U.S. Army Corps
of Engineers

Galveston District
Southwestern Division

Appendix F

Real Estate Plan
for
Coastal Texas Protection and Restoration Study
Integrated Feasibility Report and
Environmental Impact Statement

October 07, 2020

This Real Estate Plan has been prepared in accordance with Engineer Regulation (ER) 405-1-12 dated May 1, 1998.

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Acronyms and Abbreviations

ADM	Agency Decision Milestone
BEG	Bureau of Economic Geology
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resources Systems
CSRM	Coastal Storm Risk Management
ER	Ecosystem Restoration
GCCPRD	Gulf Coast Community Protection and Recovery District
GIS	Geographic Information System
GIWW	Gulf Intracoastal Waterway
GLO	Texas General Land Office
Gulf	Gulf of Mexico
HTRW	hazardous, toxic, radioactive waste
LERRD	land, easements, rights-of-way, relocation, and disposal areas
MLS	Multiple Listing Service
NFS	non-Federal Sponsor
NOAA	National Oceanic and Atmospheric Administration
OMRR&R	operation, maintenance, repair, replacement, and rehabilitation
PL	Public Law
PDT	Project Development Team
PPA	Project Partnership Agreement
REP	Real Estate Plan
RSLR	relative sea level rise
SCCR	Subdivisions and Covenants, Conditions and Restrictions
SLR	Sea level rise
TRRC	Texas Railroad Commission
TSP	Tentatively Selected Plan
TXOBA	Texas Open Beaches Act
UASFLA	Uniform Appraisal Standards for Federal Land Acquisitions
USACE	U.S. Army Corps of Engineers
USC	United States Code
USPAP	Uniform Standards of Professional Appraisal Practice
WRDA	Water Resources Development Act

1.0 GENERAL BACKGROUND

This Real Estate Plan (REP) is the real estate work product of the U.S. Army Corps of Engineers (USACE), Galveston District, Real Estate Division. The Real Estate Division supports project plan formulation for the Coastal Texas Protection and Restoration Feasibility Study. This plan identifies and describes the lands, easements, and rights-of-way required for the construction, operation and maintenance of the proposed project including those required for relocations pursuant to Public Law No. 91-646 relocations and utility/facility relocations, borrow material, dredged or excavated material disposal, and all required lands, easements, rights-of-way, relocations, and disposal areas – collectively referred to by the acronym “LERRD”.. The REP describes the required LERRD property, and the estimated LERRD value and administrative and incidental costs attributable to providing LERRD. The information contained herein is tentative in nature and intended for planning purposes only.

This project contains two major components that have been designed to give the most projection to the Texas coast. Coastal Storm Risk Management (CSRM) and Ecosystem Restoration (ER) features that, when completed, will work together giving the most populated areas two levels of protection. The two levels of protections is designed to protect, restore and maintain a diverse coastal ecosystem and reduce the risks of storm damage to homes and businesses across Texas’ coastal regions Both components will have challenges throughout the different stages of the project, such as different types of real estate requirements and multiple levels of coordination with local, state and federal agencies. CSRM components will impact highly developed and populated areas in the Houston-Galveston areas impacting thousands of tracts and ownerships. ER components will be mainly located along the coast impacting mostly state and federal lands.

2.0 PROJECT TYPE AND APPLICABILITY

The Galveston District of the USACE is conducting a feasibility study to investigate Coastal Storm Risk Management (CSRM) and Ecosystem Restoration (ER) opportunities on the Texas Gulf coast. The study area encompasses 18 counties along 400 miles of the Gulf Coast. The footprint area consists of the entire Texas Gulf Coast from the mouth of the Sabine River to the mouth of the Rio Grande and includes the Gulf of Mexico (Gulf) and tidal waters, barrier islands, estuaries, coastal wetlands, rivers, streams and adjacent areas that make up the interrelated ecosystem along the coast of Texas. The area is highly populated with over 6 million people and contains vital infrastructure that supports maritime trade, national security, and other Federal investment. Texas Gulf Coast ports handle more than 563 million tons of foreign and domestic cargo in 2015, approximately 22 percent of all U.S. port tonnage. Texas ports generate $368.7 billion in economic activity in the state and $6.9 billion in state and local taxes per year, according to the Texas Ports Association. The Port of Galveston ranked as the fourth largest U.S. cruise market based on embarkation, with more than 834,000 passengers in 2015. Refineries in the study area account for more than 25 percent of the nation's total refining capacity. In addition to the port activity there are 3.9 million acres of wetlands, and 235,000 acres of seagrass making Coastal Texas one of the richest shorelines in terms of aquatic resources of national significance.

2.1 PROJECT AUTHORIZATION

Authorization for the study is under Section 4091, Water Resources Development Act (WRDA) of 2007 P.L. 110-114 which states:

> *Sec. 4091. Coastal Texas Ecosystem Protection and Restoration, Texas.*
>
> *(a) In General.—The Secretary shall develop a comprehensive plan to determine the feasibility of carrying out projects for flood damage reduction, hurricane and storm damage reduction, and ecosystem restoration in the coastal areas of the State of Texas.*
>
> *(b) Scope.—The comprehensive plan shall provide for the protection, conservation, and restoration of wetlands, barrier islands, shorelines, and related lands and features that protect critical resources, habitat, and infrastructure from the impacts of coastal storms, hurricanes, erosion, and subsidence.*
>
> *(c) Definition.—For purposes of this section, the term ''coastal areas in the State of Texas'' means the coastal areas of the State of Texas from the Sabine River on the east to the Rio Grande River on the west and includes tidal waters, barrier islands, marshes, coastal wetlands, rivers and streams, and adjacent area.*

2.1.1 Recommended Plan

The planning process for this study was driven by the overall objective of developing a comprehensive plan that will help manage risks associated with coastal storms within the study counties while avoiding and minimizing impacts to the region's environmental resources.

CSRM and ER measures were developed and evaluated through several iterations of screening and assembled into alternatives to address specific needs for the Texas coast. This REP will only describe the Recommended Plan and cost. The recommended plan consists of three components (these could not be evaluated as separable elements, because the Bolivar Roads Gate System is dependent upon stabilized barrier islands) ; one addresses storm surge in the upper Texas coast, the second addresses erosion in the lower Texas coast, and the third is an ecosystem restoration plan for areas along the coast.

The first component is located in the upper Texas coast and is a combination of beach and dune CSRM features along the seaward portion of west Galveston Island and Bolivar Peninsula, resiliency features to the existing seawall, a storm surge gate crossing the Houston Ship Channel entrance and a ring levee protecting the city of Galveston. Additional features include breakwaters at the west end of the Galveston Ship Channel and induced damage mitigation measures consisting of voluntarily elevating homes combined with residential buy outs south of the proposed breakwaters. Nonstructural measures are proposed for areas along west side of Galveston bay shoreline north of the Texas City levees due to wind driven storm surges.

The second component for the lower Texas coast consists of beach nourishment and sediment management located in South Padre Island.

The third component is the ER features and includes gulf shoreline restoration (beach and dune restoration, nearshore breakwaters), Gulf Intracoastal Waterway (GIWW) erosion protection, marsh restoration, oyster reef restoration/creation, and salinity/water control structures.

A brief description of all three components are described below in the following order:

Component one: Section 2.1.1.1 Galveston Bay Surge Barrier System
Component two: Section 2.1.1.2 South Padre Island Beach Nourishment and Sediment Management
Component three: Section 2.1.1.3 Ecosystem Restoration Measures

2.1.1.1 Galveston Bay Storm Surge Barrier System

West Galveston and Bolivar Peninsula Beach and Dune System (Figure 1, Figure 2)

Beach and dune construction on West Galveston Island and Bolivar Peninsula form a first line of defense against Gulf of Mexico surge create critical components of the coastal surge barrier and the overall comprehensive risk reduction plan for the upper Texas coast. On West Galveston Island, this CSRM feature would tie into the existing seawall. On Bolivar Peninsula, this CSRM feature would tie into the Bolivar Roads Gate System, supporting the continued integrity and function of the surge gate over time.

Galveston Ring Barrier System (Figure 3, Figure 4)

The Galveston Ring Barrier feature consists of a combination of flood wall and gates at an elevation of 14 feet surrounding the City of Galveston. The barrier ties into the existing Seawall and proceeds clockwise from the west end of the Seawall north in the proximity of 103rd Street to Offatts Bayou, crosses the Teichman Point area and ties into I-45, continues east along the Harborside area to the 47st street area, then continues north to the Galveston Ship Channel, then continues east through the Port of Galveston to the University of Texas Medical Branch (UTMB), turns northward to the Ferry and then back south to the Seawall. Offshore breakwaters are recommended to reduce wave heights during storm events to mitigate part of the risk. Nonstructural measures for residential structures in the Channelview neighborhood are also recommended to address risk due to the proximity of the neighborhood to the floodwall. Although a cost estimate was developed for voluntary home elevations, the uncertainty associated with successful implementation of raising houses caused this option to be set aside for nonstructural buyouts. The higher cost of buying out homes is carried forward in the recommendation. In PED, the existing surge risk, and induced surge risk from the floodwall, will be further investigated to determine if the nonstructural mitigation measures need to be implemented.

Bolivar Roads Gate System, Tie-in Structure and Operations Center (Figure 5)

The crossing starts on Bolivar Peninsula at the end of Biscayne Beach Road with 3.03 miles of earthen levee and proceeds northwesterly to State Highway 87 where the levee turns south westerly to near the intersection of Keystone and 23rd Streets. The barrier continues southwest with combi-wall for 5,000 feet reaching the start of the gate system across Bolivar roads. The 2.08 gate system starts at the end of the combi-wall with 16 Shallow Water Environmental Gates. The next feature is the largest feature of the entire gate system, the deep-draft navigation gates crossing Bolivar Roads. The deep-draft navigation gate openings are designed to be 650 ft wide. The deep-draft navigation sector gates across Bolivar Roads are anchored and housed in man-made “islands” on either side of the channel. Before construction of any structures, and to minimize impacts to existing channel traffic, the navigation channel will be widened to accommodate the new inbound channel and the inbound sector gate. The widening of the channel will be north of the existing channel toe, through existing anchorage areas, and will be maintained at an 800ft toe to toe width and a depth of –48 MLLW, which is consistent with the existing channel authorized depths. Due to the extension of the existing navigation channel toe to the east to accommodate an inbound lane through the deep-draft navigation sector gate, existing aids to navigation will be relocated and additional aids provided for the extension of the channel. New aids will also be required for the smaller sector gate structures. Existing and/or new aids to navigation would be of can or conical type. Further coordination with the Coast Guard and the shipping industry will be conducted during PED. The gate system then ties into the end of the existing seawall at the San Jacinto Placement Area on Galveston Island.

The Bolivar Roads Gate System will also include a central control control/visitor center (called the Galveston Island Control/Visitor Center) on the Galveston side of the barrier. The Operations Center would be located on the protected side of the barrier near the northeast corner of the San

Jacinto Placement Area. The 5,000 square foot building would be on Government owned lands and would be accessible via the construction of a 0.32-mile access road from the existing USMC Reserve Center access road to the building location. The road would be aligned outside the San Jacinto Placement Area perimeter levee.

Clear Lake Gate System and Pump Station (Figure 6)

This CSRM feature consists of a gated closure structure, associated barrier walls, and a pump station to address the residual risk that persists in the Clear Lake area. A closure is proposed at State Highway 146 and Clear Lake to address Bay surge. The design includes a 75 ft sector gate across the channel and a pump station.

Dickinson Bay Gate System and Pump Station (Figure 7)

This CSRM feature consists of a gated closure structure, associated barrier walls, and a pump station. A closure is proposed at State Highway 146 and Dickinson Bayou to address Bay surge. The design includes a 100' sector gate across the channel and a pump station. The floodwall and closure structure would start on the west side of State Highway 146, near Avenue T, and end on the south side of the bayou, near Waterman's Harbor west of State Highway 146.

Nonstructural Improvements (Figure 8)

Nonstructural measures are proposed for the west side of Galveston Bay, north of the Texas City hurricane protection levees, to address the residual risk that persists for the area as a result of wind driven storm surges from the Bay. The study team reviewed residential and nonresidential structures within the Galveston Bay system that are predicted to sustain more than $5,000 in damage in the 20yr, 50yr 100-year or 200yr flood event, under the future with-project condition with the surge barrier in place. Based on an evaluation of cost and benefits and the ability to continue to buy down risk, structures still receiving damages in the 100-year event were recommended for voluntary nonstructural raisings. 1,755 residential pier and slab-on-grade structures are being recommended to be raised to the future with-project 100-year stage plus 1 ft. and 170 nonresidential slab structures are recommended to be flood proofed to 3ft above the existing ground elevation.

2.1.1.2 South Padre Island Measures

South Padre Island Beach Nourishment and Sediment Management (Figure 9)

This CSRM measure includes beach and dune nourishment to maintain a 120-foot-width beach and +12.5 ft (NAVD88) dune along 2.9 miles of the developed shorefront areas of SPI, from Sea Vista Condos near McCarter Road and Padre Road to the beginning of Andy Bowie Park. This feature is a dune and berm feature that will be constructed on South Padre Island. While developing the footprint for these measures, state and county policies such as the Open Beaches Act (OBA), State Submerged Lands Act and Cameron County's Historical Building Line (HBL) were considered.

The Open Beaches Act grants unrestricted lateral ingress/egress to all the state's beaches. According to the OBA state beaches is intended to include any beaches owned in fee or easement by the state. Additionally, it is implied in the OBA that the state has held a continuous right to access the beaches since the original charters, therefore all beaches are state beaches due to a continuous use easement. The area for the beach was described as the area from the low-tide water line landward to the vegetation line. The vegetation line is the natural line of vegetation as approved by the GLO.

The State Submerged Lands Act states that all lands from the mean High Tide Line seaward (approximately 10.33 miles) belongs to the State. Additionally, the SSL states that any lands owned by a private property owner that becomes submerged seaward of the High Tide Line is automatically conveyed to the state. The SSL indicates that ocean-facing properties along the Gulf of Mexico do not possess a traditional fixed boundary (dimension), but rather the seaward boundary is continuously fluctuating. Properties along the Gulf Coast are held in trust for the public benefit until the point in time that they are beyond the high tide line.

The Historical Building Line is a line that was established by Cameron County for properties with ocean frontage along the Gulf of Mexico. This line was established in accordance to a Beach & Dune protection plan. The line essentially established a point along the Gulf of Mexico past which property owners could not develop without an extensive and restrictive approval process. Please refer to Cameron County data for the specifics of the HBL.

2.1.1.3 Ecosystem Restoration Measures

Coastwide All-Inclusive Restoration

The recommended ER plan would restore natural features, which provide habitat within the coastal ecology and support natural conditions to withstand coastal storm conditions that cause land and habitat loss. Table 2-1 lists the measures for the coast wide all-inclusive restoration plan, which are future described below.

Table 2-1: Recommended ER Measures

Coastwide All-Inclusive Restoration Plan	
ER Measure	Name
G-28	Bolivar Peninsula and West Bay GIWW Shoreline and Island Protection
B-2	Follets Island Gulf Beach and Dune Restoration
B-12	Bastrop Bay, Oyster Lake, West Bay, and GIWW Shoreline Protection
CA-5	Keller Bay Restoration
CA-6	Powderhorn Shoreline Protection and Wetland Restoration
M-8	East Matagorda Bay Shoreline Protection
SP-1	Redfish Bay Protection and Enhancement
W-3	Port Mansfield Channel and Island Rookery Restoration

Described below are the eight different measures that make up the different ER alternatives:

G-28: Bolivar Peninsula and West Bay GIWW Shoreline and Island Protection (Figure 10, Figure 11)

This measure features 664 acres of wetland and marsh restoration, breakwaters, and 326 acres of island restoration. Construction of 36 miles of rock breakwaters would reduce erosion of unprotected segments of shoreline along the GIWW on Bolivar Peninsula and shoreline along the north shore of West Bay. New oyster reef will also be constructed over approximately 18 acres in West Galveston Bay.

B-2: Follets Island Gulf Beach and Dune Restoration (Figure 12)

This measure features beach nourishment and dune restoration on the Gulf shoreline on Follets Island in Brazoria County. This project also protects State Highway 257, which is the only road accessing and providing evacuation capability to the east towards Galveston Island and to the west towards Freeport. Follets Island protects Bastrop, Christmas, and Drum bays, and the Brazoria National Wildlife Refuge on the mainland behind this bay system.

B-12: West Bay and Brazoria GIWW Shoreline Protection (Figure 13)

This feature is located along the GIWW from West Galveston Bay to approximately 15 miles west of the city of Freeport. The feature will include 551 acres of estuarine marsh restoration and continuing nourishment and 3,708 linear feet of oyster reef creation. Additionally, 43.2 miles of breakwaters will be constructed along the western side of West Galveston Bay, Cowtrap Lake, and along selected segments of the GIWW in Brazoria County.

CA-5: Keller Bay Restoration (Figure 14)

This feature is located on a peninsula that extends between Lavaca, Matagorda, and Keller Bays and includes approximately 3.8 miles of breakwater construction along the Matagorda Bay side of the peninsula. Oyster reef will be constructed over 12,213 linear feet along the Lavaca Bay side of the peninsula.

CA-6: Powderhorn Shoreline Protection and Wetland Restoration (Figure 15)

This feature is in west Matagorda Bay from Indianola south to Port O'Connor, Texas. The feature includes 531 acres of estuarine marsh restoration and nourishment within the Powderhorn Lake estuary, Boggy Bayou and along the west Matagorda Bay shoreline. Additionally, five miles of breakwaters will be constructed along the shorelines fronting portions of Indianola, the Powderhorn Lake estuary, and Texas Parks and Wildlife Department's Powderhorn Ranch State park and Wildlife Management Area M-8: East Matagorda Bay Shoreline Protection (Figure 5).

