

DRAFT ENVIRONMENTAL ASSESSMENT

Minimizing Erosional Loss on Moody National Wildlife Refuge with Breakwaters or Adapted Reef Structure Placement in East Bay

2024-0011591-NEPA-001

Prepared for:

**U.S. Fish and Wildlife Service
Texas Chenier Plain NWR Complex
Anahuac, TX**

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1.0 INTRODUCTION

This Environmental Assessment (EA) is being prepared to evaluate the effects associated with this proposed action and complies with the National Environmental Policy Act (NEPA) in accordance with Department of the Interior (43 CFR 46; 516 DM 8) and U.S. Fish and Wildlife Service (550 FW 3) regulations and policies. NEPA requires examination of the effects of proposed actions on the natural and human environment¹.

2.0 PROPOSED ACTION

Consistent with the United States Fish and Wildlife Service's (USFWS or Service) Texas Chenier Plain Refuge Complex *Final Environmental Impact Statement, Comprehensive Conservation Plan and Land Protection Plan* (USFWS, 2008), USFWS is proposing to “increase coordination with landowners, USFWS Partners for Fish and Wildlife, and Coastal programs to enhance shoreline protection on Moody NWR”. Three separate breakwaters would be constructed in East Bay along the southern boundary of Moody National Wildlife Refuge (NWR) for shoreline protection. The breakwaters would be constructed generally northwest and west of Frozen Point in key locations that are experiencing erosion from wave action, tidal scour, and other natural processes. The breakwaters would total approximately 9,173 feet in length and would be constructed on both sides of and between existing Texas Parks and Wildlife Department (TPWD) oyster projects, which are also designed to protect the shoreline.

The USFWS is considering the possibility of adapting the breakwaters to function as living reefs. This would potentially require minor adjustments to the breakwater footprints for incorporation of structures that would provide oysters and other aquatic invertebrates the hard surfaces they need to thrive. The living reefs would have the same function as the rock breakwaters, providing shoreline protection, and effects of their construction would be similar to those of the Proposed Action, with added beneficial effects to aquatic resources.

3.0 BACKGROUND

Moody NWR is a 3,516-acre coastal refuge located in along East Galveston Bay in south central Chambers County. The town of Smith Point is approximately 5 miles west of this Refuge. Through his will in 1954, W. L. Moody, Jr. conveyed as a gift to the USFWS an undivided ½ fee interest in 14-acre Lake Surprise, which became Moody NWR on November 9, 1961. In 1982, the USFWS exchanged the fee interest in Lake Surprise with the Moody Foundation for a perpetual non-

¹ Executive Order 14154, Unleashing American Energy (Jan. 20, 2025), and a Presidential Memorandum, Ending Illegal Discrimination and Restoring Merit-Based Opportunity (Jan. 21, 2025), require the Department to strictly adhere to the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 et seq. Further, such Order and Memorandum repeal Executive Orders 12898 (Feb. 11, 1994) and 14096 (Apr. 21, 2023). Because Executive Orders 12898 and 14096 have been repealed, complying with such Orders is a legal impossibility. The USFWS verifies that it has complied with the requirements of NEPA, including the Department's regulations and procedures implementing NEPA at 43 C.F.R. Part 46 and Part 516 of the Departmental Manual, consistent with the President's January 2025 Order and Memorandum.

development conservation easement on a little over 3,500 acres of wetland habitat around Lake Surprise which comprises the current Moody NWR and is otherwise entirely privately-owned and managed.

Moody NWR is part of the Texas Chenier Plain National Wildlife Refuge Complex (Refuge Complex). The Refuge Complex contributes to the conservation of wildlife and their habitats in the Texas Gulf Coast Ecosystem. The individual NWRs in the Refuge Complex encompass a diversity of habitats: aquatic habitats (open water and near shore Gulf habitats), freshwater to saline marshes, riparian habitats, coastal woodlots, rice fields, native prairies, chenier's and coastal beach and dune habitats. These areas host a multitude of plant, invertebrate and vertebrate species including over 300 bird species, 75 species of freshwater fish, and 400 species of salt and brackish water fish and shellfish. The Refuge Complex protects quality habitats for migrating, wintering, and breeding waterfowl; shorebirds; and wading birds, and provides strategic and crucial resting areas for neotropical migratory songbirds migrating across the Gulf of America (GOA, formerly Gulf of Mexico).

Natural processes such as tidal ingress and egress, wave action, storms, and hurricanes have resulted in erosion and land loss along the East Bay shoreline, which poses a major threat to wetland and upland habitats within the Moody NWR. Shoreline erosion is a natural process; however, a severe sediment deficit in the Gulf's littoral system resulting from altered hydrologic regimes (i.e., construction of navigation channels, jetties, and upstream dams on rivers) has greatly accelerated rates of shoreline retreat. Rising sea levels and land subsidence are also causative factors in the accelerated loss of coastal habitats.

Shoreline erosion along East Bay is resulting in the loss of salty prairie habitat and threatens interior marshes with saltwater intrusion. Increased saltwater intrusion negatively impacts plant productivity and diversity in Moody NWR marshes.

This project is funded through NOAA DARRP Damage Assessment, Remediation, and Restoration Program. The current funding in hand will allow for the development of 60% design for permitting, as well as construction specs and cost estimates.

National Wildlife Refuges are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

The primary authority in establishing Moody NWR was the Migratory Bird Conservation Act (MBCA) of 1929 (16 U.S.C. 715d), "...for use as an inviolate sanctuary, and for any other management purposes, for migratory birds." The Moody NWR is administered by the USFWS, as a unit of the National Wildlife Refuge System.

The mission of the NWRS, as outlined by the National Wildlife Refuge System Administration Act (NWRSA), as amended by the National Wildlife Refuge System Improvement Act (16 U.S.C. 668dd et seq.), is:

“... to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans”

The proposed breakwaters would help to achieve this mission by preserving and potentially enhancing and/or creating wetland habitat along the shoreline of East Bay. The breakwaters would also help to protect inland assets/resources important to management of the Refuge by slowing shoreline erosion/retreat.

4.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of this proposed action is to slow erosion of the Moody NWR shoreline along East Bay due to tidal scour, wave action, and other natural processes.

The need for the proposed action is to protect/conservate valuable wetland habitat and other assets/resources of importance to the management of the Refuge further inland. This will help to meet the USFWS’s priorities and mandates as outlined by the NWRSA 16 U.S.C. 668dd(a)(4)) as follows:

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the NWRS;
- Ensure that the biological integrity, diversity, and environmental health of the NWRS are maintained for the benefit of present and future generations of Americans; and
- Ensure that the mission of the NWRS described at 16 U.S.C. 668dd(a)(2) and the purposes of each refuge are carried out.

Left unprotected, the Moody NWR shoreline would continue to erode rapidly over time and saltwater will eventually intrude upon the more landward brackish and freshwater wetlands and coastal prairies, significantly changing the hydrological regime and altering the ecological diversity of the area.

5.0 ALTERNATIVES CONSIDERED

5.1 Alternative A – Construct Three East Bay Shoreline Protection Breakwaters with No Land-Based Support [Proposed Action Alternative]:

The proposed rock breakwaters would be constructed in three separate segments located approximately at the -1.5-foot contour line adjacent to the shoreline of MNWR in East Bay as shown in the attached drawings (**Appendix A**). The breakwaters will be constructed of graded riprap (COE 650# gradation) to a crest elevation of +3.5 feet, which is an average of 5.0 feet above

existing grade at the centerline, with a 3-foot top width and 2:1 side slope, which equates to a base of 21 feet. The actual width of the base will be 20 feet, on average, because the existing grade is shallower at the shoreward toe of the breakwaters. Each rock breakwater will end in open water, transitioning into 3:1 side slopes.

Each of the breakwaters are designed with 30-foot-wide fish passes at 500-foot intervals to facilitate the movement of water, sediment, and aquatic species. Fish passes would be lined with rock (approximately 18 inches) to a 0.0 elevation to prevent excess scour at these locations.

At a minimum, day beacons will be located at the starting and ending points of the rock breakwaters, as well as every 550 feet along the breakwaters. The final configuration of warning signs will be in accordance with USCG recommendations.

Six barges at a time, containing a total of approximately 10,000 tons of riprap, will be transported from the Mississippi River to the GIWW in the vicinity of the project area. The barges will be anchored just outside the navigational channel so there would be no interference with navigation in the GIWW as a result of project operations. Two smaller shallow water barges will be utilized for construction, one spud barge containing a long-reach excavator and a light-loaded barge containing approximately 2,500 tons of riprap. The barges will be transported to breakwater locations using a shallow water tugboat. The barge containing the excavator will be spudded down adjacent to the breakwater locations and the barge containing the rock will be secured to the back or side of the spud barge.

Geotextile fabric will be placed under the footprint of the breakwaters prior to placement of riprap. Small John boats would be utilized to access the project area for the purpose of placement of the geotextile fabric. Once the geotextile fabric is in place, the long-reach excavator will obtain riprap from the barge and place the riprap onto the breakwater locations. This process will continue until construction of the breakwaters is complete.

All work will be conducted in the water. There will be no equipment use/access or staging areas on land or in wetlands and the excavator will never leave the barge. There would be no impact to wetland areas.

Table 1 provides the area, length, and volume of material for each of the three breakwater segments.

TABLE 1. BREAKWATER SIZES AND FILL VOLUMES

Breakwater Number	Area of Fill (acres)	Area of Fill (square feet)	Length of Breakwater (linear feet)	Volume of Fill (tons)	Volume of Fill (cubic yards)
#1	1.75	76,371.00	3,143.91	14,647.00	8,137.00
#2	1.38	60,083.00	2,527.32	11,296.00	6,275.00
#3	1.93	83,964.00	3,501.87	15,998.00	8,888.00
Totals	5.06	220,418.00	9,173.10	41,941.00	23,300.00

The following are the legal descriptions of the locations of each of the three breakwater segments on state submerged lands:

- Breakwater #1: Tract Number 151; Control Number 02-008455; East Bay
Tract Number 163; Control Number 02-008570; East Bay
- Breakwater #2: Tract Number 163; Control Number 02-008570; East Bay
- Breakwater #3: Tract Number 164; Control Number 02-008589; East Bay

Construction drawings included in **Appendix A** provide more details regarding the Proposed Action Alternative.

The USFWS is currently considering the possibility of adapting the breakwaters to function as living reefs. This would potentially require minor adjustments to the breakwater footprints for incorporation of structures that would provide oysters and other aquatic invertebrates the hard surfaces they need to thrive.

No engineering design related to living reefs has been done to date, as no funding is yet available to explore this option. The living reefs would have the same function as the rock breakwaters, providing shoreline protection, and effects associated with construction of living reefs on each resource are expected to be similar to those of the proposed action, with some added beneficial effects, especially to aquatic resources.

5.2 Alternative B – No Action Alternative:

Under the No Action Alternative, no breakwaters would be constructed; therefore, the shoreline would remain unprotected from tidal scour and wave action and continue to erode over time. Erosion results in the loss of saltwater marsh, which provides habitat for a variety of species including but not limited to several species of migratory and nesting birds and offers protection from storm surge for interior marsh areas.

6.0 ALTERNATIVE CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS

The refuge considered placing breakwaters in the same locations as proposed in Alternative A; however, the method of delivering riprap to the breakwater locations would be by buggy from the landward side of the breakwater locations. This option was eliminated from analysis because the weight of the riprap, the equipment required to transport it, and the number of trips required to transport it would result in damage to marsh vegetation and compaction to the substrate. This could lead to changes in hydrology in the area and increased erosion rates, likely resulting in conversion of wetland areas to open water.

7.0 ENVIRONMENTAL CONSEQUENCES OF THE ACTION

This section is organized by affected resource categories and for each affected resource discusses both (1) the existing environmental baseline in the action area for each resource, and (2) the reasonable foreseeable effects (direct and indirect) and impacts of the Proposed Action and any alternatives on each resource that have a reasonably close causal relationship to the Proposed Action or alternatives, including those effects that occur at the same time and place as the proposed actions or alternatives and may include effects that are later in time or farther removed in distance from the proposed action. The effects and impacts of the proposed action considered here are changes to the human environment, whether adverse or beneficial, that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives. This EA includes the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an “affected resource.” Any resources that will not be more than negligibly impacted by the action have been dismissed from further analyses.

The 3,517-acre Moody NWR is a privately-owned property upon which the USFWS owns and administers a perpetual non-development conservation easement. Approximately one-third of this tract is comprised of two natural brackish lakes, Lake Surprise and Lake Wallis. Emergent marsh habitats and interspersed ponds and sloughs are primarily intermediate. Salty prairies are interspersed throughout the marshes.

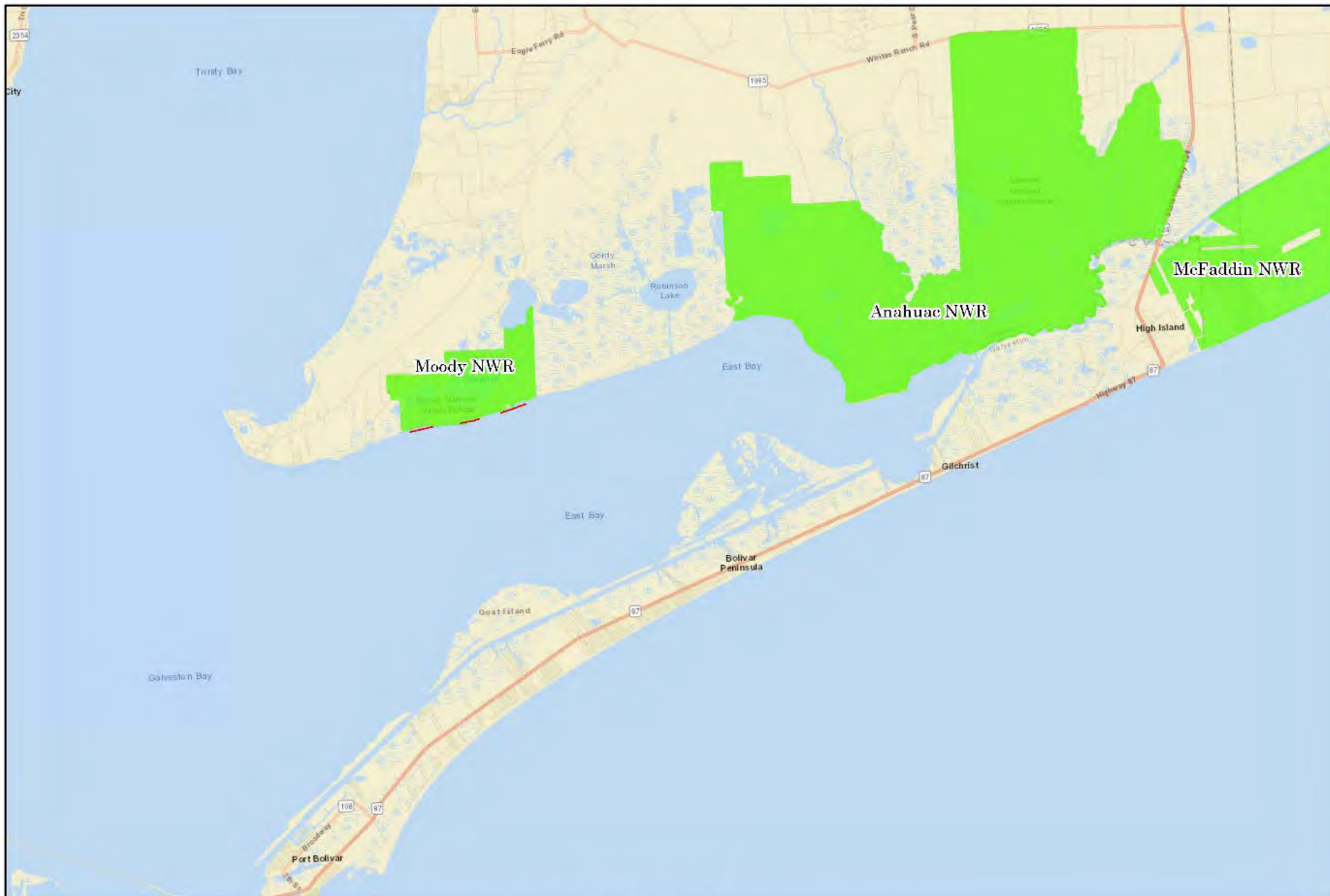
The proposed action is in and adjacent to the Moody NWR along East Galveston Bay in south central Chambers County. The town of Smith Point is approximately 5 miles west of this Refuge (See **Figure 1**). Habitat within and adjacent to this area can be described as Chenier Plain: Salt and Brackish Low Tidal Marsh, Urban Low Intensity, or Open Water (Elliott et. al, 2014).

For more information regarding the affected environment, please see Chapter 3: Affected Environment in Volume 1 of the Texas Chenier Plain Refuge Complex *Final Environmental Impact Statement Comprehensive Conservation Plan and Land Protection Plan*. (2008), which can be found here: <https://ecos.fws.gov/ServCat/DownloadFile/1460?Reference=1485>.

7.1 Wildlife and Aquatic Species

Description of Affected Environment

Moody NWR is home to an incredible diversity of wildlife species that rest, nest, feed and migrate through the area. Between October and March, 27 species of ducks, including green-winged teal, gadwall, shoveler, and northern pintail are likely to be present on the Refuge and huge flocks of snow geese, sometimes more than 80,000, feed in rice fields and moist soil units within the Refuge. During spring and fall migrations, warblers and other songbirds are present in small, wooded areas. Roseate spoonbills, great and snowy egrets, white-faced ibis, and mottled ducks can be found throughout the year on the Refuge.



Legend

- BW Footprint
- Chenier Plain Refuges

Figure 1: Vicinity Map
Moody NWR Breakwaters Project

Chambers County, Texas

Map Base: 2020 NAIP Aerial Imagery from TNRIS
 Map Datum: NAD 1983 State Plane Texas South Central, US Foot
 Map Date: February 15, 2023

North Arrow
 1:203,608

DISCO

0 1 2
 Miles

Alligators, river otters, raccoons, skunks, muskrats, and opossums are among some of the more common refuge residents. Bobcats can also be seen crossing the roads or slipping through the vegetation in the early morning hours.

Important commercial and recreational finfish and shellfish species in the area include brown shrimp, white shrimp, American oyster, and blue crab.

The major gamefish include spotted sea trout, sand sea trout, and red fish or red drum. Other important recreational fishes include southern flounder, black drum, Atlantic croaker, gafttop-sail catfish, and sheepshead. Ancillary species include bay anchovy, gulf menhaden, striped mullet, and gizzard shad.

Direct and Indirect Impacts on Wildlife and Aquatic Species

Alternative A

The breakwaters would be constructed from and within open water habitat in East Bay that is subject to recreational boat traffic and visitor use. While many wildlife species are known to occur within MNWR, not many are expected to be present in the project area during operations. Direct impacts on any resident wildlife present within or adjacent to the project area will be short-term. Noise from construction and the presence of crews could temporarily displace wildlife into adjacent habitat and/or temporarily alter the normal behavior of certain species. Use of NWR habitats by migratory birds, including waterfowl, shorebirds, wading birds, and songbirds would likely be temporarily reduced within the immediate vicinity of the project area. In general, habitat exists for wildlife to emigrate from the immediate vicinity of the project area to similar adjacent habitats, which will be unaffected by project operations.

Oysters could potentially be present within the footprint of the breakwaters and could be crushed and killed during placement of riprap. Any oyster mortality resulting from project construction is not expected to negatively impact the oyster fishery in East Bay. The oyster population may temporarily decline in localized areas; however, oyster spat is expected to eventually attach to and colonize the riprap used to construct the breakwaters.

The breakwaters will be constructed with intermittent fish passages, allowing for movement of marine life into and out of the areas behind the breakwaters; therefore, there should be no negative effects to fish and other aquatic species as a result of project construction. There would be short-term enhancement to fisheries habitat between the land and the breakwater locations prior to sediment accretion; however, the proposed project has the potential to result in the creation of wetlands between the shoreline and the breakwater locations. If this occurs, there would be beneficial indirect impacts to wildlife that utilize this habitat.

Alternative B

There would be no direct impacts to wildlife and aquatic species as a result of the No Action Alternative; however, the continued loss of habitat that would occur without implementing the proposed action would affect wildlife and aquatic species through loss and/or conversion of habitat.

Other Reasonably Foreseeable Impacts on Wildlife and Aquatic Species:

Other reasonably foreseeable impacts on wildlife and aquatic resources within the project area have occurred and would continue to occur because of Refuge operations, visitor use, hunting, fishing, development including oil and gas operations, and natural processes.

Natural processes such as tidal ingress and egress, wave action, storms, and hurricanes have resulted in erosion and land loss along the East Bay shoreline, posing a major threat to wetland and upland habitats within the Moody NWR and the Refuge Complex. Shoreline erosion is a natural process; however, a severe sediment deficit in the Gulf's littoral system resulting from altered hydrologic regimes (i.e., construction of navigation channels, jetties, and upstream dams on rivers) has greatly accelerated rates of shoreline retreat. Rising sea levels and land subsidence are also causative factors in the accelerated loss of coastal habitats.

Shoreline erosion along East Bay is resulting in loss of salty prairie habitat and threatens interior marshes with saltwater intrusion. Increased saltwater intrusion negatively impacts plant productivity and diversity in Moody NWR marshes.

Construction of breakwaters along the shoreline of the Moody NWR is just one of several projects designed to protect the resources/assets important to the management of the Texas Chenier Plain NWR Complex. The USFWS, in conjunction with GLO, completed a beach renourishment project along approximately 19 miles of McFaddin NWR (MNWR) beach shoreline and has plans to renourish another 5.8 miles of beach along the shoreline of the Texas Point NWR (TPNWR) in the near future. In addition, the USFWS has recently undertaken several actions that will aid in the management and conservation of Refuge resources using funds appropriated for Hurricane Harvey Recovery under Bipartisan Budget Act of 2018 (Public Law 115-123). These actions include repair of interior levees and water control structures within the complex that were damaged due to Hurricane Harvey. The Cattlewalk Levee, Lone Tree Levee, Frozen Point Levee, East Bay Bayou Levee, and associated water control structures were repaired/replaced within Jocelyn Nungaray NWR (JNNWR; formerly Anahuac NWR); the Perkins Levee, White's Levee, and O-Ditch Levee, and their associated water control structures were repaired within MNWR; and the Texas Point Cattlewalk Levee was repaired within the TPNWR. The USFWS also constructed breakwaters in the Gulf Intracoastal Waterway (GIWW) along the shoreline of MNWR and in East Bay along the shoreline of JNNWR utilizing the afore-mentioned funding to slow and/or prevent erosion. USFWS plans to construct similar breakwaters in the GIWW along the JNNWR shoreline in the near future.

The USFWS also has plans to construct an inverted siphon system under the GIWW on MNWR lands to restore freshwater inflows from north of the GIWW to south of the GIWW. On JNNWR, marsh will be restored on the Roberts Mueller tract through the beneficial use of dredged material on up to 3,500 acres. Funding will be provided in support of this partnership with Ducks Unlimited through the Additional Supplemental Appropriations for Disaster Relief Act, 2019 (PL 116-20), which provided funds to restore and rebuild national wildlife refuges and increase the resiliency and capacity of coastal habitat and infrastructure to withstand storms and reduce the amount of damage caused by such storms. These specific projects have been approved by DOI under the

Service's Recovery Plan. In addition, a levee system on the East Bay Bayou Unit of JNNWR will be repaired to facilitate more effective marsh management (funding through a Refuge Deferred Maintenance appropriation).

As discussed earlier in this document, TPWD is constructing 3 intertidal oyster reefs along the north shore of East Galveston Bay along the shoreline of Moody NWR adjacent to the proposed breakwaters. TPWD's project, in combination with the proposed breakwaters will help to slow natural erosion of the Moody NWR shoreline and assist with preservation of Refuge habitats and resources.

The proposed action, combined with all of the above-mentioned projects/actions, should result in beneficial effects on wildlife and aquatic resources, as each is designed to preserve and enhance areas that provide habitat to a multitude of species, including but not limited to migratory birds, waterfowl, and threatened, endangered, and sensitive species.

7.2 Threatened and Endangered Species and Other Special Status Species

Description of Affected Environment

The USFWS ECOS-IPaC system species list for the project area (Project Code: 2023-0044752) indicates that the following federally listed threatened and endangered (T&E) species have potential for occurrence in the project area:

- Piping Plover
- Red Knot
- Eastern Black Rail
- Whooping Crane
- Attwater's Greater Prairie-Chicken
- Green Sea Turtle
- Hawksbill Sea Turtle
- Kemp's Ridley Sea Turtle
- West Indian Manatee
- Tri-Colored Bat
- Monarch Butterfly

In addition, there are several birds of conservation concern with potential for presence in and around the project area.

Piping Plovers and Red Knots have been seen using the beach areas on the Texas Chenier Plain NWR Complex. Piping Plovers have also been observed utilizing mud flat areas along the GIWW. These species would not utilize the open water habitat within the project area or the adjacent vegetated wetlands; however, piping plovers could potentially be present on mud flats behind the breakwaters during construction.

The Eastern Black Rail is known to occur within the Texas Chenier Plain NWR Complex year-round and could be present in persistent emergent wetland areas adjacent to the project area during

project construction. However, there is no suitable habitat within the project's area of potential effect.

Whooping cranes have been seen and documented within the upper Texas coast region in recent years; however, there have been no documented sightings within Moody NWR. Whooping cranes would not utilize the open water habitat within the project's APE but could occur as a transient species in adjacent marshes near the project area.

The project area is outside of the known range of Attwater's Greater Prairie Chicken.

There is no suitable sea turtle nesting habitat within the project area; however, juvenile Green and Kemp's Ridley Sea turtles have the potential for occurrence in the project area during operations. The likelihood of presence is low and is greater in the summer months than in the winter months. West Indian manatees also have the potential for occurrence in the project area; however, the likelihood is extremely low.

There is no suitable habitat for tri-colored bats or monarch butterflies within the project's open water footprint.

There is no designated critical habitat or proposed critical habitat for any protected species within the Moody NWR boundary nor within the project area considered herein.

Direct and Indirect Impacts on Threatened and Endangered Species and Other Special Status Species

Alternative A

The project would have no effect on the Attwater's greater prairie chicken because the project area is outside of the known range for the species. There would also be no effect on the Rufa red knot or piping plover based on lack of suitable habitat within or adjacent to the project area.

Whooping cranes utilize a variety of habitats to breed, overwinter, migrate, and forage. These habitats include coastal marshes and estuaries, inland marshes, open ponds, shallow bays, salt marshes, sand or tidal flats, rivers, and pastures and agricultural fields. There are four geographically distinct populations, with the only natural and self-supported population being the Aransas Wood Buffalo Population that migrates between Aransas National Wildlife Refuge on the Texas Coastal Bend to Wood Buffalo National Park in Alberta, Canada. Three experimental populations were established between 1993-2011, a Central Florida non-migratory population, an Eastern migratory population, and a White Lake, Louisiana non-migratory flock. The current populations of whooping cranes in existence today come from the all-time low population of 15 individual whooping cranes that were overwintering at Aransas National Wildlife Refuge in 1941.

The nearest critical habitat for the species is located approximately 180 miles southwest of the project site in the vicinity of Aransas National Wildlife Refuge. According to Tim Cooper, Texas Chenier NWR Complex Manager (personal communication, May 30, 2023), whooping cranes in Jefferson and Chambers County are utilizing rice fields further inland.

Whooping cranes have been seen and documented within the upper Texas coast region in recent years; however, there are no documented sightings within or near the project area. Observations on iNaturalist and eBird (2023) show the nearest reported sighting to the project area is approximately 17 miles away. Additional clustered sightings have occurred further west in the vicinity between the towns of Anahuac and Winnie from 2017-2023.

More recently, several whooping cranes were seen in the nearby McFaddin National Wildlife Refuge for approximately four days from March 23-26, 2025. They left the area and have not been seen since (Tim Cooper, Refuge Complex Manager, personal communication, March 26, 2025). While there is a possibility for whooping cranes to occur as a transient species in adjacent marshes near to the project area, the likelihood of occurrence in the project's area of effect is so low that it is discountable.

