



Lighthouse Beach

Kickoff Meeting - 9/19/2024

June 26, 2024



Introductions



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Meeting Agenda

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Project Overview

2

Scope of Work

3

Schedule

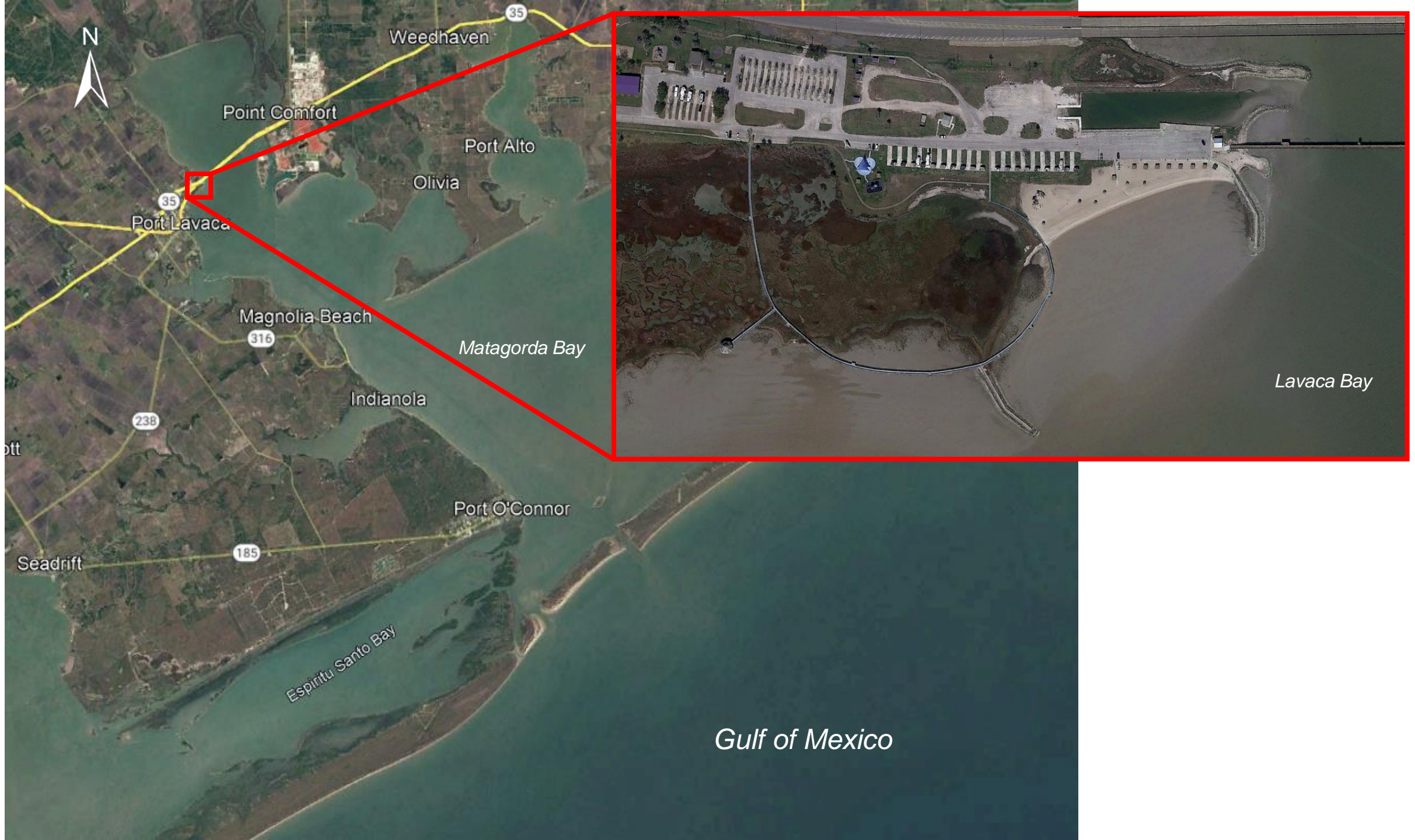
4

Next Steps

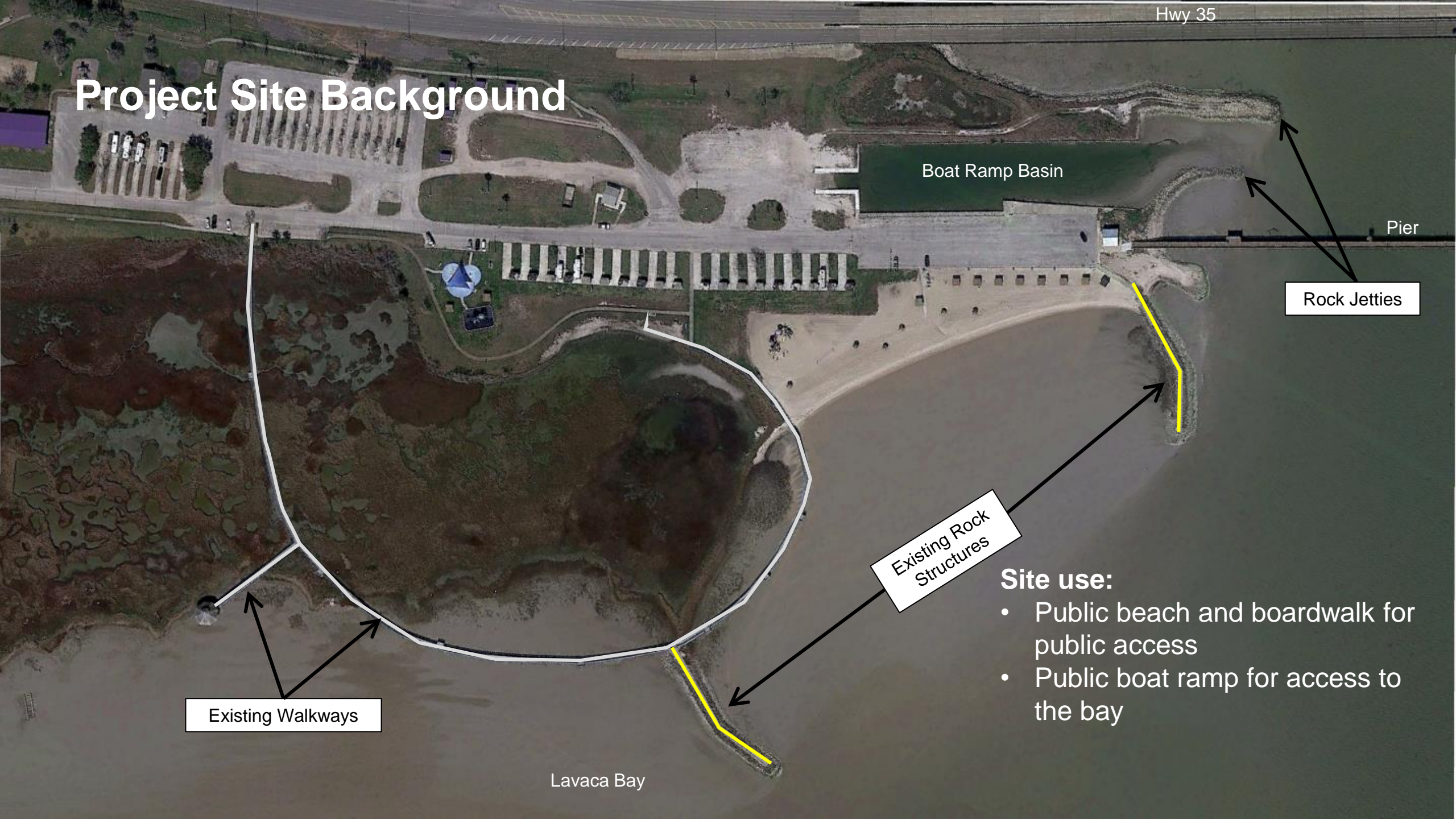
Meeting Agenda

1

Project Overview