M-8: East Matagorda Bay Shoreline Protection (Figure 16)

This feature is in Redfish Bay near Corpus Christi, Texas. The feature includes 391.4 acres of island restoration for Dagger, Ransom, and Stedman Islands and 7.4 miles of breakwater construction along the restored islands and along unprotected segments of the GIWW. Additionally, 7,392 linear feet of oyster reef will be created between the breakwaters and the restored islands

SP-1: Redfish Bay Protection and Enhancement (Figure 17)

This measure features restoration of the island complex of Dagger, Ransom, and Stedman islands in Redfish Bay, construction of breakwaters along unprotected GIWW shorelines along the backside of Redfish Bay and adding oyster reef balls between the breakwater and island complex.

W-3: Port Mansfield Channel, Island Rookery, and Hydrologic Restoration (Figure 18)

This feature is located along the Port Mansfield Channel on North Padre Island. The feature will include 27.8 acres of bird island restoration with an associated 0.7 miles of breakwater construction around the island. Also, the North Padre Island gulfward beach will be nourished for 9.5 miles north of the northern Port Mansfield Channel Jetty. Source material for the beach nourishment will come from dedicated dredging of the Port Mansfield Channel. The dredging will also restore the hydrologic connection between the channel and Brazos Santiago Pass across approximately 113,000 acres of the Laguna Madre.

3.0 PURPOSE AND SCOPE

Houston is the fourth most populated city in the United States with the second largest port in terms of tonnage (Port of Houston). Houston is also home to some of the most important oil and gas production and critical infrastructure in the nation, and the Houston region is highly vulnerable to coastal storm damage. The purpose of this feasibility study is to identify critical infrastructure and recommend a comprehensive strategy for reducing coastal storm flood risk through structural and nonstructural measure in the event of coastal storms such as hurricanes.

Some of the highest rates of Gulf shoreline erosion in Texas occurs in Jefferson County and to the west end of the Galveston Seawall. Much of the Galveston Island dune system that was washed out by Hurricane Ike has still not recovered, leaving the Houston-Galveston area vulnerable to the next major storm. Restoration of beaches and dunes provides renourishment of sediment to beach and dune complexes to address erosion, shoreline loss, and limited sediment supply.

3.1 PREVIOUS STUDIES

Sabine Pass to Galveston Bay Feasibility Study, 2016. The study encompasses six coastal counties on the upper Texas Gulf coast: Orange, Jefferson, Chambers, Harris, Galveston, and Brazoria.

Storm Surge Suppression Study, by the Gulf Coast Community Protection and Recovery District (GCCPRD), 2014 to 2016. A technical, scientific based effort to investigate opportunities to alleviate the vulnerability of the upper Texas coast to storm surge and flooding.

Texas Coastal Resiliency Master Plan, by Texas General Land Office (GLO), 2016 to 2017. A study to provide a framework of community, socioeconomic, ecologic, and infrastructure protection from coastal hazards, including short-term direct impacts (e.g., flooding, storm surge) and long-term gradual impacts (e.g., erosion, habitat loss).

4.0 REAL ESTATE REQUIREMENTS

4.1 EXISTING REAL ESTATE REQUIREMENTS

4.1.1 Existing USACE Interest

The Galveston District has many perpetual easements within the vicinity of the proposed project. Once the Tentatively Selected Plan (TSP) is determined, the exact locations for the District's interests within in the project footprint will be determined. When there is an available government property right, it will be utilized to support the construction and ultimate operation of the project. Any additional acquisition beyond existing government rights; however, is the responsibility of the non federal sponsor.

Government interests proposed for use:

CSRM

The Storm Surge Gate at Bolivar Roads will also include a central control/visitor center on the Galveston side of the barrier. The Operations Center would be located on the protected side of the barrier near the northeast corner of the San Jacinto Placement Area. This land was conveyed in fee to the government in May 1917.

ER

Non-standard estates will be required for the construction of the ER features. The NFS and State will need to enter an agreement, resulting in a non-standard estate requiring approval by USACE Headquarters as set forth in ER 405-1-12. The request for approval of the non-standard estate will be made by separate request to USACE HQ and can be reasonably anticipated to take approximately twelve months.

ER measures restore beach, island, oyster, or marsh habitat. Many of the restoration measures were drawn from the GLO's Coastal Resiliency Master Plan, past USACE studies. ER alignment measures overlap other state and federal owned lands such as the TPWD and USFWS.

The PDT has worked with TPWD and USFWS to assure the missions of TPWD and USFWS aligns with the purpose of this ecosystem restoration project, which should justify the non-standard estate and continuation of ownership by the State of Texas. As a result of the non-standard estate, the continuing care and maintenance of the project features will need to be addressed in the project partnership agreement (PPA).

4.2 REAL ESTATE REQUIREMENTS

4.2.1 Real Estate Requirements for the Coastal Storm Risk Management plan.

The CSRM plan will require approximately 1,856.4 acres in perpetual easements and 367.7 acres in temporary work area easements, and 19.3 acres in fee impacting a total of 2,170 tracts and 1,468 owners. Table 4-1 provides the expected easements and type of estates required for each of the measures within in the footprint. The estates identified here are discussed in detail in Section 4.3 of this REP. A tract register listing parcel, land ownership information is available upon request.

Table 4-1: Estimated Land Impacts for Coastal Storm Risk Management Measures

Recommended Plan	Measure	Feature	Land Use	Est. Owners	Est. Tracts	Fee	Perpetual Easements (acres)	****Temp. Work Area Easements (acres)
(Coastal Barrier/Nonstructural System with Galveston Ring Levee)	West Galveston and Bolivar Beach/ Dune	*Beach and Dune Barrier	C/G/I /O/P/ R/UN K/UD N/V	1,004	1,460	0	1,465.2	171.3
	Galveston Ring Barrier	***Floodwall/Levee/ Drain Structures/Combi-walls/Pump Stations/***Circulation Gate/ Nonstructural Channelview**/ Seawall	C/G/I /O/P/ UND/ UNK/ V/R	267	395	19.3	141.3	183.6
	Clear Creek /Dickinson Bayou Gates	Navigation Gate	C/A/ E	26	34	0	136	11.82
	Bolivar Roads Gate System	Navigation Gate	G/O/ P/U	17	91	0	1,058	155
	South Padre Island	*Beach and Dune Barrier	C/G/ P/R/	154	148	0	68	6

C=Commercial, G=Gov/Med/Edu, I=Industrial, O=Other, P=Parks/Open Spaces, R=Residential, Unk=Unknown, UND=Undevelopable, V=Vacant Developable, A=Agricultural Land, E=Electric Company. *Standard Estate #26, **Standard Estate #1, ***Standard Estate#9, ****Standard Estate#15,

4.2.1.1 BORROW MATERIAL

Borrow material required for the levee features of CSRM will be acquired commercially, rather than obtained from a borrow area under Federal control. The costs associated with the acquisition of the borrow material will be a construction cost, and the NSF will not be eligible for LERRD crediting for these costs. If this plan is altered during PED, the NFS must acquire necessary easements and environmental clearances for any proposed borrow area under existing federal control.

4.2.1.2 Access/Staging Areas

545 acres are required for access/staging areas for the CSRM portion of the project. Once the alternatives are finalized the REP will be updated to specifically describe the property and determine the necessary term for any temporary work area easements necessary as described in section 4.2.1 of this REP. Access and staging areas for ER features have not been determined at the time of this report. These requirements will be determined in PED phase.

4.2.1.3 MITIGATION

Compensatory mitigation is required for the unavoidable impacts to the environment that are caused by the Recommended Plan, specifically from the implementation of the Galveston Bay Storm Surge Barrier System. Impacted habitat types are estuarine emergent wetland, palustrine emergent wetland, oyster reef, and open bay bottom. The impacts are divided into two categories, direct and indirect:

- Direct Impacts are caused by the footprint of CSRM feature construction
- Indirect Impacts are caused by construction induced changes to the environment that are not within the direct footprint.

A Mitigation Plan, which is included as Appendix C-1 in the attached EIS, details proposed plans to replace the lost functions and values of the impacted areas through restoration or enhancement activities that increase and/or improve the habitat functions and services within a mitigation site.

Potential locations, as shown in Figure 19, for mitigation sites have been developed with the interagency team but will be refined further during the PED phase. Ultimately, the final size of the mitigation measures (width, length etc.) may change. The conservative engineering approach and economic assumptions used in the development of the Recommended Plan, will result in equal or lesser environmental impacts than currently estimated as the plan is refined in PED.

Ecological mitigation will occur across Galveston and West Galveston Bays and includes construction of new oyster reefs, palustrine wetlands, and estuarine wetlands. Oyster reef construction will be located in the vicinity of Alligator Point Rookery, Evia Island, and in Dickinson Bay. Palustrine wetlands will be constructed on Galveston Island in three locations bounded by Pabst Road and Grand Avenue on the east and west and by Stewart Road and FM 3005 on the north and south. Estuarine wetlands will be constructed in seven locations: Dickinson Bayou,

Seabrook, and Greens Lake on the mainland, and Sievers Cove and thr.ee locations within Horseshoe Lake on the Bolivar Peninsula.

4.2.1.4 Coastal Barrier Resources Act (CBRA)

The Coastal Barrier Resources Act (CBRA) of 1982 established the John H. Chafee Coastal Barrier Resources Systems (CBRS), a defined set of geographic units along the Atlantic, Gulf of Mexico, Great Lakes, U.S. Virgin Islands, and Puerto Rico coasts. Most new Federal expenditures and financial assistance are prohibited within the CBRS, unless those activities qualify for an exception under Section 6 of CBRA (16 USC § 3505).

Features located in CBRA Zones have been identified and a detailed summary of CBRA coordination efforts is included in Appendix E of the Draft EIS.

4.2.2 Real Estate Requirements for the Environmental Restoration (ER) project.

The recommended ER plan will require approximately 4,378.48 acres in fee impacting a total of 5,550 tracts and 2,766 owners. The required estate for ecosystem restoration projects per ER 405-1-12 is fee. The fee estate will be required for all ER measures on lands not owned by the state. A non-standard estate will be required for all ER features on lands owned by the state. Standard Estate #21 Bank Protection Easement will be required for ER features located along the banks of the GIWW. Standard Estate# 26 Perpetual Beach Storm Damage Reduction Easement will be required for all ER features located on beach and dunes not owned by the state. Table 4-2 lists the land impacts for each of the measures within in the footprint. These “non-standard” estates are tract specific and will be developed in PED as the scale and scope of the interest necessary to support the federal project becomes definitized. Until approved, the District may not negotiate non-standard estates or utilize them in official appraisals or planning efforts.

Table 4-2: Estimated Land Impacts for Ecosystem Restoration Measures

All Real Estate to be Acquired in Fee (except state owned lands)

Recommended Plan	Measure	Est. Tracts	Est. Owners	Submerged Land (acres)	Beach (acres)	Dunes (acres)	Wetlands (acres)	Buildable (acres)
(Coastwide All-Inclusive Restoration)	G-28	428	111	203.18			906.14	289
	B-2	227	21	674.29	140.68	262.07		
	B-12	239	28	13.31			825	958
	M-8	16	6	284.53			52	5,881
	CA-5	137	124	29.85				
	CA-6	57	38	143.77			378	12
	SP-1	0	0	454.80				
	W-3	1	1	471.79	1,446.34			

4.2.2.1 BORROW MATERIAL

Materials required for ER features will be sourced from offshore locations, the GIWW, or navigation channels crossing the GIWW subject to the proximate wet land, marsh and island restoration locations.

4.3 REQUIRED ESTATE FOR SPONSOR PROVIDED REAL ESTATE

The non-Federal Sponsor (NFS) is responsible for acquiring and furnishing all required LERRD for the project. USACE policy specifies the standard estate required for a cost shared civil works project based on the proposed use of the land. Engineering Regulation (ER) 405-1-12 Chapter 12-9 specifies the estate for each proposed land use. The actual text of the standard estate is provided in Engineering Circular (EC) 405-1-11 Exhibit 5-29. These estates have been developed over many years in coordination with the Department of Justice in the course of litigation involving government acquisition. Altering or deviating from these estates is prohibited; except when such alteration or deviation is specifically approved by both Division and Headquarters.

In general, lands needed for the CSRM components of the project will be acquired through a combination of fee, permanent easements, and temporary work area easements. ER features will require fee estate for privately owned lands and a non-standard estate for any state-owned lands needed for the ER features. The real estate requirements for the project must support construction as well as the continued operation and maintenance of the project. The majority of the acreage

affected by the project consists of residential, commercial, industrial, vacant/undeveloped, and wetland/marsh land.

Construction of the complete project, including the breakwater and/or living shoreline, will require a variety of real estate interests as outlined below and will depend on the specific footprint developed in PED. By policy, USACE requires standard estates for all LERRD which fully allows construction and perpetual operations and maintenance of the project. The specific estate utilized depends on the nature of the project use and must fully support both construction rights, and future operation and maintenance requirements.

Any necessary non-standard estates will be drafted in PED phase in coordination with the vertical team, the District Engineering and Planning team, and the NFS. The draft estates will be submitted through CESWD to CEHQ-RE as a Request for Approval of a Non-Standard Estate. The real estate interests for this project are as follows. The following USACE Standard Estates are being utilized in the planning portion of this project:

Non-Standard Estate (required for state owned lands)

The granting clause and additional details regarding this non-standard estate will be updated when available. At 30-35% design, discussions regarding the specifics of the proposed non-standard estate are ongoing. Considerations at this time include a license or an interest similar to a conservation or ecosystem restoration easement for state-owned land. However, the final estate will be determined in Pre-Construction, Engineering, and Design (PED) phase.

Standard Estate #1. Fee

The fee simple title to (the land described in Schedule A) (Tracts Nos. _____, _____ and _____) subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

Standard Estate #9. Flood Protection Levee Easement

A perpetual and assignable right and easement in the land described to construct, maintain, repair, operate, patrol and replace a flood protection levee, including all appurtenances thereto; reserving, however, to the owners, their heirs and assigns, all such rights and privileges in the land as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

Standard Estate #15. Temporary Work Area Easement

A temporary easement and right-of-way in, on, over and across (the land described in Schedule A) (Tracts Nos._____,_____ and _____), for a period not to exceed _____, beginning with date possession of the land is granted to the United Sates, for use by the United States, its representatives, agents, and contractors as (borrow area) (work area), including the right to (borrow and/or deposit fill, spoil and waste material thereon) (move, store and remove equipment and supplies, and erect and remove temporary structures on the land and to perform any other work necessary and incident to the construction of the _____ Project, together_____

___ with the right to trim, cut, fell and remove therefrom all trees, underbrush, obstructions, and any other vegetation, structure, or obstacles within the limits of the right-of-way; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

Standard Estate #21. Bank Protection Easement

A perpetual and assignable easement and right-of-way in, on, over and across the land hereinafter described for the location, construction, operation, maintenance, alteration, repair, rehabilitation and replacement of a bank protection works, and for the placement of stone, riprap and other materials for the protection of the bank against erosion; together with the continuing right to trim, cut, fell, remove and dispose therefrom all trees, underbrush, obstructions, and other vegetation; and to remove and dispose of structures or obstructions within the limits of the right-of-way; and to place thereon dredged, excavated or other fill material, to shape and grade said land to desired slopes and contour, and to prevent erosion by structural and vegetative methods and to do any other work necessary and incident to the project; together with the right of ingress and egress for such work; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however to existing easements for public roads and highways, public utilities, railroads and pipelines.

Standard Estate #26. Perpetual Beach Storm Damage Reduction Easement

A perpetual and assignable easement and right-of-way in, on, over and across (the land described in Schedule A) (Tract No._____) for use by the (Project Sponsor), its representatives, agents, contractors, and assigns, to construct; preserve; patrol; operate; maintain; repair; rehabilitate; and replace; a public beach [a dune system] and other erosion control and storm damage reduction measures together with appurtenances thereto, including the right to deposit sand; to accomplish any alterations of contours on said land; to construct berms [and dunes]; to nourish and renourish periodically; to move, store and remove equipment and supplies; to erect and remove temporary structures; and to perform any other work necessary and incident to the construction, periodic renourishment and maintenance of the (Project Name), together with the right of public use and access; [to plant vegetation on said dunes and berms; to erect, maintain and remove silt screens and sand fences; to facilitate preservation of dunes and vegetation through the limitation of access to dune areas;] to trim, cut, fell, and remove from said land all trees, underbrush, debris, obstructions, and any other vegetation, structures and obstacles within the limits of the easement (except_____); [reserving, however, to the grantor(s), (his) (her) (its) (their) (heirs), successors and assigns, the right to construct dune overwalk structures in accordance with any applicable Federal, State or local laws or regulations, provided that such structures shall not violate the integrity of the dune in shape, dimension or function, and that prior approval of the plans and specifications for such structures is obtained from the (designated representative of the Project Sponsor) and provided further that such structures are subordinate to the construction, operation, maintenance, repair, rehabilitation and replacement of the project; and further] reserving to the grantor(s), (his) (her) (its) (their) (heirs), successors and assigns all such rights and privileges as may be used and enjoyed without interfering with or

abridging the rights and easements hereby acquired; subject however to existing easements for public roads and highways, public utilities, railroads and pipelines.

4.4 RECREATION FEATURES

The proposed project does not have any recreation features.

5.0 NON-FEDERAL SPONSOR

The USACE Galveston District is responsible for the overall management of the study. The NFS for the study and construction is the GLO. The GLO has been actively involved throughout the study process has the ability to acquire LERRD for this project, as discussed in Section 13 of this REP. The GLO will not be responsible for operation, maintenance, repair, replacement, and rehabilitation (OMRR&R). A separate local sponsor will be sought for certain identified portions of project features to be responsible for OMRR&R. The OMRR&R NFS must have the ability to own the necessary land interests to perform this work, which will require a non-standard Project Partnership Agreement (PPA). GLO is actively coordinating with the State of Texas to create NFS who can be responsible for the OMRR&R for each project feature. As stated in section 7.2 of the main report *"The State of Texas (encompassing its various entities, including the GLO) anticipates issuing a Letter-of-Intent in the near future stating its intent to serve as the non-Federal sponsor, with support from local entities, for future phases of the Coastal Texas Protection and Restoration Plan, pending legislation to be considered in the 2021 Texas legislative session. Accordingly, local entities such as counties, cities, levee improvement districts, drainage districts, municipal utility districts, or other special taxing entities may elect to, or be created to, support the State of Texas and the USACE in the implementation of this project."* The addition of a separate NFS for OMRR&R will require that certain LERRD instruments be assignable to eligible NFS partners or administratively transferred after completion of construction. This may require deviations from the standard estates.

