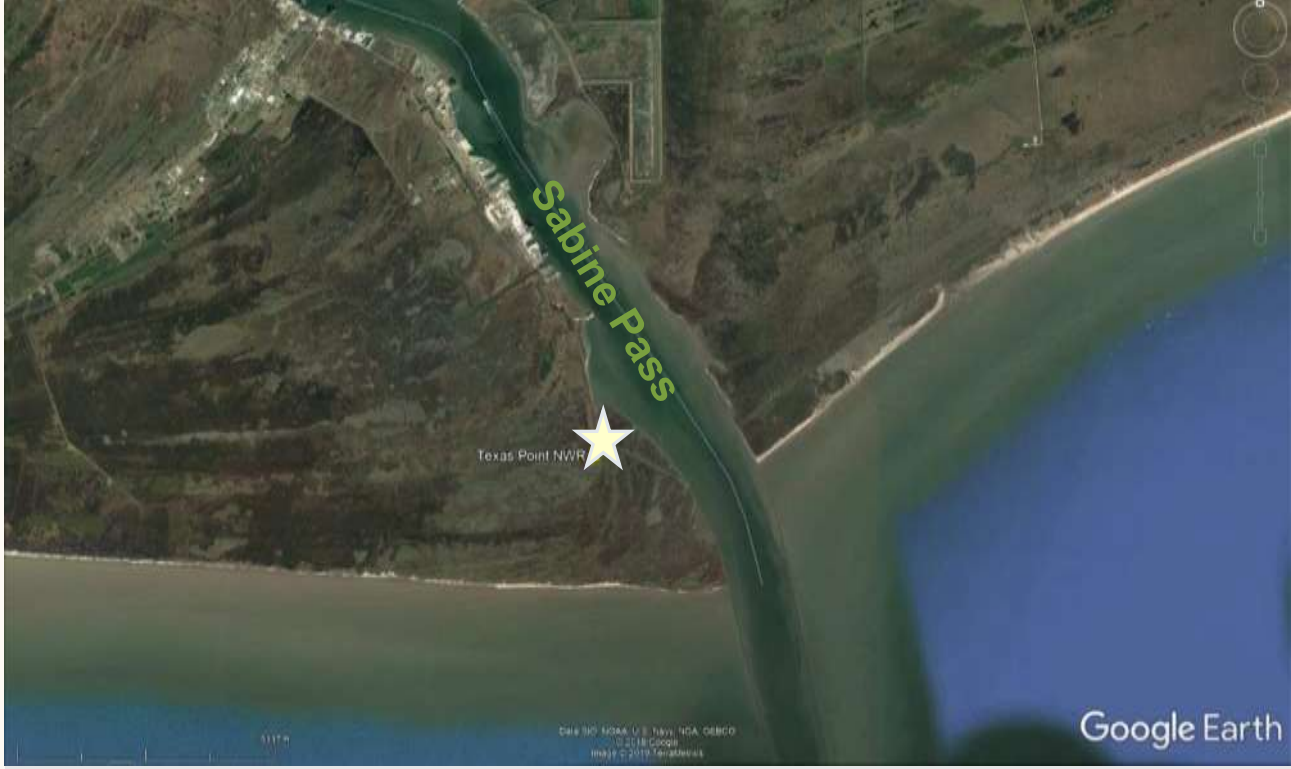
Texas Point NWR

Sediment Source

SNWW

Data Collected

- Topography/bathymetry
- Reference Vegetation Elevations



BENEFITS

- Sediment availability (every 2 to 3 years)
- Beach protected by other projects
- Public land

CHALLENGES

- Potential pipeline conflicts
- Existing USACE alternate PA BU site within Texas Point NWR

McFaddin NWR Willow Lake Terraces

McFaddin NWR Willow Lake Terraces

Sediment Source

Gulf Intracoastal Waterway (GIWW) or SNWW

Data Collected

- Topography/bathymetry
- Reference Vegetation Elevations

BENEFITS

- Fill in between existing terraces
- Existing USFWS project
- Public land

CHALLENGES

- Distance from most likely sediment source (SNWW)