Project Site Background



Boat Ramp Basin

Pier

Rock Jetties

Existing Rock Structures

Existing Walkways

Lavaca Bay

Site use:

- Public beach and boardwalk for public access
- Public boat ramp for access to the bay

Project Site Background

Boat Ramp Basin

Lighthouse Beach

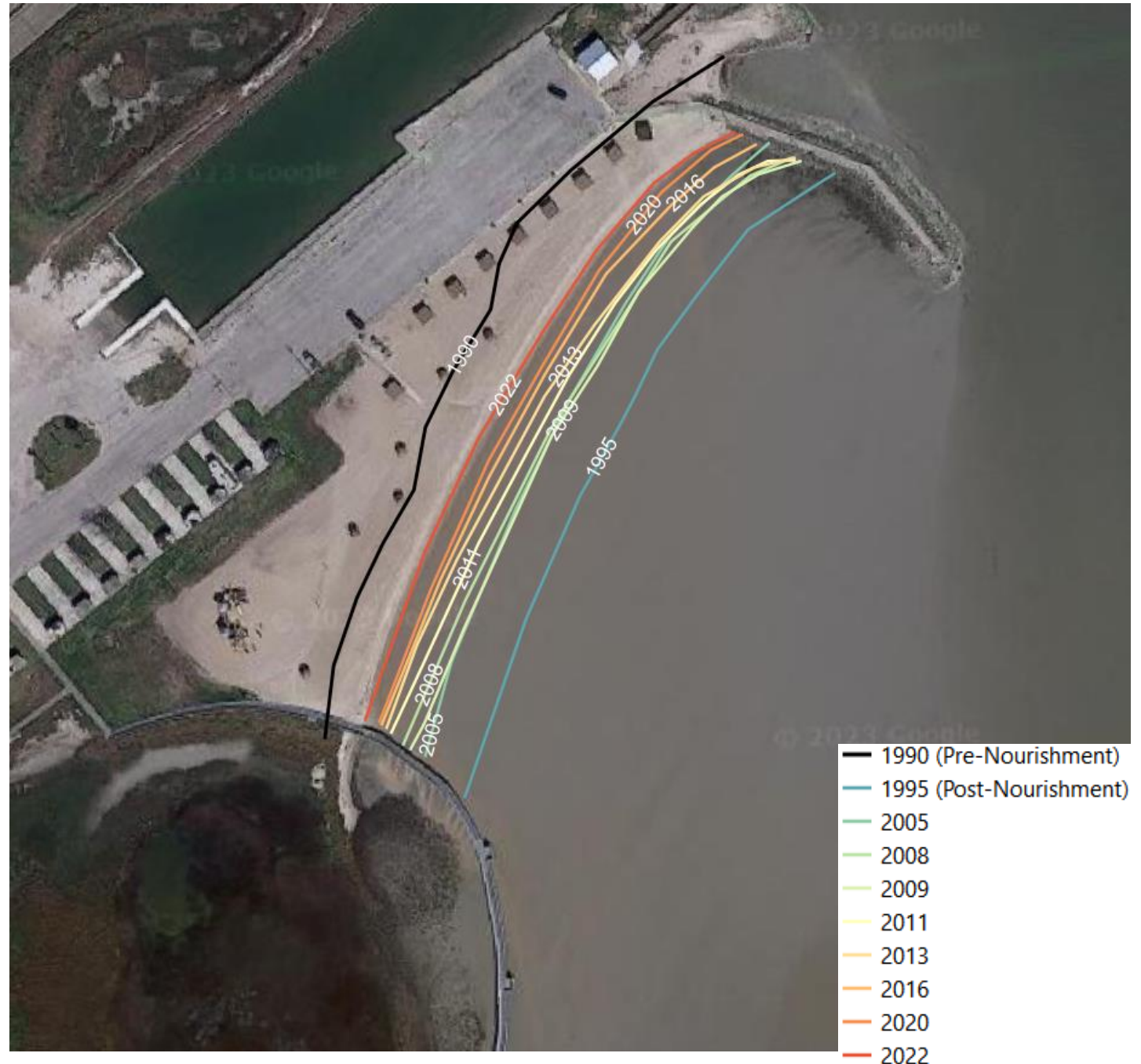
Sedimentation at the mouth of the boat ramp basin

