

Memorandum of Understanding

April 16, 2026

To: Jacob Lehner

From: Ian Fisher, P.E., Noah Billiter

cc: Joel Behrens, Aaron Horine

Re: Olivia Haterius Park Shoreline Restoration Phase II MOU

Introduction

This memorandum is submitted to the Texas General Land Office (GLO) by Anchor QEA (AQ) as the first deliverable on the Olivia Haterius Park Shoreline Restoration Phase II Project.

The contract between AQ and the GLO was executed on February 20, 2026 and notice to proceed was issued March 4, 2026 with an initial project kickoff meeting occurring on March 23, 2026.

The objectives of this Memorandum of Project Understanding (MOU) include:

- Provide background information and an overview of Phase I
- Develop a consensus on project goals and objectives
- Review schedule and deliverables
- Summarize new data collection

The Tasks under the Scope of Work for the project site include:

- Task 1 – Project Initiation and Data Collection
- Task 2 – Regulatory Coordination
- Task 3 – Engineering Design
- Task 4 – Project Management

Project Overview

Located in Olivia, Texas, Olivia Haterius Park is a county park with approximately 1,750 feet of waterfront exposure. Waterfront features include a concrete bulkhead, vinyl sheet pile breakwater, single lane boat ramp and dock, concrete rubble riprap revetment, and kayak launch area. The Olivia Haterius County Park Shoreline Protection and Restoration Project Phase II (the project) involves completing the engineering design required to further develop the selected alternative from Phase I, as well as regulatory coordination for permitting for the preferred alternative.

The work will include project kickoff and new data collection, regulatory permitting and coordination, engineering design of the preferred alternative, and project management. The project sponsor is Calhoun County while the GLO is the project owner, who is utilizing funding provided by the Gulf of Mexico Energy Security Act (GOMESA) to complete Phase II of the project.

Kickoff Meeting

A kickoff meeting for Phase II was held on March 23, 2026, between the GLO, Calhoun County, Matagorda Bay Mitigation Trust, and AQ to discuss project goals and objectives, coordination, background, scope of work, and schedule. The PowerPoint presentation reviewed at the kickoff meeting is included in Appendix A and the meeting minutes and sign-in sheet are included as Appendix B. Meeting attendees are listed below in Table 1.

Table 1
Kickoff Meeting Attendees

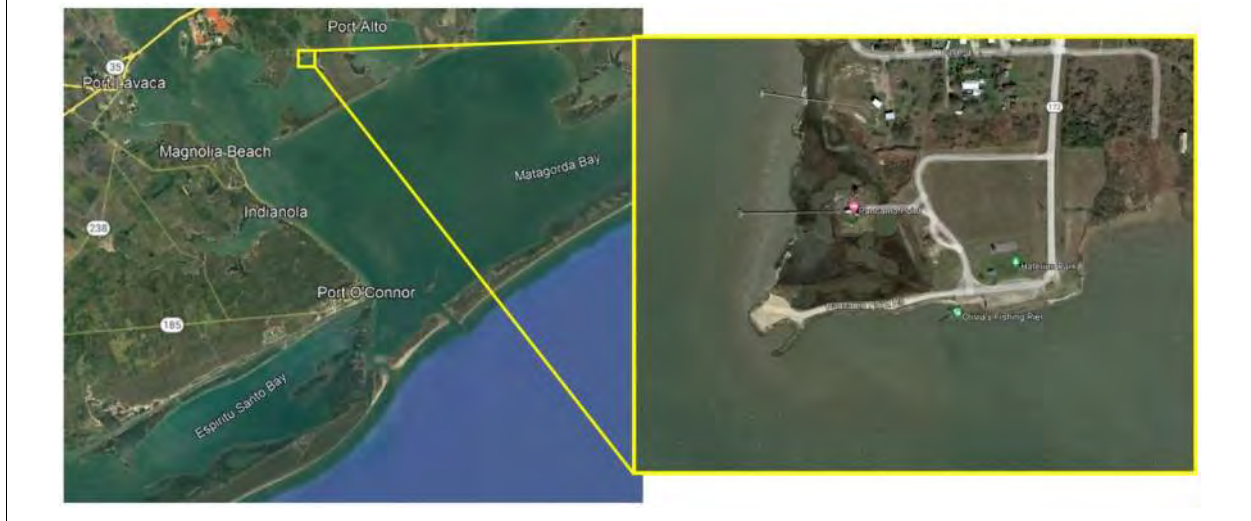
Entity	Name	Phone	Email	Means of Attendance
Texas General Land Office	Jacob Lehner	512-497-6722	jacob.lehner@glo.texas.gov	In Person
Matagorda Bay Mitigation Trust	Steven Raabe	830-391-0616	Trustee@MBMTrust.com	In Person
Calhoun County Precinct 3	Joel Behrens	361-893-5309	joel.behrens@calhouncotx.org	In Person
Calhoun County Precinct 3	Lynette Adame	361-893-5346	lynette.adame@calhouncotx.org	In Person
Calhoun County Park Board	John Cruthirds	N/A	Jdc2146@gmail.com	In Person
Anchor QEA	Ian Fisher	361-450-6208	ifisher@anchoragea.com	In Person
Anchor QEA	Aaron Horine	361-450-6945	ahorine@anchoragea.com	Online
Anchor QEA	Noah Billiter	281-565-1133	nbilliter@anchoragea.com	Online

Project Background and Purpose

The project site is located along Pancamo Point Road (Figure 1), which is exposed to wave action of the Keller Bay from south winds. From Phase I, it was determined that these winds have the greatest effect on the degradation of the bulkhead, concrete rubble revetment, and vinyl sheet pile breakwater at the project site. Wind waves acting on the bulkhead have caused gaps to form between panels, leading to sediment piping from behind the bulkhead. This loss of material has led to the formation of sinkholes and instability behind the bulkhead. These problems, if unaddressed, expose the public parking lot along the bulkhead to risk of damage. Wave action along the concrete riprap revetment has caused displacement of the placed material. Continued damage and displacement will lead to damage of the public access road to the western parking area, used for recreational fishing and a launching spot for kayakers. The existing vinyl sheet pile breakwater has

been heavily damaged by wave action and no longer provides the intended protection of the park's small boat launch. The county has completed some repairs to the section of the breakwater that runs parallel to the shoreline to provide temporary relief to boaters until a long-term solution can be implemented.

Figure 1
Project Location Map



The purpose of this project is to continue the work from Phase I intended to improve shoreline protection and mitigate shoreline erosion by reducing wave energy at the existing shoreline, in order to mitigate potential damage to public infrastructure, parking, and recreational areas located along the shoreline of Olivia Haterius Park.

It should be noted that a Coastal Boundary Survey (CBS) will not be part of this phase of the Project. Due to the CBS being required as close to construction as possible and the phasing of GLO projects, the CBS is typically included in the same phase as construction. It is recommended that during Phase III a CBS is completed immediately in order to reduce the delay in beginning construction as much as possible.