6.0 FEDERALLY OWNED LAND AND EXISTING FEDERAL PROJECT

CSRM Impacts on Federally Owned Lands

The CSRM features will be impacting Federally owned lands at the Galveston Entrance Channel (Figure 24) and Eastern Tie-In Reach (Figure 25). The environmental gate at Galveston Entrance Channel will be impacting two tracts of the Galveston Harbor Channel Project in which the government owns the fee interest, and the sector gate at Eastern Tie-In Reach will be impacting three tracts of the GIWW Project in which the Government holds perpetual easements. The features of both CSRM and ER measures impact several Federally owned lands (Figures 9 through 18).

ER Impacts on Federally Owned Lands

Table 6-1 shows a breakdown of the estimated number of tracts or placement areas controlled and/or maintained by the Galveston District that will be impacted by the recommended plan.

Table 6-1: ER Measures Impact on the Galveston District Interests

Measures	Features	Number of Galveston District Tracts Impacted
G-28	Wetlands, Revetment/ Breakwaters, Out-Year Nourishment, Island Restoration	82
B-12	Wetlands, Revetment/ Breakwaters, Out-Year Nourishment	47
M-8	Wetlands, Revetment/ Breakwaters, Out-Year Nourishment, Island Restoration	1
SP-1	Wetlands, Revetment/ Breakwaters, Submerged Aquatic Vegetation, Island Restoration	2
W-3	Dune/Beach Restoration, Revetment/Breakwaters, Island Restoration	1

7.0 NON-FEDERAL SPONSOR OWNED LAND

Portions of CSRM and ER features will lie within submerged land owned by the State of Texas and administered by the GLO. The NFS will be required to enter into an agreement with the State of Texas (including entities such as GLO) which will result in a conveyance of interest in the form or a non-standard estate to the NFS for the construction and future operation and maintenance of portions of the project owned by the State of Texas.

8.0 NAVIGATION SERVITUDE

Portions of the project structures, specifically two navigation gates located in Clear Lake and Dickinson Bayou, one gate at Offatts Bayou, and one environmental gate located at the Galveston Entrance Channel, will lie within navigational waters of the United States. The recommended plan will include gates at Clear Lake (Figure 26), Dickinson Bayou (Figure 27), Eastern Tie-In Reach (Figure 28), and the Galveston Entrance Channel also known as the Bolivar Roads gate (Figure 29). The District has requested administrative approval to utilize the navigation servitude for these features. Additional opportunities to utilize navigational servitude may arise as the plan is refined in PED. By policy use of the navigational servitude for ER and CSMR land use requires administrative approval of headquarters. The application of navigational servitude would reduce the cost for the gate components of this project.

9.0 INDUCED FLOODING

Details of the impact of the induced flooding cannot be determined at this phase of the study. Further investigations using water modeling will be conducted in PED phase, at which point the PDT can more accurately identify real estate impacts which may lead to additional real estate requirements and costs. REP would then be updated accordingly.

10.0 BASELINE COST ESTIMATE FOR REAL ESTATE

10.1 CSRM COST

The baseline cost estimate (BCE) provided in this report are based on feasibility level design. In order to account for the additional risk present when determining real estate requirements for the feasibility level design, a contingency has been included in each table. Total project costs are not expected to be greater than $33B. Pursuant to Policy Guidance Letter (PGL) 31 dated 11 January 2019, “for projects in which the value of real estate (lands, improvements, and severance damages) are not expected to exceed 30% of total project costs (total costs to implement project), a brief gross appraisal will be acceptable for purposes of the feasibility phase.” As such, the land cost listed in the tables below are based on a brief gross appraisal cost estimate. The following tables are the BCE for all CSRM features as listed below.

- West Galveston Beach and Dunes
- Bolivar Beach and Dunes
- Bolivar Roads Gate System
- Galveston Ring Levee System
- Clear Lake Gates and Pump System
- Dickinson Bayou Gates Pump System
- South Padre Island Beach Nourishment and Sediment Management

Table 10-1: West Galveston Beach and Dune BCE

West Galveston Beach and Dune System			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission 40 hrs. x $125/hr. per tract)	$2,700,000.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and State Land)	$6,896,700,00.00
	0105	Appraisals ($2,500 per tract)	$1,350,000.00
		Survey ($4,000 per tract)	$2,160,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$540,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County and Sponsor Owned Lands *(Includes **CBRA lands of $1,370,264.00**)*	$171,500,000.00
		Utility Relocations (Admin Cost)	$9,000.00
	01-0117	Title Commitment ($1,000 per tract)	$540,000.00
		Subtotal	$185,695,700.00
		Contingency	$46,423,925.00
		Non-Federal Total	**$232,119,625.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$675,000.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$790,500.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$405,000.00
	01-0117	Potential Pipeline Relocations Costs (Admin Only Not Construction Costs) (3,000 each) (AOC)	$9,000.00
		Subtotal	$1,870,500.00
		Contingency	$467,625.00
		Federal Total	**$2,338,125.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$234,457,750.00**

Table 10-2: Bolivar Beach and Dune System BCE

Bolivar Beach and Dune System			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission 40 hrs. x $125/hr. per tract)	$5,605,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$0.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$10,300,500.00
	0105	Appraisals ($2,500 per tract)	$2,802,500.00
		Survey ($4,000 per tract)	$4,484,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$1,121,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County and Sponsor Owned Lands. *(Includes **CBRA lands of $11,970,677**)*	$91,200,000.00
		Utility Relocations (Admin Cost)	$15,000.00
	01-0117	Title Commitment ($1,000 per tract)	$1,121,000.00
		Subtotal	$116,649,000.00
		Contingency	$29,162,250.00
		Non-Federal Total	**$145,811,250.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$1,401,250.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$1,471,500.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$844,500.00
	01-0117	Potential Pipeline Relocations Costs (Admin Only Not Construction Costs) (3,000 each) (AOC)	$15,000.00
		Subtotal	$3,717,250.00
		Contingency	$929,312.50
		Federal Total	**$4,646,562.50**
GRAND TOTAL (Federal and Non-Federal Cost):			**$150,457,812.50**

Table 10-3: Bolivar Road Gate System

Bolivar Road Gate System			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission 40 hrs. x $125/hr. per tract)	$480,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$0.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$1,395,900.00
	0105	Appraisals ($2,500 per tract)	$150,000.00
		Survey ($4,000 per tract)	$384,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$96,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County and Sponsor Owned Lands	$20,700,000.00
		Facility/Boat Ramp Relocations (Admin Cost)	$3,000.00
	01-0117	Title Commitment ($1,000 per tract)	$96,000.00
		Subtotal	$23,394,900.00
		Contingency	$5,848,725.00
		Non-Federal Total	**$29,243,625.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$120,000.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$142,500.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$79,500.00
	01-0117	Boat Ramp Relocations Costs (Admin Only Not Construction Costs) (3,000 each) (AOC)	$3,000.00
		Subtotal	$345,000.00
		Contingency	$86,250.00
		Federal Total	**$431,250.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$29,674,875.00**

Table 10-4: Galveston Ring Levee Barrier System BCE

Galveston Ring Levee Barrier System (Including Offatts/Seawall/Channelview)			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission 40 hrs. x $125/hr. per tract)	$3,310,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$35,000.00
		Potential Residential Relocation Costs ($31,000.00/ residence)	$2,015,000.00
		Potential Residential Moving Costs ($4,000.00/ residence)	$260,000.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$9,690,300.00
	0105	Appraisals ($2,500 per tract)	$1,655,000.00
		Survey ($4,000 per tract)	$2,648,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$662,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County and Sponsor Owned Lands	$178,400,000.00
		Utility/Facility Relocations (Admin Cost)	$117,000.00
	01-0117	Title Commitment ($1,000 per tract)	$662,000.00
		Subtotal	$199,454,300.00
		Contingency	$49,863,575.00
		Non-Federal Total	**$249,317,875.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$827,500.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$982,500.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$497,250.00
	01-0117	Utility/Facility Relocations Costs (Admin Only Not Construction Costs) (3,000 each) (AOC)	$117,000.00
		Subtotal	$2,424,250.00
		Contingency	$606,062.50
		Federal Total	**$3,030,312.50**
GRAND TOTAL (Federal and Non-Federal Cost):			**$252,348,187.50**

Table 10-5: Clear Lake Gates BCE

Clear Lake Gates and Pump Station			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission 40 hrs. x $125/hr. per tract)	$150,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$0.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$459,000.00
	0105	Appraisals ($2,500 per tract)	$75,000.00
		Survey ($4,000 per tract)	$120,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$30,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County and Sponsor Owned Lands	$27,000,000.00
		Utility/Facility Relocations (Admin Cost)	$54,000.00
	01-0117	Title Commitment ($1,000 per tract)	$30,000.00
		Subtotal	$27,918,000.00
		Contingency	$6,979,500.00
		Non-Federal Total	**$34,897,500.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$37,500.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$45,000.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$22,500.00
	01-0117	Utility/Facility Relocations Costs (Admin Only Not Construction Costs) (3,000 each) (AOC)	$54,000.00
		Subtotal	$159,000.00
		Contingency	$39,750.00
		Federal Total	**$198,750.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$35,096,250.00**

Table 10-6: Dickinson Gates BCE

Dickinson Gates and Pump Station			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission 40 hrs. x $125/hr. per tract)	$20,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$0.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$61,2000.00
	0105	Appraisals ($2,500 per tract)	$10,000.00
		Survey ($4,000 per tract)	$16,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$4,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County and Sponsor Owned Lands	$22,300,000.00
		Utility/Facility Relocations (Admin Cost)	$39,0000
	01-0117	Title Commitment ($1,000 per tract)	$3,000.00
		Subtotal	$22,454,200.00
		Contingency	$5,613,550.00
		Non-Federal Total	**$28,067,750.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$5,000.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$6,000.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$8,000.00
	01-0117	Utility/Facility Relocations Costs (Admin Only Not Construction Costs) (3,000 each) (AOC)	$39,000.00
		Subtotal	$58,000.00
		Contingency	$14,500.00
		Federal Total	**$72,500.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$28,140,250.00**

Table 10-7: South Padre Island BCE

South Padre Island			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission 40 hrs. x $125/hr. per tract)	$740,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$0.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$2,449,800.00
	0105	Appraisals ($2,500 per tract)	$370,000.00
		Survey ($4,000 per tract)	$592,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$148,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County and Sponsor Owned Lands (35% contingency used for land cost only)	$13,000,000.00
		Utility/Facility Relocations (Admin Cost)	$0.00
	01-0117	Title Commitment ($1,000 per tract)	$148,000.00
		Subtotal	$4,262,400.00
		Contingency	$1,065,600.00
		Non-Federal Total	**$18,328,000.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$185,000.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$222,000.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$111,000.00
	01-0117	Utility/Facility Relocations Costs (Admin Only Not Construction Costs) (3,000 each) (AOC)	$0.00
		Subtotal	$518,000.00
		Contingency	$129,500.00
		Federal Total	**$647,500.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$18,975,500.00**

10.2 ER COST

The Area of impacts: start at the south west area of the Gulf of Mexico near Port Mansfield, following up the coast traversing through the Gulf, bays, and the GIWW up through Galveston Bay, concluding at the Gulf Intracoastal Waterway near High Island Bolivar Peninsula. BCE include all cost associated with the acquisition of real estate requirements such appraisal reports, survey, title, condemnation action, and administration costs. The following tables are the BCE for all ER features as listed below.

- G-28 – Bolivar Peninsula and West Bay GIWW Shoreline and Island Protection
- B-2 – Follets Island Gulf Beach and Dune Restoration
- B-12 – West Bay and Brazoria GIWW Shoreline Protection
- M-8 – East Matagorda Bay Shoreline Protection
- CA-5 – Keller Bay Restoration
- CA-6 – Powderhorn Shoreline Protection and Wetland Restoration
- SP-1 – Redfish Bay Protection and Enhancement
- W-3 – Port Mansfield Channel, Island Rookery, and Hydrologic Restoration

Table 10-8: G-28 – Bolivar Peninsula and West Bay GIWW Shoreline and Island Protection BCE

G-28 – Bolivar Peninsula and West Bay GIWW Shoreline and Island Protection			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission (40 hrs. x $125/hr. per tract)	$1,395,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$0.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$4,115,700.00
	0105	Appraisals ($2,500 per tract)	$697,500.00
		Survey ($4,000 per tract)	$1,116,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$279,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County, and Sponsor Owned Lands)	$39,591,100.00
	01-0117	Title Commitment ($1,000 per tract)	$279,000.00
		Subtotal	$47,473,300.00
		Contingency	$11,868,325.00
		Non-Federal Total	**$59,341,625.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$348,750.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$697,500.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$214,250.00
		Subtotal	$966,500.00
		Contingency	$241,625.00
		Federal Total	**$1,208,125.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$60,549,750.00**

Table 10-9: B-2 – Follets Island Gulf Beach and Dune Restoration BCE

B-2 – Follets Island Gulf Beach and Dune Restoration			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission (40 hrs. x $125/hr. per tract)	$580,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$0.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$1,652,400.00
	0105	Appraisals ($2,500 per tract)	$290,000.00
		Survey ($4,000 per tract)	$464,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$116,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County, and Sponsor Owned Lands)	$5,567,000.00
	01-0117	Title Commitment ($1,000 per tract)	$116,000.00
		Subtotal	$8,785,400.00
		Contingency	$2,196,350.00
		Non-Federal Total	**$10,981,750.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$145,000.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$162,000.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$87,000.00
	01-0117	Attorney's Opinion ($3,300 per tract)	$0.00
		Subtotal	$401,500.00
		Contingency	$100,375.00
		Federal Total	**$501,875.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$11,483,625.00**

Table 10-10: B-12 – West Bay and Brazoria GIWW Shoreline Protection BCE

B-12 – West Bay and Brazoria GIWW Shoreline Protection			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission (40 hrs. x $125/hr. per tract)	$415,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$0.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$673,200.00
	0105	Appraisals ($2,500 per tract)	$207,500.00
		Survey ($4,000 per tract)	$332,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$83,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County, and Sponsor Owned Lands)	$5,420,000.00
	01-0117	Title Commitment ($1,000 per tract)	$83,000.00
		Subtotal	$7,213,700.00
		Contingency	$1,803,425.00
		Non-Federal Total	**$9,017,125.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$103,750.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$124,500.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$62,250.00
	01-0117	Attorney's Opinion ($3,300 per tract)	$0.00
		Subtotal	$290,500.00
		Contingency	$72,625.00
		Federal Total	**$363,125.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$9,380,250.00**

Table 10-11: M-8 East Matagorda Bay Shoreline Protection BCE

M-8 – East Matagorda Bay Shoreline Protection			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission (40 hrs. x $125/hr. per tract)	$75,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$0.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$153,000.00
	0105	Appraisals ($2,500 per tract)	$37,500.00
		Survey ($4,000 per tract)	$60,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$15,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County, and Sponsor Owned Lands)	$1,577,000.00
	01-0117	Title Commitment ($1,000 per tract)	$394,250.00
		Subtotal	$1,577,000.00
		Contingency	$394,250.00
		Non-Federal Total	**$1,971,250.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$18,750.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$15,000.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$14,250.00
	01-0117	Attorney's Opinion ($3,300 per tract)	$0.00
		Subtotal	$48,000.00
		Contingency	$12,000.00
		Federal Total	**$60,000.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$2,031,250.00**

Table 10-12: CA-5 – Keller Bay Restoration BCE

CA-5 – Keller Bay Restoration			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission (40 hrs. x $125/hr. per tract)	$35,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$0.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$107,100.00
	0105	Appraisals ($2,500 per tract)	$17,500.00
		Survey ($4,000 per tract)	$28,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$7,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County, and Sponsor Owned Lands)	$188,100.00
	01-0117	Title Commitment ($1,000 per tract)	$7,000.00
		Subtotal	$389,700.00
		Contingency	$97,425.00
		Non-Federal Total	**$487,125.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$8,750.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$10,500.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$5,250.00
	01-0117	Attorney's Opinion ($3,300 per tract)	$0.00
		Subtotal	$24,500.00
		Contingency	$6,125.00
		Federal Total	**$30,625.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$517,750.00**

Table 10-13: CA-6 – Powderhorn Shoreline Protection and Wetland Restoration BCE

CA-6 – Powderhorn Shoreline Protection and Wetland Restoration			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission (40 hrs. x $125/hr. per tract)	$490,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$0.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$1,331,100.00
	0105	Appraisals ($2,500 per tract)	$245,000.00
		Survey ($4,000 per tract)	$392,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$98,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County, and Sponsor Owned Lands)	$3,279,00.00
	01-0117	Title Commitment ($1,000 per tract)	$98,000.00
		Subtotal	$5,933,100.00
		Contingency	$1,483,275.00
		Non-Federal Total	**$7,416,375.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$155,000.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$186,000.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$93,000.00
		Subtotal	$434,000.00
		Contingency	$108,500.00
		Federal Total	**$542,500.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$7,958,875.00**

Table 10-14: SP-1 - Redfish Bay Protection and Enhancement BCE

SP-1 – Redfish Bay Protection and Enhancement			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission (40 hrs. x $125/hr. per tract)	$105,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$0.00
	0105	Appraisals ($2,500 per tract)	$52,500.00
		Survey ($4,000 per tract)	$84,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$21,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County, and Sponsor Owned Lands)	$2,900,000.00
	01-0117	Title Commitment ($1,000 per tract)	$21,000.00
		Subtotal	$3,183,500.00
		Contingency	$795,875.00
		Non-Federal Total	**$3,979,375.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$26,250.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$31,500.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$15,750.00
	01-0117	Attorney's Opinion ($3,300 per tract)	$0.00
		Subtotal	$735,500.00
		Contingency	$18,375.00
		Federal Total	**$91,8750.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$4,071,250.00**

Table 10-15: W-3 - Port Mansfield Channel, Island Rookery, and Hydrologic Restoration BCE

W-3 – Port Mansfield Channel, Island Rookery, and Hydrologic Restoration			
	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	0102	Acquisition Labor for Relocation Assistance, Homeowner Negotiations, LERRD Submission (40 hrs. x $125/hr. per tract)	$75,000.00
	0103	Condemnation Subdivisions ($35,000 per subdivision)	$0.00
	0103	Condemnation ($90,000 per tract, 17% of the private tract and 1% of County and Sponsor Land)	$0.00
	0105	Appraisals ($2,500 per tract)	$37,500.00
		Survey ($4,000 per tract)	$60,000.00
	0112	Office Administration and Management Oversight (8 hrs. x $125/hr. per tract)	$15,000.00
	01-1501	Land Value Estimate (Estimated values for Private, Federal, State, County, and Sponsor Owned Lands)	$10,105,000.00
	01-0117	Title Commitment ($1,000 per tract)	$15,000.00
		Subtotal	$10,307,500.00
		Contingency	$2,576,875.00
		Non-Federal Total	**$12,884,375.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
	0102	Acquisition Labor for reviewing RE Planning Documents, Verifying Ownership, Relocation Assistance, LERRD Crediting, Mapping (10 hrs. x $125/hr. per tract)	$21,250.00
	0105	Appraisal Reviews (10 hrs. x $150/hr. per tract)	$25,000.00
	0112	Office Administration and Management Oversight (6 hrs. x $125/hr. per tract)	$12,750.00
	01-0117	Attorney's Opinion ($3,300 per tract)	$0.00
		Subtotal	$59,500.00
		Contingency	$14,875.00
		Federal Total	**$74,375.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$12,958,750.00**

10.3 MITIGATION COST

The mitigation portion is located along the Texas Gulf Coast. The Area of impacts: The south westerly area starts at Chocolate Bay, continuing north easterly to the Gulf Side of Galveston, then north to the City of Seabrook, then to the south east to the Bay side of the Bolivar Peninsula.

