FINAL PROSPECTUS
LOWER TEXAS COASTAL MITIGATION BANK
CAMERON COUNTY, TEXAS

JANUARY 2018

PREPARED FOR

U.S. Army Corps of Engineers –
Galveston District

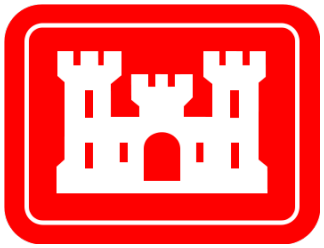
PREPARED BY

SWCA Environmental Consultants

FINAL PROSPECTUS
LOWER TEXAS COASTAL MITIGATION BANK

CAMERON COUNTY, TEXAS

Prepared for:



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January 2018

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LIST OF ABBREVIATIONS, ACRONYMS, AND INITIALISMS

2008 Rule	Compensatory Mitigation for Losses of Aquatic Resources; Final Rule
BSC	Brownsville Ship Channel
CELCP	Coastal and Estuarine Land Conservation Plan
CFR	Code of Federal Regulations
CNRA	Coastal Natural Resource Area
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
EPS-HDT	Economic Profile System-Human Dimensions Toolkit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Administration
GCPMB	Gulf Coastal Plains Mitigation Bank
HUC	Hydrologic Unit Code
iHGM	Interim hydrogeomorphic
IRT	Interagency Review Team
LNG	Liquefied natural gas
LRGV NWR	Lower Rio Grande Valley National Wildlife Refuge
LSLS	Licensed State Land Surveyor
LTCM	Lower Texas Coastal Mitigation LLC (Sponsor)
LTCMB	Lower Texas Coastal Mitigation Bank
MA-NERR	Mission-Aransas National Estuarine Research Reserve
MAPA	McLeod, Alexander, Powel & Apffel, P.C.
MBI	Mitigation Banking Instrument
NOAA	National Oceanic and Atmospheric Association
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
PRM	Permittee-responsible mitigation
PSU	Practical Salinity Unit
Rampart	Rampart Capital Corporation
Sponsor	Lower Texas Coastal Mitigation LLC (LTCM)
State Park	Boca Chica State Park
SWCA	SWCA Environmental Consultants
TCEQ	Texas Commission on Environmental Quality
TGLO	Texas General Land Office

TPWD	Texas Parks and Wildlife Department
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDOD	U.S. Department of Defense
USDOI	U.S. Department of the Interior
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WAA	Wetland assessment area
WOTUS	Waters of the United States
WRDA	Water Resources Development Act

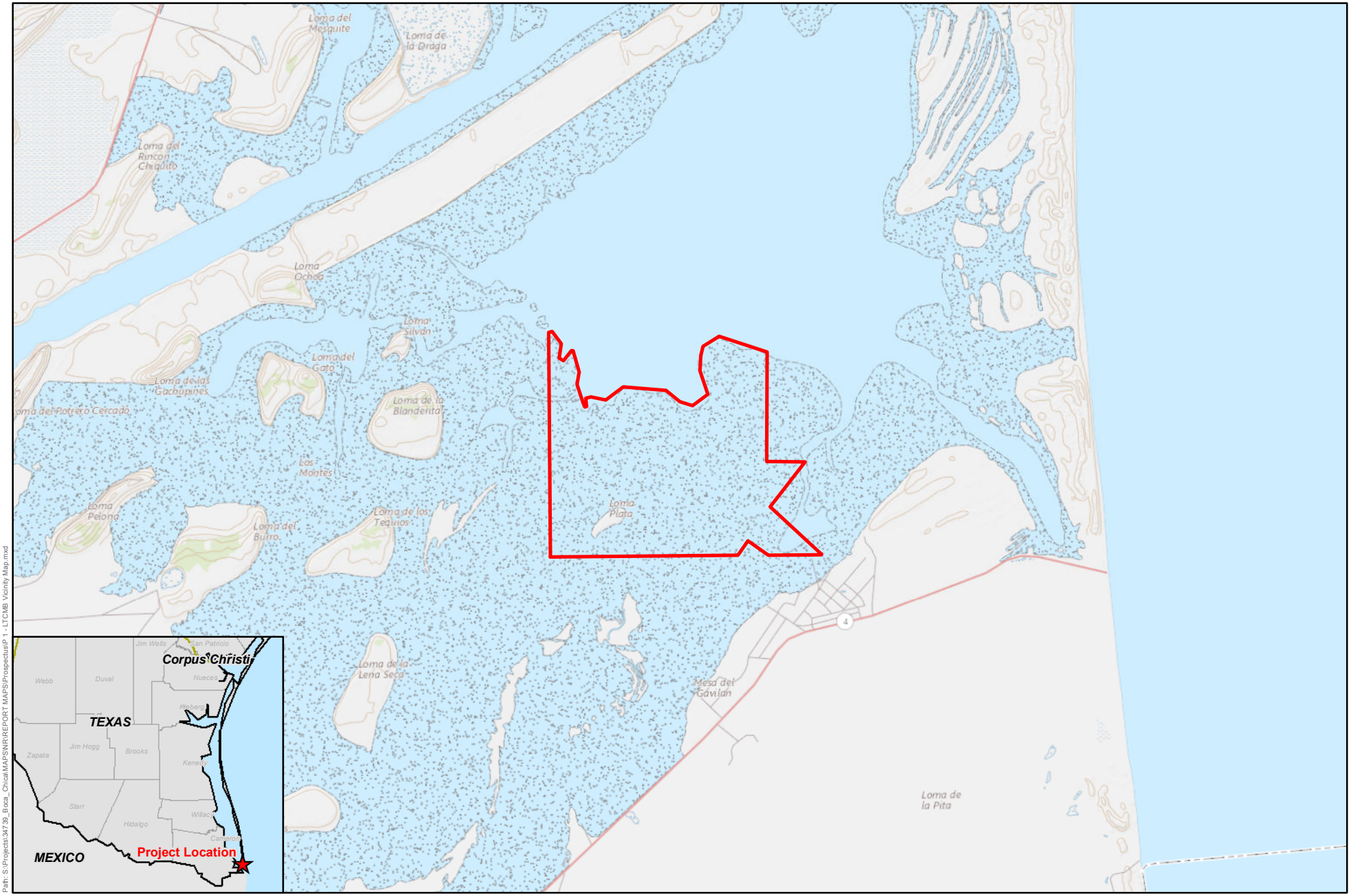
1 INTRODUCTION AND LOCATION

Lower Texas Coastal Mitigation LLC (LTCM) (Sponsor) proposes establishing a mixed habitat mitigation bank in Cameron County, located approximately 5.0 miles south of Port Isabel, Texas, and approximately 20 miles northeast of Brownsville, Texas. The proposed Lower Texas Coastal Mitigation Bank (LTCMB) encompasses approximately 955 acres of mudflats (some of which are occasionally covered by shallow water primarily caused by wind-driven tides and changes in barometric pressure), estuarine emergent wetlands, and mangroves. The approximate mid-point latitude and longitude is at 26.005382°N and -97.191597°W. The northern side of the site is bound by South Bay, with the Gulf of Mexico approximately 2.0 miles to the east. The closest roadway is Texas State Highway 4, which is located approximately 0.5 mile from the southeastern corner of the site. Figure 1 shows the project location and boundaries.

Anticipated demand for mitigation credits is directly linked to development activities incurring impacts to Waters of the United States (WOTUS) and defined by the Clean Water Act (CWA; 33 U.S.C. §1251 et seq.). This development includes industrial and commercial development as well as the municipal infrastructure (roads, drainage, utilities, etc.) that supports them. Over the long term, growth in Cameron County, which includes the international Port of Brownsville, should remain relatively strong as the region continues to develop. Following effectively no growth in 2009 and 2010, the local job base is projected to expand at a compounded annual rate of 1.8% from 2011 through 2040 (Economic Profile System-Human Dimensions Toolkit [EPS-HDT] 2014). With this local job growth comes increased industrial and development growth. The border region and areas along the coast that are close to shipping channels are prime locations for liquefied natural gas (LNG) terminals—multiple projects are currently proposed in the region—and other commercial or industrial uses as exemplified by proposed upcoming private projects in the area described below.

The forecasted growth and development in the area and the placement of the primary and secondary service areas of the proposed LTCMB support a robust and growing demand for mitigation credits. Upcoming major private projects in the area will support this growth, such as the existing and proposed SpaceX facilities and oil and gas pipeline projects, proposed LNG facilities and the mainland portion of the proposed Padre Island Causeway. Dredging activities with regards to potential ship channel expansion and port activities could also be in need of mitigation credits.

Historically, mitigation for wetland and aquatic resource impacts within the lower Texas coast has come in the form of land preservation and donation to a federal or state agency. Often, as in the case of the recent SpaceX Texas Launch Site, mitigation in accordance with the 2008 mitigation rule could not be accomplished as there is little private land for restoration available in the primary service area. In addition, mitigating impacts to WOTUS through credit purchase is not possible in the area of LTCMB because no mitigation banks currently exist in this area. To date, only one coastal restoration mitigation bank exists in the Galveston District, the Gulf Coastal Plains Mitigation Bank (GCPMB), located in Chambers County, Texas. The GCPMB does not occur within the same hydrological cataloging unit (designated by an 8-digit hydrologic unit code [HUC]) as LTCMB, and therefore has different primary and secondary service areas. The Sponsor proposes to provide a long-term solution to the lack of mitigation in the coastal environments in Cameron County and the lower Texas Coast. LTCMB will offer ecologically suitable and technically feasible aquatic resource opportunities. Nearly the entire proposed LTCMB has mitigation potential in the form of reestablishment and preservation of mudflats, emergent wetland vegetation, and mangroves.



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LOWER TEXAS COASTAL MITIGATION BANK

PROJECT AREA MAP
CAMERON COUNTY, TEXAS

FIGURE 1

Project Area

Background:	USGS National Map
Scale:	1:50,000
Created By:	JS
Approved By:	KC
SWCA Project No.:	34739
Date Produced:	November 17, 2017

NAD 1983 StatePlane Texas South FIPS 4205 Feet

0 0.5 1 Miles

0 0.5 1 1.5 Kilometers

2 GENERAL INFORMATION

2.1 Bank Name and Sponsorship

The mitigation bank will be known as the LTCMB. LTCM will act as the bank's sponsor. SWCA Environmental Consultants (SWCA) will act as the Sponsor's agent.

Contact information for the Sponsor and their Agent are as follows:

Sponsor:
Lower Texas Coastal Mitigation LLC
16401 Country Club Drive, Bldg. B
Crosby, Texas 77532

Contact: Jim Carpenter
Main: 713-223-4610
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Email: jcarpenter@rampartcapital.com

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Contact: Kenny Carothers
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2.2 Sponsor Qualifications

The proposed LTCMB will be the first aquatic resources mitigation bank developed by the Sponsor. The Sponsor will be supported by SWCA, who has extensive experience designing and developing mitigation sites, conducting wetland and stream functional assessments, and working with clients and regulatory personnel to establish high-quality mitigation options for unavoidable aquatic resource impacts. SWCA has successfully assisted multiple clients with mitigation bank establishment and permittee-responsible mitigation (PRM) site planning in and around the Galveston District. For over 10 years, SWCA has monitored the vegetation, wildlife, and water quality at various mitigation banks in Texas. Such banks include the Gin City Mitigation Bank, Danza del Rio Mitigation Bank, Katy Prairie Stream Mitigation Bank, and dozens of PRM sites along the Gulf Coast and throughout the Country.

3 GENERAL NEED

Mitigation banks are considered preferable to other mitigation mechanisms such as in-lieu fee and PRM. According to 33 Code of Federal Regulations (CFR) 332.3(b)(2):

> *Since an approved instrument (including an approved mitigation plan and appropriate real estate and financial assurances) for a mitigation bank is required to be in place before its credits can begin to be used to compensate for authorized impacts, use of a mitigation bank can help reduce risk and uncertainty, as well as temporal loss of resource functions and services. Mitigation bank credits are not released for debiting until specific milestones associated with the mitigation bank site's protection and development are achieved, thus use of mitigation bank credits can also help reduce risk that mitigation will not be fully successful. Mitigation banks typically involve larger, more ecologically valuable parcels, and more rigorous scientific and*

> *technical analysis, planning and implementation than permittee-responsible mitigation. Also, development of a mitigation bank requires site identification in advance, project-specific planning, and significant investment of financial resources that is often not practicable for many in-lieu fee programs. For these reasons, the district engineer should give preference to the use of mitigation bank credits when these considerations are applicable.*

In addition, on November 3, 2015, the White House released a Presidential Memorandum urging federal agencies to take a more unified and proactive approach to land planning. Most notably, the Memorandum directs the agencies to address mitigation needs before they undertake or permit actions impacting the environment. The Memorandum, entitled *Mitigating Impacts on Natural Resources from Development and Encouraging Related Private Investment*, orders five federal agencies (the U.S. Departments of Agriculture [USDA], Defense [USDOD], and the Interior [USDOI]; the U.S. Environmental Protection Agency [EPA]; and the National Oceanic and Atmospheric Administration [NOAA], and any of their respective bureaus or agencies) to produce policy documents and regulations detailing how they plan to meet the President's goal of "net benefit" (or at a minimum, "no net loss") for natural resources. The path to a net gain (or at least no net loss) involves adherence to the three-part concept of mitigation, relying on: avoidance, minimization, and compensation (at a ratio of 1:1 or greater), for impacts that cannot be avoided entirely.

The Memorandum encourages agencies to promote conservation banking, stewardship contracts, and other financial-incentive-based tools that generate "credits" that developers can use to offset adverse impacts of proposed projects. The logic of this directive appears to be that the new, higher standards for resource mitigation (i.e., net gain, or at least no net loss) are reasonably achievable if any project's unavoidable adverse impacts can be offset with conservation credits. This demonstrates an Administration preference for privately developed market-based systems.

The Sponsor contends a mitigation bank is a superior alternative to conducting the type of mitigation that has been occurring along the lower Texas coast. Preservation and donation of land to federal and state, or non-governmental organizations, has been the preferred method of compensatory mitigation in the past. For example, the compensatory mitigation for the SpaceX Texas Launch Site Project, which borders the northeast boundary of the proposed LTCMB, was to preserve in-kind, high-quality wetlands at a ratio of 10 times the amount of wetlands impacted by the project. According to the SpaceX compensatory mitigation plan, the mitigation site would either be conveyed to a state or federal natural resource agency or held by a third-party in a perpetual conservation easement (Federal Aviation Administration [FAA] 2014). Unfortunately, this does not fulfill the requirements for mitigating for impacts to WOTUS through the Compensatory Mitigation for Losses of Aquatic Resources; Final Rule (2008 Rule). The 2008 Rule established the parameters by which the CWA's "no net loss" requirement would be managed by federal regulatory agencies. In particular, the 2008 Rule formally required the use of "in-kind" mitigation and placed emphasis on the watershed scale for managing impacts and the related mitigation. In-kind mitigation options were not available in the area at the time the SpaceX compensatory mitigation plan was implemented. Once the proposed LTCMB is established, permittees would be required to purchase the available in-kind credits to satisfy their mitigation requirements according to the 2008 Rule.

Currently there are no approved mitigation banks that share portions of the same service area as that proposed for LTCMB. Therefore, the coastal area of Cameron County and the entire lower Texas coast is in need of mitigation bank opportunities for future development and impacts to WOTUS. Population and development growth in Cameron County has been steadily increasing and will continue to increase with future development projects, such as establishing new LNG facilities, oil and gas pipelines, and the expansion of the Brownsville Ship Channel (BSC). Since 1980, the population of Cameron County has more than doubled from 209,680 in 1980 to 422,135 in 2016, the latest census estimate for the area (U.S. Census Bureau 2017). The job growth numbers did not match the population growth due to the 2008–

2011 recession that impacted job numbers throughout the United States. However, from 1970 to 2016, employment grew from 48,384 to 193,333 jobs, a 300% increase (EPS-HDT 2017).

The Port of Brownsville serves as a center for shipping to the Lower Rio Grande Valley and northern Mexico. The BSC, is an existing deep-draft navigation project located on the lower Texas coast that connects to the Port. The channel uses the natural Brazos-Santiago Pass to connect the Gulf of Mexico with the inland portion of the BSC (U.S. Army Corps of Engineers [USACE] 2014). The interior deep-draft navigation channel is an artificial waterway extending 17 miles westward from the Laguna Madre to the turning basin, which is located on the eastern outskirts of the city of Brownsville, and to the northwest of the proposed LTCMB site.

After 7 years of research and analysis to gauge the feasibility of deepening the BSC, the Civil Works Review Board of the USACE recently released the *Final Independent External Peer Review Report Brazos Island Harbor, Texas Channel Improvement Project Draft Integrated Feasibility Report and Environmental Assessment* (USACE 2014). The purpose of the Brazos Island Harbor study is to determine if there is a federal interest in making channel improvements to the existing BSC. The current plan for improving the BSC includes multiple channel deepening and/or widening measures and construction of a new turning basin.

In 2016, the Obama Administration signed the Water Resources Development Act (WRDA) into law, authorizing the BSC deepening project, making it eligible for federal funding. Because of the enactment of WRDA, The Brazos Island Harbor Channel Improvement Project, one of 28 water infrastructure projects nationwide, was submitted by the USACE to Congress for approval, which was granted. This project calls for the deepening of the Port of BSC to 52 feet from its current design depth of 42 feet.

The Sponsor is also aware of three LNG projects that are proposed within the same 8-digit HUC as the proposed LTCMB site. These types of development projects frequently require coastal wetland mitigation. New LNG facilities or expansions are expected to occur near the Port or within areas that are accessible by large LNG ships (such as up the BSC). The Port is the only deep water port located on the U.S. and Mexico border, and owns abundant land for development and 17 miles of waterfront access, which offers developers of LNG and other refineries or industrial plants easy access to non-congested international bridge crossings and rail connections. In addition, the Sponsor is aware of multiple large-scale oil and gas pipeline projects that are in the planning phases, and which are proposed to occur within the LTCMB's primary service area. The environments that may be impacted vary from mud flats, to coastal marsh, to seagrass beds. Additionally, the Sponsor is aware of a potential need for seagrass mitigation due to the South Padre Island Secondary Access Project.

Given predicted population increases and infrastructure development in Cameron and surrounding counties, the Sponsor believes that the lack of private land for PRM or any available mitigation credits, will not allow future developments to mitigate unavoidable impacts to aquatic resources. The Sponsor therefore believes there is a sound general need for the LTCMB.

4 GOALS AND OBJECTIVES

The goals of the LTCMB are to: 1) enhance, restore and preserve mudflats, mangroves, seagrass, and emergent wetlands; and 2) provide compensatory mitigation for unavoidable aquatic resource impacts within watersheds that traverse or abut Cameron County.

The LTCMB mitigation site will improve chemical, physical, and biological functions within the watersheds that drain Cameron County and adjacent areas. The physical structure of mangroves and emergent wetland vegetation decreases pollutant concentrations, increases wildlife habitat, and restores

nutrient cycles previously disrupted by agriculture and urbanization. Restoration of water filtering habitats such as emergent wetland vegetation, would incrementally improve water quality impairments within the watershed. The potential to improve hydrologic connectivity within the LTCMB site and filter water through aquatic and wetland vegetation would yield a direct benefit to water quality. Restored and preserved mudflats and emergent wetland vegetation increase floral and faunal biodiversity, overall species richness, and habitat connectivity, while providing connectivity to other properties under state and federal management, thereby contributing to the protection of potential wildlife movement corridors. Additional fieldwork will be conducted as the project progresses to provide further information on potential improvements to water quality, including the proposed source of water to the site, general water quality characteristics, residence time of water introduced onto the site, and the biogeochemical characteristics and ecological processes that would be expected to provide water quality benefits. This information will be provided in the draft Mitigation Banking Instrument (MBI).

Historically, the property was widely considered in the regulatory community as being predominantly existing wetlands and tidal flats. The property was evaluated as a potential mitigation site in 2001, but the Sponsor did not pursue a mitigation bank at that time because of the perception that mitigation banks were not being supported by the field offices of the USACE and Interagency Review Team (IRT) agencies. Photographs from 2001, originally from the vegetation community analysis completed by SWCA, are included with this prospectus (Appendix A) and recent photographs from the site are included in Appendix B.

