US Army Corps of Engineers ®
Galveston District

Appendix E

Coastal Barrier Resources Act Compliance

for

Coastal Texas Protection and Restoration Study

October 2020

INTERAGENCY CBRA CONSULTATIONS

The Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 *et seq*.) encourages the conservation of hurricane prone and biologically rich coastal barriers. No new expenditures or financial assistance may be made available under authority of any Federal law for any purpose within the System Units of the John H. Chafee Coastal Barrier Resources System (CBRS) including: construction or purchase of roads, structures, facilities, or related infrastructure, and most projects to prevent the erosion of or otherwise stabilize any inlet, shoreline, or inshore area. However, the appropriate Federal officer, after consultation with the U.S. Fish and Wildlife Service (Service), may make Federal expenditures and financial assistance available within System Units for activities that meet one of the CBRA's exceptions (16 U.S.C. 3505). The CBRA imposes no restrictions on actions and projects within the CBRS that are carried out with State, local, or private funding. Any response from the Service to a CBRA consultation request is in the form of an opinion only. The Service has not been granted veto power. **The responsibility for complying with the CBRA and the final decision regarding the expenditure of funds for a particular action or project rests with the Federal funding agency.**

There are two types of units within the CBRS, System Units and Otherwise Protected Areas (OPAs). OPAs are denoted with a "P" at the end of the unit number (e.g., "FL-64P"). Most new Federal expenditures and financial assistance, including Federal flood insurance, are prohibited within System Units. The only Federal spending prohibition within OPAs is on Federal flood insurance; other Federal expenditures are permitted. **Consultation with the Service is not needed if the proposed action or project is located within an OPA.** However, agencies providing disaster assistance that is contingent upon a requirement to purchase flood insurance after the fact are advised to disclose the OPA designation and information on the restrictions on Federal flood insurance to the recipient prior to the commitments of funds.

The Service has developed the attached template to help facilitate the CBRA consultation process. This form, and any additional documentation, may be submitted to the appropriate Ecological Services Field Office to fulfill the CBRA's consultation requirement.

Additional Resources:

CBRS Mapper: *https://www.fws.gov/cbra/maps/mapper.html*

CBRS shapefile and Web Map Service: *https://www.fws.gov/cbra/maps/Boundaries.html*

CBRA consultations: *https://www.fws.gov/cbra* under "Project Consultations"

CBRS in/out property determinations: *https://www.fws.gov/cbra/Determinations.html*

Ecological Services Field Office contact information: *https://www.fws.gov/offices*

August 14, 2020

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The U.S. Army Corps of Engineers (USACE) requests a consultation with the U.S. Fish and Wildlife Service (Service) under the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 *et seq*.) for the proposed Coastal Texas Protection and Restoration Feasibility Study (Coastal Texas Study).

Project Location

The Coastal Texas Protection and Restoration Feasibility Study (Coastal Texas Study) is a comprehensive study of the coastal zone throughout Texas for both coastal storm risk management (CSRM) and ecosystem restoration (ER). Since Congress authorized the USACE to study CSRM and ER along the Texas several measures included in the recommended plan intersects with CBRS units, these locations are included in *Table 1*. The USACE used the USFWS's CBRS online mapping tool (http://www.fws.gov/cbra/Maps/Mapper.html) to identify the CBRS unit locations and numbers. Additional information on the project locations can be found in the attached project maps and the ecosystem restoration project plans. Also, as part of our ongoing coordination with the Service, electronic KMZ and Shape files have been shared for all of the project measures.

Table 1. List of project measure locations that cross CBRS Units

Measure	Authority	Location	CBRS Units Effected
G-28: Bolivar Peninsula and West Bay GIWW Shoreline and Island Protection	Ecosystem Restoration	Along 27 miles of GIWW shoreline from High Island to Port Bolivar in Chambers and Jefferson counties, Texas	T02A and T03A
B-2: Follets Island Gulf Beach and Dune Restoration	Ecosystem Restoration	Along 10.1 miles of Gulf shoreline on Follets Island in Brazoria County, Texas	T04
B-12: West Bay and Brazoria GIWW Shoreline Protection	Ecosystem Restoration	Along 43 miles of GIWW shoreline from just east of Oyster Lake to and area just west of the Cedar Lakes in Brazoria and Matagorda counties, Texas This measure also includes a segment on the west side of west Galveston Bay just east of Oyster Lake	T04, T05, and T06
W-3: Port Mansfield Channel, Island Rookery, and Hydrologic Restoration	Ecosystem Restoration	This measure contains multiple parts, the portion in the CBRS unit is a one mile-long borrow source on the northernmost part of South Padre Island in Willacy County, Texas	T11

Bolivar Peninsula Beach and Dune System	Dual purpose: Ecosystem Restoration and Coastal Storm Risk Management	Along 22.8 miles of Gulf shoreline from approximately 2 miles east of State Highway 87 to the end of Biscayne Beach Road.	T02A and T03A
Bolivar Peninsula Tie-In feature for the Bolivar Roads Surge Barrier	Coastal Storm Risk Management	This feature is approximately 2.8 miles long, starts near the shoreline interface with the north Jetty, runs along State Highway 87, and ties into the Bolivar Peninsula Beach and Dune System near the end of Biscayne Beach Road in Galveston County, Texas	T03A

Description of the Proposed Action or Project

The recommend plan is a complementary set of Ecosystem Restoration and Coastal Storm Risk Management measures that restore large segments of degraded ecosystems, enhance resiliency, and establish multiple lines of defense for the Coastal Zone in the State of Texas.

The recommended plan includes six project measures where a portion or all of the measure is located in a CBRS unit (*Table 1*). The following includes an overall description of each measure and a description of the specific part or work that would occur in a CBRS unit. For additional information see the attached maps and the plans for the ER measures. Also, these descriptions are based on a feasibility level of design, minor modifications to these descriptions and designs may occur.

The Ecosystem Restoration measures that include marsh, dune, and island habitat restoration would all be vegetated with native plant species. Selection of plant species and plant source locations will be coordinated with the Interagency Review Team. All elevations in the description are referenced to the North American Vertical Datum of 1988 (NAVD 88).

G-28: Bolivar Peninsula and West Bay GIWW Shoreline and Island Protection:

Overall Description: This measure consists of utilizing 36 miles of rock breakwater at a crest height of 7 feet with 2H:1V side slopes and a base width of 46 feet to stop erosion along the Gulf Intracoastal Waterway and to protect 664 acres of marsh restoration that would be constructed mostly in areas between the proposed breakwaters and the existing eroded shoreline. G-28 also includes 18 acres of oyster reef creation, and 5 miles of bird rookery island habitat restoration along the GIWW on the north side of West Galveston Bay. Maintenance dredge material from the GIWW would be the sediment source for the marsh restoration and island habitat restoration. The oyster cultch material would be commercially sourced clean cultch, similar to that used for oyster reef restoration projects associated with the Houston Ship Channel. Gaps in the breakwaters are included in the designs to allow for fish passage. The designs for the breakwaters are modeled after similar structures that line the GIWW at the Anahuac National Wildlife Refuge and the McFaddin National Wildlife Refuge which are in close proximity to the project.

Description in CBRS unit: G-28 crosses two CBRS units along the GIWW on the north side of Bolivar peninsula, T02A and T03A. This measure would construct approximately 3.2 miles of breakwater totaling 10.0 acres in CBRS unit T02A. This measure would also restore 12.6 acres of marsh in CBRS unit T02A. This measure includes construction of approximately 7.1 miles of breakwater totaling 41.0 acres in CBRS unit T03A. This measure would also restore 207.7 acres of marsh in CBRS unit T03A.

B-2: Follets Island Gulf Beach and Dune Restoration:
Overall Description: This beach nourishment and dune restoration measure features 1,113.8 acres/10.1 miles of dune/beach restoration. The measure would restore the beach and dune complex on about 10.1 miles of Gulf shoreline on Follets Island in Brazoria County, Texas. The dune would have a crest elevation of 12 feet, width of 10 feet with 3H:1V slopes, and beach width would be 164 feet. Approximately 8,782,000 cubic yards of sand would be needed to construct this measure. The sand material for this measure would come from an offshore location, specifically, from the Sabine and/or Heald Banks. The study team reviewed and incorporated many of the Service's design aspects for beach and dune restoration project at the McFaddin National Wildlife Refuge. The dimensions for the project were designed using geomorphic guidelines established using data on Kemp's ridley sea turtle (*Lepidochelys kempii*) nesting preferences that were identified by Culver *et al.* (2020). The Kemp's ridley sea turtle is considered a sentinel species for beach and dune systems in Texas, which means that the presence of nesting is an indicator of overall habitat quality for multiple species including shore birds and other species.

Description in CBRS unit: Almost the entirety (1102.5 acres) of this measure is located in CBRS unit T04. The offshore borrow source is not within a CBRS unit.

B-12 West Bay and Brazoria GIWW Shoreline Protection:
Overall Description: This measure consists of utilizing 43 miles of rock breakwater at a crest height of 7 feet with 2H:1V side slopes and a base width of 46 feet, 0.17 acre of oyster cultch creation, and 551 acres of marsh nourishment. The sediment sources for B-12 include maintenance dredge material from the GIWW and the Freeport Channel. Gaps in the breakwaters are included in the designs to allow for fish passage. The designs for the breakwaters are modeled after similar structures that line the GIWW at the Anahuac National Wildlife Refuge and the McFaddin National Wildlife Refuge which are in close proximity to the project.

Description in CBRS unit: B-12 crosses three CBRS units along the GIWW and on the west side of West Galveston Bay, T04, T05, and T06. This measure would construct approximately 5.8 miles of breakwater totaling 8.8 acres in CBRS unit T04. This measure would also restore 145.2 acres of marsh in CBRS unit T04. This measure includes construction of approximately 3.8 miles of breakwater totaling 12.0 acres in CBRS unit T05. This measure would also restore 26.0 acres of marsh in CBRS unit T05. This measure includes construction of approximately 1.5 miles of breakwater totaling 8.6 acres in CBRS unit T06. This measure would also restore 9.0 acres of marsh in CBRS unit T06. Due to the location of the CBRS units in relation to the measure, the planned sediment source for this work would be maintenance material from the GIWW.

W-3: Port Mansfield Channel, Island Rookery, and Hydrologic Restoration:
Overall Description: The measure consists of three elements: (1) 9.5 miles of beach nourishment along the Gulf shoreline north of the Port Mansfield Channel; (2) protection and restoration of Mansfield Island with the construction of a 0.66-mile rock breakwater and placement of sediment from the Port Mansfield Channel to create 22.3 acres of island surface at an elevation of 7.5 feet; and (3) restoration of the hydrologic connection between Brazos Santiago Pass and the Port Mansfield Channel by dredging of a portion of the Port Mansfield Ship Channel, which will provide for 112,864.1 acres of hydrologic restoration in the Lower Laguna Madre. The borrow source for the beach nourishment would also be the Port Mansfield Channel and an approximately 1-mile-long area just south of the Port Mansfield Channel's south jetty adjacent to and just offshore from South Padre Island.

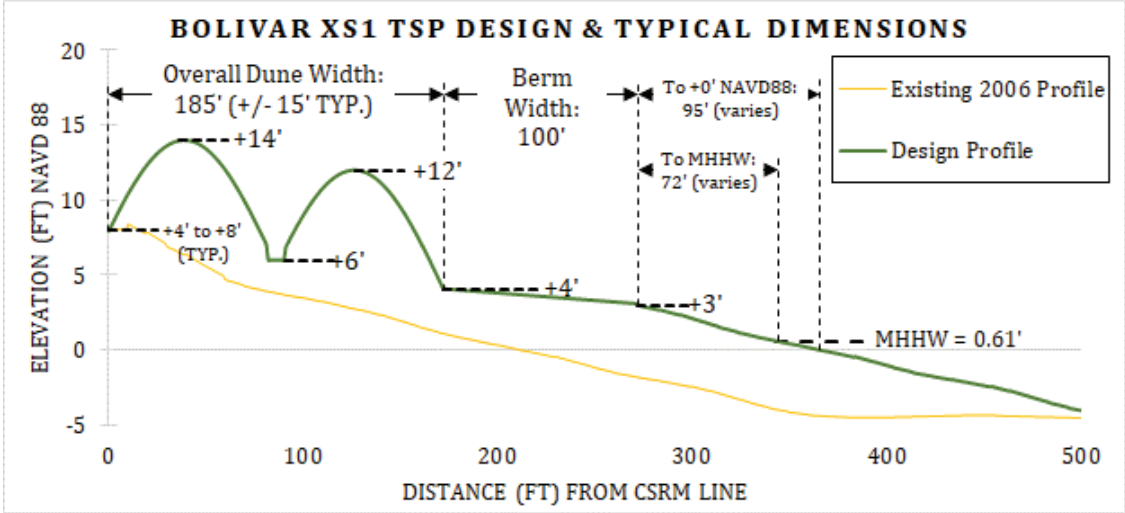
Description in CBRS unit: W-3 crosses CBRS unit T11 with the only proposed activity being dredging for beach nourishment. The borrow site within T11 is a narrow 1-mile-long area, totaling 117.0 acres, just south of the Port Mansfield Channel's south jetty adjacent to and just offshore from South Padre Island.

Bolivar Peninsula Beach and Dune System:
Overall Description: The Bolivar Peninsula beach and dune system spans 22.8 miles of Gulf shoreline of Bolivar Peninsula from 2.0 miles east of State Highway 87 to the end of Biscayne Beach Road. The construction includes a two dune system which will have a seaward dune elevation of 12.0 feet and a landward dune elevation of 14.0 feet. The dunes would have an initial slope gradient of 5H: 1V. The restored beach (from the toe of the dune to elevation 0-foot) would be approximately 195-foot-wide. The restored beach width matches parts of Bolivar Peninsula that are considered to be functioning well. On average, the new profile would extend the portion of the beach above the Mean Higher High Water Datum by and a length of 84 feet gulfward (these lengths would vary based on the beach contours at the time of construction). The design team used a Kemps Ridley nesting ecological model to optimize the design for the dual purpose beach and dune measure to ensure geomorphic characteristics of the beach and dune system were regionally appropriate.

The sediment source for the Bolivar Peninsula Beach and Dune feature would be the Sabine and Heald Banks located approximately 30 miles offshore from Bolivar Peninsula. The feasibility estimate for the Bolivar Peninsula Beach and Dune feature would require an initial volume of 22.1 million cubic yards of sand material with a 10 year re-nourishment cycle that would include an additional 1.9 million cubic yards of sand material for each cycle. The re-nourishment period and volumes were determined by the engineering team who used a lifecycle analysis.

Description in CBRS unit: The Bolivar Peninsula Beach and Dune System crosses two CBRS units along the Gulf shoreline of Bolivar Peninsula, T02A and T03A. This measure would construct approximately 6.7 miles of beach and dune complex totaling 340.7 acres in CBRS unit T02A. This measure would construct approximately 3.65 miles of beach and dune complex totaling 191.8 acres in CBRS unit T03A.

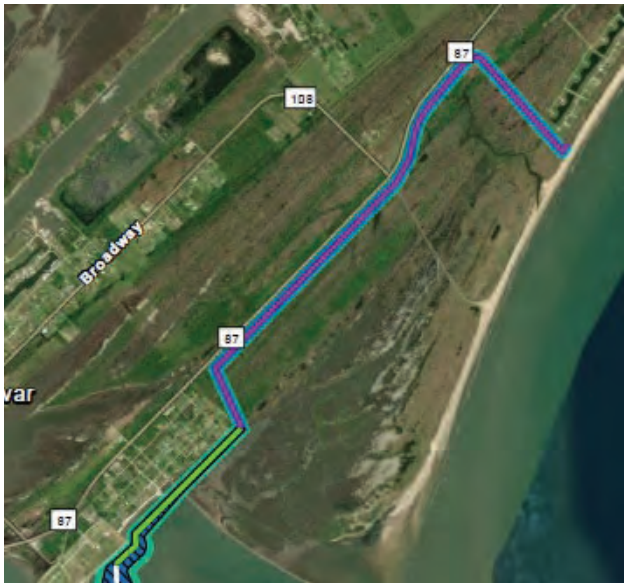
Figure 1. Bolivar Beach and Dune Cross Section



Bolivar Peninsula Tie-In feature for the Bolivar Roads Surge Barrier:
Description in CBRS unit: The measure includes a combination floodwall system (combi-wall) that consists of vertical piling, batter piling and a concrete cap system) and levee before tying into the Bolivar Peninsula Beach and Dune Measure. The combi-wall would extend for 5,300-linear-foot and has a top of structure elevation of 21.5-foot. The levee would be approximately 3.3 miles in length and would have a 5:1 slope on the gulf facing side, a 3:1 slope on the interior side, a crest width of 10-foot, and a crest height of 12-foot. The levee would be constructed by hauling in clean commercially sourced clay material.

Description in CBRS unit: The Bolivar Peninsula Tie-In feature measure would construct approximately 2.8 miles of earthen levee totaling 96.2 acres in CBRS unit T03A.

Figure 2. Location of the Bolivar Peninsula Tie-In feature (purple line denotes levee and green line denotes combi-wall, and outer lines show right of way and some scour protection)



The Coastal Texas Study has been performed under the authority of Section 4091, Water Resources Development Act of 2007, Public Law 110-114 and it is presumed that funding for project construction would come from Congress in a future Water Resources Development Act.

Applicable Exception(s) under 16 U.S.C. 3505(a)
Identify the appropriate exception(s) for the action or project under the CBRA (16 U.S.C. 3505(a)).

General Exceptions

☐ 16 U.S.C. 3505(a)(1): Any use or facility necessary for the **exploration, extraction, or transportation of energy resources** which can be carried out only on, in, or adjacent to a coastal water area because the use or facility requires access to the coastal water body.

☒ 16 U.S.C. 3505(a)(2): The **maintenance or construction of improvements of existing Federal navigation channels** (including the Intracoastal Waterway) and related structures (such as jetties), including the disposal of dredge materials related to such maintenance or construction. A Federal navigation channel or a related structure is an existing channel or structure, respectively, if it was authorized before the date on which the relevant System unit or portion of the System Unit was included within the CBRS.

☐ 16 U.S.C. 3505(a)(3): The maintenance, replacement, reconstruction, or repair, but not the expansion, of **publicly owned or publicly operated roads, structures, or facilities that are essential links** in a larger network or system.

☐ 16 U.S.C. 3505(a)(4): **Military activities** essential to national security.

☐ 16 U.S.C. 3505(a)(5): The construction, operation, maintenance, and rehabilitation of **Coast Guard facilities** and access thereto.

Specific Exceptions
These exceptions must also be consistent with all three purposes of the CBRA (see "Justification" section below).

☒ 16 U.S.C. 3505(a)(6)(A): **Projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats**, including acquisition of fish and wildlife habitats, and related lands, stabilization projects for fish and wildlife habitats, and recreational projects.

☐ 16 U.S.C. 3505(a)(6)(B): Establishment, operation, and maintenance of **air and water navigation aids** and devices, and for access thereto.

☐ 16 U.S.C. 3505(a)(6)(C): Projects under the **Land and Water Conservation Fund Act** of 1965 (16 U.S.C. 4601-4 through 11) and the **Coastal Zone Management Act** of 1972 (16 U.S.C. 1451 et seq.).

☐ 16 U.S.C. 3505(a)(6)(D): **Scientific research**, including aeronautical, atmospheric, space, geologic, marine, fish and wildlife, and other research, development, and applications.

☐ 16 U.S.C. 3505(a)(6)(E): Assistance for **emergency actions essential to the saving of lives and the protection of property and the public health and safety**, if such actions are performed pursuant to sections 5170a, 5170b, and 5192 of title 42 **and are limited to actions that are necessary to alleviate the emergency.**

☐ 16 U.S.C. 3505(a)(6)(F): Maintenance, replacement, reconstruction, or repair, but not the expansion (except with respect to United States route 1 in the Florida Keys), of **publicly owned or publicly operated roads, structures, and facilities.**

☒ 16 U.S.C. 3505(a)(6)(G): **Nonstructural projects for shoreline stabilization** that are designed to mimic, enhance, or restore a natural stabilization system.

Table 2. List of measure with corresponding exceptions.