BCE include all cost associated with the acquisition of real estate requirements such appraisal reports, survey, title, condemnation action, and administration costs.

Table 10-16: Mitigation BCE

	Non-Federal Cost Estimate		
Non-Federal	Account	Description	Amount
	01	Sievers Cove	$4,027,250.00
		Greens Lake	$3,305,000.00
		Horseshoe Lake-Site 1	$1,096,500.00
		Horseshoe Lake-Site 2	$1,019,750.00
		Horseshoe Lake-Site 3	$204,750.00
		Seabrook	$79,750.00
		Dickinson Bayou	$97,000.00
		Marquette	$1,411,000.00
		Evia Island (Oyster Reef)	$992,250.00
		Dickinson Bayou (Oyster Reef)	$70,375.00
		Alligator Point (Oyster Reef)	$229,750.00
		Non-Federal Total	**$12,533,375.00**
	Federal Cost Estimate		
Federal	Account	Description	Amount
		Sievers Cove	$93,500.00
		Greens Lake	$42,500.00
		Horseshoe Lake-Site 1	$161,500.00
		Horseshoe Lake-Site 2	$136,000.00
		Horseshoe Lake-Site 3	$4,375.00
		Seabrook	$8,500.00
		Dickinson Bayou	$4,375.00
		Marquette	$4,375.00
		Evia Island (Oyster Reef)	$4,375.00
		Dickinson Bayou (Oyster Reef)	$8,500.00
		Alligator Point (Oyster Reef)	$4,375.00
		Federal Total	**$472,375.00**
GRAND TOTAL (Federal and Non-Federal Cost):			**$13,005,750.00**

10.4 TOTAL COSTS

Below are the totals for Federal and Non-Federal real estate baseline cost estimates for all CSRM, SPI and ER features.

Table 10-17: CSRM Total Costs

CSRM Element with 25% Contingency	Non-Fed	Fed	Total Cost per Measure
West Galveston Beach and Dunes[1]	$232,119,625.00	$2,338,125.00	$234,457,750.00
Bolivar Beach and Dunes[2]	$145,811,250.00	$4,646,562.00	$150,457,812.00
Bolivar Roads Gate System	$29,243,625.00	$431,250.00	$29,674,875.00
Galveston Ring Levee System	$249,317,875.00	$3,030,312.50	$252,348,187.50
Clear Lake Gates and Pump System	$34,897,500.00	$198,750.00	$35,096,250.00
Dickinson Bayou Gates and Pump System	$28,067,750.00	$72,500.00	$28,140,250.00
Totals	**$719,457,625.00**	**$10,717,499.50**	**$730,175,124.50**
[1]Including $1,370,264.00 CBRA [2]Including $11,970,667 CBRA			

Table 10-18: SPI Total Costs

SPI Element with 35% Contingency	Non-Fed	Fed	Total Cost per Measure
South Padre Island Beach Nourishment and Sediment Management[3]	$18,328,000.00	$647,500.00	$18,975,500.00
Totals	$18,328,000.00	$647,500.00	$18,975,500.00
[3]Only Segments 3, 4, and 5			

Table 10-19: ER Total Costs

ER Element with 25% Contingency	Non-Fed	Fed	Total Cost per Measure
B2	$10,981,750.00	$501,875.00	$11,483,625.00
B12	$9,017,125.00	$363,125.00	$9,380,250.00
CA5	$1,971,250.00	$60,000.00	$2,031,250.00
CA6	$487,125.00	$30,625.00	$517,750.00
G28	$7,416,375.00	$542,500.00	$7,958,875.00
M8	$3,979,375.00	$52,500.00	$4,031,875.00
SP1	$12,884,375.00	$42,500.00	$12,926,875.00
W3	$59,341,625.00	$1,208,125.00	$60,549,750.00
Totals	$106,079,000.00	$2,801,250.00	$108,880,250.00

Table 10-20: West Shore of Galveston Bay Total Costs

West Shore of Galveston Bay Structural Measures with 25% Contingency	Non-Fed	Fed	Total Cost per Measure
Eagle's Point to Morgans Point	$14,182,500.00	$4,812,500.00	$18,995,000.00
Totals	$14,182,500.00	$4,812,500.00	$18,995,000.00

11.0 PUBLIC LAW 91-646 RELOCATION ASSISTANCE

Landowner Assistance for Nonstructural Measure- Channelview

Many of the residential homes in the Channelview neighborhood are already raised to prevent inundation from coastal storm surges. However, a portion of the homes on the interior streets are still slab on grade homes. Due to the close proximity of residential structures to the floodwall, and due to concerns with wave action deflecting off the floodwall, mitigation measures are being included in the recommendation to address the uncertainty surrounding the issue.

65 homes were identified as possible voluntary home elevations, the uncertainty associated with successful implementation of raising houses caused this option to be set aside for nonstructural buyouts. The higher cost of buying out homes is carried forward in the recommendation. In the event home relocation are required, the NFS will comply with the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 (PL 91-646). In PED, the existing surge risk, and induced surge risk from the floodwall, will be further investigated to determine if the nonstructural mitigation measures need to be implemented.

The benefits of Title II of the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 (PL 91-646), as amended, are applicable for this project. Title II requires that persons and businesses displaced by a Federal project be given advisory services and assistance in the location of replacement dwellings and/or businesses.

Under Title II, displaced persons are entitled to reimbursement for actual and reasonable moving of personal property, differential housing payment, and incidental costs associated with the relocation. Differential housing payment is a payment made by the Government when the compensation paid for the property being acquired is not sufficient to cover the costs of a replacement dwelling for the displaced persons. Differential payments are capped at $34,000 for homeowners and $10,200 for tenants. Commercial businesses are entitled to receive advisory services, reimbursement for actual reasonable moving costs, reestablishment costs, which are capped at $10,000, and certain reasonable and necessary incidental costs associated with the relocation. For purposes of this study, the estimate of relocation for business includes all of these costs and was estimated to be approximately $100,000 per industrial business and $50,000 per commercial business. The NFS will be required to perform and pay for PL 91-646 relocations, which will be eligible for LERRD crediting.

Availability of Homes Survey

During the development of the real estate base line cost estimate for the Channelview measure, a survey of available homes was conducted utilizing the Houston Association of Realtor database. The geographic area surveyed was all of Galveston Island, from Galveston Bay/East Beach south to Galveston Island State Park, and Tiki Island across West Bay. All single-family detached residential properties listed for sale in the geographic area were included in the analysis. Also included in the analysis were all available listings and listings currently under contract. As of June 29, 2022, listing data revealed a total of 327 listings, of which 148 were

under contract and 179 were available. The listings ranged from 620 SF to 7,802 SF, with an average of 2,234 SF.

The 65 improved properties for the subject neighborhood would represent approximately 36.31% of all available listings (20% of all listings). As a point of reference, pending listings represented about 45% of the total listings seven eight properties are listed under $250,000. Of those four eight were under contract. Ocean-front and Lake-front listings are included in the analysis. These properties are not considered to be ideal replacements for any of the subject neighborhood tracts but could be utilized if necessary. Properties in the East Beach Area appeared to represent the upper end of the value range for water-front properties. Based on the subject property's characteristics and the available properties, it appears first row and bay frontage properties would be the most difficult and costly to replace.

It appears as if the current availability would support a mass-buyout of the neighborhood. At the time of the development of this report, the real estate market is near equilibrium. With the added influx the proposed buyout would bring, it would be expected to steer the market into a strong seller's market. This would result in an expectation of sale values at, or near list prices, in addition to a potential increase in average list prices.

Landowner Assistance for Non-Structural Improvements-West Shore of Galveston Bay Structural Measures

Residential

Property owner/occupants of eligible residential structures who willingly participate in the residential elevation program are not considered displaced persons (in accordance with 49 CFR Part 24), and therefore are not entitled to receive relocations assistance benefits. However, displaced tenants of eligible residential structures to be elevated, are eligible for temporary relocations assistance benefits. Eligible tenants that temporarily relocate would be reimbursed for the cost of temporary alternate housing, meals and incidentals (such as laundry services), and the fees for disconnection and connection of utilities at the temporary residence. Alternate housing could be hotels or apartments, depending upon availability in the community. All temporary housing costs would need to be approved in advance by the NFS after first obtaining the prior written approval of USACE. Hotel costs would be reimbursed based on the General Services Administration per diem rates for Texas. Apartment costs would be based on market rents. All conditions of temporary relocation must be reasonable. Temporary relocation should not extend beyond one year before the person is returned to his or her previous unit or location. Any residential tenant who has been temporarily relocated for more than one year must be offered permanent relocation assistance which may not be reduced by the amount of any temporary relocation assistance previously provided. At a minimum, tenants shall be provided the following: reimbursement for all reasonable out-of-pocket expenses incurred in connection with the temporary relocation, including the cost of moving to and from the temporarily occupied housing, and any increase in monthly rent or utility costs at such housing. Tenants are entitled to receive appropriate advisory services, including reasonable advance written notice of the following:

- Date and approximate duration of the temporary relocation;
- Address of the suitable decent, safe, and sanitary dwelling to be made available for the temporary period;
- Terms and conditions under which the tenant may lease and occupy a suitable decent, safe and sanitary dwelling in the building/complex upon completion of the project; and
- Provisions of reimbursement for all reasonable out of pocket expenses incurred in connection with the temporary relocation as noted above.
- In addition to relocation advisory services, displaced tenants may be eligible for other relocation assistance including relocation payments for moving expenses and replacement housing payments for the increased costs of renting or purchasing a comparable replacement dwelling.

All temporary housing costs must be approved in advance by the NFS. In order for the NFS to receive credit towards their cost-share obligations, USACE must provide prior written approval for those expenditures.

Non-Residential

It is assumed that for these measures, there will be no requirements for temporary relocation. In the event that relocations are required, in accordance with 49 CFR Part 24 (Subpart A, Section 24.2(a)(9)(ii)(D), property owner/occupants of non-residential structures who willingly participate in the program are not considered displaced, and therefore are not entitled to receive relocations assistance benefits. Additionally, businesses will not receive benefits for temporary loss of operation during construction. Business owners who are tenants of the structure, and who must relocate temporarily during construction, could receive relocation assistance advisory services and moving expenses, in accordance with 49 CFR Part 24.

12.0 MINERAL AND ENERGY ACTIVITY

Preliminary research was conducted to identify mineral and energy activity that may impact project features. This research was done utilizing the Texas Railroad Commission (TRRC) website. There are multiple areas within the vicinity of the project features where mineral extraction activity is occurring, mostly oil and gas. The majority of the proposed alignment for the CSRM features are located mainly in highly developed areas within the Harris/Galveston areas. In these areas mineral extraction is largely completed. It is anticipated that if any future extraction were to take place, directional drilling from the existing well sites would be employed in order to reduce extraction costs and avoid existing structures and not impacting the project. ER features are mainly located along the Texas coastline and are mostly owned by State or Federal agencies, which have strict regulations regarding the surface extraction of minerals. As stated above if third-party extraction were to occur, directional extraction technology would likely be used in the area, resulting in minimal onsite surface impacts. In addition, to the extent that 33 USC 408 applies, USACE, through its permission process, will have an opportunity to affect any proposed mineral extraction that would impact the Federal project so as to prevent injury to the public interest or impairment to the usefulness of the project.

13.0 ASSESSMENT OF NON-FEDERAL SPONSOR LAND ACQUISITION CAPABILITIES

NFSs have not been identified for the construction and OMRR&R for the multiple project measure. That's said an assessment of each NFS's Real Estate Capabilities has not been sent to the NFS at this phase of the study. An assessment of each NFS's Real Estate Capabilities will be conducted when a construction NFS is identified.

14.0 ZONING IN LIEU OF ACQUISITION

There is no zoning in lieu of acquisition anticipated for this project.

15.0 ACQUISITION SCHEDULE

A specific acquisition schedule has not been determined at this time. The project will be constructed in segments and the detailed acquisition schedule will be prepared during PED once the 95 percent plans and specifications are prepared for each section of the project. The NFS will be required to acquire all LERRD for the Recommended Plan CSRM features, after a PPA has been signed and prior to the advertisement for construction, such that the features can be constructed and available for use as scheduled. Additional days were added to the milestone table to account for the number of tracts needing to be acquired. Description of acquisition milestones for the NFS are listed in Table 15-1 below. The milestones listed are a per contract basis and based on perfect conditions for land acquisitions.

Table 15-1: Land Acquisition Schedule

Land Acquisition Schedule Per Contract	
Milestone*	Approximate Duration
Transmittal of ROW drawings and estate(s)	30 days after PPA signed
Obtain surveys	120 days after transmittal of ROW drawings and estate(s)
Obtain title evidence	120 days after obtaining surveys
Obtain appraisals and reviews	120 days after obtaining titles
Authorization to proceed with offer	30 days after obtaining appraisals and reviews
Conclude negotiations	90 days after negotiations begin
Conduct closings	90 days after conducting closings
Conclude condemnations	365 days after condemnation process begins
Attorney certify availability of LERRD	30 days after condemnation concludes
USACE certifies availability of LERRD	30 days after NFS Attorney certifies LERRD
Review LERRD credit request	120 days after receiving LERRD documentation
Approve or Deny LERRD Credit Requests	120 days after concluding review of LERRD documentation

*Milestones are based on the Project Partnership Agreement (PPA) being signed.

16.0 FACILITIES/UTILITIES/PIPELINE RELOCATION AND REMOVALS

This information included the pipeline's approximate location and orientation by coordinates, system and subsystem names, ownership, operator, diameter, and product carried. However, it did not provide the pipeline depth. Because only a nominal amount of the project areas is within USACE's regulatory domain, no information on pipeline depth was immediately available. There was no other expedient vehicle by which the pipeline depths could be readily assessed. Most oil and gas pipelines are typically buried at a depth of 3 to 6 feet, as reported by the industry. Table 16-1 below lists the subject pipelines that may be impacted by the CSRM features.

Table 16-1: Pipelines Present within CSRM

Feature	Size/Type	Owner
Bolivar	6"Natural Gas	CENTANA INTRASTATE PIPELINE, LLC
Bolivar	4" Crude	BP PIPELINES (NORTH AMERICA),INC
Bolivar	4" Crude	BP PIPELINES (NORTH AMERICA),INC
Bolivar	6" Natural Gas	CENTANA INTRASTATE PIPELINE, LLC
Bolivar	16" Natural Gas	WILLIAMS FIELD SERVICES COMPANY
Bolivar	10" Natural Gas	GATEWAY OFFSHORE PIPELINE CO.
Bolivar	8" Natural Gas	IMPACT MIDSTREAM, LLC
Bolivar	24" Crude	ENTERPRISE PRODUCTS OPERATINGLLC
Galveston	6" Natural Gas	EMERALD GATHER AND TRANS, LLC
Galveston	14" Natural Gas	AMOCO PIPELINE COMPANY
*Galveston	0 Natural Gas	NICOR EXPLORATION COMPANY
Galveston	14" Natural Gas	AMOCO PIPELINE COMPANY
Galveston	14" Crude	PANTHER OPERATING COMPANY, LLC
Galveston	6" Natural Gas	EMERALD GATHER AND TRANS, LLC
Galveston	14" Natural Gas	AMOCO PIPELINE COMPANY
Galveston	4" Natural Gas	HOUSTON PIPELINE COMPANY LP
Clear Creek	6" Propylene	ExxonMobil
Clear Creek	12" Gas	NuStar Logistics
Clear Creek	12" Pipeline	Magellan Pipeline Co
Clear Creek	6" Ethylene	UCAR Pipeline Incorp.
Clear Creek	Unknown	Enterprise Texas Pipeline
Clear Creek	12"	Seadrift Pipeline Corp
Clear Creek	Unknown	Lavaca Pipeline Co.
Dickinson Bayou	6" Propylene	Flint Hills Resources
Dickinson Bayou	12" Gas	NuStar Logistics

Feature	Size/Type	Owner
Dickinson Bayou	12” Pipeline	Magellan Pipeline Co.
Dickinson Bayou	6” Ethylene	UCAR Pipeline Incorp.
Dickinson Bayou	Unknown	Enterprise Texas Pipeline
Dickinson Bayou	12”	Seadrift Pipeline Corp
Dickinson Bayou	Unknown	Lavaca Pipeline Co.