The area surrounding the LTCMB site has been changing steadily over the last 130 years due to a series of manmade modifications, such as the construction of the Rio Grande Valley Railway in 1872, and the Port of Brownsville and the BSC completed in 1936 (Garza and Long 2010; Young 2010). Shipping through the Brazos de Santiago Pass has been dated to the sixteenth century, but the presence of shifting sandbars prevented large vessels from anchoring in the area of South Bay (Garza and Long 2010). During the Civil War, the confederates initially shipped their goods overland to the Brazos Santiago Pass at the mouth of the Rio Grande and from there to Mexico. It was not until the 1920s when a series of civic improvements (i.e., roads were paved, a new international bridge was opened, and the first airport was constructed) led to efforts to build a ship channel from Brazos Santiago Pass (Garza and Long 2010). It was not until 1936 that the Port of Brownsville officially opened as the BSC was completed. The spoils from the original channel were placed in the area between Clark and Brazos Islands, which, pre-1920 was the location of the deepest water in South Bay (Bates 2004). Now, this area is the highest hill on Boca Chica Beach. Only the western pass, located on the western side of Clark Island, remains (Bates 2004). The small pass located at the southeastern end of South Bay, known as the Boca Chica Pass, has been closed for decades.

The EPA has promulgated that rising sea levels are anticipated to increase the amount of seawater on the LTCMB site over the next 50 to 100 years. According to the NOAA Sea Level Rise Viewer, a sea level increase of 1 foot could completely inundate the LTCMB site (NOAA 2015). This includes the mangroves on the northern border of the property that would become completely submerged, along with any remaining mudflats. A NOAA sea gage located at Port Isabel, Texas, which is less than 5.0 miles to the north of the LTCMB site at 26° 3.7’ N latitude and 97° 12.9’ W longitude, has been monitoring sea level, salinity, and various other physical and chemical qualities of the area since 1944. The EPA has stated that the mean sea level trend around Port Isabel can be translated to the LTCMB site. The Port Isabel gauge indicates that the sea level change is 3.79 millimeters (mm) per year with a 95% confidence interval of +/- 0.35 mm/year based on monthly mean sea level data from 1944 to 2014 (NOAA 2015). This data suggests that the sea level would increase 1 foot in 80 years. This estimation aligns with the EPA’s past and projected sea level rise from 1800 to 2100 (EPA 2014).

It appears that the LTCMB site is not materially affected by the rising seas. The shoreline of the site has been surveyed five (5) times since the Skelton Patent was conveyed in 1939 (Appendix C). If the shoreline was materially affected by rising sea, the shoreline would erode or retreat inland from South Bay. In the most recent survey dated May 2017, the shoreline had changed minimally with some areas accreting and some areas eroding—the net change appears to be slight accretions (Appendices C and D).

Item 9 on page 6 of the surveyor's report provides a detailed analysis of the research of previous surveys of the site, as well as the method used by the surveyor to accurately establish the actual south shoreline of South Bay abutting the LTCMB site, which is the northern boundary of the tract. The surveyor states that, "the current location of this shoreline is easily observed in the field as the northerly side of an almost continuous line of Mangroves." This shoreline has changed minimally, as shown on the survey (Appendix C), an analysis of the shoreline change since 1936 based on prior surveys of the site (Appendix D), and a historical image analysis of South Bay from Google Earth (Appendix E).

From a practical standpoint, a shoreline would erode inland if the seawater within South Bay was rising. It has been 80 years since the shoreline was initially surveyed and based on EPA's projections, the water level in South Bay would have risen about 1 foot, and should have inundated the entire tract. This event has not occurred at LTCMB's site.

We have no scientific explanation for the lack of significant sea rise effect for South Bay. A logical explanation would be the restriction of seawater flow into South Bay caused by the development of the BSC, and the extreme sedimentation occurring within the Bay. Appendix E clearly reflects the following conditions within South Bay:

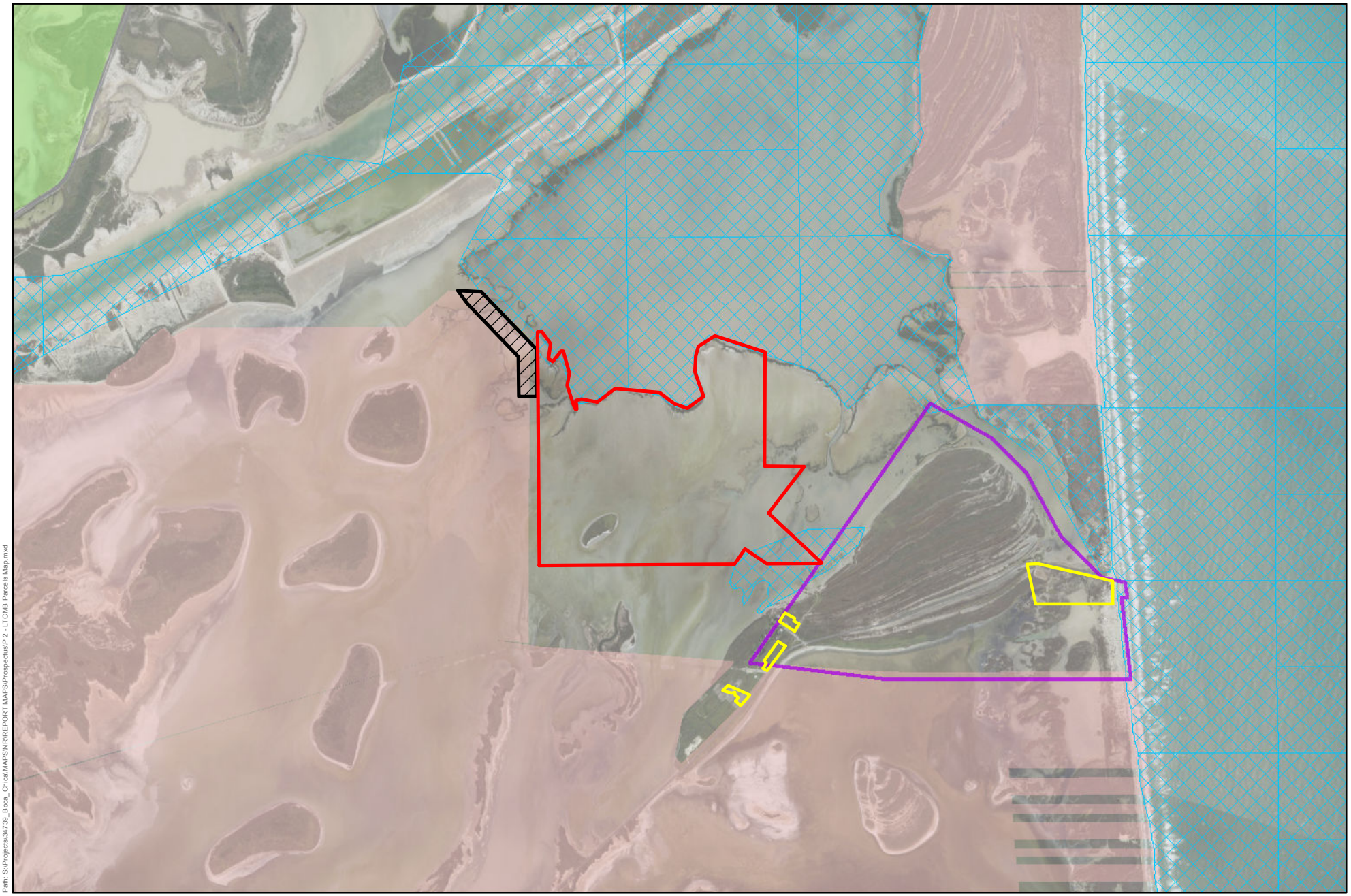
1. The shoreline of LTCM's site has, for the most part, remained static or accreted.

2. South Bay has experienced significant sedimentation.

3. The water flow into South Bay was significantly reduced with the development of the BSC and further restricted by sedimentation.

Improving the hydrologic connectivity at this site through open water channel(s), such as Inlet A on the survey, will help restore historical tidal and mudflat habitats, and improve resiliency against climate change without adding sediment to artificially increase elevation of the site. Photographs of the current conditions of the site are provided in Appendix B.

Mudflats (wind tidal and algal) are the preferred wintering habitat of the piping plover (*Charadrius melodus*). Such habitat also provides ideal areas for migratory birds to rest and replenish during their long journeys. Emergent vegetation and mudflats create a link for wildlife, such as the ocelot (*Leopardus pardalis*), to move between adjacent parcels of state and federally managed lands. Figure 2 shows the LTCMB property and the adjacent publicly managed lands. Establishing a perpetually protected mitigation bank on the proposed property would protect an ecologically significant portion of southeastern Cameron County and create an important link in a contiguous habitat system that has been fragmented by hurricanes, rising sea levels, saltwater intrusion, and human development. The environmental benefits provided by conservation corridors include reduced flooding and soil erosion, improved water quality, and increased water quantity. Additional environmental benefits of broad corridors include improvement of wildlife habitat and range, increasing wildlife use in dispersal, and increased population connectivity (Natural Resources Conservation Service [NRCS] 2004).



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LOWER TEXAS COASTAL MITIGATION BANK

ADJACENT PARCELS MAP
CAMERON COUNTY, TEXAS

FIGURE 2

- Project Area
- SpaceX Launch Site
- Boca Chica State Park
- GLO Submerged Lands (2015)
- Existing SpaceX PRM Conservation Easement
- Laguna Atascosa National Wildlife Refuge
- Lower Rio Grande Valley National Wildlife Refuge

Background:	ESRI Aerial Imagery
Scale:	1:48,000
Created By:	JS
Approved By:	KC
SWCA Project No.:	34739
Date Produced:	December 18, 2017

NAD 1983 StatePlane Texas South FIPS 4205 Feet

0 1,500 3,000 Feet

0 300 600 900 Meters

Benefits specific to wildlife in this particular region include protections of a unique parcel of land that sits between other protected lands (see Figure 2, Adjacent Lands). Currently, public trespass is largely responsible for a high level of off road all-terrain vehicle use, which results in visible damage to mudflats and the sparse emergent wetland vegetation that is present. By protecting this site through conservation measures associated with the required conservation easement, this public trespass will be eliminated or significantly reduced, allowing for increases in useful habitat for coastal species, and the reestablishment of greater quantities of emergent wetland vegetation. By connecting the adjacent protected lands surrounding the LTCMB site, the greater amount of overall protected acreage in the area will help increase ecological functions by not only allowing the enhancement and protection of the LTCMB site, but by connecting a larger area of contiguously protected lands. Additionally, through enhancement and/or restoration activities to reestablish hydrologic connectivity of the LTCMB site with surrounding waters, the objective would be to decrease potential for vegetation to become overwhelmed by sediments and chemical processes when wind-driven water becomes trapped on the property and is unable to drain naturally. This improvement to the overall site would assist in allowing for plants to maintain proper nutrient absorption rates, thereby increasing overall ecological functions. This increase in overall ecological function of the site would provide long-lasting benefit to the region, including all surrounding and connected parcels.

The Sponsor will develop measurable objectives for the LTCMB site based on the site's proposed mitigation work plan during the MBI phase of the project. These objectives will include a description of the resource type and amount that will be provided, the method of compensation (i.e., restoration, establishment, enhancement, and/or preservation), and the manner in which the resource functions of the mitigation project will address the needs of the surrounding watershed.

5 ECOLOGICAL SUITABILITY

The proposed LTCMB has great potential as a mitigation bank from an ecological perspective. The site is located within a large contiguous area of protected lands, which are managed by different agencies, including relatively pristine estuaries, wetlands, and scrub-shrub habitats (see Figure 2). Administrators of these state and federal lands have management and ecosystem restoration/protection goals and will likely be interested in developing a larger, conjoined tract of restored and protected estuaries in concert with the LTCMB site.

The current environmental conditions, including the right mixture of salinity, soils, water quality, and coastal barrier lands between the Gulf of Mexico and the proposed LTCMB, site provide the perfect backdrop for a coastal restoration project. Wind-driven hydrology on the site is facilitated by soils that are also conducive to successful wetland restoration; the clayey, hydric soils within the LTCMB site will retain water due to their hydric characteristics and contribute to sustaining restored wetlands and other aquatic habitats.

5.1 Historical Uses and Conditions

As outlined in Section 4, above, the LTCMB site, as well as the surrounding area, has been undergoing ecological changes due to the construction of the Port of Brownsville and the BSC. The LTCMB site also has a history of past development. During the late 1980s, the site was part of a proposed 13,000-acre master-planned resort development. Much of the site was to be dredged and modified to become tidal marsh and shallow-water habitat; however, this plan was ultimately abandoned primarily because it was met with significant opposition from various federal and state resource agencies. After the project was abandoned, the site was eventually acquired by Rampart Capital Corporation (Rampart), predecessor in title to LTCM.

SWCA's history with this property dates back to July 2001, when we were retained by Rampart to conduct a preliminary site assessment and vegetation community evaluation. The purpose of the field inspection was to document and map the existing conditions and relative habitat types present on the site that may have the potential to provide viable mitigation for CWA Section 404 impacts. It should be noted that the objective of the study was not to conduct a comprehensive delineation of all habitat types on the property. A total of five (5) vegetation communities were documented on the study site, and a series of ground-level photographs were taken of each vegetation community type that was evaluated (Appendix A). The five communities described at the site and their associated acreages are outlined in Table 1 below.

Table 1. Historical Vegetation Communities & Acreages at LTCMB Site

Loma	Estuarine Mudflats	Estuarine Emergent	Algal Mudflats	Mixed Algal/Sand Flats
~ 11.5 acres	~ 62.9 acres	~ 62.9 acres	~ 229.1 acres	~ 276.7 acres

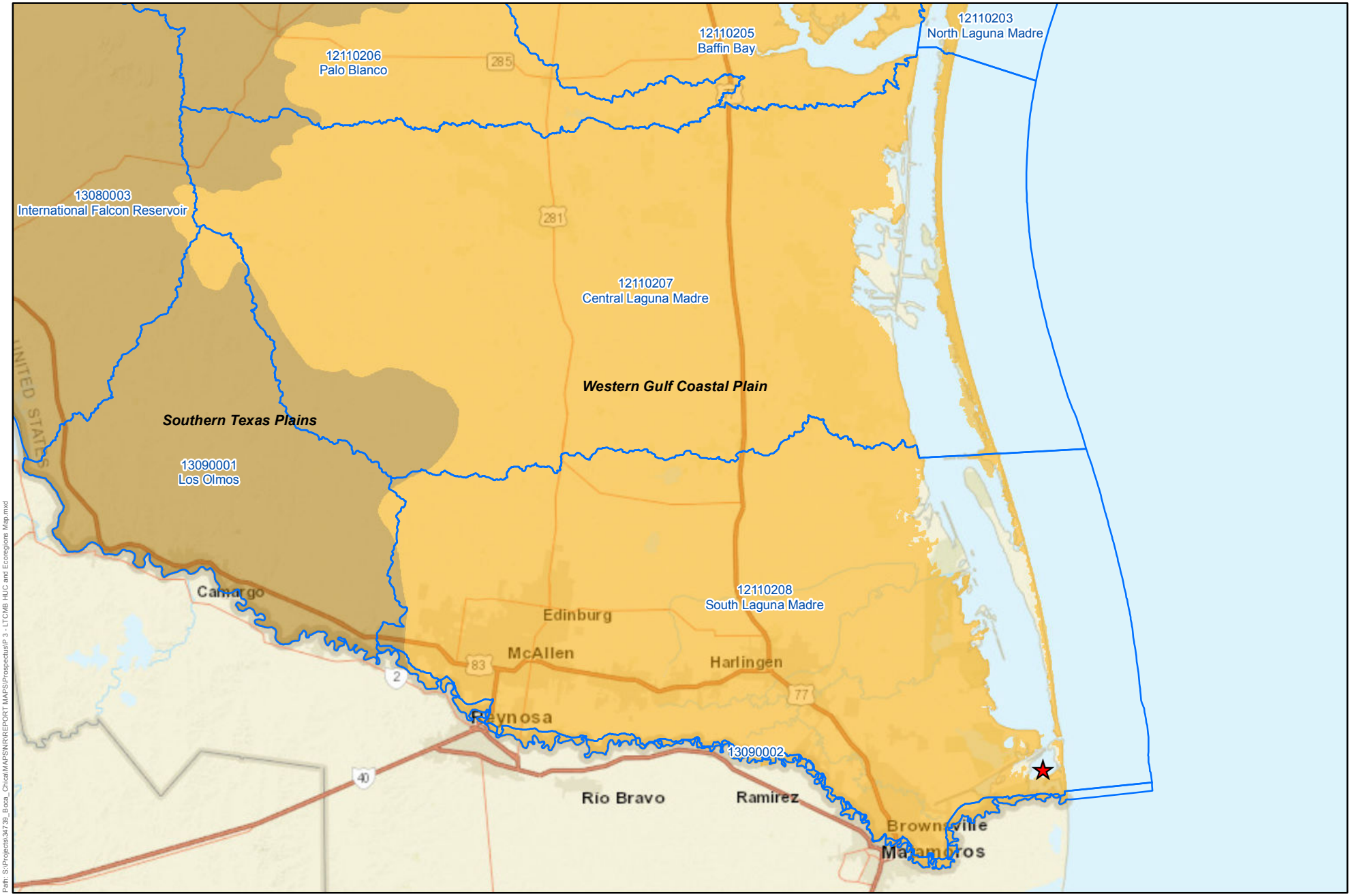
Of the historical communities documented in 2001, only estuarine mudflats and a loma named Loma Plata are still present on site. South Bay is not hydrologically connected with the Gulf of Mexico; therefore, it is not influenced by the astronomical tides, but rather only by wind-driven tides and changes in barometric pressure. Mudflats, estuarine emergent wetlands, and mixed algal/sand flats are decreasing in acreage. According to the 2001 report, mudflats were the most dominant community type on the property, occurring at slightly higher elevations than the estuarine wetlands. These areas are irregularly inundated by abnormally high water primarily caused by storm surges or rainfall events. It was also noted in the 2001 report that a portion of the study site appears to be subject to flooding during storm surges resulting from tropical storms and hurricanes.

5.2 Existing Conditions

5.2.1 Physiography and Topography

As designated by the U.S. Geological Survey (USGS 2015; Fenneman and Johnson 1946), the proposed LTCMB lies within the Western Gulf Coastal Plain Physiographic Section of the Coastal Plain Physiographic Region. The Western Gulf Coastal Plain is defined as a relatively flat strip of land, generally 50 to 90 miles wide, adjacent to the Gulf of Mexico, and is distinguished by its flat topography and mainly grassland potential natural vegetation. This Physiographic Section is fairly consistent with the Western Gulf Coastal Plain Level III Ecoregion, as described by Griffith et al. (2004 and 2007). Within this Physiographic Section and Level III Ecoregion, the proposed site is within the Laguna Madre Barrier Island and Coastal Marshes Level IV Ecoregion and the South Laguna Madre 8-digit USGS hydrologic cataloguing unit (HUC 12110208), as shown on Figure 3.

The proposed LTCMB exhibits some of the typical characteristics of the Laguna Madre Barrier Islands and Coastal Marshes (34i) as described by Griffith et al. (2007). The site is predominantly mudflats, a portion of which is periodically inundated with shallow hyperhaline water. The northern border of the site is black mangroves (*Avicennia germinans*), whereas the southwestern corner of the proposed LTCMB, a small island called Loma Plata is present. This island is a dune formation of wind-blown clay known as a loma. The soils within the LTCMB site are generally clayey over loamy alluvium and storm washover sediments, as discussed below in Section 5.2.3.



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LOWER TEXAS COASTAL MITIGATION BANK

HYDROLOGIC UNIT AND ECOREGION MAP
CAMERON COUNTY, TEXAS

FIGURE 3

Project Location
HUC Boundary

Level III Ecoregions
Southern Texas Plains
Western Gulf Coastal Plain

Background:	ESRI Street Map
Scale:	1:1,000,000
Created By:	JS
Approved By:	KC
SWCA Project No.:	34739
Date Produced:	November 17, 2017

NAD 1983 StatePlane Texas South FIPS 4205 Feet

0 10 20 Miles
0 10 20 30 Kilometers

The lower coastal zone in Texas where the LTCMB site is located typically receives between 24.0 to 32.0 inches of precipitation annually with an average of 28.56 inches (USDA 2015). Annual rainfall is extremely variable, and evapotranspiration is generally two to three times greater than precipitation. Tropical storms and hurricanes can bring large changes to this dynamic ecoregion. It is a unique region where species from the temperate north, tropical south, maritime east, and arid west are found. Temperatures in the region vary from an average of 80°F in the summer months to 66.8°F in the winter. The yearly average temperature is 73.3°F (USDA 2015).

The topography of the site is described by two USGS 7.5-minute topographical quadrangle maps from 2013 and 2012, (i.e., Port Isabel, Texas, for the northern portion of site and Mouth of Rio Grande, Texas for the very southern portion of site). The physical geography of the LTCMB site and nearby properties fit well within Griffith et al.'s 2007 physiographic description of the area: bays, estuaries, tidal marshes, and mud flats. The maximum elevation of the site is approximately 7.3 feet on Loma Plata. The minimum elevation of the site is at sea level (USGS 2015).