Literature Review

During Phase I, a literature review was conducted to find historical design information pertaining to the features located along the project site. A Freedom of Information Act (FOIA) request was submitted to the Army Corps of Engineers for any permitting and design documents related to shoreline structures, dredging, breakwaters, boat ramps or any other waterfront improvement activities. The request returned permit documents for the construction of the timber breakwater and walkway, along with the dredging design of the boat ramp access channel. The permit for these features was issued on 11/2/1995 and expired on 12/31/1998. The breakwater was permitted as 250

ft long with a top elevation of +3.0 ft MSL, however no dimensions of piles or sheathing were given in the design plans. The timber walkway was permitted as 40 ft long and 6 ft wide, with the walkway at an elevation of +4.0 ft MSL. Dredging of the access channel was permitted as 350 ft long by 15 ft wide at the toe of slopes. Bottom elevation for dredging was set to -3.0 ft MSL, utilizing 2:1 side slopes. It was estimated in the permit that 485 CY of material would be removed and disposed of in the center of the park. An amendment to the permit was proposed to replace the timber breakwater with a rock and concrete breakwater but was rejected by the USACE due to possible impacts to sensitive habitats in the area. Aside from the information received via the FOIA request no historical information pertaining to building of the concrete seawall, boat ramp or concrete rubble revetement could be found.

Project Goals

The goals of the project are to further develop the selected Phase I solution to repair, rehabilitate, or rebuild sections along the shoreline of Olivia Haterius Park, including the concrete bulkhead, vinyl sheet pile breakwater, and concrete rubble revetment to meet current regulations and design standards, maintain or improve the current level of aesthetics, and remain within the available GLO funding. Project goals also include analysis into living shoreline measures to be installed along the western and eastern areas of the project site. Such features would be installed in hopes of enhancing activities such as fishing and kayaking.

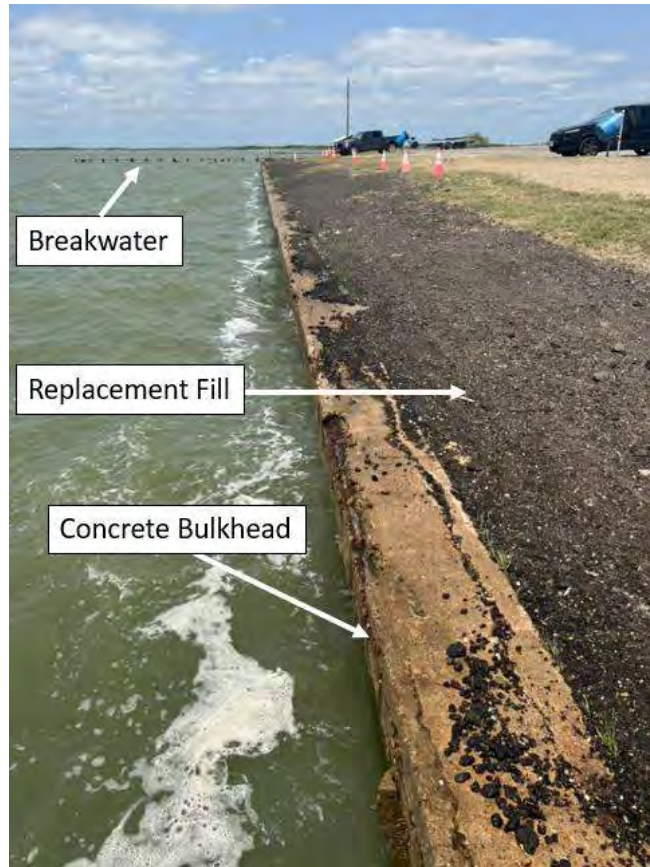
The project will further develop the preferred alternative to the 30%, 60%, and 90% design level to meet project goals as well as secure all necessary regulatory authorizations through the U.S. Army Corps of Engineers (USACE). Figure 2 shows the features evaluated during Phase I of this project.

Figure 2
Project Areas



The concrete bulkhead (depicted in red in Figure 2) is approximately 600 ft in length. Based upon site observations it is believed the bulkhead was constructed in the 1960's and is well beyond its design life. Wind wave impacts have led to cracking and spalling along the length of the bulkhead. Wave action has also caused separation of the concrete panels, which has led to sediment piping from behind the bulkhead. Calhoun County has to replace fill behind the bulkhead every month.

Figure 3
Concrete bulkhead with Severe Damage



The vinyl sheet pile breakwater (shown in yellow in Figure 2) is approximately 170 feet in length and intended to provide shadowing of wave action to the small boat ramp. However, many sections of the vinyl panels are missing or severely damaged which leads to minimal dissipation of wave action impacting the boat launch area. Calhoun County has completed some repairs to the section of the breakwater that runs parallel to the shoreline to provide temporary relief to boaters until a more long-term solution can be implemented. Project goals laid out by Calhoun County have stated a willingness to move the configuration of the breakwater to increase the protection of the boat ramp, as well as increasing the width of the boat ramp to accommodate more boaters at a time. This project will also evaluate potential borrow material in the area of the access channel for use in the living shoreline component of the Project.

Figure 4
Failed vinyl sheet pile breakwater



Extending from the boat ramp to the west is a revetment made of concrete rubble approximately 1,085 feet in length. This concrete rubble consists of blocks of concrete of varying sizes that have been continuously placed as a means of protecting the access road to the far west side of the park, used for fishing and a kayak launch area shown in Figure 5.

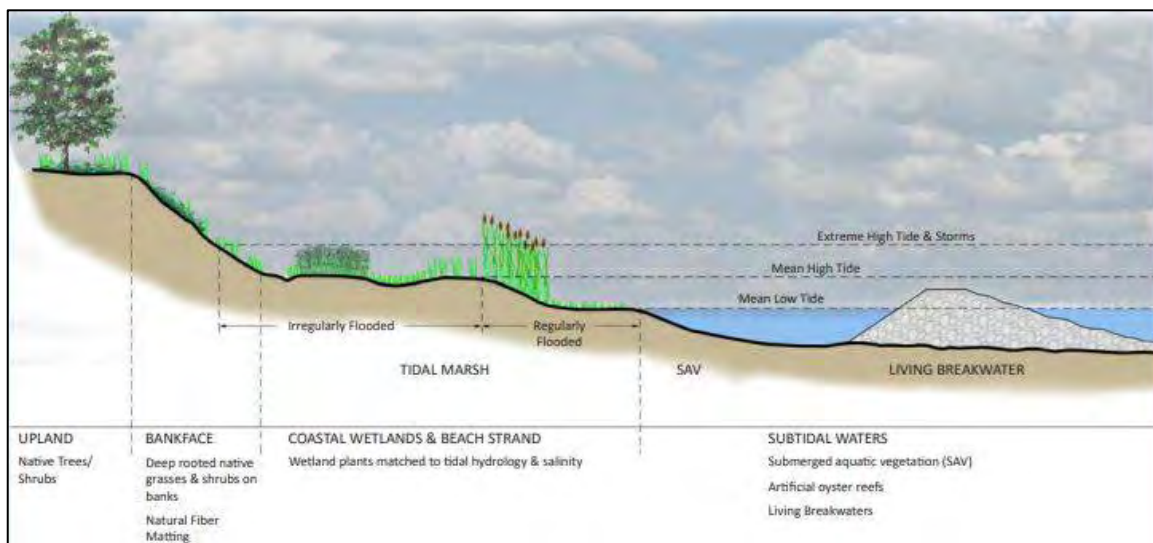
Figure 5
Concrete rubble revetment and kayak launch area.



Use of this type of material can lead to sediment piping through large openings when acted upon by waves. The Project goals for this area include the replacement of concrete rubble with vegetation as part of a living shoreline protected by detached breakwaters further from the shoreline.