*NICOR EXPLORATION COMPANY was listed in the TRRC database as 0” diameter natural gas pipeline that is in service during preliminary research. Additional investigation will be done to verify pipeline data at which point the REP will be updated.

Attorney Opinions of Compensability were not done at this phase of the Study. The NFSs will perform these relocations as a part of their responsibility under the PPA. The Government will make a final determination of the relocations necessary for the construction, operation or maintenance of the project during the design phase and will complete Final Attorney Opinions of Compensability as required by Chapter 12 of ER 405-1-12.

> “ANY CONCLUSION OR CATEGORIZATION CONTAINED IN THIS REAL ESTATE PLAN, OR ELSEWHERE IN THIS PROJECT REPORT, THAT AN ITEM IS A UTILITY OR FACILITY RELOCATION TO BE PREFORMED BY THE NON-FEDERAL SPONSOR AS PART OF ITS LERRD RESPONSIBILITY IS PRELIMINARY ONLY. THE GOVERNMENT WILL MAKE A FINAL DETERMINATION OF THE RELOCATIONS NECESSARY FOR THE CONSTRUCTION, OPERATION, OR MAINTENANCE OF THE PROJECT AFTER FURTHER ANALYSIS AND COMPLETION AND APPROVAL OF FINAL ATTORNEY’S OPINIONS OF COMPENSABILITY FOR EACH OF THE IMPACTED UTILITIES AND FACILITIES.”

17.0 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE OR OTHER ENVIRONMENTAL CONTAMINANTS

Investigations indicated no hazardous, toxic, radioactive waste (HTRW) areas are within or adjacent to the proposed project areas that could impact this project. Based upon these findings, the potential of encountering HTRW within the proposed project area is considered low.

18.0 SPONSOR NOTIFICATIONS OF RISKS.

Since there has yet to be identified NFSs for proposed project beyond GLO, a letter has not been sent to the NFS advising of the risks of acquiring lands prior to the signing of the PPA. An example of this letter is provided in Figure 20 below.

19.0 TIMBER RIGHTS

Timber rights do not apply to this project.

20.0 LANDOWNER ATTITUDES

At this time the content of the information presented to the public has been conceptual and general in nature. It is reasonable to suggest that the general public is in favor of flood risk reduction and environmental restoration projects with a; however, until more detailed alignments are available, which will more definitively determine which landowners are impacted.

21.0 REFERENCES

Texas General Land Office (GLO). 2017. Texas Coastal Resiliency Master Plan. http://www.glo.texas.gov/coastal-grants/projects/texas-coastal-resiliency-master-plan.html