Anahuac NWR Roberts Mueller Tract

Anahuac NWR Roberts Mueller Tract

Sediment Source

GIWW

Data Collected

- Topography/bathymetry
- Reference Vegetation Elevations

BENEFITS

- Existing project in vicinity
- 300,000 cy dredged every other year from GIWW

CHALLENGES

- Equipment access and staging
- Avoidance of active oil field

San Bernard NWR Sargent Oil Field

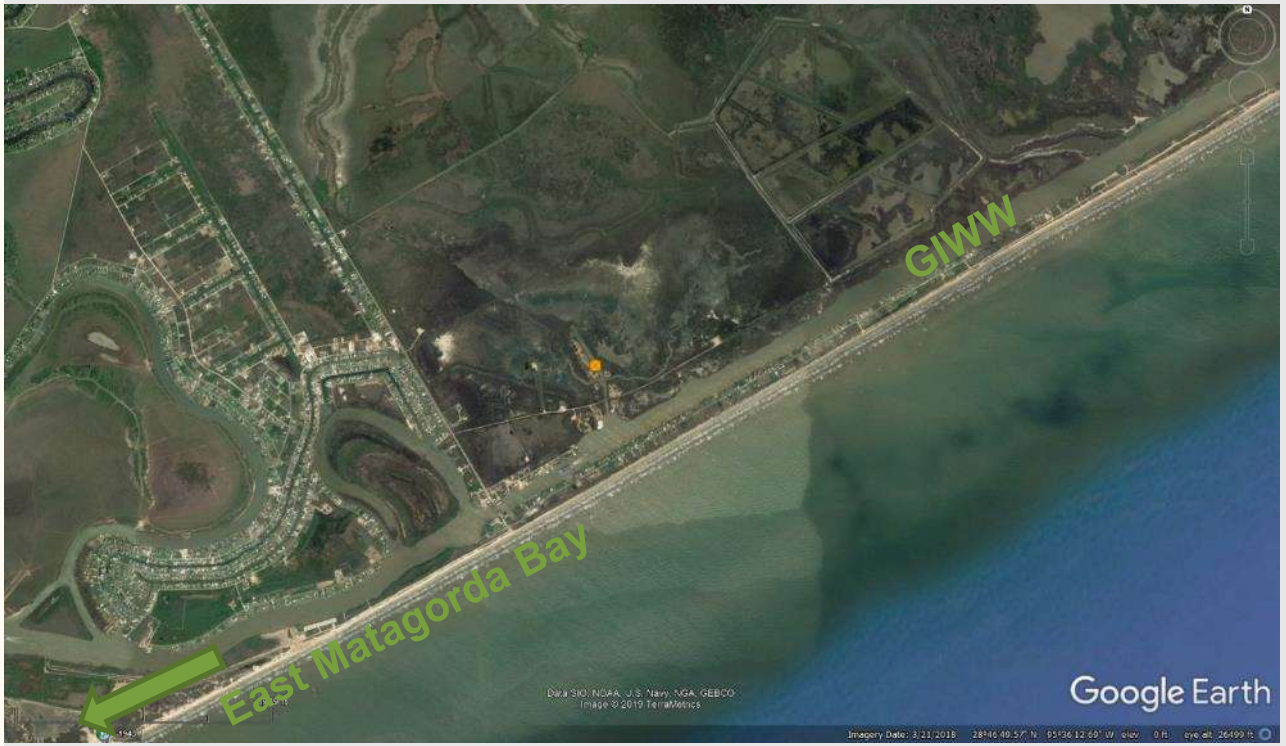
San Bernard NWR
Sargent Oil Field

Sediment Source

GIWW

Data Collected

- Topography/bathymetry



BENEFITS

- Naturalize existing oil field channels
- Public land

CHALLENGES

- Limited sediment availability
- Available material is mostly sand (and applied to beaches)