Measure	General Exceptions	Specific Exceptions	
	§ 3505(a)(2)	§ 3505(a)(6)(A)	§ 3505(a)(6)(G)
G-28: Bolivar Peninsula and West Bay GIWW Shoreline and Island Protection	X	X	
B-2: Follets Island Gulf Beach and Dune Restoration		X	X
B-12: West Bay and Brazoria GIWW Shoreline Protection	X	X	
W-3: Port Mansfield Channel, Island Rookery, and Hydrologic Restoration		X	
Bolivar Peninsula Beach and Dune System		X	X
Bolivar Peninsula Tie-In feature for the Bolivar Roads Surge Barrier	*does not apply*	*does not apply*	*does not apply*

In a meeting with USACE the Service agreed that it is acceptable to describe how certain project measures meet multiple exceptions, *Table 2* identifies the project measure by the applicable exception(s). The Service also agreed with USACE that due to the nature of the Bolivar Peninsula Tie-In feature for the Bolivar Roads Surge Barrier, that the measure did not meet an exception. USACE plans to work with our Non-federal Sponsor to ensure that no federal funds are expended on the portions of this measure within CBRS Unit T03A. USACE also confirmed with the Service that the Non-federal Sponsor's funding for the portions of this measure within CBRS Unit T03A will need to be above and beyond their congressionally approved, federal cost share allocation.

Justification for Exceptions

General Exceptions

The ecosystem restoration measures G-28 and B-12 are consistent with General Exception 16 U.S.C. 3505(a)(2). Construction was completed on the Gulf Intracoastal Waterway on June 18, 1949, the original channel width was approximately 125 feet. Today the GIWW is 400 to 500 feet wide in some sections and is continuing to erode. This ongoing erosion along the shorelines of the GIWW results in the loss of sensitive habitats including coastal prairie, palustrine wetlands, and estuarine wetlands which are all being converted to unconsolidated open water habitat. Additionally, the erosion increases the maintenance dredging costs as sediment from the eroded shorelines is transported into the navigation channel. Also, as the barriers that separate the GIWW from the Bay systems that line the Texas Coast are eroded away, the protection that the GIWW affords barges and tug boats is reduced as these vessels are exposed to increased fetch, wind, and waves which create navigational hazards and decrease the operational efficiency of the navigation channel. The USACE Operations, Navigation Team for the GIWW has identified cost saving resulting from reduced shoaling in the channel near the breakwaters built by the service at the Anahuac National Wildlife Refuge and the McFaddin National Wildlife Refuge. Additionally, the elevations of the breakwaters and the engineered gaps are designed to act as sediment traps which will help to accrete wetland habitat and will further reduce maintenance dredging costs for the navigation channel.

***Specific Exceptions* and the three purposes of CBRA:**

For an activity to meet a *Specific Exception*, it must be consistent with all three purpose of CBRA, which are: 1. minimize the loss of human life, 2. minimize wasteful expenditure of federal revenues, and 3. minimize damage to fish, wildlife, and other natural resources.

All of the measures included in the recommended plan are consistent with all three purposes of CBRA, for several reasons, one specific reason that applies to all of the measures is that none of the measures in the recommended plan were intentionally cited in a CBRS unit or were formulated for the purpose of encouraging development on barrier island resources. Texas' Gulf coastline is protected by a series of barrier islands and peninsulas that shield interior bays and estuaries from the harsh physical environment of the Gulf of Mexico and contain many diverse, highly productive habitats. As a result of this geomorphology (lots of barrier islands), Texas' gulf coast is dotted with numerous CBRS units. It would have been impossible to achieve the congressionally approved study purpose, which is to formulate solutions for system wide coastal storm risk reduction and ecosystem restoration, without proposing some work within CBRS units.

The explanations on the consistency of ER measures G-28, B-2, B-12, and W-3 will be discussed together because they are similar in nature, similar in setting, ER measures, and if authorized by congress, would be all funded from the USACE ER appropriations. These ER measures are consistent with all three purpose of CBRA. G-28, B-12, and W-3 are located in remote areas that are difficult to access (not easily accessible by automobiles) and therefore, none of these measures would encourage development and the resulting increased risk of loss of human life. Moreover, all of these measures are part of a system that is designed to improve the resiliency of the natural environment to coastal storms, they were not formulated to protect or encourage human development. G-28 and B-12 are mostly located along the GIWW and would not provide

protection to developable areas within CBRS units from storms moving in off the Gulf and would therefore not encourage development within the CBRS units since the primary threat to these areas is from tropical storms. All of the beach nourishment included in W-3 would be within the Padre Island National Seashore which is federally protected from development. The only work that would occur in the CBRS unit for W-3 is borrowing sediment which would not encourage development. The construction of B-2 will use almost the entirety of land between the TXDOT right of way for Bluewater Highway (State Highway 257) and the Gulf, meaning there would not be a risk of increased development south of State Highway 257 from the project. Development to the north of State Highway 257 has been limited by the inability of property owners to get federally backed insurance and the fact that the overwhelming majority of the land is wetlands characterized as waters of the United States.

ER measures G-28, B-2, B-12, and W-3 are consistent with the second purpose of CBRA which is to minimize wasteful expenditure of federal revenues. The discussion above about why these four measures would not have the effect of encouraging development applies to this purpose as well. Since these measures wouldn't encourage development they would not create the need for future federal revenues in these areas because of development. Additionally, each USACE ER measures is formulated to be self-sustaining, meaning that even though it would be constructed in a CBRS unit, it would be designed to last without operations and maintenance activities. The PDT identified relative sea level change (RSLC) as a potential that may justify the future need for re-nourishment, in this event the Non-Federal Sponsor would be responsible for these actions if needed.

During project formulation, the Interagency Coordination Team, which includes representatives from the Service, worked to find examples of successful and unsuccessful restoration projects with similar goals and objectives to the ER measures to make sure the lessons learned were incorporated into the designs. Examples of where these lessons learned were incorporated into these four measures include the use of breakwaters for erosion protection instead of articulated concrete block, the use of sand fencing on dunes to hold sediment (where appropriate), and planting the measures with an appropriate diversity and density of regionally sourced native plant species. Also, a monitoring and adaptive management plan was developed by the PDT in consultation with the resource agencies including the Service.

The USACE hosted an Interagency Coordination Team workshop to use the extensive knowledge base of the local resource agencies in developing the monitoring parameters and the adaptive management strategies for these measures. The development of a robust monitoring and adaptive management plan will help to ensure the measures reach a self-sustaining status by the end of the 10-year monitoring period. Additionally, for USACE planning purposes, ecological modeling, including Habitat Evaluation Procedure (HEP) and Wetland Valuation Analysis (WVA), was used to quantify the ecological lifts expected from each ER measure. The Kemps Ridley sea turtle nesting model has also been applied to all of the beach and dune measures to further quantify additional benefits which will be reported in the next draft document release. The economists on the PDT used the projected costs of the measures and the results of the ecological modeling to run cost effectiveness and incremental cost analysis, also known as a "is it worth it analysis." All of these measures successfully passed this analysis.

Please note that because of the far reaching benefits of W-3 to the hydrology of the Laguna Madre, the projected benefits per cost were extremely high.

ER measures G-28, B-2, B-12, and W-3 are consistent with the third purpose of CBRA which is to minimize damage to fish, wildlife, and other natural resources associated with the coastal barriers by restricting Federal expenditures and financial assistance which have the effect of encouraging development. The purpose of all four of these ER measures is to restore degraded habitat for fish and other wildlife species. All of the breakwaters included in the project plans were designed to have the minimum footprint necessary to stop erosion. All of the breakwaters in these ER measures were designed to be similar to projects constructed by the Service and the Texas Parks and Wildlife Department on the GIWW to protect NWRs and State lands. All of the breakwaters in these measures were designed to protect sensitive habitats from future losses or to protect restoration areas. The breakwaters also provide habitat for sessile organisms including oysters. All four of these measures have broad support from the resource agencies who helped develop and optimize the designs for them. In the previous paragraph it discusses the ecological modeling that went into analyzing these measures. The parameters and assumptions that went into the ecological modeling were developed by the Interagency Coordination Team. The main point of including Table 3 is to show that the ecological modeling for all four of these ER measures showed large net benefits to their respective ecosystems.

Table 3. Results of the Ecological Modeling

Measure	Without-Project	With Project	Net AAHUs*
G-28	20,327	21,414	1,087
B-2	222	613	391
B-12	30,357	31,618	1,261
W-3	8,279	38,815	30,536

AAHUs = Average Annual Habitat Units

The Bolivar Peninsula Beach and Dune System is consistent with the three purposes of CBRA. Specifically, regarding the first purpose of CBRA, expenditures on the Bolivar Peninsula Beach and Dune System would not encourage development for several reasons detailed below. First, the cost of complying with building codes on Bolivar Peninsula in Coastal High Hazard Areas (FIRM maps zones V, VE, V1-30) makes new housing development very expensive. Second, the proposed beach and dune without a hardened core would still present a significant risk to structures that are not elevated on piers and will not change the availability of flood insurance for properties in CBRS units. Third, the coastal dune/berm does not protect against flooding caused by high water from Galveston Bay. Forth, the presence of the dune feature is unlikely to change the current development pattern because the availability of federal flood protection insurance is driving the preference of non-CBRS lands over lands within the CBRS units. Based on current rate of development on Bolivar, there is presently decades of available lands that are outside of the CBRS units that will be developed before lands inside the CBRS units would likely be developed. Finally, the dune feature is part of a CSRM system that is cost effective and provides storm damage reduction benefits that are orders of magnitude greater than any additional federal expenditure that might arise from incidental development that might occur within CBRS units after construction of this project.

The previous draft for, the Coastal Texas Study, that was released for public comment in 2018, included an additional measure for Bolivar Peninsula, the construction of a floodwall levee from the Surge Barrier Tie in at Port Bolivar to High Island. The previously proposed floodwall levee would have been a typical grass lined clay levee structure and would have provided coastal storm risk reduction for the structures within the system. Based on an analysis of the public comments, the floodwall levee was determined to be infeasible to implement. In response, the levee was removed from the plan and the Bolivar Beach and Dune measure was refined to provide some risk reduction and ecosystem restoration benefits for the region. This refinement does not afford the same level of risk reduction as the levee but removed the impacts to access and land use. If the full system was constructed and a tropical storm was approaching the Texas Coast, the presence of the CCSRM system would not alter emergency management or evacuation recommendations for people on Bolivar Peninsula.

Bolivar Peninsula is a very popular place, even after the catastrophic damage from Hurricane Ike (2008), people have rebuilt on the Peninsula and development has expanded but not in any of the CBRS units. The highest storm surges from Hurricane Ike occurred on Bolivar Peninsula, while most of the tide gauges failed, NOAA ground assessment teams recorded that the surge was between 15' and 20' (Berg 2009). "Almost every structure on parts of the Bolivar Peninsula, including the communities of Crystal Beach, Gilchrist, and High Island, were completely razed from their foundations due to the surge and accompanying waves (Berg 2009)." The aerial imagery figures included in Figures 3, 4, and 5 show that since Hurricane Ike, there has been wide spread recovery but little to no development in the CBRS units on Bolivar Peninsula.

Figure 3. Bolivar Peninsula Pre-Hurricane Ike (Google Earth September 2008)

Figure 4. Bolivar Peninsula soon after Hurricane Ike (Google Earth September 2008)

Figure 5. Bolivar Peninsula Recent (Google Earth June 2018)

The Bolivar Peninsula Beach and Dune System is consistent with the second purpose of CBRA which is to minimize wasteful expenditure of Federal revenues, because it is part of the CSRM system that has a benefit cost ratio greater than 1 which indicate that the project cost is less than the expected storm damages prevented. Similar to the Fire Island to Montauk Point Hurricane Sandy project in New York (USACE CBRA Consultation Request Attached), the Bolivar Peninsula Beach and Dune System would reestablish the geomorphic functionality of the coastal barrier which is crucial to maintain the ecosystems in Galveston Bay and to restore resiliency which would provide benefits to inland communities. The PDT performed a resiliency index for Bolivar Peninsula and concluded that the erosion is only going to get worse and the eastern portion of the Peninsula, where dunes are minimal or non-existent, is highly vulnerable to breaching (See attached summary: Bolivar Peninsula FWOP Discussion). If a breach occurred along Bolivar Peninsula the impacts to the Galveston Bay Ecosystem could be very expensive to fix. Galveston Bay contains one of the largest oyster and shrimp commercial fisheries on the Gulf Coast. Also, the Study Team performed a lifecycle analysis and has included 10-year renourishment cycles in the cost estimates for the project. Finally, the economic analysis done for the study has demonstrated that the barrier resources provided by Bolivar Peninsula are key for the resilience of the region.

The Bolivar Peninsula Beach and Dune System is consistent with the third purpose of CBRA which is to minimize damage to fish, wildlife, and other natural resources associated with the coastal barriers by restricting Federal expenditures and financial assistance which have the effect of encouraging development. The Bureau of Economic Geology at the University of Texas has documented long term erosion on Bolivar Peninsula as far back as the 1930's. The analysis show that the majority of the Peninsula is losing between 2 and 5 feet of shoreline a year. This project would restore these degraded habitats which help restore fish and wildlife resources. Also, the measure was designed so that it would extend gulfward from the line of vegetation at the base of the existing dunes (if present) to ensure that impacts to fish and wildlife resources are minimized. Also, this feature was originally designed as an ER measure, when it was reconsidered as a dual purpose measure, the study team used ecological models to ensure that the habitat benefits from the measure would still be realized. The study team also used the Kemps Ridley sea turtle nesting model to ensure that the geomorphic design of the measure would be similar to areas shown to be preferred by nesting Ridleys. This measure would tie into the McFadden Beach nourishment project east of High Island. Also, the study team in Consultation with the Service agreed to stop the construction of the measure before reaching Piping Plover Critical Habitat at Bolivar Roads.

ER measures G-28, B-2, B-12, W-3 and the Bolivar Peninsula Beach and Dune dual purpose measure all meet CBRA exception 16 U.S.C. 3505(a)(6)(A): Projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats, including acquisition of fish and wildlife habitats, and related lands, stabilization projects for fish and wildlife habitats, and recreational projects. All of these measures were formulated in consultation with federal and state resource agencies to restore degraded habitats. As discussed above, all of the measures have been assessed using ecological models and which supports the prediction that the project would enhanced fish and wildlife resources and habitats along the Texas Coast.

ER Measure B-2 and the Bolivar Beach and Dune System meet CBRA exception 16 U.S.C. 3505(a)(6)(G): Nonstructural projects for shoreline stabilization that are designed to mimic, enhance, or restore a natural stabilization system. Similar to the Fire Island project and these beach and dune nourishment activities would use sand to stabilize the shorelines and that this activity would help restore and stabilize the natural system. Other than native dune plants and some sand fencing, both of these measures would be constructed using only sand, there is no other structural component to the measures. The applicability of this exception to these measures is consistent with the justification and legislative support for the finding described in the Fire Island to Montauk Point project's CBRA consistency determination.

References

Berg, R. 2009. Tropical Cyclone Report, Hurricane Ike, National Hurricane Center, NOAA, https://www.nhc.noaa.gov/data/tcr/AL092008_Ike.pdf.

Culver, M. Gibeaut, J.C., Shaver, D.J., Tissot, P., and Starek, M. 2020.Using Lidar Data to Assess the Relationship Between Beach Geomorphology and Kemp's Ridley (*Lepidochelys kempii*) Nest Site Selection Along Padre Island, TX, United States. Front. Mar. Sci., 08 April 2020.

Contact Information

Mr. Jeff Pinsky
US Army Corps of Engineers
Regional Planning and Environmental Center
P. O. Box 1229
Galveston, TX 77553-1229
(409) 766-3039
Jeffrey.F.Pinsky@usace.army.mil

Sincerely,

Amanda M. McGuire
Chief, Environmental Branch
Regional Planning and Environmental Center

MCGUIRE.AMANDA.M.1399923332 Digitally signed by MCGUIRE.AMANDA.M.1399923332 Date: 2020.10.21 09:44:24 -05'00'

DATE

10-21-2020

U.S. Fish and Wildlife Service Response

Below is the Service's response to U.S. Army Corps of Engineers request for a consultation under the CBRA for Gulf Intracoastal Waterway High Island to Brazos River Texas Section 216 Study. Authorized under Sec 1001 (42) PL 110-114; 08 Nov 2007. This response represents the Service's opinion. **The final decision regarding the expenditure of funds for this action or project rests with the Federal funding agency.** US Army Corps of Engineers has fulfilled its obligation to consult with the Service under the CBRA for this particular action or project within the CBRS. Please note that any new commitment of Federal funds associated with this action or project, or change in the project design and/or scope, is subject to the CBRA's consultation requirement.

The Service has reviewed the information provided by U.S. Army Corps of Engineers, and believes the referenced action/project is:

- ☐ Not located within a System Unit of the CBRS and the CBRA does not apply (except with respect to the restrictions on Federal flood insurance)
- ☒ Located within a System Unit of the CBRS and meets the exception(s) to the CBRA selected above
- ☐ Located within a System Unit of the CBRS and meets different exception(s) than the one(s) selected above (see additional information/comments below)
- ☐ Located within a System Unit of the CBRS and does not meet an exception to the CBRA (see additional information/comments below)
- ☐ Due to many competing priorities, the Service is unable to provide an opinion on the applicability of the CBRA's exceptions to this action/project at this time. The Department of the Army, Galveston District, Corps of Engineers may elect to proceed with the action/project if it has determined that the action/project is allowable under the CBRA. Please note that any new commitment of Federal funds associated with this action/project or a related future project is subject to the CBRA's consultation requirement.

Additional Information/Comments

The Service also recognizes that it is not the intention of the project to promote development and that "Development to the north of State Highway 257 has been limited by the inability of property owners to get federally backed insurance and the fact that the overwhelming majority of the land is wetlands characterized as waters of the United States." However, there are numerous examples throughout the CBRA system where neither of those restrictions has been a deterrent to the development of available coastal property especially with flood control measures in place. Therefore, it is the Service's recommendation, that the project proponents consider means to provide protection or conservation easements within these CBRS units to deter such development in the future that may arise due to the flood control objectives of the project. Please note that any new commitment of Federal funds associated with this action/project or a related future project is subject to the CBRA's consultation requirement. If you have any questions, please contact Mr. David Hoth, Assistant Field Supervisor, at 281-705-7436 or at David_Hoth @fws.gov.