The breakwaters will be constructed completely within and from open water habitat approximately 1.5 feet deep; therefore, there is no suitable habitat for this species within the area of potential effect. We have analyzed the effects of the proposed action on the endangered Whooping Crane and believe the project will have no effect on this species due to the lack of suitable habitat in the project area.

There would be no effect to nesting sea turtles under USFWS purview, as there is no suitable nesting habitat within the project area.

There is a low likelihood of juvenile green and Kemp's Ridley sea turtles and/or manatees being present in the project area during operations. If individuals are present, they could be physically injured if struck by construction equipment, support vessels, or materials. We believe this is extremely unlikely to occur due to the species' ability to move away from the project site if disturbed. These species are able to avoid slow-moving equipment and support vessels and the placement of material. The likelihood of impacts would be minimized with crew education and implementation of NOAA Fisheries Southeast Regional Office *Protected Species Construction Conditions* (NOAA 2021a) and *Vessel Strike Avoidance Measures* (NOAA, 2021b). Operation of any mechanical construction equipment shall cease immediately if a sea turtle is seen within 150 feet of operations. Activities may not resume until the protected species has departed the project area of its own volition. Further, construction would be limited to daylight hours so construction workers would be more likely to see listed species, if present, and avoid interactions with them. Additionally, if sea turtles and/or manatees swim into the area behind the breakwaters or are pushed there during storm tide events, the fish passages incorporated into the project design would allow them to leave the area. For the reasons stated the proposed action may affect but would not likely adversely affect sea turtles under NMFS purview and/or manatees.

The USFWS initiated informal programmatic consultation with NMFS on August 31, 2022, for potential effects to marine species protected by ESA due to the carrying out and/or funding of shoreline stabilization (including construction of breakwaters), water control, levee repair, and hydrology function improvement projects within the USFWS coastal refuges and inter-tidal nearshore areas in coastal Texas (SERO-2022-00591). NMFS concurred with USFWS's findings of not likely to adversely affect NMFS ESA-listed species on September 7, 2022. Construction of

the Moody NWR Breakwaters will comply with the conservation measures included in the consultation documentation (**Appendix C**).

The proposed project does not include actions that are expected to affect tri-colored bats, as there is no suitable habitat in the project area and project operations would only occur during daylight hours when bats are not active. The breakwaters are located in and would be constructed entirely from open water areas.

Adult monarchs are mobile and would likely move out of harm's way during project activities. There is an abundance of potentially suitable, undisturbed habitat for monarch butterflies adjacent to the project area. We have analyzed the effects of the proposed action on the monarch butterfly and believe the proposed action would not jeopardize the continued existence of the species, thus resulting in no effect to the monarch butterfly. This determination is due to the short-term, minimal, localized nature of impacts to potentially suitable habitat in relation to the vast geographic range of the species, and the fact that completion of the project will help to preserve thousands of acres of potentially suitable monarch habitat.

For detailed analysis of potential effects to T&E Species, refer to the Intra-Service Section 7 Biological Evaluation included in **Appendix C**. USFWS is working on completing Intra-Service Section 7 consultation requirements and will incorporate any protection measures recommended for protection of T&E species during consultation efforts into project design prior to implementation.

Alternative B

There would be no direct impacts to T&E, or other special status species as a result of the No Action Alternative; however, the continued loss of habitat that would occur without implementing the proposed action could indirectly affect these T&E species through loss and/or conversion of habitat.

Other Reasonably Foreseeable Impacts on Threatened and Endangered Species and Other Special Status Species

The proposed breakwaters, in combination with past, ongoing, and reasonably foreseeable future actions (as described in the Other Reasonably Foreseeable Impacts discussion in **Section 7.1** Wildlife and Aquatic Species), should have overall beneficial effects on T&E and other special status species as a result of preservation and/or enhancement of Refuge habitats utilized by these species. USFWS has completed and will continue to implement numerous projects throughout the Complex to protect, preserve, and/or enhance refuge shoreline, interior marsh areas, and resources.

7.3 Vegetation (including vegetation of special management concern)

Description of Affected Environment

Vegetated habitats within the Moody NWR are dominated by a variety of marshes and wetlands, both fresh and saltwater influenced. These habitats are primarily vegetated with grasses such as *Spartina alterniflora* (smooth cordgrass), *S. patens* (marshhay cordgrass), and *S. spartinae* (gulf

cordgrass); *Schizanthium scoparium* (little bluestem); *Panicum spp.*; and *Paspalum spp.*; as well as a mix of shrubs and forbs such as *Baccharis halimifolia* (baccharis);, *Iva frutescens* (bigleaf sumpweed); *Borrchia frutescens* (sea ox-eye daisy); *Sagittaria spp.* (arrowheads); *Ludwigia spp.* (water primroses); *Solidago spp.* (goldenrods); among many others (Elliott et. al., 2014).

The breakwaters would be placed in open water habitat approximately 1.5 feet deep. Areas along and immediately adjacent to the shoreline are considered to be Salt and Brackish Low Tidal Marsh. Vegetation here is dominated by *S. alterniflora* and is regularly flooded tidal marshland. Portions of this marsh may also contain species such as *S. patens* and *S. spartinae*, *Distichlis spicata* (saltgrass), *Schoenoplectus americanus* (three-square bulrush), and *B. frutescens* (Elliott, 2014).

Direct and Indirect Impacts on Vegetation

Alternative A

Direct impacts to the vegetation would be minimal as the breakwaters would be installed within the open water ecosystem, away from the shoreline. Creation of the breakwaters would protect the existing shoreline vegetation from erosion and over time natural recruitment of salt marsh vegetation would likely result in accretion of additional salt marsh habitat. Additionally, construction of the breakwaters under the proposed action will slow erosion due to natural process until such time that the sea level rises to a level that is higher than the top of the breakwaters. For these reasons, the project is expected to result in minor, beneficial effects on vegetation.

Alternative B

There would be no direct impacts to vegetation because of the No Action Alternative; however, the continued loss of vegetation and habitat within this area would occur because of erosion from tidal scour and wave action resulting in loss of the valuable wetland habitat over time.

Other Reasonably Foreseeable Impacts on Vegetation

Vegetated habitats along the Texas Coast and Moody NWR shoreline are being lost because of several natural processes, including but not limited to tidal scour, wave action, and natural disasters. Several hurricanes have impacted the Texas Coast and Moody NWR, including Hurricane Ike in 2008 and Hurricane Harvey in 2017, which resulted in devastating impacts to refuge infrastructure and introduced large volumes of saltwater into interior fresh marsh areas, resulting in impacts, conversion, and loss of vegetated wetland habitats. Sea level rise over time will impact coastal and estuarine zones, resulting in loss/conversion of vegetated habitat, as well. The proposed breakwaters are designed to slow erosion of the Moody NWR shoreline along East Bay due to tidal scour, wave action, and other natural processes.

The proposed breakwaters, in combination with past, ongoing, and reasonably foreseeable future actions (as described in the Other Reasonably Foreseeable Impacts discussion in **Section 7.1 Wildlife and Aquatic Species**), should have overall beneficial effects on vegetation as a result of preservation and/or enhancement of vegetated Refuge habitats. USFWS has completed and will continue to implement numerous projects throughout the Complex to protect, preserve, and/or enhance refuge shoreline, interior marsh areas, and resources.

7.4 Geology & Soils

Description of Affected Environment

The soils adjacent to the project area along the shoreline are considered to be Harris clay, 0 to 1 percent slopes, frequently flooded, tidal. This very poorly drained soil is found in marsh landforms and is not considered to be prime farmland (NRCS, 2023).

Mapped geology at the site is Alluvium and Water. Characteristics of Alluvium are “Clay, silt, and sand, organic matter abundant locally; includes point-bar, natural levee, stream channel, backswamp, coastal marsh, mud-flat, and narrow beach deposits that are shown by line symbol” (TWDB, 2023).

Direct and Indirect Impacts on Geology and Soils

Alternative A

Direct impacts to the soils or geology along the shoreline would be minimal to non-existent as the project would be constructed from and within open water. Minimal disturbance of the soil and geological substrate beneath the water surface would occur from placement of riprap as the weight of the riprap would cause minor displacement of sediment and settling in the footprint of the breakwaters.

Sedimentation is expected to occur over time behind the breakwaters as natural vegetation recruitment takes place. This could result in the creation of wetland acreage behind the breakwaters where none currently exists and have a beneficial effect on soils/geology over time. The location of the structures and sediment loading in the water column will be the greatest factors affecting the potential for creation of wetland habitat. The distance between the proposed breakwaters and the shoreline may be too great for adequate sedimentation to occur.

Alternative B

There would be no direct impacts to the soils or geology under this alternative, however indirect impacts would include continued erosion of the soils and geologic features along the shoreline in this area due to lack of protection.

Other Reasonably Foreseeable Impacts on Geology and Soils

Other reasonably foreseeable effects on Geology and Soils would be similar to those described in **Section 7.3 Vegetation**, as the breakwaters are designed to slow erosion of the Moody NWR shoreline along East Bay due to tidal scour, wave action, and other natural processes. This would result in preservation of soils and geological features along and interior of the Moody NWR shoreline.

The proposed breakwaters, in combination with past, ongoing, and reasonably foreseeable future actions (as described in the Other Reasonably Foreseeable Impacts discussion in **Section 7.1 Wildlife and Aquatic Species**), should have overall beneficial effects on geology and soils as a result of preservation and/or enhancement of Refuge habitats. USFWS has completed and will

continue to implement numerous projects throughout the Complex to protect, preserve, and/or enhance refuge shoreline, interior marsh areas, and resources.

7.5 Water Resources

Description of Affected Environment

The breakwaters would be constructed in East Bay, adjacent to the shoreline of Moody NWR. East Bay is a sub-bay of Galveston Bay. It lies toward the mainland from Bolivar Peninsula and receives inflow from Oyster Bayou, the Gulf Intracoastal Waterway, and small tributaries, as well as surface runoff from Chambers County.

East Bay is an estuary that provides habitat and nursery grounds for a wide range of aquatic life. Nutrients from 4 sources contribute to the productivity of estuaries: (1) freshwater flowing off the land, (2) tidal exchange with the ocean, (3) deposition from the atmosphere, and (4) the recycling of material from the estuarine bottom sediments (GBEP, 2011)

East Bay is identified and monitored by the Texas Commission on Environmental Quality (TCEQ) as water quality segment 2423 and is in the Bays and Estuaries Basin 24 (TCEQ, 2020c). The closest TCEQ station ID to the project area is Active SWQM Station 16515.

According to TCEQ (2020b) East Bay is a Category 5 Texas 303(d) impaired waterbody, which means it may require a TMDL or other types of water quality management practices. It has been listed since 2010 due to dioxin and PCBs in edible tissue (catfish).

The project area is under a Texas Department of State and Health Services (TDSHS) consumption advisory (ADV-50) for all species of catfish due to PCBs and dioxins in edible tissue (TDSHS, 2023). ADV-50 advises that women of childbearing age and children under 12 years of age do not eat any species of catfish and women past childbearing age and men only consume 1 meal per month (TDSHS, 2023). For this reason, Fish Consumption Use is not supported (TCEQ, 2020b).

East Bay is also listed by TCEQ as a water body with concern for water quality based on screening levels for chlorophyll-a, which exceeded its criteria in 33 out of 65 samples assessed (2020b). East Bay does; however, fully support Recreational Use (TCEQ, 2020b) and has a High Aquatic Life Use (ALU) Designation (TCEQ, 2020a).

Direct and Indirect Impacts on Water Resources

Alternative A

Temporary increases in turbidity would result from vessel travel within the project area and placement of riprap. These effects should be short term and minimal and should not adversely impact water resources, water use, or water quality. Water quality could potentially be improved in the immediate vicinity of the breakwaters after construction, as the structures are designed to slow erosion of the shoreline, resulting in less sedimentation in the nearshore environment.

Alternative B

Without shoreline protection, accelerated land loss would result in greater increases in turbidity/sedimentation over time. This could negatively impact water quality.

Other Reasonably Foreseeable Impacts on Water Resources

The proposed project would have only minimal, short-term increases in turbidity during construction, but is likely to improve water quality in the nearshore environment after construction by reducing erosional rates along the Moody NWR shoreline. For these reasons, the proposed breakwaters, in combination with past, ongoing, and reasonably foreseeable future actions (as described in the Other Reasonably Foreseeable Impacts discussion in **Section 7.1** Wildlife and Aquatic Species), should have overall beneficial effects on water resources.

7.6 Wetlands

Description of Affected Environment

The emergent marsh habitats found in the Moody NWR and interspersed ponds and sloughs are primarily intermediate. Salty prairies are interspersed throughout the marshes. Habitat within and adjacent to this area can be described as Chenier Plain: Salt and Brackish Low Tidal Marsh, Urban Low Intensity, or Open Water (Elliott et. al, 2014)

The *Texas Conservation Action Plan, Gulf Coast Prairies and Marshes Ecoregion Handbook* (TPWD, 2012) identified these wetlands as priority habitats for Species of Greatest Conservation Need (SGCN).

Fresh water from an occasional storm and the inflow from rivers and creeks helps to keep saltwater out of the freshwater marshes, as well as provides nutrients and sediments. Wetlands continue to be lost because of erosion and saltwater intrusion, especially along the shoreline of the Moody NWR.

Direct and Indirect Impacts on Wetlands

Alternative A

There would be no direct impacts on wetlands as a result of the proposed action, as all work would be conducted in and from open water. There would be positive impacts as a result of the proposed action. The breakwaters will prevent or slow further erosion of wetlands by protecting the shoreline from wave action and tidal scour. Additionally, accumulation of sediments behind the breakwaters is expected to result in the creation of wetland habitat, as evidenced as a result of creation of similar breakwaters in other areas along the Moody NWR shoreline.

Alternative B

There would be no direct impacts to wetlands as a result of the no action alternative. Left unprotected, the shoreline would, however, continue to erode over time resulting in greater losses of wetland habitat.

Other Reasonably Foreseeable Impacts on Wetlands

Wetlands within the Moody NWR are already being lost due to erosion and saltwater intrusion, especially along the Refuge shoreline. Hurricanes and other weather systems are likely to impact the Refuge in the future with varying degrees and intensity and are expected to create additional damage to infrastructure and wetlands.

The proposed breakwaters are designed to slow erosion of the Moody NWR shoreline along East Bay due to tidal scour, wave action, and other natural processes. By protecting the shoreline, the project would also offer protection to wetlands adjacent to the shoreline and further inland. For this reason, the proposed breakwaters, in combination with past, ongoing, and reasonably foreseeable future actions (as described in the Other Reasonably Foreseeable Impacts discussion in **Section 7.1** Wildlife and Aquatic Species), should have overall beneficial effects on wetlands.

7.7 Floodplains

Description of Affected Environment

Moody NWR is within the 100-year floodplain and subject to flooding from storm and weather events.

Direct and Indirect Impacts on Floodplains

Alternative A

There would be no direct impacts to floodplains as a result of the proposed action. All work would be conducted from and in open water. Construction of the breakwaters could result in positive impacts on the floodplain by offering shoreline protection that could reduce the frequency of flooding in interior marsh areas and, thereby, slow erosion and/or wetland loss.

Alternative B

There would be no direct impacts as a result of the no action alternative. Left unprotected, the shoreline would, however, continue to erode over time, which could result in increased frequency of flooding and/or significantly change the hydrological regime of the area.

Other Reasonably Foreseeable Impacts on Floodplains

The Moody NWR is located within the 100-year floodplain and is subject to flooding from storm and weather events. Since construction of the breakwaters would provide shoreline protection and is expected to reduce the frequency of flooding in interior marsh areas, the proposed breakwaters, in combination with past, ongoing, and reasonably foreseeable future actions (as described in the Other Reasonably Foreseeable Impacts discussion in **Section 7.1** Wildlife and Aquatic Species), should have overall beneficial effects on floodplains.

7.8 Visitor Use and Experience

Description of Affected Environment

There are no public access routes/points within Moody NWR; however, the project area is accessible by boat. Anglers and/or other recreational users can be found wade fishing and fishing from vessels along the shorelines of East Galveston Bay. Wildlife in the nearshore environment of the Moody NWR can also be observed from vessels.

Direct and Indirect Impacts on Visitor Use and Experience

Alternative A

The presence of crews and noise from construction could deter anglers or other recreational users from utilizing the project area for the duration of activities; however, there is a multitude of adjacent, undisturbed similar habitat in and adjacent to East Galveston Bay that is available for use; therefore, impacts on visitor use and experience are expected to be minimal, short-term, and localized.

Alternative B

There would be no direct impacts as a result of the no action alternative. Left unprotected, the shoreline would, however, continue to erode over time and result in conversion of vegetated habitats into open water. Anglers in areas adjacent to the Moody NWR could potentially experience short term positive impacts (i.e., greater success) through the creations of additional open water habitat; however, fisheries could decline as open water habitat becomes more prevalent in the area. Open water habitat is the least used of any of the coastal fishery's habitat present on the Gulf Coast. Wildlife observation would continue, but species diversity would be affected due to habitat loss/conversion.

Other Reasonably Foreseeable Impacts on Visitor Use and Experience

Because impacts to visitor use and experience are expected to be minimal, short-term, and localized the project area, the proposed breakwaters, in combination with past, ongoing, and reasonably foreseeable future actions (as described in the Other Reasonably Foreseeable Impacts discussion in **Section 7.1** Wildlife and Aquatic Species), should not contribute significantly to reasonably foreseeable effects on visitor use and experience.

7.9 Cultural Resources

Description of Affected Environment

DESCO reviewed records maintained by the Texas Archeological Research Laboratory (TARL) and the online Texas Historic Sites Atlas within a 1-mile radius of the project area. Site file research resulted in the finding of 10 known cultural resources sites, one archaeological project area (8500019347) and two underwater archaeological surveys (8700000213 and 8700000214). None of the sites are within the project's Area of Potential Effect (APE). The table below contains information on each of the known sites.

The breakwater locations are within Texas General Land Office waters in East Bay. Based on a review of historic maps of the breakwater locations, it appears that the entirety of Breakwater #1 and majority of Breakwater #2 were located in land areas in 1905 that were eroded into the bay between 1918 and 1952; however, Breakwater #3 appears to be located in shallow waters of the bay, as opposed to dry land, for the same time period.

The two afore-mentioned underwater archaeological surveys (Tubby et al. and Laurence et al.) were conducted in association with seismic surveys. Survey lines were 1160 feet apart for Tubby et al. and 790 feet apart for Laurence et al. and ran almost perpendicular to the shoreline in both cases. There were no anomalies detected overlapping the proposed breakwaters from either survey; however, these surveys are akin to reconnaissance surveys and do not meet the minimum survey standards for other types of projects; therefore, they are not sufficient to assess presence/absence of cultural resources within the APE for purposes of evaluating effects on underwater cultural resources.

One site, 41CH278, a human burial site recorded in 1987, is located between Breakwater #1 and the shoreline of the Moody NWR but is documented well outside of the project's APE.

USFWS provided project information and DESCO's desktop cultural resources assessment to the Texas Historical Commission for review on March 13, 2023, initiating Section 106 consultation. The THC responded on April, 11, 2023, indicating that no historic properties are present or affected by the project as proposed; however, they indicated that previously recorded underwater anomalies have the potential to be adversely affected by the proposed work and there is a potential for additional underwater shipwreck targets and submerged terrestrial sites to be present within the APE; therefore, archeological remote-sensing surveys are required for the APE. The THC also requested additional information necessary to understand potential effects of the proposed undertaking on site 41CH278.

USFWS provided additional information to THC on July 5, 2023 (via email), July 25, 2023 (via eTRAC), and October 12, 2023 (via eTRAC), documenting site 41CH278 well outside of the project's APE. THC concurred with the DESCO/USFWS's findings indicating no effect to the site on November 1, 2023.

BOB Hydrographics (BOB) completed a marine geophysical survey on October 6, 2023, under Texas Antiquities Permit 31403. The magnetometer survey covered 78 acres. The sonar survey covered 130.4 acres. Survey area depths range from -0.9 feet to -3.5 feet (North American Vertical Datum of 1988). BOB assessed all geophysical data to locate potential archaeological sites affected by construction. No artifacts were collected during the survey. No significant geophysical targets were discovered that might be potentially eligible for the State Antiquities Landmark or for the National Register of Historic Places. BOB prepared a detailed report of survey methodology and findings and recommended cultural resource clearance for all areas surveyed. Bob submitted the draft report to the THC on December 11, 2023, for review and concurrence. The THC accepted the report as final and concurred with BOB's findings on January 9, 2024.

THC correspondence and concurrence are included in **Appendix D**.

Direct and Indirect Impacts on Cultural Resources

Alternative A

There would be no excavation associated with construction of the rock breakwaters. Riprap would be placed on the existing bottom of East Bay at the approximate -1.5-foot contour, outside of documented locations of any sites and/or underwater anomalies in the vicinity of the project area.

No access channels will be dredged as part of the proposed action. Should an access channel(s) be deemed necessary, this would be permitted as a separate action(s) and be evaluated separately for compliance with Section 106 of the National Historic Preservation Act.

If human remains, shipwreck remains, or other cultural materials, are discovered anywhere in the survey area during construction, work should be halted within 50 m (164 ft) of the find until the THC can provide guidance concerning the discovery.

Because no identified historic properties, archeological sites, or underwater anomalies are present within the APE or have the potential to be adversely affected by the proposed project, USFWS believes that there would be no adverse effects to cultural resources. Conversely, the breakwaters would protect the integrity of the sites located inland of their locations by preventing further erosion of these areas.

Alternative B

There would be no direct impacts to cultural resources as a result of the no action alternative. Left unprotected, cultural resource sites along and inland of the Moody NWR shoreline would be subject to continued erosion, resulting in a loss of cultural resources.

Other Reasonably Foreseeable Impacts on Cultural Resources

There would be no adverse effects on cultural resources as a result of the proposed action, and construction of the breakwaters would help to protect the integrity of existing sites along and inland of the Moody NWR shoreline. For these reasons, the proposed action, in combination with past, ongoing, and reasonably foreseeable future actions (as described in the Other Reasonably Foreseeable Impacts discussion in **Section 7.1** Wildlife and Aquatic Species), should have overall beneficial effects on cultural resources through site preservation.

7.10 Refuge Management & Operations

Description of Affected Environment

As explained earlier, W. L. Moody, Jr. conveyed an undivided ½ fee interest in 14-acre Lake Surprise to USFWS as a gift in 1954. This area became Moody NWR on November 9, 1961. In 1982, the USFWS exchanged the fee interest in Lake Surprise with the Moody Foundation for a perpetual non-development conservation easement on a little over 3,500 acres of wetland habitat around Lake Surprise which comprises the current Moody NWR and is otherwise entirely privately-owned and managed.

Unlike most NWRs, Moody has no public access. There is no active USFWS management of this property, but it is protected from development through the afore-mentioned conservation easement. The landowners voluntarily agreed to preserve the natural values of the property for conservation (USFWS, 2023).

Direct and Indirect Impacts on Refuge Management & Operations

Alternative A

Current land uses and management would not be affected as a result of the proposed action. There would be no impacts to Refuge management or operations because the USFWS does not actively manage or operate within the Moody NWR. Construction of the breakwaters will protect the Moody NWR shoreline, resulting in protection and potentially enhancement of Refuge habitats. Protection of assets/resources important to Refuge management will have positive, long-term effects on all land uses.

Alternative B

There would be no impacts to Refuge management or operations because under the no action alternative because the USFWS does not actively manage or operate within the Moody NWR. Left alone, the Moody NWR East Bay shoreline would continue to erode, resulting in loss/conversion of habitat and long-term effects to land use.

Other Reasonably Foreseeable Impacts on Refuge Management & Operations

The proposed action would not contribute to other reasonably foreseeable effects on Refuge management or operations because the USFWS does not actively manage and/or operate within the Moody NWR.

7.11 Socioeconomics

Description of Affected Environment

The Moody NWR is located approximately 11.5 miles from the city of Anahuac, TX and 15 miles from the town of Winnie, TX. Anahuac's estimated population in 2021 was 1,980 with a median household income of \$56,573.00 between 2017 and 2021. Winnie's estimated population in 2021 was 3,162 (USBC, 2021a/c), and the estimated household income between 2014 and 2018 was \$46,560 (USCB, 2021a). The percentage of persons in poverty in Anahuac, TX between 2017 and 2021 was 24.2% (USCB, 2021b), which is more than double the U.S. poverty rate of 14.2 percent (USCB, 2021b); whereas this statistic for Winnie is 14.4%, (USCB, 2020c) which is at the national rate. Moody National Wildlife Refuge, established under a conservation easement, remains closed to the public while being managed for the utmost benefit of wildlife and habitat preservation. The refuge's coastal wetlands play a vital role in providing essential habitat for a wide range of birds, including resident, migrant, and wintering species, as well as offering refuge to various other wildlife and fish species (USFWS, 2023).

Direct and Indirect Impacts on Socioeconomics

Alternative A

The economic and social condition of the area would remain relatively the same; however, there would be short-term positive benefits to the local economy during the construction phase of the project, since labor and materials would be utilized locally, as much as possible. The construction labor force would need temporary housing and meals in the nearby towns of Anahuac and Winnie.

Alternative B

In the long-term, socioeconomic conditions would ultimately be affected due to the loss of potential revenue from the surrounding community if duck hunting and bird migration diminished due to loss/conversion of associated habitat(s). Losses due to impacts to the fisheries resource would impact both the recreational and commercial fishing sectors of the environment.

Other Reasonably Foreseeable Impacts on Socioeconomics

There would be no adverse effects on socioeconomics as a result of the proposed action. The proposed action, in combination with past, ongoing, and reasonably foreseeable future actions (as described in the Other Reasonably Foreseeable Impacts discussion in **Section 7.1** Wildlife and Aquatic Species), may have minimal overall beneficial effects on socioeconomics in the local area due to crew expenditures and/or addition of jobs for local laborers.

8.0 MITIGATION MEASURES AND CONDITIONS

Measures to mitigate and/or minimize adverse effects have been incorporated into the selected action. These measures include:

- Each of the breakwaters are designed with 30-foot-wide fish passes at 500-foot intervals to facilitate the movement of water, sediment, and aquatic species. Fish passes would be lined with rock (approximately 18 inches) to a 0.0 elevation to prevent excess scour at these locations.
- The permittee will instruct all personnel associated with the project of the potential presence of sea turtles and manatees in the project area.
- The permittee and all personnel associated with the project will be informed that there are civil and criminal penalties for harming, harassing, or killing sea turtles and/or manatees, which are protected under the Endangered Species Act.
- Vessel operators and crews will maintain a vigilant watch for protected species to avoid striking them and project activities would adhere to NOAA Fisheries Southeast Regional Office *Protected Species Construction Conditions* (NOAA 2021a) and *Vessel Strike Avoidance Measures* (NOAA, 2021b).
- As a general condition of operations, trash would be contained within work vessels and taken out daily to prevent trash from entering waterways and being ingested and/or resulting in entanglement of protected species.

- If dead or injured protected species are observed, either related or unrelated to the project, they will be reported to USFWS, the National Marine Fisheries Service's Protected Resources Division (727-824-5312), and the local authorized sea turtle stranding/rescue organization.

9.0 MONITORING

No long-term monitoring is necessary for this project. As long as the breakwaters are in place, they should function as planned, slowing erosion of the shoreline and offering protection to inland assets/resources within Moody NWR.

10.0 LIST OF SOURCES, AGENCIES, AND PERSONS CONSULTED

Tim Cooper, Refuge Complex Manager, Texas Chenier Plain NWR Complex
 Kristin Fritz, Moody NWR Manager
 Joseph Marty, Complex Biologist, Texas Chenier Plain NWR Complex
 Kevin Hartke - Regional Biologist, Ducks Unlimited
 Carter Coleman - Regional Engineer, Ducks Unlimited
 Amy Boergens, Texas Historical Commission
 Marie Archambeault, Texas Historical Commission

11.0 LIST OF PREPARERS

Tanya Matcek, President, DESCO Environmental Consultants
 Misti Little, Biologist and GIS Specialist, DESCO Environmental Consultants
 Ashley Chapman, Principal Investigator/Archaeology, DESCO Environmental Consultants
 Sidney Cardenas, Biologist, DESCO Environmental Consultants
 Tim Cooper, Refuge Complex Manager, Texas Chenier Plain NWR Complex
 Kristin Fritz-Grammond, Refuge Manager, Anahuac National Wildlife Refuge
 Joseph Marty, Complex Biologist, Texas Chenier Plain NWR Complex

12.0 STATE COORDINATION

The USFWS and other project proponents coordinated closely with the THC regarding cultural resources and with Texas Parks and Wildlife Department regarding proposed oyster reef projects in the vicinity of the breakwater alignments. A history of state coordination efforts, by date, is provided below:

May 13, 2023 - USFWS submitted a project description and information on cultural resources to the THC to initiate Section 106 consultation.