Calhoun County project goals also include the evaluation of living shoreline solutions along the eastern side of the park (Figure 6), generally used as an area for wade fishers. Living shoreline measures adapted for this area would be used to interrupt wave refraction in this corner while keeping the area accessible for the public and create habitat for oysters or fish.

Figure 6
Example of a living shoreline (courtesy of the Texas General Land Office)



Phase I Overview

Phase I of the project focused on data collection, modeling, and development of shoreline protection alternatives. New topographic and bathymetric survey data collected in August 2022 was combined with NOAA CuDEM datasets to create a modeling surface used for evaluating conditions. Historical wind and water level data from NOAA and NDBC gauges were analyzed to establish extreme event conditions and wave characteristics. Multiple numerical models were applied to analyze conditions at the site, including SWAN for initial wave conditions, MIKE21 for circulation, and HWAVE for nearshore wave dynamics. These models defined existing conditions and provided the basis for comparing how various design alternatives would perform in reducing wave energy and protecting the shoreline.

Four alternatives were developed with varying levels of shoreline stabilization, constructability, and cost. All alternatives were developed with considerations to reduce erosion, protect infrastructure such as the boat ramp and parking lot, and improve recreational access. Alternative 1 included

multiple detached breakwaters, bulkheads, and an extended breakwater for kayak launch protection. Alternative 2 simplified this approach by replacing central breakwaters with a revetment using recycled material. Alternatives 3a and 3b expanded on Alternative 1 by adding more detached breakwaters and modifying alignments to improve wave attenuation, particularly from dominant wind directions. HWAVE modeling results showed that Alternative 3b provided the greatest reduction in wave energy along the central shoreline due to its lengthened detached breakwater length.

Circulation modeling in MIKE21 indicated that all alternatives produced relatively minor changes in current velocities, below 0.25 ft/s from existing conditions. Alternatives 1, 2, and 3b all marginally reduced velocities at the site, while Alternative 3a decreased velocities in most of the site, but near the boat ramp velocities marginally increased. An evaluation matrix initially ranked Alternative 1 highest due to cost efficiency, but further engineering judgment and stakeholder coordination identified Alternative 3b as the superior option for overall shoreline protection and recreational benefits. Additional refinements, including shoreline fill and planting, were incorporated into this design, resulting in the final preferred alternative, available in Figure 7.

Figure 7
Preferred Alternative – Modified Alternative 3b



Scope of Work

Task 1 – Project Initiation and Data Collection

Task 1.1 Project Kickoff and Existing Data Review

AQ attended a project kickoff meeting on March 23, 2026, in Olivia, Texas to discuss project site history, goals and expectations, schedule, and milestones. The PowerPoint presentation reviewed at the kickoff meeting is included as Appendix A. AQ will perform a literature review and database search for information pertaining to the project site.

Task 1.2 Survey Data Collection

The Corps of Engineers' standards for Hydrographic Surveying will be followed where appropriate. The survey will follow "Other General Surveys and Studies (Coastal Engineering Surveys)" specifications according to USACE Manual No. 1110-2-1003. Quality control and quality assurance (QA/QC) procedures as presented in the manual will be followed where applicable.

GPS-RTK will be utilized for the upland and wading portions of the survey. The upland and wading survey will extend to wading depth. The bathymetric survey will utilize a single-beam echo sounder to obtain sounding on a maximum spacing of 20 feet along the profile lines; normal spacing is 5 feet or less. Cross lines will be measured to check consistency of the data. Bar checks, horizontal position checks, manual lead-line soundings, and other appropriate calibration methods will be employed to calibrate the echo sounder and verify depths. A frequency of 200 kHz (single beam) will be used for the survey. The bathymetric survey will overlap the topographic/wading survey on each transect to the extent possible. In addition, a magnetometer survey will be conducted in conjunction with the bathymetric survey along the same transect lines.

The deliverables will consist of reduced data in the proper coordinate system and referenced to the correct vertical datums (Texas State Plane Coordinate System NAD 83, South Central Zone and NAVD 88).

Task 1.3 Geotechnical Data Collection

Prior to data collection, 811 ("Call Before You Dig") and publicly available datasets will be queried to understand the potential presence and location of underground utilities, such as cables and pipelines. Following confirmation of safe locations to dig, three borings will be taken in the upland area and three in water. One boring will be taken on the east side of the park behind the existing bulkhead and one will be taken behind the bulkhead near the boat ramp. These two borings will be 40-foot borings. The final upland boring will be taken on Pancamo Point and will be a 20-foot boring. The in-water borings will be 20-foot borings and distributed to capture the detached breakwaters and potential borrow area footprint. A total of 160 linear feet of borings are proposed.

The borings will be used to ascertain the physical characteristics of the sediment and soil to be removed or built on. Field logs and other data resulting from the borings investigation will be provided.

Task 1.4 Cultural Resources

A basic desktop database review of the Texas Historical Commission's (THC's) Archeological Sites Atlas and historical records at the GLO was conducted to determine the presence or absence of previously recorded cultural resources within the demonstration Project area and a 1-mile buffer. Historical maps and aerial photography were reviewed to identify potential historic-age archaeological sites and architectural resources, in addition to documenting the degree of landscape modification that has occurred since the early twentieth century period. The results of the desktop analysis and discussed in later sections.

Based on the desktop analysis, and to assist in meeting regulatory obligations under Section 106 of the National Historic Preservation Act (NHPA), cultural resources services related to archaeology and the built environment will be provided. Prior to fieldwork, if required, a Texas Historical Commission Antiquities Permit will be obtained. An archaeological investigation will be carried out to determine the presence/absence of archaeological resources within the Area of Potential Effects as per the Antiquities Code of Texas (13 TAC 26) and to evaluate identified resources for their eligibility for inclusion in the National Register of Historic Places or as a designated State Antiquities Landmark. A Final Report will be prepared in compliance with the guidelines published by the Council of Texas Archeologists, the THC, and the Secretary of the Interior's Guidelines.

Task 1.5 Waters of the US, Wetland Delineation, and Submerged Aquatic Resources Survey

Project Planning and Survey Development

Any readily available desktop data including survey boundaries provided by the client, prior Approved Jurisdictional Determinations (AJDs) related to the survey area, U.S. Army Corps of Engineers' (USACE) AJD regulations and guidance documents, Texas Parks and Wildlife published seagrass and oyster data, historical tide data, Texas General Land Office (GLO) resource management codes, GLO state tract boundaries, available bird rookery data, existing bathymetric and topographic data, current and historical aerial imagery, nautical charts, soils data, floodplain maps, National Wetland Inventory maps, United States Geological Survey benchmarks, surveyor benchmarks and other pertinent data will be consolidated, reviewed, and analyzed. Examination of all available desktop data will assist in determining the likely habitat characterization for the survey area.

Conduct Terrestrial and Marine Survey

Findings from the desktop investigation will allow AQ to create terrestrial and marine survey sampling plans, including establishment of digital survey area boundaries, GPS data loading, wetland

delineation and marine survey transect locations, preliminary wetland delineation and marine survey observation point locations, pinpoint any probable areas of concern (wetlands, seagrasses, oyster reefs, etc.), field crew instructions, etc.

AQ will delineate the High Tide Line (HTL) and Mean High Water (MHW) tidal elevations, circumnavigated and geo-referenced the edge of sensitive resources (i.e., seagrass, wetlands, oysters, etc.) within the project review area. The survey will be conducted in a manner that has been historically approved by the resource agencies, including the USACE.