22.0 EXHIBIT A: FIGURES

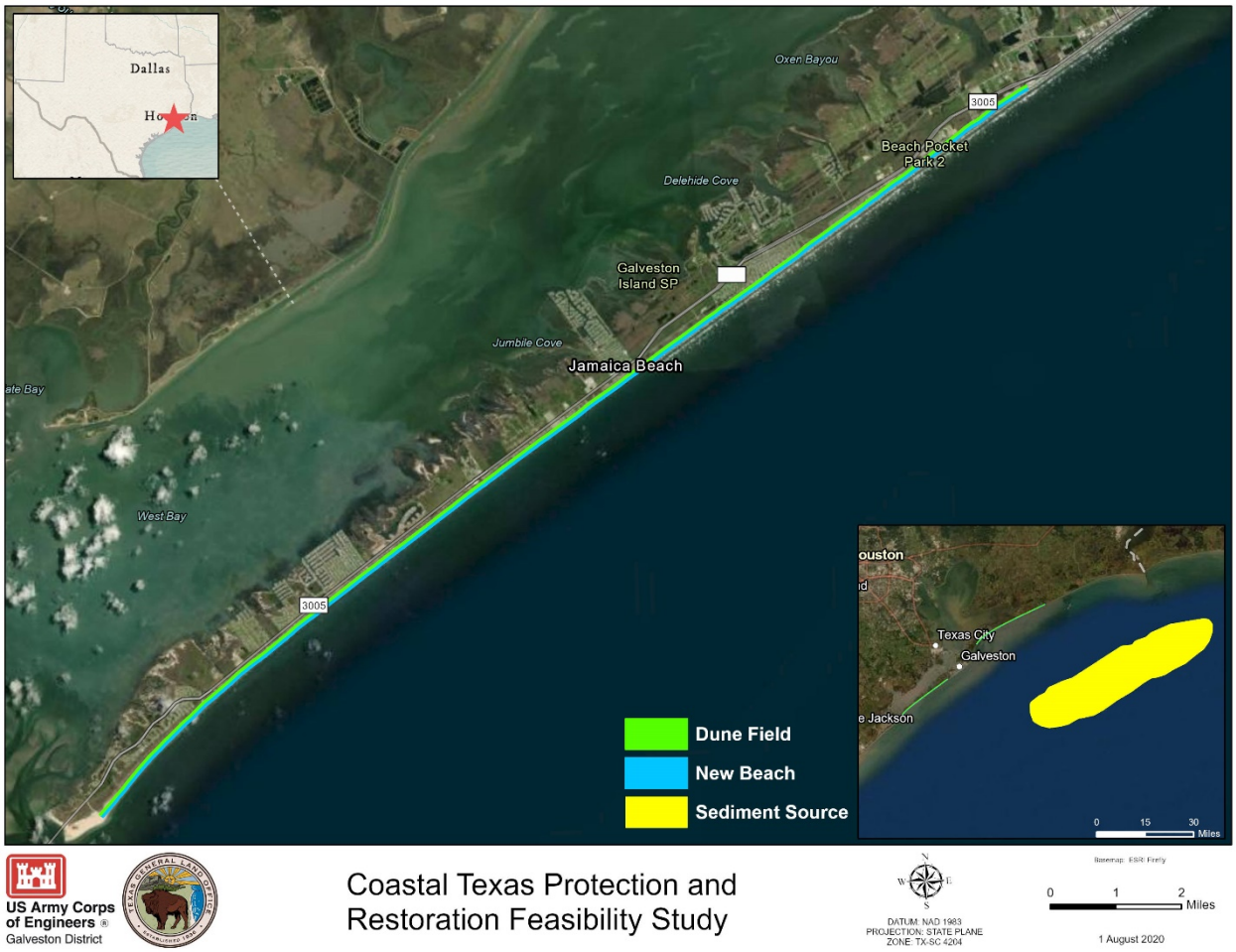

Figure 1: West Galveston Beach and Dune System

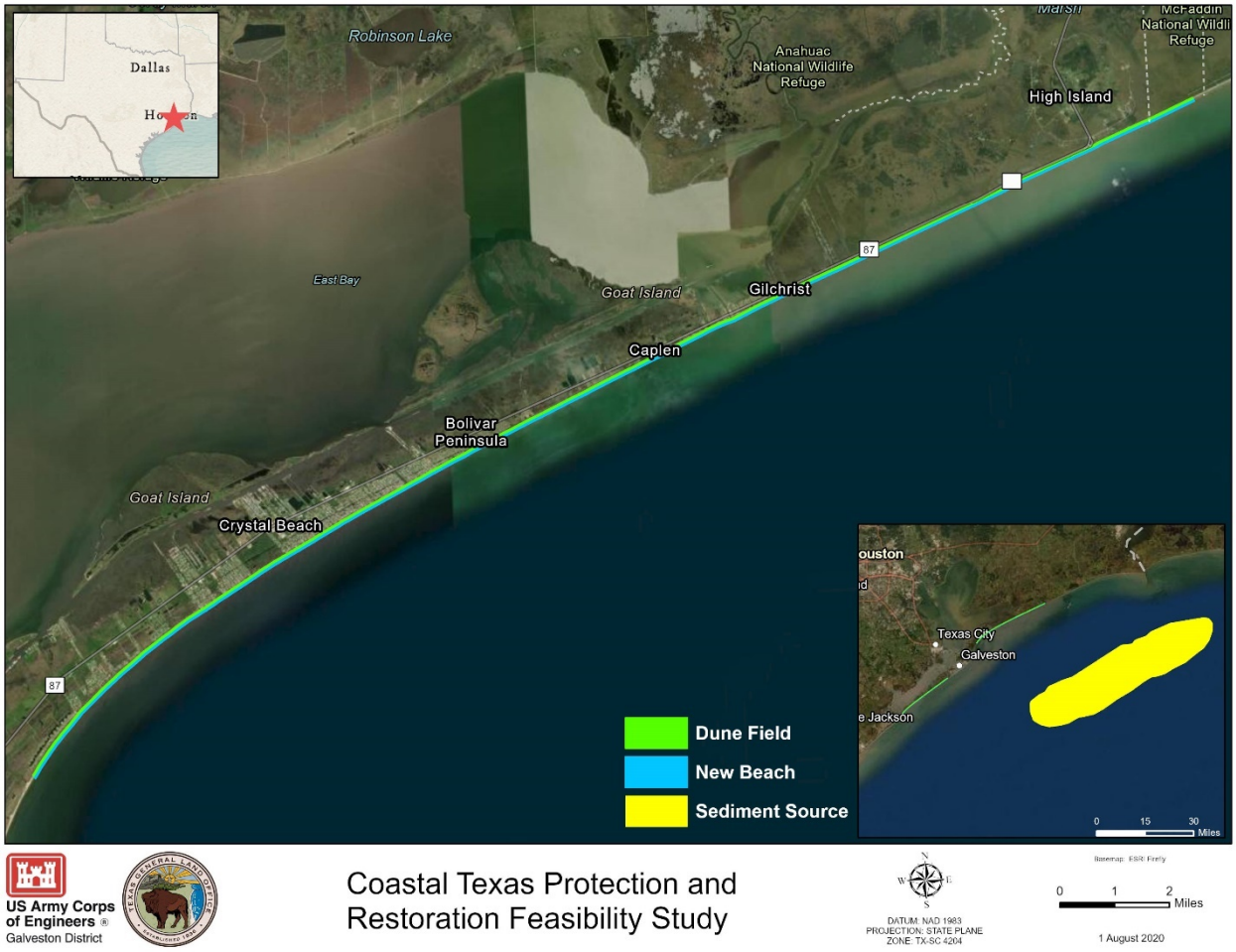

Figure 2: Bolivar Beach and Dune System

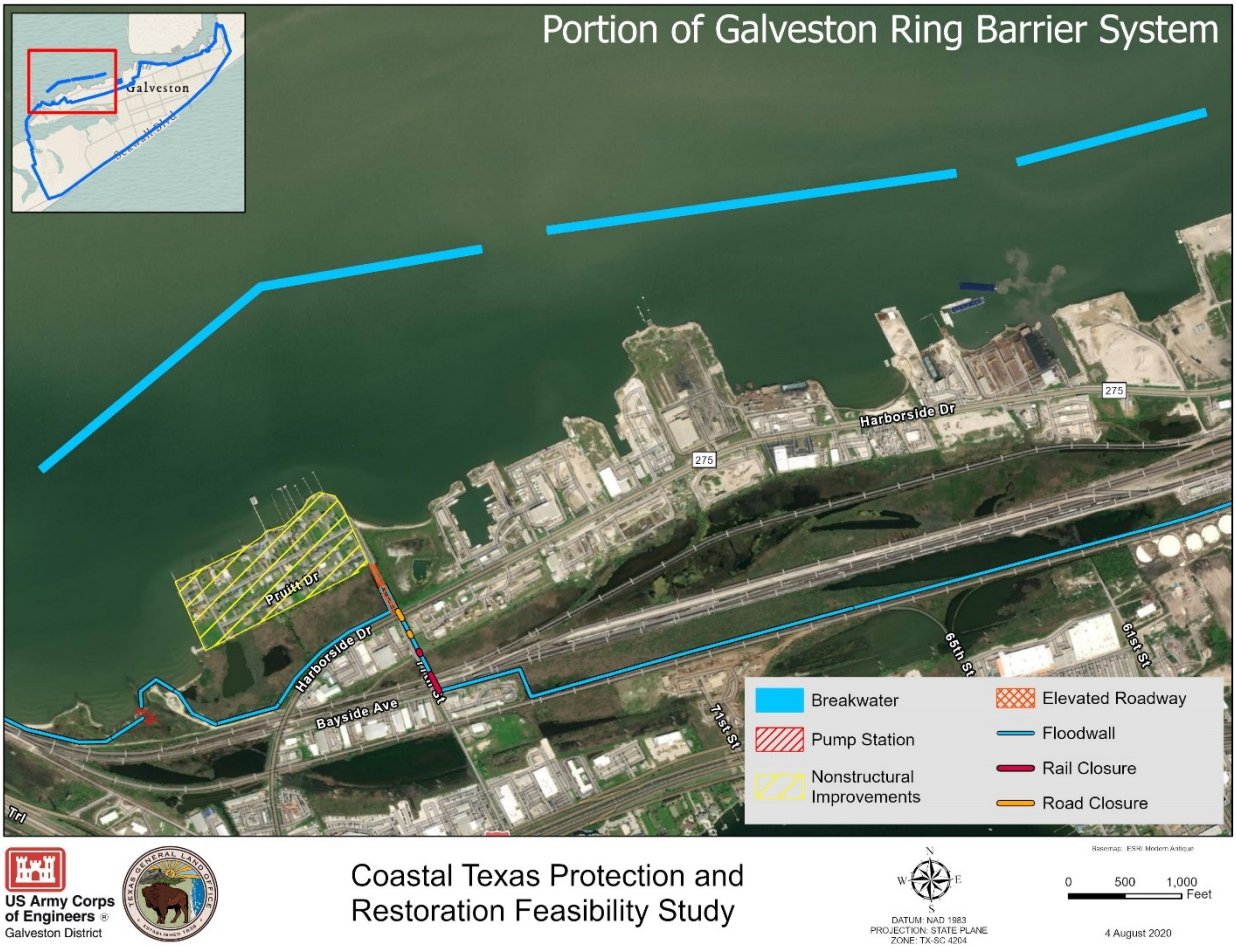

Figure 3: Channelview Breakwaters

Figure 4: Galveston Ring Barrier System

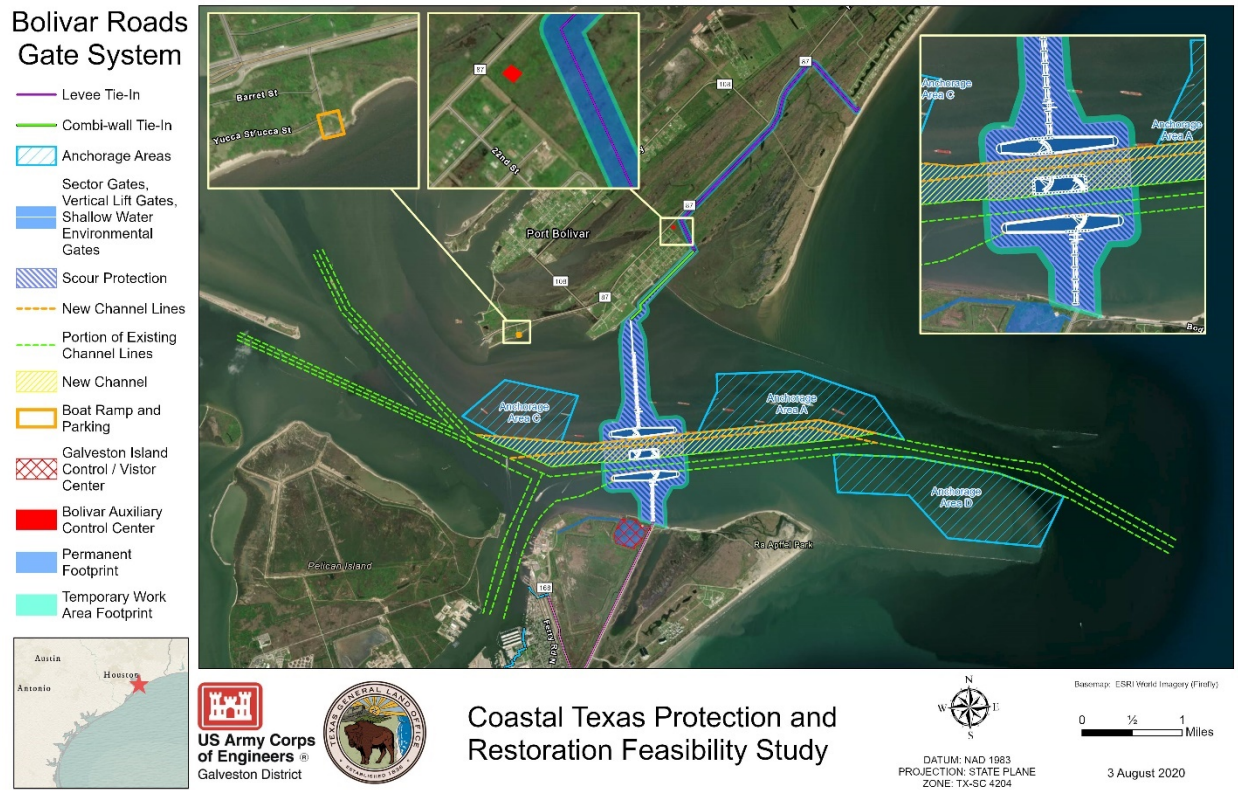

Figure 5: Bolivar Roads Gate System

Figure 6: Clear Lake Gate System

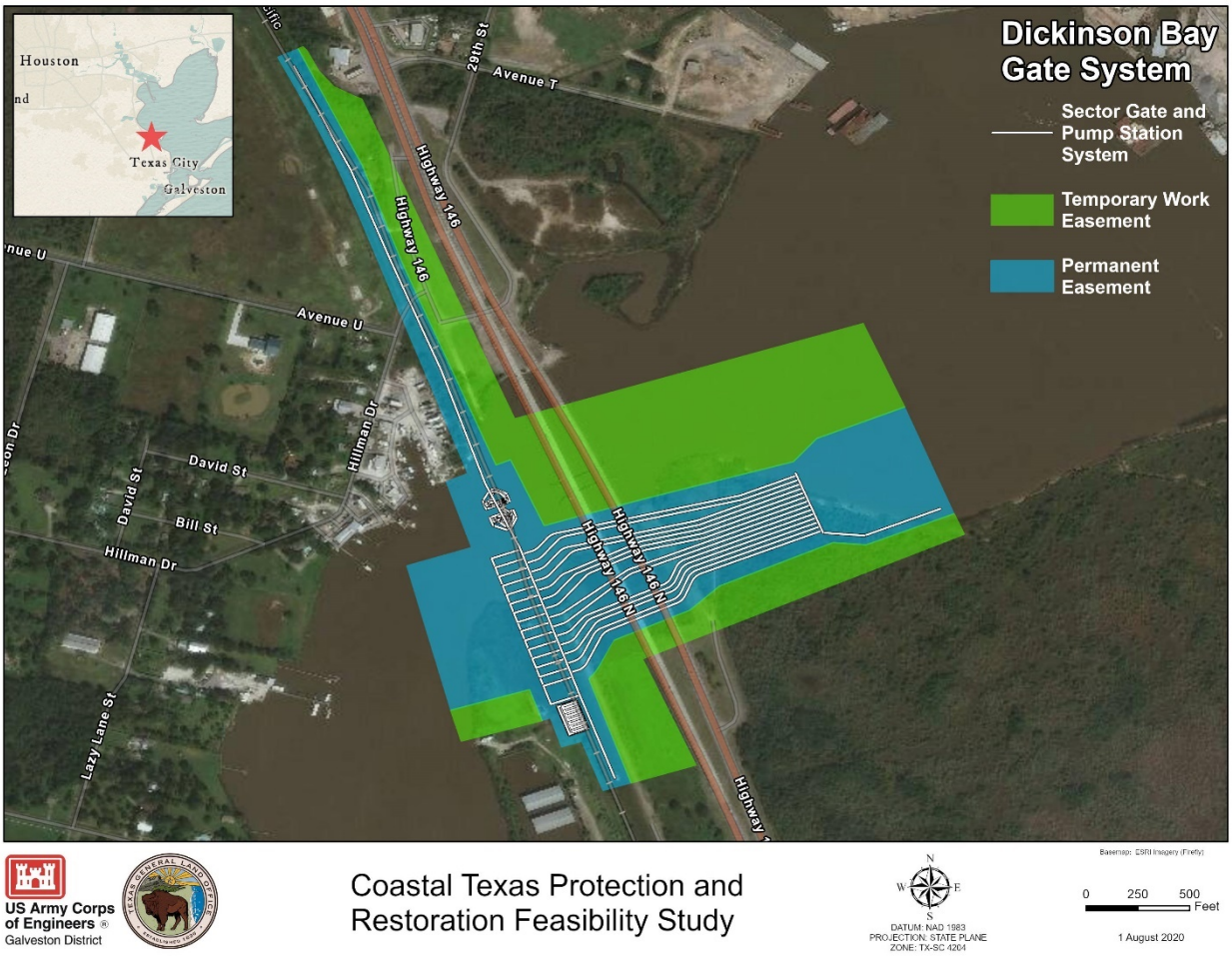

Figure 7: Dickinson Bay Gate System

Figure 8: West Galveston Bay Nonstructural

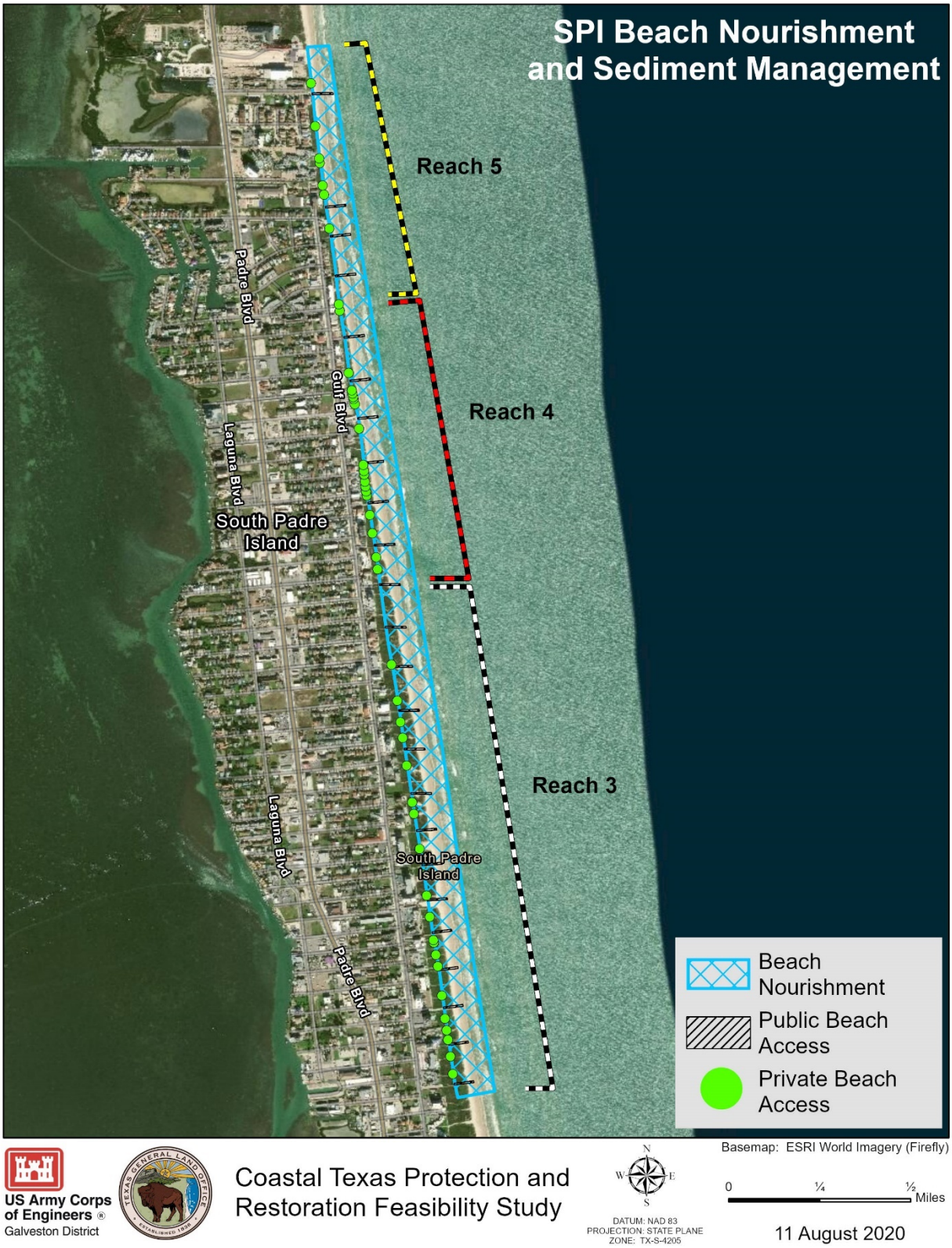

Figure 9: South Padre Island Beach Nourishment and Sediment Management

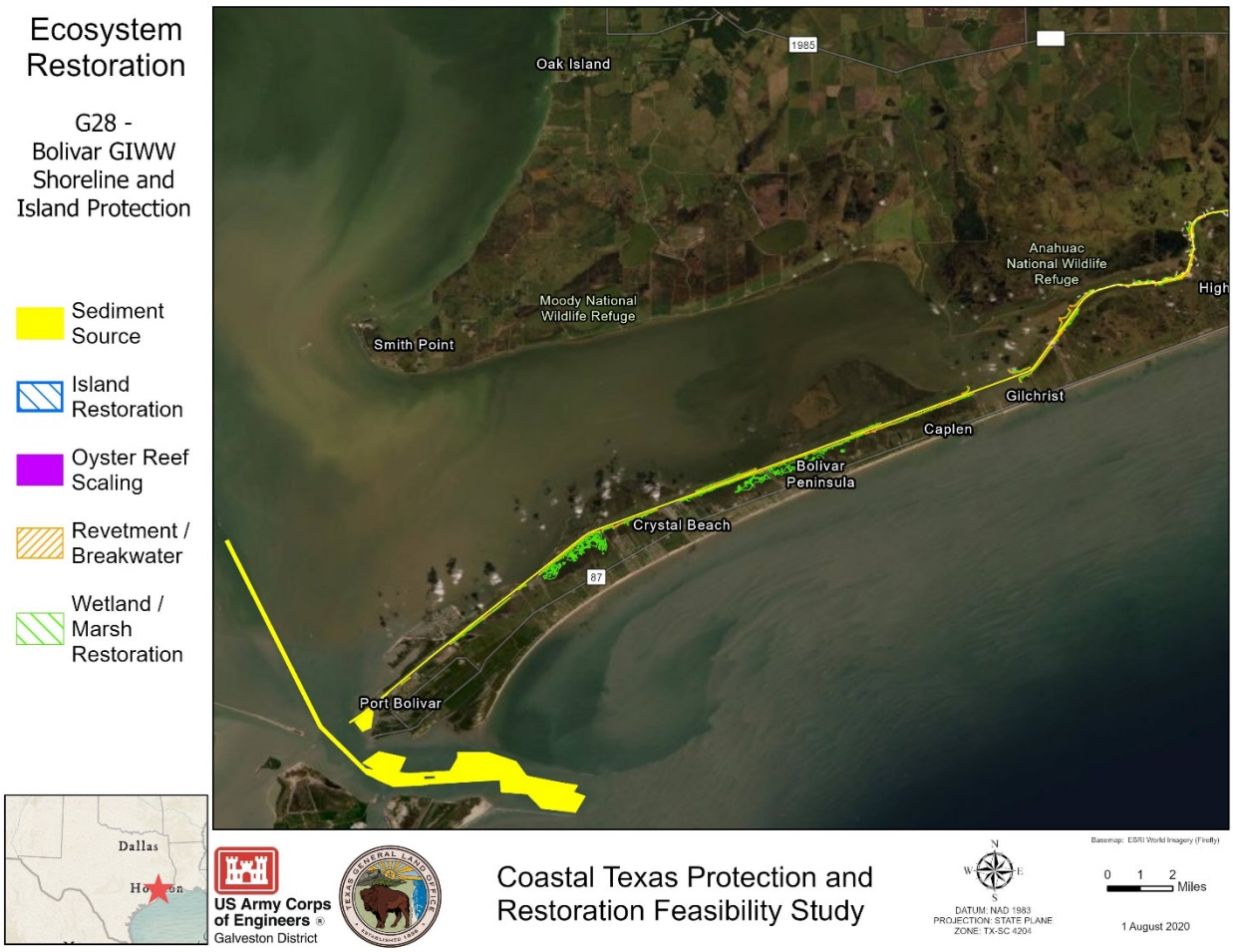

Figure 10: ER G-28 Bolivar GIWW Shoreline and Island Protection

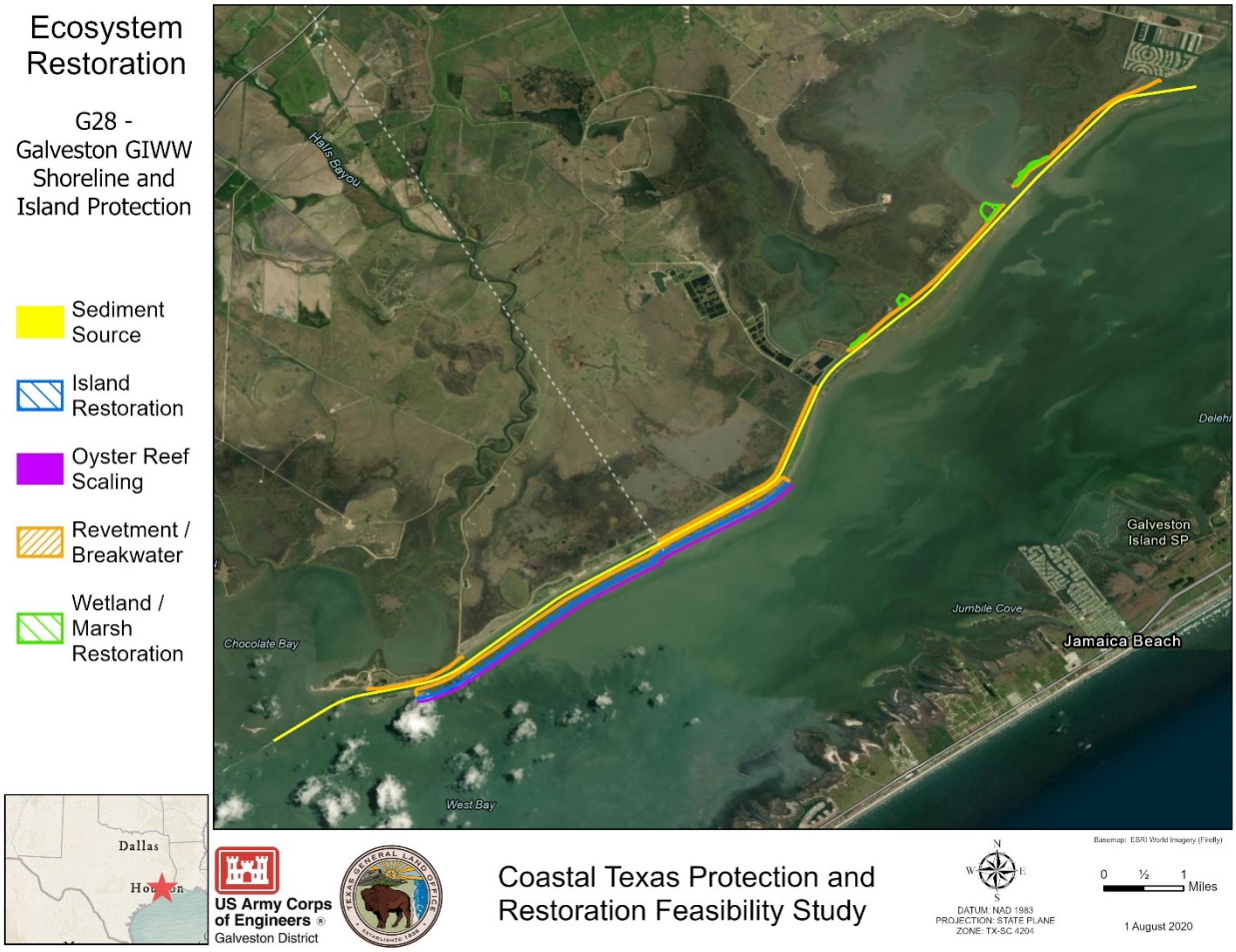

Figure 11: ER G-28 Galveston GIWW Shoreline and Island Protection

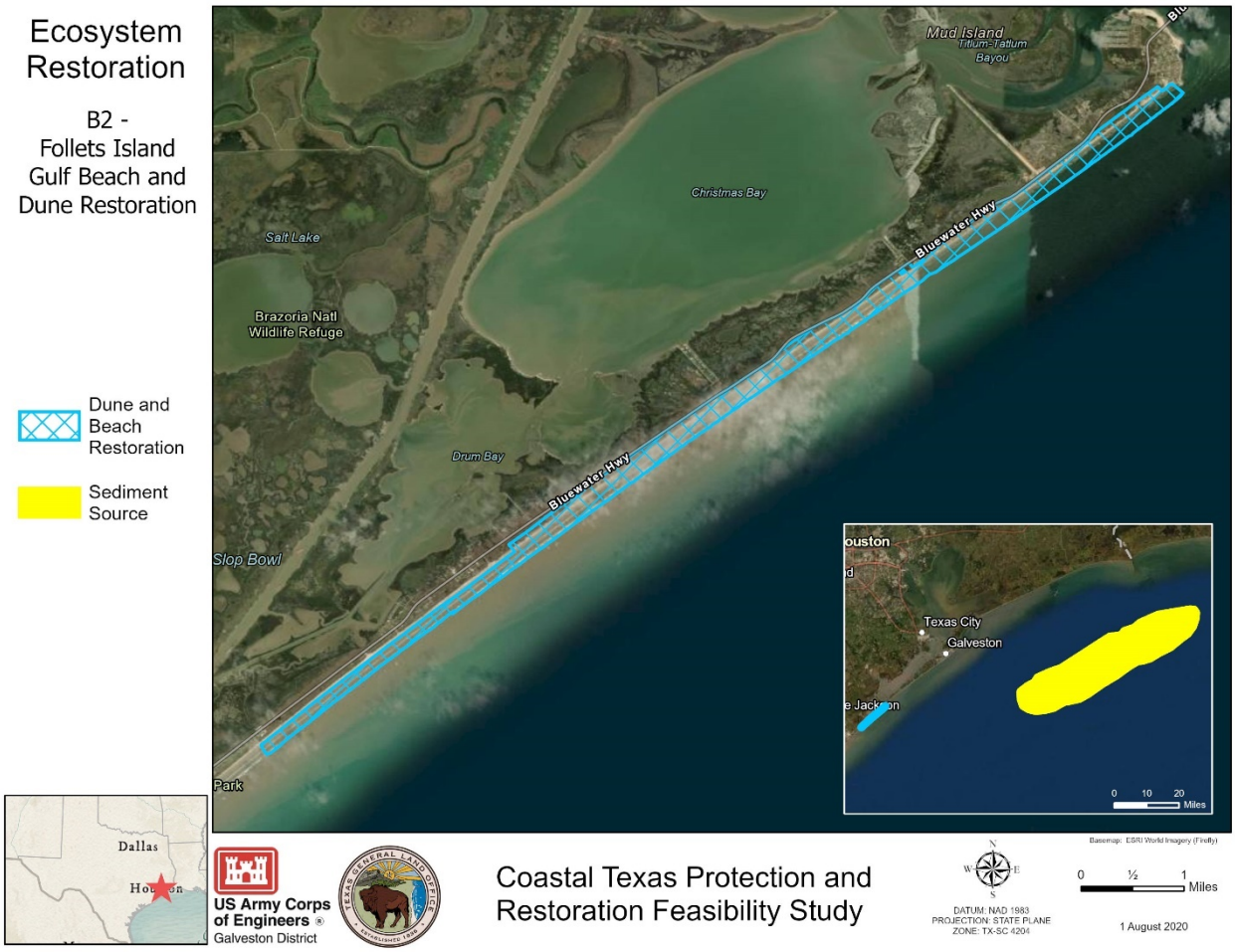

Figure 12: ER B-2 Follets Island Gulf Beach and Dune Restoration

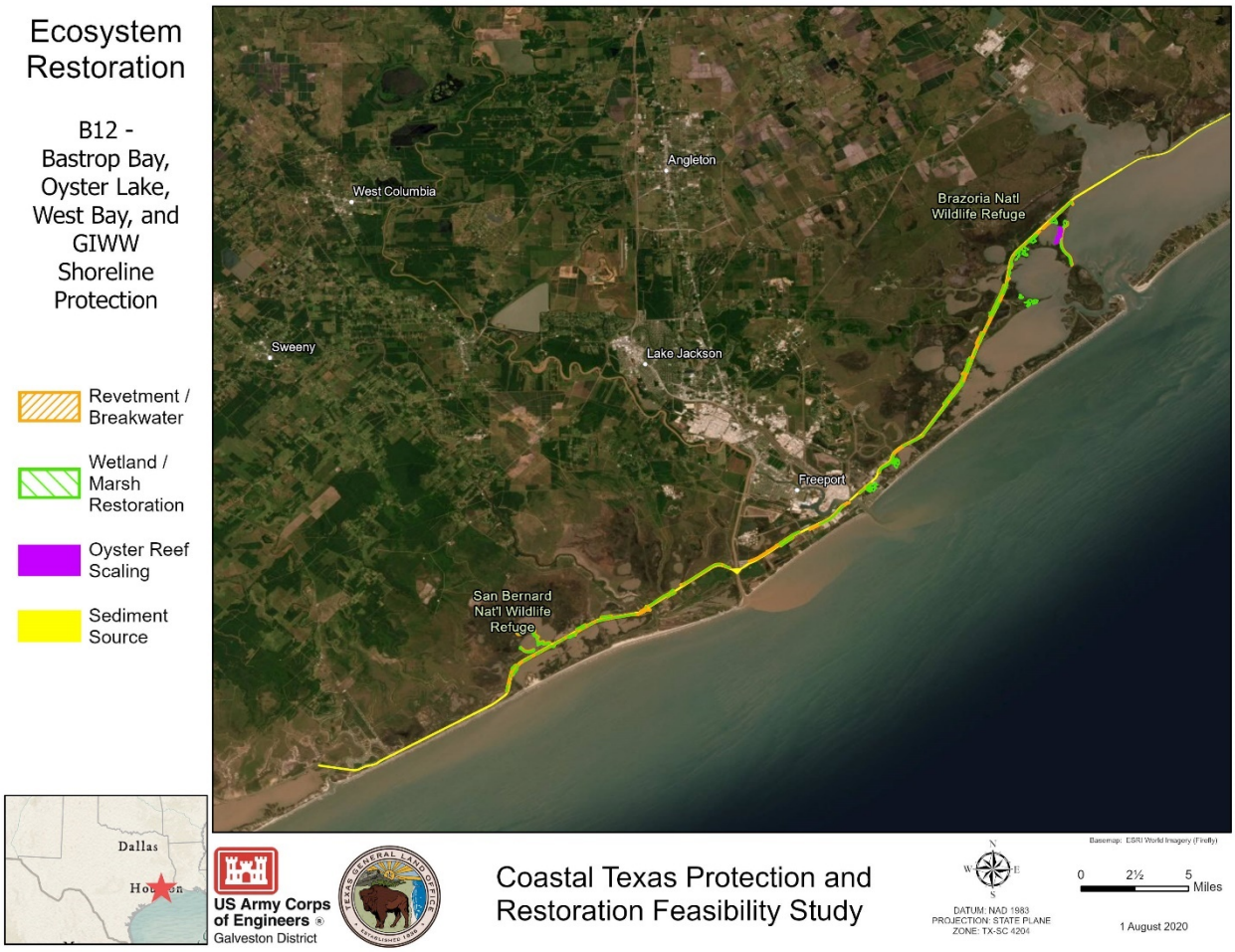

Figure 13: ER B-12 Bastrop Bay, Oyster Lake, West Bay, and GIWW Shoreline Protection

Figure 14: ER CA-5 Keller Bay Restoration

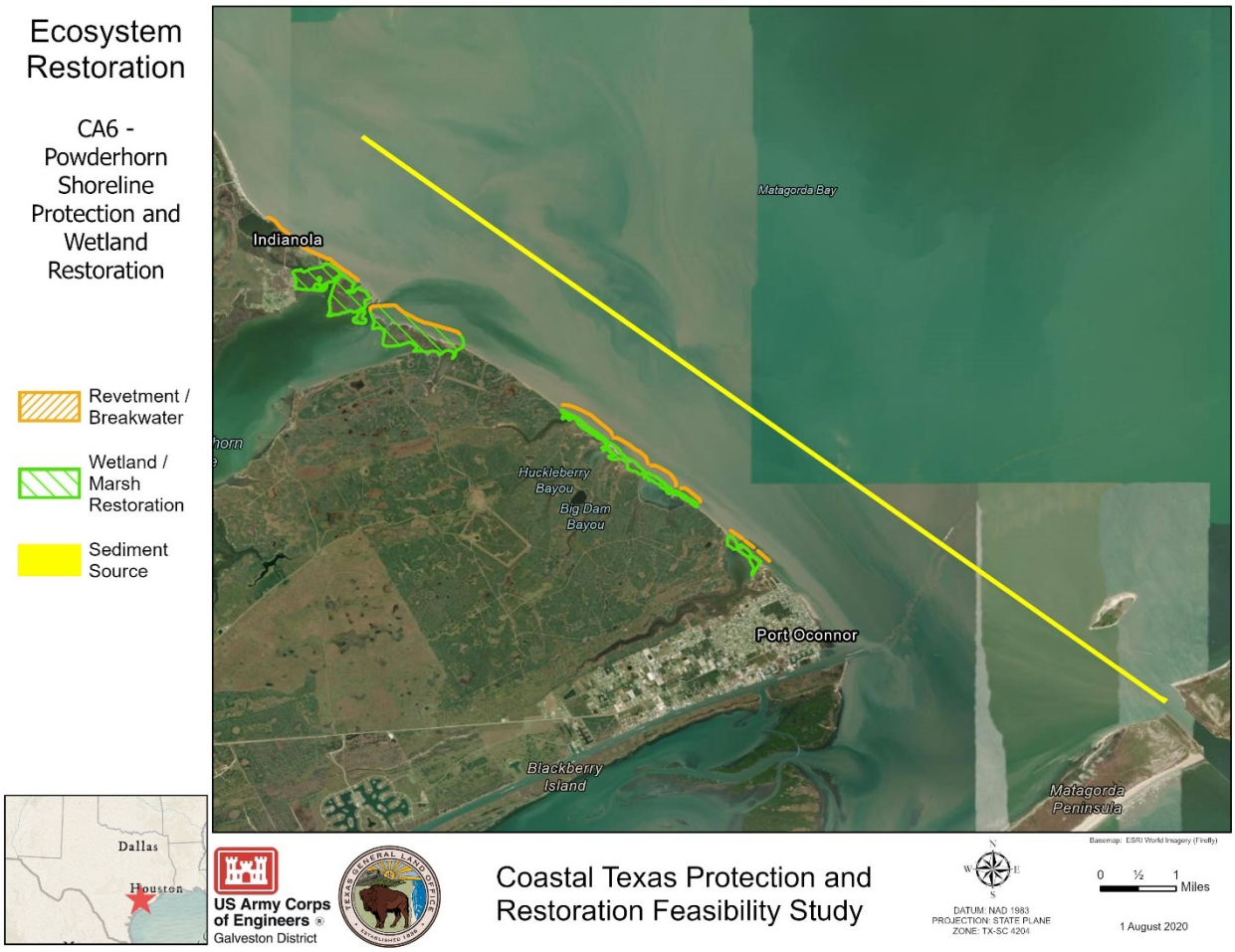

Figure 15: ER CA-6 Powderhorn Shoreline Protection and Wetland Restoration

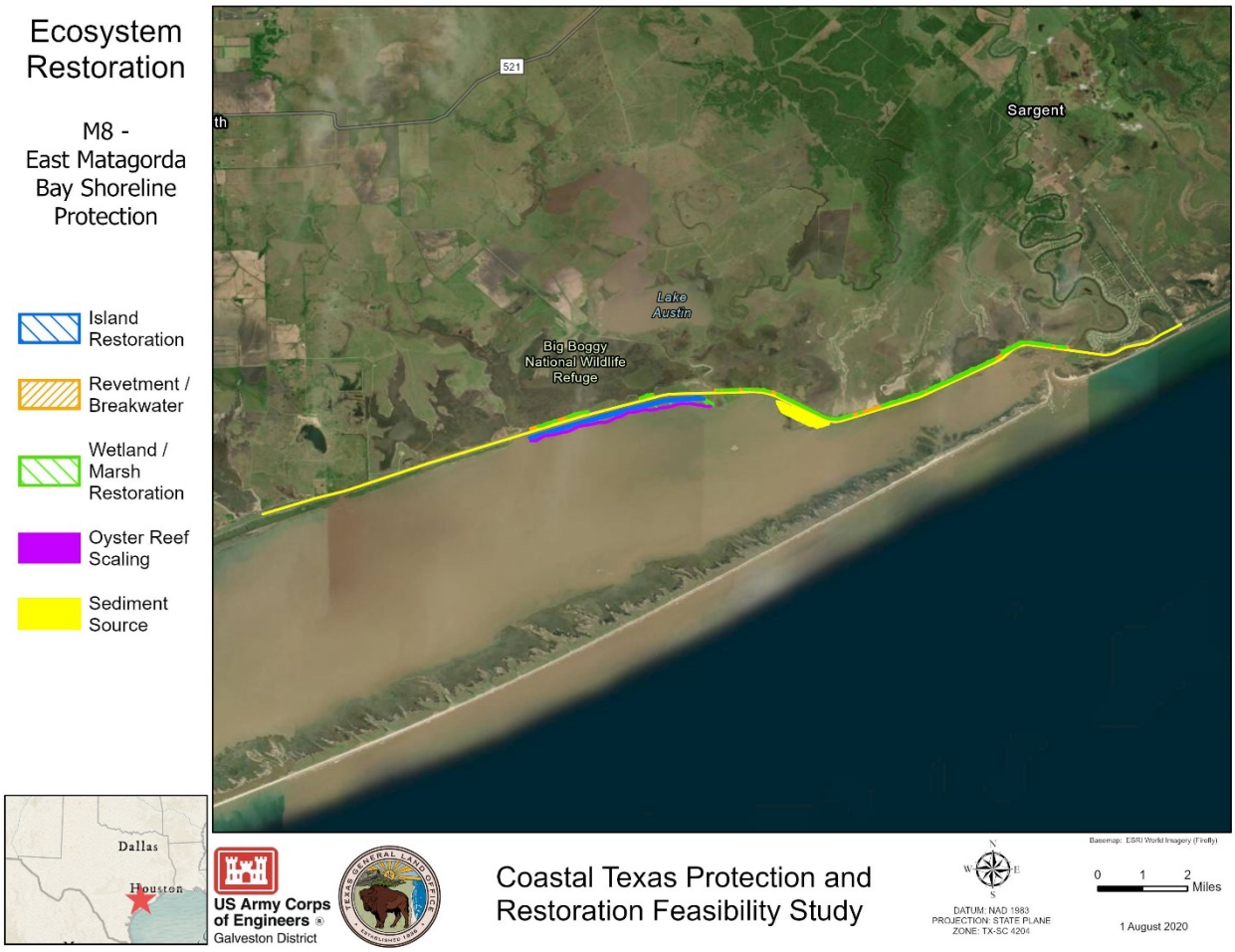

Figure 16: ER - M-8 East Matagorda Bay Shoreline Protection