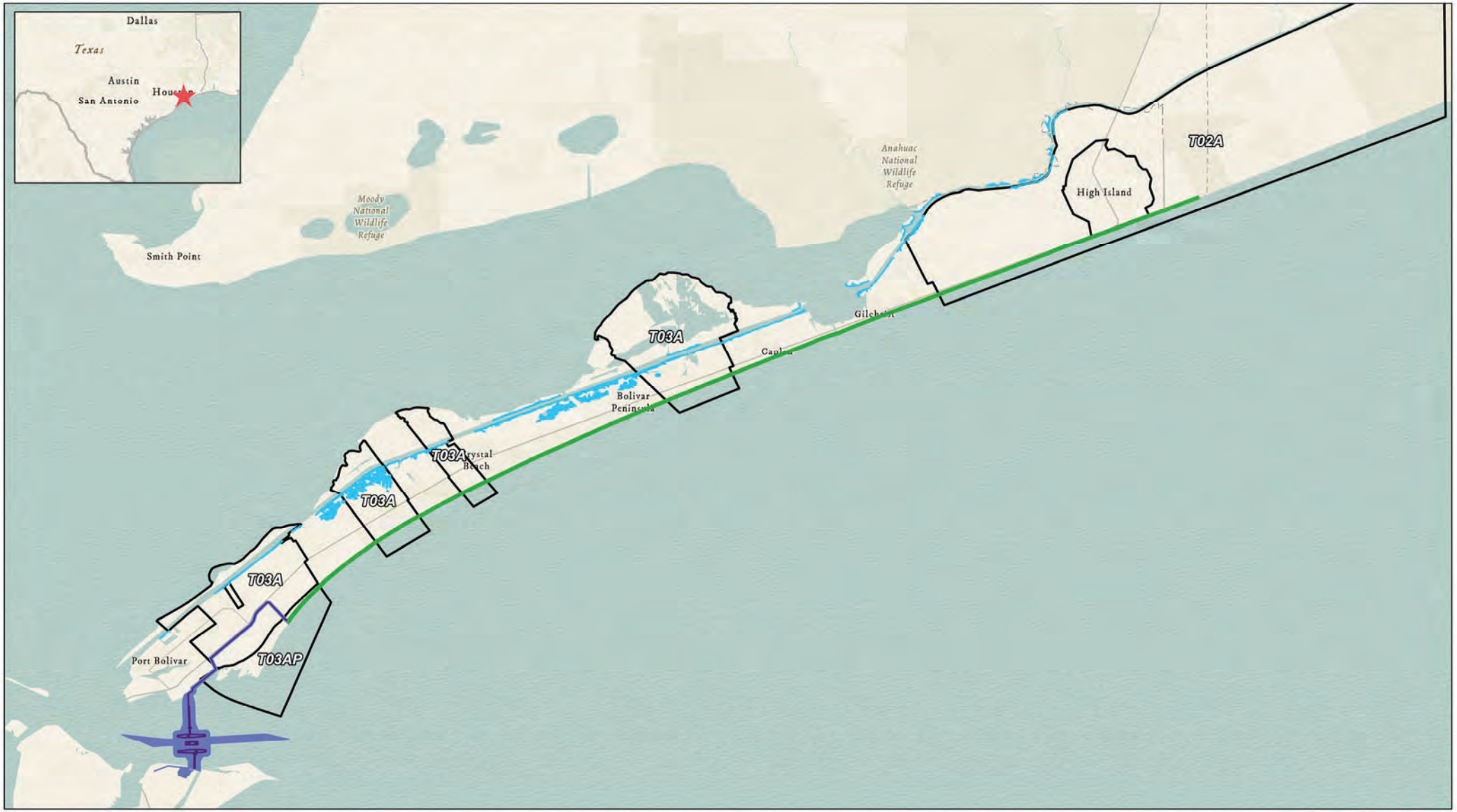
This response does not constitute consultation for any project pursuant to section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) or comments afforded by the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*); nor does it preclude comment on any forthcoming environmental documents pursuant to the National Environmental Policy Act (83 Stat. 852; 42 U.S.C. 4321 *et seq.*).

SERVICE FIELD OFFICE SIGNATORY AND TITLE DATE

CHARLES ARDIZZONE Digitally signed by CHARLES ARDIZZONE Date: 2020.10.21 10:47:16 -05'00'

10-21-2020

Attachment 1
Project Maps



US Army Corps of Engineers ®
Galveston District

Beach and Dune Restoration
ER G28
HSC Navigation Gate and Tie-Ins
CBRS Units

Coastal Texas Protection and Restoration Feasibility Study

Basemap: ESRI Modern Antique

DATUM: NAD 1983
PROJECTION: STATE PLANE
ZONE: TX-SC 4204

0 1 2 Miles

Date: 17 June 2020

US Army Corps of Engineers ®
Galveston District

ER B12
CBRS Units

Coastal Texas Protection and Restoration Feasibility Study

Basemap: ESRI Modern Antique

DATUM: NAD 1983
PROJECTION: STATE PLANE
ZONE: TX-SC-4204

0 0.63 1.25 Miles

Date: 17 June 2020

US Army Corps of Engineers
Galveston District

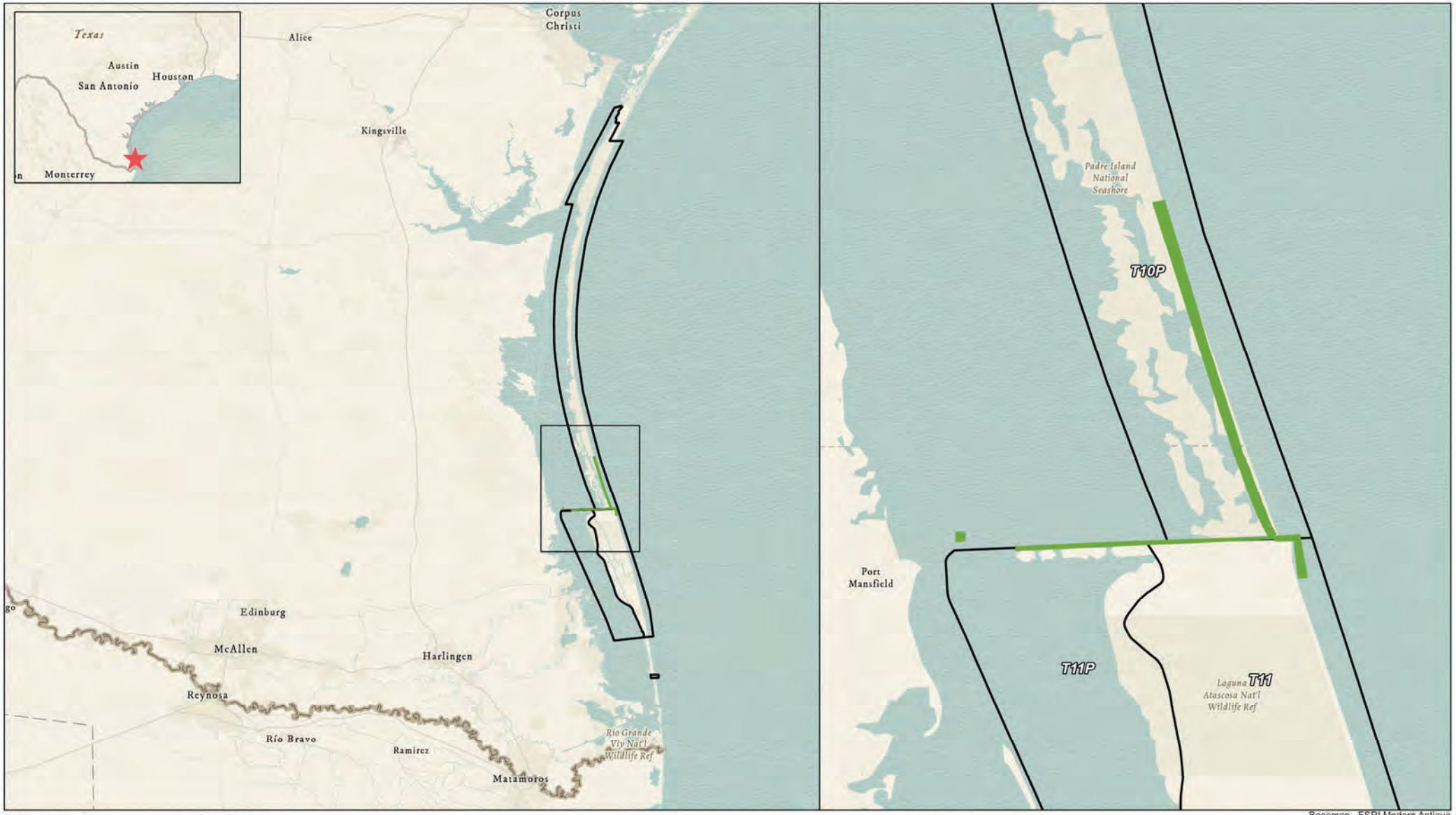
Coastal Texas Protection and Restoration Feasibility Study
Ecosystem Restoration B2

DATUM: NAD 1983
PROJECTION: STATE PLANE
ZONE: TX-SC 4204

Basemap: ESRI Modern Antique

0 ½ 1 Miles

Date: 27 July 2020



US Army Corps of Engineers ®
Galveston District

ER W3
CBRS Units

Coastal Texas Protection and Restoration Feasibility Study

Basemap: ESRI Modern Antique

DATUM: NAD 1983
PROJECTION: STATE PLANE
ZONE: TX,SC 4204

0 1 2 Miles

Date: 17 June 2020

Attachment 2
Conceptual Plans for the Ecosystem Restoration Measures

COASTAL TEXAS
PROTECTION AND RESTORATION FEASIBILITY STUDY

ECOSYSTEM RESTORATION CONCEPTUAL DRAWINGS

VICINITY MAP
(NOT TO SCALE)

SHEET INDEX

SHEET NO.	TITLE
1	COVER SHEET
2	B-2: FOLLETS ISLAND GULF BEACH & DUNE RESTORATION
3	G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (WEST)
4	G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (WEST)
5	G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (WEST)
6	G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (EAST)
7	G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (EAST)
8	B-12: BASTROP BAY, OYSTER LAKE, WEST BAY, & GIWW SHORELINE PROTECTION
9	B-12: BASTROP BAY, OYSTER LAKE, WEST BAY, & GIWW SHORELINE PROTECTION
10	M-8: EAST MATAGORDA BAY SHORELINE PROTECTION
11	M-8: EAST MATAGORDA BAY SHORELINE PROTECTION
12	M-8: EAST MATAGORDA BAY SHORELINE PROTECTION
13	CA-5: KELLER BAY RESTORATION
14	CA-6: POWDERHORN SHORELINE PROTECTION & WETLAND RESTORATION
15	CA-6: POWDERHORN SHORELINE PROTECTION & WETLAND RESTORATION
16	SP-1: REDFISH BAY PROTECTION & ENHANCEMENT
17	SP-1: REDFISH BAY PROTECTION & ENHANCEMENT
18	SP-1: REDFISH BAY PROTECTION & ENHANCEMENT
19	W-3: PORT MANSFIELD CHANNEL, ISLAND ROOKERY & HYDROLOGIC RESTORATION
20	W-3: PORT MANSFIELD CHANNEL, ISLAND ROOKERY & HYDROLOGIC RESTORATION

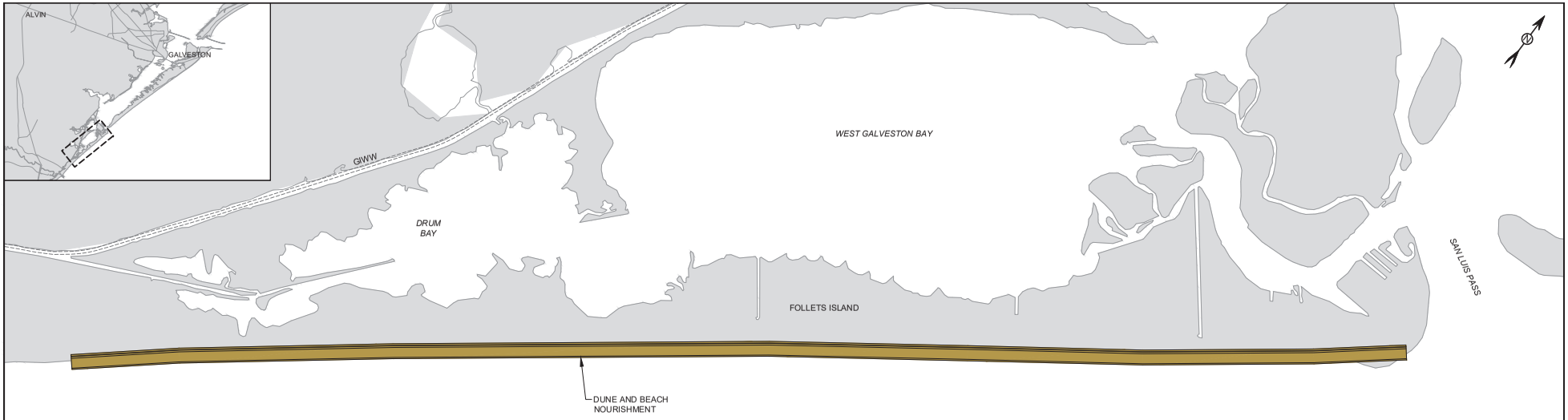
COVER SHEET

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
JULY 28, 2020

MOTT MACDONALD



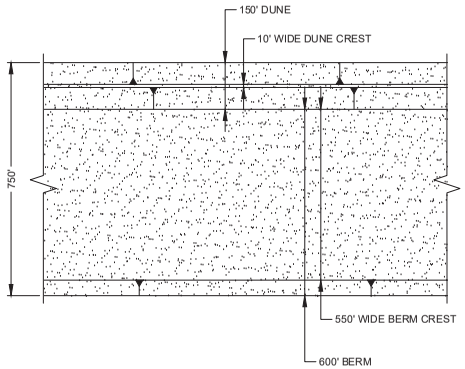
LEGEND

DUNE & BEACH NOURISHMENT

GULF INTRACOASTAL WATERWAY (GIWW)

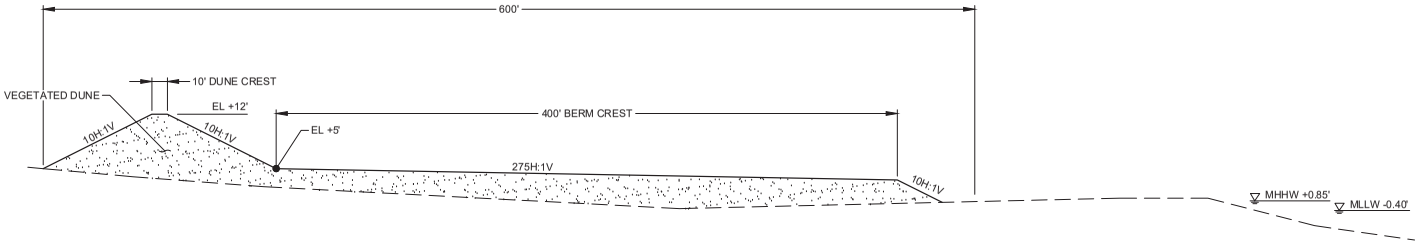
0 2,000 4,000

SCALE IN FEET



B-2 - DUNE & BEACH NOURISHMENT

SITE PLAN DETAIL



B-2 - DUNE & BEACH NOURISHMENT

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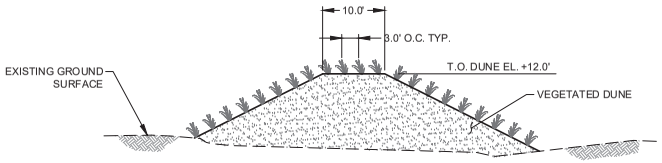


TYPICAL VEGETATION SECTION

NOT TO SCALE

NOTES:

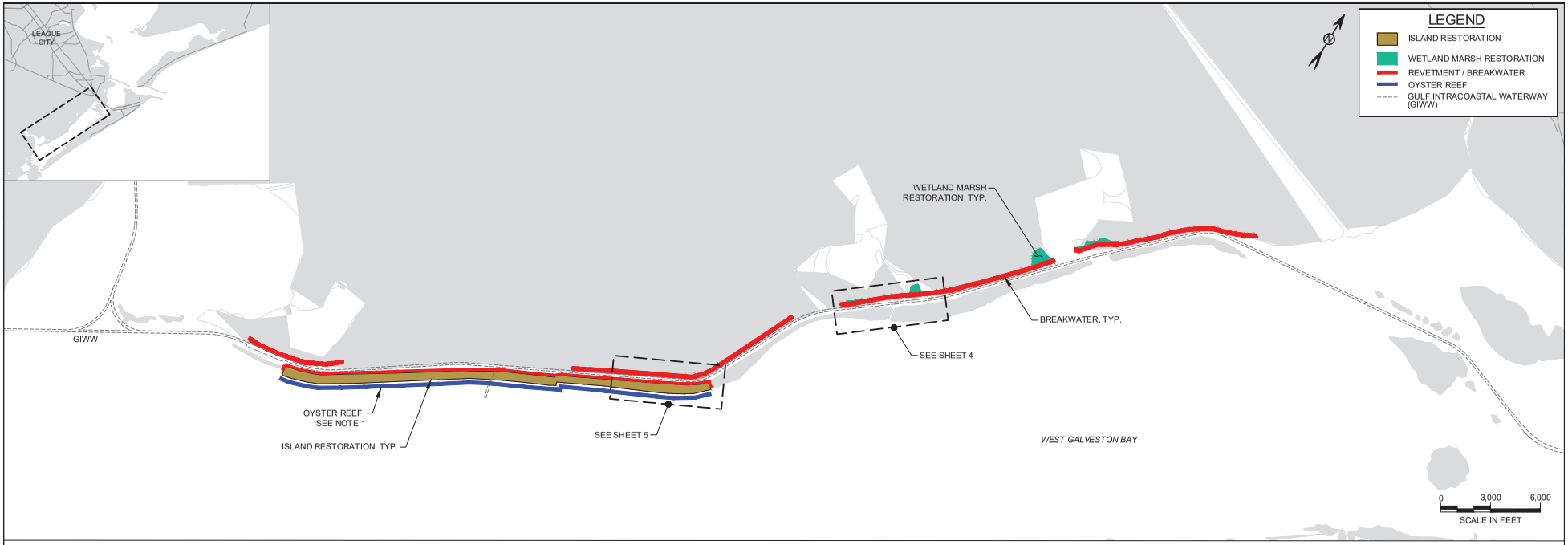
1. ALL ELEVATIONS IN FEET NAVD88.
2. DATUMS FROM NOAA GAGE 8771972, SAN LUIS PASS, TX.

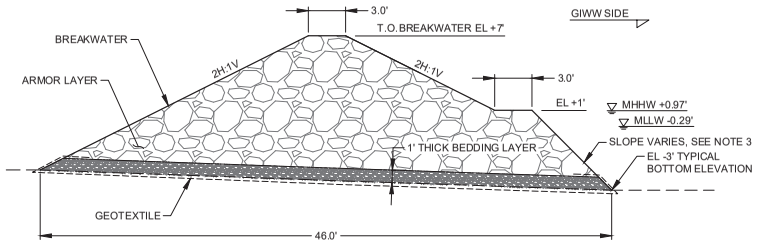
B2: FOLLET'S ISLAND GULF BEACH & DUNE RESTORATION

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

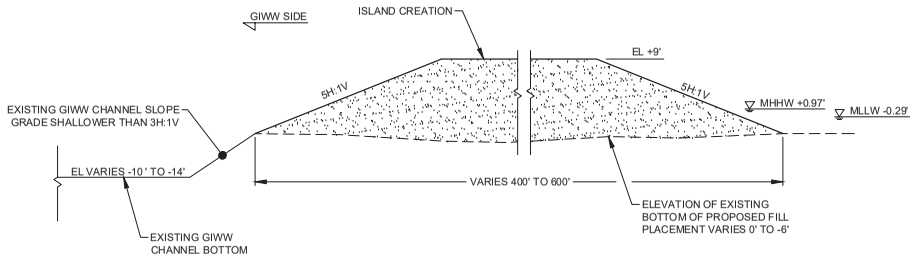
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
JULY 28, 2020
MOTT MACDONALD

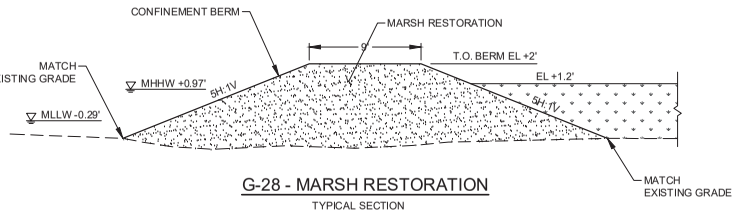




G-28 - BREAKWATER
TYPICAL SECTION



G-28 - ISLAND RESTORATION
TYPICAL SECTION



G-28 - MARSH RESTORATION
TYPICAL SECTION

NOTES:

1. OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
2. ALL ELEVATIONS IN FEET NAVD88.
3. DATUMS FROM NOAA GAGE 8771486 GALVESTON RAILROAD BRIDGE, TX

G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (WEST)

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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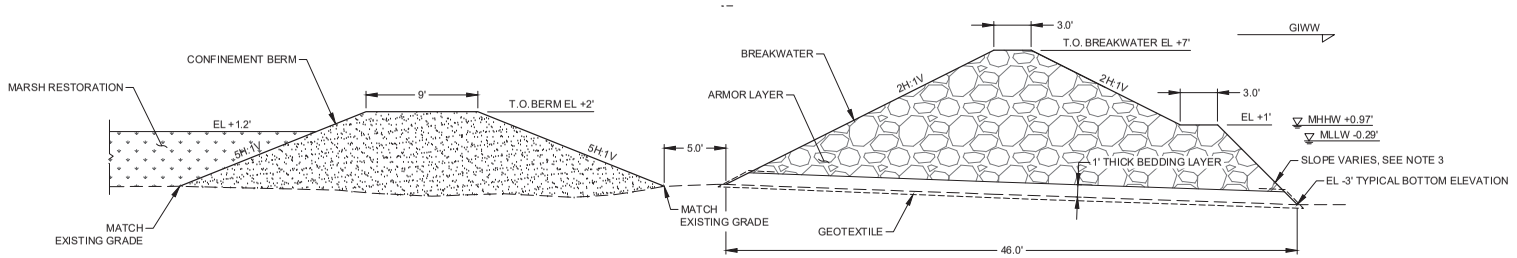


A

G-28: COMBINED BREAKWATER & MARSH RESTORATION SECTION

TYPICAL SECTION

NOTES:

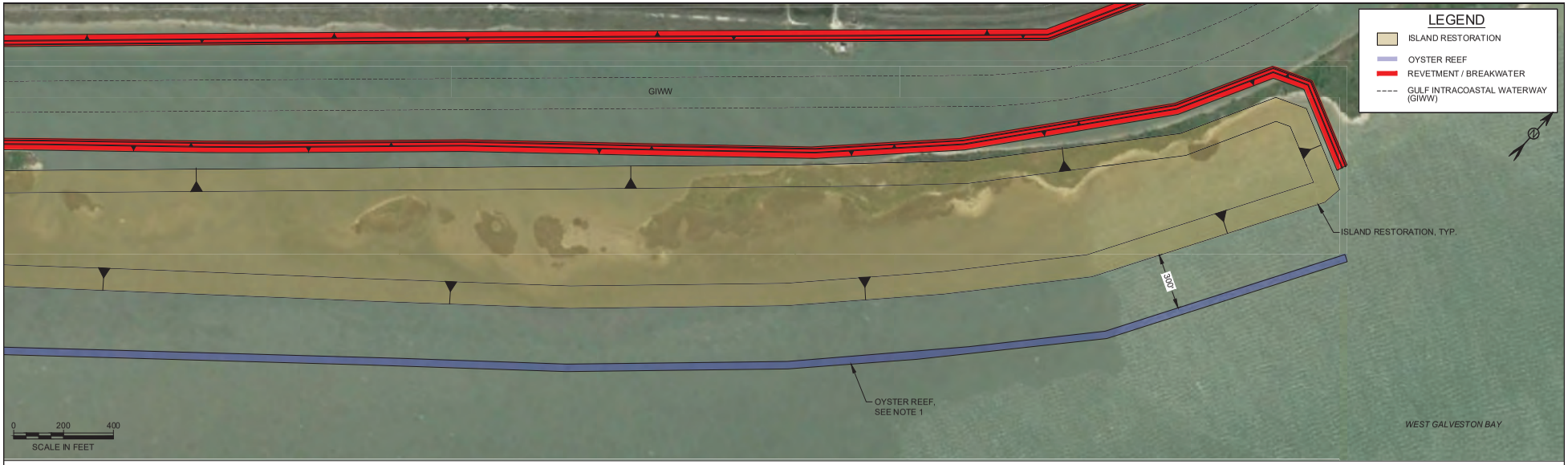
1. ALL ELEVATIONS IN FEET NAVD88.
2. DATUMS FROM NOAA GAGE 8771486 GALVESTON RAILROAD BRIDGE, TX.