Data Analysis and Report Preparation

Field data collected from the survey effort will be used to prepare maps and GIS files to determine and quantify the location, boundaries, and size of any sensitive resources and preliminary limits of Waters of the United States. Other field data, as applicable, including benchmarks, topographic, oyster, rookery, seagrass, sounding, vegetation, soils, and hydrology samples will also be assessed and analyzed.

AQ will prepare a summary report of findings to document methods, jurisdictional areas, and extents of sensitive resources within the survey area.

Task 2 – Regulatory Coordination

As part of this Phase, AQ will assemble the necessary materials to seek a U.S. Army Corps of Engineers (USACE) Section 10/404 permit for construction of the proposed the living shoreline system, submerged and estuarine vegetative planting, breakwaters, dredging, and bulkhead. This will include the development of permit level design drawings of the preferred alternative identified during the previous task. It is expected that the project components will require an Individual Permit to receive project authorization. AQ will assist in preparing the materials to submit an Individual Permit (IP).

Prior to submitting a permit application, AQ will attend a pre-application meeting with USACE and a Joint Evaluation Meeting (JEM) with USACE and other state and federal resource agencies. The purpose of the pre-application meeting is to introduce and discuss the Project with USACE and obtain feedback on potential issues prior to submittal of the permit application. This meeting can also be used to identify the type of permit USACE will use to authorize the Project.

The purpose of the JEM is to present the proposed Project to state and federal resource agencies in order to obtain feedback that will be useful to address agency comments resulting from the 30-day Public Notice (PN). AQ will organize the meeting and present the engineering analysis performed, Project details, maps showing the preferred alternative with any associated potential habitat impacts, proposed construction methods, and the timeline for construction.

After considering state and federal resource agency comments received during the JEM, AQ will submit the permit application to the USACE. AQ will develop a response to comments document to address concerns submitted by state and federal resource agencies resulting from the 30-day PN. Coordination from AQ with the USACE will be on-going throughout the permit process to expedite issuance of the permit.

It is assumed that the Project elements will have a determination of not likely to adversely effect on threatened and endangered species, and that formal consultation with the U.S. Fish and Wildlife Service (USFWS) or NOAA's National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act will not be required. It is assumed that development of a Biological Assessment (BA) to initiate formal consultation with these agencies will not be required. The Project will likely require informal consultation with these agencies, which can be addressed during the permit application and response to comments phases of the Project. It is also assumed that the Project footprint will not have a significant impact on Essential Fish Habitat (EFH) and therefore an EFH Assessment Report will not be required.

Task 3 – Engineering Design

The preferred alternative selected under Phase I will be designed for the development of the preparation of Plans, Specifications, and Engineers Opinion of Probable Cost (PS&E). AQ will prepare technical specifications, construction level drawings, and construction cost estimates for the preferred layout of the shoreline restoration components: rubble-mound or artificial reef detached breakwaters, attached breakwater, bulkhead, revetment, and shoreline fill and planting. No more than four progress submittals will occur during this task. AQ will submit a 90% completion level set of PS&E documents to complete Phase II of the project. The 90% level submittal will include front end contract documents, technical specifications, engineering drawings, and cost estimate. AQ will schedule and attend a meeting with the project team to discuss the design progress submittals after their submission and before proceeding to the next phase of the design.

It is anticipated that a 100% level design will be completed in Phase III of the project.

Schedule and Deliverables

AQ developed a schedule detailing the anticipated timelines for completing the tasks described above. A table of timelines and deliverables is provided below in Table 2.

Table 2
Projected Timeline

Task	Item	Time from NTP	Schedule
NTP	Notice to Proceed	-	March 4 th , 2026
Task 1	Project Kickoff and Data Collection	4 months	March-July 2026
Task 2	Regulatory Coordination – Submittal	6 months	March-September 2026
	Regulatory Coordination – Permit Receipt	18-24 months	September 2027
Task 3	30%	6 months	July-September 2026
	70%	8 months	September-November 2026
	90%	20-26 months	November 2027

Note: Timeline assumes receipt of stakeholder feedback within 2 weeks. Permit receipt and 90% schedule dependent on agency review times.