5.2.2 Hydrology and Water Quality

Tidal fringe wetlands occurring along the Texas coast are influenced by local hydrological and climatic conditions such as freshwater input from riverine sources, rainfall, and evapotranspiration rates. Moving southward from Galveston Bay to the Rio Grande, there is a decrease in rainfall, and an increase in average temperatures and rates of evapotranspiration. From Galveston Bay to Corpus Christi Bay, major rivers supply freshwater inflow to large bays (except the Brazos River and San Bernard River estuary) that have major Gulf inlets between the barrier islands or peninsulas.

The upper and lower Laguna Madre, on the other hand, comprise the most extensive hypersaline lagoon system in the United States (Copeland and Nixon 1974). As such, they have no major source of freshwater inflow (low rainfall and no major drainages between the Nueces River and Rio Grande) and restricted Gulf inlets. These unique and relatively rare water bodies form in arid coastal environments, and typically run parallel to the shore (Copeland and Nixon 1974). As is typical of these systems, salinity generally increases with distance from Gulf inlets. Shallower waters around the edge of the lagoon are harsh environments with great fluctuations in salinity, temperature, and oxygen, among other water quality parameters, that few species are able to withstand (Birke 1974). These areas are often dominated by blue-green alga (primarily *Lyngbya confervoides*), which is able to thrive in this harsh environment and forms dense mats in some areas (Birke 1974; Copeland and Nixon 1974). This assessment applies to the characteristics of the LTCMB site. Currently, there is very little hydrologic connectivity within the LTCMB site. The site has no freshwater inlets, nor direct channels to the gulf, as is typical in a hypersaline lagoon environment. However, hydrologic flow has been degraded within the site itself due to the history of manmade modifications in the area, especially the BSC in 1936. The site is located on the most southern portion of Laguna Madre, which has been deemed not part of the Gulf of Mexico, and not effected by astronomical tidal influences. Rather, it is predominately influenced by wind-driven tides and changes in barometric pressure. This is especially true since the creation of the BSC, which limited South Bay's access to the Laguna Madre. The LTCMB site is more wind-dominated than elsewhere along the Texas coast. The primary sources of hydrology for the LTCMB site are wind-driven tides, direct rainfall and runoff from surrounding higher properties during rainfall events. Evidence of astronomical tides influencing the LTCMB site is minimal. The LTCMB site lies completely within the 100-year floodplain according to maps published by the Federal Emergency Management Administration (FEMA).

SWCA conducted an assessment of the historical images provided in Appendix E to evaluate if there are any measurable differences in the width of the inlet from the BSC on the north end of South Bay. Through the analysis of historical aerial photographs, it was determined that the inlet is in fact becoming experiencing a reduction in width by 292 feet since 1949, which may ultimately result in further

separation of South Bay from its connection to the Laguna Madre. Table 2 below provides the actual width of the inlet for the years of 1949, 1995, and 2017.

Table 2. Width of Inlet to South Bay from the BSC between 1949 and 2017

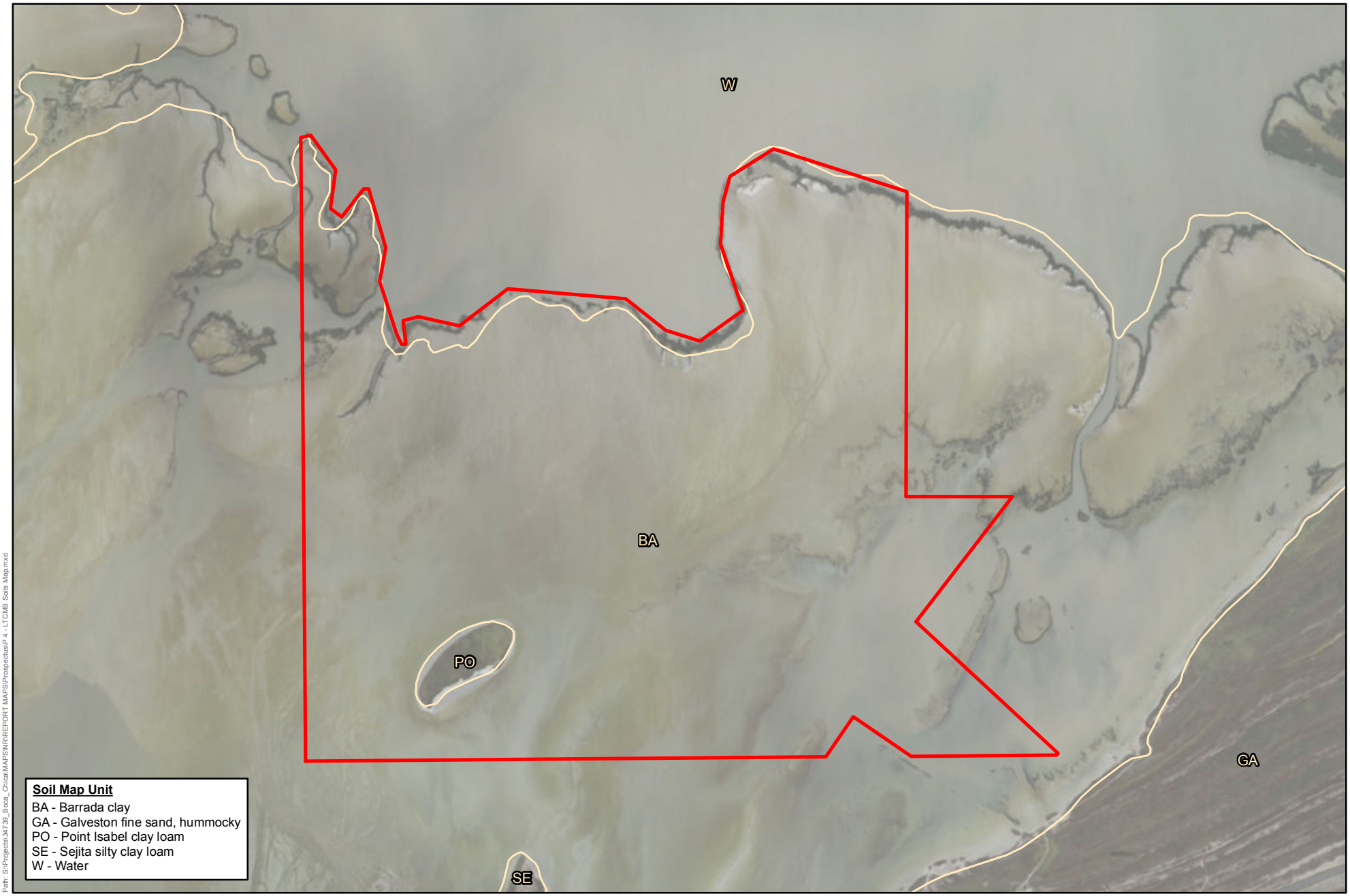
1949	1962	1995	2017	Total Reduction in Width
1220’	N/A	1173’	928’	292’

Salinity measurements taken from a Texas Commission on Environmental Quality (TCEQ) data sonde, northeast of the BSC on the eastern Laguna Madre side of South Padre Island, (26.0726°N, -97.1671°W), show an average salinity of 32.9 Practical Salinity Units (PSU) over the last few years. Hyperhaline is generally defined as over 40.0 PSU. As the location of the data sonde is near the confluence of the BSC and the Gulf of Mexico, it is likely that the salinity of the LTCMB site is higher than that of the area monitored by the TCEQ data sonde, as there is no freshwater influence at the LTCMB site. With little freshwater input, evapotranspiration generally exceeds precipitation south of the Bay City-Freeport area (White et al. 1983). The Sponsor will conduct site-specific salinity studies on the LTCMB site during the MBI phase if the project coincides with development of conceptual and actual proposals for preservation, enhancement, and restoration activities.

Under the authority of the CWA Section 303(d) and 40 CFR 130.7, the TCEQ has assembled a list of waterbodies that are considered impaired (TCEQ 2014). An impaired waterbody is one that does not meet water quality standards including designated uses, numeric and narrative criteria, or anti-degradation requirements defined in 40 CFR 131. While data collection will be required to confirm, SWCA is of the opinion that even though an active monitoring station (Station 14865) exists within the Laguna Madre at Port Isabel about 5 miles from South Bay, the LTCMB site is not directly connected to the Gulf of Mexico and has a lower water quality and diminished ability to provide habitat for aquatic life. On more than one occasion during field studies, SWCA observed significant fish kills within the LTCMB site after high wind events. It was apparent that wind-driven tides pushed in fish that were subsequently unable to exit the LTCMB site due to its lack of hydrological connection to South Bay or waters to the east. Since no water quality monitors are located within the LTCMB, data from the Laguna Madre and Port Isabel area have been used as a proxy for the purposes of this document. The Sponsor will conduct several seasonal water quality sampling events within the LTCMB site during the development phase of the MBI.

5.2.3 Soils and Vegetation

Wetland restoration is most successful where hydric soils exist. The NRCS (2015a) defines hydric soils as “a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part.” Such soils, whether they exist as a wetland currently or not, possess the physicochemical characteristics that are required to sustain emergent wetland vegetation. The LTCMB site includes two distinct soil types based on an NRCS Web Soil Survey for the area: Barrada clay and Point Isabel clay loam (NRCS 2015b). Figure 4 shows the locations of these soils within the LTCMB site.



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LOWER TEXAS COASTAL MITIGATION BANK

NRCS SOILS MAP
CAMERON COUNTY, TEXAS

FIGURE 4

Project Area
Soil Map Unit Boundary

Background:	ESRI Aerial Imagery
Scale:	1:18,000
Created By:	JS
Approved By:	KC
SWCA Project No.:	34739
Date Produced:	November 17, 2017

NAD 1983 StatePlane Texas South FIPS 4205 Feet

0 750 1,500 Feet
0 150 300 450 Meters

Barrada clays are a part of the Barrada series of deep, very poorly drained, calcareous, saline clays that occur at or near sea level. The series sometimes reaches a depth of 63 inches, of which the upper 40 inches are considered to be from 45% to 60% clay. This percentage of clay content results in a very slow permeability with very slow to ponded runoffs. When water evaporation in the soils occur during prolonged dry periods, the first 2 to 4 inches are easily moved by wind. Because the Barrada clays typically occur in areas less than 5 feet, or below sea level, they are subject to flooding from high tides during Gulf storms, or high-intensity rainstorms.

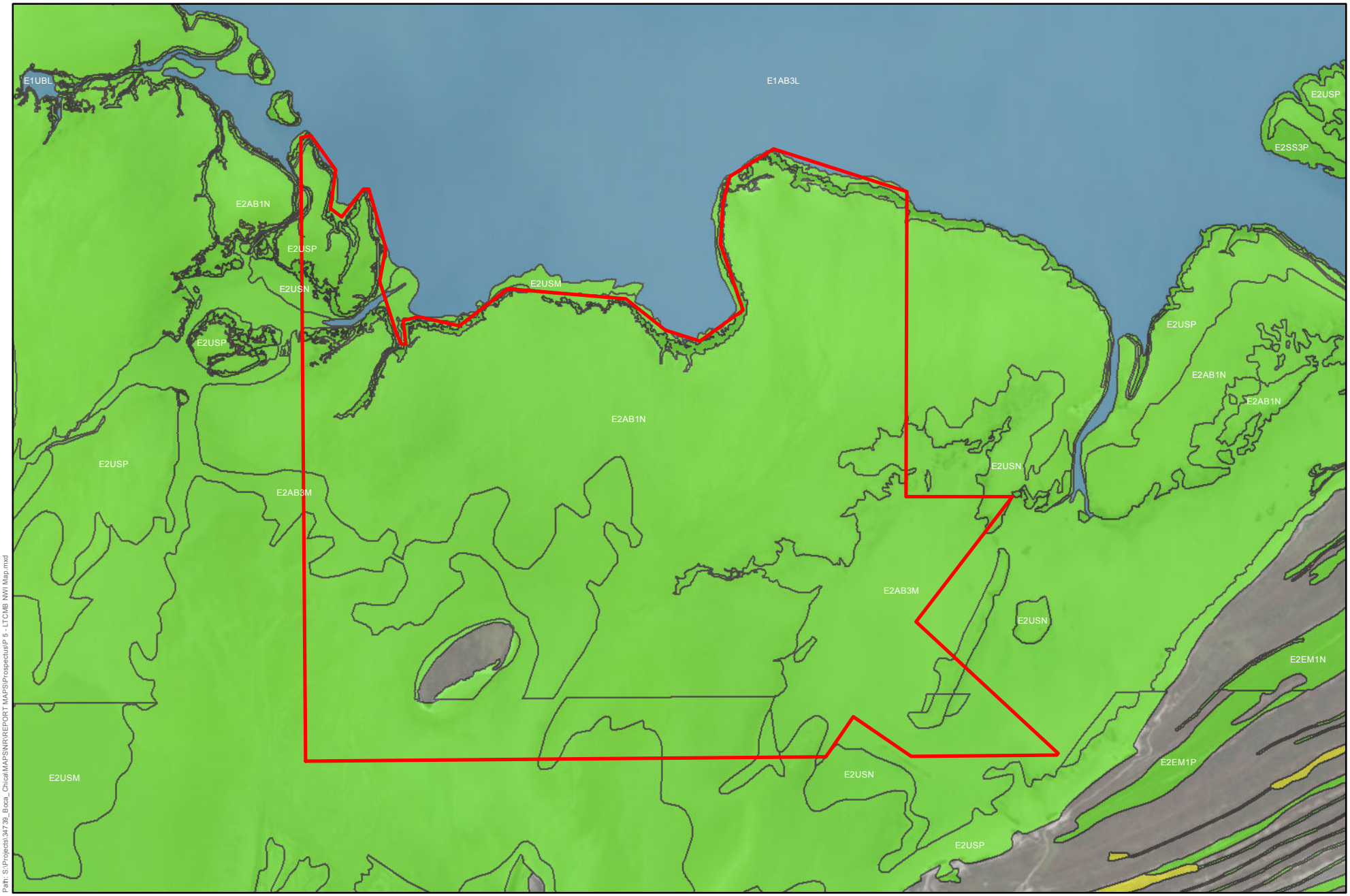
Point Isabel clay loam is a part of a Point Isabel series of deep, well-drained, calcareous soils composing clayey dunes along the lower part of the Gulf Coast. The surfaces of the dunes are convex and the permeability of the clay loam is slow and runoff is rapid. The Point Isabel clay loams occur at elevations ranging from 5 to 30 feet above mean high tide and reach thicknesses of 65 inches. Erosion due to wind and rain is very high (Soil Conservation Service 1977).

Numerous variables determine the species of vegetation that can thrive within a restored coastal habitat, most importantly, hydrology, salinity, and soil type. Point Isabel clay loam as a medium for growing saline-tolerant wetland herbaceous vegetation and shrubs for use as saline wetland wildlife habitat. In this case, Barrada clay, which makes up 96.82% of the LTCMB site, is an excellent soil for the establishment and maintenance of saline-tolerate herbaceous and wetland plant habitat. The Point Isabel clay loam also found on-site is not as suitable for growing emergent halophytic wetland vegetation, as it is likely to be insufficiently saline to support such species.

Typical plants found within the mudflats and loma habitat are sea ox-eye (*Borrichia frutescens*), saltwort (*Batis maritima*) and glasswort (*Salicornia* sp.) on the vegetated portions of the flats, and gulf cordgrass (*Spartina spartinae*), Berlandier's fiddlewood (*Citharexylum berlandieri*), Texas ebony (*Pithecellobium ebano*) and yucca (*Yucca treculeana*) on the higher lomas. Existing rooted vegetation on the site is sparse, with a band of black mangroves (*Avicennia germinans*) bordering the northern portion of the LTCMB site. Loma Plata also has vegetation present, predominantly scrub-shrub with a subclass of broad-leaved evergreen. Figure 5 shows the types of wetland systems that are included in the National Wetland Inventory (NWI) for the LTCMB site, based on the hierarchal classification of wetland systems (e.g., estuarine), subsystems (e.g., intertidal), classes (e.g., aquatic bed) and subclasses (e.g., rooted vascular) (U.S. Fish and Wildlife Service [USFWS] 2013). The NWI indicates that there are four classes of deepwater and habitat classifications with seven subclasses of vegetation within the site boundaries (see Figure 5); however, land survey efforts conducted by the Sponsor have determined that there is not any deepwater habitat present on the LTCMB site (Appendix C).

5.2.4 Piping Plover Critical Habitat

On July 10, 2001, the USFWS published their final determination designating critical habitat for the wintering population of the piping plover. The entire study site has been designated critical habitat for the wintering population of the piping plover; however, it is noted that this species primarily lives on sandy beaches and lakeshores, neither of which are present on the LTCMB site. Therefore, it is the intent of the Sponsor to conduct surveys for wintering piping plover between February 15 and April 15, 2018. The surveys will determine if piping plovers are wintering at the site, and will assist the Sponsor in making an informed decision as to enhancement/restoration activities that would protect and not adversely affect this species. Establishing hydrologic flow and emergent vegetation on portions of the LTCMB may encourage increased use by the piping plover and other migratory species for foraging in particular. The Sponsor currently is not proposing the wholesale conversion of mudflat habitat to tidal marsh or emergent wetlands. Rather, we are in the conceptual phase of the mitigation approach/design, and are fully aware of, and progressing in a manner that considers, habitat criteria and requirements for wintering piping plover with the intention that no negative impacts result to the piping plover as a result of the establishment of the LTCMB.



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LOWER TEXAS COASTAL MITIGATION BANK

NATIONAL WETLAND INVENTORY MAP
CAMERON COUNTY, TEXAS

FIGURE 5

Project Area

NWI

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland

Background:	ESRI Aerial Imagery
Scale:	1:18,000
Created By:	JS
Approved By:	KC
SWCA Project No.:	34739
Date Produced:	November 17, 2017

NAD 1983 StatePlane Texas South FIPS 4205 Feet

0 750 1,500 Feet

0 150 300 450 Meters

The Sponsor is aware that any development of a mitigation bank at the study site will require input from the USFWS regarding piping plover, which will likely require consultation between the USACE and USFWS.

As the LTCMB site has been subject to ecological changes due to construction of the BSC and the Port of Brownsville, and may experience inundation due to rising sea levels, it is unlikely that this site will be suitable for wintering habitat for the piping plover over the long term. Piping plover-preferred wintering habitat consists primarily of intertidal beaches with sand and/or mud flats with no or very sparse vegetation. With periodic and increased inundation by wind-driven tides at the LTCMB site, habitat capacity on the site is becoming more and more limited. Preferred wintering habitat for piping plover, as it is described above, is also ideal for migratory birds to rest and replenish during their long journeys. The longer the site is inundated, especially during the winter months, the less piping plover and other migrating birds will be able to utilize the site due to an increase in temporary open water habitat resulting from the current inability of the LTCMB site to naturally drain after storm surges and wind-driven tide events. It is SWCA's opinion that reestablishing hydrologic flow and increasing emergent vegetation in some areas, while preserving/enhancing mudflats and limiting public access at the LTCMB site, will likely encourage continued use by the piping plover and other migratory bird species.

5.3 Existing Relevant Conservation and Natural Resource Management Programs

Various public parcels surround the LTCMB site (see Figure 2). The parcel abutting the western side of the LTCMB site is part of the Lower Rio Grande Valley National Wildlife Refuge (LRGV NWR). Currently, this property is leased from the Port of Brownsville, and the lease expires in 2023. The Boca Chica State Park (State Park) lies just southeast of the LTCMB site, with a small section of common property lines along the southeast corner. Narrow bands of privately held lands lie between the LTCMB site and the State Park in other locations. South Bay lies along the northern boundary of the LTCMB site.

As the LTCMB site is located amongst the State Park, LRGV NWR, and provides important ecological value as a hypersaline lagoon system, numerous management plans exist for the region. Two important and relevant management plans are discussed below, as well as a discussion about the Texas General Land Office's (TGLO's) submerged lands.

Upon completion of LTCMB and the full funding of the permanent maintenance fund, the Sponsor's intent is to donate the conservation site to a state agency, along with the permanent maintenance fund for the site. Preference would be given to the TGLO or the Texas Parks and Wildlife Department (TPWD) so the LTCMB can be fully integrated with the other managed sites surrounding South Bay.