Eroding Marsh



Project Site Background

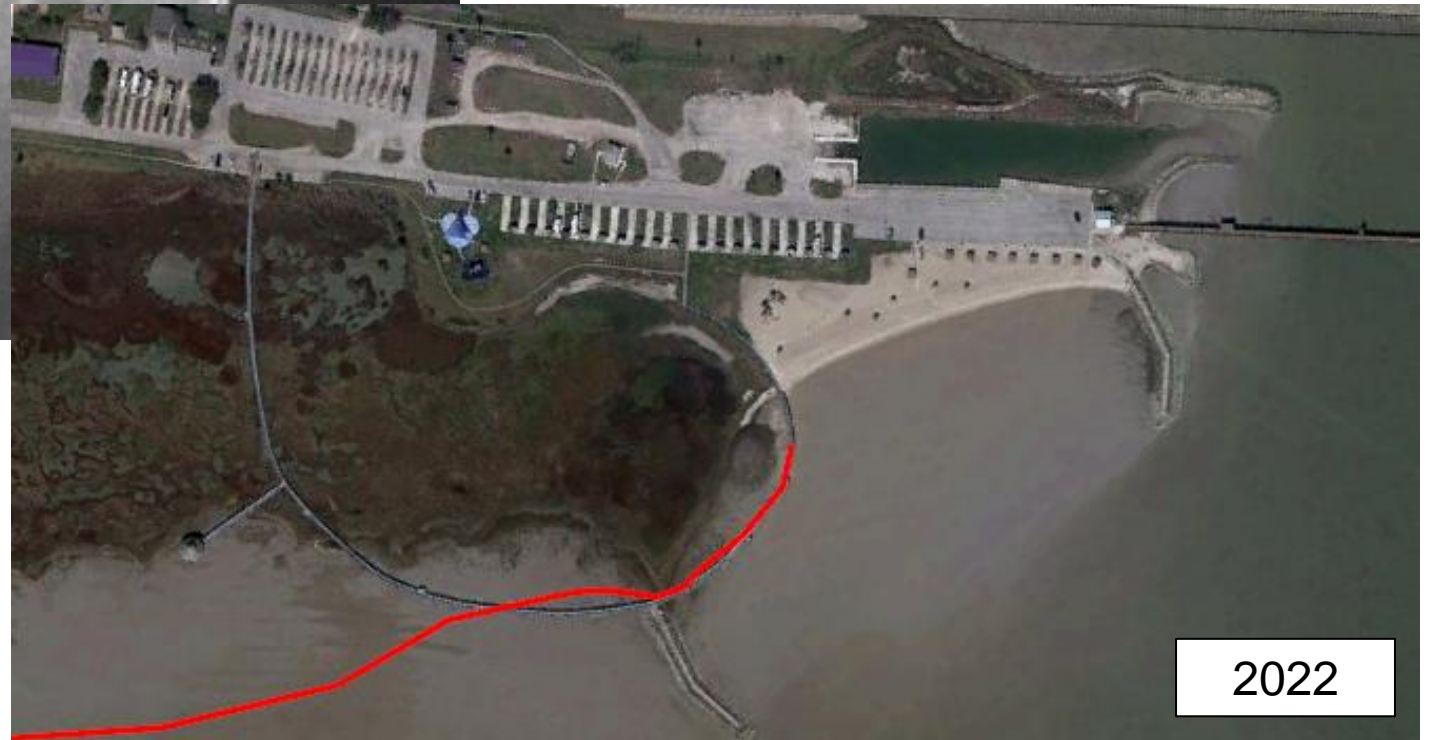
- Lighthouse Beach was restored in the 90's.
- Erosion rates of 10 ft/yr have occurred along the Lighthouse Beach shoreline over the long-term (1930's to 2010's)
- Erosion rates of 4 ft/yr were measured in the short-term (1990's to 2020's)



Project Site Background



- Loss of approximately 6 acres of marsh habitat between 1995 and 2022
- Erosion rates between 5 and 8.7 ft/yr



Project Overview

Project Goals as defined in the Scope

1.

Nourish the recreational beach

2.

Protect and enhance the adjacent wetlands

Re-establish the historic marsh using living shoreline techniques and/or marsh creation

3.

Improve the performance of the existing structures

Modify the existing coastal structures to improve the the life of the nourished beach

4.

Reduce sedimentation in the boat ramp channel

Modify the existing structures to minimize sedimentation

Meeting Agenda

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Scope of Work

Project Scope of Work

1

Project Initiation

2

Data Collection

3

**Coastal Analysis, Alternatives
Development, and Alternatives
Evaluation**

4

Conceptual Design

Project Scope of Work

1	Project Initiation
2	Data Collection
3	Coastal Analysis, Alternatives Development, and Alternatives Evaluation
4	Conceptual Design

Task 1 – Project Initiation

1. Kickoff Meeting – 9/19/2024
2. Site Visit – 9/19/2024
3. Kickoff meeting minutes and site visit summary deliverables
4. Summarize understanding in Tech Memo

Project Scope of Work

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Data Collection

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**Coastal Analysis, Alternatives
Development, and Alternatives
Evaluation**

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Conceptual Design

Task 1 . Existing and New Data Collection

Overview

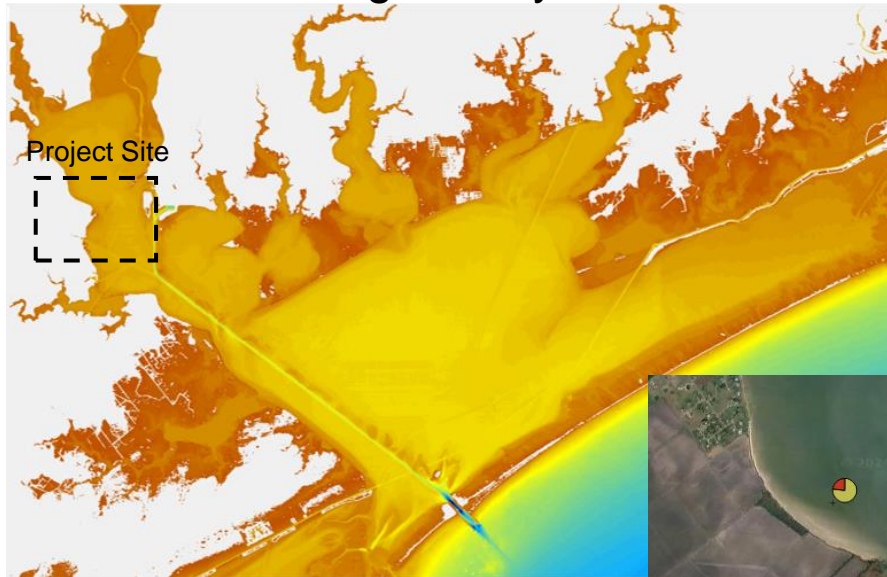
Existing Data Collection

- Existing survey data
- Existing geotechnical data
- Oil and gas infrastructure in the project area
- Historic Aerial photos