New Data Collection

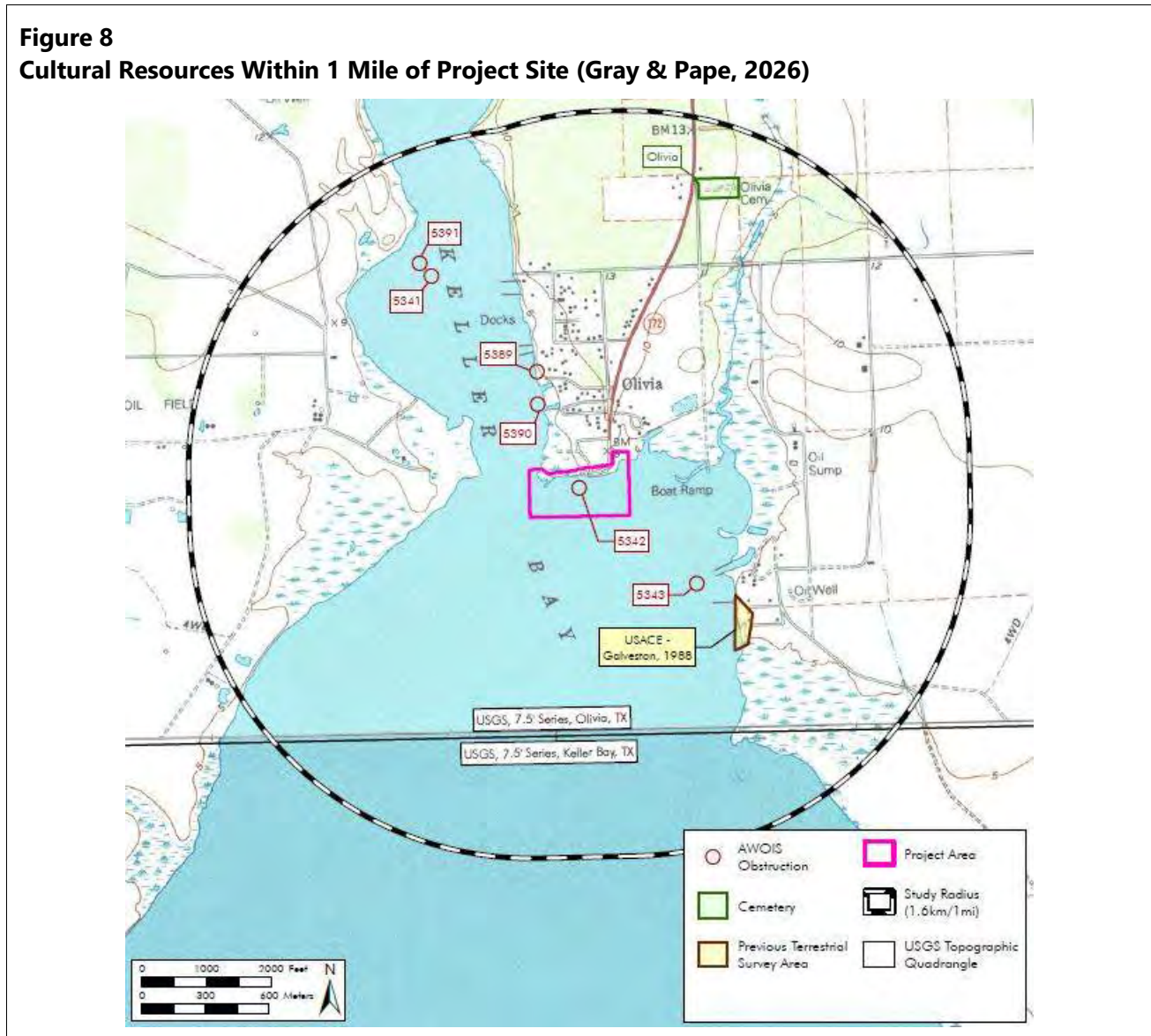
Cultural Resources Review

An assessment of terrestrial and marine cultural resources was conducted by Gray & Pape (Gray & Pape, 2026) for Task 1.4 of the Scope of Work. The desktop review of cultural resources was conducted using the Texas Historical Commission’s Texas Archeological Sites Atlas, GLO records, historical maps, and aerial imagery to evaluate the presence of previously recorded archaeological resources within the project site and a 1-mile buffer. Research of archival records reveal no identified archeological sites, historical properties, historic markers, cemeteries or National Register properties within the project site. Within the 1-mile buffer, only one resource, the Olivia Cemetery, is documented, along with one prior shoreline survey conducted southeast of the park (Figure 8).

Evaluations of historical maps and aerial photography indicate that the project site has not been greatly disturbed since at least 1952, with the exception of a dredged channel to the boat launch site and a shoreline face hardening at the Olivia fishing pier. No previously recorded maritime cultural resources are mapped within the project area. A review of the GLO Coastal Resource Management Viewer indicates that the marine footprint of the project lies within Keller Bay Tract #77 and is coded MK, indicating that cultural resources may be located within the submerged tract and to consult with the Texas Historical Commission. Based on the scope of the work to be performed, review of recent

and historic aerial photography and maps, the GLO's MK code, and the lack of marine surveys in the area, it is the opinion of Gray & Pape that it is likely that a maritime archeological survey of the site is necessary to conform the absence of submerged cultural resources, while a terrestrial archeological survey of the project site is likely not necessary.

Figure 8
Cultural Resources Within 1 Mile of Project Site (Gray & Pape, 2026)



Conclusion

This report marks the end of Task 1.1. The remaining subtasks under Task 1 are currently underway. If any discrepancies are found within this report, please notify the project manager for resolution. The kickoff meeting presentation is included in the following pages as Appendix A, with meeting minutes and sign-in sheet for the Kickoff Meeting provided in Appendix B.

References

Anchor QEA (2025). *Proposal for Engineering and Design Services for Olivia Haterius Park Shoreline Protection and Restoration Phase II.*

G&W Engineers, Inc. (1995). *Olivia Haterius Park Boat Ramps Permit: Permit Drawings.*

G&W Engineers, Inc. (1996). *Permit No. 20410 Amendment.*

Gray & Pape (2026). *Cultural resources assessment of the proposed Olivia Haterius Park Shoreline Protection Project in Keller Bay, Calhoun County, Texas.*

Mott MacDonald (2023). *Olivia Haterius County Park Shoreline Protection – CEA and Alternatives Analysis.*

Appendix A

Kickoff Meeting Presentation

Olivia Haterius Park Shoreline Protection and Restoration Project

Phase II Kickoff

March 23, 2026



Agenda

1

Project Team

2

Project Overview
and Phase 1 Recap

3

Scope of Work

4

Schedule and
Coordination

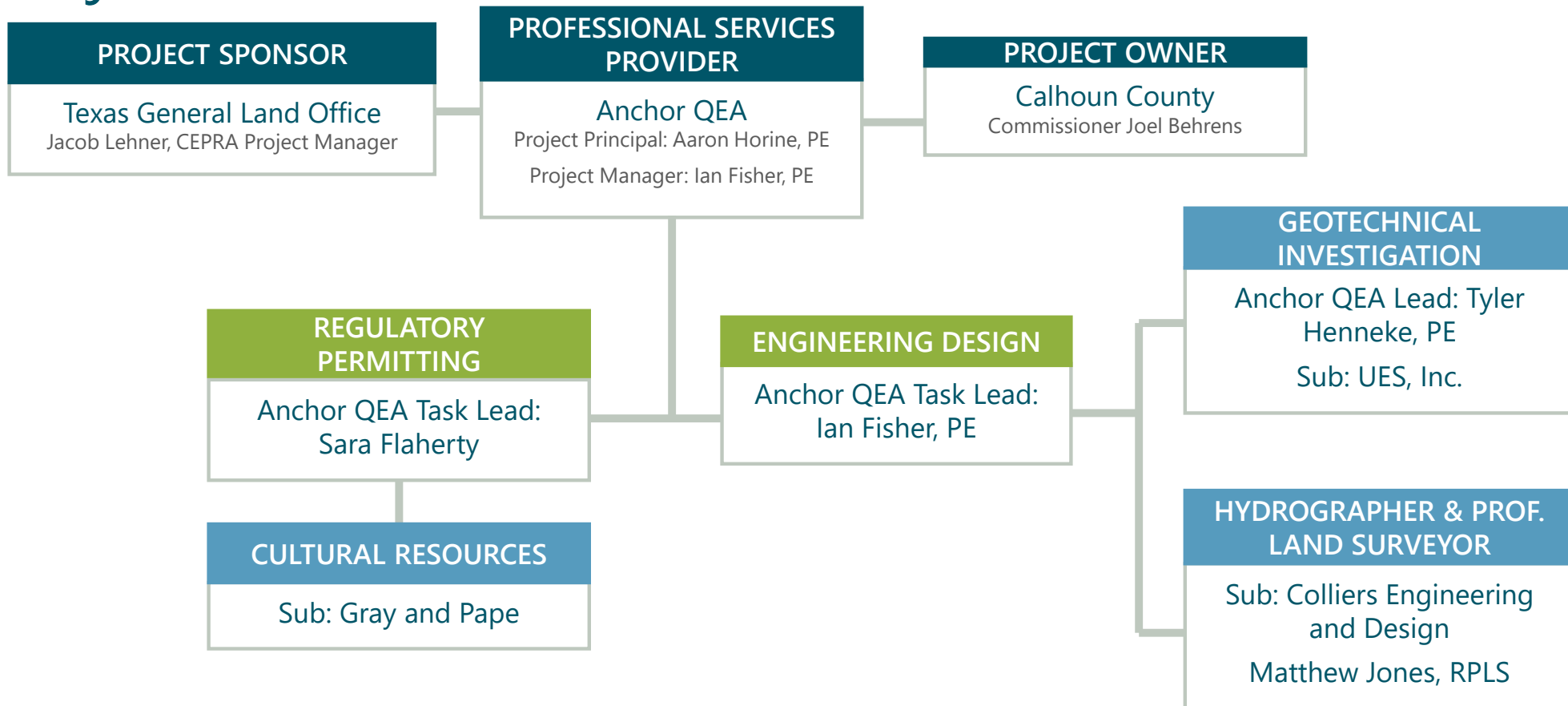
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Open Discussion
and Questions

1

Project Team

Project Team



2

Project Overview and Phase I Recap

Project Goals

Shoreline Protection:

- Stabilize shoreline and mitigate erosion
- Protect existing infrastructure
- Increase resiliency

Habitat:

- Protect and restore sensitive habitats
- Enhance area ecology

Public Recreation:

- Improve public safety, aesthetics
- Improve small craft and wading access
- Facilitate fishing, birdwatching, and improve general public access



Existing Site Conditions



Existing Site Conditions

- Rubble Revetment
 - Approx. 1,085 linear feet
 - Broken concrete slab rubble
 - Non-Engineered
 - Continuously added as deterioration occurs





Existing Site Conditions

- Sheetpile Breakwater
 - Approx. 170 linear feet
 - Vinyl sheet pile and timber piles
 - Non-functional

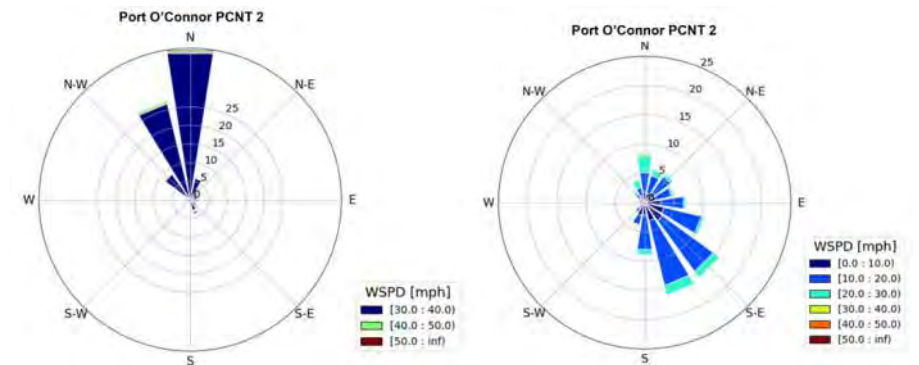
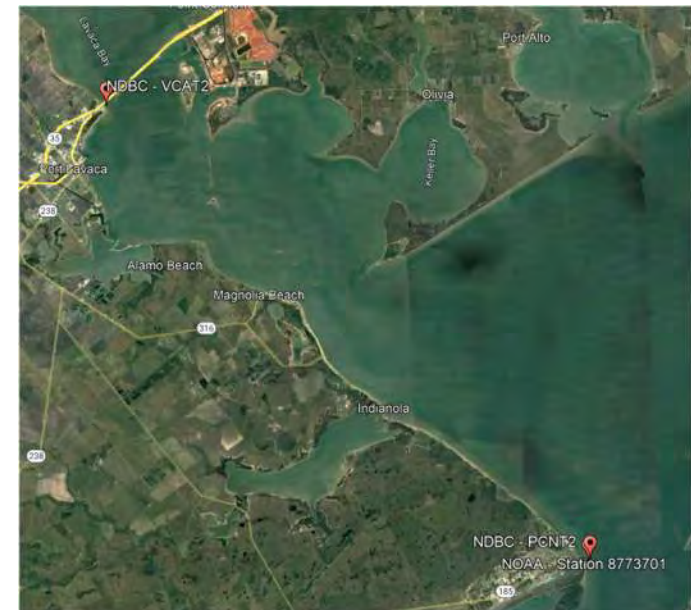
Existing Site Conditions

- Bulkhead
 - Approx. 600 linear feet
 - Significant damage
 - Overtopping causing erosion, continuously backfilled
 - End of design life



Data Collection

Datum	Elevation [ft NAVD88]
Mean Higher High Water (MHHW)	1.1
Mean High Water (MHW)	1.09
Mean Sea Level (MSL)	0.78
Mean Low Water (MLW)	0.4
Mean Lower-Low Water (MLLW)	0.38
North American Vertical Datum of 1988 (NAVD88)	0.00



Coastal Engineering Analysis

- Port O'Connor NOAA 8773701 Gauge
 - Wind and Water Level Extremal Analysis

Return Period [years]	Wind Speed [mph]
1	29
2	38
5	43
10	48
25	78
50	96
100	115

Return Period [years]	Water Surface Elevation [ft, NAVD88]
1	2.5
2	3.3
5	3.7
10	4.0
25	4.2
50	4.4
100	4.6

Coastal Engineering Analysis

- HWAVE Modeling



Case	Case Description	Wind Direction	Wind Speed [mph]	WSE [ft]	Hs (ft)	Tp (s)
1	Predominate Wind DIR, 25yr Wind, and MHHW	SE	78	1.1	1.66	3.51
2	Longest Fetch Wind DIR, 25yr Wind, and MHHW	SSW	78	1.1	1.63	2.40
3	Longest Fetch Wind DIR, 50yr Wind and MHHW	SSW	96	1.1	1.89	2.18
4	Longest Fetch Wind DIR, 50yr Wind, and 50yr WSE	SSW	96	4.4	3.08	3.19

Conceptual Alternative Development

- Primary goals of the alternatives
 - Reduce wave energy impacting the parks shoreline to mitigate erosion
 - Minimize negative impacts to circulation and public access
 - Enhance shoreline and in-water habitats