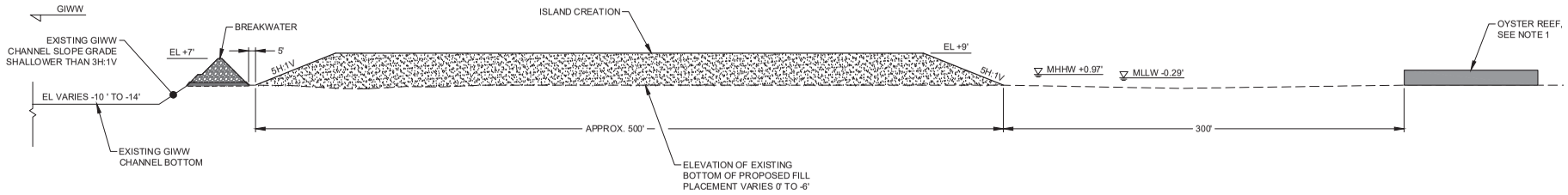
G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (WEST)

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
JULY 28, 2020
MOTT MACDONALD





B

G-28: COMBINED ISLAND RESTORATION AND OYSTER CULTCH SECTION

TYPICAL SECTION

NOTES:

1. OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
2. ALL ELEVATIONS IN FEET NAVD88.

G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (WEST)

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
JULY 28, 2020

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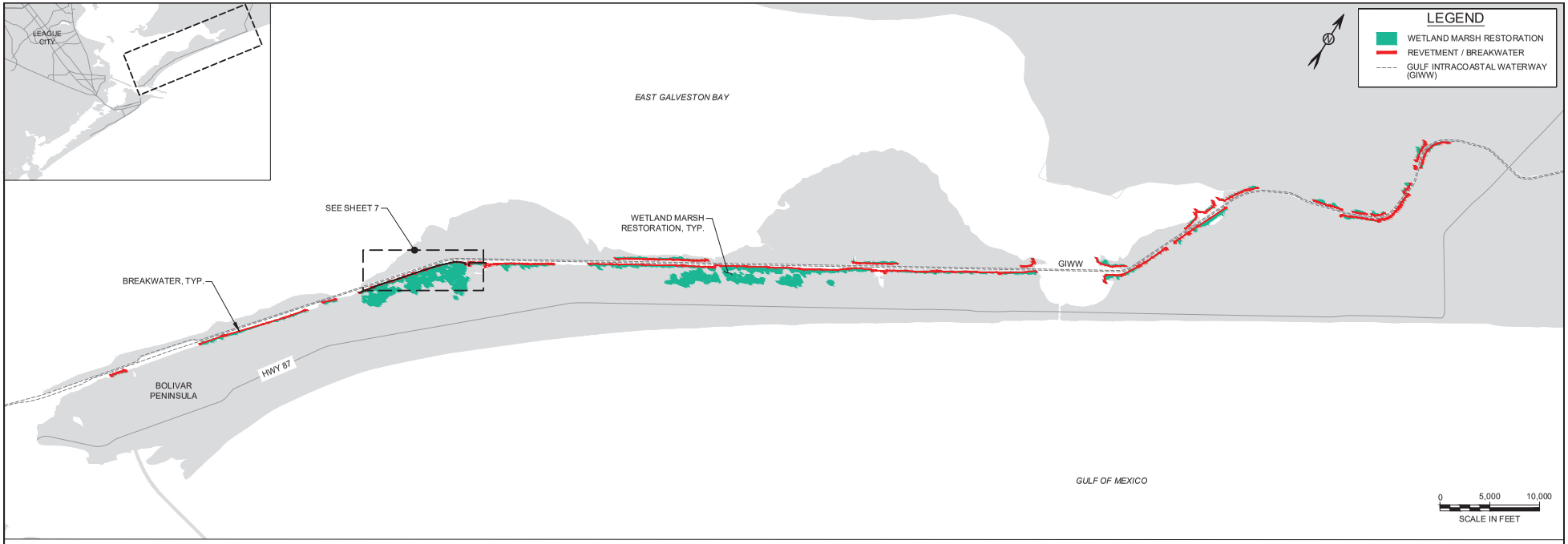
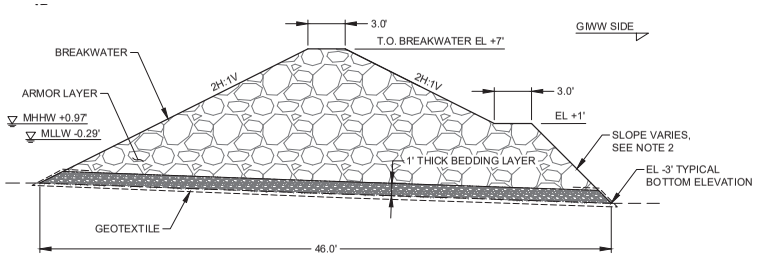
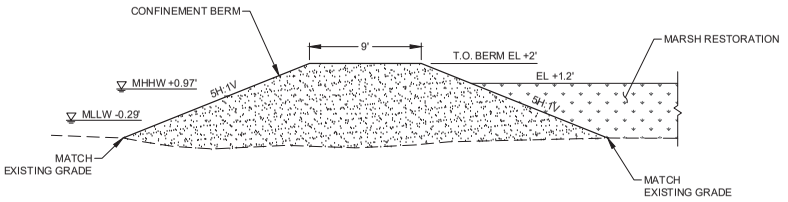




G-28 - BREAKWATER
TYPICAL SECTION



G-28 - MARSH RESTORATION
TYPICAL SECTION

NOTES:

1. ALL ELEVATIONS IN FEET NAVD88.
2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
3. DATUMS FROM NOAA GAGE 8771486 GALVESTON RAILROAD BRIDGE, TX.

G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (EAST)

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
JULY 28, 2020
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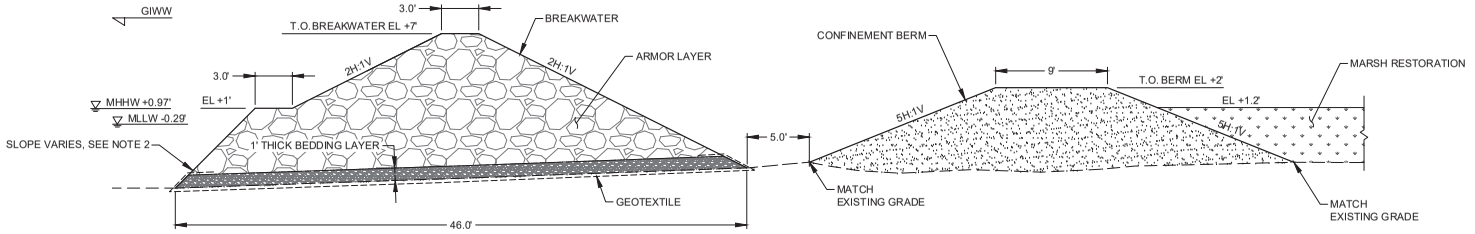

C
-

G-28: COMBINED BREAKWATER & MARSH RESTORATION

TYPICAL SECTION

NOTES:

1. ALL ELEVATIONS IN FEET NAVD88.
2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
3. DATUMS FROM NOAA GAGE 8771486 GALVESTON RAILROAD BRIDGE, TX.

G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (EAST)

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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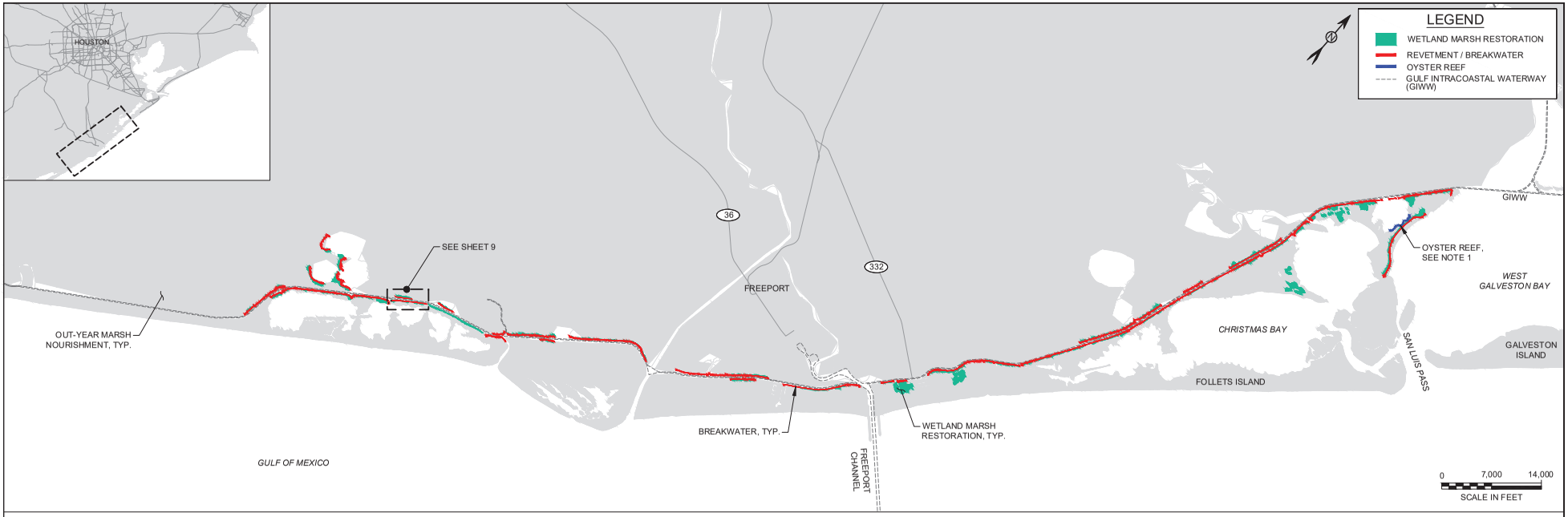
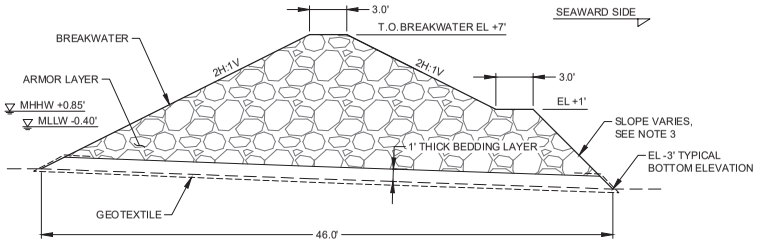
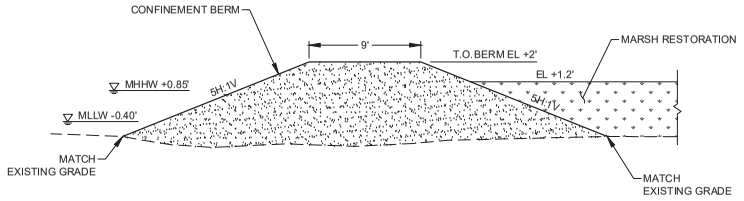




B-12- BREAKWATER
TYPICAL SECTION



B-12 - MARSH RESTORATION
TYPICAL SECTION

NOTES:

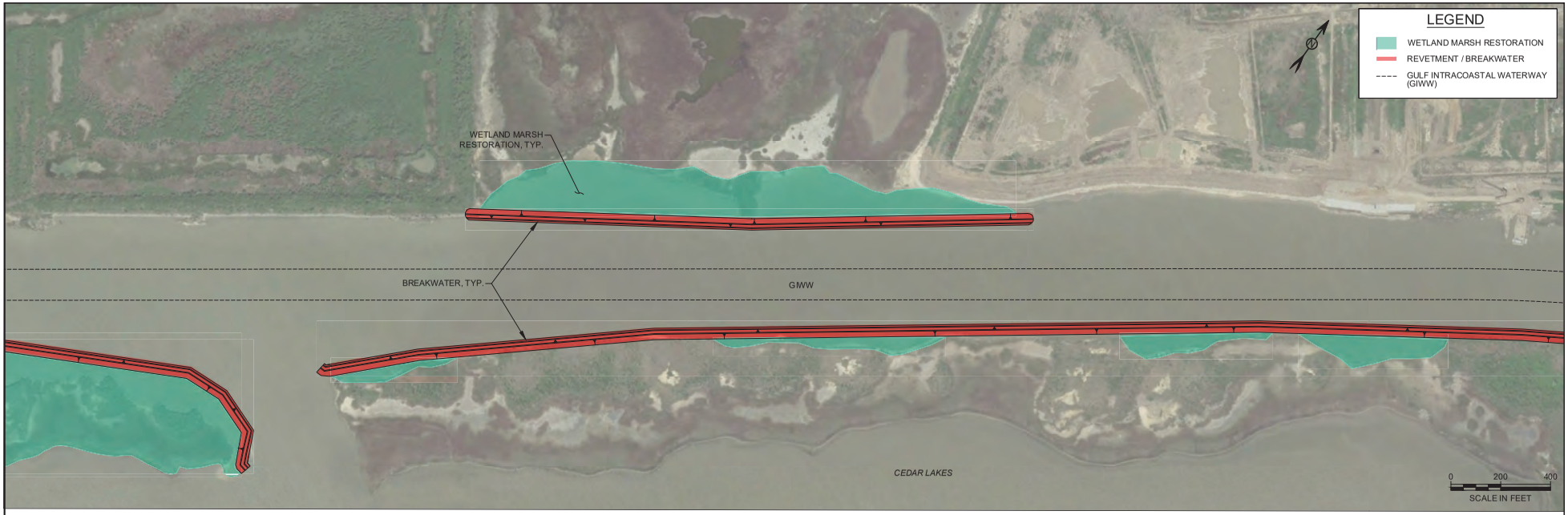
1. OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
2. ALL ELEVATIONS IN FEET NAVD88.
3. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
4. DATUMS FROM NOAA GAGE 8771972, SAN LUIS PASS, TX.

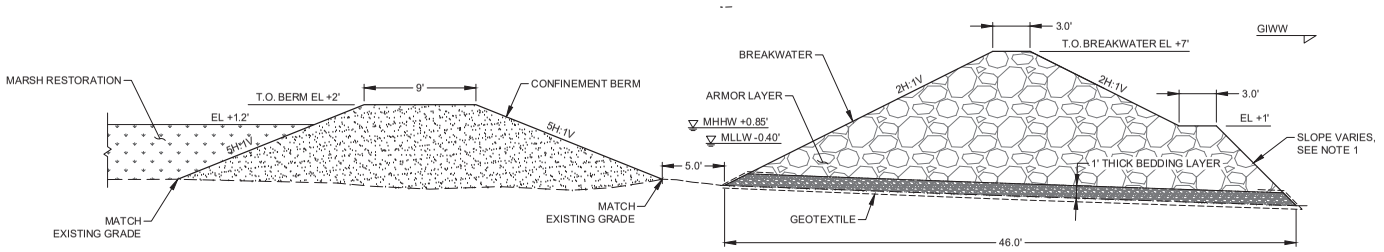
B-12: BASTROP BAY, OYSTER LAKE, WEST BAY, & GIWW SHORELINE PROTECTION

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
JULY 28, 2020
MOTT MACDONALD





D

B-12: COMBINED BREAKWATER & MARSH RESTORATION

TYPICAL SECTION

NOTES:

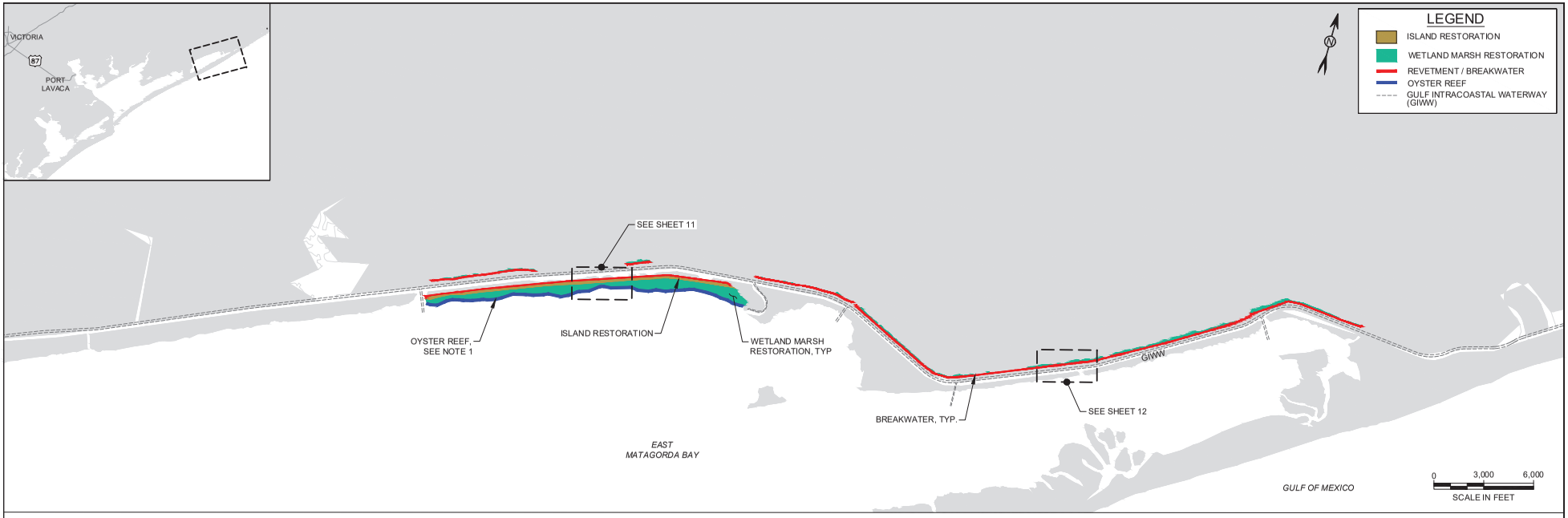
1. ALL ELEVATIONS IN FEET NAVD88.
2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
3. DATUMS FROM NOAA GAGE 8771972, SAN LUIS PASS, TX.