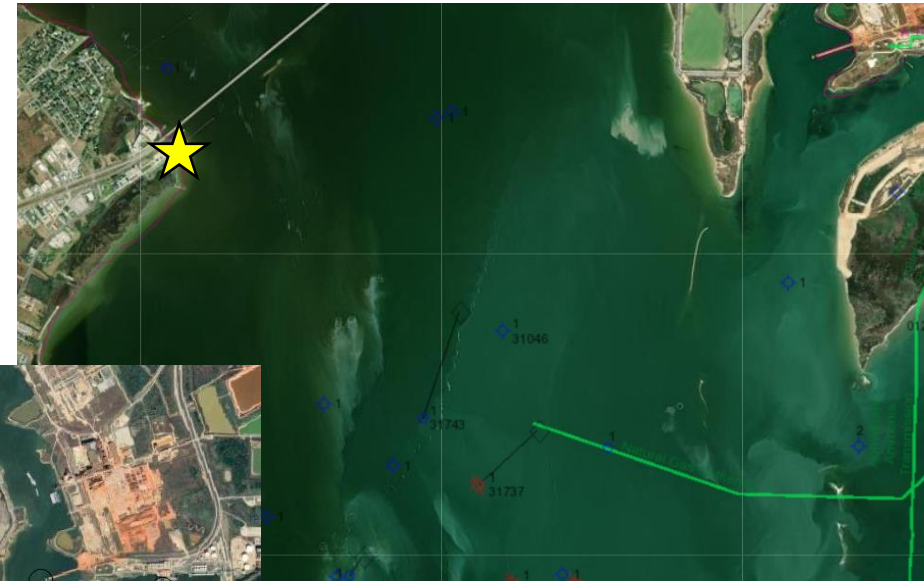
New Data Collection	Schedule	Status
Topographic and Bathymetric Survey Data	4 months from NTP	Estimated to begin 9/23/2024
Geotechnical Data Collection	4 months from NTP	Finalize plan after survey data collection
Cultural Resources Desktop Study	4 months from NTP	In Progress
Sensitive Resources Survey	4 months from NTP	Estimated to begin end of September

Task 1 – Existing Data Collection

Existing Survey Data



Existing Pipelines and Wellheads



Existing Geotechnical Data



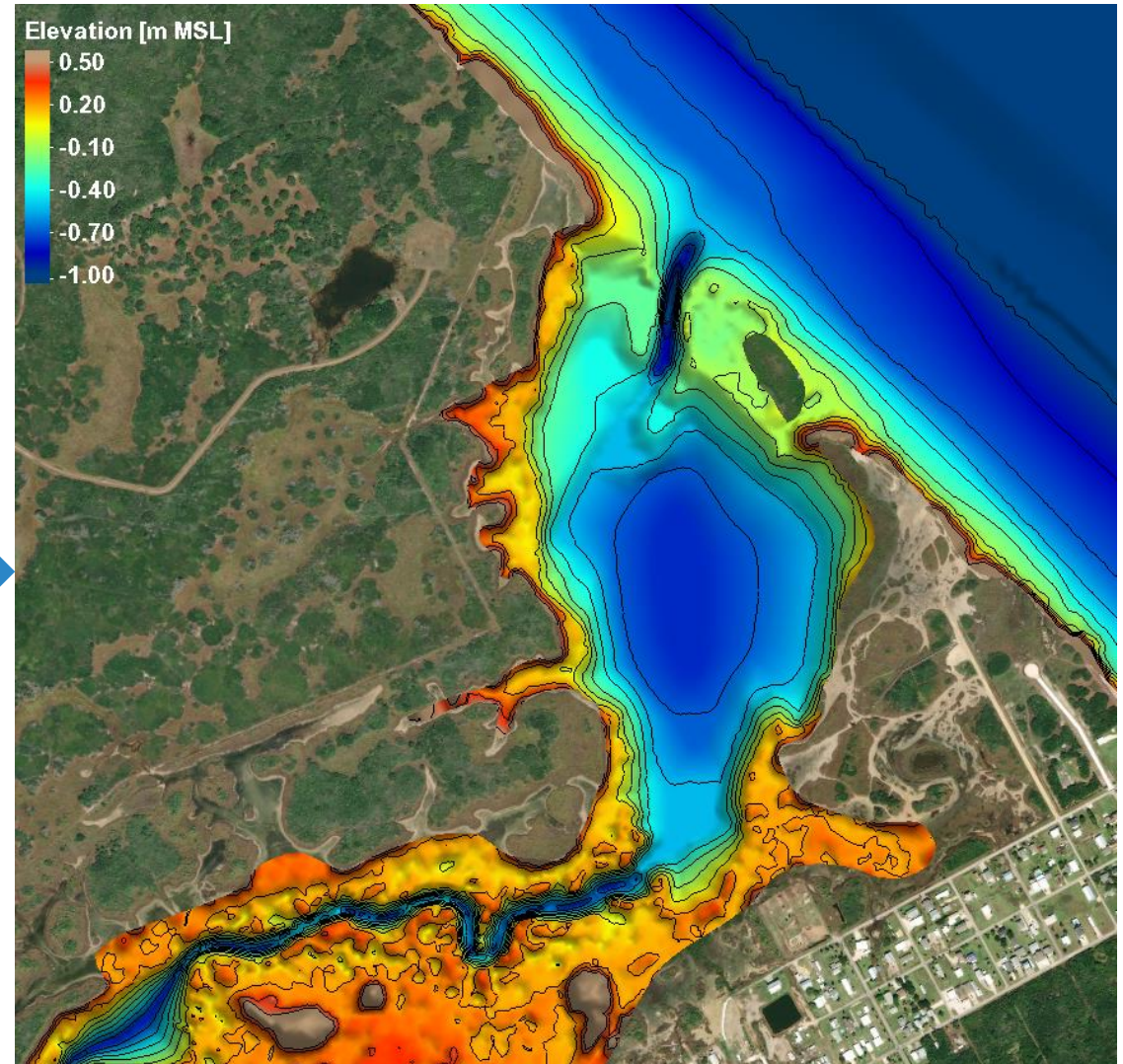
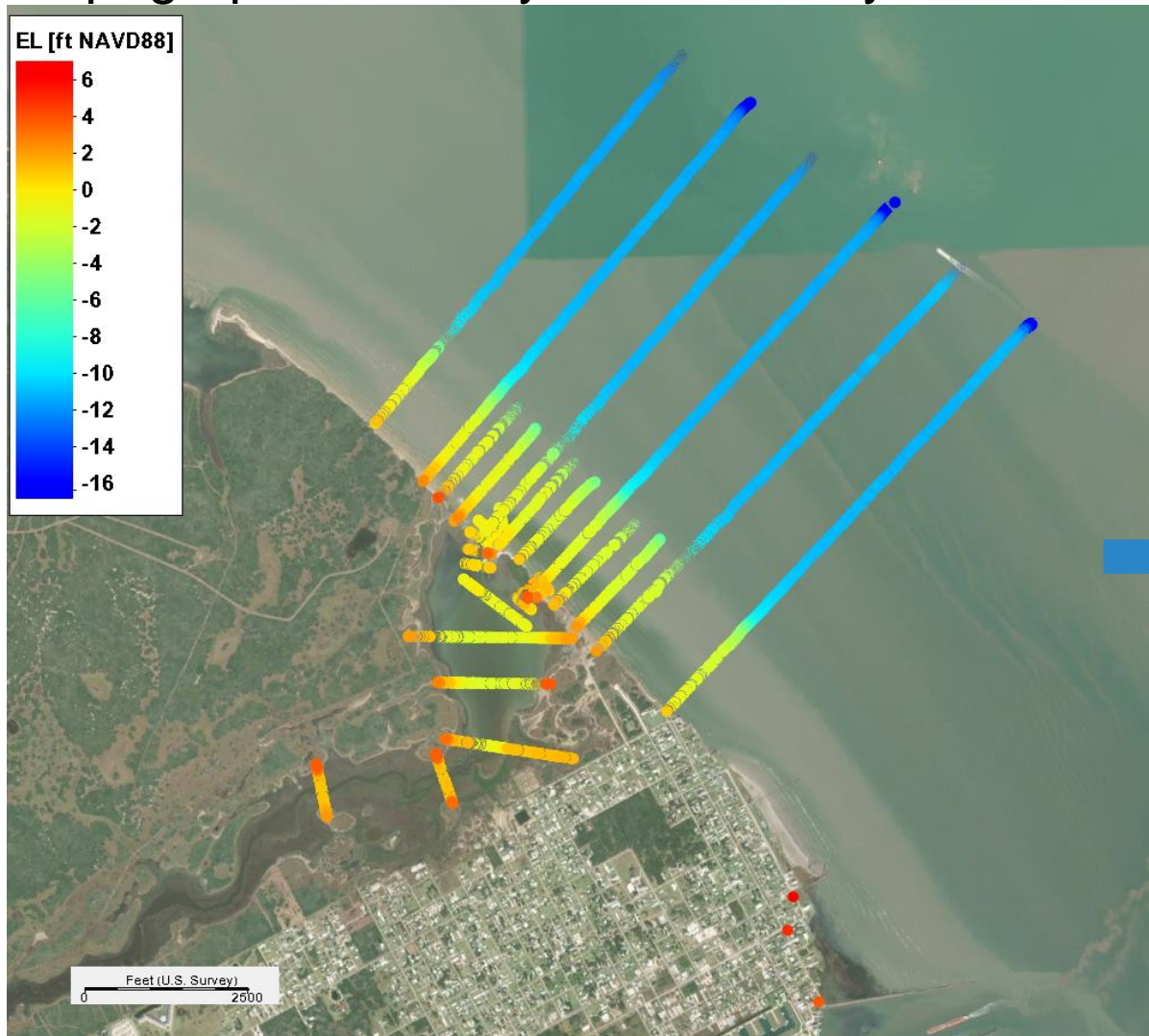
Task 1 – New Data Collection