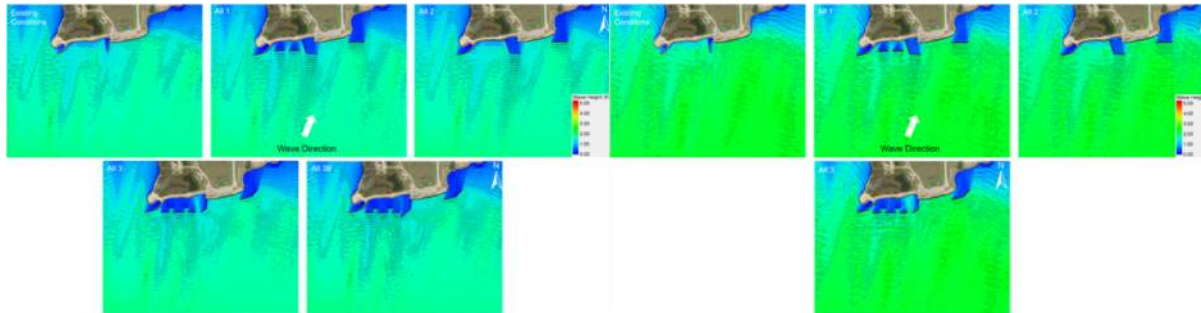
Conceptual Alternative Development



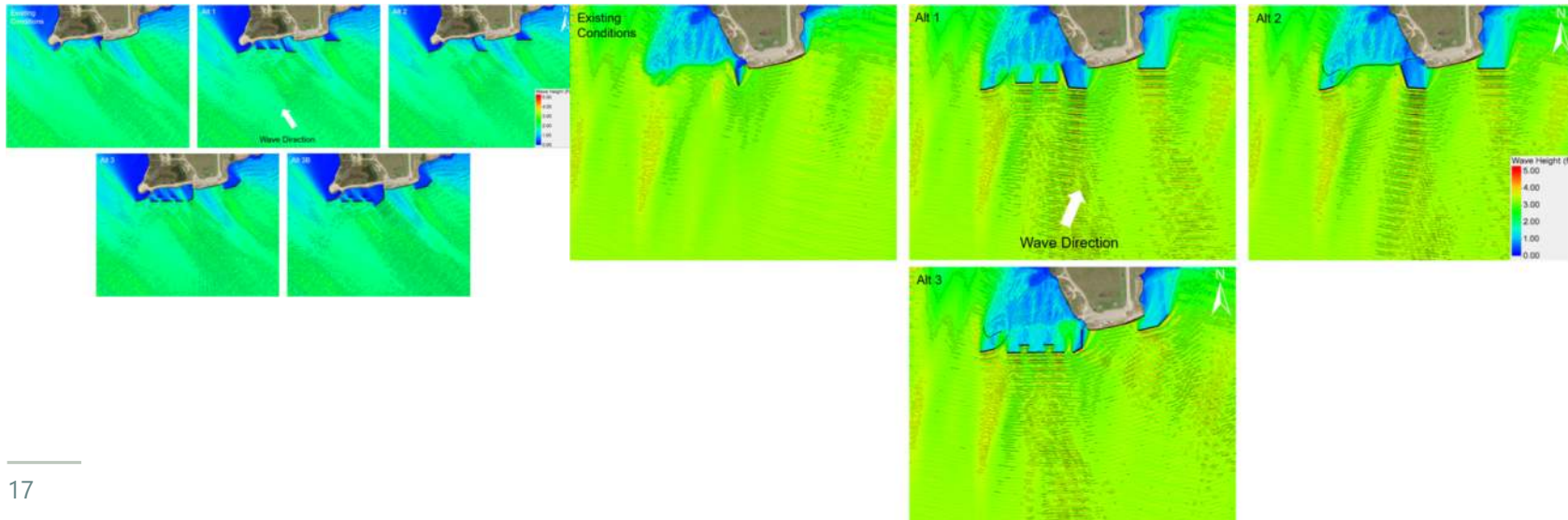
Conceptual Alternative Development



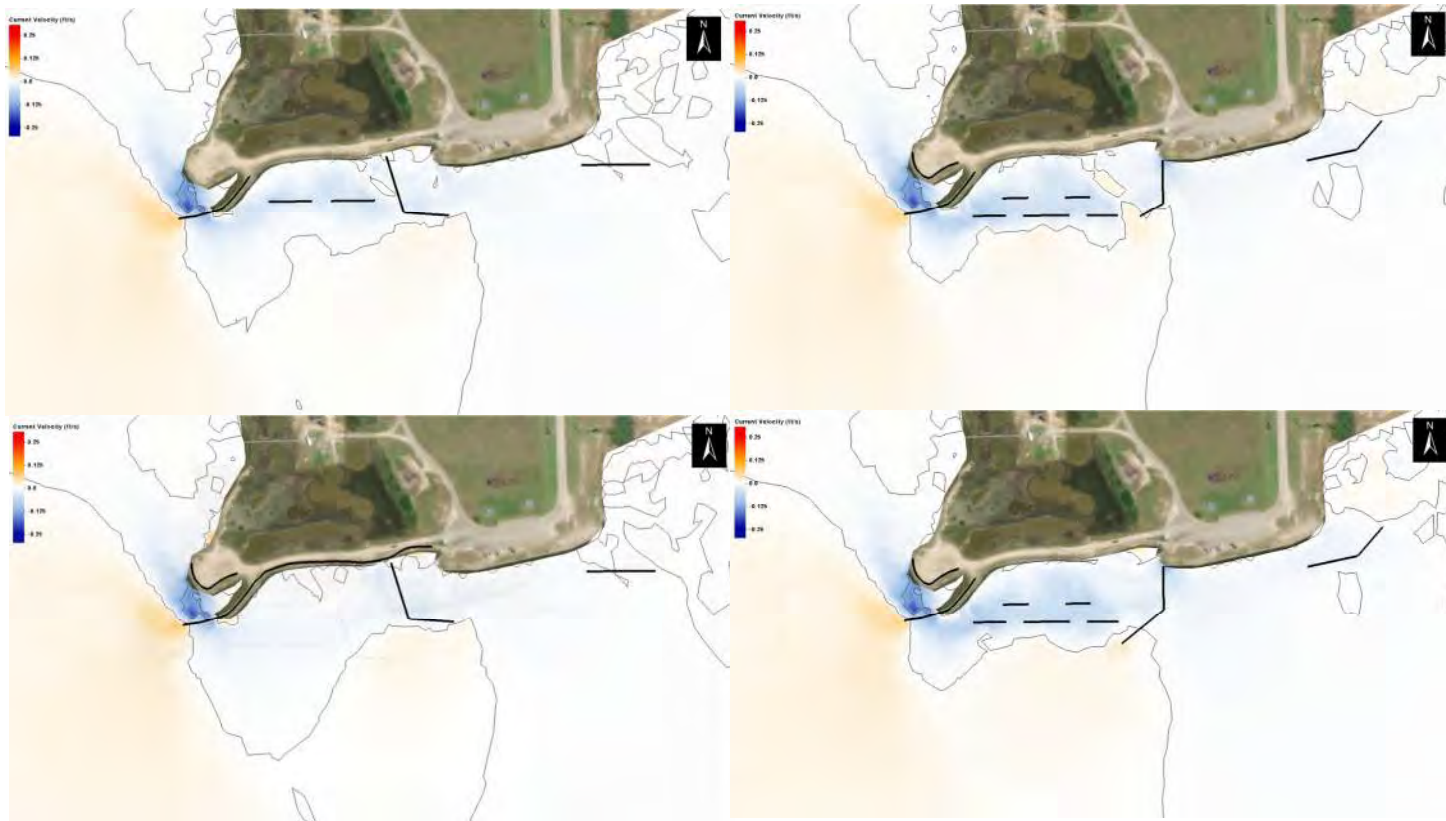
Alternatives Analysis



Case	Transmission Coefficient for Detached Breakwaters
Case 1 – 25yr Wind, SE Direction, MHHW	0.08
Case 2 – 25yr Wind, SSW Direction, MHHW	0.08
Case 3 – 50yr Wind, SSW Direction, MHHW	0.08
Case 4 – 50yr Wind, SSW Direction, 50yr Water Level	0.39



Alternatives Analysis



Preferred Alternative



3

Scope of Work

Task 1

Project Kickoff and Data Collection

Task 1.1

Project Kickoff and Existing Data Review

- ❖ Kickoff Meeting
- ❖ Existing (Desktop) Data Collection

Deliverables:

Kickoff Meeting Presentation
Memorandum of Understanding
Map of Topographic and Bathymetric Survey
Magnetometer Survey Data
Geotechnical Report
Archaeological Report
Waters of the U.S. and Wetlands and Submerged Aquatic Resources Delineation Report
Map of Seagrass, Oyster, and Marsh habitat Survey Data

Winds, Water Levels, Currents
Storm Surge
Morphology
Geology
Borrow Source
Ecosystem & Habitat
Oil and Gas Infrastructure
Obstructions / Hazards
FOIA

Task 1.3

Geotechnical Data Collection

- ❖ New Soil and Sediment Borings (UES)
- ❖ Sediment and Soil Characteristics
- ❖ Sieve Analysis
- ❖ Settlement and Bearing Capacity
- ❖ Pile Capacity and Loads



Figure 1 - Proposed Boring Plan

*Final location of borings dependent on habitat survey

Task 1.4

Cultural Resources

- ❖ Desktop Review and Assessment
- ❖ Terrestrial Survey (If Necessary)
- ❖ Marine Survey (If Necessary)



Task 1.5

Waters of the US, Wetland Delineation, and Submerged Aquatic Resources Survey

- ❖ Desktop Investigation
 - ❖ Survey Boundaries
 - ❖ Previous Approved Jurisdictional Determinations
 - ❖ Published Resource Data
 - ❖ Other Publicly Available Data
- ❖ Field Survey
 - ❖ HTL, MHW Delineation
 - ❖ WOTUS and Wetland Delineation
 - ❖ Resource Survey