5.3.1 Lower Rio Grande National Wildlife Refuge Comprehensive Conservation Plan

Bordering the LTCMB site is the LRGV NWR, established and managed by the USFWS. The LRGV NWR is considered a unique ecosystem found nowhere else in the United States (USFWS and USDOI 1997). The combination of climate, geology, vegetation, and wildlife creates tremendous biological diversity. Many organisms found in the LRGV NWR occur nowhere else in Texas or the United States. Two major flyways, the Mississippi and the Central, come together north of the LRGV NWR funneling millions of birds each spring and autumn to this stopover pinched between the Gulf Coast and the desert to the west. This area supports an abundance of Neotropical migratory songbirds, mammals, snakes, lizards and salamanders and contains many rare and unique plant and animal species, many of which reach the northernmost limits of their distribution in the LRGV NWR.

The LRGV NWR and the proposed LTCMB are located within a larger defined area following the Rio Grande from El Paso to the Gulf of Mexico. It is one of 52 ecosystems within the United States designated by the USFWS based primarily upon watershed designations. Based upon a broad set of issues present throughout the entire defined ecosystem, the USFWS has developed some broad goals. These ecosystem goals include:

1. stewardship to protect and enhance biological diversity and the environment by developing and implementing a Lower Rio Grande Ecosystem Plan;
2. improve and protect air quality and the quantity and quality of water in the Lower Rio Grande Ecosystem;
3. conserve bay and estuarine habitat within the Lower Rio Grande Ecosystem; and
4. promote public outreach and information dissemination.

The USFWS has adopted a biotic community approach to land acquisition within the LRGV NWR area of ecological concern. This community-based acquisition plan establishes goals only for the LRGV NWR complex. However, it is also intended to help coordinate land protection and management efforts between the USFWS and the other federal, state, Mexican, and private partners in the Wildlife Corridor project. It is emphasized that ecological communities are not themselves discreet entities, but concepts defined by biologists to describe natural associations of organisms within their physical environment. One of these communities identified in the plan is the Clay Loma and Wind Tidal Flats.

The LTCMB can help contribute to the goals of the LRGV NWR by restoring hydrologic connectivity and reestablishing emergent vegetation communities that existed historically at the site, as discussed in Section 5.1. Placing the LTCMB under a conservation easement will also allow the onsite loma and mudflats to continue to be preserved, protected from public trespass and damages, and possibly enhanced.

5.3.2 Texas Coastal and Estuarine Land Conservation Program

The United States Congress, through the adoption of the Appropriations Act of 2002 (Public Law 107-77), directed the Secretary of Commerce to establish a Coastal and Estuarine Land Conservation Program (CELCP), "for the purpose of protecting important coastal and estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values, or that are threatened by conversion from their natural or recreational state to other uses," giving priority to lands that can be effectively managed and protected, and that have significant ecological value. In 2003, the Office of Ocean and Coastal Resource Management, part of NOAA, issued guidelines for states to follow in developing state CELCP plans. Basically, the guidelines require the states to submit a state CELCP plan that discusses conservation priorities and project areas, and establishes a process for identifying and ranking qualified projects within the state for nomination to the annual national competition.

In Texas, during development of the State Plan, a steering committee was formed that was composed of representatives from the TGLO, the TPWD, and the Mission-Aransas National Estuarine Research Reserve (MA-NERR). An advisory committee composed of representatives from state and federal environmental agencies, state estuary programs, land trusts, river authorities, and non-profits was also formed. In concert with the steering committee, conservation priorities were determined for the CELCP and includes Coastal Natural Resource Areas (CNRAs; i.e., coastal wetlands, coastal shore areas, critical dune areas, coastal barriers, tidal sand and mud flats, special hazard areas, and coastal historic areas).

Lands and values to be protected include CNRAs requiring special management of lands important for their conservation, ecological, recreational, historical, or aesthetic values. The lands and values discussed

below include all the conservation priorities of the CELCP. Some of the lands and values to be protected, such as seagrasses, already exist on the LTCMB's site. Examples of these lands include:

- **Wetlands (swamps/bottomland hardwoods, mangroves and other scrub shrubs, and salt, fresh, intermediate, and brackish marshes):** Areas having a predominance of hydric soils that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, the growth and regeneration of hydrophytic vegetation.
- **Tidal sand and mud flats:** Silt, clay, or sand substrates, unvegetated or vegetated by algal mats, that occur in intertidal areas and that are regularly or intermittently exposed and flooded by wind-driven waters from South Bay.

5.3.3 Texas General Land Office, Submerged Lands

Projects located within the Texas Coastal Management Area are required to consult with the TGLO, which has regulatory authority in Texas over submerged lands. The Republic of Texas Congress established the TGLO in 1836 shortly after Texas won its independence from Mexico. The TGLO was originally responsible for managing the public domain by collecting and keeping records, providing maps and surveys and issuing land titles. Since then, the TGLO's duties have evolved, but its core mission is still the management of state lands and mineral rights on properties totaling 20.3 million acres. Included in that portfolio are the beaches, bays, estuaries and other "submerged" lands extending 10.3 miles into the Gulf of Mexico, institutional acreage, and grazing lands in West Texas.

According to the Natural Resources Code of Texas, the definition of submerged lands in Texas is any land extending from the boundary of the land of the state seaward to the low-water mark on any saltwater lake, bay, inlet, estuary, or inland water within the tidewater limits (State of Texas 1977). TGLO identifies approximately 32 acres of LTCMB site as submerged land (See Figure 2). Approximately 33 acres of the LTCMB site is within the San Martin Grant as shown in Appendix C.

The Sponsor has conducted extensive boundary and survey work at the LTCMB site over the past year. The Sponsor also obtained a legal opinion to verify that the northern boundary of the LTCMB site, as stated in the patent issued by the state and ratified by the TGLO, is the meandering shore of the Laguna Madre, which is the southern shoreline boundary of South Bay. The survey and boundary work performed by a Licensed State Land Surveyor (LSLS) on the LTCMB site located and identified this northern boundary on South Bay and the remaining boundaries of the site.

In a legal opinion dated September 29, 2017, and rendered by David E. Cowen. Esq. of the law firm McLeod, Alexander, Powel & Apffel, P.C. (MAPA). Mr. Cowen discusses his review of the history of that patent and numerous rulings and decisions made by both the TGLO and the Texas Attorney General's office that legally allowed for the conveyance of the entire Skelton Patent area, which includes the LTCMB site (Appendix F). Mr. Cowen's analysis determined that these TGLO and Texas Attorney General Opinions, and subsequent rulings by Courts of Texas and the Attorney General's Office demonstrate as a matter of law that the area is neither submerged land, nor land on the Gulf of Mexico, nor on an arm of the Gulf of Mexico, subject to astronomical tides.

Mr. Cowen's opinion noted that the Texas Attorney General had to decide in the 1930s if the area within the proposed patent was not submerged, and thus Public School Land, which would not have required the legislature to approve the conveyance. Mr. Cowen's opinion explains that the Texas Attorney General found that the land was in fact Public School Land and could be conveyed by patent.

The LTCMB site is located within the boundary of the Skelton Patent, except for approximately 33 acres located on the southeast boundary which is within the adjoining San Martin Grant. As such, legal grounds for TGLO to claim historical or current ownership of any portion of the LTCMB site within the Skelton Patent do not exist. Mr. Cowen's legal analysis and opinion conclude that if a claim by the TGLO of ownership of any portion of the LTCMB site within the Skelton Patent were litigated in a court of law, it is more likely than not a court would reject any such claim of ownership by the State of Texas. As a result of prior rulings and actions by the state officials and the courts of Texas and Mr. Cowen's legal opinion, the Sponsor does not believe that the TGLO has any claim on any portion of the surface of the LTCMB's site within the Skelton Patent.

Mr. Cowen also reviewed numerous court rulings and Attorney General rulings regarding the status of the Laguna Madre and South Bay as they relate to the issue of so-called tidal boundary rules applicable to property on the Gulf of Mexico or which are on an "arm" of the Gulf of Mexico. Since the 1940s, Mr. Cowen notes, Texas courts have recognized that the Laguna Madre and South Bay are not an "arm of the Gulf of Mexico" and that so-called tides in that area are meteorological occurrences and not astronomical. The Skelton Patent clearly defined the "meanders of the Laguna Madre" as the northern border of the Patent clearly delineating property landward of South Bay. The survey work of the Sponsor also confirms the northern boundary along this line of "meander" in South Bay. Mr. Cowen opines that these legal opinions, confirmed by the survey work, make inapplicable any attempt to apply the rules of "high tide" or "mean high tide" to the LTCMB site.

The Skelton Vacancy surveys approved by the State of Texas depict the boundaries of the LTCMB site to be the meandering shores of the Laguna Madre. Thus, based on Mr. Cowen's legal opinion and the rulings by the courts of Texas and the Texas Attorney General, the Sponsor would more likely than not, prevail in legal dispute over this issue.

It should also be noted that the SpaceX PRM sites, as shown on Figure 2 above, were not required to identify submerged lands on their site. The TGLO was a participant in the IRT review and did not object. Since the SpaceX site is also located within the Skelton Patent and would be subject to the same legal considerations as outlined in David Cowen's legal opinion, it appears that the TGLO reached the same legal conclusions as outlined in the above narrative as it relates to the SpaceX tracts.

5.4 Proposed Restoration and Technical Feasibility

A combination of preservation, enhancement, and restoration of different habitat types, along with the reestablishment of an existing, but nonfunctional open water channel for hydrologic flow, will create the most cost-effective and successful mitigation bank. At this time, it is the objective of the proposed LTCMB to enhance, restore, and/or preserve mudflats and mangroves, as well as reestablish emergent vegetation on-site in areas where technically feasible, most likely along fringe areas and in close proximity to the reestablished open water channel. The exact restoration plan has not been established at this time. However, engineering specifications for creating an open water channel to increase hydrology within the site, as well as a planting plan, will be established during the MBI phase of the proposed project. For this prospectus, the following restoration considerations by habitat type have been considered, but no formal engineering designs have been developed at this time. The Sponsor will provide a restoration plan that addresses proposed preservation, enhancement, and restoration actions within the MBI.

5.4.1 Emergent Vegetation & Mudflat Restoration

Emergent wetlands in coastal Texas have tremendous ecological and economic values, including armoring to prevent or reduce erosion, filtering pollutants, enhancing water quality and promoting

primary production. However, emergent wetlands in Texas have been lost due to filling, draining, dredging and dredge disposal, and bulkheading. As land subsides, wetland vegetation is inundated by deeper water and replaced by less-productive open water habitat.

Currently, the hydrology of the proposed LTCMB is not conducive to emergent vegetation due to extreme sedimentation occurring in South Bay. Therefore, an engineering design, such as creating an open water channel, would be needed to successfully establish emergent vegetation and to protect existing mudflat habitat from regular inundation due to wind-driven tides and storm surges that cannot exit the site except through evaporation. Restoration ecologists have developed two readily used marsh restoration techniques. Each technique requires modifying the elevation of the soils to produce adequate hydrology for the establishment and survival of hydric plants. Neither of the methodologies discussed below are proposed for any type of wholesale conversion of the LTCMB site; however, in creating the engineering design to reestablish the hydrologic connection and creating an open water channel on the site, these design construction methodologies, or modified versions thereof, may be reasonable to consider for the LTCMB engineering design.

- **Scrape down technique:** The "scrape-down" technique is used to remove excess dredge material from areas that were once emergent marshes or mudflats. By removing dredge material to the elevation of adjacent salt marsh, and then planting the area with hydric plant species, emergent marshes can be established or reestablished. Typically, channels are excavated to allow nutrient flow into the upper reaches of the restoration site. This method has been successfully employed to restore coastal wetlands along the Gulf of Mexico. Although there are no known dredge material disposal sites on this tract, this general technique may prove useful should it provide increased ecological function by converting degraded upland areas to lower more suitable areas for emergent wetland habitat.
- **Beneficial uses technique:** The "beneficial uses" technique can be employed when dredge material is available from nearby construction or maintenance projects. Until recently, dredge material has typically been transported to upland disposal sites. However, regulatory agencies, such as the USACE, appreciate that dredge material can be deposited in coastal areas where fill is needed to counteract the effects of subsidence. This methodology would only be proposed to be used at the LTCMB site for areas where it can be demonstrated that subsidence is the cause for a decrease in elevation. The sponsor is not proposing to convert mudflats to higher elevation habitats. Regular dredging activities in the area (for instance the BSC) may be a source of dredged materials. A sampling effort would be needed to ensure the dredged sediments are not contaminated and would be suitable for establishment and sustainability of appropriate vegetation. Dredge material is usually broadcast as a wet slurry across a subsided area until the elevation is appropriate for establishing emergent marsh vegetation. Once the dredge material settles, hydric vegetation is planted to encourage establishment of native plants. Dredge material can also be used to create and maintain islands that provide predator-free nesting for colonial water birds. The beneficial uses technique can provide substantial environmental benefits, and may also reduce costs for industrial dredgers by reducing upland disposal fees. This method has been employed throughout the Gulf of Mexico coastal region. Although creation of islands to support bird roosting and nesting habitat would not likely result in generation of wetland credits, it could increase overall ecological productivity of areas within the LTCMB site, thereby contributing to an increase in ecological functions of adjacent wetland habitats.

The reestablishment of mudflats may be as simple as creating an open water channel to help drain ponded water and create a better hydrologic flow at the LTCMB site. The Sponsor will work with the IRT on using the most innovate and appropriate techniques to restore this type of habitat.

5.4.2 Mangrove Enhancement

Ecologically, mangroves are defined as an assemblage of tropical and semi-tropical trees and shrubs that inhabit the coastal intertidal zone. A mangrove community is typically composed of plant species whose special adaptations allow them to survive the variable flooding and salinity stress conditions imposed by the coastal environment. In the continental United States, mangroves were historically distributed as distinct forests along the Atlantic and Gulf coasts of Florida. However, their range has since expanded, with black mangrove forests now present in large numbers in southern Texas and Louisiana. This increase in range for mangroves is primarily due to the decrease in the frequency and severity of hard winter freezes along the coast (Osland et al. 2013).

Mangroves can establish and grow under a relatively wide range of flooding and salinity conditions; however, they are generally restricted to the intertidal zone where there is less competition with freshwater plants. Mangroves have developed a series of physiological and morphological adaptations that have allowed them to successfully colonize these environments. Mangroves provide both habitat and a source of food for a diverse animal community that inhabits both the forest interior and the adjacent coastal waters. Some animals depend on the mangrove environment during their entire lives, whereas others utilize mangroves only during specific life stages, usually reproductive and juvenile stages. In addition, mangrove habitats contribute to maintaining water quality. By trapping sediments in the mangrove root system, these and other solids are kept from offshore waters, thereby protecting other coastal ecosystems such as oyster beds, seagrasses, and coral reefs from excessive sedimentation. This process can also remove agrochemical and heavy-metal pollutants from the water, since these contaminants often adhere to sediment particles.

Mangrove ecosystems around the world suffer degradation from logging, coastal development, spraying of herbicides, conversion to fish ponds, and from oil spills and other pollutants. The continued loss of mangrove forests worldwide underscores the importance of projects focusing on restoration of forest structure and functions. Adequate tidal exchange is most critical to restoration success. Mangrove restoration projects in Florida often involve reestablishing natural hydrologic and tidal regimes, planting mangrove propagules, and/or planting marsh plants to provide a habitat that can be colonized more easily by mangrove trees. There is an extensive body of technical information on replanting mangroves. Specific details on elevation, use of fertilizer, planting density, species selection, etc. can be found in Snedaker et al. (1997) and Field (1996, 1998). Today, restoration projects have moved away from broad use of planting except in those cases where natural processes are inadequate to naturally repopulate the area with recruits from surviving trees or more distant sources. Examples include mangrove forests where hydrology has been substantially altered, or where physical barriers such as dead trees, debris, or berms restrict circulation such that propagules have no access to denuded areas.

Planting is still used to establish new mangrove forests in areas where they have not previously existed (such as in newly accreted shorelines or along human-built structures), or to replant in forests that have been logged. Survival of planted mangroves ranges from 0% to as high as 80% after one year (Rothenberger 1999). Lowest rates are often in areas with high wave energy where propagules are simply washed away. A planting technique that successfully increases survival rates of planted mangroves in exposed areas is called the Riley encasement method. Seedlings are planted inside PVC tubes (bamboo can also be used) to anchor and protect the seedlings until they become established (Rothenberger 1999).

Adequate hydrology has been identified as the most important parameter for mangrove recruitment. When tidal connections have been cut off or altered, as is common along developed coasts, reestablishing these connections can promote natural recruitment and improve the overall health and functioning of the mangrove ecosystem. Facilitating or increasing tidal exchange to these impounded mangrove forests could be a promising restoration activity.

5.4.2.1 OPEN WATER AND HYDROLOGIC FLOW RESTORATION

As shown in the restoration options above, vegetation establishment is often dependent on hydrologic flows. Currently, the LTCMB site does not appear to have any freshwater influence, nor much saltwater movement. Most hydrologic movement in the area is from wind-driven tidal action and barometric changes. In order to support various habitats, changes in the hydrology need to be implemented. Establishment of an open water channel running through the LTCMB site, connecting it to South Bay will ensure that water reaches the restored habitats, while also keeping the inundated site drier. This open water channel could provide additional habitat value, and therefore mitigation credits, if seagrass is also established.

6 BANK ESTABLISHMENT AND OPERATION

The Sponsor will procure the financial resources, planning, and scientific professional services required to successfully restore, enhance, establish, and/or preserve the land proposed for inclusion in the LTCMB. The Sponsor will perform all restoration, enhancement, and establishment activities, provide for financial assurances (per 33 CFR 332.3[n]) and long-term protection mechanisms (per 33 CFR 332.7[a]), administer the sale and accounting of credits, and complete all record-keeping and reporting requirements for the LTCMB.

As part of the review process, the Sponsor will draft an MBI for review and approval by the USACE and the IRT in accordance with 33 CFR 332.8(d)(6-8). The MBI shall establish the LTCMB and outline the operating agreement for the bank. The MBI will detail LTCMB's service area, accounting procedures, provisions stating the Sponsor's legal responsibility for providing mitigation with secured credits, default and closure provisions, reporting protocols, mitigation plans, credit release schedules, and other information required for inclusion by the USACE.

7 CREDIT DETERMINATION

In response to the 2008 Rule and the requirements of the CWA, the USACE Galveston District developed a suite of tools to assess the functional condition of wetlands and streams. These are intended to be used to determine impacts to WOTUS associated with a planned project, and to quantify the mitigation requirements associated with those anticipated impacts. Aquatic functions are determined using functional assessment tools developed by the Galveston District. Wetlands are assessed using the interim hydrogeomorphic (iHGM) approach, which includes tools for various wetland types within the Galveston District (e.g., tidal fringe, riverine forested, riverine herbaceous/shrub, lacustrine; USACE 2008). The iHGM approach is a collection of concepts and methods for developing functional indices, and subsequently using them to assess the capacity of a wetland to perform functions relative to similar wetlands in a region.

The iHGM approach for tidal fringe wetlands was developed by the USACE Galveston District as the preferred method to quantify wetland functions along the coasts and estuaries within the district. However, the guidance manual that outlines this preferred methodology, the "Regional Guidebook for Applying the Hydrogeomorphic Approach to Assessing Wetland Functions of Northwest Gulf of Mexico Tidal Fringe Wetlands," does not provide any reference wetland systems to the south of Rockport, Texas. Since the Laguna Madre estuary system is so unique, and no comparable reference sites are located outside of the Laguna Madre area, the tidal fringe wetland interim iHGM approach cannot be directly used to evaluate the ecological functions of the proposed LTCMB. Through conversations with representatives from the USACE, SWCA has developed and proposes the following solutions in order to conduct an HGM assessment of the proposed LTCMB site.

7.1 Original Tidal Fringe iHGM

Component 1: Biota

$$Biota = \frac{\left(\frac{V_{edge} + \left(2 \times V_{hydro}\right) + (0.5 \times V_{nhc})}{3.5} + V_{typical}\right)}{2}$$

Component 2: Botanical

$$Botanical = V_{typical}$$

Component 3: Physical

$$Physical = \frac{\left(V_{slope} + V_{width} + V_{rough} + V_{soil} + V_{hydro}\right)}{5}$$

Component 4: Chemical

$$Chemical = \sqrt{V_{typical} \times V_{hydro}}$$

In the original formulation (above), a silty-clay mud flat free of gravel or shell cover and with sparse vegetation (<10% cover) would score as follows, assuming all other variables are maximized:

- Biota: 0.55
- Botanical: 0.1
- Physical: 1
- Chemical: 0.31

These scores are driven primarily by the disproportionate effect of $V_{typical}$ on these equations, particularly for the botanical component, which is composed of only this variable. Based on this calculation, mud flats that are identified as important resources for such species as piping plover, red knots (*Calidris canutus rufa*), and other shorebirds could be readily mitigated with substantially smaller acreages of vegetated tidal fringe areas. To prevent this, an alternate calculation is recommended for mud flat habitats.