Topographic & Bathymetric Survey



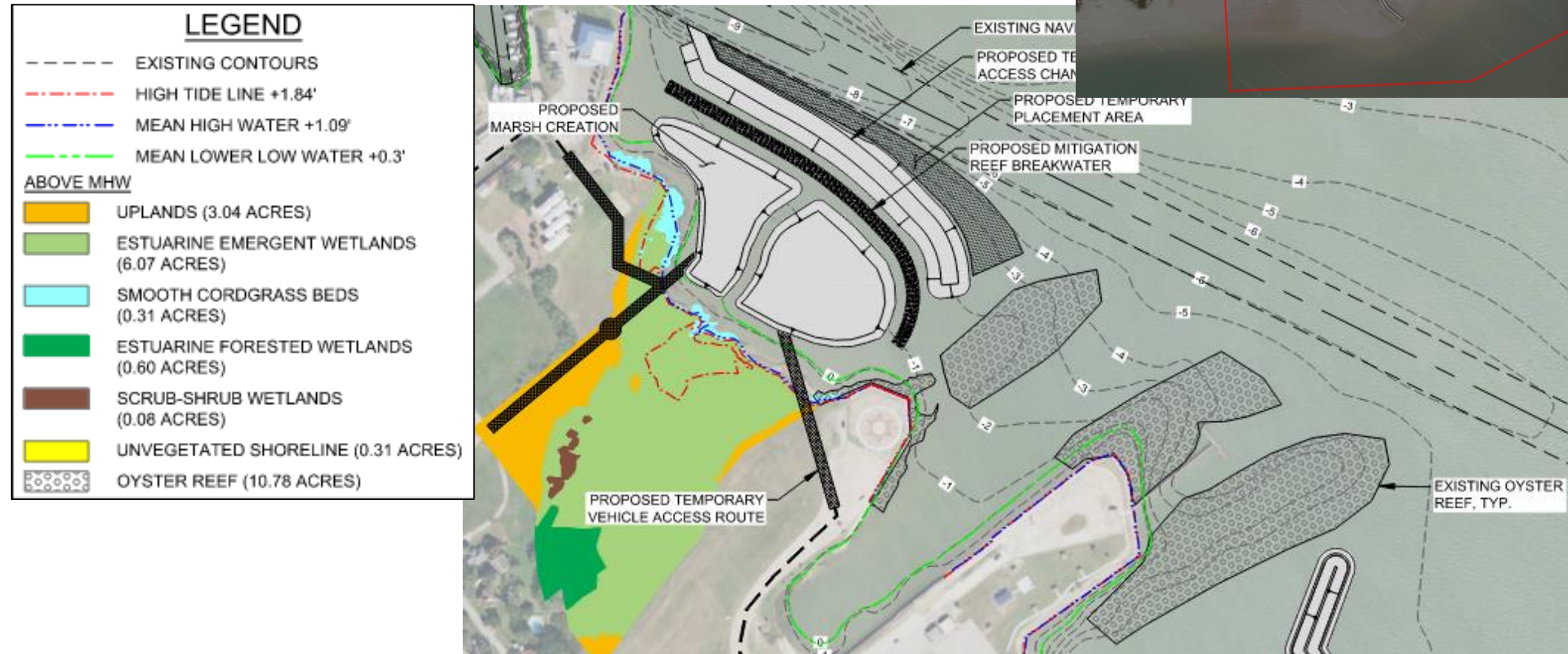
Task 1 – New Data Collection

Topographic & Bathymetric Survey



Task 1 – New Data Collection

Habitat Survey



Project Scope of Work

1	Project Initiation
2	Data Collection
3	Coastal Analysis, Alternatives Development, and Alternatives Evaluation
4	Conceptual Design