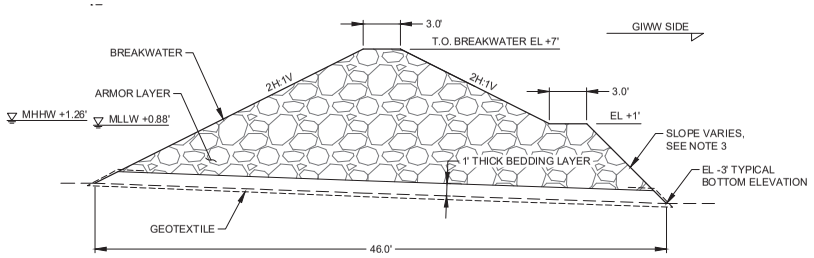
B-12: BASTROP BAY, OYSTER LAKE, WEST BAY, & GIWW SHORELINE PROTECTION

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

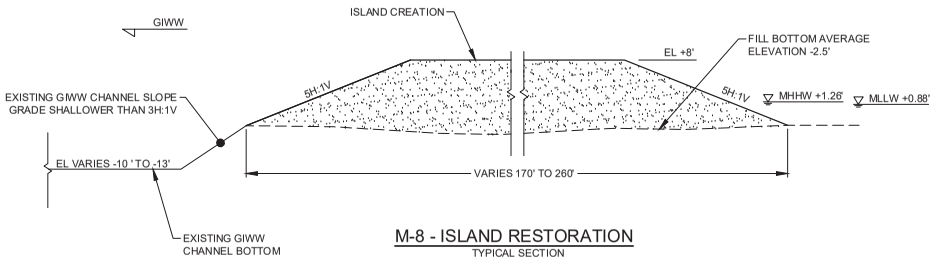
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
JULY 28, 2020
MOTT MACDONALD

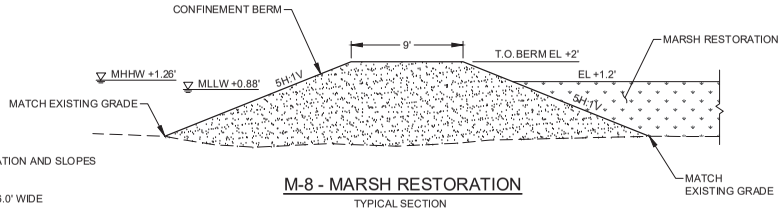




M-8 - BREAKWATER
TYPICAL SECTION



M-8 - ISLAND RESTORATION
TYPICAL SECTION



M-8 - MARSH RESTORATION
TYPICAL SECTION

NOTES:

1. OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
2. ALL ELEVATIONS IN FEET NAVD88.
3. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
4. DATUMS FROM NOAA GAGE 8773037 SEADRIFT, TX

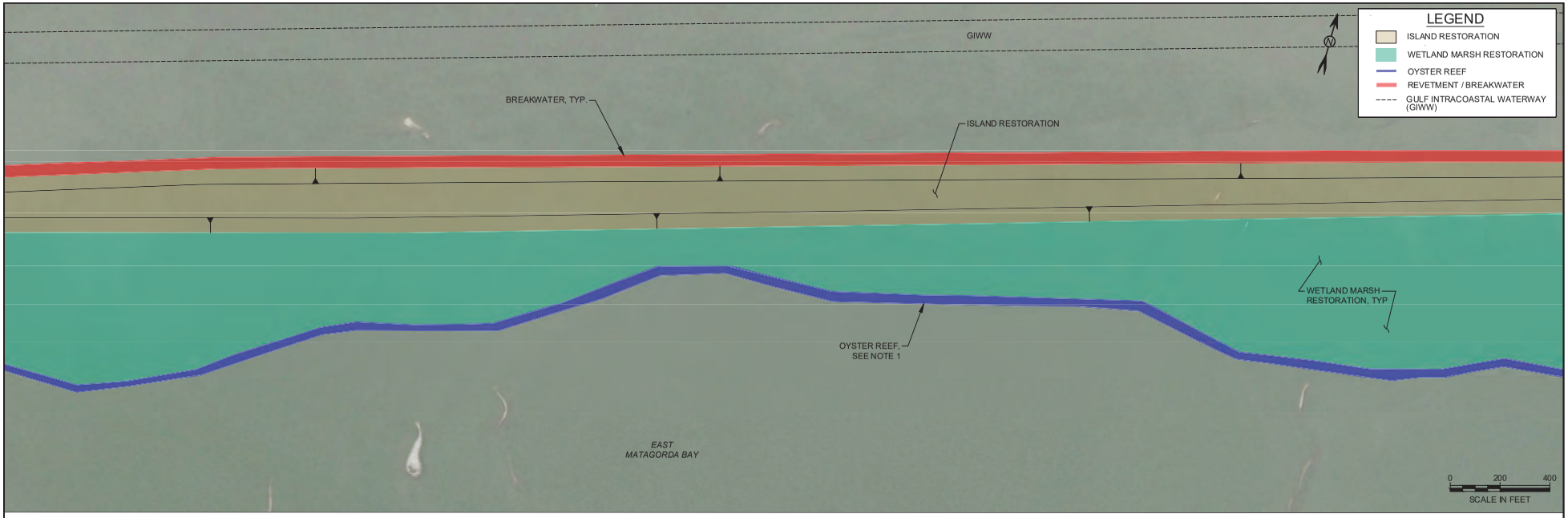
M-8: EAST MATAGORDA BAY SHORELINE PROTECTION

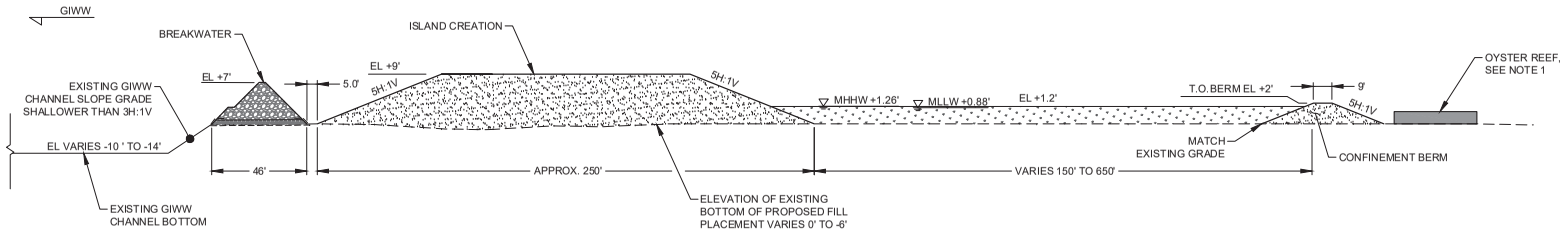
COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
JULY 28, 2020

MOTT MACDONALD





E

M-8: COMBINED ISLAND RESTORATION, MARSH RESTORATION, AND OYSTER CULTCH SECTION

TYPICAL SECTION

NOTES:

1. OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
2. ALL ELEVATIONS IN FEET NAVD88.
3. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
4. DATUMS FROM NOAA GAGE 8773037 SEADRIFT, TX

M-8: EAST MATAGORDA BAY SHORELINE PROTECTION

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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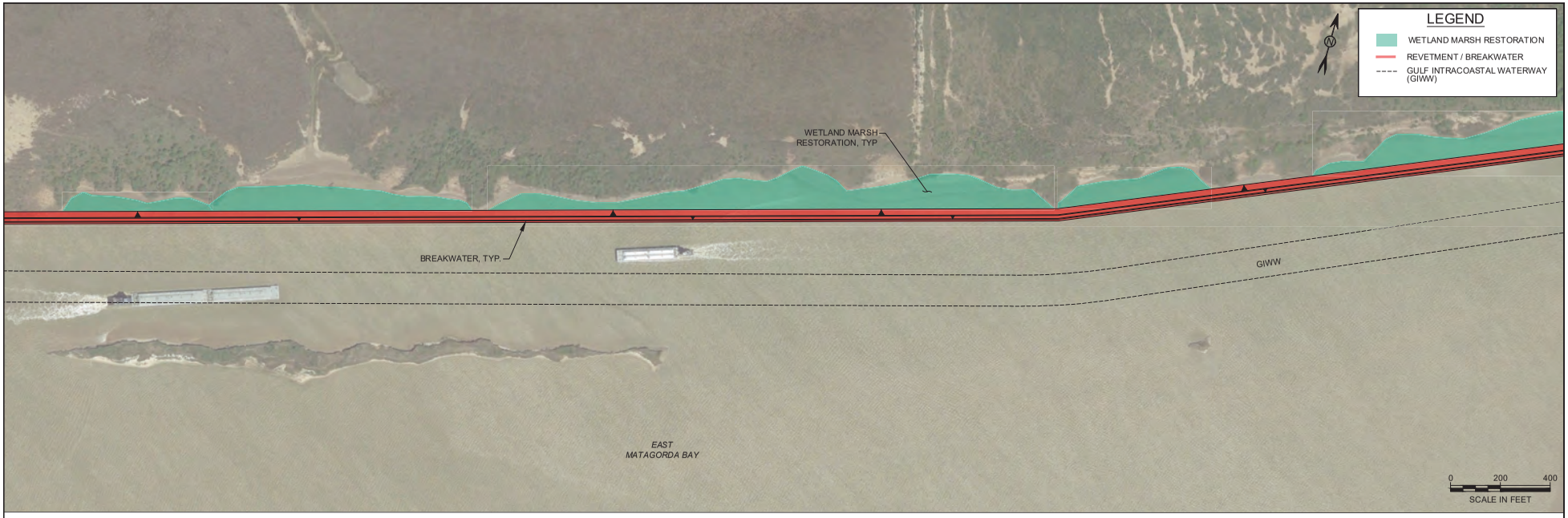

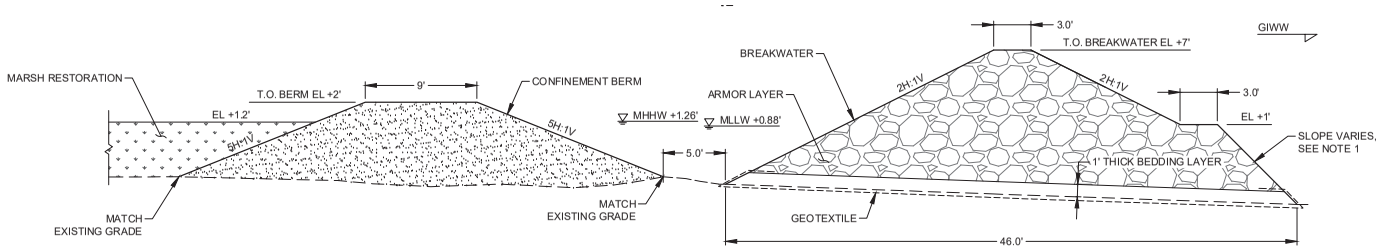

F

M-8: COMBINED BREAKWATER & MARSH RESTORATION

TYPICAL SECTION

NOTES:

1. ALL ELEVATIONS IN FEET NAVD88.
2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
3. DATUMS FROM NOAA GAGE 8773037 SEADRIFT, TX

M-8: EAST MATAGORDA BAY SHORELINE PROTECTION

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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DATED:
JULY 28, 2020
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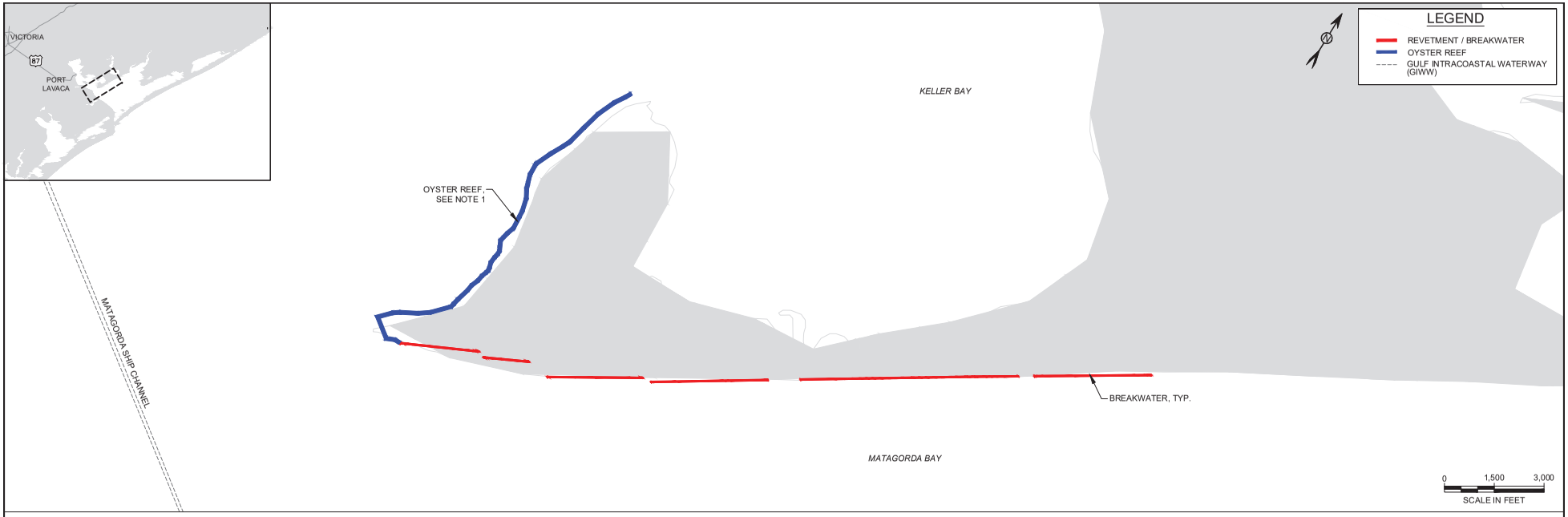
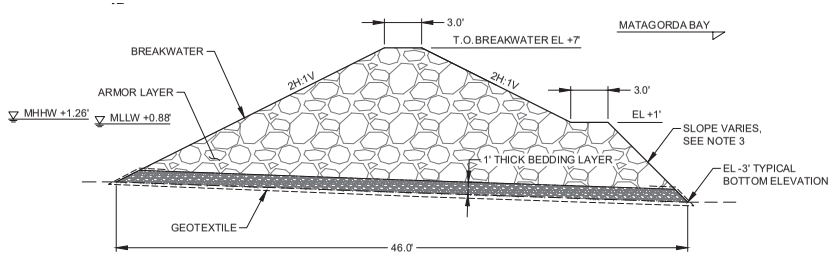




CA-5 - BREAKWATER
TYPICAL SECTION

NOTES:

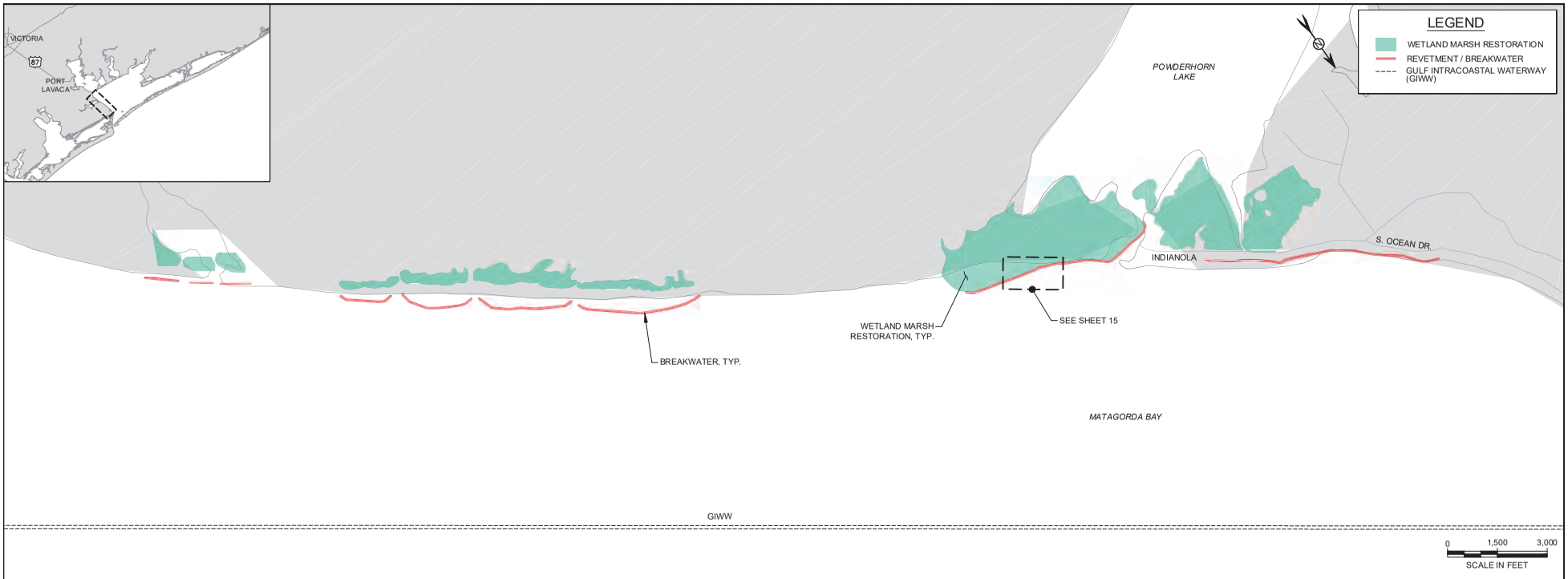
1. OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
2. ALL ELEVATIONS IN FEET NAVD88.
3. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
4. DATUMS FROM NOAA GAGE 8773037 SEADRIFT, TX

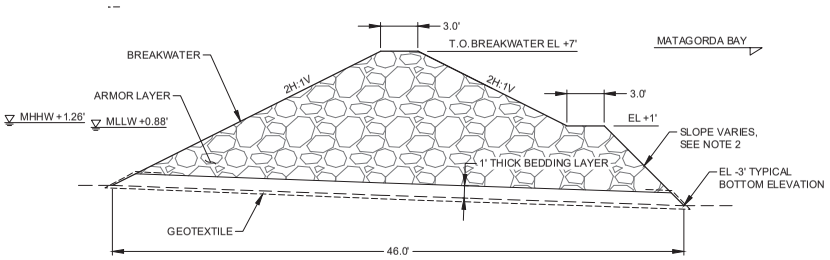
CA-5: KELLER BAY RESTORATION

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

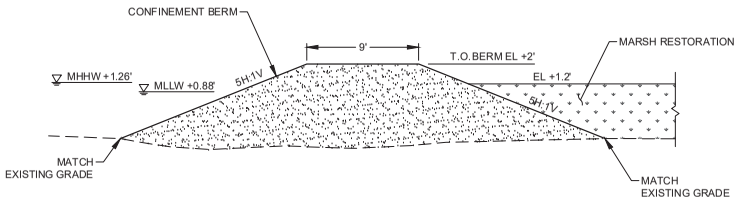
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
JULY 28, 2020
MOTT MACDONALD





CA-6 - BREAKWATER
TYPICAL SECTION



CA-6 - MARSH RESTORATION
TYPICAL SECTION

NOTES:

1. ALL ELEVATIONS IN FEET NAVD88.
2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
3. DATUMS FROM NOAA GAGE 8773037 SEADRIFT, TX