7.1.1 Solution 1

Because mud flats are valued by shorebirds for their lack of vegetation, the $V_{typical}$ variable should be removed to ensure that these resources are appropriately valued. This can be addressed relatively simply by removing the variable from the calculation. This eliminates the "Botanical" component from the model, as would be expected for mud flats. After correcting the effects of the removing $V_{typical}$, the following expressions are created:

Component 1: Biota

$$Biota = \frac{V_{edge} + \left(2 \times V_{hydro}\right) + (0.5 \times V_{nhc})}{3.5}$$

Component 2: Physical

$$Physical = \frac{\left(V_{slope} + V_{width} + V_{rough} + V_{soil} + V_{hydro}\right)}{5}$$

Component 3: Chemical

$$Chemical = V_{hydro}$$

7.1.2 Solution 2

An alternative approach to this would be to substitute a variable for $V_{typical}$ that emphasizes the function of microbes in these mud flats. In mud flats, algae, bacteria, and other microbiota perform many of the essential functions of providing resources for macroscopic organisms. As such, it may be reasonable to substitute V_{micro} for $V_{typical}$ to capture this value. This formulation of the model would provide for the comparison of mud flats and algal flats in a single model. All other functions would remain unchanged and would read as follows:

Component 1: Biota

$$Biota = \frac{\left(\frac{V_{edge} + \left(2 \times V_{hydro}\right) + (0.5 \times V_{nhc})}{3.5} + V_{micro}\right)}{2}$$

Component 2: Microbes

$$Botanical = V_{micro}$$

Component 3: Physical

$$Physical = \frac{\left(V_{slope} + V_{width} + V_{rough} + V_{soil} + V_{hydro}\right)}{5}$$

Component 4: Chemical

$$Chemical = \sqrt{V_{micro} \times V_{hydro}}$$

7.2 Variables for HGM (Interim) Tidal Fringe – Mud Flat

Table 3. V_{edge}: Amount of shoreline in meters per hectare (m/ha)

Site Description	Qualitative	Quantitative	Subindex
Marsh shows deterioration due to subsidence, large amounts of open water.	Very High	> 800 m/ha	0.8
Well-developed tidal drainage network present. OR Simple tidal network with isolated ponds & depressions in the marsh interior. OR Large amount of shallow shoreline in relations to the entire area.	High	350—800 m/ha	1.0
Simple tidal drainage network; isolated ponds and depressions are few and lacking.	Moderate	200-350 m/ha	0.7
Marsh lack both tidal creeks and isolated ponds/ depressions; shoreline is linear or smooth. Marsh area is large relative to shoreline length. OR The wetland assessment area is a depression that is not affected by the daily tide (i.e., high marsh).	Low	< 200 m/ha	0.4

Table 4. V_{hydro}: Site hydroperiod or degree of hydrological modifications

Site Description	Subindex
Site is open, no hydrologic restrictions	1.0
Moderate hydrologic restriction (i.e., low berms that overtop frequently by waves or has multiple breeches or large numerous culverts).	0.6
Severe hydrologic restriction (i.e., high elevation berm that overtop infrequently, small culverts, single opening or breech).	0.3
Site receives water only during extreme storm events.	0.1
Site is cut off from tidal exchange.	0.0

Table 5. V_{nhc}: Number of nekton habitat types as defined by habitat types within 150 feet of wetland assessment area edge

Number of Habitat Types*	Variable Subindex
1	0.2
2	0.3
3	0.5
4	0.7
5	0.8
6	1.0

***Habitat types include:** low marsh, high marsh, subtidal creeks, intertidal creeks, ponds or depressions, SAVs, oyster reef, unvegetative flats, algal flats, mangroves, and coarse woody debris

$V_{typical}$: Proportion of the site that is covered by vegetation typical of the regional subclass

As written:

Invasive species: tallow, alligator weeds, spiny aster, common reed, rattlebox, cattail, flat sedge (*Sapium sabiferum*, *Alternathera philoxeroides*, *Aster spinosus*, *Phragmites drummondii*, *Sesbania drumondii*, *Typha* sp., *Cyperus entranianus*)

Table 6. $V_{typical}$ as written in standard iHGM for tidal fringe wetlands

Total % Cover by Typical Species	Variable Subindex
10%	0.1
20%	0.1
30%	0.2
40%	0.4
50%	0.5
60%	0.6
70%	0.7
80%	0.9
90%	1.0
100%	1.0

SWCA Revisions:

Invasive species (e.g., tallow [*Triadica sebifera*], alligator weeds [*Alternathera philoxeroides*], spiny aster [*Aster spinosus*], common reed [*Phragmites drummondii*], rattlebox [*Sesbania drumondii*], cattail [*Typha* sp.], flat sedge [*Cyperus entranianus*]) do not count toward cover.

Table 7. $V_{typical}$ as revised in SWCA modified iHGM for tidal fringe wetlands

Total % Cover by typical species	Variable Subindex
0%	0
1-29%	0.1
30-39%	0.2
40-49%	0.4
50-59%	0.5
60-69%	0.6
70-79%	0.7
80-89%	0.9
90-100%	1.0

Table 8. V_{slope}: Distance to water greater than or equal to 6 feet deep

Distance to Navigation Channel or water greater than or equal to 6 feet deep	Variable Subindex
<150 feet	0.1
151-450 feet	0.5
>451 feet	1.0

Table 9. V_{width}: Average marsh width

Mean Width Wetland Assessment Area Distance (feet)	Variable Subindex
0-30 feet	0.1
31-75 feet	0.25
76-150 feet	0.5
151-225 feet	0.6
226-300 feet	0.8
301-375 feet	0.85
376-450 feet	0.9
451-525 feet	0.95
526-600 feet	1.0
Greater than 600 feet	1.0

V_{rough}: Manning's roughness coefficient (n)

$n_{base} + n_{topo} + n_{veg}$ = Manning's n

Table 10. n_{base}: Substrate roughness

0.025	≤25% of the sediment surface covered with gravel or broken shell
0.03	> 25% of the sediment surface covered with gravel or broken shell

Table 11. n_{topo}: Topographic roughness

0.001	Wetland assessment area (WAA) is flat with <5% topographic relief
0.005	WAA has 5-25% topographic relief
0.010	WAA has 26-50% topographic relief
0.20	WAA has > 50% topographic relief

Table 12. n_{veg}: vegetative roughness

< 50% cover	50-75% cover	>76% cover	Description of Conditions
0.025	0.030	0.035	Predominantly short, flexible stem grass (i.e., *Spartina alterniflora*, *S. patens*, *Distichlis spicata*)
0.035	0.040	0.050	Predominantly short stiff trailing stems (i.e., *Batis* sp. & *Salicornia* sp.)
0.050	0.060	0.070	Predominantly tall flexible grass (i.e., tall *Spartina alterniflora*, *S. cynosuroides*, *Scirpus* sp.).
0.070	0.100	0.160	Predominantly tall with stiff leaves or mixed with woody shrubs (i.e., *Juncus roemerianus*, mangroves)

Table 13. FCI variable sub index (rounded appropriately)

Roughness	Variable Subindex
<0.045	0.1
0.045-0.054	0.2
0.055-0.064	0.4
0.065-0.074	0.6
0.075-0.089	0.8
≥0.09	1.0
0.10	1.0

Table 14. V_{soil}: predominant soil texture

Soil Texture	Variable Subindex
Sandy	0.2
Sandy loam	0.4
Loam	0.6
Clay loam	0.8
Clay	1.0

Alternate subindex scores:

Table 15. V_{micro}: percentage of wetland assessment area covered by persistent algal mats

Total % Cover by Typical Species	Variable Subindex
0%	0.4
1-20%	0.5

Total % Cover by Typical Species	Variable Subindex
21-40%	0.6
41-60%	0.7
61-80%	0.85
>80%	1

8 FINANCIAL ASSURANCES AND LONG-TERM MANAGEMENT

8.1 Financial Assurances

The Sponsor will provide financial assurances acceptable to the USACE Galveston District and the IRT to ensure the completion of all proposed mitigation efforts. The specific means of financial assurance for the construction and monitoring phases of the project will be provided in the Draft and Final MBI for the LTCMB. The conservation easement holder and the Sponsor will be responsible for the long-term management and maintenance of the project after the construction and monitoring phases have been completed. The conservation easement holder will receive an endowment from the Sponsor to provide for costs associated with these responsibilities in perpetuity. The amount of these endowments will be determined by first identifying the labor, equipment, materials, and management costs associated with addressing the issues involved and the expected recurrence interval for each (e.g., fence establishment and maintenance if fencing is deemed appropriate to limit public trespass). From these cumulative costs, an average annual expenditure amount will be calculated. The endowment amounts will then be calculated by determining what amount, with an acceptable average annual rate of return, would yield this average annual expenditure in perpetuity, with adjustments for expected inflation. Detailed information on financial assurances will be discussed in the MBI.

8.2 Perpetual Protection

A perpetual conservation easement will be executed following the completion of mitigation activities in accordance with Texas Law, Natural Resources Code, Title 8, Chapter 183, Subchapter A. The purpose of such an easement will be to define prohibited activities that are incompatible with the objectives of the mitigation bank while recognizing allowable and compatible uses. The preservation mechanism will contain provisions to allow the restoration of the property to proceed but will protect conservation values of the restoration for perpetuity. The easement shall be executed and filed within the title records of Cameron County. In accordance with 33 CFR 332.7(a)(3), the easement shall contain a provision requiring 60-day advance notification to USACE Galveston District before action is taken to void or modify the easement including title transfer.

The proposed third party easement holder for the LTCMB is not known at this time. However, it will more than likely be a non-profit, tax-exempt organization focused on preserving the coastal environments of Texas, such as the Nature Conservancy, the Texas Land Conservancy, or other acceptable and accredited organization.

8.3 Long-Term Management

Upon closeout of the project (post-closeout, 7 years or until success is achieved), the role of long-term management typically becomes the responsibility of the conservation easement holder and the Sponsor. For the LTCMB, the Sponsor proposes that at the closeout of the project they would convey the bank's mitigation property to a State of Texas Agency, at no cost to the State. Because a non-wasting endowment would have been accumulated during the development and marketing stages of the mitigation bank to ensure that required perpetual monitoring and maintenance capital is available, the Sponsor also proposes to assign the endowment to the State. Furthermore, upon conveyance of the mitigation site to the State, the State would own both the surface and mineral estates and would receive 100% of future revenues from potential oil and gas production.

If the State is a willing recipient of the mitigation land, as well as the non-wasting endowment, it will be up to the USACE and the State to determine if a perpetual conservation easement is required to continue. If so, the conservation easement holder will be responsible for monitoring the integrity of the easement boundaries and to conduct annual site visits, and if needed direct the State to take the necessary steps required to remedy any issues that are discovered. Similarly, the conservation easement holder will alert the State of any easement boundary issues of which they become aware.

Should the State be unwilling to accept the mitigation land and non-wasting endowment for any reason, the Sponsor will retain the mitigation land and the associated 50% the minerals ownership, and will work with the conservation easement holder to ensure that long-term management requirements are met. Detailed information on third party easement holders will be discussed in the MBI.

8.4 Adaptive Management Plan

The USDOI, in their Technical Guide on the subject, defines adaptive management as, "a systematic approach for improving resource management by learning from management outcomes," (Williams et al 2009). The USDOI further defines adaptive management with regard to natural resources as:

> *a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a 'trial and error' process, but rather emphasizes learning while doing. Adaptive management does not represent an end in itself, but rather a means to more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social, and economic goals, increases scientific knowledge, and reduces tensions among stakeholders.*

The Sponsor will apply this definition of adaptive management in their management of the LTCMB site. The Sponsor will apply the adaptive management process throughout their entire involvement in the project. They and their Agent/Consultant, SWCA will stay up-to-date on the most recent and innovative restoration techniques by participating in pertinent workshops, conferences, and other professional society meetings regarding coastal restoration and management practices in the Gulf Coast.

9 SITE OWNERSHIP AND CONTROL

9.1 Site Ownership and Mitigation Bank Development Rights

The lands proposed for LTCMB are fully owned by LTCM, who is also the Sponsor. The Sponsor owns the development rights for a mitigation bank.

9.2 Existing Easements and Encumbrances

There are no mortgages or liens on the property. The property has no know utility easements. The landowner will provide a Certificate of Title and Liens for verification.

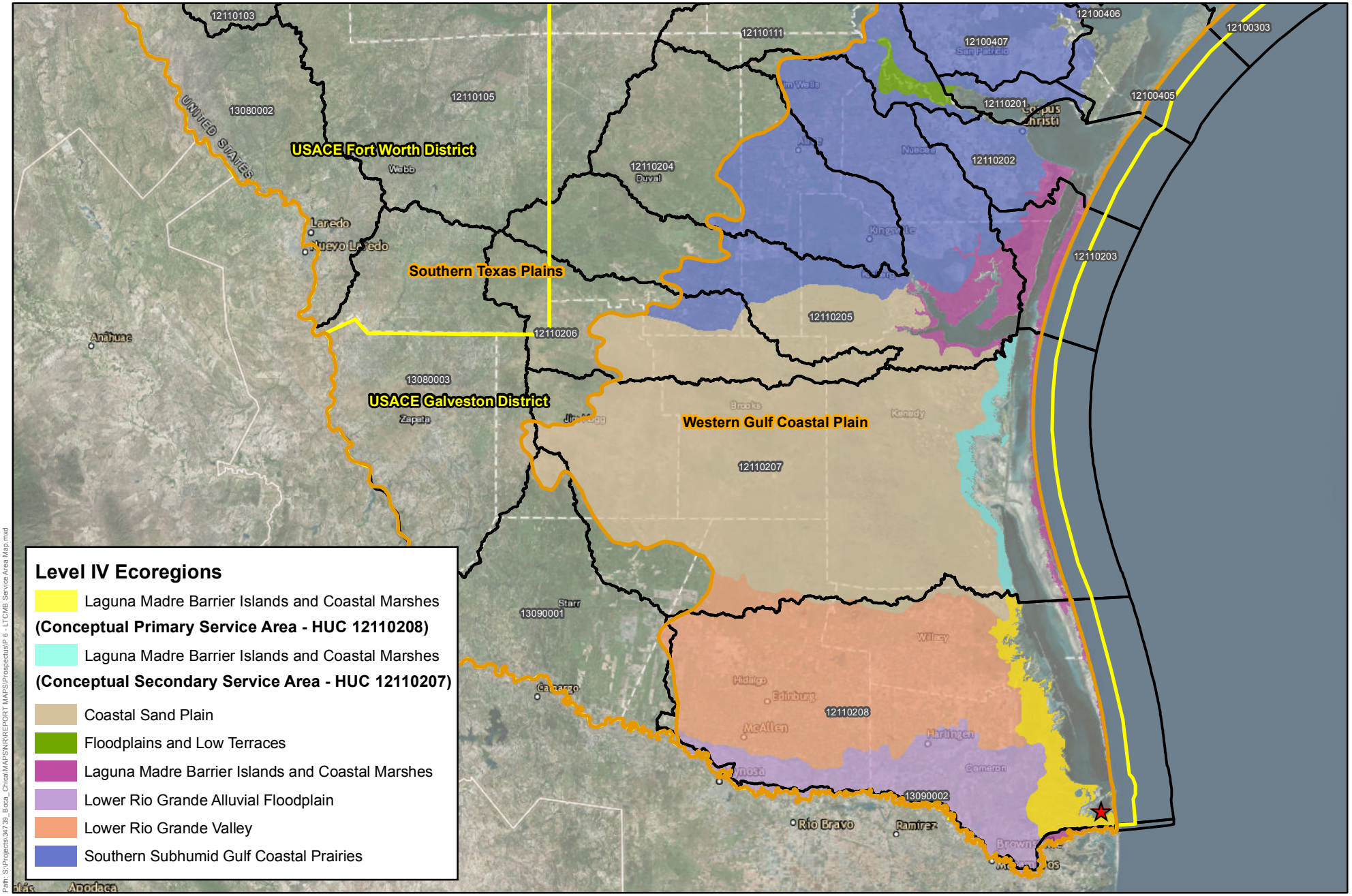
10 SERVICE AREA

The Sponsor proposes to use USGS 8-digit hydrologic cataloging units to establish primary and secondary service areas based on the mitigation site's location.

The watershed approach will be the tool used to identify and support the primary and secondary service areas for any mitigation bank developed at the LTCMB site. Fortunately, the LTCMB site is located within a single 8-digit hydrologic cataloging unit (South Laguna Madre; HUC 12110208). The portion of this watershed within the EPA's Level IV Laguna Madre Barrier Islands and Coastal Marshes ecoregion would be considered the primary service area. The secondary service area that would be considered for the LTCMB site is the area directly north, along the coast, of the LTCMB site. The portion of the Central Laguna Madre (HUC 12110207) within this same ecoregion is an acceptable secondary service area because:

- this 8-digit HUC lies completely within the USACE Galveston District; and
- this 8-digit HUC and the primary service area 8-digit HUC, constitute the entire Laguna Madre estuary, which supports important habitats for the region, including seagrass, shoal grass, and tidal flats. It also serves as an important habitat for migratory birds and a variety of recreationally and commercially important species.

It is arguable that the entire Level IV Laguna Madre Barrier Islands and Coastal Marshes ecoregion could be included in the secondary service area, extending all the way up to Corpus Christi. However, that would cross multiple 8-digit HUCs, which the IRT may not approve given their proclivity to stick to the watershed approach. Figure 6 outlines the conceptual service areas for the LTCMB, with the secondary service area extending up the coast to Corpus Christi. By comparison, GCPMB included three 8-digit HUCs, all draining into Galveston Bay. This approach will be discussed with the IRT and approved during MBI development.



Path: S:\Projects\34739_Boca_Chica\MAPS\NR\REPORT MAPS\Prospectus\P 6 - LTCMB Service Area Map.mxd

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LOWER TEXAS COASTAL MITIGATION BANK

CONCEPTUAL SERVICE AREAS MAP
CAMERON COUNTY, TEXAS

FIGURE 6

- Project Location
- Level III Ecoregions
- HUC 8 Boundary
- USACE Regulatory Boundary
- Conceptual Primary Service Area **(Laguna Madre Barrier Islands and Coastal Marshes)**
- Conceptual Secondary Service Area **(Laguna Madre Barrier Islands and Coastal Marshes)**

Background:	ESRI Aerial Imagery
Scale:	1:1,500,000
Created By:	JS
Approved By:	KC
SWCA Project No.:	34739
Date Produced:	December 05, 2017

NAD 1983 StatePlane Texas South FIPS 4205 Feet

0 10 20 Miles

0 10 20 30 Kilometers

11 WATER RIGHTS AND SUBMERGED LANDS

The LTCMB will be designed to be driven by natural hydrology from the adjacent South Bay waterbody, direct precipitation, and wind-driven tidal events. Since the hydrologic sustainability of LTCMB will be dependent on natural processes, securing water rights will not be required. Projects located within the Texas Coastal Management Area are required to consult with the TGLO which has regulatory authority in Texas over submerged lands. As discussed in Section 5.3.3, the Sponsor has conducted extensive boundary and survey work at the LTCMB site over the past year (Appendix C), in addition to obtaining a legal opinion to determine if any TGLO submerged lands exist within the LTCMB site. It is the Sponsor's position based on the Legal Opinion (Appendix F) that the TGLO has no claim to any submerged lands occurring on the LTCMB site within the boundaries of the Skelton Patent.

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APPENDIX A:

SWCA 2001 Vegetation Analysis Site Photographs, Date of Photographs: July 2001

Photo 1- Facing southwest from the western end of Loma Plata.

Photo 2- Facing northeast from the western end of Loma Plata.

Photo 3- Facing northwest from the northern side of Loma Plata.

Photo 4- A view of Loma Plata from the southeast.

Photo 5- Facing west at the southwestern tip of Loma Plata.

Photo 6- Facing north across a tidal flat located at the northwestern corner of the property.

Photo 7- Facing northeast from the northwestern quadrant of the property. The tidal channel seen in this photo connects to South Bay at the center of the photo.

Photo 8- Facing northeast from the northwestern quadrant of the property. The small tidal tributary seen in this photo connects to the larger channel shown in Photo 7.

Photo 9- Facing west from the center of the northern boundary of the property.

Photo 10- Facing southwest from the center of the northern boundary of the property.

Photo 11- Facing west from the northeastern corner of the property.

Photo 12- Facing south from the northeastern corner of the property.

Photo 13- Facing south from the center of the eastern boundary of the property across a tidal flat.

Photo 14- Facing northeast at a tidal flat located at the southeastern corner of the property.