April 11, 2023 – THC concurred that no historic properties are present or affected by the project, as proposed, but required an archeological remote-sensing survey of the underwater project area

to identify any submerged cultural resources and requested additional information about a burial site documented between Breakwater #1 and the shoreline, outside of the project APE.

May – June, 2023 – DESCO Archaeologist, Ashley Chapman, reached out to Marie Archambeault and Amy Boergens via telephone and email multiple times on behalf of USFWS to clarify questions/concerns about burial site documented outside of the project APE.

July 5, 2023 – DESCO Archaeologist, Ashley Chapman, provided additional information to THC on behalf of USFWS (via email to Amy Boergens), documenting site 41CH278 well outside of the project's APE.

July 25, 2023 – USFWS provided additional information to THC (via eTRAC) documenting site 41CH278 well outside of the project's APE.

August 24, 2023 – THC responded to USFWS requesting additional information concerning site 41CH278 from the 1994 report by William Louis Fullen, "Archeological Recovery of a Human Burial at Site 41CH278, Upper Drum Village Reef in East Bay, Chambers County, Texas." The THC indicated the report should include additional descriptions regarding the location, interpretation of site formation, and other observations needed to understand the effects of the proposed undertaking on the site and maps should be revised to provide metric scales for easier interpretation of distances in meters from proposed project activities.

August 24, 2023 – DESCO Archaeologist, Ashley Chapman, requested a copy of the report "Archeological Recovery of a Human Burial at Site 41CH278, Upper Drum Village Reef in East Bay, Chambers County, Texas" from THC (via email to Marie Archambeault) because it was not available through the Atlas or in the TARL files, but the Atlas indicated the report was on file at THC.

August 24, 2023 – Marie Archambeault responded to Ashley Chapman's request, indicating that she was afraid that was the case and would have to recall the volume from storage. She made a request to do so, obtained the document, and sent it to Mr. Chapman the same day.

August 30, 2023 – DESCO Archaeologist, Ashley Chapman, emailed Marie Archambeault thanking her for the quick turnaround on the 1994 report and indicating that, after review of the report, no new additional relevant descriptions regarding the location, interpretation of site formation, and other observations needed to understand the effects of the proposed undertaking were found apart from what he found within the TARL sources, (i.e. maps and site descriptions). He indicated that reference maps have been revised to provide metric scales for the interpretation of distances in meters from proposed project activities. He indicated that, apart from the changes that THC requested regarding the 1994 report and map scales, he believed that he had enough information to support the idea that the project's footprint will not impact resources related to site and asked if Marie had any other suggestions or issues before USFWS resubmitted via eTRAC.

September 5, 2023 – Marie Archambeault responded to Ashley Chapman with a list of several pieces of new information that she wanted discussed in the report. She also requested that Mr. Chapman provide the distance from the southernmost known point of the site to the northernmost

impact zone of the of the currently proposed activities. She asked Mr. Chapman to discuss the possibility of a different location of the site along the shoreline, and the distance of the current project from either location. She also asked him to discuss whether the proposed project will require any ground disturbance or if riprap will be placed. If the latter, how far out will rip rap extend. What erosion is expected on either side of the riprap. Marie also requested any additional information on the location of the Upper Drum Village Oyster Reef, if available, and for Mr. Chapman to discuss projects impacts to the reef.

September 8, 2023 – DESCO Archaeologist, Ashley Chapman, and Project Principal, Tanya Matcek, participated in a Microsoft Teams call with Marie Archambeault to clarify her additional information request via email on September 5, 2023, as Mr. Chapman believed that much of the information requested in the email was already provided with USFWS’ original submittal and submittal of additional information on July 25, 2023. Marie clarified that she wanted the additional documentation for consideration of all potential locations of Site 41CH278 to document that it was well outside of the APE and would not be affected by project construction.

October 3, 2023 – Bob Hydrographics (BOB) submitted an Antiquities Permit application for the THC to facilitate the underwater remote sensing survey of the project area.

October 5, 2023 – THC issued the Antiquities Permit for the underwater remote sensing survey of the project area.

October 6, 2023 – BOB completed a marine geophysical survey of the APE.

October 12, 2023 – USFWS submitted (via eTRAC) the additional information compiled by Ashley Chapman in response to Marie Archambeault’s September 5, 2023, request, documenting site 41CH278 well outside of the project’s APE based all documented sources of information.

November 1, 2023 – THC concurred with DESCO/USFWS’s findings that the project would have no effect on terrestrial cultural resources, including site 41CH278.

December 11, 2023 – BOB submitted a draft report of finding to the THC for review.

January 9, 2024 – THC accepted BOB’s report as final and concurred with BOB’s findings.

13.0 TRIBAL CONSULTATION

USFWS sent a letter containing a project description, cultural resources information, and a request for comments/concerns to the following tribal representations on January 17, 2024:

1. Alabama Coushatta Tribe of Texas
2. Alabama Quassarte Tribal Town
3. Apache Tribe of Oklahoma
4. Coushatta Tribe of Louisiana
5. Tonkawa Tribe of Oklahoma

6. Wichita and Affiliated Tribes
7. Comanche Nation of Oklahoma

No tribal comments were received in response to the request for comments/concerns.

14.0 OTHER APPLICABLE STATUTES, EXECUTIVE ORDERS & REGULATIONS

Other statutes, executive orders, and/or regulations that are applicable to the proposed action and were considered during its development are included in **Appendix B**.

15.0 REFERENCES

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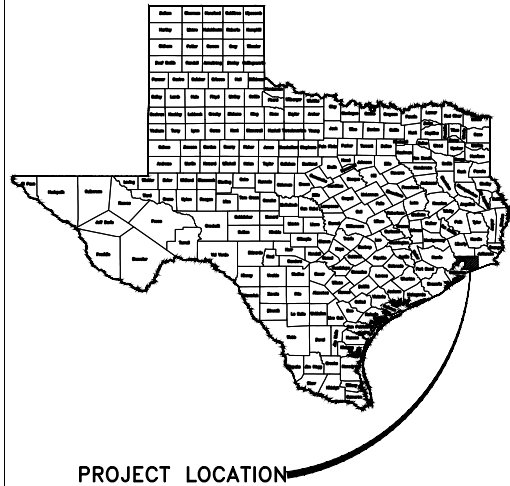
APPENDIX A

Construction Drawings



DUCKS UNLIMITED, INC. MOODY NWR - SHORELINE PROTECTION

CHAMBERS COUNTY IN COOPERATION WITH
U.S. FISH & WILDLIFE SERVICE



PROJECT LOCATION



INDEX

- 1 COVER SHEET
- 2 PROJECT VICINITY
- 3 BREAKWATER #1 PLAN STA. 0+00 - 7+00
- 4 BREAKWATER #1 PLAN STA. 7+00 - 16+00
- 5 BREAKWATER #1 PLAN STA. 16+00 - 25+00
- 6 BREAKWATER #1 PLAN STA. 25+00 - 31+43
- 7 BREAKWATER #2 PLAN STA. 0+00 - 7+00
- 8 BREAKWATER #2 PLAN STA. 7+00 - 16+50
- 9 BREAKWATER #2 PLAN STA. 16+50 - 28+17.28
- 10 BREAKWATER #3 PLAN STA. 0+00 - 6+00
- 11 BREAKWATER #3 PLAN STA. 6+00 - 16+00
- 12 BREAKWATER #3 PLAN STA. 18+50 - 26+00
- 13 BREAKWATER #3 PLAN STA. 26+00 - 35+01.87
- 14 TYPICAL DETAILS

CAUTION:
The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All changes to the plans must be in writing and must be approved by the preparer of these plans.

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PROJECT NUMBER: DU-TX-249-1

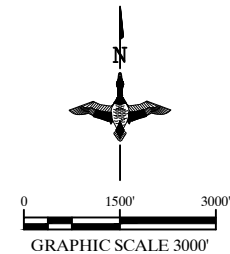
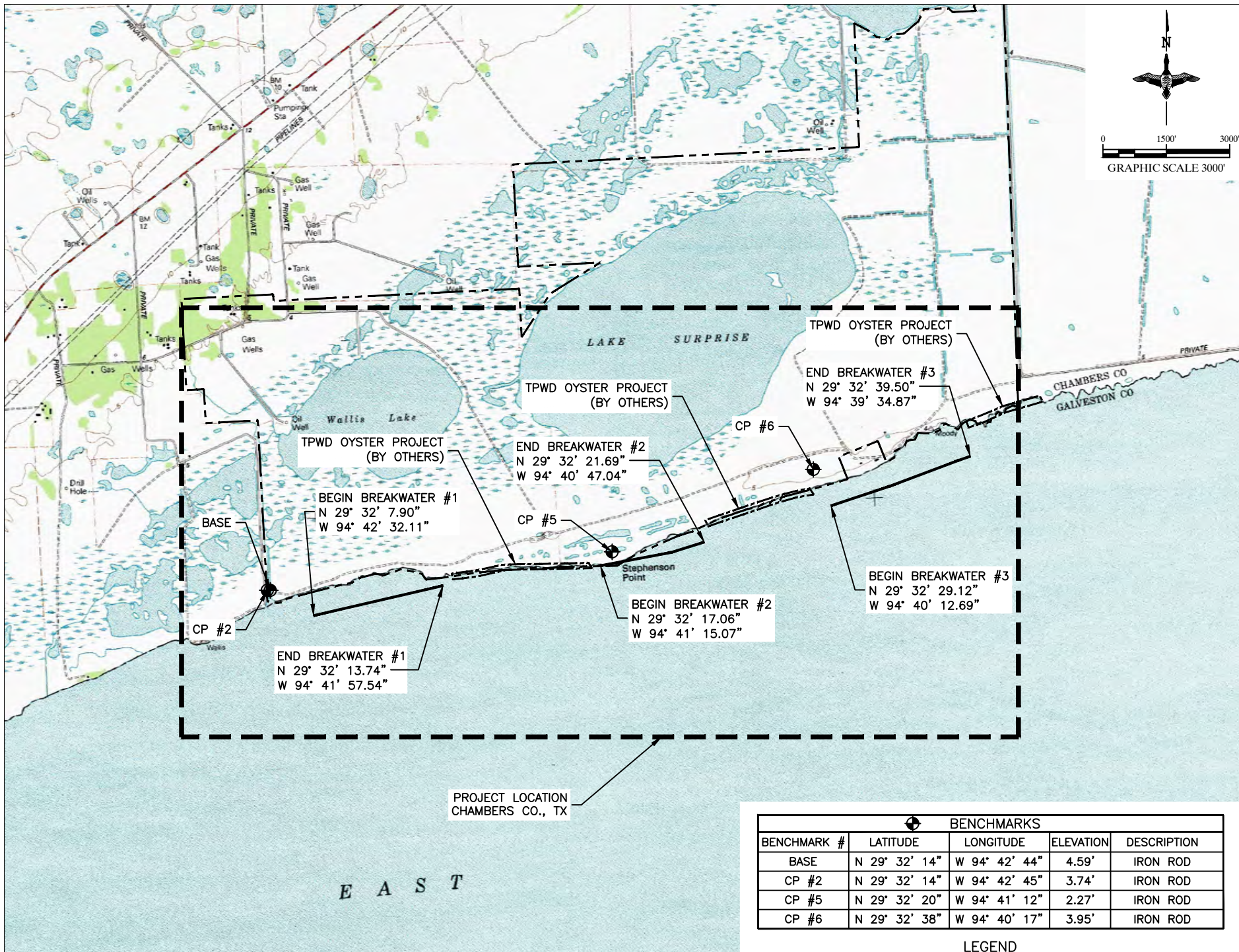
MOODY NWR - SHORELINE PROTECTION
COVER SHEET

DATE: 1/23

DUCKS UNLIMITED, INC.
SOUTHERN REGIONAL OFFICE
193 Business Park Drive, Suite E
Ridgeland, MS 39157

SHEET NUMBER

1



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MOODY NWR - SHORELINE PROTECTION
PROJECT VICINITY
DATE: 1/23

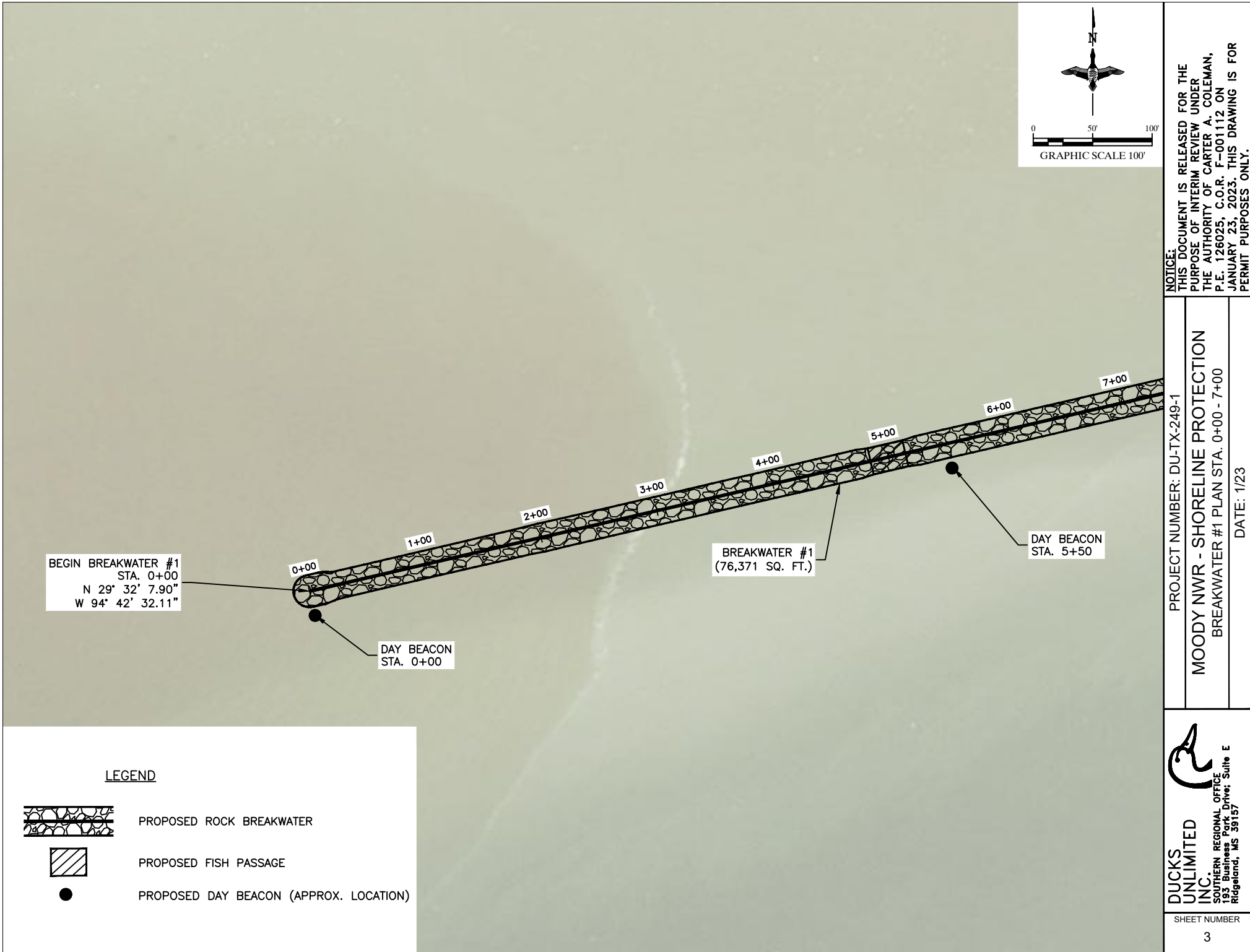
DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
193 Business Park Drive, Suite E
Ridgeland, MS 39157

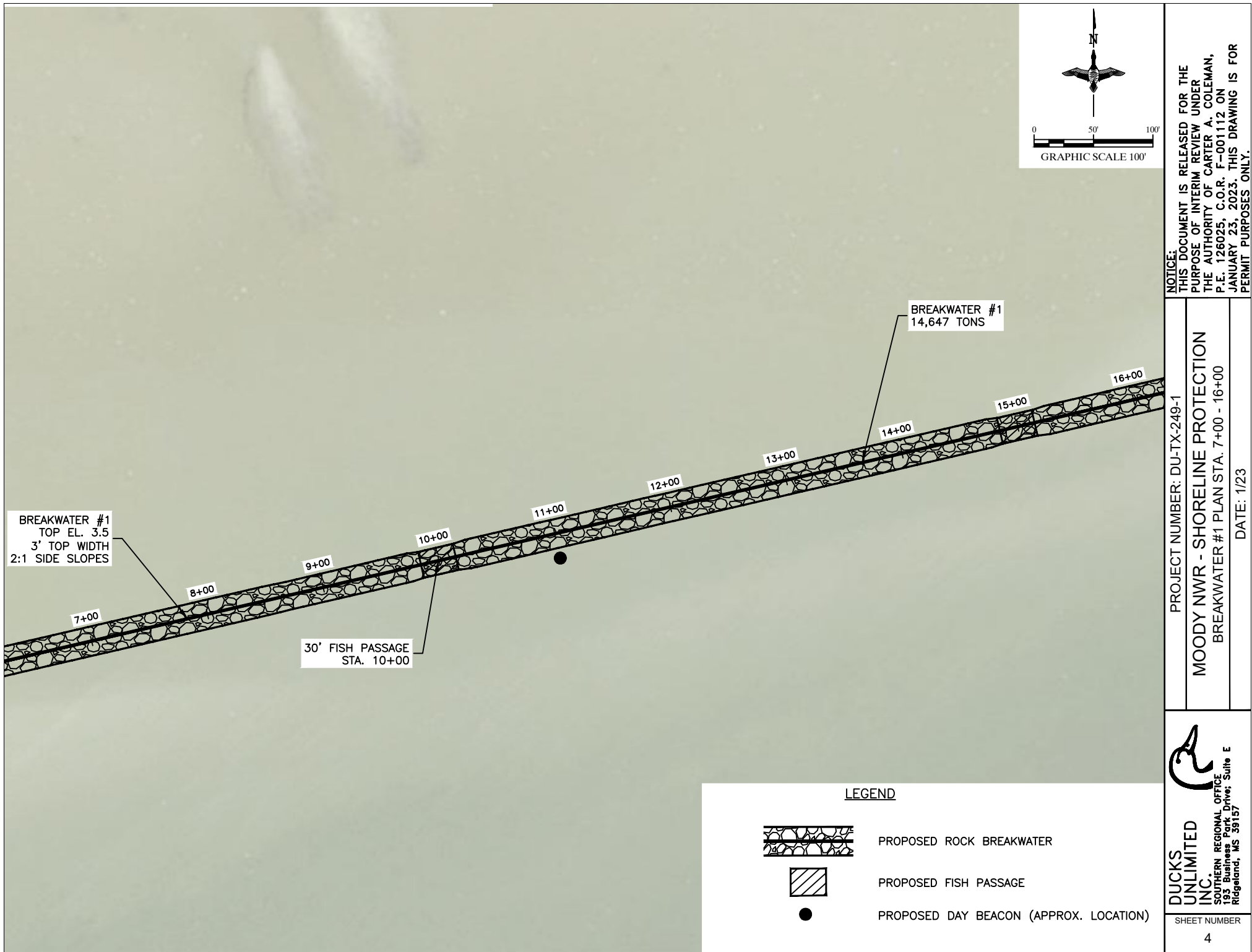
SHEET NUMBER
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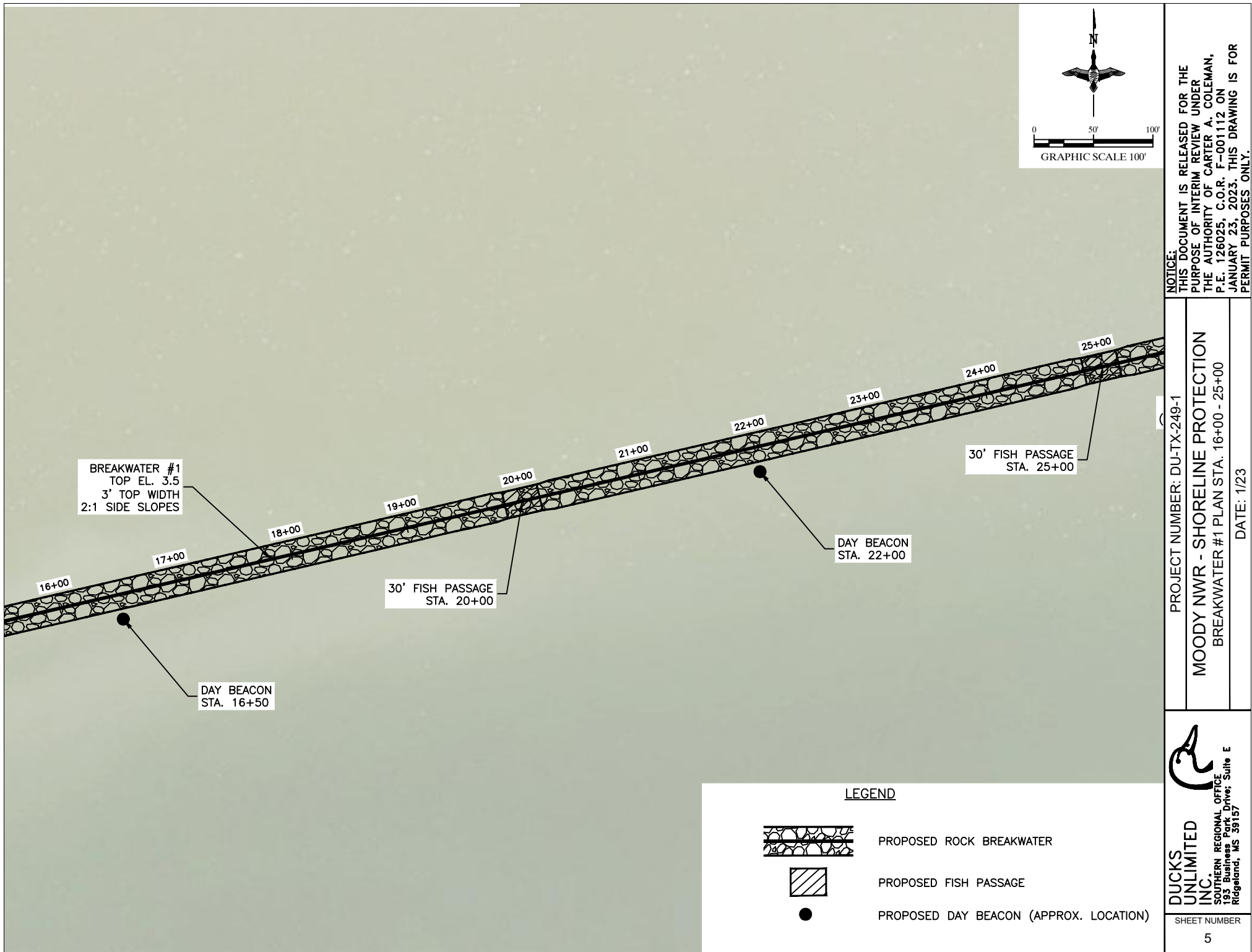
BENCHMARKS				
BENCHMARK #	LATITUDE	LONGITUDE	ELEVATION	DESCRIPTION
BASE	N 29° 32' 14"	W 94° 42' 44"	4.59'	IRON ROD
CP #2	N 29° 32' 14"	W 94° 42' 45"	3.74'	IRON ROD
CP #5	N 29° 32' 20"	W 94° 41' 12"	2.27'	IRON ROD
CP #6	N 29° 32' 38"	W 94° 40' 17"	3.95'	IRON ROD

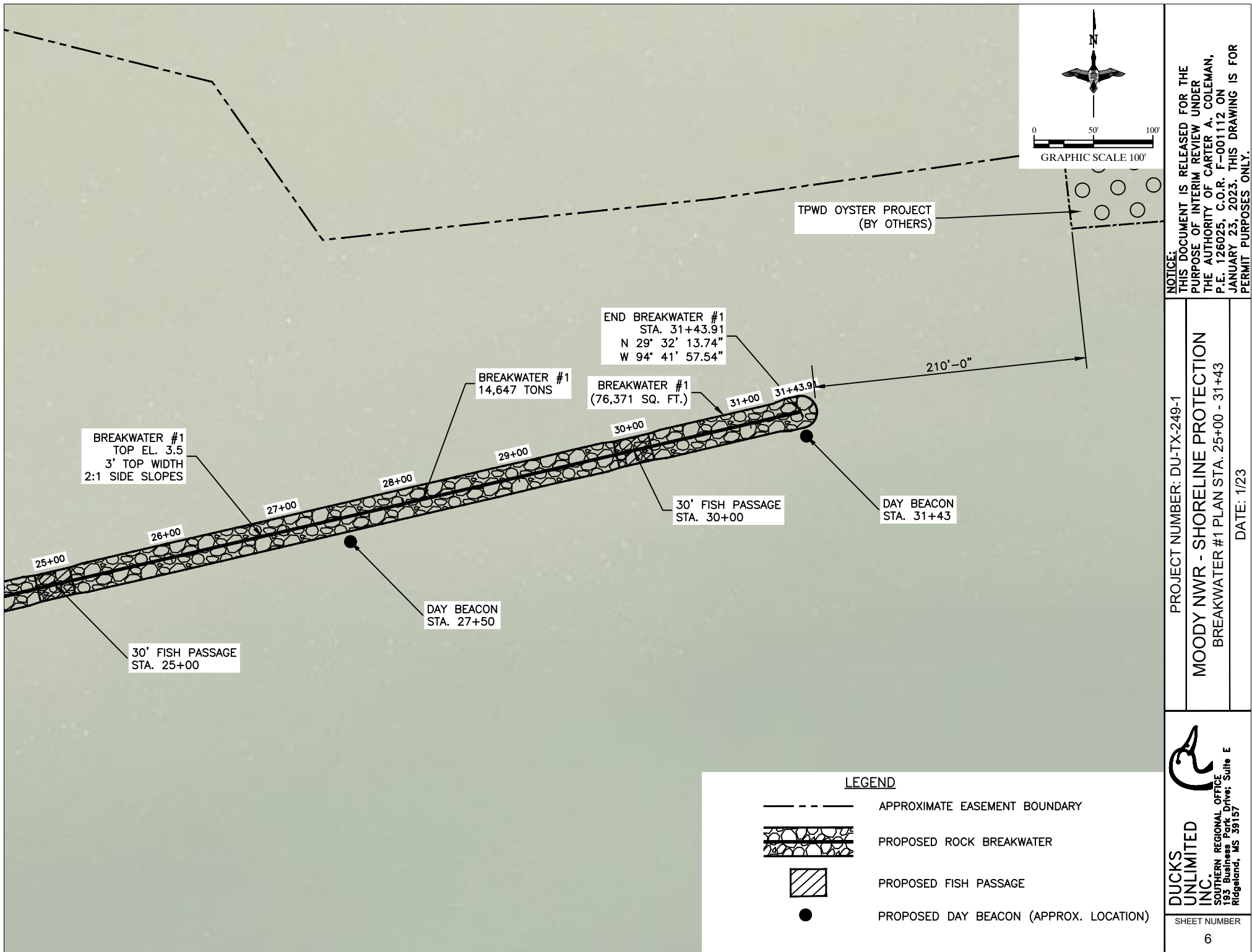
LEGEND

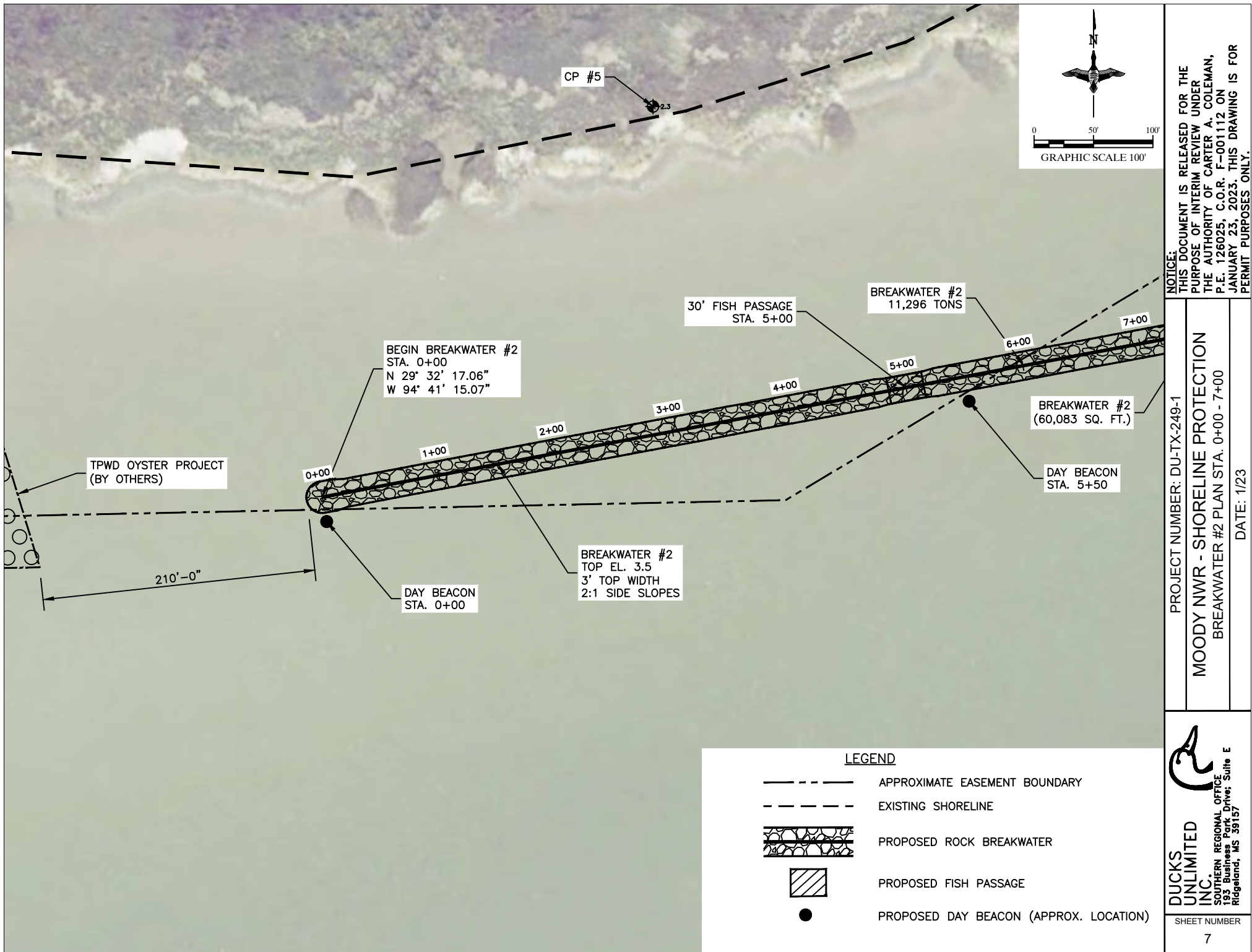
- APPROXIMATE EASEMENT BOUNDARY
- TPWD OYSTER PROJECT (BY OTHERS)