Schicke Point

Schicke Point, Carancahua Bay

Sediment Source

Palacios Ship Channel

GIWW

Data Collected

- Topography/bathymetry
- Reference Vegetation Elevations

BENEFITS

- Existing breakwater plus plans in place for expansion of breakwater

CHALLENGES

- Distance from sediment sources
- Part of site is privately owned

Guadalupe River Old Delta

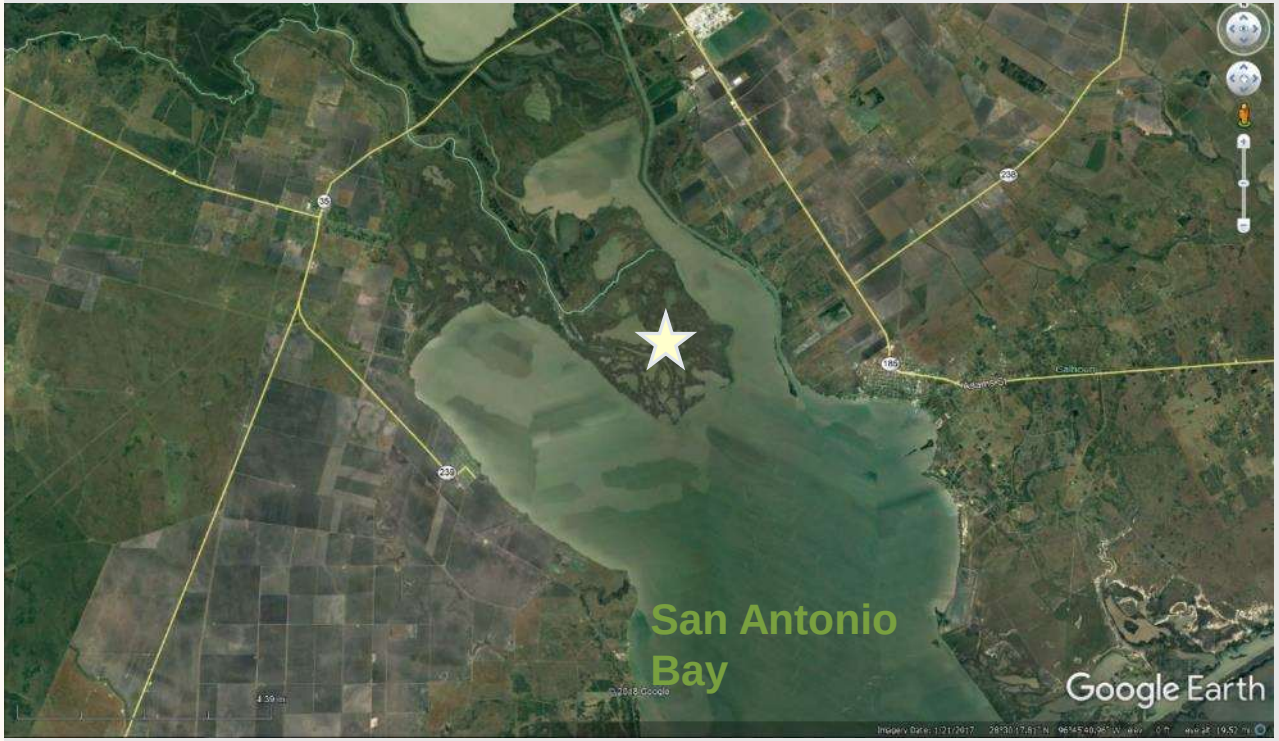
Guadalupe Old River Delta

Sediment Source

Victoria Barge Canal

Data Collected

- Topography/bathymetry
- Reference Vegetation Elevations



BENEFITS

- Large area
- Well known area of degrading marsh

CHALLENGES

- Some portions may need shoreline protection
- Privately owned

Goose Island State Park Marsh Cells

Goose Island SP Existing Beneficial Use Cells

Sediment Source

GIWW or local

Data Collected

- Topography/bathymetry

BENEFITS

- Existing cells were intended to be developed into marsh
- Currently GIWW open water placement

CHALLENGES

- Distance to sediment source (4+ miles) coupled with small project may be expensive

Summary

- Eight sites
  - 6 on public land
  - 2 on private land
- Each site has a single landowner
- All sites have landowner support
- Stakeholder input was invaluable in efficiently selecting the eight sites
- GIS data was helpful and would be more helpful for long-range planning

Questions/Discussion

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