Photo 15- Facing northwest from the southeastern corner of the property.

APPENDIX B:

Recent LTCMB Photographs
Date of Photographs: July 2016

Figure 1. DPA001_U facing east.

Figure 2. T1DPA002_U facing north.

Figure 3. DPA003_E2EM facing east.

Figure 4. DPA004_E2EM facing west.

Figure 5. Photo point 1 facing north.

Figure 6. Photo point 2 facing east.

Figure 7. Photo point 3 facing north.

Figure 8. Photo point 4 facing east.

Figure 9. Photo point 5 facing north.

Figure 10. Photo point 6 facing east.

Figure 11. Photo point 7 facing west.

Figure 12. Photo point 8 facing south

Figure 13. Photo point 9 facing west.

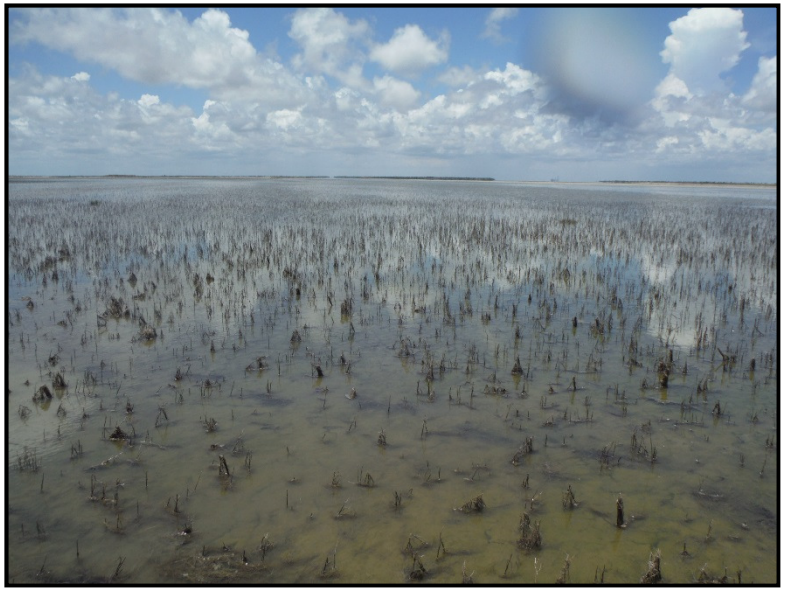


Figure 14. Photo point 10 facing west.

Figure 15. Photo point 11 facing east.

Figure 16. Photo point 12 facing south.

Figure 17. Photo point 13 facing north.

Figure 18. Photo point 14 facing west.

Figure 19. Photo point 15 facing south.

Figure 20. Photo point 16 facing east.

APPENDIX C:

Land Survey, Legal Description, and Surveyors Notes of the LTCMB Site

PLACEHOLDER FOR LAND SURVEY MAP

Survey of that certain 955.82 acre tract or parcel (called 1265.52 acres more or less) out of Share I and II, of the San Martin Grant, A-6 and the H. M. Skelton Vacancy Award, A-269, Cameron County, Texas, as conveyed from Rampart Properties LLC to Lower Texas Coastal Mitigation LLC (LTCM LLC) as recorded in Instrument Number 2016-00006495 (and as Volume 21593, Page 87 of the Official Records), both of Cameron County, Texas, and this description being a part of survey and surveyors report of even date attached hereto as a part hereof, said tract being more particularly described by metes and bounds as follows:

COMMENCING at the Southwest corner of that certain 3250-acre tract as described in Volume 710, Page 741 Cameron County Deed Records, Cameron County, Texas (CCDR) and in Volume 711, Page 10 CCDR, and being the Southwest corner of that certain tract described in Volume 435, Page 154 Cameron County Deed of Trust Records, Cameron County, Texas (CCDTR), and being the intersection of the west line of the said 3250 acre tract and the "release line" as referenced in said Volume 435, Page 154, Cameron County Deed Records, Cameron County, Texas, said COMMENCING point being represented on attached survey and attached Surveyors report as **M1** and being S 82°18'33" W, a distance of 12294.32 feet from NGS monument DEL MAR AZ MK NGS PID AB0090 N:16,525,987.24, E: 1,422,162.85 US SF, said COMMENCING Point being N:16,524,341.93, E: 1,409,979.16 (US SF) **M37** ;

THENCE N 00°37'32" W (called N00°35'00" W), along the West line of the said 3250 acre tract and the West line of the said 516 acre tract, at a distance of 209.58 feet passing a found Aluminum Disk, at a distance of 600 feet passing the called South line of the said Skelton Award, at a distance of 835.43 feet passing a found Aluminum Disk, and continuing, a total distance of 2600.00 feet to the Northwest corner of the said 516 acre tract and Southwest corner of the said called 1265.52 acre tract and the POINT OF BEGINNING (N:16,526,941.77, E: 1,409,950.77 (US SF), set capped rod "Coastal Surveying" **M2**;

THENCE CONTINUING N 00°37'32" W, along the West line of the said LTCM, LLC tract, and along a found line of 5-inch wooden post represented by **M9, M10** and **M11**, at a distance of 4499.26 feet passing a set ½" rod capped "Coastal Surveying"**M4**, at a distance of 4547 feet more or less passing the southerly side of an inlet of Laguna Madre South Bay, at a distance of 5748 feet passing the northerly side of the said inlet, and continuing for a total distance of 7122.34 feet (called 6984.26') to the shoreline of said Laguna Madre South Bay as surveyed on July 12, 2017;

THENCE following the meanders of the said shoreline of Laguna Madre, the meanders of said shoreline as follows:
N 77°59'00" E, a distance of 120.63 feet; (noted as M-1 on survey)

THENCE S 36°16'01" E, a distance of 481.41 feet; (M-2)

THENCE S 07°33'09" W, a distance of 447.67 feet; (M-3)

THENCE S 54°16'28" E, a distance of 163.04 feet; (M-4)

THENCE N 37°34'12" E, a distance of 401.24 feet; (M-5)

THENCE N 86°26'04" E, a distance of 63.19 feet; (M-6)

THENCE S 16°04'36" E, a distance of 698.35 feet; (M-7)

THENCE S 10°14'06" W, a distance of 390.52 feet; (M-8) to the northerly side of the said inlet;

THENCE crossing the said inlet, S 18°16'51" E, at a distance of 325 feet, more or less, passing the said southerly line of the said inlet, said inlet being referenced in description for the Brownsville Navigation District Patent, San Patricio Scrip 3686 Abstract 276, and continuing for a total distance of 631.80 feet; (M-9)

THENCE S 25°33'40" E, a distance of 127.47 feet; (M-10)

THENCE N 86°05'10" E, a distance of 46.56 feet; (M-11)

THENCE N 06°05'02" W, a distance of 268.47 feet; (M-12)

THENCE N 76°29'25" E, a distance of 179.98 feet; (M-13)

THENCE S 77°59'02" E, a distance of 475.73 feet; (M-14)

THENCE N 52°38'08" E, a distance of 691.82 feet; (M-15)

THENCE S 85°19'32" E, a distance of 1352.33 feet; (M-16)

THENCE S 52°01'20" E, a distance of 572.53 feet; (M-17)

THENCE S 72°33'17" E, a distance of 414.74 feet; (M-18)

THENCE N 54°06'38" E, a distance of 601.30 feet; (M-19)

THENCE N 19°02'40" W, a distance of 797.72 feet; (M-20)

THENCE N 03°29'05" E, a distance of 480.79 feet; (M-21)

THENCE N 15°03'56" E, a distance of 300.36 feet; (M-22)

THENCE N 57°44'09" E, a distance of 589.23 feet; (M-23)

THENCE S 70°53'17" E, a distance of 1607.55 feet and a set fiberglass boundary marker **M19**, said point being South 132.18 feet from the described Northwest corner of that certain SAVE AND EXCEPT called 106.3577-acre tract in said 2016-00006495 CCDR calculated point **M18**;

THENCE South (called S 90°00'00" E), at a distance of 79.66 feet passing a set ½" rod capped "Coastal Surveying" **M20** and continuing for a total distance of 3472.28 feet to calculated point **M21**;

THENCE East (called N 00°90'00" E), a distance of 1177.77' feet (called 1384.70') to the West line of Loma Del Burro Avenue and the West line of Rio Grande Beach Subdivision Unit Three, according to the Map recorded in Volume 22, Page 4 of the Map Records of Cameron County, Texas **M32,** said **M32** being

West 274.00 feet from the Southwest corner of a called 191.10 acre Save and Except tract in the said LTCM LLC deed calculated point **M30**.
THENCE S 37°21'37" W, along the West line of said Rio Grande Beach Subdivision Unit Three and the West line of Laguna Madre Beach Subdivision Unit Two, according to the Map recorded in Volume 20, Page 42 of the Map Records of Cameron County, Texas, a distance of 1796.28 feet to the West corner of said Laguna Madre Beach Subdivision Unit Two and the North corner of Rio Grande Beach Subdivision, Unit No. Four, according to the Map recorded in Volume 22, Page 21 of the Map Records of Cameron County, Texas;

THENCE S 47°16'43" E, along the southerly line of said Laguna Madre Beach Subdivision Unit Two and the northerly line of said Rio Grande Beach Subdivision Unit No. 4, a distance of 2205.93 feet (called 2211.88') to the Westerly line of that certain 1000-acre tract or parcel as recorded in Volume 726, Page 514 CCDR;

THENCE S 34°16'58" W, along the said West line of the 1000-acre tract, a distance of 41.33 feet (called 156.61');

THENCE S 89°22'27" W, a distance of 1630.29 feet (called 1778.93') to the northerly line of Laguna Madre Beach Subdivision; according to the Map recorded in Volume 20, Pages 11-14 of the Map Records of Cameron County, Texas;

THENCE N 55°43'23" W, along the northerly line of said Laguna Madre Beach Subdivision, a distance of 823.08 feet (called 700.29') to the North corner of said Laguna Madre Beach Subdivision;

THENCE S 34°16'37" W, along the westerly line of said Laguna Madre Beach Subdivision, and being the westerly line of Saint Regina Street (60' R.O.W. not open and not improved), a distance of 574.24 feet (called 487.72') to the South line of the said 1265.52 acre tract and the North line of the said 516 acre tract set rod capped "Coastal Surveying" **M53**;

THENCE S 89°22'28" W, along the said common line, at a distance of 66.50 feet passing a set rod capped Coastal Surveying" **M54**, at a distance of 154.24 feet passing a found rod **M55** 21.34 North of line, at a distance of 666.03 feet passing a found rod **M56** 16.10 feet North of line, at a distance of 2571.81 feet passing a set rod capped "Coastal Surveying" **M57** and continuing for a total distance of 5921.94 feet to the POINT OF BEGINNING, and containing a calculated 955.82 acres.

Bearings are State Plane Coordinate, Texas South Zone. Distances are Grid Distances in US Survey Feet as tied to NGS Monument Del Mar Az Mk PID AB0090.

Sidney Bouse
RPLS 5287

Coastal Surveying of Texas, Inc.
Firm Certificate No. 10026601
409-684-2121
sid@surveygalveston.com

Surveyors Report- Cameron County-CST Job 16-0706

TGLO Volume 71A No 324 - S.F. 12924, H. M. Skelton

ITEM 1 - TGLO Volume 71A No 324 - S.F. 12924, H. M. Skelton Vacancy Award and Patent

Issued March 23, 1939

Being a called 16,904.4-acre tract in both the said Patent as issued on March 23, 1939 and the Filed notes as surveyed by V.L. Conrad, Deputy Surveyor of Cameron County on December 9, 1936.

The boundary of this portion of the South end of Laguna Madre, called South Bay in Cameron County, Texas, has been the subject of much discussion and litigation. A thorough discussion of the origin of the H.M. Skelton Survey SF 12924 is found in a letter from the Assistant Attorney General Llewellyn B. Duke to the Honorable J. H. Walker, Commissioner General Land Office, Austin, Texas dated November 9, 1936 and is attached here to as Exhibit A to this report.

Final Construction as shown is based on the monumentation discussed for the construction of the Brownsville Navigation District Tract (Item 2 below). Holding this survey is the best evidence found to date as to the original location of this Patent. Holding said construction will closely match aluminum disks found **M8 and M6**. 71A No. 324 so constructed produces a counterclockwise rotation of 0°31' 08". The USACoE program CORPSCON 6 calculated Convergence Factor for Del Mar Az Mark **M37** is 0°36'18". Note: in the area of L-3 there some disagreement in these two adjoining tracts.

ITEM 2 - Brownsville Navigation District San Patricio Scrip 3686 Abstract 276 Surveyed November 30, 1960. Originally Patented under the Provisions of Article 8225 V.C.S on November 30, 1960. The Brownsville Navigation District sold 3419.86 acres back to the State of Texas for the benefit and use of the Permanent School Fund on February 26, 1986 as recorded in Volume 31, Page 712 CCDR.

Construction as follows:

Comparing the calls along the common portion of this Patent and the said Skelton Patent, this Patent appears to have an approximate calculated Counterclockwise rotation of 0°14' as compared to the said Skelton notes. Holding found post **M25** and rotating to found post **M13** produces **M26** the Southeast corner of said Navigation District tract. **M26** so constructed is S 89°29'58" W, 121.20' from found concrete monument "A" **M27** (called West approximately 43.2 varas *(120')* in description of Survey No. 703 Tract 1-3826.45 acres in "South Bay").

This tract so constructed holding **M25** (CM), line passes 0.2 feet South of **M24**, Post **M17** is N 36°32'32" W, 2.56 feet from angle point, found capped rod **M16** is N 74°25'51"W, 3.86 feet from same angle point, found capped rod **M15** is N 86°40'20" W, 3.61 feet from angle point, found post **M14** is N 87°10'29"E, 13.49 feet from angle point, **M13** (CM) is on line and found capped rod **M12** is 0.2 feet North of line.

Volume 31, Page 712 so constructed produces a counterclockwise rotation of 0°40' 47". The USACoE program CORPSCON 6 calculated Convergence Factor for Del Mar Az Mark is 0°36'18".

ITEM 3 - Volume 710, Page 741 CCDR – 3250 Acres Deed Dated May 29, 1961

Called 3250 Acres out of the North half of Share No. One of the San Martin Grant as recorded in the Deed Records of Cameron County in Volume C, Supplemental Page 524 and described as surveyed by W.R. Smith in 1939.

The legal description begins at the intersection of the centerline of State Highway No. 4 and the Mean High tide line of the Gulf of Mexico. It then heads Southerly down the Gulf Coast, then Westerly passing a concrete monument and a "lighter post". The description turns Northerly passing the southern boundary line of the said Skelton Patent at a distance of 600 feet and continues to the shore of Laguna Madre then turns easterly and southerly along the meandering shore of Laguna Madre to the Place of Beginning. The description then ends with "and being Tract No. 1 described in Option Agreement between grantors and Grantee dated August 16, 1960." ITEM 6 below appears to speak to the location of this line as being the "release line".

Construction as follows:

A re-creation of the legible portions of a survey by Claunch and Associates for Sundance Oil Company dated January 1974 as tied to Del Mar Az Mark and RP 54 both NGS Monuments with current SPC TX S Grid coordinates create search points **M1, M41**, and **M42. M1** was searched for and not found. Concrete monument **M41** calculated location is now on the Beach and was not found. Broken base of "Lighter Post" **M42** found at location described. M42 held for location and said Claunch map calls to be Grid in rotation. The construction of the South line of the 3250 acre tract and the North line of a called 1559.60 acre "Lease Area" from this map, follows an apparent ditch line that can be seen from aerial photographs as found on Google Earth imagery online. This ditch line appears first in the 1995 image, and still can be found on the ground to follow the said Claunch line. This line was held as the re-creation of the "release Line and the Point of Commencing of this survey.

Found Aluminum Disks **M50, M3** and **M6** also align to found Lighter Post **M42**, but holding **M50, M3, M6** and **M42** creates 0°41'55" angular disagreement with the called angular relationship with the line found North through found Aluminum Disk **M3** and **M8**, and with found post **M9, M10** and **M11**. It is my belief that line produced through **M50, M3** and **M6** may be a boundary line, but it is not the true "release line" called for in ITEMS 4, 5 and 6 below. The West line of Volume 710, Page 741 held to be **M3** (CM) and **M8** produced Northerly. Row of post found from **M9** to **M10** and **M11** are on this line.

ITEM 4 – Volume 711, Page 10 CCDR Dated May 31, 1961

Called 3250 Acres out of the San Martin Grant A-6 and the H.M. Skelton Vacancy Award, A-269, (S.F. 12924). This description is similar to ITEM 3 above. This description references a survey by W.R Smith in 1939 and the tract is called "Release 1" in Option Contract dated August 16, 1960.

ITEM 5 – Volume 726, Page 514 CCDR - 1000 acres Deed Dated May 8, 1962

Phase One property out of the said Volume 710, Page 741 CCDR- see ITEM 3 above.

Point of beginning is Southwest corner of Lot No. 1, Block 19, Unit 2 and is called to be in the East R.O.W. line of Weems Street, a found 5/8" rod **M46.** The boundary then runs in a North Easterly direction along the Easterly line of Weems to the "shoreline of Laguna Madre Bay". This line is constructed through said **M46, M35, M23** and **M24.**

ITEM 6 - Volume 435, Page 154 CCDTR – called 516 acres - Deed of Trust Dated September 22, 1964

Point of beginning is the centerline of Weems Street-extended southwest to the intersection of the "release line". Volume 711, Page 10 calls this "being known and designated as Release 1 in certain Option Contract dated August 16, 1960". The next call westerly appears to be missing. The next call given is the North call along the west line passing the South line of the Skelton at 600 feet and continuing for a total of 2600 feet. The next call is perpendicular to the last and extends to the said centerline of Weems. The last call follows the said centerline back to the point of beginning leaving a gap between this tract and the 1000 acres described in item 5 above. The construction of the said "release line" is as outlined in Item 3 above.

ITEM 7 -Volume 36, Page 306 Deed of Trust CCOR - 1265.52 acres **April 11, 1986**

This is a called 1265.52-acre tract out of the San Martin Grant A-6 and the said H. M. Skelton Vacancy Award, A-269 (S.F. 12923).

The North line of this tract is called to the "shore of Laguna Madre" as depicted by ***L3-L13*** on attached survey.

The line designated as ***L11*** on the attached survey is described as N 14° W, in (ITEM 1) and as N 14°13' 00" W, in (ITEM 2). This line was erroneously described as N 14°E, in said Volume 36, Page 306 and in all subsequent conveyances. This angular error has produced considerable differences in the called acreage of this tract.

This survey begins at the Southwest corner of the said 3250-acre tract (ITEMs 3, 4, 5 and 6 above). Said point believed to be **M3**. (see issues above in ITEM 3 and ITEM 6). This description contains calls to the shore of Laguna Madre, calls to the West line of the said 1000-acre tract (ITEM 5).

ITEM 8 below, calls to subdivisions referenced in said Volume 36, Page 306, calls to the North line of a tract recorded in ITEM 6. This description also contains two SAVE and EXCEPT tracts and several SAVE AND EXCEPT portions of ad joining subdivisions. The two SAVE AND EXCEPT tracts will be discussed first.

Volume 36, Page 306 Deed of Trust CCOR Called 191.10 acre SAVE AND EXCEPT Tract

This description follows the West and North lines of the parent tract to a point on the North line of said 1265.52-acre tract at calculated point **M22**.

Continuing with the description Southeasterly along South Bay will not reach found rod **M24** by approximately 57 feet. The call to the West line of the 1000-acre tract will be held over distance to reach **M24**. The said West line of the 1000 acre tract as constructed from found rod **M24** to found rod **M46** will be held for line.

The description then calls to reach North boundary of Laguna Madre Beach Subdivision Unit 2 (LMBS2) at a distance of 3164.60 feet. Leaving **M24** Southwesterly along the said West line of the 1000-acre tract, the found distance from found rod **M24** to found rod **M35** at the North boundary of Laguna Madre Beach Subdivision Unit 2 (LMBS2) is found to be 4598.63 feet, or approximately 1534 feet too long.

The intersection of the East line of this tract and the North line of Loma Del Burro Avenue (100' R.O.W.) of the Rio Grande Beach Subdivision Unit Three (RGBSU3) in Volume 22, Page 4 CCMR is calculated to be at 3156.10 feet from said **M24** to calculated point **M36** or approximately 8.5 feet short of the called distance.