CA-6: POWDERHORN SHORELINE PROTECTION & WETLAND RESTORATION

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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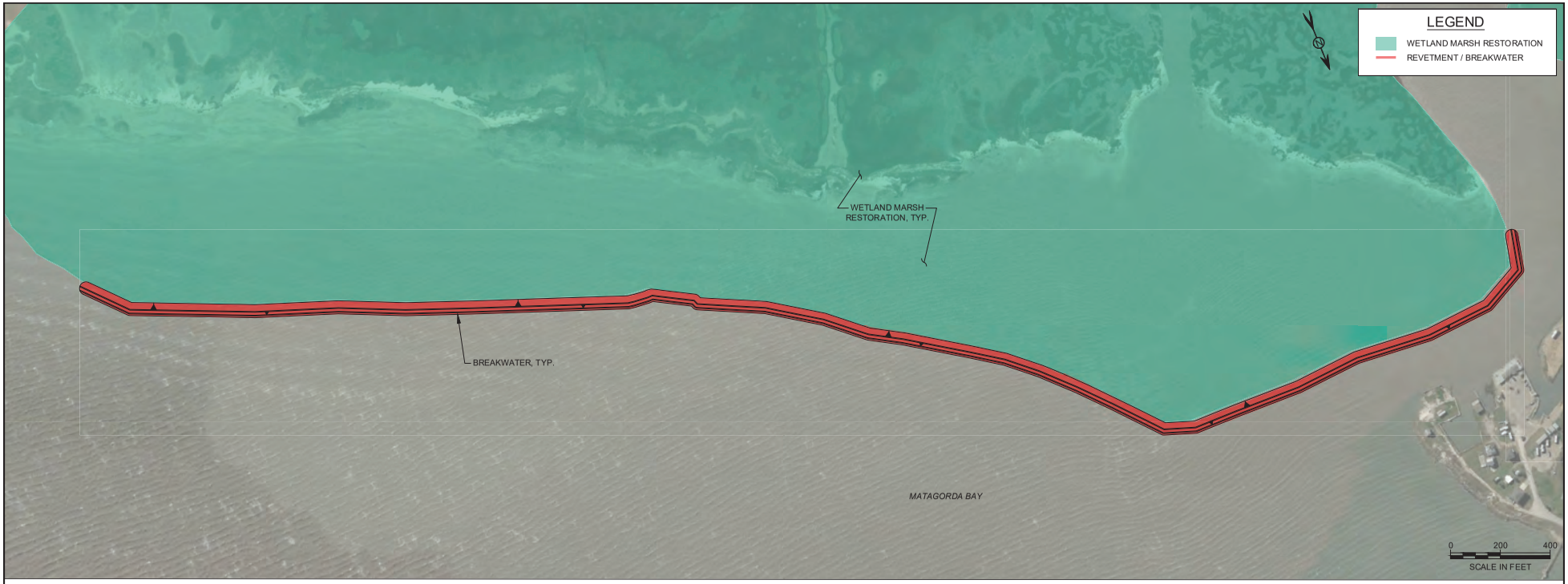

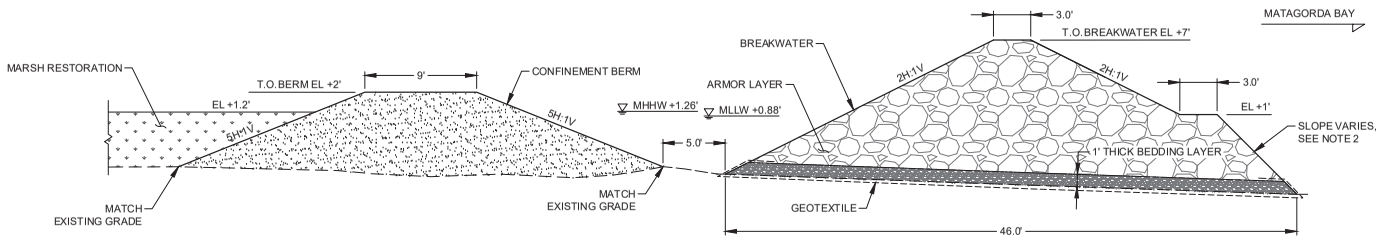

G
CA-6: COMBINED BREAKWATER & MARSH RESTORATION
TYPICAL SECTION

NOTES:

1. ALL ELEVATIONS IN FEET NAVD88.
2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
3. DATUMS FROM NOAA GAGE 8773037 SEADRIFT, TX

CA-6: POWDERHORN SHORELINE PROTECTION & WETLAND RESTORATION

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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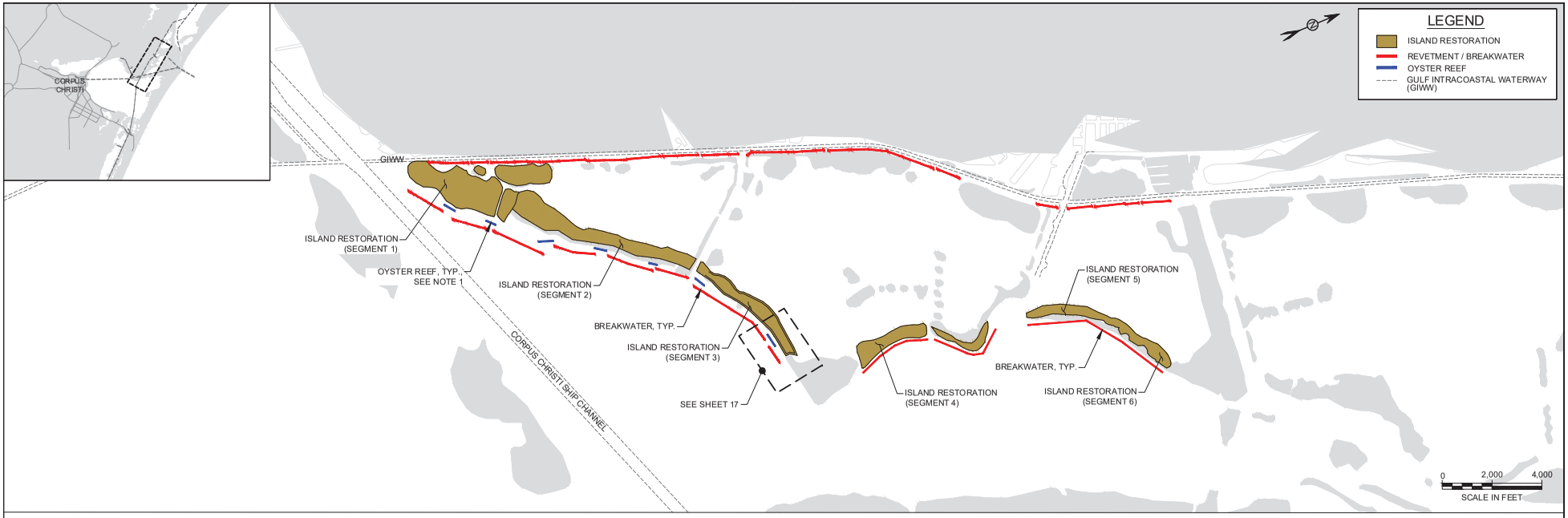
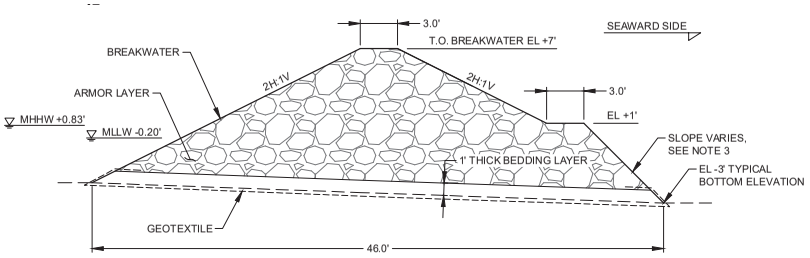
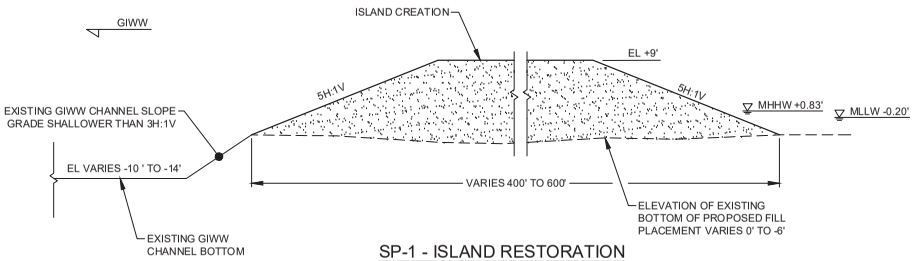




SP-1 - BREAKWATER
TYPICAL SECTION



SP-1 - ISLAND RESTORATION
TYPICAL SECTION

NOTES:

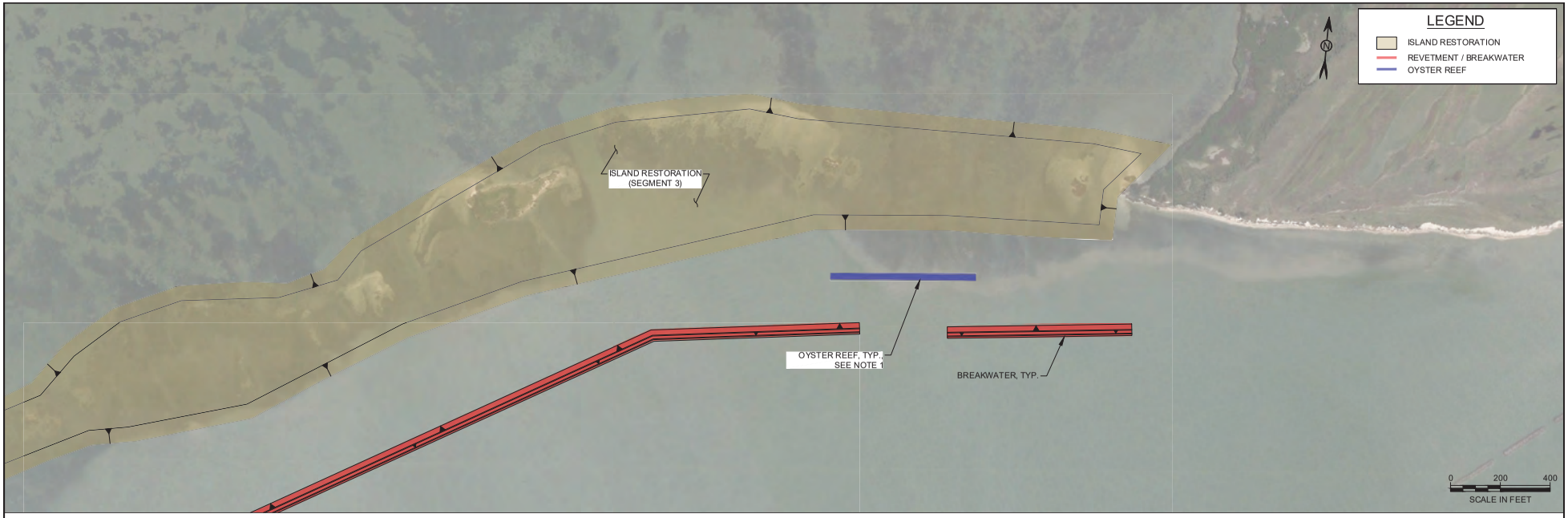
1. OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
2. ALL ELEVATIONS IN FEET NAVD88.
3. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
4. DATUMS FROM NOAA GAGE 8775237, PORT ARANSAS TX

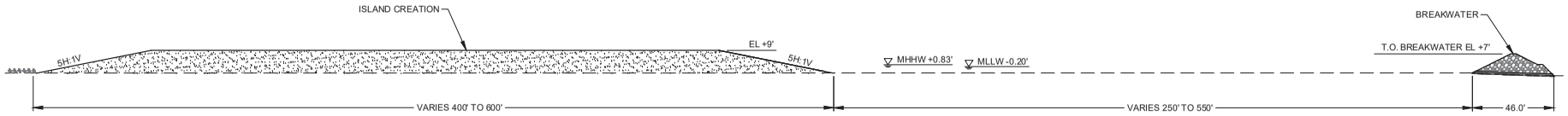
SP-1: REDFISH BAY PROTECTION & ENHANCEMENT

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
JULY 28, 2020
MOTT MACDONALD





H

SP-1: COMBINED ISLAND RESTORATION AND BREAKWATER

TYPICAL SECTION

NOTES:

1. OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
2. ALL ELEVATIONS IN FEET NAVD88.
3. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
4. DATUMS FROM NOAA GAGE 8775237, PORT ARANSAS TX

SP-1: REDFISH BAY PROTECTION & ENHANCEMENT

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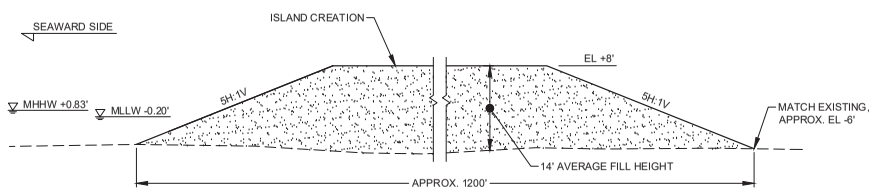
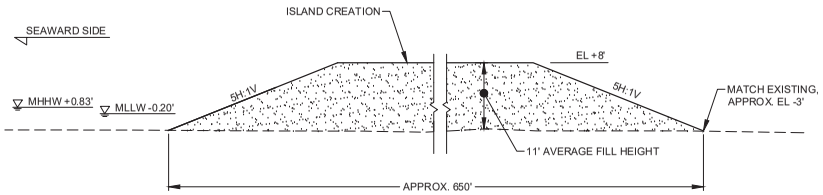


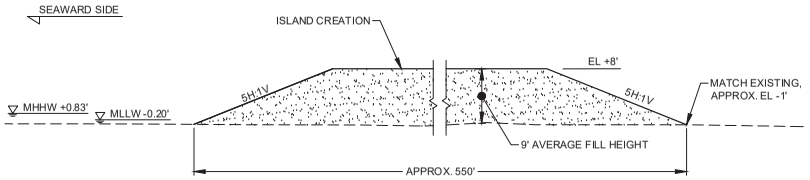
SP-1 - ISLAND RESTORATION (SEGMENT 1)

TYPICAL SECTION



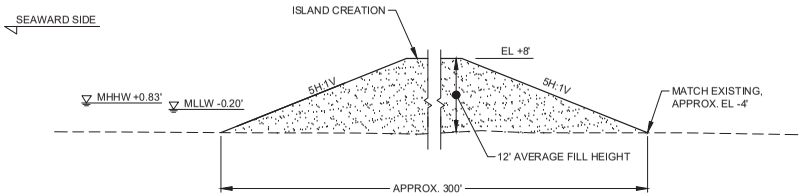
SP-1 - ISLAND RESTORATION (SEGMENT 4)

TYPICAL SECTION



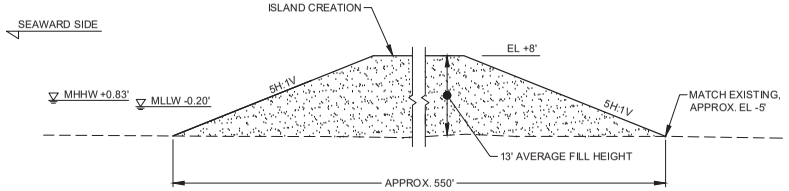
SP-1 - ISLAND RESTORATION (SEGMENT 2)

TYPICAL SECTION



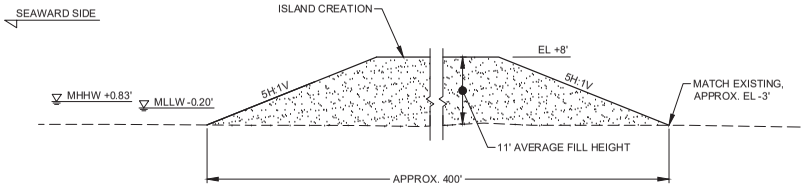
SP-1 - ISLAND RESTORATION (SEGMENT 5)

TYPICAL SECTION



SP-1 - ISLAND RESTORATION (SEGMENT 3)

TYPICAL SECTION



SP-1 - ISLAND RESTORATION (SEGMENT 6)

TYPICAL SECTION

NOTES:

1. ALL ELEVATIONS IN FEET NAVD88.
2. DATUMS FROM NOAA GAGE 8775237, PORT ARANSAS TX

SP-1: REDFISH BAY PROTECTION & ENHANCEMENT

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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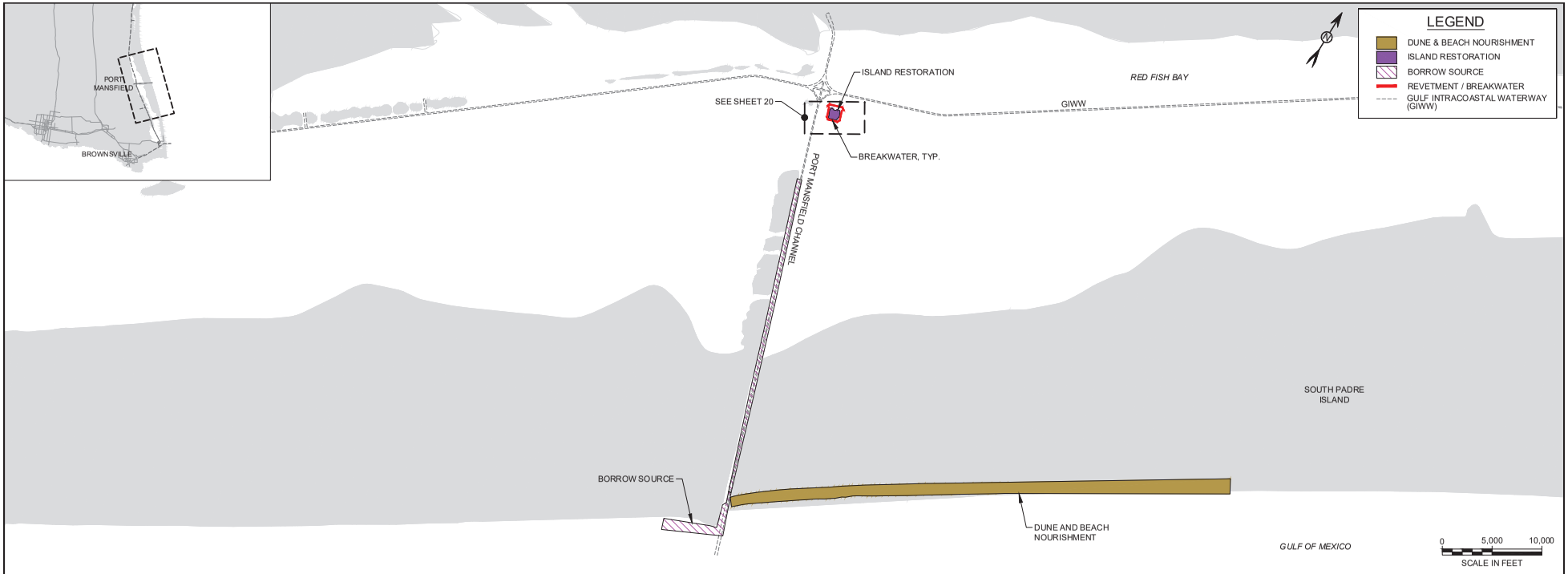
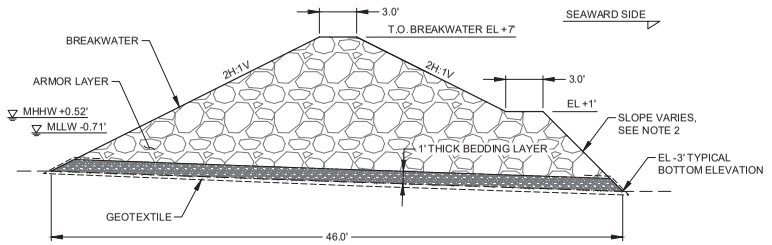
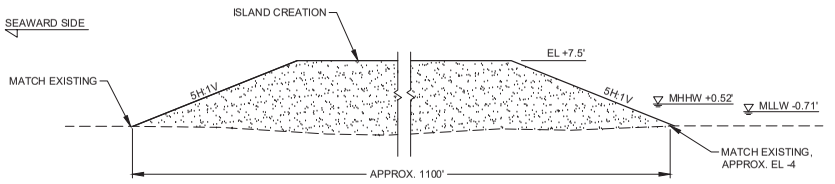
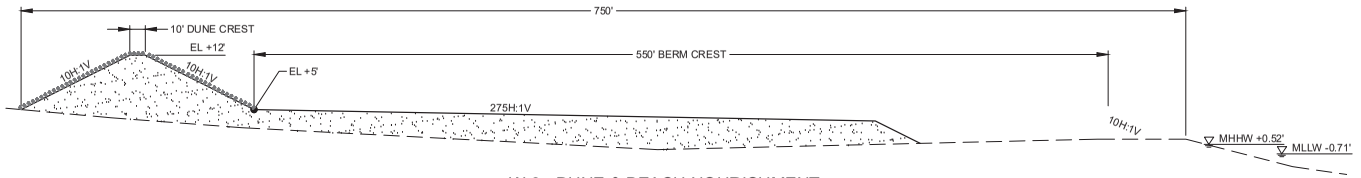