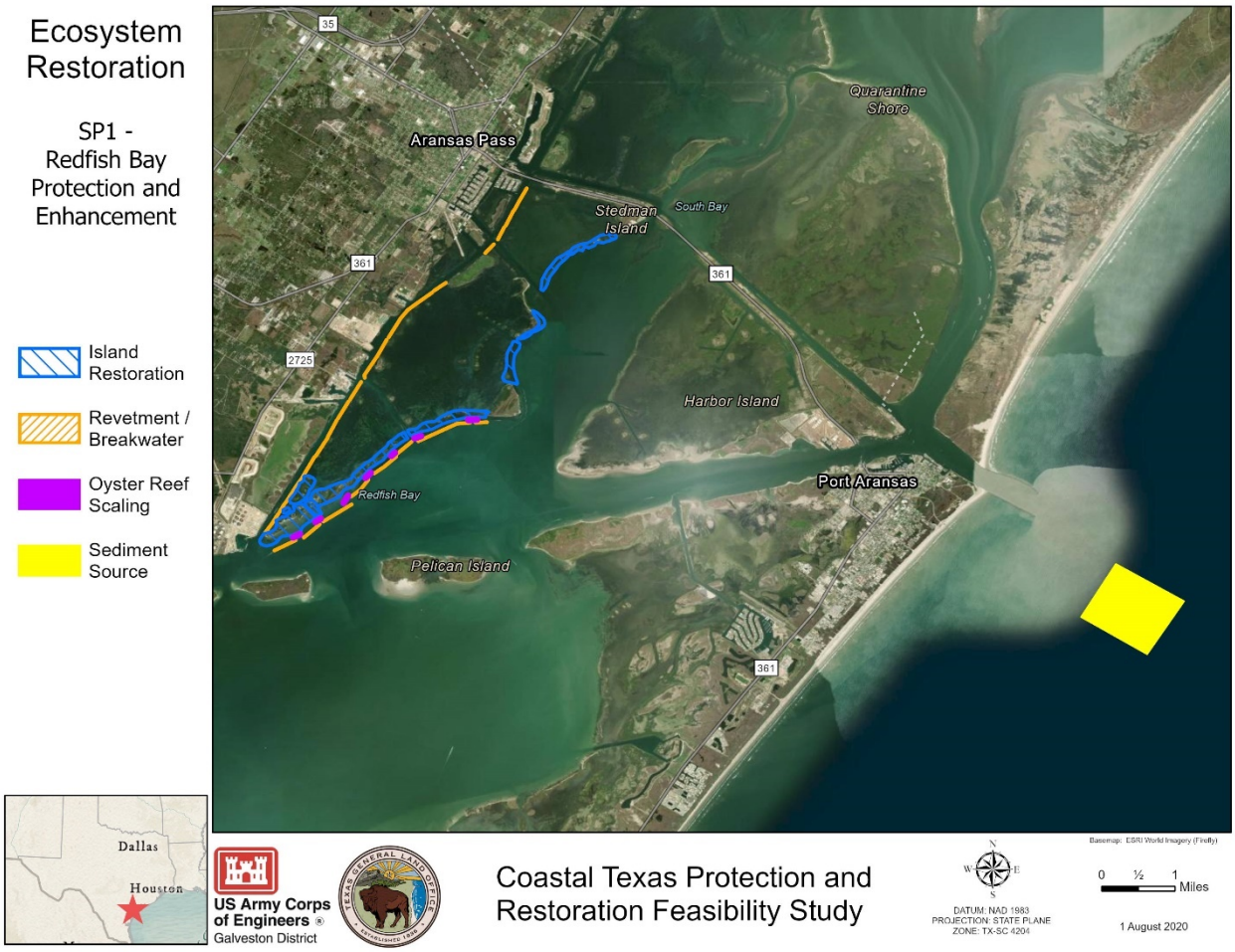

Figure 17: ER - SP1 Redfish Bay Protection and Enhancement

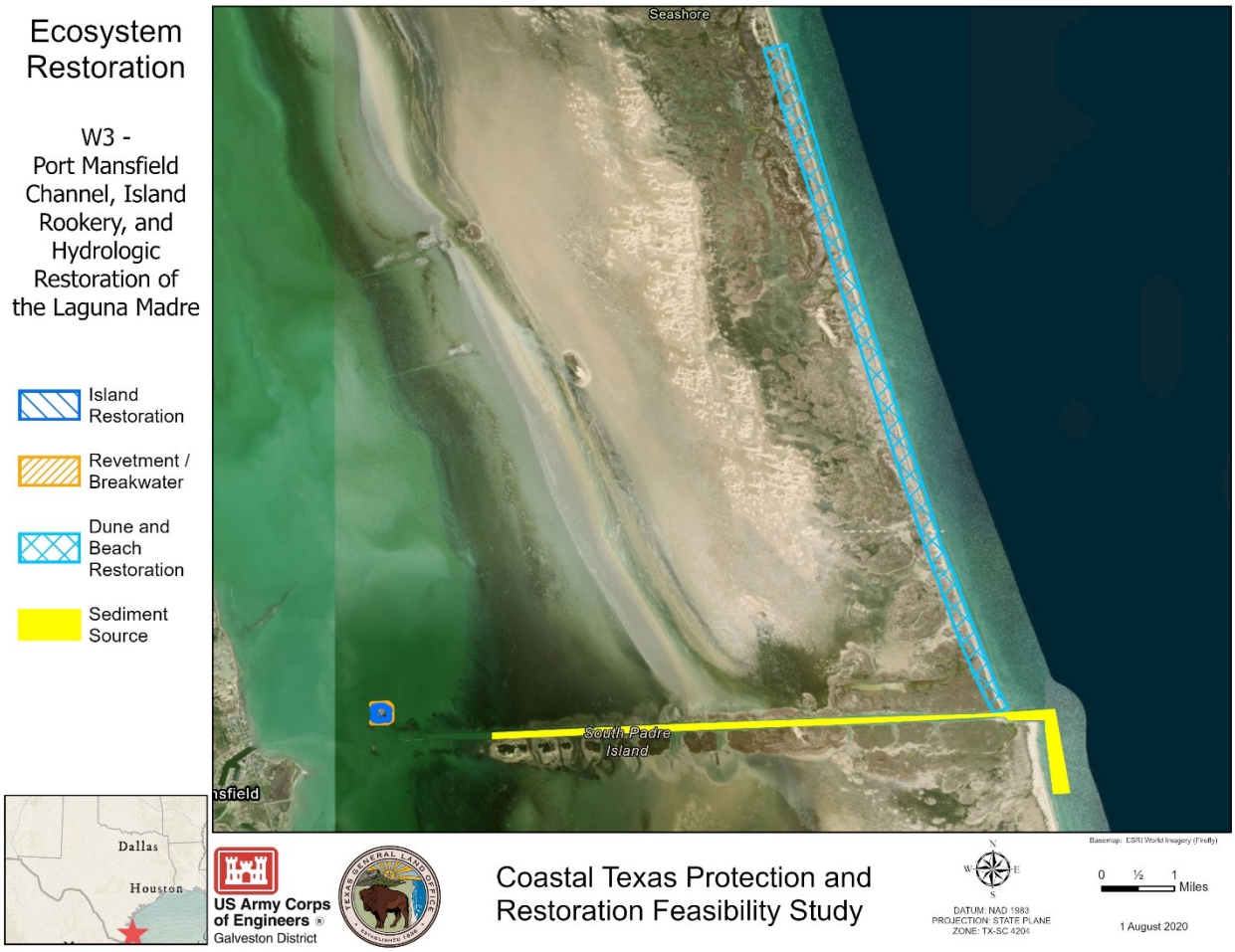

Figure 18: ER - W-3 Port Mansfield Channel, Island Rookery, and Hydrologic Restoration of Laguna Madre

Figure 19: Mitigation and Sediment Source Sites

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

Real Estate Division

Name
Title
Texas General Land Office (TXGLO)
1700 Congress Ave.
Austin, TX 78701-1495

Dear Sirs/Madam:

It is our understanding that TXGLO is the construction sponsor of the Texas Coastal Project and will have the responsibly to furnish all Lands, Easements, Right of Ways, Relocations, and Disposals LERRDs. The purpose of this letter is to advise the risks to TXGLO if lands are acquired prior to the signing of prior to execution of a Project Partnership Agreement (PPA) with the Federal Government. We appreciate your support for this proposed project, but our regulations require us to inform you that **IF FOR ANY REASON, THE PPA NEVER GETS SIGNED OR IF CONGRESS FAILS TO AUTHORIZE OR FUND THE PROJECT, ANY LAND YOU ACQUIRED OR ANY MONEY YOU SPEND IN YOUR EFFORTS TO ACQUIRE LAND WILL BE AT THE SOLE RISK OF TXGLO.** Furthermore, for any property that qualifies for Federal participation in the project, your acquisition efforts must be in compliance with all of the provisions of P.L. 91-646, the Federal Relocation Assistance Law.