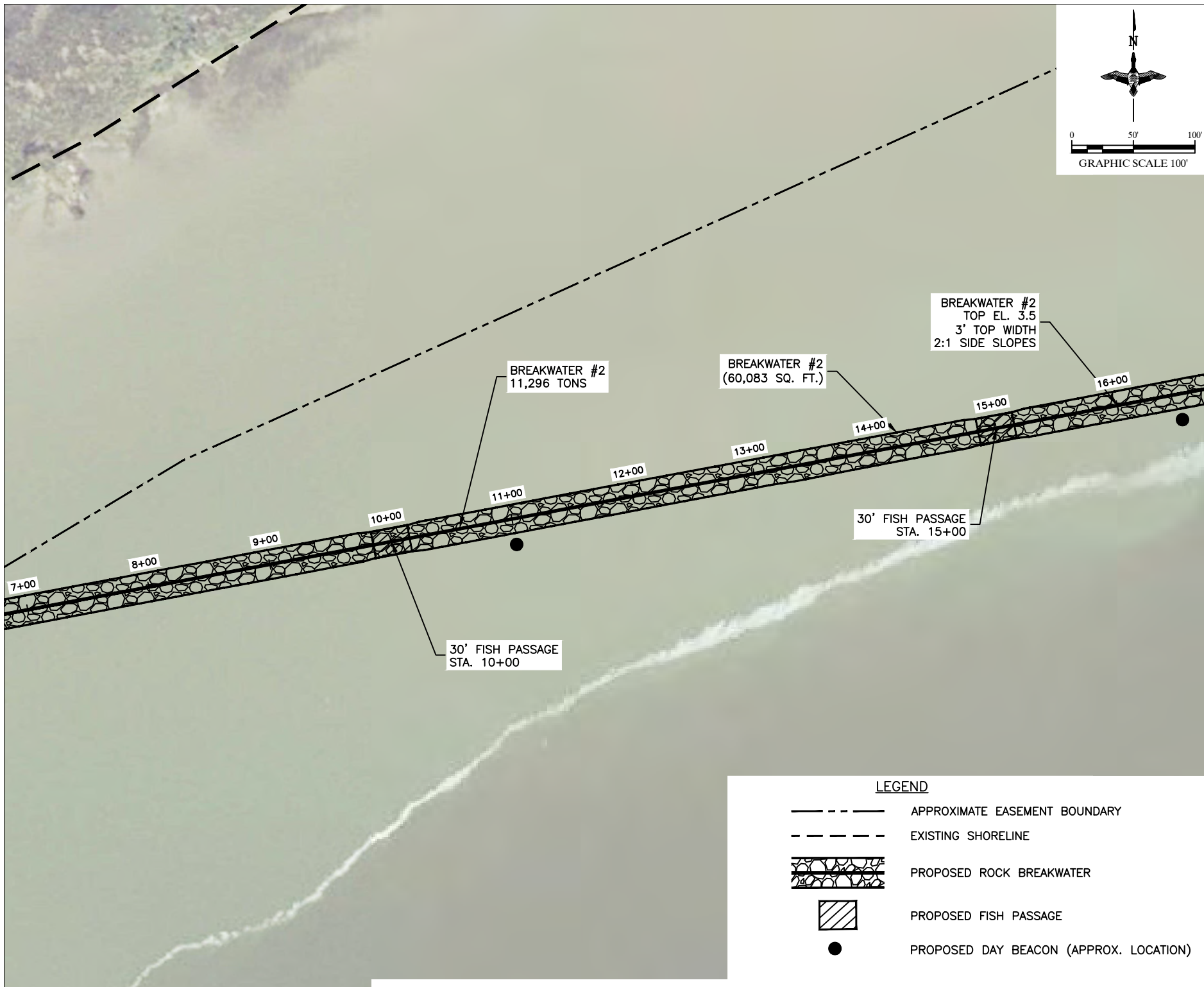












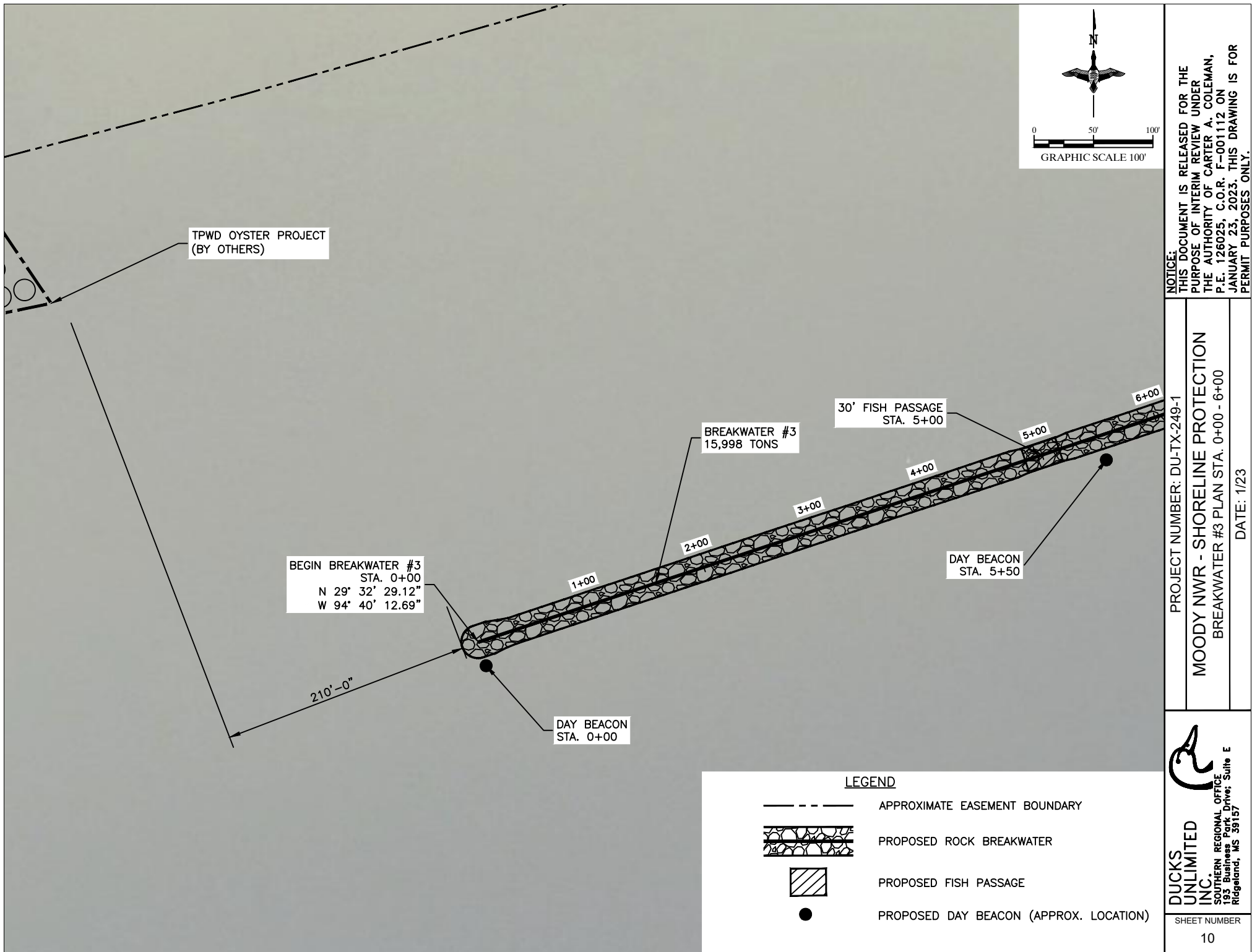
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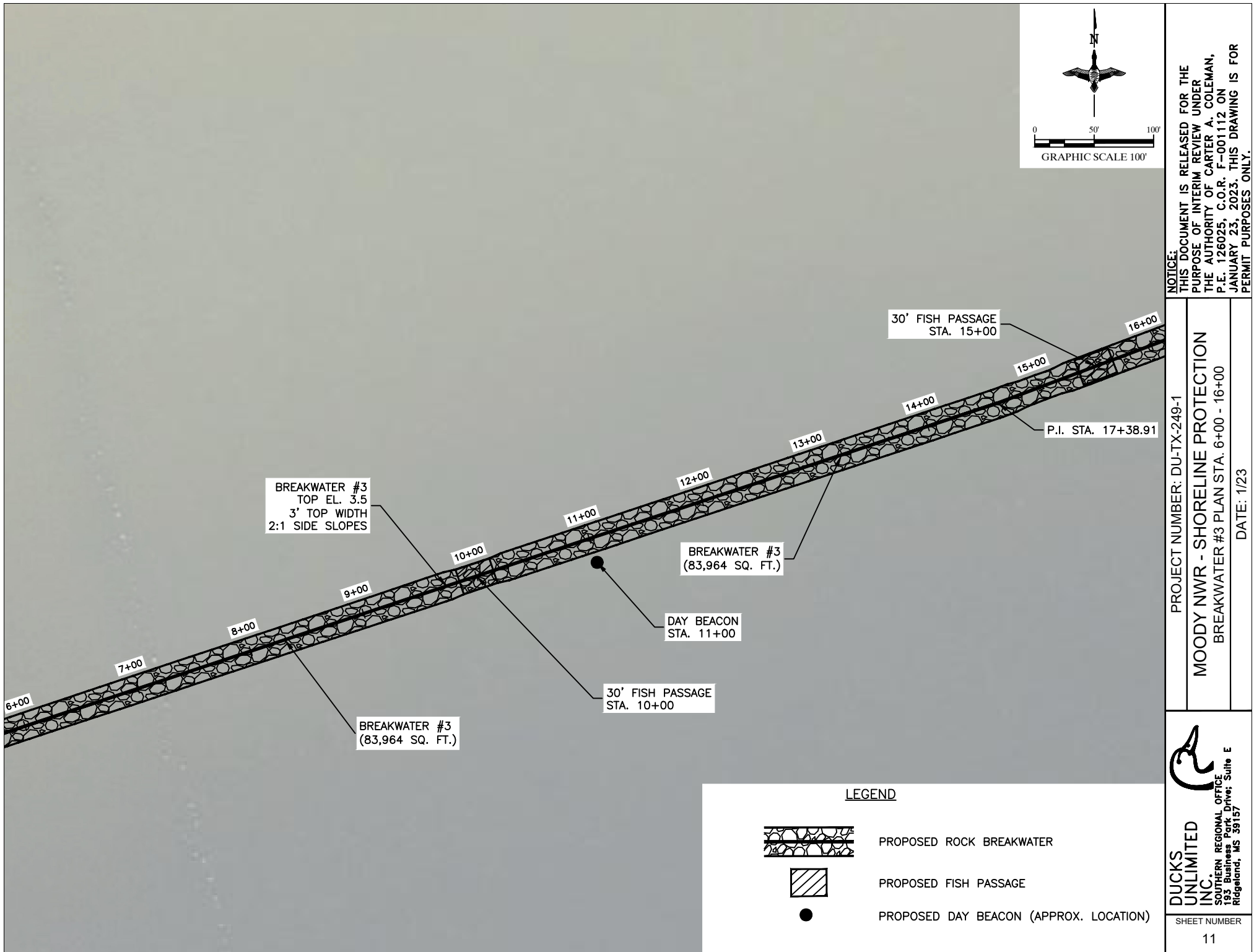
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MOODY NWR - SHORELINE PROTECTION
BREAKWATER #2 PLAN STA. 9+00 - 16+50
DATE: 1/23

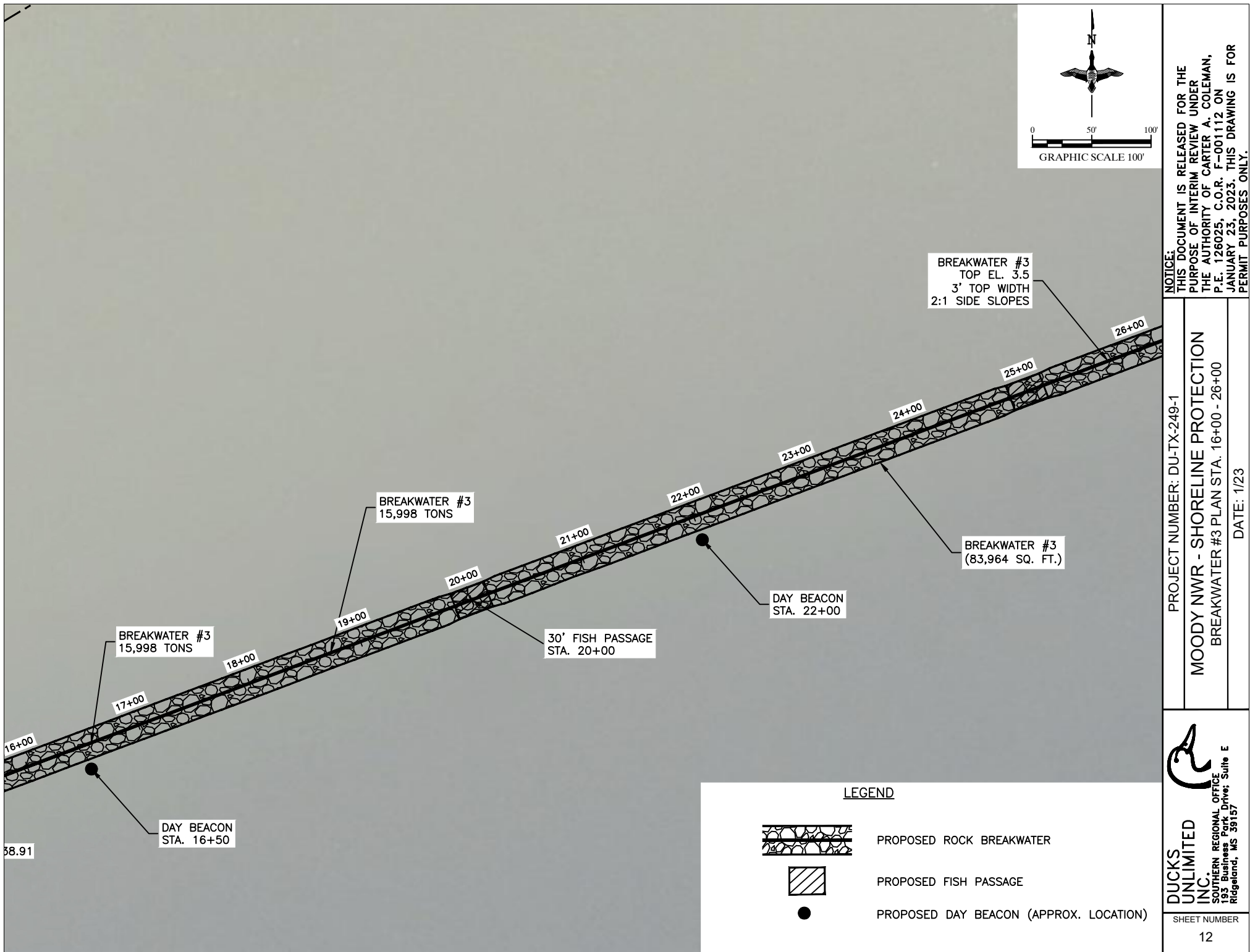
DUCKS UNLIMITED INC.
SOUTHERN REGIONAL OFFICE
193 Business Park Drive, Suite E
Ridgeland, MS 39157
SHEET NUMBER
8

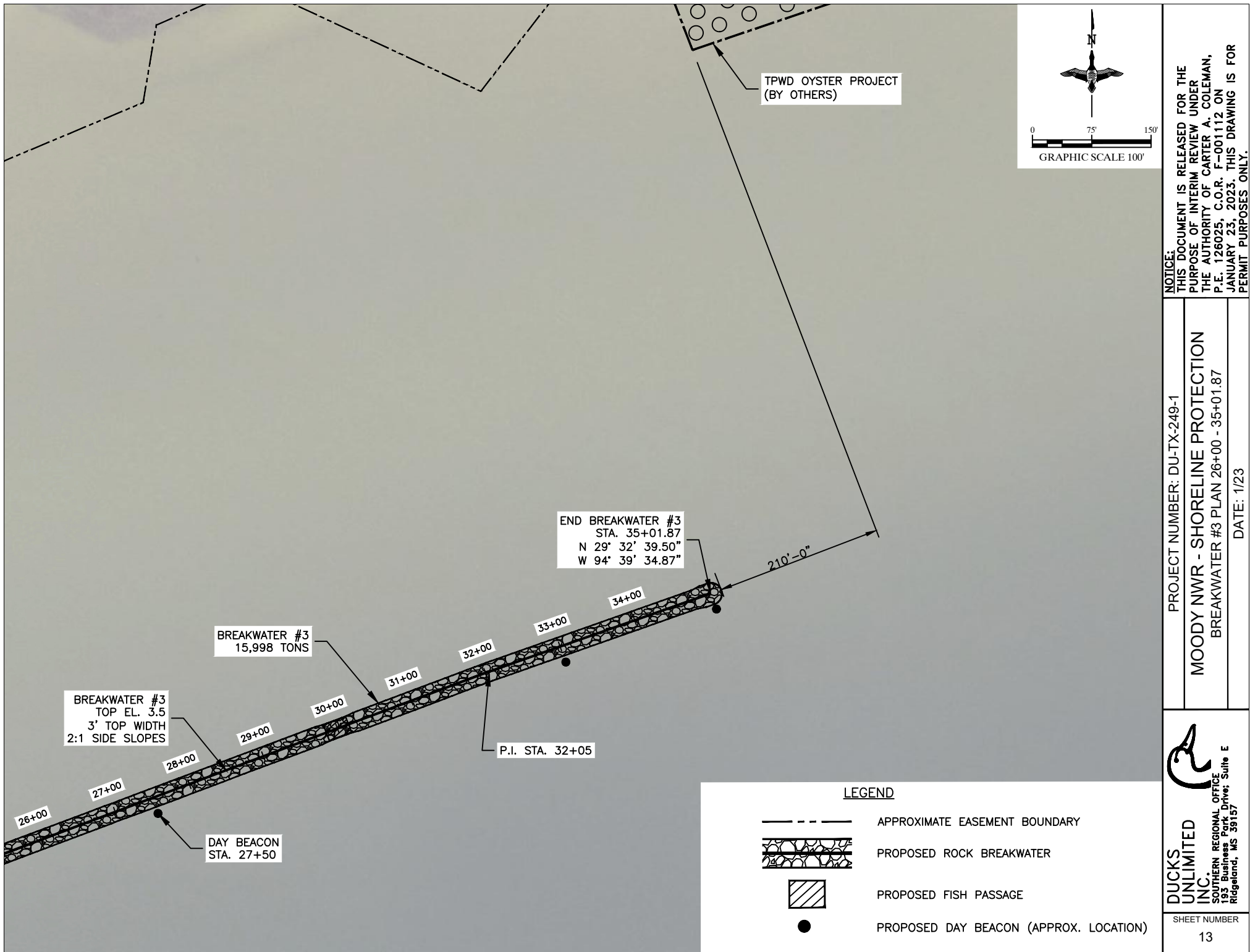
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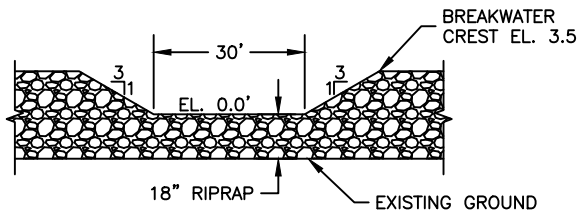
-  APPROXIMATE EASEMENT BOUNDARY
-  EXISTING SHORELINE
-  PROPOSED ROCK BREAKWATER
-  PROPOSED FISH PASSAGE
-  PROPOSED DAY BEACON (APPROX. LOCATION)





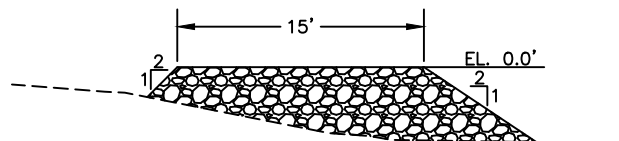






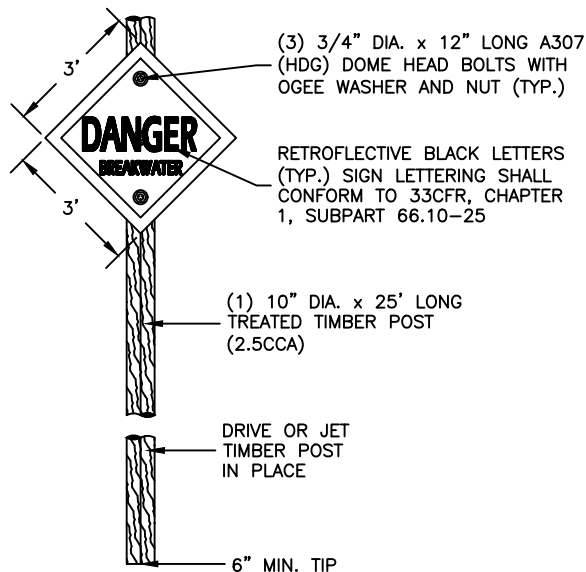
PROFILE OF FISH PASSAGE

NOT TO SCALE
FISH PASSAGES SHALL OCCUR EVERY 400 L.F. ON CENTER
THROUGHOUT THE ENTIRE BREAKWATER



TYPICAL SECTION OF FISH PASSAGE

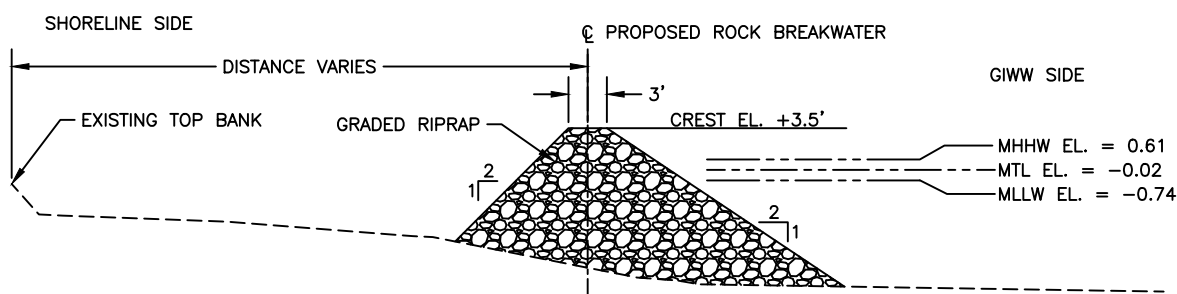
NOT TO SCALE
FISH PASSAGES SHALL OCCUR EVERY 400 L.F. ON CENTER
THROUGHOUT THE ENTIRE BREAKWATER



TYPICAL DETAIL - DAY BEACON

NOT TO SCALE

NOTE:
BREAKWATER #1 - 9 TOTAL DAY BEACONS TO BE INSTALLED.
DAY BEACONS ARE TO BE LOCATED AT THE STARTING POINT,
ENDING POINT, & EVERY 550' O.C. OF THE ROCK BREAKWATER.
BREAKWATER #2 - 7 TOTAL DAY BEACONS TO BE INSTALLED.
DAY BEACONS ARE TO BE LOCATED AT THE STARTING POINT,
ENDING POINT, & EVERY 550' O.C. OF THE ROCK BREAKWATER.
BREAKWATER #3 - 9 TOTAL DAY BEACONS TO BE INSTALLED.
DAY BEACONS ARE TO BE LOCATED AT THE STARTING POINT,
ENDING POINT, & EVERY 550' O.C. OF THE ROCK BREAKWATER.



TYPICAL SECTION - ROCK BREAKWATER

NOT TO SCALE

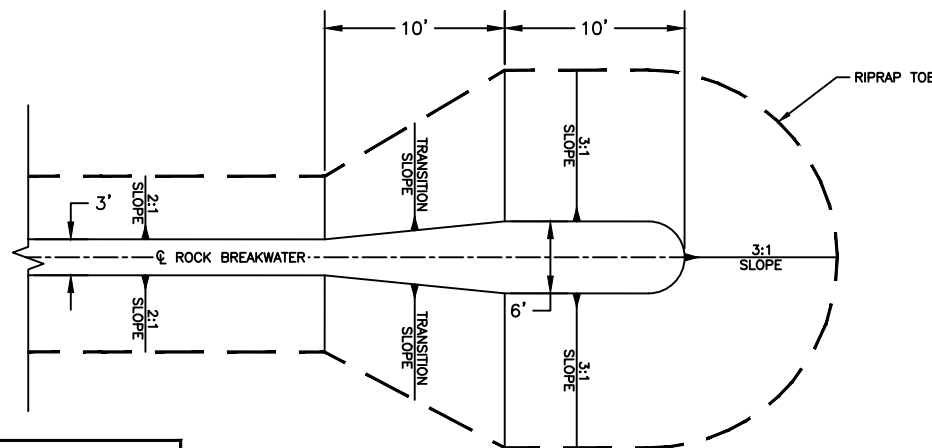
NOTE:

1. WATER ELEVATIONS BASED ON ROLLOVER PASS STAGE GAUGE 01/01/2017 - 12/31/2018.
2. ALL ELEVATIONS ARE NAVD 88

BREAKWATER INFORMATION	
BREAKWATER #1 AREA	76,371 SQ. FEET
BREAKWATER #1 QUANTITIES	8,137 C.Y.
BREAKWATER #1 QUANTITIES	14,647 TONS
BREAKWATER #2 AREA	60,083 SQ. FEET
BREAKWATER #2 QUANTITIES	6,275 C.Y.
BREAKWATER #2 QUANTITIES	11,296 TONS
BREAKWATER #3 AREA	83,964 SQ. FEET
BREAKWATER #3 QUANTITIES	8,888 C.Y.
BREAKWATER #3 QUANTITIES	15,998 TONS

NOTE:

1. 1.8 TONNAGE FACTOR USED IN ROCK QUANTITIES CALCULATIONS.