Task 2. Alternatives Analysis and Conceptual Design

Overview

Coastal Engineering Analysis

- Develop typical and extreme value **statistics of wind, waves, and water levels**
- **Wave modeling** to evaluate waves impacting the project site and proposed alternatives
- **Circulation modeling** to evaluate tide and tide generated currents at the project site
- **Shoreline response** and/or **Storm response** will be analyzed using numerical or empirical methods

Alternatives Analysis

- Develop 3 alternatives for analysis
- Evaluation Criteria will be developed with input from the GLO and the City of Port Lavaca

Task 3 Schedule:

- 8 months from NTP

Task 2 – Alternatives Analysis and Conceptual Design

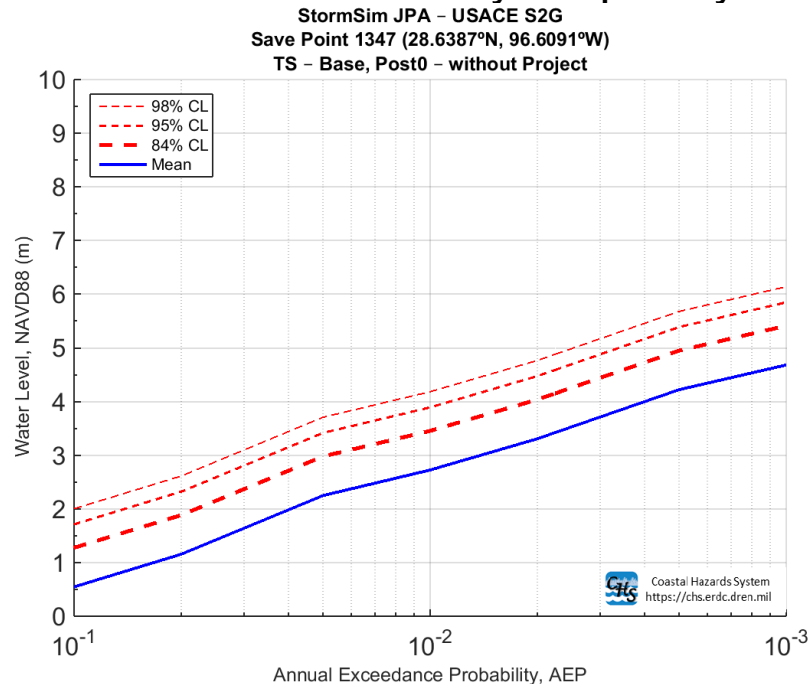
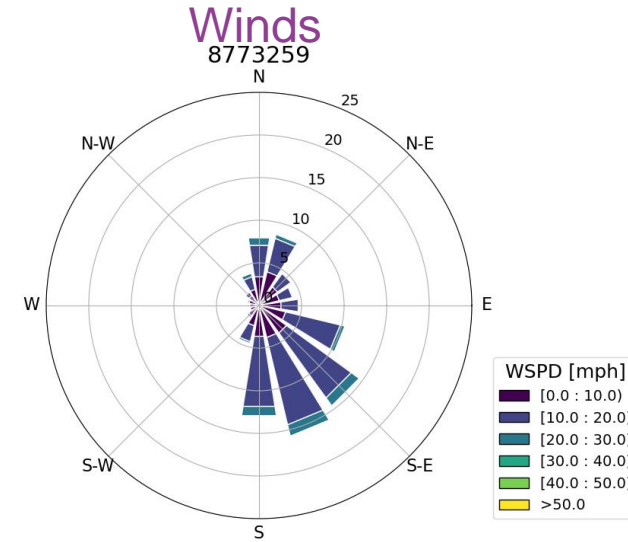
Coastal Engineering Analysis

1. Survey data analysis

- Compile collected survey data and existing available topographic and bathymetric data