The North line of said Loma Del Burro Avenue is found to be N 69°33'34" W and the call in this description along the "northerly boundary line of" LMBS2 is called to be N69°34'20" W in ITEM 9 (2016-00006495 CCDR). The recorded plat the North line of LMBS2 is called to be N 52°38'20" W and the line produced from found rod **M35** to found rod M33 is found N 52°35'56" W. The call to the North boundary of Laguna Madre Beach Subdivision Unit 2 (LMBS2) is believed to be in error in favor of the North line of Loma Del Burro Avenue (100' R.O.W.) of the Rio Grande Beach Subdivision Unit Three (RGBSU3). The called distance of 3164.60 feet will be held at calculated point **M36**.

A bearing-bearing intersection of the West line of this SAVE AND EXCEPT TRACT starting at **M22** with the South line of this SAVE AND EXCEPT tract starting at **M36** produces **M30** with a calculated area of 195.28 acres, called 191.10 acres.

Volume 36, Page 306 Deed of Trust CCOR Called 106.3577 acre SAVE AND EXCEPT Tract

This description also follows the parent tract to a point on the North line of the said 1265.52-acre tract. This point is calculated point **M18**.

Following the North line from **M18** the called distance of 1500 feet will reach said **M22**.

This construction will hold the West line of the said called 191.10-acre tract as previously discussed from **M22** to **M30** being S 0°34'10" E, a distance of 3142.53 feet (called S 00°35'00" W, a distance of 3100.81 feet to the POINT OF BEGINNING".

The next call of "S 00°90' W, 1384.70 feet" will be held to be West for a distance of 1384.70 feet to calculated point **M21**.

The last call of "N 90°00' W, 3595.84 feet to the POINT OF BEGINNING" will be held to close from **M21** North, 3604.46 feet to **M18.** This construction creates a calculated area of 111.16 acres (called 106.3577 acres)

SAVE AND EXCEPT Blocks

Save and Except any portions of Blocks 83 and 84, Laguna Madre Beach Corporation Unit 1 of record in Volume 20, Pages 11-14, CCMR as shown on Map of even date to this report attached hereto as a part hereof and needs no addition discussion.

The second SAVE AND EXCEPT of Blocks 11, 12, 13, 14, 15, 16, North ½ of 10, 17, 20 and 21, Rio Grande Beach Subdivision Unit No. 3 appears to remove that portion of these blocks that are North of line **M35** to **M33** from this conveyance.

NOTE: These Save and except Blocks were not surveyed and are not a part of this survey.

ITEM – 8 Volume 2960, Page 329 CCOR Called 1292.22 Acre Tract Recorded June 30, 1994

This tract is East of our tract and is our ad joiner for a portion of our East line.

The West line of this called 1292.22-acre tract is called to be the East line of Weems Street (60' R.O.W.) and is also the West line of the called 1000 acre tract in said Volume 726, Page 514 (CCDR) and begins at its intersection of the North line of San Martin Boulevard (100' R.O.W.) and is constructed as discussed in Item5 above. This line is shown as Line 1 (*L1*) and is constructed by holding Monument (**M**) **M46** align to **M24**. *L1* so constructed is N 34°16'59" E, 9685.00 feet (called N 34°16'20" E, 9683.66 feet).

This construction of said *L1* is the basis of the location of the following platted subdivisions as listed and as shown on attached survey as discussed previously and as attached hereto as a part hereof:

Laguna Madre Beach Subdivision Volume 20, Pages 11-14 CCMR

Rio Grande Beach Subdivision No. 4 Volume 22, Page 21 CCMR

Laguna Madre Beach Subdivision Unit Two Volume 20, Page 42 CCMR

Rio Grande Beach Subdivision Unit Three Volume 22, Page 4 CCMR

Construction of the Northerly line of this tract Easterly from aluminum disk **M23,** passes through **M38** and **M39** and 0.6 feet South of **M40** as shown. Creates a position of Concrete Monument called for in CCDR 710/741 at position **M41** (not found). "Lighter Post" **M42** found at the angle point has a found tie from control monument NGS Monument "DEL MAR AZ MRK"**M37** to said **M42** of S 31°18'28" W,

3102.06 feet. The Sundance Oil Survey by Claunch and Associates dated Jan-Feb 1974 (very difficult to read) appears to have a tie of S 31°18' 17" W, 3102.60 feet.

ITEM 9 - 2016-00006495 CCDR Vesting Deed to LTCM, LLC CONSTRUCTION Deed Dated February 26, 2016

This is a called 1265.52-acre tract out of the San Martin Grant A-6 and the said H. M. Skelton Vacancy Award, A-269 (S.F. 12923).

All of the discussion thus far has been the resolution of conflicting calls in the various tracts on and around this site. This report now turns to the survey of this tract standing on the basis of construction as previously discussed.

This survey is based on those items contained in the said General Land Office file associated with the said H.M Skelton Patent, together with attached opinion letter by David E. Cowen of McLeod, Alexander, Powel and Apffel, P.C. of 802 Rosenberg, Galveston, Texas tiled "Opinion regarding ownership of Lower Laguna Madre Mud Flat Owned by Lower Texas Coastal Mitigation, LLC (LTCM) within the so-called 1936 Skelton Vacancy" dated September 29, 2017.

This survey is constructed as authorized by the owners and is in harmony with the many legal opinions concerning this tract. This report attempts to explain the many issues found in attempting to "follow the footsteps" of those surveyors before me during the course of the on the ground survey work of this tract. The North boundary line of this tract has been held by multiple surveyors and listed in many conveyances as a hard line described by metes and bounds. The said North line is called the South "shoreline" of South Bay of Laguna Madre in these referenced conveyances. The current location of this shoreline is easily observed in the field as the northerly side of an almost continuous line of Mangroves. This shoreline was scanned by lidar by LidarUSA on May 10 and 11, 2017. The actual shoreline as shown on the attached survey is the contour line of the Mean High Water Line (MHW) elevation as referenced to NOAA Tide Station PORT ISABEL Station Number 8779770, 1983-2001 Tidal Epoch as tied to Tidal Benchmark No. 13. This scanned shoreline and not the called metes and bounds line was used for the area calculations as given. The multiple interpretations of the location of the East, South and West boundary lines due to conflicting legal descriptions, errors in descriptions and multiple monumented lines are discussed above.

NOTES:

The said Shoreline of South Bay and the North line of this survey is meandered as calls **M-1** thru **M-24** on attached survey.

This description crosses the mouth of the said inlet at **M-9**. This inlet is labeled as "INLET A". The description for the Brownsville Navigation District Patent, San Patricio Scrip 3686 Abstract 276., does call for a 12 vara (33') wide inlet near this area. This measures almost 160' as of the date of this survey.

The following Legal description is a result of this construction.

Survey of that certain 955.82 acre tract or parcel (called 1265.52 acres more or less) out of Share I and II, of the San Martin Grant, A-6 and the H. M. Skelton Vacancy Award, A-269, Cameron County, Texas, as conveyed from Rampart Properties LLC to Lower Texas Coastal Mitigation LLC (LTCM LLC) as recorded in Instrument Number 2016-00006495 (and as Volume 21593, Page 87 of the Official Records), both of Cameron County, Texas, and this description being a part of survey and surveyors report of even date attached hereto as a part hereof, said tract being more particularly described by metes and bounds as follows:

COMMENCING at the Southwest corner of that certain 3250-acre tract as described in Volume 710, Page 741 Cameron County Deed Records, Cameron County, Texas (CCDR) and in Volume 711, Page 10 CCDR, and being the Southwest corner of that certain tract described in Volume 435, Page 154 Cameron County Deed of Trust Records, Cameron County, Texas (CCDTR), and being the intersection of the west line of the said 3250 acre tract and the "release line" as referenced in said Volume 435, Page 154, Cameron County Deed Records, Cameron County, Texas, said COMMENCING point being represented on attached survey and attached Surveyors report as **M1** and being S 82°18'33" W, a distance of 12294.32 feet from NGS monument DEL MAR AZ MK NGS PID AB0090 N:16,525,987.24, E: 1,422,162.85 US SF, said COMMENCING Point being N:16,524,341.93, E: 1,409,979.16 (US SF) **M37** ;

THENCE N 00°37'32" W (called N00°35'00" W), along the West line of the said 3250 acre tract and the West line of the said 516 acre tract, at a distance of 209.58 feet passing a found Aluminum Disk, at a distance of 600 feet passing the called South line of the said Skelton Award, at a distance of 835.43 feet passing a found Aluminum Disk, and continuing, a total distance of 2600.00 feet to the Northwest corner of the said 516 acre tract and Southwest corner of the said called 1265.52 acre tract and the POINT OF BEGINNING (N:16,526,941.77, E: 1,409,950.77 (US SF), set capped rod "Coastal Surveying" **M2**;

THENCE CONTINUING N 00°37'32" W, along the West line of the said LTCM, LLC tract, and along a found line of 5-inch wooden posts represented by **M9, M10** and **M11**, at a distance of 4499.26 feet passing a set ½" rod capped "Coastal Surveying"**M4**, at a distance of 4547 feet more or less passing the southerly side of an inlet of Laguna Madre South Bay, at a distance of 5748 feet passing the northerly side of the said inlet, and continuing for a total distance of 7122.34 feet (called 6984.26') to the Shore line of said Laguna Madre South Bay as surveyed on July 12, 2017;

THENCE following the meanders of the said shore line of Laguna Madre, the meanders of said line as follows:
N 77°59'00" E, a distance of 120.63 feet; (noted as M-1 on survey)

THENCE S 36°16'01" E, a distance of 481.41 feet; (M-2)

THENCE S 07°33'09" W, a distance of 447.67 feet; (M-3)

THENCE S 54°16'28" E, a distance of 163.04 feet; (M-4)

THENCE N 37°34'12" E, a distance of 401.24 feet; (M-5)

THENCE N 86°26'04" E, a distance of 63.19 feet; (M-6)

THENCE S 16°04'36" E, a distance of 698.35 feet; (M-7)

THENCE S 10°14'06" W, a distance of 390.52 feet; (M-8) to the northerly side of the said inlet;

THENCE crossing the said inlet, S 18°16'51" E, at a distance of 325 feet, more or less, passing the said southerly line of the said inlet, said inlet being referenced in description for the Brownsville Navigation District Patent, San Patricio Scrip 3686 Abstract 276, and continuing for a total distance of 631.80 feet; (M-9)

THENCE S 25°33'40" E, a distance of 127.47 feet; (M-10)

THENCE N 86°05'10" E, a distance of 46.56 feet; (M-11)

THENCE N 06°05'02" W, a distance of 268.47 feet; (M-12)

THENCE N 76°29'25" E, a distance of 179.98 feet; (M-13)

THENCE S 77°59'02" E, a distance of 475.73 feet; (M-14)

THENCE N 52°38'08" E, a distance of 691.82 feet; (M-15)

THENCE S 85°19'32" E, a distance of 1352.33 feet; (M-16)

THENCE S 52°01'20" E, a distance of 572.53 feet; (M-17)

THENCE S 72°33'17" E, a distance of 414.74 feet; (M-18)

THENCE N 54°06'38" E, a distance of 601.30 feet; (M-19)

THENCE N 19°02'40" W, a distance of 797.72 feet; (M-20)

THENCE N 03°29'05" E, a distance of 480.79 feet; (M-21)

THENCE N 15°03'56" E, a distance of 300.36 feet; (M-22)

THENCE N 57°44'09" E, a distance of 589.23 feet; (M-23)

THENCE S 70°53'17" E, a distance of 1607.55 feet and a set fiberglass boundary marker **M19**, said point being South 132.18 feet from the described Northwest corner of that certain SAVE AND EXCEPT called 106.3577-acre tract in said 2016-00006495 CCDR calculated point **M18**;

THENCE South (called S 90°00'00" E), at a distance of 79.66 feet passing a set ½" rod capped "Coastal Surveying" **M20** and continuing for a total distance of 3472.28 feet to calculated point **M21**;

THENCE East (called N 00°90'00" E), a distance of 1177.77' feet (called 1384.70') to the West line of Loma Del Burro Avenue and the West line of Rio Grande Beach Subdivision Unit Three, according to the

Map recorded in Volume 22, Page 4 of the Map Records of Cameron County, Texas **M32,** said **M32** being West 274.00 feet from the Southwest corner of a called 191.10 acre Save and Except tract in the said LTCM LLC deed calculated point **M30**.
THENCE S 37°21'37" W, along the West line of said Rio Grande Beach Subdivision Unit Three and the West line of Laguna Madre Beach Subdivision Unit Two, according to the Map recorded in Volume 20, Page 42 of the Map Records of Cameron County, Texas, a distance of 1796.28 feet to the West corner of said Laguna Madre Beach Subdivision Unit Two and the North corner of Rio Grande Beach Subdivision, Unit No. Four, according to the Map recorded in Volume 22, Page 21 of the Map Records of Cameron County, Texas;

THENCE S 47°16'43" E, along the southerly line of said Laguna Madre Beach Subdivision Unit Two and the northerly line of said Rio Grande Beach Subdivision Unit No. 4, a distance of 2205.93 feet (called 2211.88') to the Westerly line of that certain 1000-acre tract or parcel as recorded in Volume 726, Page 514 CCDR;

THENCE S 34°16'58" W, along the said West line of the 1000-acre tract, a distance of 41.33 feet (called 156.61');

THENCE S 89°22'27" W, a distance of 1630.29 feet (called 1778.93') to the northerly line of Laguna Madre Beach Subdivision; according to the Map recorded in Volume 20, Pages 11-14 of the Map Records of Cameron County, Texas;

THENCE N 55°43'23" W, along the northerly line of said Laguna Madre Beach Subdivision, a distance of 823.08 feet (called 700.29') to the North corner of said Laguna Madre Beach Subdivision;

THENCE S 34°16'37" W, along the westerly line of said Laguna Madre Beach Subdivision, and being the westerly line of Saint Regina Street (60' R.O.W. not open and not improved), a distance of 574.24 feet (called 487.72') to the South line of the said 1265.52 acre tract and the North line of the said 516 acre tract set rod capped "Coastal Surveying" **M53**;

THENCE S 89°22'28" W, along the said common line, at a distance of 66.50 feet passing a set rod capped Coastal Surveying" **M54**, at a distance of 154.24 feet passing a found rod **M55** 21.34 North of line, at a distance of 666.03 feet passing a found rod **M56** 16.10 feet North of line, at a distance of 2571.81 feet passing a set rod capped "Coastal Surveying" **M57** and continuing for a total distance of 5921.94 feet to the POINT OF BEGINNING, and containing a calculated 955.82 acres.

Bearings are State Plane Coordinate, Texas South Zone. Distances are Grid Distances in US Survey Feet as tied to NGS Monument Del Mar Az Mk PID AB0090.

Sidney Bouse
RPLS 5287

Coastal Surveying of Texas, Inc.
Firm Certificate No. 10026601
409-684-2121

sid@surveygalveston.com

EXHIBIT "A"

Attached letter from Llewellyn B. Duke, Assistant Attorney General to J.W. Walker, Commissioner General Land Office dated November 9, 1936

1146

12924

OFFICE OF THE ATTORNEY GENERAL

AUSTIN

November 9, 1936

Honorable J. H. Walker, Commissioner
General Land Office
Austin, Texas

Dear Sir:

The question of an alleged vacancy of approximately twenty thousand acres of land bounded on the north by the Potrero de Santa Isabel and on the south by the Potrero de San Martin in Cameron County has been referred to the writer for attention. This department has received two communications from you, one dated September 21, 1936 addressed to the Honorable H. Grady Chandler, Assistant Attorney General, and one dated October 23, 1936 addressed to the Honorable Russell Rentfro, Assistant Attorney General, which, we understand, contain your views relative to this vacancy.

In view of the importance of this matter, your letters will be set out in full:

September 21, 1936

Hon. H. Grady Chandler
Assistant Attorney General
Austin, Texas

Dear Grady:

At the instance of Mr. E. Cartledge of this city, who is representing T. A. Kinder and Ralph J. Friedman who have filed in this office papers with a view to the purchase of two large tracts of land in Cameron County, I am submitting a report of Mr. Carl F. K. von Blucher who made an inspection of the area recently under instructions from this office.

The boundaries of the San Martin and the Santa Isabel grants have been frequently before this Department during my connection with it. Some years ago Mr. Robison, then Commissioner submitted to your Department

F.1.

the matter of selling the area upon which the parties mentioned have filed, under an application by H. M. Skelton. It appears that a representative of your Department and Mr. Robison went on the ground, and in letter dated December 21, 1927, Mr. C. W. Trueheart, assistant Attorney General, says:

> "It seems to me that the calls of the patent of this Mexican grant for the Lagoona Madre would serve to extend its lines beyond course and distance calls to the actual shore lines of the Lagoona Madre as of the date of the patent. If there have been accretions since that time it would seem to me that they would rightfully belong to those deraigning under the San Martin patent."

As Commissioner I have followed the holdings of your Department in this matter.

My information is that the parties at interest, Messrs. Kinder and Friedman, with their attorney Mr. Cartledge, have presented the matter to you, and that you wish some information from this Department regarding it. Also enclosed are copies of the field notes of the two grants mentioned, and field notes of the Brownsville Navigation District in Cameron County patented to the district February 18, 1935. It will be noted from the latter field notes that it is "a survey of 102.60 acres of land and flats covered or partly covered by the waters of the Laguna Madre, an arm of the Gulf of Mexico." The field notes of the Kinder include this patented area "save and except 491 acres of Patent No. 68, which runs through this tract." Copies of the Kinder and Friedman field notes are also enclosed.

Some years ago my information is a District Court of Cameron County granted an injunction against Commissioner Robison prohibiting the sale of the land included in the H. M. Skelton field notes. No formal action in the way of a rejection appears to have been taken on the Skelton survey. The file wrapper bears this endorsement: "Surveyor's sketch in rolled sketch file. Should be rejected. See Attorney General's opinion herein. 1-6-27. Blucher." This endorsement is in addition to one by Commissioner Robison reading as follows: "Questions arising under this file are rather judicial than administrative, hence this claim and field notes herein will be referred to Attorney General, without further consideration." The result of the

investigation by this Department has been stated.

If the area belongs to the State I am persuaded that it does not come within the appropriation to the School Fund, or at least the provisions of Article 5310 requiring one of three classifications to be placed on it: agricultural, grazing or timber. My reaction is that if the area belongs to the State it is of such character as would prevent its sale as agricultural or grazing land, and leave it opened to be leased for the development of the minerals therein. If you desire to make an investigation of the matter the records of this Department, and any information we may have, are at your disposal. I am also enclosing a letter from E. M. Ridley, county surveyor of Cameron County, dated June 17, 1936, and copy of the judgment mentioned above.

Very truly yours,

J. H. Walker
Commissioner

October 23, 1936

Hon. Russell Rentfro
Assistant Attorney General
Austin, Texas

Dear Mr. Rentfro:

This is in reference to the applications of Ralph J. Friedman and T. A. Kinder to purchase what they claim to be unsurveyed land lying between the San Martin and Santa Isabel grants in Cameron County.

The patented field notes of these two grants now on file in the Land Office carries a sketch each showing the outlines of the two grants, as required by law and instructions to surveyors in force at that time. Fitting the western part of the surveys together a considerable area will lie between them, which is indicated on the sketches as Laguna Madre. When the line of the San Martin running along the Gulf Coast reaches the Boca Chica 332 varas wide, thence with meanders of the Laguna Madre for

the Northeast boundary of this grant, the meander lines of different courses are straight lines, but the boundary line as delineated on the sketch is serpentine, which shows clearly to my mind that the meander lines were not intended as boundary lines, but to show in a general way the true boundary, and to enable the distances of the area toto be computed. This is true of the entire Coastal line of the two surveys lying on the Laguna. Under the laws in force when the grants were originally made, as well as when patented, no part of the sea could have been lawfully included in them, but it is certain that the grants were intended to include all of the area subject to disposition by the granting authority.

It is my opinion that all of the area not included in the grants and not added to it by accretion belongs to the State. That there has been some gain by accretion, and some loss by erosion, is shown by a survey made from March 17 to April 12, 1930, by R. P. Jackson, county surveyor of Cameron County, and filed in this office in connection with the application of the Brownsville Navigation District for patent to 3362.64 acres of land running through the area described on the sketches of the San Martin and the Santa Isabel heretofore mentioned. If the contention of the attorneys for Friedman and Kinder are correct that the area belongs to the Public Free School Fund, it would follow that patent issued to the Brownsville Navigation District is null and void. The area was bought by the district as submerged land, and passed as submerged land by this Department on the strength of Mr. Jackson's sketch and other records of this office, including an opinion from your department to the effect that the area was not subject to sale to H. M. Skelton, who filed on it in 1926.

On the Skelton file is this endorsement by Mr. Robison made July 22, 1926: "questions arising under this file are rather judicial than administrative, hence this claim and field notes herein will be referred to Attorney General without further consideration."