DETAIL - OPEN WATER ROCK BREAKWATER TERMINATION

NOT TO SCALE

NOTE: GRADED RIP RAP IS COE 650# GRADATION.

GRADATION COE 650# STONE GRADATION	
PARTICLE MASS. lb.	% LIGHTER
280-650	100
130-280	50
40-130	25
0-40	5 MAX.

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PROJECT NUMBER: DU-TX-249-1

MOODY NWR - SHORELINE PROTECTION

TYPICAL DETAILS

DATE: 1/23

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UNLIMITED
INC.**
SOUTHERN REGIONAL OFFICE
193 Business Park Drive, Suite E
Ridgeland, MS 39157

SHEET NUMBER

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APPENDIX B

Other Applicable Statutes, Executive Orders, & Regulations

APPENDIX B

OTHER APPLICABLE STATUTES, EXECUTIVE ORDERS & REGULATIONS

STATUTES, EXECUTIVE ORDERS, AND REGULATIONS	
Cultural Resources American Indian Religious Freedom Act, as amended, 42 U.S.C. 1996 – 1996a; 43 CFR Part 7 Antiquities Act of 1906, 16 U.S.C. 431-433; 43 CFR Part 3 Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa – 470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7 National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810 Paleontological Resources Protection Act, 16 U.S.C. 470aaa – 470aaa-11 Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001-3013; 43 CFR Part 10 Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971) Executive Order 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)	Compliance with the National Historic Preservation Act of 1966, as amended, requires identification of all NRHP-listed or NRHP-eligible properties in the project’s Area of Potential Effect (APE) and development of mitigation measures for those resources adversely affected in coordination with the Texas State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation. The State Historic Preservation Officer (SHPO) of the Texas Historical Commission is responsible for overseeing Section 106 consistency within the State of Texas. DESCO reviewed records maintained by the Texas Archeological Research Laboratory (TARL) and the online Texas Historic Sites Atlas within a 1-mile radius of the project area. Site file research resulted in the finding of 10 known cultural resources sites, one archaeological project area (8500019347) and two underwater archaeological surveys (8700000213 and 8700000214). None of the sites are within the project’s Area of Potential Effect (APE). One site, 41CH278, a human burial site recorded in 1987, is located between Breakwater #1 and the shoreline of the Moody NWR but is documented well outside of the project’s APE. BOB Hydrographics (BOB) completed an archaeological remote-sensing survey of the breakwater footprint plus a 50-meter buffer on October 6, 2023, and found no geophysical targets to recommend for avoidance or believed to meet criteria for State Antiquities Landmark or NRHP eligibility. Section 106 Consultation with THC was initiated by USFWS on March 13, 2023, and was completed on January 9, 2024. See Appendix D for documentation of THC concurrences. The USFWS initiated tribal consultation on January 17, 2024, and no comments/concerns were received from the tribes.
Fish & Wildlife Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450 Fish and Wildlife Act of 1956, 16 U.S.C. 742 a-m	The USFWS has completed an Intra-Service Section 7 Biological Evaluation to facilitate interagency consultation procedures under Section 7 of the Endangered Species Act for listed species under the jurisdiction of the USFWS. The USFWS initiated informal programmatic consultation with NMFS on August 31, 2022, for potential effects to marine species protected by ESA due to the carrying out and/or funding of shoreline stabilization, including construction of breakwaters, and other projects (SERO-2022-00591). NMFS concurred with USFWS’s findings of not likely to adversely affect NMFS ESA-listed species on September 7, 2022. Construction of the Moody NWR Breakwaters will comply with the conservation measures included in the programmatic consultation with NMFS (Attachment C). The Fish and Wildlife Coordination Act directs Federal agencies to consult with USFWS, NMFS, and State agencies before authorizing alterations to water bodies, for any purpose, including navigation, and by any public or

Migratory Bird Treaty Act, as amended, 16 U.S.C. 703-712; 50 CFR Parts 10, 12, 20, and 21 Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001) The Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA)	private agency under Federal permit or license. USFWS, NMFS, and TPWD are being provided copies of this Draft EA for review and comment. There should be no adverse impacts to migratory birds, as the project would be constructed from and within open water. Should birds be displaced by noise or presence of crews during operations, there is a multitude of adjacent suitable habitat for them to move into. USFWS initiated consultation with NMFS under the Magnuson-Stevens Act on November 15, 2023, and received confirmation on November 20, 2023, that NMFS had no issues with the project moving forward, EFH consultation requirements have been satisfied, and no further coordination with the NMFS Habitat Conservation Division is required for the proposed project.
Natural Resources Clean Air Act, as amended, 42 U.S.C. 7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23 Executive Order 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999)	The Clean Air Act (CAA) contains provisions under the General Conformity Rule to ensure that actions taken by Federal agencies in air quality nonattainment and maintenance areas do not interfere with a state's plans to meet national standards for air quality. Under the General Conformity Rule (the Rule), Federal agencies must work with State, Tribal and local governments in a nonattainment or maintenance areas to ensure that Federal actions conform to the air quality plans established in the applicable state or tribal implementation plan. The regulations codifying the Rule under 40 CFR Part 93, Subpart B, specify that no Federal agency shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform to an applicable implementation plan. Construction emissions would be minimal and would not adversely affect air quality. Construction equipment would be washed prior to entry into the area to prevent the spread of invasive species.
Water Resources Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et seq.; 15 CFR Parts 923, 930, 933 Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S.C. 1251 et seq.; 33 CFR Parts 320-330; 40 CFR Parts 110, 112, 116, 117, 230-232, 323, and 328 Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.; 33 CFR Parts 114, 115, 116, 321, 322, and 333 Executive Order 11988 – Floodplain Management, 42 Fed. Reg. 26951 (1977) Executive Order 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977)	Submerged tracts of land owned by the State of Texas and administered by the Texas General Land Office (GLO) are present within the project area. Texas Coastal Management Program (CMP) Consistency statements were submitted to the USACE as part of permit application. The USFWS will obtain any necessary permissions from the GLO to construct the breakwaters. The Clean Water Act (Section 404) and Rivers and Harbors Act (Section 10) afford protection of non-tidal and tidal waters of the United States. The USFWS obtained a Letter of Permission for construction of the Moody NWR Breakwaters from the USACE Galveston District. The applicant will comply with the terms and conditions of the USACE permit. State water quality certification through Section 401 of the Clean Water Act was obtained from the TCEQ through the USACE permit process. The proposed action has been analyzed for compliance with Executive Order (EO) 11990, Protection of Wetlands and 11988, Floodplain Management. The project will be constructed from and in open water; therefore, no wetlands will be impacted. The project would help to protect wetlands that offer flood protection to interior areas and, therefore, any impacts to floodplains as a result of the proposed action would be beneficial.

APPENDIX C
Endangered Species Act Section 7
Documentation

USFWS REGION 2

Intra-Service Section 7 Biological Evaluation Form

CONTACT INFORMATION

Originating Person:

Kristin Fritz, Moody National Wildlife Refuge

Email:

kristin_fritz@fws.gov

Telephone Number:

409-267-3337

GENERAL PROJECT INFORMATION

Consultation Initiation Type:

- ☒ Informal or Formal Intra-Service Submission
- ☐ Director's Order 194 Submission

On April 17, 2008, the Deputy Director issued Director's Order (DO) 194, which gives Regional Directors the authority to delegate Intra-Service ESA section 7 consultation determinations to non-ES project leaders. The Regional Director could delegate signature authority delegation for informal (NLAA) Intra-Service section 7 consultation concurrence from the ES program to officers in non-ES programs, at the Regional Director's discretion. The purpose of extending authority delegation is to streamline the consultation process. On August 30, 2019, Region 2 extended this authority to non-ES programs, including the National Wildlife Refuge System. Thus, non-ES programs have the authority to forgo consultation with ES for "may affect, not likely to adversely affect" determinations. The responsibilities of ES and the non-ES program are outlined in *Southwest Regional Guidance: Delegating Authority for Intra-Service Section 7 Consultation Determinations*.

Under the authority provided by DO194, the submission of this Biological Evaluation is the signatory's acknowledgement that the effects from the proposed action are insignificant or discountable for identified listed, proposed, or candidate species. In addition, the signatory acknowledges that the proposed action does not destroy or adversely modify designated or proposed critical habitat. "Destruction of adverse modification" means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed or proposed species (50 CFR §402.02).

IPaC Information:

Did you use IPaC to generate an official species list? ☒ YES ☐ NO

Consultation Number:

2023-0044752 - (Species List Obtained on April 15, 2025)

Region:

Region 2 - Southwest

Service Program and Geographic Area or Station Name:

Service Program: USFWS

Station Name: Texas Chenier Plain NWR Complex, Moody NWR, Chambers County, Texas.

PROJECT LOCATION INFORMATION**Project Name:**

Minimizing Erosional Loss on Moody National Wildlife Refuge with Breakwaters or Adapted Reef Structure Placement in East Bay

Location:

Section Township, and Range:

N/A

Coordinates for Project Centroid:

<u>NAD 1983, Texas State Plane, South Central Zone</u>			
	<u>Breakwater #1</u>	<u>Breakwater #2</u>	<u>Breakwater #3</u>
<u>Beginning</u>	<u>N 29° 32' 7.90"</u> <u>W 94° 42' 32.11"</u>	<u>N 29° 32' 21.69"</u> <u>W 94° 40' 47.04"</u>	<u>N 29° 32' 39.50"</u> <u>W 94° 39' 34.87"</u>
<u>End</u>	<u>N 29° 32' 13.74"</u> <u>W 94° 41' 57.54"</u>	<u>N 29° 32' 17.06"</u> <u>W 94° 41' 15.07"</u>	<u>N 29° 32' 29.12"</u> <u>W 94° 40' 12.69"</u>

County:

Chambers County, Texas

Distance to Nearest Town:

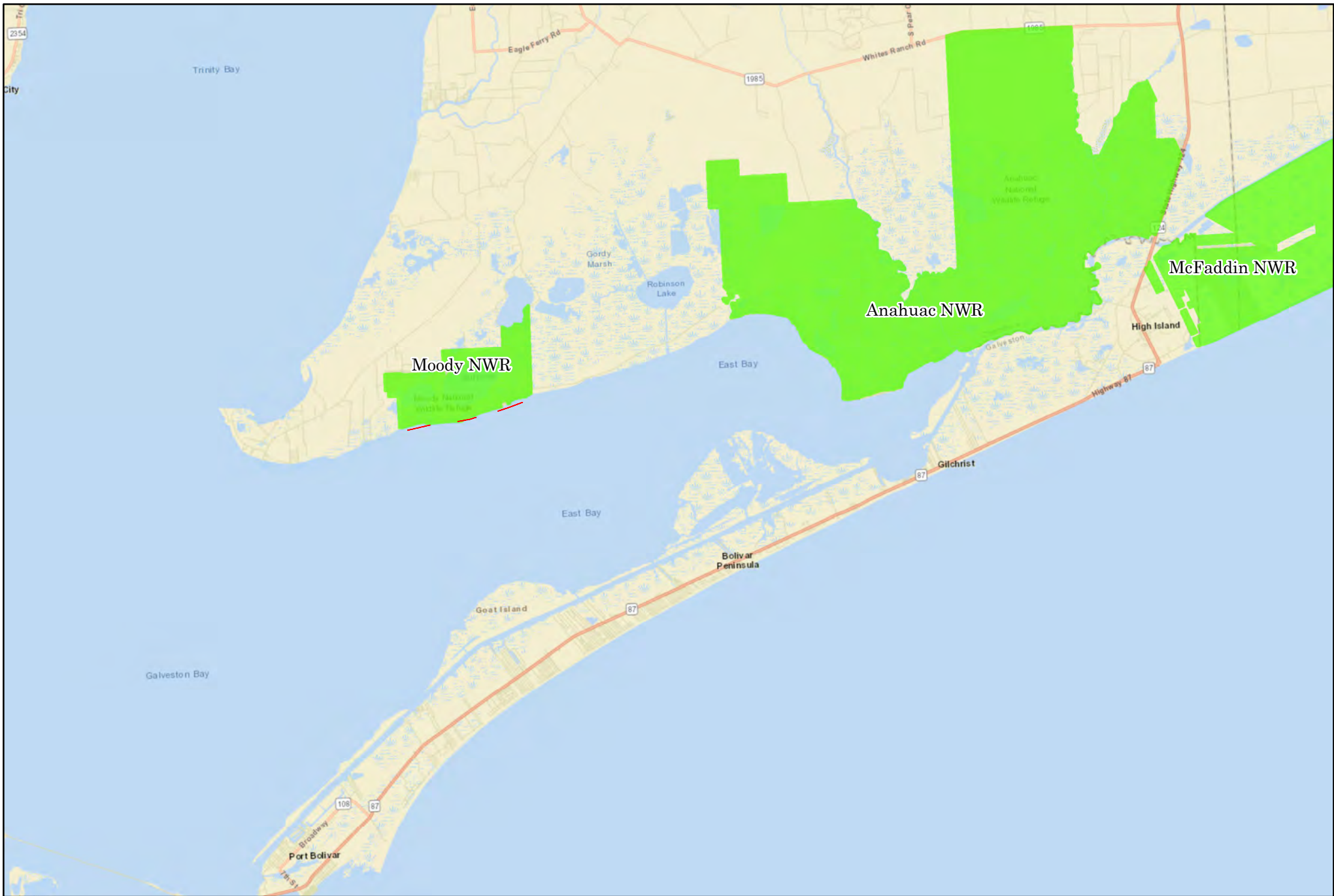
Moody NWR is part of the Texas Chenier Plain NWR Complex. It is located approx. 46 miles east-southeast of the Houston metro area. Moody NWR begins approx. 6 miles south of the town of Anahuac, with its southern boundary forming along the western portion of East Galveston Bay.

Location description:

The project is located entirely within water approximately 1.5 feet in depth within East Galveston Bay adjacent to the shoreline of the Moody NWR. See **Figure 1: Project Vicinity Map**.

Ecoregion Number and Name:

Southeastern Mixed Forest Province (231)



Legend

- BW Footprint
- Chenier Plain Refuges

Figure 1: Vicinity Map
Moody NWR Breakwaters Project

Chambers County, Texas

Map Base: 2020 NAIP Aerial Imagery from TNRIS
 Map Datum: NAD 1983 State Plane Texas South Central, US Foot
 Map Date: February 15, 2023

N
 1:203,608



0 1 2
 Miles

PROJECT DESCRIPTION AND IMPLEMENTATION

Project Description:

Rock breakwaters would be constructed in three separate segments located approximately at the -1.5-foot contour line adjacent to the shoreline of Moody NWR in East Bay. The breakwaters will be constructed of graded riprap (COE 650# gradation) to a crest elevation of +3.5 feet, which is an average of 5.0 feet above existing grade at the centerline, with a 3-foot top width and 2:1 side slopes, which equates to a base of 21 feet. The actual width of the base will be 20 feet, on average, because the existing grade is shallower at the shoreward toe of the breakwaters. Each rock breakwater will end in open water, transitioning into 3:1 side slopes.

Each of the breakwaters are designed with 30-foot-wide fish passes at 500-foot intervals to facilitate the movement of water, sediment, and aquatic species. Fish passes would be lined with rock (approximately 18 inches) to a 0.0 elevation to prevent excess scour at these locations.

At a minimum, day beacons will be located at the starting and ending points of the rock breakwaters, as well as every 550 feet along the breakwaters. The final configuration of warning signs will be in accordance with USCG recommendations.

Six barges at a time, containing a total of approximately 10,000 tons of riprap, will be transported from the Mississippi River to the GIWW in the vicinity of the project area. The barges will be anchored just outside the navigational channel so there would be no interference with navigation in the GIWW as a result of project operations. Two smaller shallow water barges will be utilized for construction, one spud barge containing a long-reach excavator and a light-loaded barge containing approximately 2,500 tons of riprap. The barges will be transported to the breakwater locations using a shallow water tugboat. The barge containing the excavator will be spudded down adjacent to the breakwater locations and the barge containing the rock will be secured to the back or side of the spud barge.

Geotextile fabric will be placed under the footprint of the breakwaters prior to placement of riprap. Small John boats would be utilized to access the project area for the purposes of placement of the geotextile fabric. Once the geotextile fabric is in place, the long-reach excavator will obtain riprap from the barge and place the riprap onto the breakwater locations. This process will continue until construction of the breakwaters is complete.

All work will be conducted in the water. There will be no equipment use/access or staging areas on land or in wetlands and the excavator will never leave the barge. There would be no impacts to wetland areas.

The USFWS is considering the possibility of adapting the breakwaters to function as living reefs. This would potentially require minor adjustments to the breakwater footprints for incorporation of structures that would provide oysters and other aquatic invertebrates the hard surfaces they need to thrive. The living reefs would have the same function as the rock breakwaters, providing shoreline protection, and effects of their construction would be similar to those of the Proposed Action, with added beneficial effects to aquatic resources.

Conservation Measures

Per 50 CFR §402.14(c)(1)(i), conservation measures are measures intended to avoid, minimize, or offset effects of the action. The conservation measures associated with the proposed project are:

- All Species: All crew members (contractors, workers, etc.) will attend training sessions prior to the initiation of, or their participation in, project work activities. Training will be conducted

by qualified personnel and the scope of training will include: 1) recognition of sea turtles, manatees, piping plovers, rufa red knots, eastern black rails, Whooping Cranes, and their habitats; 2) recognition of other listed species; 3) impact avoidance measures; 4) reporting criteria; 5) contact information for different rescue agencies in the area. Documentation of this training, including a list of attendees, will be submitted to the Refuge Manager prior to project construction and as new members are trained.

- All Species: If any federally listed species is observed in or within 100 meters of the construction area, work will be stopped within that area, until the animal leaves the construction site. If the protected animal does not relocate (e.g., injured bird), Refuge staff will be contacted to solicit additional guidance.
- All Species: All construction will occur during daylight hours only.
- Sea Turtles and Manatees: The contractor performing the proposed work will adhere to *NOAA Fisheries Southeast Regional Office Protected Species Construction Conditions* (NOAA 2021a). These conditions include the following measures:
 - (a). All personnel associated with the project are to be instructed about the potential presence of marine species protected under the ESA and the Marine Mammal Protection Act (MMPA). All on-site project personnel are responsible for observing water-related activities for the presence of protected species. All personnel shall be advised that there are civil and criminal penalties for harming, harassing, or killing listed species and all marine mammals.
 - (b). For construction work that is generally stationary (e.g., barge-mounted equipment dredging a berth or section of river, or shore-based equipment extending into the water):
 - Operations of moving equipment shall cease if a protected species is observed within 150 feet of operations.
 - Activities shall not resume until the protected species has departed the project area of its own volition (e.g., species was observed departing or 20 minutes have passed since the animal was last seen in the area).
 - (c). For projects requiring vessels, the action agency, and any permittee shall ensure conditions in the *Vessel Strike Avoidance Measures* (NOAA, 2021b) are implemented as part of the project/permit issuance.
 - (d). Any interaction with a protected species shall be reported immediately to NOAA Fisheries SERO PRD and the local authorized stranding/rescue organization.

Project Timeline:

Project construction is expected to take approximately 5 months to complete.

Project Area:

Project Area

Three separate segments of breakwaters totaling 9,173 linear feet (1.74 linear miles) will be constructed completely within and from open water habitat in East Bay that is approximately 1.5 feet deep. The breakwaters will be constructed adjacent to the shoreline of the Moody NWR in Chambers County, TX. The project area is depicted in **Figure 2: Project Location Map**.



Legend

-  BW Footprint
-  Moody NWR

Figure 2: Project Location Map
Moody NWR Breakwaters Project

Chambers County, Texas

Map Base: 2020 NAIP Aerial Imagery from TNRIS
Map Datum: NAD 1983 State Plane Texas South Central, US Foot
Map Date: March 1, 2023

N
1:30,000



0 0.25 0.5
Miles

SPECIES AND CRITICAL HABITAT INFORMATION

The USFWS ECOS-IPaC system species list for the project area (Project Code: 2023-0044752) indicates a total of 11 federally listed and proposed species potentially occur in the action area. The IPaC species list is included as **Attachment A**.

List of Species

- Piping plover (*Charadrius melodus*) – Threatened
- Rufa Red Knot (*Calidris canutus rufa*) – Threatened
- Eastern Black Rail (*Laterallus jamaicensis jamaicensis*) – Threatened
- Attwater's Greater Prairie-Chicken (*Tympanuchus cupido attwateri*) – Endangered
- Whooping Crane (*Grus americana*) – Endangered
- Green sea turtle (*Chelonia mydas*) – Threatened
- Hawksbill sea turtle (*Eretmochelys imbricate*) – Endangered
- Kemp's Ridley sea turtle (*Lepidochelys kempii*) – Endangered
- Tri-colored bat (*Perimyotis subflavus*) – Proposed Endangered
- West Indian Manatee (*Trichechus manatus*) – Threatened
- Monarch butterfly (*Danus Plexippus*) – Proposed Threatened

SPECIES AND CRITICAL HABITAT STATUS AND EFFECTS DETERMINATIONS

Regulations implementing the Act (50 CFR §402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present effects of all Federal, State, or private actions and other human activities in the action area, the anticipated effects of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the effect of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

In accordance with 50 CFR §402.02, effects of the action are all consequences to listed species or critical habitat that the proposed action causes, including the consequences of all other activities that are caused by the proposed action but are not part of the action. The proposed action causes a consequence if it would not occur "but for" the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR §402.17).

Piping Plover

Species and Critical Habitat Status and Environmental Baseline

The piping plover, a federally listed threatened species, occurs along the Texas Gulf Coast in large wintering populations. Piping plovers are normally only observed in small numbers wintering on the beaches and mudflats of the Texas Chenier Plain NWR Complex between October and March.

Historically, McFaddin National Wildlife Refuge conducted some short duration population surveys consisting of two survey types, an annual full beach survey and a monthly survey that was done on select preferred habitat areas. The annual survey route was conducted during the middle of the piping plover wintering season on the Texas Gulf Coast (November), at low tide, and ran the entire length of

the beach in the proposed area. For a project need on the beach bordering 3 miles of McFaddin National Wildlife Refuge, bi-monthly surveys were conducted on two main areas, one on the east end of the route and one on the west end of the route. These surveys were conducted from July-April from 2014 to 2016. Results from Dec 2014-April 2016 show an average of nine piping plovers on the McFaddin beach per survey. The McFaddin beach birds are approximately 7 miles from this project area. No survey work has been conducted on McFaddin since 2016.

No survey work has been done on Moody NWR. The project area is located approximately 8.5 miles from the Gulf beaches at its closest point and 6.3 miles from the Gulf Intracoastal Waterway. The nearest designated Critical Habitat is approximately 10.5 miles to the southwest in the vicinity of Rollover Bay.

Effects to the Species and Critical Habitat

The proposed project, as described above, does not include actions that are expected to affect piping plover.

The breakwaters will be constructed completely within and from open water habitat approximately 1.5 feet deep. There is no suitable habitat or designated critical habitat for this species within the project area or action area.

Breakwaters placed along the GIWW at McFaddin have shown adequate sediment deposition behind the breakwaters for creation of new foraging areas for piping plovers. Refuge surveys have documented bird use in these areas. Construction of the proposed breakwaters in East Bay could potentially result in the benefit of creation of similar foraging habitat for piping plovers. The location of the structures and sediment loading in the water column will be the greatest factors affecting the potential for sedimentation to create foraging habitat. The distance between the proposed breakwaters and the shoreline may be too great for adequate sedimentation to occur. If sedimentation does occur and habitat is created behind the breakwaters, it would likely require more than a decade for the habitat to develop suitable characteristics for use by plovers.

Species Determination and Justification

- ☒ No Effect
- ☐ May Affect, Not Likely to Adversely Affect
- ☐ Not Likely to Jeopardize
- ☐ May Affect, Likely to Adversely Affect

This determination is due to the lack of suitable habitat within the project area.

Rufa Red Knot

Species and Critical Habitat Status and Environmental Baseline

The rufa red knot is listed as threatened under the Endangered Species Act. While sightings have been recorded within the Texas Chenier Plain NWR Complex, information on these sightings is limited entirely to coastal beach areas. There are records of rufa red knot usage elsewhere in fresher water systems, so an occurrence, although highly unlikely, is possible in areas containing mud flats.

The Moody NWR East Bay Breakwaters project area is located approximately 8.5 miles from the Gulf

beaches at its closest point and there is no suitable rufa red knot habitat within the project area or action area. The placement of these structures is in areas with water depths that exceed foraging depths for red knots.

Effects to the Species and Critical Habitat

The proposed project, as described above, includes actions that are not expected to affect rufa red knots.

The breakwaters will be constructed completely within and from open water habitat approximately 1.5 feet deep. There is no suitable habitat or designated critical habitat for this species within the project area or action area. As described above under effects to piping plovers, it is possible that construction of the proposed breakwaters in East Bay could eventually result in the benefit of creation of foraging habitat for suitable for rufa red knots due to sediment accretion behind the breakwaters.

Species Determination and Justification

- ☒ No Effect
- ☐ May Affect, Not Likely to Adversely Affect
- ☐ Not Likely to Jeopardize
- ☐ May Affect, Likely to Adversely Affect

This determination is due to the lack of suitable habitat within the project area.

Eastern Black Rail

Species and Critical Habitat Status and Environmental Baseline

The eastern black rail has been listed as threatened under the Endangered Species Act and is thought to occur within the Texas Chenier Plain NWR Complex year-round. Eastern black rails along the Gulf Coast are known to inhabit freshwater and brackish/saltwater persistent emergent marsh habitats. Currently, there are no official records of eastern black rails being documented within or near the project area.

Effects to the Species and Critical Habitat

The proposed project, as described above, does not include actions that are expected to affect eastern black rails.

There is no suitable black rail habitat within the project area or action area. All work will be conducted from and within open water habitat.

Species Determination and Justification

- ☒ No Effect
- ☐ May Affect, Not Likely to Adversely Affect
- ☐ Not Likely to Jeopardize
- ☐ May Affect, Likely to Adversely Affect

This determination is due to the fact that the entire project is being conducted from the water and barges.

Attwater's Greater Prairie-Chicken

Species and Critical Habitat Status and Environmental Baseline

Attwater's Greater Prairie-Chicken, listed as Endangered under the Endangered Species Act, is found in coastal prairie habitat that includes grasses such as little bluestem, big bluestem, Indiangrass, and switchgrass. This species is known to occur in only two small pockets of refuge habitat in Galveston and Colorado counties. These two refuges combine for about 12,000 acres - 0.2% of the historic 6 million acres of prairie. No birds are known to be surviving off the refuges despite repeated censuses.

Effects to the Species and Critical Habitat

The proposed project, as described above, does not include actions that are expected to affect Attwater's Greater Prairie-Chicken.

The Moody NWR Breakwaters project is outside of the known range of this species and the species is not expected to be present in or around the project area.

Species Determination and Justification

- ☒ No Effect
- ☐ May Affect, Not Likely to Adversely Affect
- ☐ Not Likely to Jeopardize
- ☐ May Affect, Likely to Adversely Affect

This determination is due to the lack of species presence within the project area.

Whooping Crane

Species and Critical Habitat Status and Environmental Baseline

The whooping crane is designated as endangered under the Endangered Species Act. The species utilizes a variety of habitats to breed, overwinter, migrate, and forage. These habitats include coastal marshes and estuaries, inland marshes, open ponds, shallow bays, salt marshes, sand or tidal flats, rivers, and pastures and agricultural fields.