2. Gauge data analysis

- Waves, wind, water levels
- Establish storm intensity/frequency

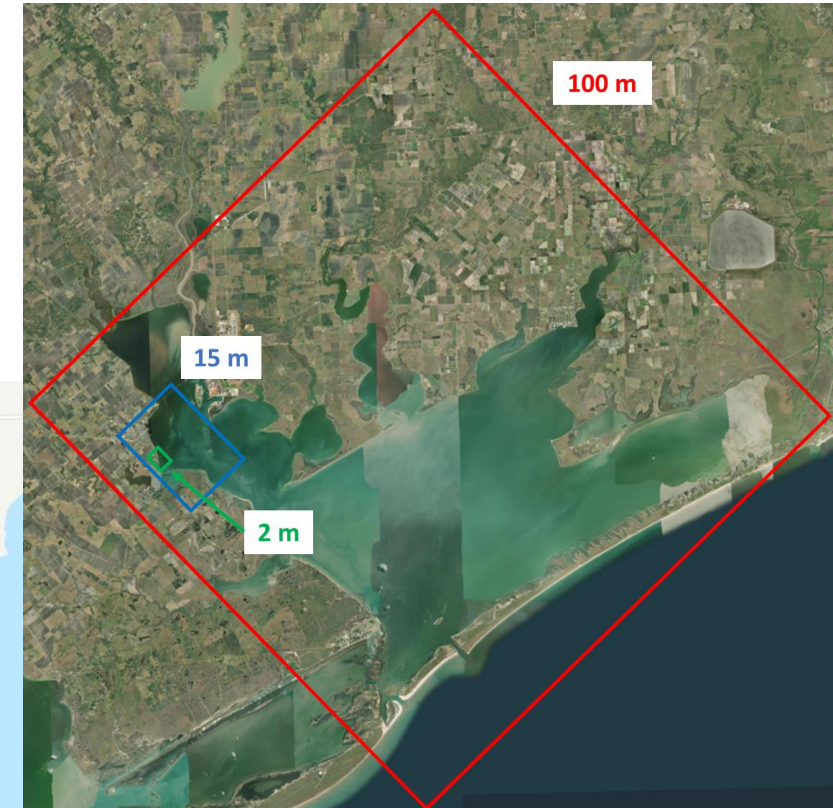
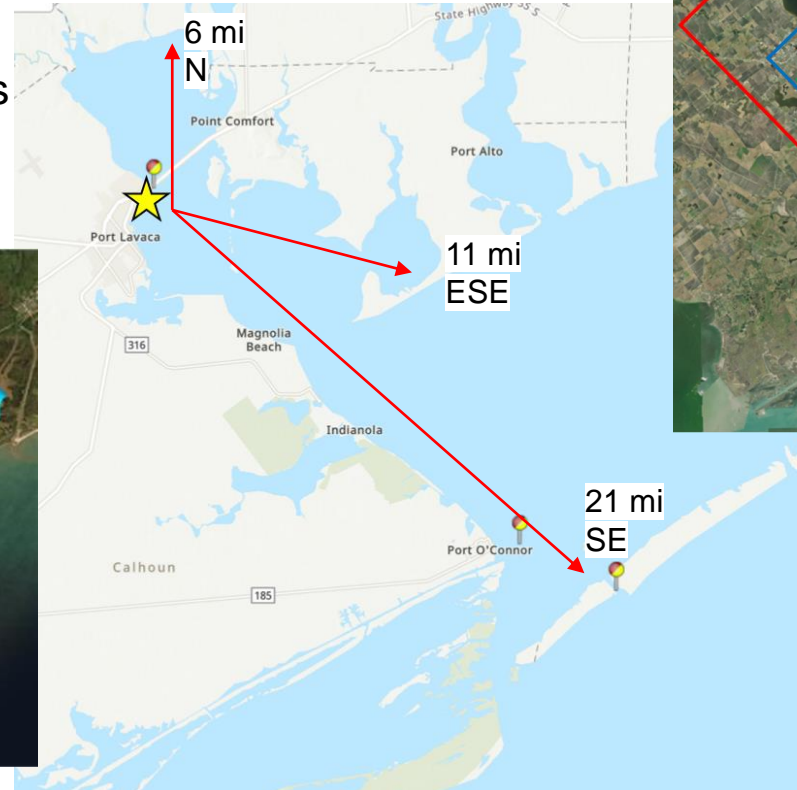
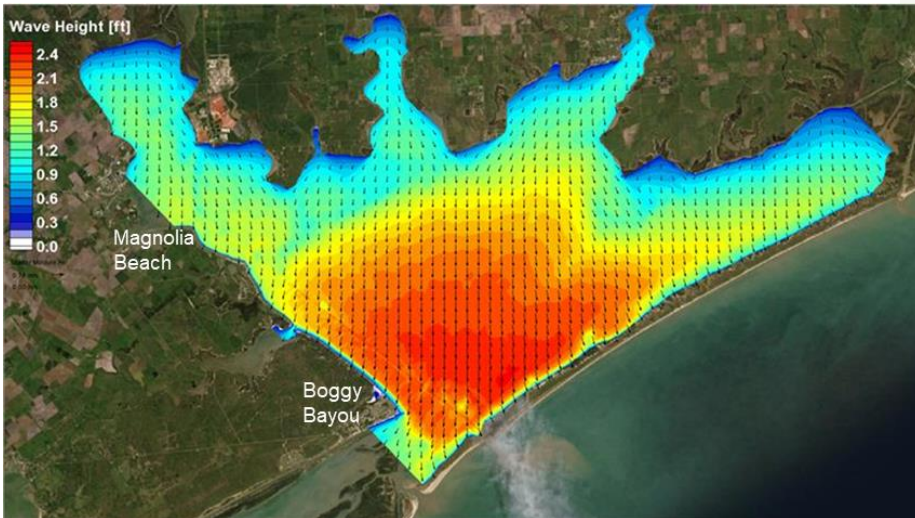


Tr [yr]	Water Level (non-TC) [ft, NAVD88] ¹	Water Level (TC) [ft, NAVD88] ²	Wind Speed [mph] ³
1	2.7	-	25 (NOAA)
5	3.7	-	33 (NOAA)
10	4.0	1.8	37 (NOAA)
25	4.4	4.6	79 (NHC)
50	4.8	7.4	92 (NHC)
100	5.2	8.9	105 (NHC)

Task 2. Alternatives Analysis and Conceptual Design

Wave Modeling:

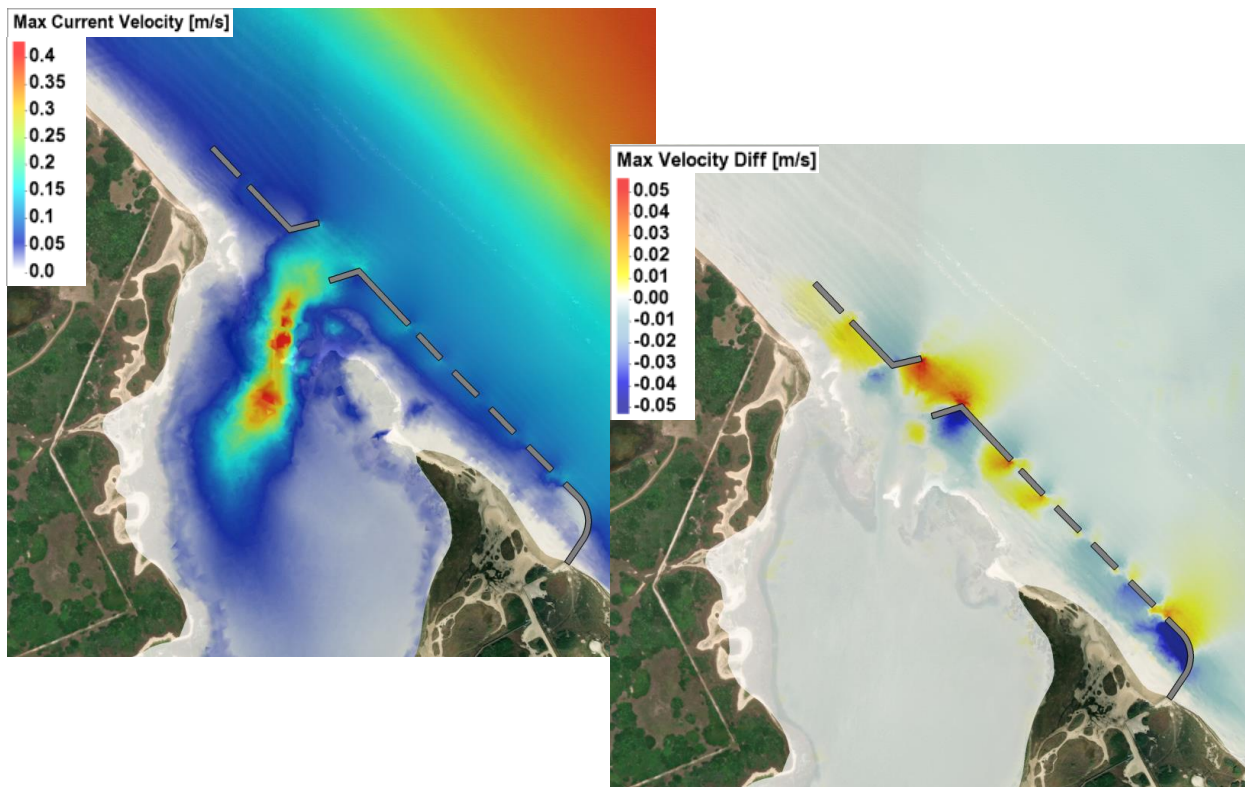
- Create bathy surface that includes new survey and data
- Baywide and nested models
 - Baywide covers Lavaca and Matagorda Bay
 - Nested is local to project site
- Evaluate 3 wind directions and 4 return periods (Tr = 1, 5, 25, 100 yr) for existing conditions and 3 alternatives