W-3 - BREAKWATER
TYPICAL SECTION



W-3 - ISLAND RESTORATION
TYPICAL SECTION



W-3 - DUNE & BEACH NOURISHMENT
TYPICAL SECTION

NOTES:

1. ALL ELEVATIONS IN FEET NAVD88.
2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
3. DATUMS FROM NOAA GAGE 8779770, PORT ISABEL TX

W-3: PORT MANSFIELD CHANNEL, ISLAND ROOKERY & HYDROLOGIC RESTORATION

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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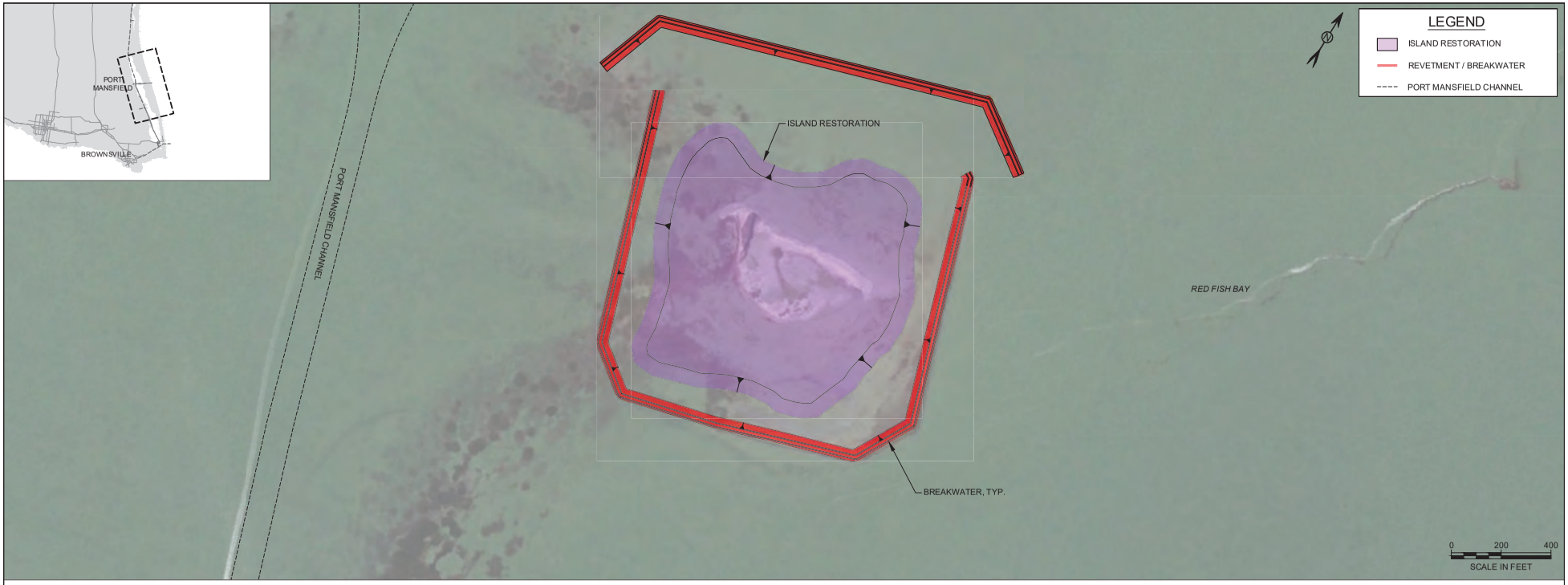

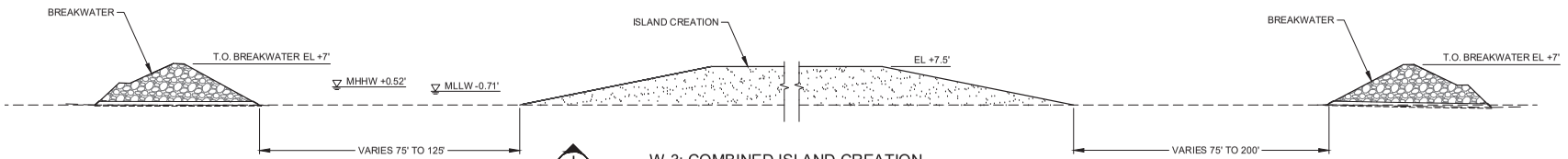

W-3: COMBINED ISLAND CREATION AND BREAKWATER

TYPICAL SECTION

NOTES:

1. ALL ELEVATIONS IN FEET NAVD88.
2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
3. DATUMS FROM NOAA GAGE 8779770, PORT ISABEL TX

W-3: PORT MANSFIELD CHANNEL, ISLAND ROOKERY & HYDROLOGIC RESTORATION

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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MOTT MACDONALD

Attachment 3
Fire Island Inlet to Montauk Point CBRA Compliance Determination

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK NY 10278-0090

Environmental Analysis Branch

February 14, 2019

Mr. David Stilwell
Field Supervisor
U.S. Fish and Wildlife Service
3817 Luker Road
Cortland, New York 13045

Subject: Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point (FIMP), New York Coastal Storm Risk Management Project, Coastal Barrier Resource Act (CBRA)

Dear Mr. Stilwell:

The U.S. Army Corps of Engineers, New York District (District) is pleased to provide the final project description for the FIMP General Reevaluation Report (GRR) and Environmental Impact Statement (EIS) (Enclosure 1).

The District, New York State Department of Environmental Conservation (NYSDEC) and their local partners, and other agencies, including the U.S. Fish and Wildlife Service (Service) have participated in extensive coordination to finalize the project description, in particular the details of the Coastal Process Features (CPFs) which are designed to achieve no net loss of sediment into the back bay system as part of the mutually acceptable plan as well as for compliance with Section 7 of the Endangered Species Act by creating early successional habitat for piping plovers (*Charadrius melodus*).

The following updates have been made to the project based on the extensive sponsor, local partner, resource agency and public coordination since the release of the July 2016 Draft GRR and EIS:

1. Updated sand quantities in tables and text
2. Additional language regarding "no net loss" of sediment (how to achieve the goal of approximately 4.2 million cubic yards of sand)CY
3. Additional section on proactive breach response triggers (ex: Southampton transitioned from Proactive to Reactive for Real Estate purposes)
4. Updated discussion of Downtown Montauk related to beach nourishment
5. Additional language describing that vacant land will be acquired as part of mainland nonstructural plan
6. Updated description of current list of CPFs, including renumbering sites and the removal of sites that do not have landowner support and are no longer included (Cupsogue, Sunken Forest, Point of Woods, Carrington, Regan Property)

7. Incorporated an updated CPF table with quantities to achieve the approximate 4.2 MCY. The quantity in the table alone will not achieve the 4.2 MCY quantity and therefore Adaptive Management will be utilized to reach the overall total
8. Included a description of mainland CPF's.

The purpose of this letter is to reaffirm and supplement the District's March 29, 2017 request for Service concurrence for the FIMP project exception determination under Section 6 of CBRA (16 U.S.C. § 3505). The Project falls within portions of three Coastal Barrier Resource System (CBRS) units.

Please refer to attached completed CBRA Determination Template provided by the Service's CBRA website (Enclosure 2).

Based on this review, the District has concluded that the Project meets the above-referenced exceptions and therefore is consistent with the purposes of CBRA. The District request that the Service notify us if you do not concur with this determination. To facilitate your review, please find enclosed maps that overlay the Project on each of the respective CBRA zones (Enclosure 3) to illustrate where the Project overlaps into these zones. If you should have any questions, please contact Mr. Robert J. Smith of my staff at 917-790-8729.

Sincerely,

Peter Weppler
Chief, Environmental Analysis Branch

cc
USFWS-LIFO

Enclosure 1 FIMP Final Project Description
Enclosure 2 CBRA Determination Template
Enclosure 3 Maps that overlay the Project on each of the respective CBRA zones

USFWS CBRA PROJECT INFORMATION
(per Template)

Project Location

The action or project is located in Suffolk county, New York within (or partially within) Unit(s) NY-59/59P, F-12 and F-13/13P of the Coastal Barrier Resources System (CBRS).

Description of the Proposed Action or Project

The Recommended Plan for the Fire Island to Montauk Point New York Hurricane Sandy project area provides a systems approach for Coastal Storm Risk Management (CSRM) that balances the risks to human life and property, while maintaining and restoring the natural coastal processes and ecosystem integrity. The Second Interim Report of the Disaster Relief Appropriations Act, 2013 designates that the Fire Island Inlet to Montauk Point, NY, Coastal Risk Management Study meets the criteria for an "Authorized But Unconstructed" project and therefore, this study is being completed at full federal expense. The initial construction will be 100% federally funded, if constructed using the authority of PL113-2.

Applicable Exception(s) under 16 U.S.C. 3505(a)
Identify the appropriate exception(s) for the action or project under the CBRA (16 U.S.C. 3505(a)).

General Exceptions

☐ 16 U.S.C. 3505(a)(1): Any use or facility necessary for the **exploration, extraction, or transportation of energy resources** which can be carried out only on, in, or adjacent to a coastal water area because the use or facility requires access to the coastal water body.

☒ 16 U.S.C. 3505(a)(2): The **maintenance or construction of improvements of existing Federal navigation channels** (including the Intracoastal Waterway) and related structures (such as jetties), including the disposal of dredge materials related to such maintenance or construction. A Federal navigation channel or a related structure is an existing channel or structure, respectively, if it was authorized before the date on which the relevant System unit or portion of the System Unit was included within the CBRS.

☐ 16 U.S.C. 3505(a)(3): The maintenance, replacement, reconstruction, or repair, but not the expansion, of **publicly owned or publicly operated roads, structures, or facilities that are essential links** in a larger network or system.

☐ 16 U.S.C. 3505(a)(4): **Military activities** essential to national security.

☐ 16 U.S.C. 3505(a)(5): The construction, operation, maintenance, and rehabilitation of **Coast Guard facilities** and access thereto.

USFWS CBRA PROJECT INFORMATION
(per Template)

Specific Exceptions
These exceptions must also be consistent with all three purposes of the CBRA (see "Justification" section below).

☒ 16 U.S.C. 3505(a)(6)(A): **Projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats**, including acquisition of fish and wildlife habitats, and related lands, stabilization projects for fish and wildlife habitats, and recreational projects.

☐ 16 U.S.C. 3505(a)(6)(B): Establishment, operation, and maintenance of **air and water navigation aids** and devices, and for access thereto.

☐ 16 U.S.C. 3505(a)(6)(C): Projects under the **Land and Water Conservation Fund Act** of 1965 (16 U.S.C. 4601-4 through 11) and the **Coastal Zone Management Act** of 1972 (16 U.S.C. 1451 et seq.).

☐ 16 U.S.C. 3505(a)(6)(D): **Scientific research**, including aeronautical, atmospheric, space, geologic, marine, fish and wildlife, and other research, development, and applications.

☐ 16 U.S.C. 3505(a)(6)(E): Assistance for **emergency actions essential to the saving of lives and the protection of property and the public health and safety**, if such actions are performed pursuant to sections 5170a, 5170b, and 5192 of title 42 **and are limited to actions that are necessary to alleviate the emergency.**

☐ 16 U.S.C. 3505(a)(6)(F): Maintenance, replacement, reconstruction, or repair, but not the expansion (except with respect to United States route 1 in the Florida Keys), of **publicly owned or publicly operated roads, structures, and facilities.**

☒ 16 U.S.C. 3505(a)(6)(G): **Nonstructural projects for shoreline stabilization** that are designed to mimic, enhance, or restore a natural stabilization system.

Justification for Exception(s)

Based on the District's review, going east to west, the project affects the following units: F12 Southampton, F-13/F-13P Tiana Beach and NY-59/59P Fire Island, NY 59P, but meets the exceptions provisions under Section 6 of the CBRA. The purpose of the Project is to strengthen the natural protective features of the south shore of Long Island's barrier system for coastal storm damage protection. It does not seek to encourage encroachment of development or alterations to the coastal barriers.

For units F-12 and F-13/13P, the District determined that the Project meets the following additional conditions under 16 U.S.C. § 3505 which provides rationale that the project be exempt "if the expenditure is for the maintenance or construction of

improvements of existing Federal navigation channels (including the Intracoastal Waterway) and related structures (such as jetties), including the placement of dredge material related to such maintenance or construction." The Project's proposed improvements to inlet sediment management will provide navigation benefits to three inlets (Shinnecock, Moriches and Fire Island Inlet) by decreasing the frequency of maintenance dredging and affording safer passage through the inlets and will allow for better retention of sediment which will decrease shoaling within the navigation channel maintaining critical access to U.S. Coast Guard Stations at Moriches and Shinnecock Inlets. The project includes sand bypassing at the inlets within units F-12 and F13/13P. These activities include dredging of sand from the inlet and placing sand on the down drift beach. These actions are designed to mimic the natural movement of sand that would occur in the absence of the inlet. Both the dredging and placement fall within this category.

For the parts of the project affecting NY-59/59P, this activity falls under the CBRA's exception for "nonstructural projects for shoreline stabilization…designed to mimic, enhance, or restore a natural stabilization system." 16 U.S.C. §3505(a) (6)(G). The Project meets §505(a) (6) (G)'s precondition that it be consistent with the CBRA's purposes. The Project minimizes the loss of human life by replacing the beach to its original pre-Sandy condition in order to avoid further erosion and loss of Fire Island, and to reestablish the functionality of these beaches as part of the coastal barriers that contribute to the resiliency of upland communities. Additional loss of the beach could result in the damage to structures on Fire Island, damage and loss to structures within the backbay communities of the mainland of Long Island and potentially resulting in the loss of life. The Project involves renourishing a beach with sand and not the development of buildings or structures that the CBRA seeks to avoid. By keeping Fire Island National Seashore, Robert Moses State Park and Smith Point County Park as a public beach. These beaches are popular summer recreational destinations within the New York City area and provides much needed comfort to persons of all ages and socioeconomic backgrounds during hot summer days. The beach nourishment activities at these areas are protective of life, safety and the environment (without the Project, the beach can continue to erode, impacting the wildlife and natural resources of the project area). Federal funding is not being used for commercial or residential development that CBRA construes as wasteful. Rather the federal funding is being used for a beneficial purpose that is consistent with the CBRA's purpose.

It is noted that for the units designated at "P", known as otherwise protected areas, the only Federal funding prohibition is Federal flood insurance.

The legislative history of the CBRA supports the finding that the project falls within the exemptions. See S. REP. NO. 419, 97th Cong., 2d Sess. 8 (Oct. 1, 1982) (listing, as an exemption from the CBRA,"[n]onstructural projects such as the planting of dune grass or beach nourishment which mimic, enhance, or restore natural stabilization systems would be permitted for shoreline stabilization"); H.R. REP. NO. 841, 97th Cong., 2d Sess. 17 (Oct. 18, 1982) ("Nonstructural projects for shoreline stabilization, such as the planting of dune grass or other beach nourishment which mimic, enhance,

or restore natural stabilization systems would be permitted [under the CBRA].”); Coastal Barrier Resources Act Advisory Guidelines, 48 Fed. Reg. 45,664, 45,667 (Oct. 6, 1983) (noting that “[t]he legislative history cites the planting of dune grass or other beach nourishment activities as examples of these projects”). See also 127 Cong. Rec. 7572 (Apr 28, 1981) (remarks of Sen. John Chafee, the CBRA’s sponsor) (specifically naming “dredge and fill activities” as an exception to the CBRA’s prohibition on federal assistance).

Contact Information
Include contact information and where the response should be sent.

Peter Weppler
Chief, Environmental Analysis Branch
U.S. Army Corps of Engineers - Planning
26 Federal Plaza - Room 2151
New York, NY 10278-0090

U.S. Fish and Wildlife Service Response

Below is the Service's response to Army Corps of Engineers request for a consultation under the CBRA for the Fire Island to Montauk Point New York Hurricane Sandy project for Coastal Storm Risk Management (CSRM) This response represents the Service’s opinion. **The final decision regarding the expenditure of funds for this action or project rests with the Federal funding agency.** The Army Corps of Engineers has fulfilled its obligation to consult with the Service under the CBRA for this particular action or project within the CBRS. Please note that any new commitment of Federal funds associated with this action or project, or change in the project design and/or scope, is subject to the CBRA’s consultation requirement.

The Service has reviewed the information provided by The Army Corps of Engineers , and believes the referenced action/project is:

- ☐ Not located within a System Unit of the CBRS and the CBRA does not apply (except with respect to the restrictions on Federal flood insurance)
- ☐ Located within a System Unit of the CBRS and meets the exception(s) to the CBRA selected above
- ☐ Located within a System Unit of the CBRS and meets different exception(s) than the one(s) selected above (see additional information/comments below)
- ☐ Located within a System Unit of the CBRS and does not meet an exception to the CBRA (see additional information/comments below)

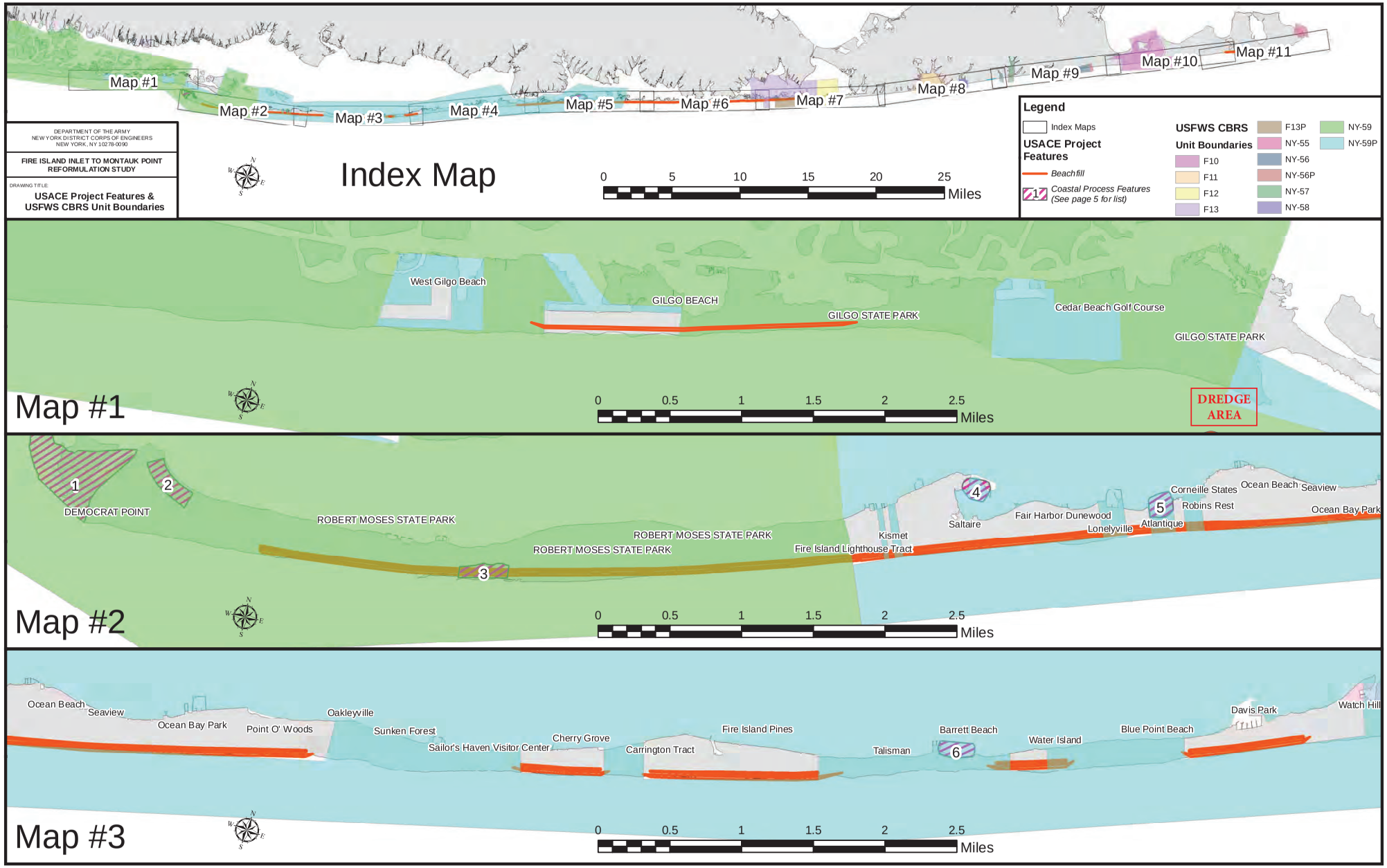
USFWS CBRA PROJECT INFORMATION
(per Template)