There are four geographically distinct populations, with the only natural and self-supported population being the Aransas Wood Buffalo Population that migrates between Aransas National Wildlife Refuge on the Texas Coastal Bend to Wood Buffalo National Park in Alberta, Canada. Three experimental populations were established between 1993-2011, a Central Florida non-migratory population, an Eastern migratory population, and a White Lake, Louisiana non-migratory flock. The current populations of whooping cranes in existence today come from the all-time low population of 15 individual whooping cranes that were overwintering at Aransas National Wildlife Refuge in 1941.

The nearest critical habitat for the species is located approximately 180 miles southwest of the project site in the vicinity of Aransas National Wildlife Refuge. According to Tim Cooper, Texas Chenier NWR Complex Manager (personal communication, May 30, 2023), whooping cranes in Jefferson and Chambers County are using rice fields further inland.

Whooping cranes have been seen and documented within the upper Texas coast region in recent years; however, there are no documented sightings within or near the project area. Observations on iNaturalist and eBird (2023) show the nearest reported sighting to the project area as approximately 17 miles away. Additional clustered sightings have occurred further west in the vicinity between the towns of Anahuac and Winnie from 2017-2023.

More recently, several whooping cranes were seen in the nearby McFaddin National Wildlife Refuge for approximately four days from March 23-26, 2025. They left the area and have not been seen since (Tim Cooper, Refuge Complex Manager, personal communication, March 26, 2025). While there is a possibility for whooping cranes to occur as a transient species in marshes adjacent to the project area, the likelihood of occurrence in the action area is so low that it is discountable.

Effects to the Species and Critical Habitat

The proposed project, as described above, does not include actions that are expected to affect whooping cranes.

The breakwaters will be constructed completely within and from open water habitat approximately 1.5 feet deep. There is no habitat within the project area or action area.

Species Determination and Justification

- ☒ No Effect
- ☐ May Affect, Not Likely to Adversely Affect
- ☐ Not Likely to Jeopardize
- ☐ May Affect, Likely to Adversely Affect

This determination is due to the lack of suitable habitat within the project area.

Sea Turtles

Species and Critical Habitat Status and Environmental Baseline

Three species of sea turtles are identified as having the possibility of being present within the project area. The Kemp's Ridley and hawksbill sea turtles are federally listed as endangered, and the green sea turtle is federally listed as threatened. All three species occur in the nearshore Gulf of Mexico waters and the Kemp's Ridley and green sea turtles can be found in East Bay adjacent to Moody NWR. The likelihood of presence is greater in the summer months than in the winter months.

Effects to the Species and Critical Habitat

The proposed project, as described above, includes actions that may affect Kemp's Ridley, hawksbill or green sea turtles within aquatic habitats; however, there is no suitable sea turtle nesting habitat within the project area or larger action area. The proposed project, as described above, does not include actions that are expected to affect nesting sea turtles under the consultation role of USFWS.

Species Determination and Justification

- ☒ No Effect
- ☐ May Affect, Not Likely to Adversely Affect
- ☐ Not Likely to Jeopardize
- ☐ May Affect, Likely to Adversely Affect

Potential effects from project construction in the aquatic environment include death or injury due to vessel strikes and/or placement of riprap; however, with implementation of the conservation measures included above for the protection of threatened and endangered sea turtles and manatees, the likelihood of impacts is low. The USFWS initiated informal programmatic consultation with NMFS on August 31, 2022, for potential effects to marine species protected by ESA due to the carrying out and/or

funding of shoreline stabilization (including construction of breakwaters), water control, levee repair, and hydrology function improvement projects within the USFWS coastal refuges and inter-tidal nearshore areas in coastal Texas (SERO-2022-00591). NMFS concurred with USFWS's finding of not likely to adversely affect NMFS ESA-listed species on September 7, 2022. Construction of the Moody NWR Breakwaters will comply with the conservation measures included in the programmatic consultation with NMFS; therefore, no further consultation with NMFS is necessary for this project.

West Indian Manatee

Species and Critical Habitat Status and Environmental Baseline

The threatened West Indian manatee is most commonly found in shallow, slow-moving waters of rivers, estuaries, saltwater bays, canals and coastal areas where it prefers freshwater and brackish habitats. West Indian manatees also have the potential for occurrence in the project area; however, the likelihood is extremely low. Potential affects from project construction include death or injury due to vessel strikes and/or placement of riprap.

There seem to be a few rare, documented occurrences or reports of manatees on the Upper Texas Coast. We reviewed a comprehensive work on distribution of manatees, namely *Manatee Occurrence in Northern Gulf of Mexico, West of Florida* (D. Fertl et al, 2005), which found 53 sightings, 8 carcasses, and documented 5 captures in Texas over a 151-year period (1853-2005). Most occurrences in Texas were south of the Matagorda Bay area. We also consulted Schmidly and Bradley (2016), which reported a manatee carcass found off of Bolivar with no specific location. It is possible this is the same badly decomposed manatee carcass that was found in 2016 on McFaddin Beach near Perkins Levee. This is an area that has offshore currents coming in directly from the Gulf, and it is likely that this manatee died elsewhere in the Gulf and was washed ashore at this location. One additional manatee carcass was documented in Cow Bayou just north of Sabine Lake, but no date was provided.

The Galveston Bay system has certainly had a few more manatee sightings and relocations since Fertl et. al.'s comprehensive work was published in 2005. Other manatees of noteworthy acclaim occurred in the area. A manatee was captured and referred to as Sweet Pea or Selina. It was found in Buffalo Bayou during December 1995. She was in a sewer plant outfall surrounded in photos by water hyacinth. She needed to be rescued as water temperatures would not have supported her. In 2012, there were manatee sightings from South Padre Island to Galveston Bay, which were thought to be a single manatee given the name Molly. Molly likely found that conditions on the upper coast were not supportive enough for survival and kept moving. She was a short-term visitor and disappeared without need for a rescue. In 2014, a manatee was seen near Corpus Christi, and more sightings came from Corpus Christi on July 11th and 17th of 2019. Both the 2014 and 2019 sightings in Corpus Christi could have been Molly moving north again or possibly another manatee. In late November of 2014, an animal was reported in need of rescue at the Baytown CPL power outlet on Trinity Bay (possibly the same as a manatee documented in Westlake, LA). The warm water discharge was attracting the animal who appeared reluctant to leave this artificial hot water discharge outflow. This animal was emaciated and captured by SeaWorld staff. It was identified as a known manatee from the Tampa Bay area of Florida and was returned to that area as soon as adequate fat reserves could be restored to allow for its release. For the Galveston Bay area, we have only two additions to the list, both rescues from the relatively sea grass rich portions of this bay system.

Rare reports exist for manatees in Louisiana (LA), as well. In 1929, a skull was added to the National Museum collection (#257406) from Calcasieu Lake and was reported, up to 1941, as the only record of this animal in this state at that time. There were other records in the state in 1976 and 1979 (Powell and Rathburn, 1984), but they were mostly confined to the eastern portion of LA. However, a manatee

was videoed in November of 2014 near Westlake, LA on the Calcasieu River. Scarring on that animal's back was not consistent with the animal recovered from Trinity Bay in November of 2014 (T. Cooper, pers. comm.); therefore, we think this was a different animal.

Florida manatees (*Trichechus manatus latirostris*) have been documented exploring other areas all the way to Massachusetts, and it is likely that the Antillean manatee (*Trichechus manatus manatus*) may move up the coast in exploratory trips. These wandering trips are referenced in numerous places in literature reviewed, but exploration comes at considerable risk to the individuals. They run a risk of being killed by cold water exposure, or they may simply find inadequate food resources and return to suitable year-round habitats.

Manatees feed on aquatic vegetation and need to consume between 5% and 10% of their body weight to maintain condition. That equates to 100 to 200 pounds of sea grasses or other vegetation daily. Sea grasses do occur in East Bay, but not in abundance since the mid-1950s. The TPWD Seagrass Conservation Plan states, "Although 1956 is our earliest reference point, it is interesting to note that seagrasses were generally more abundant in the Galveston Bay system (even East Bay and upper Galveston Bay) during the early part of the century based on anecdotal information." The only notation of East Bay in this entire report is to provide context that it no longer supports much in the way of seagrass. The proposed project will not directly impact any sea grass beds. Seagrasses may still be found in other areas of the Galveston Bay System, including places like Christmas Bay and the Trinity River delta. Manatees moving through the upper Texas Coast will not find adequate food resources from sea grasses to remain in the East Bay area at this time. Therefore, any manatee in the project area should be considered transient and likely continuing its search for more favorable areas than East Bay, even during warm summer exploratory trips.

In conclusion, in 166 years of record keeping between these various references, there has been no reported sighting of a manatee in East Bay or the upper reaches of the GIWW between East Bay and the Sabine Ship Channel. The refuges have no sightings or reports since their establishment in this area, with the exception of the 2016 carcass that likely floated in from some other location. The animal was found in an advanced state of decomposition with >95% of its epidermis sloughed off. Manatee food resources are not present in the action area except in trace amounts, and any vagrant manatee that passes through this area would continue moving to find required sea grasses or aquatic vegetation. The odds that we will encounter a manatee passing through the area during construction of this project are so remote as to be discountable. However, the measures implemented for protection of sea turtles will also offer protection to a manatee(s) in the off-chance that one is present during project construction.

Effects to the Species and Critical Habitat

The proposed project, as described above, includes actions that while unlikely, could affect West Indian manatees. The potential effects of proposed actions are listed below.

The breakwaters are located in shallow waters that typically could not be accessed by manatees (~1.5 feet deep). The breakwater structures are expected to be in place over many decades, and, although unlikely, a transient manatee(s) may encounter the structures during their projected lifespan. The structures will have openings that would allow any manatee that enters to exit the breakwater area with minimal difficulty, even in hurricane flooding events; therefore, there is no stranding risk for a transient manatee, in the very unlikely event that one encounters the breakwaters.

Species Determination and Justification

- ☐ No Effect
- ☒ May Affect, Not Likely to Adversely Affect
- ☐ Not Likely to Jeopardize
- ☐ May Affect, Likely to Adversely Affect

Tri-colored Bat

Species and Critical Habitat Status and Environmental Baseline

The tricolored bat is a proposed species for listing under the Endangered Species Act. Named for their unique tricolored fur that fades from dark to light and to dark again, adult tricolored bats are often yellowish to near orange. These bats are insectivorous and are one of the smallest bats in eastern North America. Tricolored bats can be found in the southern extents of four Canadian Provinces, 39 States in the Central and Eastern U.S., as well as Mexico, Guatemala, Honduras, Belize, and Nicaragua. During the spring, summer, and fall months tricolored bats can be found in forested habitats and predominantly roost amidst the leaves of live or recently dead deciduous hardwoods. In the winter months tricolored bats hibernate in caves and mines, however, in the southern U.S. where caves are sparse, they utilize culverts, tree cavities, abandoned water wells, and other man-made structures. Additionally, where winters are less harsh tricolored bats may break hibernation to feed on warm nights. It is common for many tricolored bats to return year after year to the same hibernation site.

The tricolored bat's greatest threat is white-nose syndrome, which is estimated to have caused a 90% decline in affected tricolored bat colonies throughout its range. Tricolored bat populations require a matrix of interconnected habitats that support spring migration, summer maternity colony formation, fall swarming, and winter hibernation. They prefer forested areas, tree corridors, and forest aggregation.

Effects to the Species and Critical Habitat

The proposed project, as described above, does not include actions that are expected to affect tricolored bats, as there is no suitable habitat in the project area. The breakwaters are located in and would be constructed entirely from open water areas. Additionally, project construction would occur during daylight hours when the bats are not active.

Species Determination and Justification

- ☐ No Effect
- ☐ May Affect, Not Likely to Adversely Affect
- ☒ Not Likely to Jeopardize
- ☐ May Affect, Likely to Adversely Affect

This determination is due to the lack of suitable habitat within the project area. In the event that the USFWS lists the tricolored bat before project implementation, we make the determination that the proposed action will have no effect on the species based on lack of suitable habitat within the project area.

Monarch Butterfly

Species and Critical Habitat Status and Environmental Baseline

The monarch butterfly, a proposed species for listing under the Endangered Species Act, has the potential for occurrence in the project area. Whether monarchs are present in a given area within their range depends on the time of year, as they are one of the few migratory insects traveling great distances between summer breeding habitat and winter habitat where they spend several months inactive. Most adult monarchs only live for a few weeks, searching for food in the form of flower nectar, for mates, and for milkweed plants (their only caterpillar host plant) on which to lay their eggs.

Effects to the Species and Critical Habitat

The proposed project, includes actions that while unlikely, could potentially affect monarch butterflies. The effects of the actions comprising the proposed project are listed below.

While it is possible for monarchs to be present in the project area during construction, it is highly unlikely since the project area is located in and would be constructed entirely from open water. Adult monarchs are mobile and would likely move out of harm’s way during project activities. There is an abundance of potentially suitable, undisturbed habitat for monarch butterflies adjacent to the project area.

Species Determination and Justification

- ☐ No Effect
- ☐ May Affect, Not Likely to Adversely Affect
- ☒ Not Likely to Jeopardize
- ☐ May Affect, Likely to Adversely Affect

This determination is due to the short-term, minimal, localized nature of impacts, the lack of suitable habitat in the project’s area of potential effect (open water), and the fact that completion of this project will help to preserve thousands of acres of potentially suitable monarch habitat. In the event that the USFWS lists the monarch butterfly before project implementation, we make the determination that the proposed action may affect, but is not likely to adversely affect the species based on discountable, or wholly beneficial effects of the proposed project.

REVIEWING ECOLOGICAL SERVICES OFFICE EVALUATIONS

Table 1. Summary of Effect Determinations

Anticipated Effects	Determination Definition	Name of Species or Critical Habitat
No Effect	The proposed project will not directly or indirectly affect (neither negatively nor beneficially) individuals of listed/proposed/candidate species or designated/proposed critical habitat.	• Piping plover • Rufa red knot • Eastern black rail • Attwater’s Greater prairie-chicken • Whooping crane • Sea turtle nesting habitat • Green sea turtle • Hawksbill sea turtle • Kemp’s Ridley sea turtle

Anticipated Effects	Determination Definition	Name of Species or Critical Habitat
<i>May Affect, but Not Likely to Adversely Affect</i>	The proposed project is likely to cause insignificant, discountable, or wholly beneficial effects to individuals of <u>listed</u> species and/or <u>designated</u> critical habitat.	West Indian manatee
<i>May Affect and Likely to Adversely Affect</i>	The proposed project is likely to adversely impact individuals of listed species and/or designated critical habitat.	
<i>Not Likely to Jeopardize <u>candidate</u> or <u>proposed</u> species, not likely to destroy or adversely modify <u>proposed</u> critical habitat</i>	The proposed project may affect but is not expected to jeopardize the continued existence of a proposed or candidate species nor adversely modify proposed critical habitat.	- Monarch butterfly - Tri-colored bat
<i>Likely to Jeopardize <u>candidate</u> or <u>proposed</u> species and/or will destroy or modify <u>proposed</u> critical habitat</i>	The proposed project is reasonably expected to jeopardize the continued existence of a <u>proposed</u> or <u>candidate</u> species or destroy/adversely modify proposed critical habitat.	

FWS Program Signatory Authority:

Program Authority & Date: _____

Ecological Services Office Signatory Authority (for non-DO 194 submissions):

ESO Biologist & Date: _____

ESO Field Supervisor & Date: _____(Concur)

ESO Field Supervisor & Date: _____(Non-Concur)

REFERENCES CITED

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ATTACHMENT A
USFWS IPaC Species List



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Texas Coastal & Central Plains Esfo
17629 El Camino Real, Suite 211
Houston, TX 77058-3051
Phone: (281) 286-8282 Fax: (281) 488-5882



In Reply Refer To:

04/15/2025 14:10:31 UTC

Project Code: 2023-0044752

Project Name: Moody NWR Breakwaters

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The U.S. Fish and Wildlife Service (Service) field offices in Clear Lake, Corpus Christi, Fort Worth, and Alamo, Texas, have combined administratively to form the Texas Coastal Ecological Services Field Office. All project related correspondence should be sent to the field office address listed below responsible for the county in which your project occurs:

Project Leader; U.S. Fish and Wildlife Service; 17629 El Camino Real Ste. 211; Houston, Texas 77058

Angelina, Austin, Brazoria, Brazos, Chambers, Colorado, Fayette, Fort Bend, Freestone, Galveston, Grimes, Hardin, Harris, Houston, Jasper, Jefferson, Leon, Liberty, Limestone, Madison, Matagorda, Montgomery, Newton, Orange, Polk, Robertson, Sabine, San Augustine, San Jacinto, Trinity, Tyler, Walker, Waller, and Wharton.

Assistant Field Supervisor, U.S. Fish and Wildlife Service; 4444 Corona Drive, Ste 215; Corpus Christi, Texas 78411

Aransas, Atascosa, Bee, Brooks, Calhoun, De Witt, Dimmit, Duval, Frio, Goliad, Gonzales, Hidalgo, Jackson, Jim Hogg, Jim Wells, Karnes, Kenedy, Kleberg, La Salle, Lavaca, Live Oak, Maverick, McMullen, Nueces, Refugio, San Patricio, Victoria, and Wilson.

U.S. Fish and Wildlife Service; Santa Ana National Wildlife Refuge; Attn: Texas Ecological Services Sub-Office; 3325 Green Jay Road, Alamo, Texas 78516

Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata.

For questions or coordination for projects occurring in counties not listed above, please contact arles@fws.gov.

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your

proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <http://www.fws.gov/media/endangered-species-consultation-handbook>.

Non-Federal entities may consult under Sections 9 and 10 of the Act. Section 9 and Federal regulations prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined (50 CFR § 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR § 17.3) as intentional or negligent actions that create the likelihood of

injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Should the proposed project have the potential to take listed species, the Service recommends that the applicant develop a Habitat Conservation Plan and obtain a section 10(a)(1)(B) permit. The Habitat Conservation Planning Handbook is available at: <https://www.fws.gov/library/collections/habitat-conservation-planning-handbook>.

Migratory Birds:

In addition to responsibilities to protect threatened and endangered species under the Act, there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts visit: <https://www.fws.gov/program/migratory-birds>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable National Environmental Policy Act (NEPA) documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- Bald & Golden Eagles
- Migratory Birds
- Marine Mammals
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Texas Coastal & Central Plains Esfo

17629 El Camino Real, Suite 211

Houston, TX 77058-3051

(281) 286-8282

PROJECT SUMMARY

Project Code: 2023-0044752

Project Name: Moody NWR Breakwaters

Project Type: Breakwaters - New Construction

Project Description: The U.S. Fish and Wildlife Service proposes to construct three (3) separate breakwater segment within East Bay along the southern edge boundary of Moody National Wildlife Refuge (NWR) for shoreline protection. The breakwaters would be constructed in key locations that are experiencing erosion from wave action, tidal scour, and other natural processes. The breakwaters would total approximately 11,021.41 feet in length and would be constructed on both sides of and between existing Texas Parks and Wildlife Department (TPWD) oyster projects, which are also designed to protect the shoreline.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@29.5387146,-94.68259304878049,14z>



Counties: Galveston County, Texas

ENDANGERED SPECIES ACT SPECIES

There is a total of 11 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered
West Indian Manatee <i>Trichechus manatus</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. <i>This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.</i> Species profile: https://ecos.fws.gov/ecp/species/4469	Threatened

BIRDS

NAME	STATUS
Attwater's Greater Prairie-chicken <i>Tympanuchus cupido attwateri</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7259	Endangered
Eastern Black Rail <i>Laterallus jamaicensis ssp. jamaicensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
Piping Plover <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Rufa Red Knot <i>Calidris canutus rufa</i> There is proposed critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane <i>Grus americana</i> Population: Wherever found, except where listed as an experimental population There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

REPTILES

NAME	STATUS
Green Sea Turtle <i>Chelonia mydas</i> Population: North Atlantic DPS There is proposed critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
Hawksbill Sea Turtle <i>Eretmochelys imbricata</i> There is final critical habitat for this species. Your location does not overlap the critical habitat.	Endangered

NAME	STATUS
Species profile: https://ecos.fws.gov/ecp/species/3656	
Kemp's Ridley Sea Turtle <i>Lepidochelys kempii</i>	Endangered
There is proposed critical habitat for this species.	
Species profile: https://ecos.fws.gov/ecp/species/5523	

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i>	Proposed
There is proposed critical habitat for this species. Your location does not overlap the critical habitat.	Threatened
Species profile: https://ecos.fws.gov/ecp/species/9743	

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

-
1. The [Bald and Golden Eagle Protection Act](#) of 1940.
 2. The [Migratory Birds Treaty Act](#) of 1918.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (MBTA). Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The data in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly

surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

MIGRATORY BIRDS

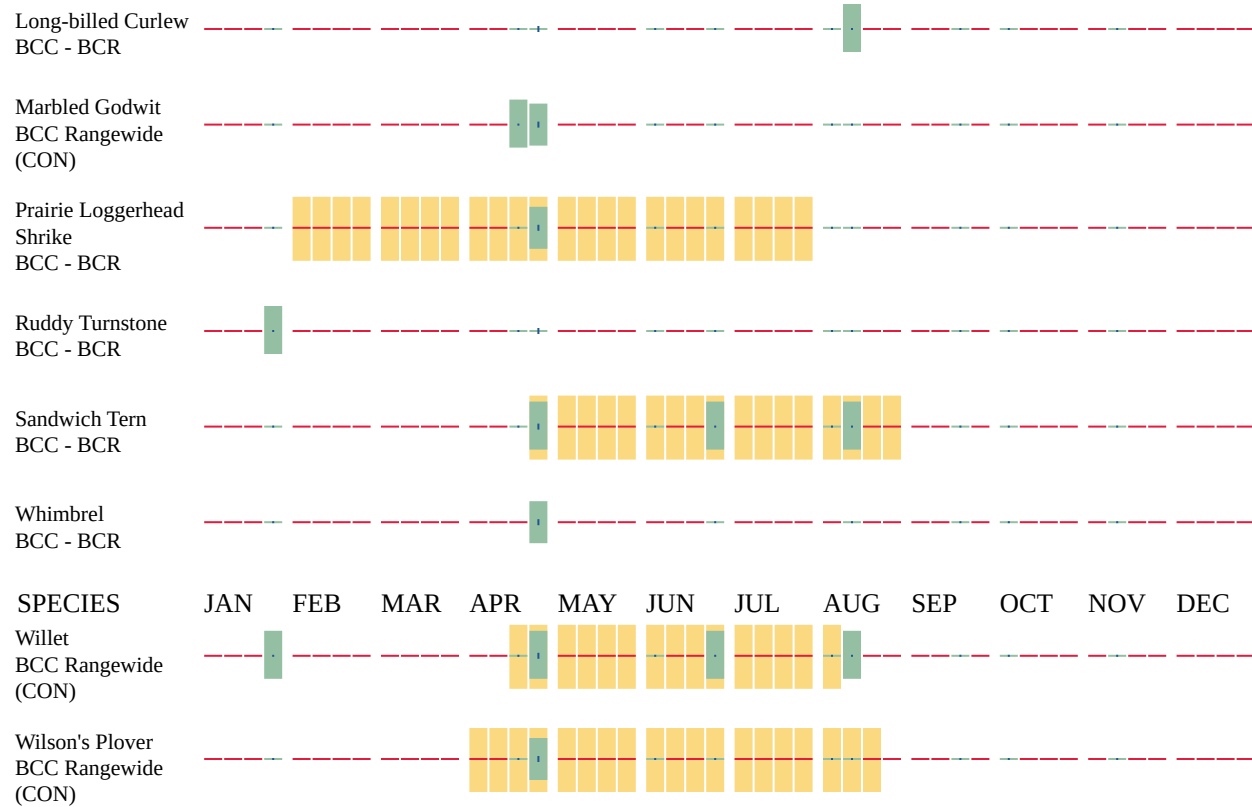
The Migratory Bird Treaty Act (MBTA) ¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Oystercatcher <i>Haematopus palliatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Dickcissel <i>Spiza americana</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9453	Breeds May 5 to Aug 31
Forster's Tern <i>Sterna forsteri</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11953	Breeds Mar 1 to Aug 15
Gull-billed Tern <i>Gelochelidon nilotica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9501	Breeds May 1 to Jul 31

NAME	BREEDING SEASON
Least Tern <i>Sternula antillarum antillarum</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/11919	Breeds Apr 25 to Sep 5
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Long-billed Curlew <i>Numenius americanus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/5511	Breeds elsewhere
Marbled Godwit <i>Limosa fedoa</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Prairie Loggerhead Shrike <i>Lanius ludovicianus excubitorides</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8833	Breeds Feb 1 to Jul 31
Ruddy Turnstone <i>Arenaria interpres morinella</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/10633	Breeds elsewhere
Sandwich Tern <i>Thalasseus sandvicensis</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9731	Breeds Apr 25 to Aug 31
Whimbrel <i>Numenius phaeopus hudsonicus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11991	Breeds elsewhere
Willet <i>Tringa semipalmata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10669	Breeds Apr 20 to Aug 5
Wilson's Plover <i>Charadrius wilsonia</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9722	Breeds Apr 1 to Aug 20



Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

MARINE MAMMALS

Marine mammals are protected under the [Marine Mammal Protection Act](#). Some are also protected under the Endangered Species Act¹ and the Convention on International Trade in Endangered Species of Wild Fauna and Flora².

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries³ [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on

this list; for additional information on those species please visit the [Marine Mammals](#) page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

-
1. The [Endangered Species Act](#) (ESA) of 1973.
 2. The [Convention on International Trade in Endangered Species of Wild Fauna and Flora](#) (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
 3. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

NAME

West Indian Manatee *Trichechus manatus*

Species profile: <https://ecos.fws.gov/ecp/species/4469>

WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

ESTUARINE AND MARINE DEEPWATER

- E1UBL

IPAC USER CONTACT INFORMATION

Agency: DESCO Environmental Consultants, LP

Name: Justin Rowland

Address: 26902 Nichols Sawmill Rd

City: Magnolia

State: TX

Zip: 77353

Email: jrowland@descoenv.com

Phone: 2812529799

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Department of Interior

APPENDIX D

National Historic Preservation Act Section 106 Documentation



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Texas Chenier Plain Refuges Complex

4017 FM 563

Anahuac, TX 77514

Phone: (409) 267-3337 Fax: (409) 267-4314



March 13, 2023

March 13, 2023

Texas Historical Commission
P.O. Box 12276
Austin, TX 78711

RE: Moody National Wildlife Refuge Shoreline Protection - Breakwaters

To Whom It May Concern:

The U.S. Fish and Wildlife Service (USFWS) proposes to construct approximately 9,173 linear feet (1.74 linear miles) of rock breakwaters along the Moody National Wildlife Refuge (NWR) shoreline in East Bay, Chambers County, Texas. The purpose of the project is to slow erosion due to tidal scour, wave action, and other natural processes. Left unprotected, the Moody NWR shoreline would continue to erode rapidly over time and saltwater will eventually intrude upon the more landward brackish and freshwater wetlands and coastal prairies, significantly changing the hydrological regime and altering the ecological diversity of the area.

The proposed rock breakwaters would be constructed in three separate segments located approximately at the -1.5-foot contour line adjacent to the shoreline of Moody NWR in East Bay as shown in the attached drawings (**Attachment A**). The breakwaters will be constructed of graded riprap (COE 650# gradation) to a crest elevation of +3.5 feet, which is an average of 5.0 feet above existing grade at the centerline, with a 3-foot top width and 2:1 side slopes, which equates to a base of 21 feet. The actual width of the base will be 20 feet, on average, because the existing grade is shallower at the shoreward toe of the breakwaters. Each rock breakwater will end in open water, transitioning into 3:1 side slopes.

Each of the breakwaters are designed with 30-foot-wide fish passes at 500-foot intervals to facilitate the movement of water, sediment, and aquatic species. Fish passes would be lined with rock (approximately 18 inches) to a 0.0 elevation to prevent excess scour at these locations.

At a minimum, day beacons will be located at the starting and ending points of the rock breakwaters, as well as every 550 feet along the breakwaters. The final configuration of warning signs will be in accordance with USCG recommendations.