Task 2. Alternatives Analysis and Conceptual Design

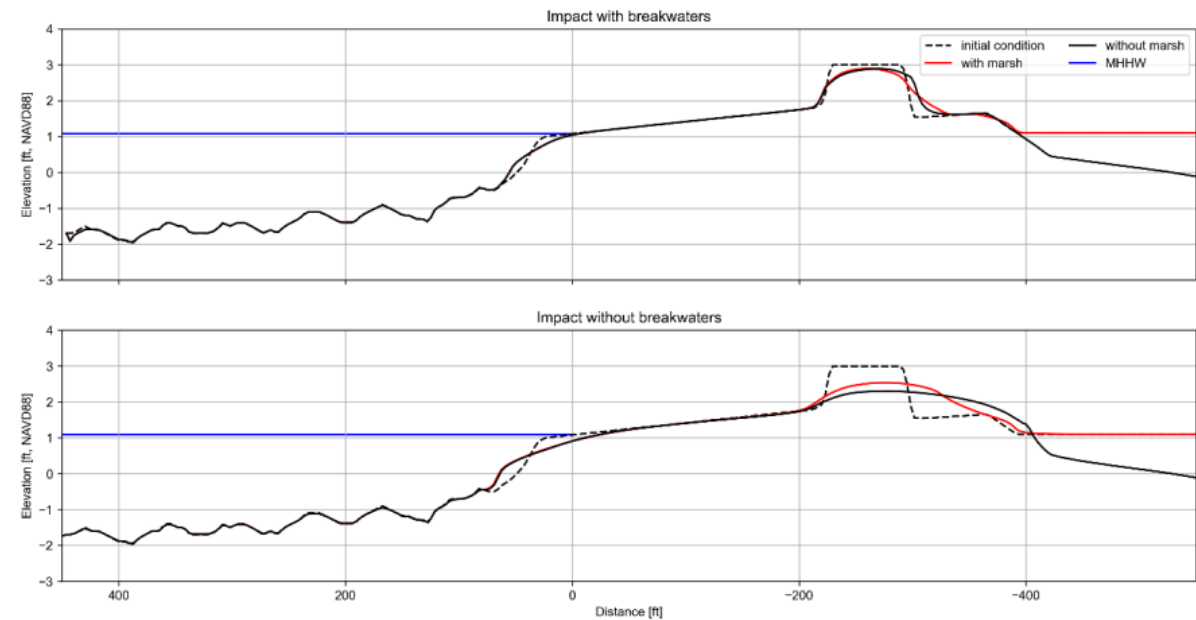
Circulation Modeling:

- Create bathy surface that includes new survey and data
- Simulate existing conditions and up to three alternatives to understand the changes to the tide generated currents



Storm Response Modeling:

- Evaluate the storm response using numerical methods such as Xbeach or empirical methods
- Use the results to evaluate the beach fill and marsh templates



Task 2 – Alternatives Analysis and Conceptual Design

Alternatives Development

- Develop conceptual level alternatives based on modeling results
- Develop evaluation criteria for proposed performance
- Establish preliminary layout for each project component



Evaluation of Alternatives to Meet Project Goals

Project Goals as defined in the Scope

1.

Nourish the recreational beach

Habitat creation – area of beach created for each alternative

2.

Protect and enhance the adjacent wetlands

Habitat creation – area of marsh created for each alternative

3.

Improve the performance of the existing structures

Performance – reduction of wave energy at the project shoreline (marsh)

Performance – increase resiliency to storms (beach)

4.

Reduce sedimentation in the boat ramp channel

Project Scope of Work

1	Project Initiation
2	Data Collection
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Task 2. Conceptual Design

Overview

Conceptual Design

- Preferred alternative will be to the conceptual design level
- Conceptual design will include:
 - Site layout and vicinity maps
 - Preliminary plans and cross sections of the preferred alternative
 - Existing site conditions
 - Volume estimates
 - Conceptual cost estimates

Task 2 Schedule:

- Conceptual design will be included in the Coastal Engineering and Alternatives Analysis Report – 8 months from NTP



Meeting Agenda

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Schedule

Meeting Agenda

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Next Steps

Next Steps

1. Existing data collection - ongoing
2. Data collection - habitat, bathymetric and topographic, and cultural resources surveys, and Geotech data collection
 1. TBS – sub for bathy data collection – have been given NTP and are starting this week
 2. Triton – sub for habitat survey – contracting in progress and estimated to start end of September
 3. TWE – sub for Geotech data collection – to be finalized after survey data collection
 4. Gray & Pape – sub for cultural resources data collects – contracting in progress
3. Progress coastal engineering analysis – data analysis, modeling, and alternatives development

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MOTT
MACDONALD

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COAST & HARBOR
ENGINEERING



Thank you

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