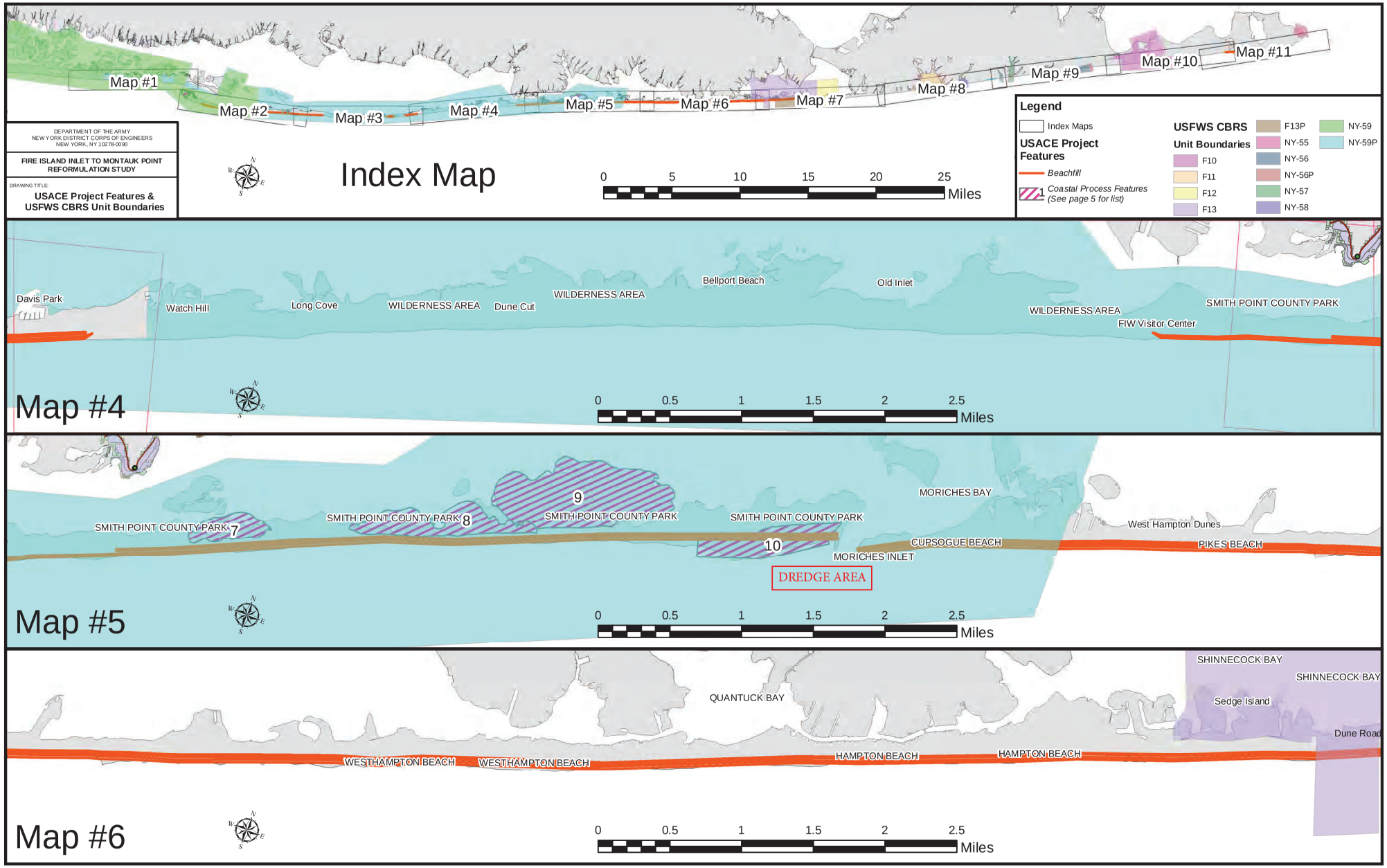
☐ Due to many competing priorities, the Service is unable to provide an opinion on the applicability of the CBRA's exceptions to this action/project at this time. The Army Corps of Engineers may elect to proceed with the action/project if it has determined that the action/project is allowable under the CBRA. Please note that any new commitment of Federal funds associated with this action/project or a related future project is subject to the CBRA's consultation requirement.

Additional Information/Comments
Include any additional information/comments.

This response does not constitute consultation for any project pursuant to section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) or comments afforded by the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*); nor does it preclude comment on any forthcoming environmental documents pursuant to the National Environmental Policy Act (83 Stat. 852; 42 U.S.C. 4321 *et seq.*).

SERVICE FIELD OFFICE SIGNATORY AND TITLE DATE


Map #1
Map #2
Map #3
Map #4
Map #5
Map #6
Map #7
Map #8
Map #9
Map #10
Map #11
DEPARTMENT OF THE ARMY
NEW YORK DISTRICT CORPS OF ENGINEERS
NEW YORK, NY 10278-0090
FIRE ISLAND INLET TO MONTAUK POINT REFORMULATION STUDY
DRAWING TITLE:
USACE Project Features & USFWS CBRS Unit Boundaries
Index Map
0 5 10 15 20 25 Miles
Legend
Index Maps
USACE Project Features
Beachfill
1 Coastal Process Features (See page 5 for list)
USFWS CBRS Unit Boundaries
F10
F11
F12
F13
F13P
NY-55
NY-56
NY-56P
NY-57
NY-58
NY-59
NY-59P
West Gilgo Beach
GILGO BEACH
GILGO STATE PARK
Cedar Beach Golf Course
GILGO STATE PARK
DREDGE AREA
Map #1
0 0.5 1 1.5 2 2.5 Miles
1
2
DEMOCRAT POINT
ROBERT MOSES STATE PARK
3
ROBERT MOSES STATE PARK
ROBERT MOSES STATE PARK
Fire Island Lighthouse Tract
Kismet
Saltaire
4
Fair Harbor Dunewood
Lonelyville
5
Atlantique
Corneille States
Robins Rest
Ocean Beach
Seaview
Ocean Bay Park
Map #2
0 0.5 1 1.5 2 2.5 Miles
Ocean Beach
Seaview
Ocean Bay Park
Point O' Woods
Oakleyville
Sunken Forest
Sailor's Haven Visitor Center
Cherry Grove
Carrington Tract
Fire Island Pines
Talisman
Barrett Beach
6
Water Island
Blue Point Beach
Davis Park
Watch Hill
Map #3
0 0.5 1 1.5 2 2.5 Miles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Map #9
Map #10
Map #11
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NEW YORK DISTRICT CORPS OF ENGINEERS
NEW YORK, NY 10278-0090
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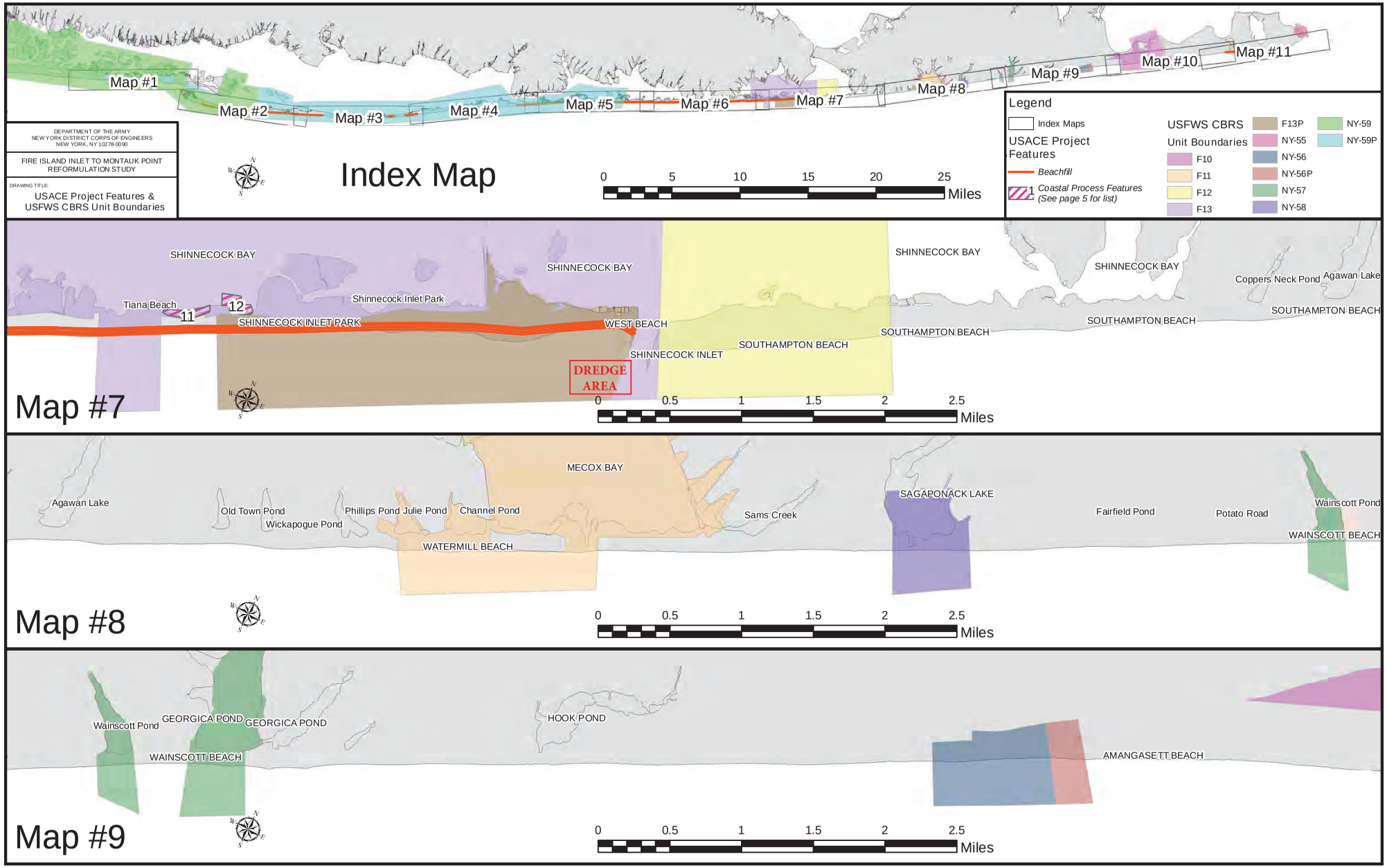
F10
F11
F12
F13
F13P
NY-55
NY-56
NY-56P
NY-57
NY-58
NY-59
NY-59P
Davis Park
Watch Hill
Long Cove
WILDERNESS AREA
Dune Cut
WILDERNESS AREA
Bellport Beach
Old Inlet
WILDERNESS AREA
SMITH POINT COUNTY PARK
FIW Visitor Center
Map #4
0 0.5 1 1.5 2 2.5 Miles
SMITH POINT COUNTY PARK
7
SMITH POINT COUNTY PARK
8
9
SMITH POINT COUNTY PARK
SMITH POINT COUNTY PARK
10
MORICHES BAY
West Hampton Dunes
CUPSOGUE BEACH
PIKES BEACH
MORICHES INLET
DREDGE AREA
Map #5
0 0.5 1 1.5 2 2.5 Miles
SHINNECOCK BAY
SHINNECOCK BAY
QUANTUCK BAY
Sedge Island
Dune Road
WESTHAMPTON BEACH
WESTHAMPTON BEACH
HAMPTON BEACH
HAMPTON BEACH
Map #6
0 0.5 1 1.5 2 2.5 Miles


Map #1
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Map #4
Map #5
Map #6
Map #7
Map #8
Map #9
Map #10
Map #11
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NEW YORK DISTRICT CORPS OF ENGINEERS
NEW YORK, NY 10278-0090
FIRE ISLAND INLET TO MONTAUK POINT
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USFWS CBRS Unit Boundaries
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0 5 10 15 20 25
Miles
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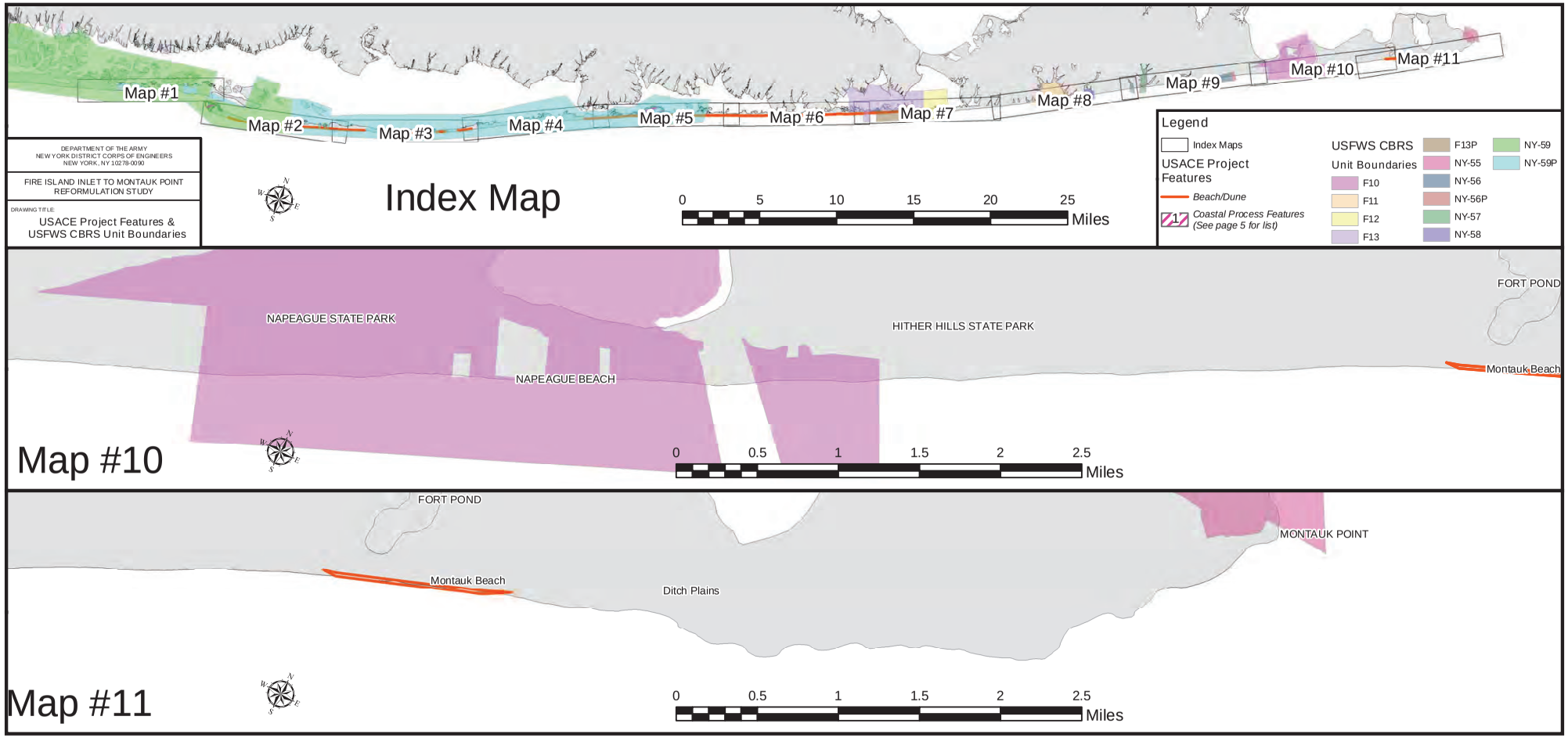
USACE Project Features
Beachfill
1 Coastal Process Features
(See page 5 for list)
USFWS CBRS Unit Boundaries
F10
F11
F12
F13
F13P
NY-55
NY-56
NY-56P
NY-57
NY-58
NY-59
NY-59P
SHINNECOCK BAY
Tiana Beach
11
12
Shinnecock Inlet Park
SHINNECOCK INLET PARK
WEST BEACH
SHINNECOCK INLET
SOUTHAMPTON BEACH
DREDGE AREA
Coppers Neck Pond
Agawan Lake
Map #7
0 0.5 1 1.5 2 2.5
Miles
MECOX BAY
Agawan Lake
Old Town Pond
Wickapogue Pond
Phillips Pond
Julie Pond
Channel Pond
WATERMILL BEACH
Sams Creek
SAGAPONACK LAKE
Fairfield Pond
Potato Road
Wainscott Pond
WAINSCOTT BEACH
Map #8
0 0.5 1 1.5 2 2.5
Miles
Wainscott Pond
GEORGICA POND
WAINSCOTT BEACH
HOOK POND
AMANGASETT BEACH
Map #9
0 0.5 1 1.5 2 2.5
Miles


Map #1
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Map #5
Map #6
Map #7
Map #8
Map #9
Map #10
Map #11
DEPARTMENT OF THE ARMY
NEW YORK DISTRICT CORPS OF ENGINEERS
NEW YORK, NY 10278-0090
FIRE ISLAND INLET TO MONTAUK POINT
REFORMULATION STUDY
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USACE Project Features &
USFWS CBRS Unit Boundaries
Index Map
0 5 10 15 20 25
Miles
Legend
Index Maps
USACE Project Features
Beach/Dune
1 Coastal Process Features (See page 5 for list)
USFWS CBRS Unit Boundaries
F10
F11
F12
F13
F13P
NY-55
NY-56
NY-56P
NY-57
NY-58
NY-59
NY-59P
NAPEAGUE STATE PARK
NAPEAGUE BEACH
HITHER HILLS STATE PARK
FORT POND
Montauk Beach
Map #10
0 0.5 1 1.5 2 2.5
Miles
FORT POND
MONTAUK POINT
Montauk Beach
Ditch Plains
Map #11
0 0.5 1 1.5 2 2.5
Miles

CPF Number	CPF Name	CPF Purpose	CPF Description
1	Democrat Point West	ESA	Regrade and devegetate; modify pond to improve functionality of existing wetland/create new foraging habitat; conserve on site sand volume.
2	Democrat Point East	ESA	Regrade and devegetate bay side; modify sand stockpiles to form barrier between recreation and ESA areas; conserve on site sand volume.
3	Dunefield West of Field 4	ESA	Devegetate ocean side; maintain vegetation buffer with road on north side.
4	Clam Pond	CSRM	Bay side fill placement to simulate cross island transport; possible living shoreline on north side per adaptive management plan.
5	Atlantique to Corneille	CSRM	Bay side fill placement to simulate cross island transport.
6	Talisman	CSRM	Bay side fill placement to simulate cross island transport.
7	Pattersquash Reach	CSRM/ESA	Devegetate bay side; shallow water bay side fill placement; south boundary follows Burma Rd alignment, includes physical barrier.
8	New Made Island Reach	CSRM/ESA	Devegetate bay side; shallow water bay side fill placement; south boundary follows Burma Rd alignment, includes physical barrier.
9	Smith Point County Park Marsh	CSRM	Bay side marsh restoration; fill placement to simulate cross island transport; regrade marsh elevation filling ditches and creating channels for tidal exchange.
10	Great Gun	ESA	Devegetate ocean side parcel.
11	Dune Rd Bayside Shoreline	CSRM	Bay side fill placement; bulkhead/groin removal; possible additional fill within offshore channel.
12	Tiana Bayside Park	CSRM	Bay side fill placement at east side of site; PED will determine fate of existing gabions.