Six barges at a time, containing a total of approximately 10,000 tons of riprap, will be transported from the Mississippi River to the GIWW in the vicinity of the project area. The barges will be anchored just outside the navigational channel so there would be no interference with navigation in the GIWW as a result of project operations. Two smaller shallow water barges will be utilized for construction, one spud barge containing a long-reach excavator and a light-loaded barge containing approximately 2,500 tons of riprap. The barges will be transported to the breakwater locations using a shallow water tugboat. The barge containing the excavator will be spudded down adjacent to the breakwater locations and the barge containing the rock will be secured to the back or side of the spud barge.

Geotextile fabric will be placed under the footprint of the breakwaters prior to placement of riprap. Small John boats would be utilized to access the project area for the purposes of placement of the geotextile fabric. Once the geotextile fabric is in place, the long-reach excavator will obtain riprap from the barge and place the riprap onto the breakwater locations. This process will continue until construction of the breakwaters is complete.

All work will be conducted in the water. There will be no equipment use/access or staging areas on land or in wetlands and the excavator will never leave the barge. There would be no impacts to wetland areas.

The table below provides the area, length, and volume of material for each of the three breakwater segments.

Breakwater Number	Area of Fill (acres)	Area of Fill (square feet)	Length of Breakwater (linear feet)	Volume of Fill (tons)	Volume of Fill (cubic yards)
#1	1.75	76371.00	3143.91	14647.00	8137.00
#2	1.38	60083.00	2527.32	11296.00	6275.00
#3	1.93	83964.00	3501.87	15998.00	8888.00
Totals	5.06	220418.00	9173.10	41941.00	23300.00

The USFWS contracted with Ducks Unlimited (DU) for project design and construction, and DU contracted with DESCO Environmental Consultants, LP (DESCO) to obtain regulatory clearances for the project.

Cultural Resources

DESCO reviewed records maintained by the Texas Archeological Research Laboratory (TARL) and the online Texas Historic Sites Atlas within a 1-mile radius of the project area. Site file research resulted in the finding of 10 known cultural resources sites, one archaeological project area (8500019347) and two underwater archaeological surveys (8700000213 and 8700000214). None of the sites are within the project's Area of Potential Effect (APE). The table below contains information on each of the known sites. Known sites and survey areas are depicted on maps in **Attachment B**.

Trinomial	Name	Site Type	Affiliation	Record Date	NRHP	Distance from APE (miles)	THC Atlas #
41CH177	East Bay # 1 Neyland Coll	unknown	unknown	1959	Unknown	0.15	9071017701
41CH178	Lake Surprise #1, Bull Knoll	unknown	unknown	1959	Unknown	0.4	9071017801
41CH195		Shell Midden	Prehistoric	1971	Unknown	0.36	9071019501
41CH196		Shell Midden	Prehistoric	1971	Unknown	0.3	9071019601
41CH198		burial midden of shell	Prehistoric	1971	Unknown	0.51	9071019801
41CH278	Burial 1, Upper Drum Village Reef	Human Burial	Prehistoric	1987	Yes	0.08	9071027801/8100007317
41CH348	Wallis Ridge	Shell Midden	Late Prehistoric	1991		0.35	9071034801
41CH349	Wallis Drain	Shell Midden	Prehistoric	1991	yes	0.21	9071034901
41CH388		Shell Midden	Prehistoric	2013	Unknown	0.63	9071038801
41CH387		Shell Midden	Prehistoric	2013	Unknown	0.85	9071038701

One site, 41CH278, a human burial site recorded in 1987, is located between Breakwater #1 and the shoreline of the Moody NWR. This site has eroded over time and is now in open water approximately 1 foot deep; therefore, DESCO assumes that the site has completely washed away.

The breakwater locations are within Texas General Land Office waters in East Bay. Based on a review of historic maps of the breakwater locations, it appears that the entirety of Breakwater #1 and majority of Breakwater #2 were located in land areas in 1905 that were eroded into the bay between 1918 and 1952; however, Breakwater #3 appears to be located in shallow waters of the bay, as opposed to dry land, for the same time period. **Attachment C** contains historic maps from the afore-mentioned time periods showing the breakwater locations (with a 50-meter buffer) in relation to land.

The two afore-mentioned underwater archaeological surveys (Tubby et al. and Laurence et al.) were conducted in association with seismic surveys. Survey lines were 1160 feet apart for Tubby et al. and 790 feet apart for Laurence et al., and ran almost perpendicular to the shoreline in both

cases. There were no anomalies detected overlapping the proposed breakwaters from either survey. The nearest anomaly reported was about 800 feet west of the Breakwater #1.

There would be no excavation associated with construction of the rock breakwaters. Riprap would be placed on the existing bottom of East Bay at the approximate -1.5-foot contour, outside of documented locations of any sites and/or underwater anomalies in the vicinity of the project area.

No access channels will be dredged as part of the proposed action. Should an access channel(s) be deemed necessary, this would be permitted as a separate action(s) and be evaluated separately for compliance with Section 106 of the National Historic Preservation Act.

If cultural materials are discovered during construction, work would cease in the immediate area of discovery.

Based on DESCO's review of existing information, no identified historic properties, archeological sites, or underwater anomalies are present or have the potential to be adversely affected by the proposed project. Conversely, the breakwaters would protect the integrity of the sites located inland of their locations by preventing further erosion of these areas.

For the above reasons, DESCO recommends that the work be allowed to proceed as planned. USFWS requests concurrence with DESCO's determination and recommendation.

If you have any questions or would like additional information, please feel free to call or email Ashley Chapman of DESCO at 843-870-9049/achapman@descoenv.com or to contact me at 409-267-3337 ext. 127. Additionally, if you could copy Ashley Chapman in on all correspondence at the following address, it would be greatly appreciated: DESCO, P.O. Box 1490, Magnolia, TX 77353.

Sincerely,

A handwritten signature in black ink, appearing to read "Kristin Fritz", with a stylized flourish at the end.

Kristin Fritz
Moody National Wildlife Refuge Manager

April 11, 2023

Kristin Fritz
Moody National Wildlife Refuge Manager
U.S. Fish and Wildlife Service
4017 FM 563
Anahuac, TX

Re: Project review under Section 106 of the National Historic Preservation Act of 1996 and the Antiquities Code of Texas

Moody National Wildlife Refuge Shoreline Protection - Breakwaters
THC Tracking No. 202306049

Dear Ms. Fritz,

This letter serves as comment on the proposed federal undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC). As the state agency responsible for administering the Antiquities Code of Texas, these comments also provide recommendations on compliance with state antiquities laws and regulations.

The review staff, led by Amy A. Borgens, Marie Archambeault, and Caitlin Brashear, has reviewed the 13 March 2023 letter and desktop review entitled *National Wildlife Refuge Shoreline Protection – Breakwaters* and have the following comments:

Above-Ground Resources

- No historic properties are present or affected by the project as proposed. However, if historic properties are discovered or unanticipated effects on historic properties are found, work should cease in the immediate area; work can continue where no historic properties are present. Please contact the THC's History Programs Division at 512-463-5853 to consult on further actions that may be necessary to protect historic properties.

Archeology

- **Underwater Cultural Resources – inundated terrestrial sites and associated features.** The information presented to the THC does not demonstrate that site 41CH278 has been washed away. The site was recorded in 1987 to document and remove an eroding burial. 41CH278 was not fully assessed and the boundary was not defined at that time, therefore, additional archeological investigations are warranted. The Cultural Resources table provides incomplete information, please review the data on the Atlas and at TARL. The area of each site should be provided. NRHP eligibility recommendations also do not correctly reflect the information available on the Atlas. Due to the preponderance of archeological sites recorded along and adjacent to the shoreline, a high potential for undetected archeological sites within the area of potential effects (APE) exists. Further, the correspondence does not provide a defined APE for the project.

- **Underwater Cultural Resources – Shipwrecks and Avoidance Buffers.** The project area was subject to an archeological remote-sensing survey conducted by Atkins in 2011–2012 under Texas Antiquities Permit No. 6038. The 2011/2012 survey, however, was for a seismic exploration project and the results of that investigation can only be applied to that specific seismic project due to the much larger transect line-spacing requirements for seismic surveys. Archeological surveys for seismic projects only occur along the shot source lines, wherein underwater archeological survey transects are otherwise spaced 20 m apart for surveys conducted within 3 miles of the Texas coastline (it is otherwise 30 m). Seismic surveys are akin to reconnaissance surveys and do not meet the minimum survey standards for other project types; however, the recommended anomalies and their 50-m avoidance buffers do apply to all future construction activities, unless additional archeological investigations remove them from consideration as potential cultural resources. The magnetic anomalies recommended for avoidance near Breakwaters 1 and 2 are much closer in proximity to the proposed construction activities than suggested by the desktop review. The THC has overlaid the DESCO cultural resources figure on Atkins Figure 3. This demonstrates that Breakwaters 1 and 2 are within two separate cultural resources underwater avoidance buffers and are also both within 50 m of significant anomalies. Breakwater 1 is within 100 m of the site centroid for 41CH278, which does not have a delineated site boundary. Archeological remote-sensing surveys are required for Breakwaters 1, 2, and 3.

In summary, the THC does not concur with the DESCO archeological assessment and, on the contrary, has determined that previously recorded underwater anomalies have the potential to be adversely affected by the proposed work. Additionally, due to the limitations of the 2011/2012 remote-sensing survey, there is a potential for additional underwater shipwreck targets and submerged terrestrial sites within the APE. Given the complexity of the archeological sites in the area, it is recommended a SOW be presented for THC review prior to submission of the permit application required for archeological investigations on public land.

Thank you for your cooperation in this federal and state review process, and for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Amy Borgens at 512-463-9505/Amy.Borgens@thc.texas.gov, Marie Archambeault at 512-463-8882/ Marie.Archambeault@thc.texas.gov, or Caitlin Brashear at Caitlin.Brashear@thc.texas.gov.**

Sincerely,



for
Mark Wolfe
State Historic Preservation Officer
MW/ab

Cc: Ashley Chapman, DESCO



DESCO

ENVIRONMENTAL CONSULTANTS

26902 Nichols Sawmill, Magnolia, Texas 77355 www.descoenv.com

July 25, 2023

Texas Historical Commission
P.O. Box 12276
Austin, TX 78711

RE: THC Tracking No. 202306049

Moody National Wildlife Refuge Shoreline Protection – Breakwaters:

Project review under Section 106 of the National Historic Preservation Act of 1996 and the Antiquities Code of Texas

Dear Ms. Borgens:

I am working on the archeological assessment for the Moody National Wildlife Refuge Shoreline Protection – Breakwaters (THC Tracking No. 202306049) on behalf of USFWS to address your comments from the review dated April 11, 2023, and wanted to reach out to you regarding archeological resources of concern near the undertaking's APE. As you are aware, site 41CH278 may contain very sensitive cultural components. This site is represented as an approximated location on the THC Atlas map (Figures 1 and 2). However, I have recently met with Lauren Bussiere at TARL to gain a better understanding of potentially impacted sites near the APE through examining documents and maps available at that facility.

The principal site of concern, 41CH278, contained the excavated prehistoric burial which was documented in 1987. The shoreline of the area of the PA has been documented as residing in a highly erosional interface on the north shore of East Bay, and currently is still undergoing pronounced erosion. The 1987 map from TARL shows relative locations of the burial, shoreline, and ranch road (Figure 3). Assuming the scale is correct (1 inch equaling 2.5 meters), "Ranch Road" is close to the north. The burial itself was mapped and described in the notes as "1 meter south of south shoreline." Analyzing historic aerial photography, the recession of the shoreline has been rapid in this area of East Bay since the 1940's (Figures 4-7). Most importantly, the aerial photograph from 1987 (the year of the burial retrieval) pinpoints accurately the shoreline at that time (Figure 6). It should be noted that easily identifiable natural and cultural features existing on the aerials and historic USGS topo maps were used to rectify and maintain accuracy of the overlays in GIS. Historic aerial photographs and historic topographic maps are consistent regarding key geographic benchmarks. With reasonable judgement, the overlays suggest the PA is 180 to 200 meters south of 41CH278 and the 1987 shoreline.

DESCO Environmental Consultants, LP
industry.environment.integrity

Office (281) 252-9799 • Fax (281) 789-1003

Natural Resources | Environmental Planning | GIS | Cultural Resources | Regulatory Permitting & Compliance

Additionally, the bathymetric data collected for the project suggests that intact significant inundated prehistoric sites are not likely to be present based on current depths of the bottom in the PA. Available historic documentation notes the eroding nature of the site relative to East Bay (i.e., “due to wave action from southeast winds”). Furthermore, the possibility of intact cultural features/deposits in the eroded or inundated areas offshore were also considered. Based upon available data, intact or significant cultures resources will not likely be impacted within the APE. Although 41CH278 was not fully assessed and the boundary was not defined in 1987, the PA resides well outside of the probable limits of significant intact cultural deposits.

As for historic cultural resources further offshore, Bob Gearhart will perform the required archaeological remote sensing survey of the project area. He will coordinate directly with you on his scope of work. I have also attached a shapefile (NAD83) for the project area and graphics showing the project area relative to the receding shoreline through time, and DESCO’s projected location of site 41CH278.

DESCO believes the proposed work would not adversely affect site 41CH278 or any other terrestrial archaeological sites or historic properties eligible for listing on the National Register of Historic Places and recommends that the work be allowed to proceed as planned once Bob Gearhart has addressed any nautical archaeological resources/concerns. DESCO requests concurrence with this determination and recommendation on behalf of USFWS.

If you have any questions or would like additional information, please feel free to call or email me at 843-870-9049 or achapman@descoenv.com.

Sincerely,

Ashley Chapman

Ashley Chapman
Principal Investigator

From: [Ashley A. Chapman](#)
To: [Tanya Matcek](#)
Subject: FW: Moody National Wildlife Refuge Shoreline Protection - Breakwaters
Date: Thursday, August 24, 2023 8:14:52 AM

FYI...

Ashley A. Chapman II, MA, RPA

Principal Investigator - Archaeology
DESCO Environmental Consultants
Mobile: 843-870-9049 • **Office:** 281.252.9799
26902 Nichols Sawmill Rd. Magnolia, TX 77355
www.descoenv.com • achapman@descoenv.com

From: noreply@thc.state.tx.us <noreply@thc.state.tx.us>
Sent: Thursday, August 24, 2023 8:11 AM
To: kristin_fritz@fws.gov; reviews@thc.state.tx.us; Ashley A. Chapman <achapman@descoenv.com>
Subject: Moody National Wildlife Refuge Shoreline Protection - Breakwaters



Re: Project Review under Section 106 of the National Historic Preservation Act
THC Tracking #202311735

Date: 08/24/2023

Moody National Wildlife Refuge Shoreline Protection - Breakwaters
4017 FM 563, Anahuac TX

Description: Attached is additional documentation for the Moody NWR Breakwaters Project (THC Tracking No. 202306049). This additional information supports any nautical archeological resources/concerns. USFWS is requesting concurrence that work is allowed to proceed.

Dear Kristin Fritz-Grammond:

Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act.

The review staff, led by Marie Archambeault, Amy Borgens and Caitlin Brashear, has completed its review and has made the following determinations based on the information submitted for review:

Above-Ground Resources

- No historic properties are present or affected by the project as proposed. However, if historic properties are discovered or unanticipated effects on historic properties are found, work should cease in the immediate area; work can continue where no historic properties are present. Please contact the THC's History Programs Division at 512-463-5853 to consult on further actions that may be necessary to protect historic properties.

Archeology Comments

- THC/SHPO unable to complete review at this time based on insufficient documentation. A supplemental review must be submitted, and the 30-day review period will begin upon receipt of adequate documentation.

We have the following comments: Please provide additional information concerning site 41CH278 from the 1994 report by William Louis Fullen, "Archeological Recovery of a Human Burial at Site 41CH278, Upper Drum Village Reef in East Bay, Chambers County, Texas." The report should include additional descriptions regarding the location, interpretation of site formation, and other observations needed to understand the effects of the proposed undertaking. Additionally, maps should be revised to provide metric scales for easier interpretation of distances in meters from proposed project activities.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If the project changes, or if new historic properties are found, please contact the review staff. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: marie.archambeault@thc.texas.gov, amy.borgens@thc.texas.gov, caitlin.brashear@thc.texas.gov.

This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit <http://thc.texas.gov/etrac-system>.

Sincerely,



for Mark Wolfe, State Historic Preservation Officer
Executive Director, Texas Historical Commission

Please do not respond to this email.

From: [Ashley A. Chapman](#)
To: [Marie Archambeault](#)
Subject: RE: 1994 report on 41CH278 (THC Tracking #202311735)
Date: Wednesday, September 6, 2023 10:39:10 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)
[image007.png](#)
[image008.png](#)

That would be great, thank you!

Ashley A. Chapman II, MA, RPA

Principal Investigator - Archaeology
DESCO Environmental Consultants
Mobile: 843-870-9049 • Office: 281.252.9799
26902 Nichols Sawmill Rd. Magnolia, TX 77355
www.descoenv.com • achapman@descoenv.com

From: Marie Archambeault <Marie.Archambeault@thc.texas.gov>
Sent: Wednesday, September 6, 2023 10:28 AM
To: Ashley A. Chapman <achapman@descoenv.com>
Subject: RE: 1994 report on 41CH278 (THC Tracking #202311735)

Yes, 10 am Friday, works fine. Do you want me to set up a TEAMS meeting?



Marie Archambeault

Tribal Liaison / Archeologist
Archeology Division
P.O. Box 12276, Austin, Texas, 78711-2276
Phone: +1 512 463 8882
Fax: +1 512 463 8927

thc.texas.gov



From: Ashley A. Chapman <achapman@descoenv.com>
Sent: Wednesday, September 6, 2023 10:09 AM
To: Marie Archambeault <Marie.Archambeault@thc.texas.gov>
Subject: RE: 1994 report on 41CH278 (THC Tracking #202311735)

CAUTION: External Email – This email originated from outside the THC email system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Marie,

That works for me. Let's do 10 am on Friday. Let me know if that's good.

Thanks!

Ashley A. Chapman II, MA, RPA

Principal Investigator - Archaeology

DESCO Environmental Consultants

Mobile: 843-870-9049 • Office: 281.252.9799

26902 Nichols Sawmill Rd. Magnolia, TX 77355

www.descoenv.com • achapman@descoenv.com

From: Marie Archambeault <Marie.Archambeault@thc.texas.gov>

Sent: Wednesday, September 6, 2023 9:59 AM

To: Ashley A. Chapman <achapman@descoenv.com>

Subject: RE: 1994 report on 41CH278 (THC Tracking #202311735)

Hi Ashley,

I'm available Friday morning, anytime between 9 am and noon, or Monday between 9 am and 2 pm.

Should we do a Teams meeting, so we can share visuals? I can set it up or you can.

Thanks,

Marie



Marie Archambeault

Tribal Liaison / Archeologist

Archeology Division

P.O. Box 12276, Austin, Texas, 78711-2276

Phone: +1 512 463 8882

Fax: +1 512 463 8927

thc.texas.gov



From: Ashley A. Chapman <achapman@descoenv.com>

Sent: Wednesday, September 6, 2023 9:50 AM

To: Marie Archambeault <Marie.Archambeault@thc.texas.gov>

Subject: RE: 1994 report on 41CH278 (THC Tracking #202311735)

CAUTION: External Email – This email originated from outside the THC email system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello Marie,

Thank you so much for your input. Any chance we could schedule a quick call for this week or early next?

Thanks Again!

Ashley A. Chapman II, MA, RPA

Principal Investigator - Archaeology

DESCO Environmental Consultants

Mobile: 843-870-9049 • Office: 281.252.9799

From: Marie Archambeault <Marie.Archambeault@thc.texas.gov>
Sent: Tuesday, September 5, 2023 2:07 PM
To: Ashley A. Chapman <achapman@descoenv.com>
Cc: Amy Borgens <Amy.Borgens@thc.texas.gov>
Subject: RE: 1994 report on 41CH278 (THC Tracking #202311735)

Hi Ashley,

I learned several pieces of new information in the report that should be discussed in the revised eTRAC submission.

- Pg 7 defines the study area as the beach area from the high tide mark to the water's edge, which helps place the minimalist map a bit more.
- Pg 8 mentions limitations of the study – including that entire surface collection of artifacts (mostly ceramic sherds) was discarded before cataloged.
- Pg 33-34, 36, Figures 4-5 & 7 show photos of the site as being on the sand or aboveground oyster reef, not in the water. Pg 35, Figure 6 shows the reef above water going south (report states 30 meters), and further places the minimalist map on the landscape.
- Aerials from 1995, show what appears to be an oyster reef running perpendicular to the shoreline that extends for 60 meters south of shoreline (partially underwater). The Upper Drum Village Oyster Reef is mapped as perpendicular to the shoreline. That oyster reef is still visible on modern aerials. Given the extent of the oyster reef in the photos and the 1990s aerial images, I would argue that this site is actually further west than Atlas has mapped.
- Report says the site appears to continue onto the Moody Ranch, which is to say north of the burial, but no evidence of it extending beyond the ranch road. A surface survey was conducted within a 50 meter radius of the burial (on GLO land). Given they report the site as 15 meters in size, one can argue that according to information presented in the report and on the site form that the site is estimated as 15 by 15 m on the GLO side (map says site estimated to continue 9 meters north, so arguably the site may only be considered to extend 6 meters south of the burial).

Please provide the distance from the southern most known point of the site to the northern most impact zone of the currently proposed activities. Discuss the possibility of different location along the shoreline, and distance of current project from either location. Discuss whether the proposed project will require any ground disturbance or if riprap will be placed. If the later, how far out will rip rap extend. What erosion is expected on either side of the riprap. If you have additional information on the location of the Upper Drum Village Oyster Reef, provide it and discuss projects impacts to the reef.

Please let me know if you have any questions, and we can schedule a call later this week.

Thanks,
Marie



Marie Archambeault

Tribal Liaison / Archeologist
Archeology Division
P.O. Box 12276, Austin, Texas, 78711-2276
Phone: +1 512 463 8882
Fax: +1 512 463 8927

thc.texas.gov



From: Ashley A. Chapman <achapman@descoenv.com>
Sent: Wednesday, August 30, 2023 10:38 AM
To: Marie Archambeault <Marie.Archambeault@thc.texas.gov>
Cc: Amy Borgens <Amy.Borgens@thc.texas.gov>
Subject: RE: 1994 report on 41CH278 (THC Tracking #202311735)

CAUTION: External Email – This email originated from outside the THC email system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Marie,

Thank you again for the quick turnaround on the 1994 report by William Louis Fullen, "Archeological Recovery of a Human Burial at Site 41CH278, Upper Drum Village Reef in East Bay, Chambers County, Texas."

After review of the report, no new additional relevant descriptions regarding the location, interpretation of site formation, and other observations needed to understand the effects of the proposed undertaking was found apart from what I found within the TARL sources, (i.e. maps and site descriptions). Additionally, the reference maps have been revised to provide metric scales for the interpretation of distances in meters from proposed project activities.

Apart from the changes that both of you suggested regarding the 1994 report and map scales, I believe that I have enough information to support the idea that the project's footprint will not impact resources related to site. Do you have any other suggestions or issues before I resubmit via eTRAC? Please call me at your earliest convenience at 843-8709049.

Thanks Again!

Ashley A. Chapman II, MA, RPA

Principal Investigator - Archaeology
DESCO Environmental Consultants
Mobile: 843-870-9049 • Office: 281.252.9799
26902 Nichols Sawmill Rd. Magnolia, TX 77355
www.descoenv.com • achapman@descoenv.com

From: Marie Archambeault <Marie.Archambeault@thc.texas.gov>
Sent: Thursday, August 24, 2023 3:07 PM
To: Ashley A. Chapman <achapman@descoenv.com>
Subject: 1994 report on 41CH278

That was faster retrieval than I imagined! I haven't had a chance to review it yet.



Marie Archambeault

Tribal Liaison / Archeologist

Archeology Division

P.O. Box 12276, Austin, Texas, 78711-2276

Phone: +1 512 463 8882

Fax: +1 512 463 8927

thc.texas.gov





United States Department of the Interior

FISH AND WILDLIFE SERVICE
Texas Chenier Plain Refuges Complex
4017 FM 563

Anahuac, TX 77514
Phone: (409) 267-3337 Fax: (409) 267-4314



October 11, 2023

Texas Historical Commission
P.O. Box 12276
Austin, TX 78711

RE: THC Tracking No. 202306049

**Moody National Wildlife Refuge Shoreline Protection – Breakwaters:
Project review under Section 106 of the National Historic Preservation Act of 1996 and
the Antiquities Code of Texas**

Dear Ms. Borgens:

Ashley Chapman, Principal Investigator of DESCO Environmental Consultants, LP (DESCO), has been working on the archeological assessment for the Moody National Wildlife Refuge Shoreline Protection – Breakwaters (THC Tracking No. 202306049) on behalf of USFWS to address your comments from the review dated August 24, 2023.

I am uploading the letter and attachments prepared by DESCO through the eTRAC system and requesting your concurrence with DESCO's findings and recommendations.

If you have any questions or would like additional information, please feel free to call or email Ashley Chapman of DESCO at 843-870-9049/achapman@descoenv.com or to contact me at 409-267-3337 ext. 127. Additionally, if you could copy Ashley Chapman in on all correspondence, it would be greatly appreciated.

Sincerely,

Kristin Fritz
Moody National Wildlife Refuge Manager



DESCO

ENVIRONMENTAL CONSULTANTS

26902 Nichols Sawmill, Magnolia, Texas 77355 www.descoenv.com

October 10, 2023

Texas Historical Commission
P.O. Box 12276
Austin, TX 78711

**RE: Project review under Section 106 of the National Historic Preservation Act of 1996 and the Antiquities Code of Texas
Moody National Wildlife Refuge Shoreline Protection - Breakwaters
THC Tracking No. 202306049**

To Whom it May Concern:

In response to comments provided in your August 24, 2023, email response to USFWS related to DESCO's archaeological assessment of the Moody National Wildlife Refuge Shoreline Protection – Breakwaters (THC Tracking No. 202306049), I am providing the following additional information to clarify concerns that arose during THC's review of the additional information regarding archeological site 41CH278 near the undertaking's area of potential effect (APE).

41CH278 contained a prehistoric burial which was excavated in 1987 and finally reported on in 1994 by William Louis Fullen, "Archeological Recovery of a Human Burial at Site 41CH278, Upper Drum Village Reef in East Bay, Chambers County, Texas." This report defines the study area as the beach area from the high tide mark to the water's edge. Pg 33-34, 36, Figures 4-5 & 7 show photos depicting the site on the sand or aboveground oyster reef, not in the water. Pg 35, Figure 6 shows the reef above water going south (report states 30 meters), and further places the minimalist map on the landscape.

Aerials from 1995 show what appears to be an oyster reef running perpendicular to the shoreline that extends 60 meters south of shoreline (partially underwater). The Upper Drum Village Oyster Reef is mapped as perpendicular to the shoreline. That oyster reef is still visible on modern aerials. Given the extent of the oyster reef in the photos and the 1995 and 2006 aerial images, as shown in Figure 9 (revised), one could argue that this site is actually further west than Atlas has it mapped, placing it even further from the Moody NWR Breakwater project footprint than originally anticipated. The report says the site appears to continue onto the Moody Ranch, which is north of the burial, but there is no evidence of it extending beyond the ranch road. A surface survey was conducted within a 50-meter radius of the burial (on GLO land). Given that Fullen reports the site as 15 meters in size, one can argue that according to information presented in the report and on the site form that the site is estimated as 15 by 15 m on the GLO side (map says site estimated to continue 9 meters north, so arguably the site may only be considered to extend 6 meters south of the burial).

DESCO Environmental Consultants, LP
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Based on the location of the site documented in Fullen's report, the northernmost point of the Breakwater footprint is 180 meters away from the southernmost point of the site. Based on the location recorded in the Atlas, the breakwater footprint is 135 meters away from the site. Regardless of which of these locations is accurate, the site is well outside of the project's area of potential effect (Figure 10).