Task 2

Regulatory Coordination

Task 2

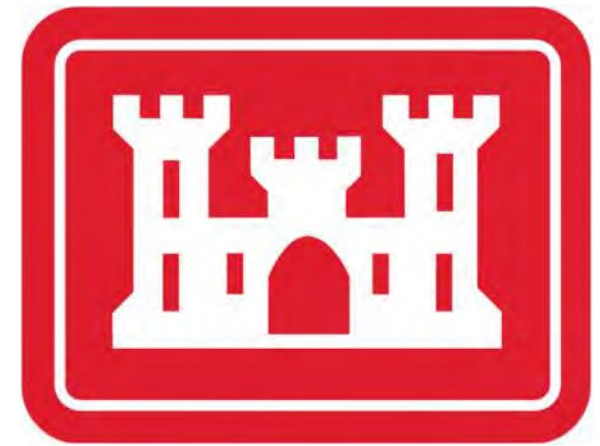
Regulatory Coordination

- ❖ Pre-Application Meeting
- ❖ Permit Application Development
 - ❖ Sensitive Habitat and Wetlands Delineation
 - ❖ Avoidance and Minimization
 - ❖ Alternatives Analysis
- ❖ Joint Evaluation Meeting (JEM)
- ❖ Application Submittal
- ❖ Respond to Public and Agency Comments

Deliverables:

Permit Drawings and IP Application Documents (8 Weeks from Completion of Task 1)

Authorized USACE Section 10/404 Permit (12-18+ Months from Submittal)



Not Included in this Scope:

- *Off-site Mitigation Planning*
- *USACE 408 Authorizations*

Task 3

Engineering Design

Task 3

Engineering Design

❖ 30% Design

- ❖ Preliminary design of selected alternative (3b)
- ❖ Layouts and sections for project components
- ❖ Preliminary quantity take-offs, cost estimates

❖ 60% Design

- ❖ 60% construction drawings, front ends, technical specifications, and cost estimates (PS&E)

❖ 90% Design

- ❖ 90% construction drawings, front ends, technical specifications, and cost estimate (PS&E)

Deliverables:

30% PS&E (6 weeks from completion of Task 1)

60% PS&E (8 weeks from receipt of 30% design comments)

90% PS&E (6 weeks from receipt of permit authorization or receipt of 60% comments - whichever occurs later.)



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Schedule and Coordination

Scope of Work – Estimated Schedule

Task No.		Time from NTP	Schedule
NTP	Notice to Proceed	-	March 4 th , 2026
Task 1	Project Kickoff and Data Collection	4 months	March – July 2026
Task 2	Regulatory Coordination - Submittal	6 months	March – September 2026
	Regulatory Coordination – Permit Receipt	18-24 months	September 2027
Task 3	30%	6 months	July – September 2026
	70%	8 months	September – November 2026
	90%	20-26 months	November 2027

*Timeline assumes receipt of stakeholder feedback within 2 weeks.

**Permit Receipt and 90% dependent on agency review times.

Communication Procedures

Points of Contact

- Anchor QEA
Ilan Fisher– Project Manager
- General Land Office
Jacob Lehner– Project Manager
- Calhoun County
Joel Behrens – Precinct 3 Commissioner

Status Updates

- Bi-Monthly Status Emails from AQ
- Monthly Progress Reports provided with all invoices

Deliverables

- All deliverables shall be submitted to Calhoun County and the GLO, distribution to other parties shall be coordinated as necessary.

5

Open Discussion and Questions

Appendix B

Meeting Minutes and Sign In Sheet



Attendance Sheet

Project title Olivia Haterius Park Shoreline Protection and Restoration Project
Subject Phase II Kickoff Meeting
Location 61 County Road 318, Port Lavaca, TX, 77979
Date and time of meeting Monday, March 23, 2026 @ 11:00 a.m.
Project Number AQ Project #241242-03.01 | CMP Project No. 1806

NAME	COMPANY	PHONE NO.	EMAIL
Steve Raab	Matijarosa Bay Michigan Trust	830-391-0616	Trustee@ MEMTrust.com
Jacob Lehner	GLU	512-497-6722	jacob.lehner@glo.texas.gov
Lynette Adame	Calhoun County Pet. 3	361-893-5346	lynette.adame@calhouncotx.org
IAN FISHER	ANCHOR OEA	361-490-6208	ifisher@anchoroea.com
JOEL BEHRENS	CALHOUN COUNTY PET-3	361-893-5309	joel.behrens@calhouncotx.org
JOHN GUTHARDS	COUNTY PARK BOARD		jdc2146@gmail.com



Meeting Minutes

Kickoff Meeting

Olivia Haterius Park Shoreline Protection and Restoration Phase II

11:00am Monday March 23, 2026
61 CR 318 Port Lavaca, TX 77979
Microsoft Teams

Attendees

Jacob Lehner	Texas General Land Office
Joel Behrens	Calhoun County
Lynette Adame	Calhoun County
John Cruthirds	Calhoun County Park Board
Steven Raabe	Matagorda Bay Mitigation Trust
Ian Fisher	Anchor QEA
Aaron Horine	Anchor QEA (Online)
Noah Billiter	Anchor QEA (Online)

Meeting Minutes

The shore parallel section of the sheet pile breakwater has been repaired according to Joel, though it is still poorly functioning.

John asked about the detached breakwater materials. Ian answered that the material is not determined yet. It could be a traditional rock breakwater, but alternatives such as reef units and other alternative options are under consideration. John mentioned that they are losing several feet behind where the proposed breakwaters are.

Ian mentioned AQ hopes to submit permits 2 months after finishing data collection. Joel asks Steven about getting an extension for this project. Ian mentions not having a GLO lease on this project yet, so moving onto the construction phase a Coastal Boundary Survey and GLO lease permit will be required.

There was discussion of permitting and scope of work timeline between Joel and Steven. \$360,000 was approved for this specific phase through the GLO. When the next phase is put in for application, funding will have to be re-applied for. Steven asks what the local match is. He and Joel discuss the 2.1 million figure from Matagorda Bay Mitigation Trust and come to consensus that that was for the entire project through construction.

There is no agreement between Calhoun County and GLO on construction yet, but there is an agreement between the GLO and the county on the design phase. Steven requests a copy of the contract between the GLO and the county. If he can get a copy of the contract between the GLO and the county, then the trust and the county agreement can be written.

Jacob mentioned that due to the GLO moving towards phasing, the GLO wants to get projects done within a funding period, so funding doesn't get lost, this requires phasing be kept manageable. (to keep in mind for funding discussion) Jacob asks if Joel has a copy of the agreement. Joel had computer issues and doesn't have a copy.

Steven requested to be copied onto the monthly reports, so it doesn't have to be sent separately to him. He will need documentation that the local match is spent. He also requested to be copied for design deliverables as well.

Ideal situation is that the GLO contract and the contract with the trust are taken to the courthouse at the same time from the county standpoint so they can see that they both have this obligation and this funding for said obligation. Jacob outlines the workorder has the money tied to it. The CPCA agreement does not but states the budget.

John asked a question about the rubble debris being removed and if it could be used for the Port Alto project. Ian answered that the debris present currently is planned to be removed and crushed up to provide bedding stone for whatever breakwater units we end up placing.