Please ensure that records are kept regarding purchase price and real estate administrative expenses such as title evidence, surveys and appraisal fees. This will be necessary for you to receive credit in the event of Federal Authorization. Please be advised that regulations dictate that credit will not be given for real estate administrative costs for any properties acquired five or more years prior to execution of a PPA.

If you have any questions, please contact Mr. Kenny Pablo at (409) 766-3816 or Kenneth.Pablo@usace.army.mil.

Sincerely,

Timothy J. Nelson
Chief, Real Estate Division
Galveston District
U.S. Army Corps of Engineers

Figure 20: Risk Letter

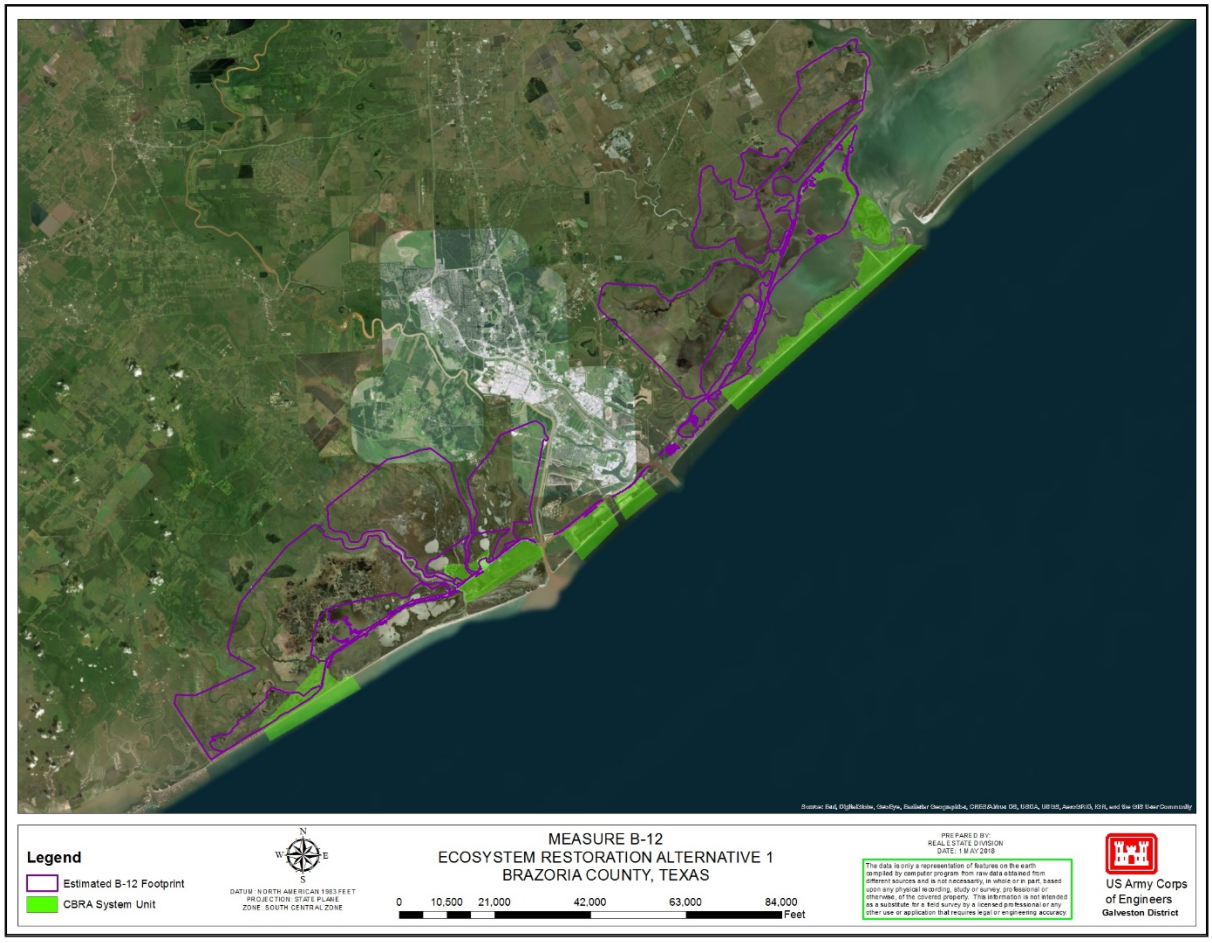

Figure 21: CBRS System Units within ER Measure B-12

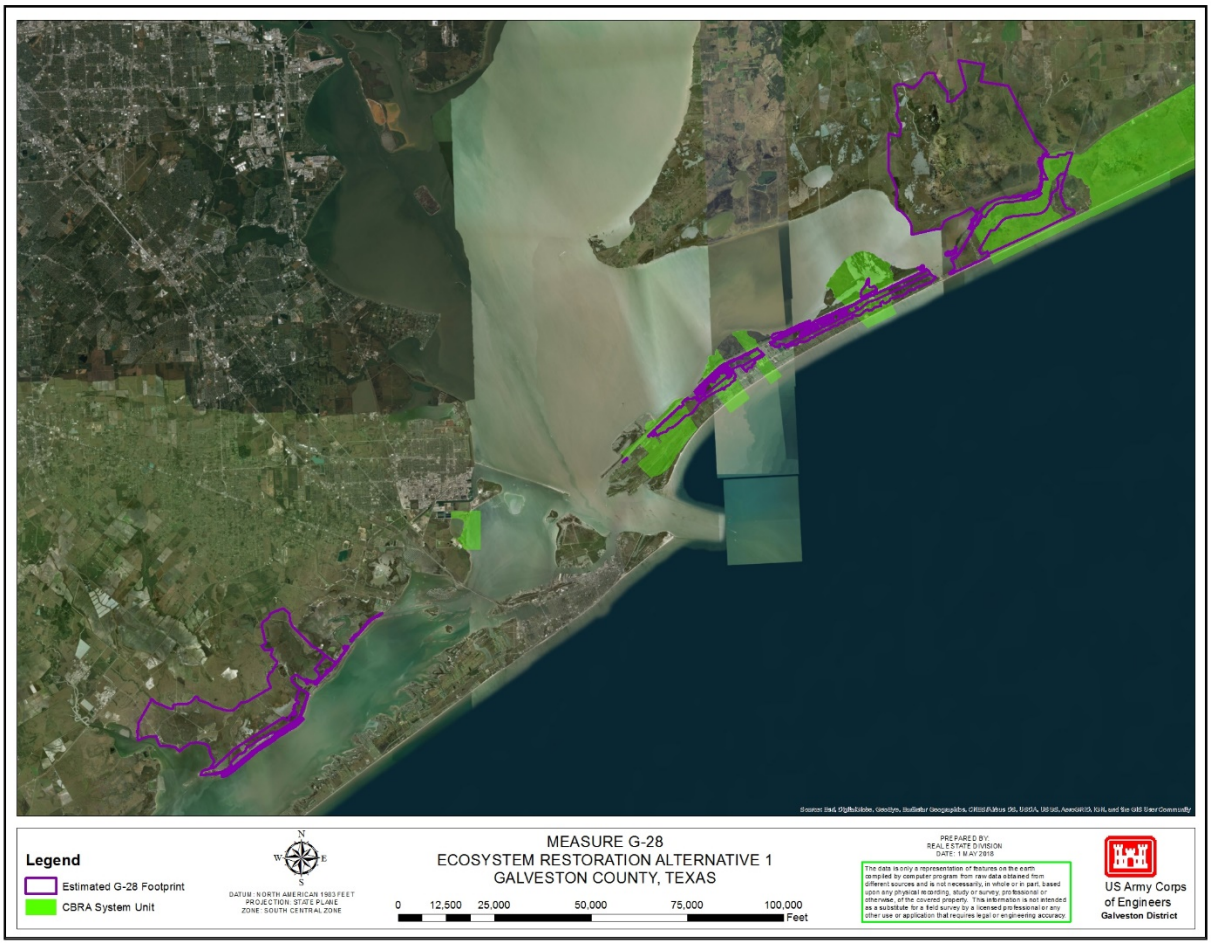

Figure 22: CBRS System Units within ER Measure G-28

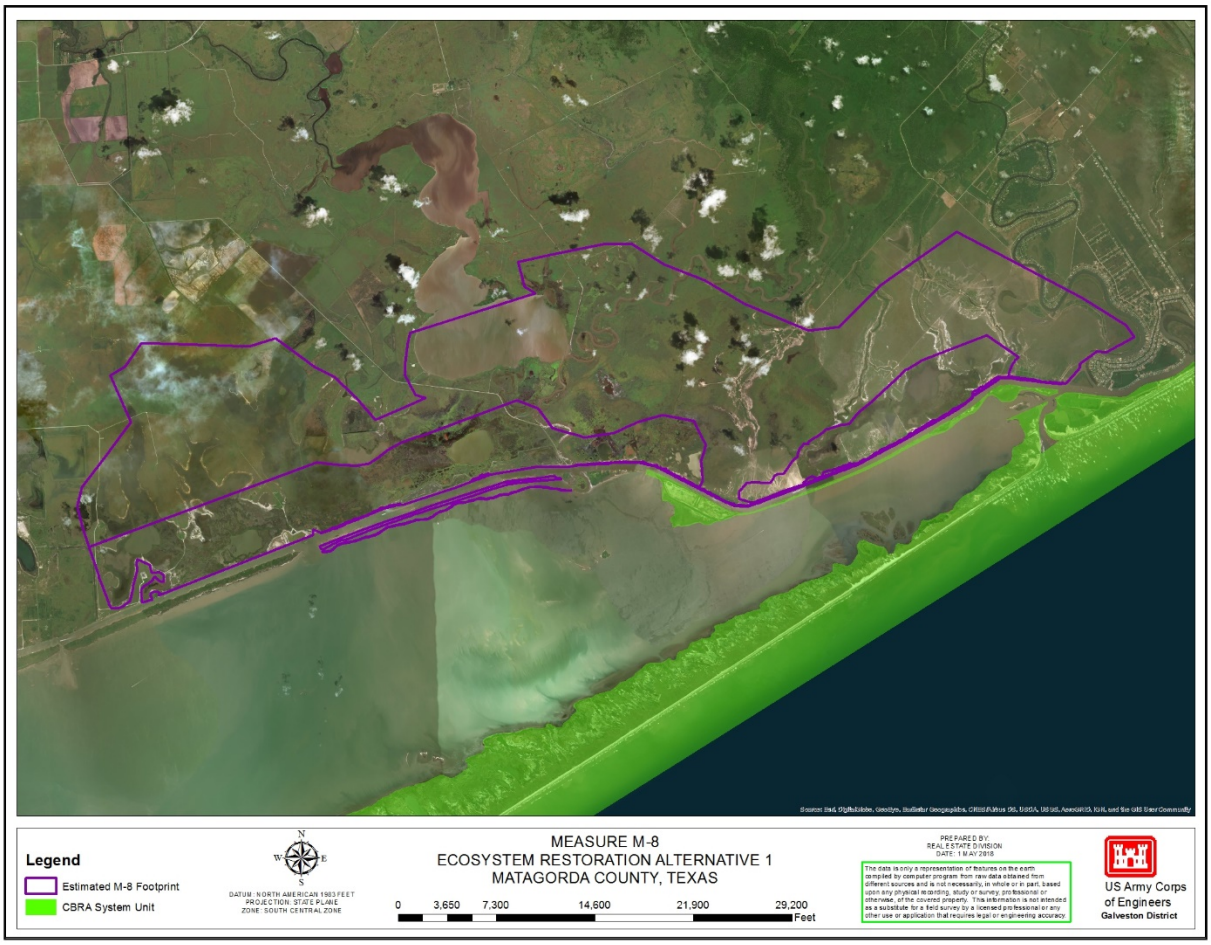

Figure 23: CBRS System Units within ER Measure M-8

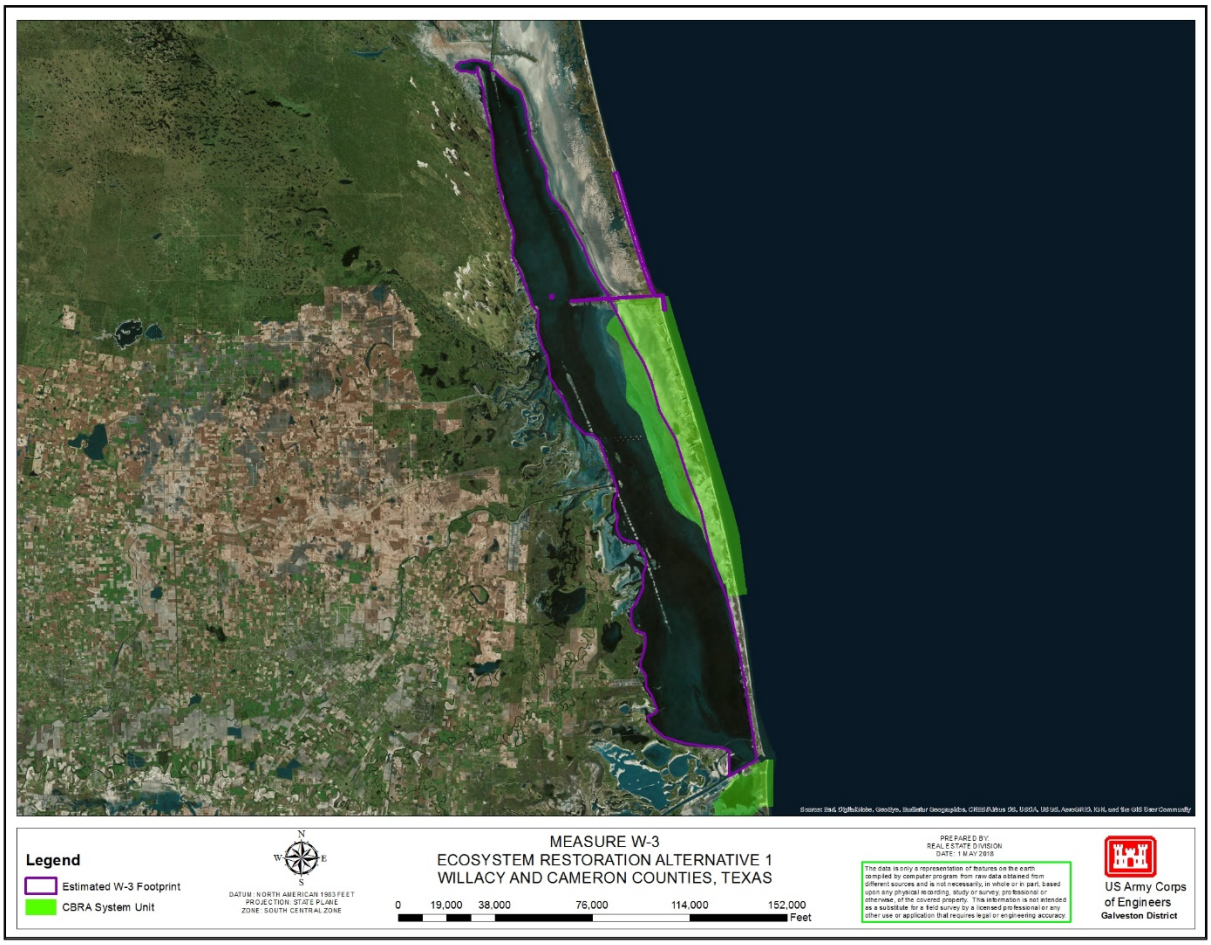

Figure 24: CBRS System Units within ER Measure W-3