As described in the project information provided with my initial submittal, six barges at a time, containing a total of approximately 10,000 tons of riprap, will be transported from the Mississippi River to the GIWW in the vicinity of the project area. The barges will be anchored just outside the navigational channel so there would be no interference with navigation in the GIWW as a result of project operations. Two smaller shallow water barges will be utilized for construction, one spud barge containing a long-reach excavator and a light-loaded barge containing approximately 2,500 tons of riprap. The barges will be transported to the breakwater locations using a shallow water tugboat. The barge containing the excavator will be spudded down adjacent to the breakwater locations and the barge containing the rock will be secured to the back or side of the spud barge. Geotextile fabric will be placed under the footprint of the breakwaters prior to placement of riprap. Small John boats would be utilized to access the project area for the purposes of placement of the geotextile fabric. Once the geotextile fabric is in place, the long-reach excavator will obtain riprap from the barge and place the riprap onto the breakwater locations. This process will continue until construction of the breakwaters is complete. All work will be conducted in the water. There will be no equipment use/access or staging areas on land or in wetlands and the excavator will never leave the barge.

No erosion is expected as a result of the proposed project; conversely, the purpose of the project is to help prevent erosion of the Moody NWR shoreline. Based on other similar breakwaters constructed along Refuge shorelines, material is expected to accrete behind the breakwaters over time. In addition to protection of the shoreline and sensitive wetland areas inland of the shoreline, the Moody NWR Breakwaters would offer protection to any cultural sites or components of sites that remain behind them.

Additionally, the bathymetric data collected for the project suggests that intact significant inundated prehistoric sites are not likely to be present based on current depths of the bottom in the PA. Available historic documentation notes the eroding nature of the site relative to East Bay (i.e. "due to wave action from southeast winds"). Furthermore, the possibility of intact cultural features/deposits in the eroded or inundated areas offshore were also considered. Based upon available data, intact or significant cultures resources will not likely be impacted within the APE. Although 41CH278 was not fully assessed and the boundary was not defined in 1987, the APE resides well outside of the probable limits of significant intact cultural deposits.

I have attached a shapefile (NAD83) for the project area and graphics showing the project area relative to the receding shoreline though time, and DESCO's projected location of site 41CH278.

As for historic cultural resources further offshore, Bob Gearhart will perform the required archaeological remote sensing survey of the project area. He will coordinate with the THC through the Antiquities Permit process and conduct work in accordance with the Antiquities permit, once approved.

DESCO believes the proposed work would not adversely affect site 41CH278 or any other terrestrial archaeological sites or historic properties eligible for listing on the National Register of Historic Places and recommends that the work be allowed to proceed as planned once Bob Gearhart has addressed any nautical archaeological resources/concerns. DESCO requests concurrence with this determination and recommendation on behalf of USFWS.

If you have any questions or would like additional information, please feel free to call or email me at 843-870-9049 or achapman@descoenv.com.

Sincerely,

Handwritten signature of Ashley A. Chapman in black ink.

Ashley Chapman
Principal Investigator

From: noreply@thc.state.tx.us <noreply@thc.state.tx.us>
Sent: Wednesday, November 1, 2023 8:10 AM
To: Fritz, Kristin <kristin_fritz@fws.gov>; reviews@thc.state.tx.us
<reviews@thc.state.tx.us>
Subject:

Re: Project Review under Section 106 of the National Historic Preservation Act
THC Tracking #202401232
Date: 11/01/2023
Moody National Wildlife Refuge Shoreline Protection - Breakwaters
4017 FM 563, Anahuac TX

Description: Additional information for 202306049. NAD83shp file can be sent once requested due to shp files not being accepted.

Dear Kristin Fritz-Grammond:

Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act.

The review staff, led by Marie Archambeault, Amy Borgens and Caitlin Brashear, has completed its review and has made the following determinations based on the information submitted for review:

Above-Ground Resources

- No historic properties are present or affected by the project as proposed. However, if historic properties are discovered or unanticipated effects on historic properties are found, work should cease in the immediate area; work can continue where no historic properties are present. Please contact the THC's History Programs Division at 512-463-5853 to consult on further actions that may be necessary to protect historic properties.

Archeology Comments

- No historic properties affected. However, if cultural materials are encountered during construction or disturbance activities, work should cease in the immediate area; work can continue where no cultural materials are present. Please contact the THC's Archeology Division at 512-463-6096 to consult on further actions that may be necessary to protect the cultural remains.
- THC/SHPO concurs with information provided.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If the project changes, or if new historic properties are found, please contact the review staff. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: marie.archambeault@thc.texas.gov,

amy.borgens@thc.texas.gov, caitlin.brashear@thc.texas.gov.

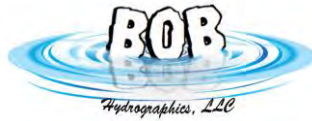
This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit <http://thc.texas.gov/etrac-system>.

Sincerely,



for Mark Wolfe, State Historic Preservation Officer
Executive Director, Texas Historical Commission

Please do not respond to this email.



December 11, 2023

Delivered via eTRAC

Amy Borgens
State Marine Archaeologist
Texas Historical Commission
108 West 16th Street
Austin, Texas 78711

RE: Antiquities Permit 31403; Moody National Wildlife Refuge Breakwaters Project; draft report transmittal

Dear Ms. Borgens:

BOB Hydrographics, LLC (BOB) is pleased to deliver a marine archaeology survey report (pdf format) for the above-referenced project. I would appreciate your review of this report. BOB recently conducted a marine geophysical survey and archaeological assessment of proposed rock breakwaters in Galveston and Chambers Counties, Texas on behalf of my client, DESCO Environmental Consultants, LP (DESCO). Three segments of breakwater, totaling 1.74 miles long, are proposed along the East Galveston Bay shoreline of the Moody National Wildlife Refuge in State Mineral Lease Tracts, East Bay 151, 163, and 164. The proposed breakwaters would slow erosion of the shoreline due to tidal scour, wave action, and other natural processes, helping to protect valuable wetland habitat and other assets/resources of importance to the management of the refuge further inland.

The United States Fish and Wildlife Service contracted with Ducks Unlimited (DU) for project design and construction, and DU contracted with DESCO to obtain regulatory clearances for the project. The Texas Historical Commission (THC) required a submerged archaeology survey for the proposed breakwaters based on their review of the project scope. The planned survey area, including a 50-meter buffer mandated by the THC, encompassed 81 acres. Portions of that area (23 acres) could not be surveyed on the land side of the proposed breakwaters, because it is too shallow to survey without undue risk to equipment. A review of cultural background determined that 2 submerged archaeological investigations but no wrecks have been reported within 1 kilometer of the survey areas.

BOB completed a marine geophysical survey on October 6, 2023 under Texas Antiquities Permit 31403. The magnetometer survey covered 78 acres. The sonar survey covered 130.4 acres. Survey area depths range from -0.9 feet to -3.5 feet (North American Vertical Datum of 1988). BOB assessed all geophysical data to locate potential archaeological sites affected by construction. No artifacts were collected during the survey. No significant geophysical targets were discovered that might be potentially eligible for the State Antiquities Landmark or for the National Register of Historic Places. BOB recommends cultural resource clearance for all areas surveyed.

Please don't hesitate to contact me if you have any questions or concerns. I can be reached any time at 512-517-8564 or by email at BOB.hydrographics@gmail.com.

All my best,

Robert Gearhart
Owner

cc: Tanya Matcek, DESCO Environmental Consultants, LP

TEXAS ANTIQUITIES COMMITTEE

Archeology Permit # 31403

This permit is issued by the Texas Historical Commission, hereafter referred to as the Commission, represented herein by and through its duly authorized and empowered representatives. The Commission, under authority of the Texas Natural Resources Code, Title 9, Chapter 191, and subject to the conditions hereinafter set forth, grants this permit for:

Underwater Survey

To be performed on a potential or designated landmark or other public land known as:

Title: Moody National Wildlife Refuge Breakwaters

County: Chambers

Location: Shoreline of Moody NWR bordering East Galveston Bay, 4.8-7.8 miles east of Smith Point

Owned or Controlled by: (hereafter known as the Permittee):

Texas General Land Office

1700 N. Congress Ave., Ste. 935

Austin/Texas/78701

Sponsored by (hereafter known as the Sponsor):

U.S. Fish and Wildlife Service, Texas Chenier Plain National Wildlife Refuges

P.O. Box 278

Anahuac, Texas 77514

The Principal Investigator/Investigation Firm representing the Owner or Sponsor is:

Robert L Gearhart

BOB Hydrographics, LLC

1315 Fall Creek Loop

Cedar Park, TX 78613

This permit is to be in effect for a period of:

0 Years and 12 Months

And will expire on:

10/5/2024

During the preservation, analysis, and preparation of a final report or until further notice by the Commission, artifacts, field notes, and other data gathered during the investigation will be kept temporarily at:

BOB Hydrographics, LLC

Upon completion of the final permit report, the same artifacts, field notes, and other data will be placed in a permanent curatorial repository at:

Texas Archeological Research Laboratory

Scope of Work under this permit shall consist of:

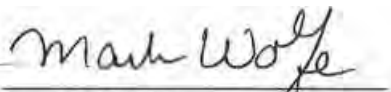
An underwater archeological survey that meets or exceeds requirements in the Texas Administrative Code, Title 13, Chapter 28, Rule §28.6. Instrumentation for underwater geophysical remote-sensing surveys includes, but is not limited to, a marine magnetometer, side-scan sonar, recording fathometer, and positioning systems. Underwater survey permits may include ground-truthing of archeological sites and remote-sensing targets through diver examination and probing of buried cultural resources. Limited removal of sediment overburden to expose a small section of a buried object is permissible. For details, see scope of work submitted with permit application.

This permit is granted on the following terms and conditions:

1. This project must be carried out in such a manner that the maximum amount of historic, scientific, archeological, and educational information will be recovered and preserved and must include the scientific, techniques for recovery, recording, preservation and analysis commonly used in archeological investigations. All survey level investigations must follow the state survey standards and the THC survey requirements established with the projects sponsor(s).
2. The Principal Investigator / Investigation Firm, serving for the Owner/ Permittee and / or the Project Sponsor, is responsible for insuring that specimens, samples, artifacts, materials and records that are collected as a result of this permit are appropriately cleaned, and cataloged for curation. These tasks will be accomplished at no charge to the Commission, and all specimens, artifacts, materials, samples, and original field notes, maps, drawings, and photographs resulting from the investigations remain the property of the State of Texas, or its political subdivision, and must be curated at a certified repository. Verification of curation by the repository is also required, and duplicate copies of any requested records shall be furnished to the Commission before any permit will be considered complete.
3. The Principal Investigator / Investigation Firm serving for the Owner/ Permittee, and / or the Project Sponsor is responsible for the publication of results of the investigations in a thorough technical report containing relevant descriptions, maps, documents, drawings, and photographs. A draft copy of the report must be submitted to the Commission for review and approval. Any changes to the draft report requested by the Commission must be made or addressed in the report, or under separate written response to the Commission. Once a draft has been approved by the Commission, one(1) printed, unbound copy and one bound copy of the final report containing at least one map with the plotted location of any and all sites recorded and two copies of the report in tagged PDF format shall be furnished to the commission. One PDF copy must include the plotted location of any and all sites recorded and the other should not include the site location data. An electronic copy of the completed Abstracts in Texas Contract Archeology Summary Form must also be submitted with the final report to the Commission.
4. If the Owner / Permittee, Project Sponsor or Principal Investigator / Investigation Firm fails to comply with any of the Commission's Rules of Practice and Procedure or with any of the specific terms of this permit, or fails to properly conduct or complete this project within the allotted time, the permit will fall into default status. A notification of Default status shall be sent to the Principal Investigator/ Investigation Firm and the Principal Investigator will not be eligible to be issued any new permits until such time that the conditions of this permit are complete or, if applicable, extended.
5. The Owner/ Permittee, Project Sponsor, and Principal Investigator/ Investigation Firm, in the conduct of the activities hereby authorizes, must comply with all laws, ordinances and regulations of the State of Texas and of its political subdivisions including, but not limited to, the Antiquities Code of Texas; they must conduct the investigation in such a manner as to afford protection to the rights of any and all lessees or easement holders or other persons having an interest in the property and they must return the property to its original condition insofar as possible, to leave it in a state which will not create hazard to life nor contribute to the deterioration of the site or adjacent lands by natural forces.
6. Any duly authorized and empowered representative of the Commission may, at any time, visit the site to inspect the fieldwork as well as the field records, materials, and specimens being recovered.
7. For reasons of site security associated with historical resources, the Project Sponsor(if not the Owner/ Permittee), Principal Investigator, Owner, and Investigation Firm shall not issue any press releases, or divulge to the news media, either directly or indirectly, information regarding the specific location of, or other information that might endanger those resources, or their associated artifacts without first consulting with the Commission and the State agency or political subdivision of the State that owns or controls the land where the resource has been discovered.
8. This permit may not be assigned by the Principal Investigator/ Investigation Firm, Owner / Permittee, or Project Sponsor in whole, or in part to any other individual, organization, or corporation not specifically mentioned in this permit without the written consent of the Commission.
9. Hold Harmless: The Owner/ Permittee hereby expressly releases the State and agrees that Owner / Permittee will hold harmless, indemnify, and defend(including reasonable attorney's fees and cost of litigation) the State, its officers, agents, and employees in their official and/or individual capacities from every liability, loss, or claim for damages to persons or property, direct or indirect of whatsoever nature arising out of, or in any way connected with, any of the activities covered under this permit. The provisions of this paragraph are solely for the benefit of the State and the Texas Historical Commission and are not intended to create or grant any rights, contractual or otherwise, to any other person or entity.
10. Addendum: The Owner/Permittee, Project Sponsor and Principal Investigator/Investigation Firm must abide by any addenda hereto attached.

Upon a finding that it is in the best interest of the State, this permit is issued on 10/5/2023


Brad Jones,
Archeology Division Director


Mark Wolfe,
Executive Director

From: [Robert Gearhart](#)
To: [Tanya Matcek](#)
Subject: Fwd: Moody National Wildlife Refuge Breakwater Project
Date: Wednesday, January 10, 2024 4:22:25 PM

Tanya,
Your email was timed perfectly! I received the THC concurrence (below) for Moody Breakwaters yesterday, but didn't realize it until your message prompted me to look.
Bob

----- Forwarded message -----

From: <noreply@thc.state.tx.us>
Date: Tue, Jan 9, 2024 at 9:35 AM
Subject: Moody National Wildlife Refuge Breakwater Project
To: <bob.hydrographics@gmail.com>, <reviews@thc.state.tx.us>, <Jerry.L.Androy@usace.army.mil>



Re: Project Review under Section 106 of the National Historic Preservation Act and/or the Antiquities Code of Texas

THC Tracking #202404124

Date: 01/09/2024

Moody National Wildlife Refuge Breakwater Project (Permit 31403)

East Galveston Bay

Galveston, TX

Description: Submerged archaeological survey of 3 rock breakwaters proposed along the northern shore of East Galveston Bay, adjacent the Moody National Wildlife Refuge.

Dear Robert L Gearhart:

Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act and the Antiquities Code of Texas.

The review staff, led by Amy Borgens, has completed its review and has made the following determinations based on the information submitted for review:

Archeology Comments

- No identified underwater archeological sites, historic shipwrecks, and/or significant remote-sensing targets present or affected. However, if buried cultural materials are encountered during project activities, work should cease in the immediate area; work can continue where no cultural materials are present. Please contact the THC's

Archeology Division at 512-463-6096 to consult on further actions that may be necessary to protect the cultural remains.

- THC/SHPO concurs with information provided for the underwater project area.
- This draft report is acceptable. To facilitate review and make project information and final reports available through the Texas Archeological Sites Atlas, we appreciate submission of tagged pdf copies of the final report including one restricted version with all site location information (if applicable), and one public version with all site location information redacted; an online abstract form submitted via the abstract tab on eTRAC; and survey area shapefiles submitted via the shapefile tab on eTRAC. For questions on how to submit these please visit our video training series at:

<https://www.youtube.com/playlist?list=PLONbbv2pt4cog5t6mCqZVaEAx3d0MkgQC>

Please note that these steps are required for projects conducted under a Texas Antiquities Permit.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If the project changes, or if new historic properties are found, please contact the review staff. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: amy.borgens@thc.texas.gov.

This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit <http://thc.texas.gov/etrac-system>.

Sincerely,



for Mark Wolfe, State Historic Preservation Officer
Executive Director, Texas Historical Commission

Please do not respond to this email.

cc: Jerry.L.Androy@usace.army.mil</p>

APPENDIX E
Magnuson Stevens Act EFH
Documentation

From: [Fritz, Kristin](#)
To: charrish.stevens@noaa.gov
Cc: [Tanya Matcek](#); [Cooper, Tim](#)
Subject: EFH Consultation Letter/Determination - Moody NWR Breakwaters
Date: Wednesday, November 15, 2023 11:37:44 AM
Attachments: [USFWS NMFS EFH Consultation Request 11022023.docx](#)
[Attachment A Construction Drawings Moody NWR Breakwaters .pdf](#)

Hello Charrish,

Please see attached NMIFS EFH Consultation Request and construction drawings reference as Attachment A to the letter for the Moody National Wildlife Refuge Breakwaters project. Please let me know if you have any other questions.

Thanks,

Kristin

Kristin Fritz-Grammond

Deputy Complex Manager & Anahuac NWR Manager
4017 FM 563/ PO Box 278
Anahuac, TX 77514
Office: 409-267-3337 x 123
Fax: 409-267-4314
Email: Kristin_Fritz@fws.gov



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Texas Chenier Plain Refuges Complex
4017 FM 563

Anahuac, TX 77514
Phone: (409) 267-3337 Fax: (409) 267-4314



November 2, 2023

Charrish Stevens
Fishery Biologist, Habitat Conservation Division
NOAA National Marine Fisheries Service (NMFS)
4700 Ave U
Galveston, TX 77551

RE: Moody NWR Breakwaters (Essential Fish Habitat)

Dear Ms. Stevens,

The US Fish and Wildlife Service proposes to construct three separate breakwaters in East Bay along the southern boundary of Moody National Wildlife Refuge (NWR) for shoreline protection. The breakwaters would be constructed generally northwest and west of Frozen Point in key locations that are experiencing erosion from wave action, tidal scour, and other natural processes. The breakwaters would total approximately 9,173 feet in length and would be constructed on both sides of and between existing Texas Parks and Wildlife Department (TPWD) oyster projects, which are also designed to protect the shoreline.

The purpose of this proposed action is to slow erosion of the MNWR shoreline due to tidal scour, wave action, and other processes. The need for the proposed action is to protect/conserves/enhance the intermediate-brackish marsh, managed freshwater wetlands, and high marsh cordgrass flats adjacent to East Bay that are critical habitats for migrating, wintering, and resident bird populations on the Western Gulf Coast.

Shoreline erosion and saltwater intrusion are negatively impacting the intermediate and brackish marsh habitats within estuarine wetlands of Moody NWR. Erosion is occurring along the southern shoreline of Moody NWR due to waves generated from commercial and recreational vessel traffic and natural processes (i.e., wind, storm events, tidal fluctuations, etc.).

The breakwaters will reduce the amount of higher salinity water encroaching into historically intermediate-brackish marsh habitat and will protect adjacent high marsh, cordgrass flats, and managed freshwater wetlands further inland. Following construction of the breakwaters, the shoreline will stabilize and the areas behind the breakwaters are expected to be colonized by emergent vegetation to establish tidal vegetated marsh, which will further enhance shoreline habitat.

Ducks Unlimited (DU) will construct the project for USFWS. This project is funded through NOAA Damage Assessment, Remediation, and Restoration Program (DARRP). DESCO Environmental Consultants, LP (DESCO) has been contracted by Ducks Unlimited (DU) and is authorized by DU and USFWS to obtain regulatory clearances for the project.

DESCO conducted a review of Essential Fish Habitat (EFH) in the project area on behalf of USFWS. Based on review of the NOAA Fisheries Essential Fish Habitat Mapper available at

https://www.habitat.noaa.gov/apps/efhmapper/?page=page_1, areas mapped as EFH for shrimp, red drum, reef fish fishery, and coastal migratory pelagic resource (mackerels), all life stages, are present within the breakwater alignments.

It is our understanding that consultation with NMFS under the Magnuson-Stevens Act with regard to EFH is required because our project area contains EFH and has a federal nexus. We are providing the following information to initiate consultation under the Magnuson-Stevens Act with regard to Essential Fish Habitat:

1. Project Description (below)
2. Essential Fish Habitat Determination (below)
3. 8.5 x 11 drawings showing the project's location and design (**Attachment A**)

Project Description

The proposed rock breakwaters would be constructed in three separate segments located approximately at the -1.5-foot contour line adjacent to the shoreline of MNWR in East Bay as shown in the attached drawings (**Attachment A**). The breakwaters will be constructed of graded riprap (COE 650# gradation) to a crest elevation of +3.5 feet, which is an average of 5.0 feet above existing grade at the centerline, with a 3-foot top width and 2:1 side slope, which equates to a base of 21 feet. The actual width of the base will be 20 feet, on average, because the existing grade is shallower at the shoreward toe of the breakwaters. Each rock breakwater will end in open water, transitioning into 3:1 side slope.

Table 1 provides the area, length, and volume of material for each of the three breakwater segments.

Breakwater Number	Area of Fill	Area of Fill	Length of Breakwater	Volume of Fill
	(acres)	(square feet)	(linear feet)	(tons)
#1	1.75	76371.00	3143.91	14647.00
#2	1.38	60083.00	2527.32	11296.00
#3	1.93	83964.00	3501.87	15998.00
Totals	5.06	220418.00	9173.10	41941.00

Each of the breakwaters are designed with 30-foot-wide fish passes at 500-foot intervals to facilitate the movement of water, sediment, and aquatic species. Fish passes would be lined with rock (approximately 18 inches) to a 0.0 elevation to prevent excess scour at these locations.

At a minimum, day beacons will be located at the starting and ending points of the rock breakwaters, as well as every 550 feet along the breakwaters. The final configuration of warning signs will be in accordance with USCG recommendations.

Six barges at a time, containing a total of approximately 10,000 tons of riprap, will be transported from the Mississippi River to the GIWW in the vicinity of the project area. The barges will be anchored just outside the navigational channel so there would be no interference with navigation in the GIWW as a result of project operations. Two smaller shallow water barges will be utilized for construction, one spud barge containing a long-reach excavator and a light-loaded barge containing approximately 2,500 tons of riprap. The barges will be transported to the breakwater locations using a shallow water tugboat. The barge containing the excavator will be spudded down adjacent to the breakwater locations and the barge containing the rock will be secured to the back or side of the spud barge.

Geotextile fabric will be placed under the footprint of the breakwaters prior to placement of riprap. Small John boats would be utilized to access the project area for the purposes of placement of the geotextile fabric. Once the geotextile fabric is in place, the long-reach excavator will obtain riprap from the barge and place the riprap onto the breakwater locations. This process will continue until

construction of the breakwaters is complete.

All work will be conducted in the water. There will be no equipment use/access or staging areas on land or in wetlands and the excavator will never leave the barge. There would be no impacts to wetland areas.

Essential Fish Habitat Determination

Direct Impacts

Project construction would have short-term, minor impacts as well as long-term effects on EFH for all fisheries that are managed by NMFS in the project area. Mobile species such as crabs, and shrimp would likely avoid the area for the duration of project construction, avoiding injury or mortality. During construction there may be a temporary increase in turbidity and underwater noise that would also contribute to temporary disturbance or displacement of aquatic species. Some less mobile benthic species could be injured or killed as a result of crushing or burial during the placement of the breakwaters. Impacts also include the conversion of 5.06 acres of shallow, open water habitat into a hardened, artificial riprap structure.

Benefits of the project include protection of the Moody NWR shoreline and approximately 1,927 acres of salt and brackish high and low tidal marsh and coastal salty prairies and shrublands adjacent to East Bay, as well as managed freshwater wetlands further inland. In the long-term, this will benefit managed species in the area by providing improved habitat for all life stages of fish and shellfish.

Indirect Impacts

Once the proposed shoreline protection project is completed, beneficial indirect effects on water quality and habitat are anticipated as a result of reduced shoreline erosion. Approximately 156.37 acres of shallow, open water habitat would be present between the breakwaters and the existing shoreline. Following construction of the breakwaters, the shoreline will stabilize and the areas behind the breakwaters are expected to be colonized by emergent vegetation to establish tidal vegetated marsh, which will further enhance the shoreline and provide foraging habitat and nursery grounds for several aquatic species. Protecting and creating tidal vegetated marsh habitat could lead to an increase in species richness of juvenile and smaller fish. The breakwaters can also serve as habitat for filter-feeding bivalves, mobile invertebrates, and young fish.

Cumulative Impacts

This project is only one of several projects that will cumulatively protect, restore, and improve habitat for aquatic and terrestrial species within Texas Chenier Plain National Wildlife Refuge Complex (Refuge Complex). Similar breakwaters have been constructed in the past, successfully protecting the shoreline of East Bay and adjacent interior marsh habitat, and several similar breakwater projects are permitted and/or planned in the near future, including but not limited to projects along the shorelines of the Brazoria, Anahuac, and McFaddin, National Wildlife Refuges.

Conclusion

Construction of the proposed breakwaters will temporarily impact EFH used by managed fish species. The proposed project would produce minor short-term, localized impacts on EFH for all fisheries that are managed by NMFS in the project area, including shrimp, red drum, reef fish, and mackerels. Long-term impacts include the conversion of 5.06 acres of shallow, open water habitat into a hardened, artificial riprap structure. This habitat conversion will be offset by the beneficial effects of the project.

Construction of the breakwaters will protect approximately 1,927 acres of salt and brackish high and low tidal marsh and coastal salty prairies and shrublands adjacent to East Bay, as well as managed freshwater wetlands further inland. Following construction of the breakwaters, we fully expect the shoreline will stabilize and the areas behind the breakwaters will be colonized by emergent vegetation to establish tidal vegetated marsh, which will further enhance the shoreline and provide foraging habitat

and nursery grounds for several aquatic species.

Based on the discussion above, we have determined the project would not have any substantial adverse effects on federally managed fishery species, or EFH. Conversely, the project is expected to improve EFH over the longer term for all species in the assessment.

We request concurrence with the above determination. If you have any questions or would like additional information, please feel free to contact me at 409-267-3337 ext. 127 or via email at kristin_fritz@fws.gov. Additionally, if you could copy Tanya Matcek of DESCO in on all correspondence at tmatcek@descoenv.com it would be greatly appreciated.

Sincerely,

A handwritten signature in black ink that reads "Kristin Fritz". The signature is written in a cursive style with a large, looped "K" and "F".

Kristin Fritz
Moody National Wildlife Refuge Manager

From: [Fritz, Kristin](#)
To: [Tanya Matcek](#)
Subject: Fw: [EXTERNAL] Re: EFH Consultation Letter/Determination - Moody NWR Breakwaters
Date: Monday, November 20, 2023 2:39:16 PM

Kristin Fritz-Grammond

Deputy Complex Manager & Anahuac NWR Manager
4017 FM 563/ PO Box 278
Anahuac, TX 77514
Office: 409-267-3337 x 123
Fax: 409-267-4314
Email: Kristin_Fritz@fws.gov

From: charrish stevens - NOAA Federal <charrish.stevens@noaa.gov>
Sent: Friday, November 17, 2023 9:37 AM
To: Fritz, Kristin <kristin_fritz@fws.gov>
Subject: [EXTERNAL] Re: EFH Consultation Letter/Determination - Moody NWR Breakwaters

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Good morning Kriistin,
I have received your EFH consultation request and will provide a response as soon as possible.
Thanks,

Charrish Stevens
Fishery Biologist
Habitat Conservation Division
NOAA National Marine Fisheries Service
4700 Ave U, Galveston, TX 77551

Currently Teleworking contact at
Mobile Number: 713-715-9613

Office Ph: (409) 766-3699
Fax: (409) 766-3575
Email: charrish.stevens@noaa.gov

On Wed, Nov 15, 2023 at 11:41 AM Fritz, Kristin <kristin_fritz@fws.gov> wrote:

Hello Charrish,

Please see attached NMIFS EFH Consultation Request and construction drawings reference as Attachment A to the letter for the Moody National Wildlife Refuge Breakwaters project. Please

let me know if you have any other questions.

Thanks,

Kristin

Kristin Fritz-Grammond

Deputy Complex Manager & Anahuac NWR Manager

4017 FM 563/ PO Box 278

Anahuac, TX 77514

Office: 409-267-3337 x 123

Fax: 409-267-4314

Email: Kristin_Fritz@fws.gov