That the San Martin and the Santa Isabel have gained considerable land by accretion is reasonably certain, but the line of demarkation between the true boundaries caused by accretion are not determinable by this Department, nor is it believed any surveyor, in the absence of a decree of court directing how to do it, can place such line on the ground. That the State owns a considerable area between the

two surveys is reasonably certain, but how to bound it I believe is a matter for the courts to determine.

Final action on the H. M. Skelton file, to which reference has just been made, does not appear to have been taken by the Land office. There is an endorsement on it by Mr. Blucher, chief draftsman: "should be rejected. See Attorney General's opinion herein."

My position is simply that a large part of the area included in these files belongs to the State, but how much of it, and where the boundaries are, I am unable to determine. It is reasonably certain that the entire area has not been absorbed by the San Martin and Santa Isabel through accretion, for the reason that the operations have been in reverse, the upland having been brought above the tidal limits by obstructions both natural and artificial at the lower end of this arm of the Laguna.

Very truly yours,

J. H. Walker
Commissioner

The writer believes that it will be conducive to a better understanding of the problems involved to set out a short resume of the history of the two grants involved.

The Potrero de San Martin is a large grant of land comprising over six square leagues or sitios situated on the left bank of the Rio Grande River approximately eight miles below Brownsville in Cameron County. This area was granted by the State of Tamaulipas, Republic of Mexico in 1828, and title was confirmed by the State of Texas under the Act of 1852. The survey for the confirmation patent was made in February, 1855. The Potrero de Santa Isabel is a large tract of land containing more than seven leagues or sitios situated on the Laguna Madre and including the town of Point Isabel in Cameron County. This area was also granted by the State of Tamaulipas, Republic of Mexico in 1828 and said grant was confirmed by the State of Texas under the Act of 1852. The re-survey made for the confirmation title is also dated February, 1855. It will not be necessary to set out the field notes of the respective grants in full; for our purpose it is sufficient to point out that the boundaries of the two grants that are affected by the alleged vacancy are as follows: The

boundary of the San Martin affected by the vacancy according to its field note calls is as follows:

> "To the Boca Chica * * * thence with meanders of the Laguna Madre for the NE boundary of this grant S 88 deg. 30' W 2100 vrs. S 68 deg. 30' W 3820 vrs. S 74 deg. 15' W 8800 vrs. S 55 deg. W 3000 vrs. N 36 deg. 45' W 3380 vrs. N 73 deg. W 3650 vrs. N 28 deg. 30' W 2415 vrs. N 34 deg. 45' E 5880 vrs. to a large ebony post set in the original survey of this grant as the NE corner and the SE corner of the grant known as the Potrero de Santa Isabel."

The affected boundary of the Santa Isabel according to its field notes is as follows:

> It begins at the aforesaid ebony post placed at the NE corner of the San Martin and the SE corner of this survey and then calls to run a certain course and distance with the meanders of the Laguna Madre.

It is well settled law in this State that where a grantee from the Mexican Government has his land surveyed and patented to him upon those field notes by way of a confirmation grant from the State of Texas, he is bound by such survey and the original survey is abandoned. Garcia vs State 274 SW 319; Kenedy Pasture Company vs State 196 SW 287; Hamilton vs State 152 SW 1117. However, where as here, there seems to be no question but that the re-survey follows the lines of the original grant, and the question of the re-survey including less or greater acreage is not involved, the extent of the two grants from the Mexican Government made in the year 1828 is determined by the Mexican Civil Law in force at the time the grants were made, and the rights of the holders under those grants are controlled by the Mexican laws in effect at the date of the grant. Manry vs Robison 122 Tex. 213, 56 SW 2nd 438. Attorney General's opinion No. 2954 dated September 5, 1934. Spanish and Mexican grants on the seashore in Texas and Texan grants of that nature made prior to the introduction of the Common Law in 1840 carry title only to the line of the highest tide in winter, and lands beyond that mark remain the property of the State. Manry vs. Robison, Supra; City of Galveston vs Menard 24 Tex. 349; Rosborough vs Picton 34 SW 791.

Having now determined that the Mexican Civil Law in force at the time of the execution of the grants should be looked to in determining the respective boundaries of such grants, and leaving the question of the applicability of the doctrines of reliction and accretion for future discussion, our next question,

in view of the calls in the field notes in the respective surveys for the meanders of the Laguna Madre, is a determination of just where was the line of the highest winter tide in 1828, the date of the grants in controversy. This is a matter of great difficulty to determine, but unanimous testimony of old inhabitants of that section seem to place the high winter tide line of thirty years ago a considerable distance from its present location, and in approximately the same location given it by the meander lines of the aforesaid grants. The only locative testimony of any real value that the writer has seen or is aware of certainly bears out this contention. The surveyor in 1855 in calling for the meanders for the Laguna Madre and then calling for a course and distance or meander line evidently believed that this "highest winter tide" fell somewhere near his course and distance line. In any event I do not believe that we can fairly attribute to him an intention to leave over twenty thousand acres of land between his meander lines and the body of water which he purported to meander. I have been reliably informed that the course and distance or meander lines run by the original Mexican surveyor fall in approximately the same location on the ground as the lines run by the surveyor of 1855. As I have never seen a map containing the platted lines as run by the original Mexican surveyor, I cannot vouch for this, but I have seen maps of this area in existence during that time which place an arm of the Laguna Madre in approximately the same shape and position as the meander lines of the field notes of the aforesaid grants would have us believe it existed in 1855.

In view of the above discussion and of the interesting fact that the surveyor in 1855 in running certain boundaries of the San Martin and Santa Isabel, set out at the beginning of this opinion, called for the different shores of the same Laguna, I believe that we can safely say that there is a considerable area of land existing between those respective boundaries. At the time the surveys were made it was unquestionably covered by the highest winter tide, which, under the Mexican Civil Law in force at the time, constituted the littoral owner's boundary. It is interesting to note, and is of some value to our discussion, the fact that I have been informed that previous owners of the respective grants have always respected the course and distance lines run by the surveyor in 1855 as the boundaries of their grants. I understand that this was done in a partition of the area.

Interested parties have also submitted an entirely different theory upon which they base their contention that the vacancy actually exists. The theory is based upon the assumption that

the shore line or meanders of the Laguna Madre in 1855 were in fact located at a great distance from the place on the ground that the surveyor's meander lines fall. They seem to locate the high winter tide line of 1855 in much the same position it is today. Having accomplished this, they contend that under the decisions of our courts, as best contained in the case of State of Texas vs Sullivan 92 SW 2nd 228 and in 111 Tex. 253 and 61 SW 2nd 792, that the calls for course and distance control over the calls for the Laguna Madre as the surveyor was mistaken as to the Laguna's true location. While we concur in the rules of law, announced in such decisions, it seems that this theory as to the location of the Laguna Madre in 1855 does violence to the apparent history and geological growth of that section of the country. We must remember that the surveyor in 1855, in calling for the meanders of the Laguna Madre, was calling for the highest winter tide, and in this connection it is interesting to note that both surveys were made in the month of February. Therefore it would seem that the theory first advanced in this opinion is the correct one, and it is interesting to note that it does not conflict with the opinion rendered December 21, 1927 by the Honorable C. W. Trueheart, Assistant Attorney General. In other words, we believe that the vacancy exists and can be best established by giving the surveyor of 1828 and of 1855 credit for competent work; in other words give them credit for accurately meandering the highest winter tide line of the Laguna Madre as it existed in 1855. Under the Mexican Civil Law this was the boundary of the grants. However, in justice to this theory, we believe that we should point out that the conclusions reached by Mr. Carl F. K. von Blucher, Chief Draftsman of the General Land Office, in his report based on an investigation of the disputed area, sustain this contention. Mr. Blucher's conclusions, as contained in his report of September 8, 1936, are as follows:

CONCLUSIONS

Laguna Madre is the Spanish equivalent for the word mother sea, or high sea. It is the name applied to the stretch of salt water lying between the main land on the west and Brazos, Padre and Mustang Islands on the east. I do not believe the Laguna Madre covered these western low areas at the time surveys were made and field notes for patent written. If it had reached this far west, there would be visible signs of its presence attested by old shore lines, marine shells, salt deposits, etc.

My investigations lead me to believe that sea water at ordinary high tide does not reach even as far west as the yellow line on the map, but this can only be determined positively by observation when Laguna Madre is at ordinary high tide. However, these lands are subject to inundation by waters from the Rio Grande and from the large drainage floodway referred to. Consequently, these flats are of a boggy or mucky nature during a large part of the year.

The hills or lomas are of sand dune origin. They, together with their slopes, are now covered with vegetation and trees, evidencing the fact that many years have elapsed since Laguna Madre covered these western low areas.

These lands, in my opinion, could not be classified as fit for agricultural or grazing purposes.

Adopting Mr. Blucher's conclusions as correct, the vacancy is established under this theory. In addition to the cases cited we have the case of Hughes v State 123 SW 177 which is on all fours with the reported facts in this case. In the Hughes Case we have a situation where the field notes of the involved survey called to run with the waters of a lake a certain course and distance. The course and distance line left a considerable area of lowlands lying between such alleged meander line and the waters of the lake it purported to meander. The court in sustaining the State's contention that the lowlands were state land held as follows:

"The facts show that both the beginning corner and the corner at the end of the nineteenth call are some distance from the water line of the lake, or bayou. It is also shown that the calls for course and distance do not conform to the configuration of the banks of the lake, or the water line. The appellees contend that the true boundary should be the lines made by course and distance, while the appellants claim that the water line of the lake should govern from the beginning conrer at the southwest to the corner at the end of the nineteenth call at the southeast, and thence along the south line."

"When the footsteps of the surveyor can be found and identified on the ground, this will determine the true

boundary, and in conflicting calls that line will be adopted which follows his course. Fulton v. Frandolig, 63 Tex. 331; Hamilton v. Blackburn, 43 Tex. Civ. App. 153, 95 SW 1098; Oliver v. Maloney, 61 Tex. 612; Booth v. Strippleman, 26 Tex. 440; Maddox v. Fenner, 79 Tex. 292, 15 SW 237."

"The lines run according to course and distance, as shown on the diagram, embrace an area fully equal to what the locating surveyor's estimate showed he intended to locate at that place. The jury found that the land contained within the calls for course and distance amounted to 2,678 acres. This was practically the same as that found in the estimate of the surveyor. If the water line or banks of the lake and bayou be taken as the boundary, as contended for by the appellants, there would be an excess in this survey of about 1,700 acres. This, it would seem, would furnish strong evidence to support the judgment rendered. The number of acres included within the lines run according to course and distance, added to that which was subsequently located elsewhere, equal the number called for in the certificate."

Naturally if you sustain the vacancy on this theory you will not be troubled with the problems of accretion and relictions. An interesting fact is that the survey in the Hughes Case was made in 1838 and patent issued in 1842. As stated at the outset there is no factual distinction between the Hughes Case and our instant case.

Even adopting our first theory, the one most favorable to the recent owners of the San Martin and Santa Isabel, we have determined that the respective boundaries of the aforesaid grants in 1855 fell along or near the meander lines run by the surveyor who returned the field notes for these grants and we are now faced with the proposition that there are over twenty thousand acres of land lying between these meander lines and the present shore line of the Laguna Madre. The question naturally presents itself of to whom does this land belong. Does it belong to the State, or have the respective littoral owners acquired title to it under the doctrines of accretion and relictions? While the case of State vs Jadwin 85 SW 490 seems to question the applicability of the doctrines of accretion to a littoral owner

the writer believes that the Texas courts have in the main recognized a littoral owner's right to acquire title to accretion of soil caused by the action of the sea. This is certainly true in all other jurisdictions with the exception of Louisiana. The Louisiana exception is caused by the peculiar provisions of the Louisiana Code. The Texas doctrine seems to be embodied in the following cases: Gibson vs Carroll 180 SW 630; Fulton vs Frandolig 53 Tex 330; Westervelt vs Muely 216 SW 680; State vs Texas Land and Cattle Company 78 SW 957; Denny vs Cotton 22 SW 122. All these cases accept as settled the doctrine that in Texas a littoral owner has a right to accretion.

Still discussing our first theory and having settled that the respective land owners of the adjoining grants are entitled to so much of the area involved as was caused by accretion to their respective grants, our next question appears to be just how much of the area involved is the result of accretion to the San Martin and the Santa Isabel. In your letter of October 23, 1936 you state, "It is reasonably certain that the entire area has not been absorbed by the San Martin and Santa Isabel through accretion, for the reason that the operations have been in reverse, the upland having been brought above the tidal limits by obstructions both natural and artificial at the lower end of this arm of the Laguna." We believe that you are correct in this statement except that the area involved was never properly an arm of the Laguna. It was subject merely to inundation by virtue of high winter tides. What appears to have happened is that in the course of the past fifteen or twenty years natural obstructions at the lower end of the area have cut off these high winter tides. Average tides never flooded the area involved. That a littoral or riparian owner is not entitled to accretion that is not contiguous to his land is beyong question. It is also well settled in this jurisdiction that accretion extending shoreward from State property does not become the property of the adjacent land owner upon its joining his shore. City of Victoria vs Shott 29 SW 681; Wilson vs Watson 138 SW 283; 35 ASR 309; Fulton vs Frandolig 63 Tex 330. Also while considering this question of how much of this area has been added to the San Martin or Santa Isabel by accretion, it is well to remember that this alleged vacancy is not properly an accretion at all. It was dry ground during most the year even in 1828. It has not been added to the "shore line" by accretion; it has merely ceased to become flooded by the "highest winter tides".

Hence we see that under what we have termed "our second theory" of this vacancy, there is indisputably a large area of state land lying between the boundaries of the grants involved and the "shoreline" of the Laguna Madre. If "our first theory" is correct we still have the same vacancy decreased in size by all of such area that is properly accretions to the aforesaid grants. Only a court can determine which is correct. In either case the vacancy exists.

Having now determined that there is a considerable body of land lying between the boundaries of the respective owners of the San Martin and Santa Isabel and the present shoreline of the Laguna Madre not absorbed entirely by said grants and belonging to the State of Texas, we are now presented with the question of whether or not this area is subject to sale to the applicants who have filed applications to purchase the same. The appropriation in the Acts of 1900, page 29, Art. 5416 (RCS 1925) to the Permanent School Fund of this State contains the following exceptions, "except that included in lakes, bays and islands along the Gulf of Mexico within tide water limits". In an opinion dated October 17, 1934 addressed to the Honorable J. H. Walker, Commissioner of the General Land Office, the Honorable Ralph W. Yarborough, then Assistant Attorney General, advised you that the preference rights of purchase granted by Section 5, page 271, General Laws 42nd Legislature (Sec. 5 Article 5421c Vernon's Annotated RCS) do not extend to permanent marsh lands or salt water lakes along the Gulf of Mexico within tide water limits and lands subject to overflow by the storm tide in the case of Civil Law grants.

Following this opinion to its natural conclusion, the same land would not be subject to sale to any individual except by special act of the Legislature. I cannot agree with Mr. Yarborough's opinion. In other words, I believe that the exception in the Act of 1900 applied to tide water areas irrespective of whether or not the adjoining grant was a Civil Law grant or one executed under the Common Law. The Common Law became the rule of decision in this State on January 20, 1840. RS 5294; Grigsby vs Reib 105 Tex. 597; 153 SW 1124. I believe that the exceptions in the Act of 1900 must be viewed in the light of the law in effect at the time the statute was enacted, and this irrespective of whether or not the area in controversy is bounded by a Common Law grant or a grant executed under the Mexican Civil law. The Mexican Civil Law can be looked to in determining

the boundaries of a grant executed when that law was in force in this jurisdiction, but it cannot be looked to in determining the effect of a statute enacted by the State of Texas sixty years after the Mexican Civil Law went out of existence in this jurisdiction. Under the Common Law the shore line is the line of ordinary high tide. City of Galveston vs Menard Supra. Thus we see that applying the Mexican Civil Law and its doctrine of "highest winter tide" in determining the boundaries of the San Martin and Santa Isabel or adopting our second theory of the surveyor's mistaken attempt to meander that "highest winter tide" in determining those boundaries, and in applying the Common Law to determine just what was meant by "tide water area" in the exception in the Act of 1900, we had at the time the grants were executed and the surveys made on the ground a considerable area of land subject to the flow of the highest winter tide, but not coming within the exception of sale embodied in the Act of 1900.

From the foregoing discussion it is apparent that we believe that resolving every reasonable doubt in favor of the State, that there is a considerable area of land lying between the respective boundaries of the San Martin and Santa Isabel, which is subject to sale to the proper applicant. The question of the exact present location of such respective boundaries and of the lines of ordinary tide are questions which can only be settled in a suit between the successful claimant and the adjoining land owners. It is suggested that your only course of action is to accept Mr. Carl F. K. von Blucher's report as determinative of this question, and as his report establishes a vacancy between the boundaries of the San Martin and Santa Isabel grants and the Laguna Madre; locate those boundaries according to the rules of law laid down in Hughes vs State Supra and other cited cases; and, as Mr. Blucher's report shows that the area has not been subject to the ebb and flow of the tides since long before the survey was made and the grants were patented, sell such area to the proper applicant to purchase. From this you will see that perhaps a great part of the foregoing opinion was unnecessary to a determination of this question. All such

part as was not absolutely necessary to a determination of this problem may be regarded merely as an attempt on the part of the writer to throw some light upon some of the ramifications attending the location of any surveys bounded by tide water areas in this state.

H. Grady Chandler, Assistant Attorney General who heads our Land Desk, concurs with the result reached in this opinion and believes that the award should issue in order to render it possible for a court to settle this matter which has been in controversy since 1910.

Trusting that the above will be of some benefit to you, I am

Yours very truly,

Llewellyn B. Duke

Llewellyn B. Duke
Assistant Attorney General

LBD/bk

Monument Page for Survey and Legal Description- Lower Texas Coastal Mitigation LLC 955.82 Acre Tract
Cameron County, Texas

M1	Calculated Point	Searched For-Not Found or Set
M2	Coastal Surveying Capped Rod (CST)	Set
M3	Aluminum Disk (AD)	Found
M4	Coastal Surveying Capped Rod (CST)	Set
M5	Calculated Point	Searched For-Not Found or Set
M6	Aluminum Disk (AD)	Found
M7	Calculated Point	Searched For-Not Found or Set
M8	Aluminum Disk (AD)	Found
M9	Old Post	Found
M10	Old Post	Found
M11	Old Post	Found
M12	Rod capped M and R	Found
M13	Old Post	Found
M14	Old Post	Found
M15	Rod capped M and R	Found
M16	Rod capped M and R	Found
M17	Old Post	Found
M18	Calculated Point	Searched For-Not Found or Set
M19	Fiberglass Boundary Marker	Set
M20	Coastal Surveying Capped Rod (CST)	Set
M21	Calculated Point	Searched For-Not Found or Set
M22	Calculated Point	Searched For-Not Found or Set
M23	Aluminum Disk (AD)	Found
M24	Rod capped M and R	Found
M25	Old Post	Found
M26	Calculated Point	Searched For-Not Found or Set
M27	Concrete Monument "A"	Found
M28	Rod capped M and R	Found
M30	Calculated Point	Searched For-Not Found or Set
M31	Rod capped M and R	Found
M32	Calculated Point	Searched For-Not Found or Set
M33	Rod capped M and R	Found
M34	Concrete Monument	Found
M35	Rod capped M and R	Found
M36	Calculated Point	Searched For-Not Found or Set
M37	NGS Monument Del Mar AZ Mark	Found Held for Reference to Survey
M38	Rod capped M and R	Found
M39	Aluminum Disk (AD) "209 200"	Found
M40	Rod capped M and R	Found
M41	Concrete Monument "A"	Not Found
M42	Base of Lighter Post "	Found
M43	Rod capped M and R	Found
M44	Rod capped M and R	Found
M45	Rod capped M and R	Found
M46	5/8" Rod	Found
M47	Rod capped M and R	Found
M48	Rod capped M and R	Found

Monument Page for Survey and Legal Description- Lower Texas Coastal Mitigation LLC 955.82 Acre Tract
Cameron County, Texas

M49	1/2" Rod	Found
M50	Aluminum Disk (AD) "19"	Found
M51	Old Post	Found
M52	Calculated Point	Searched For-Not Found or Set
M53	Coastal Surveying Capped Rod (CST)	Set
M54	Coastal Surveying Capped Rod (CST)	Set
M55	Rod capped M and R	Found 21.34' North
M56	Rod capped M and R	Found 16.10' North
M54	Coastal Surveying Capped Rod (CST)	Set

APPENDIX D:

Shoreline Change Since 1936 Based on Surveys of the Shoreline of the LTCMB's Tract

Meandering Shore of Laguna Madre Historical Analysis from Conveyances Since 1939

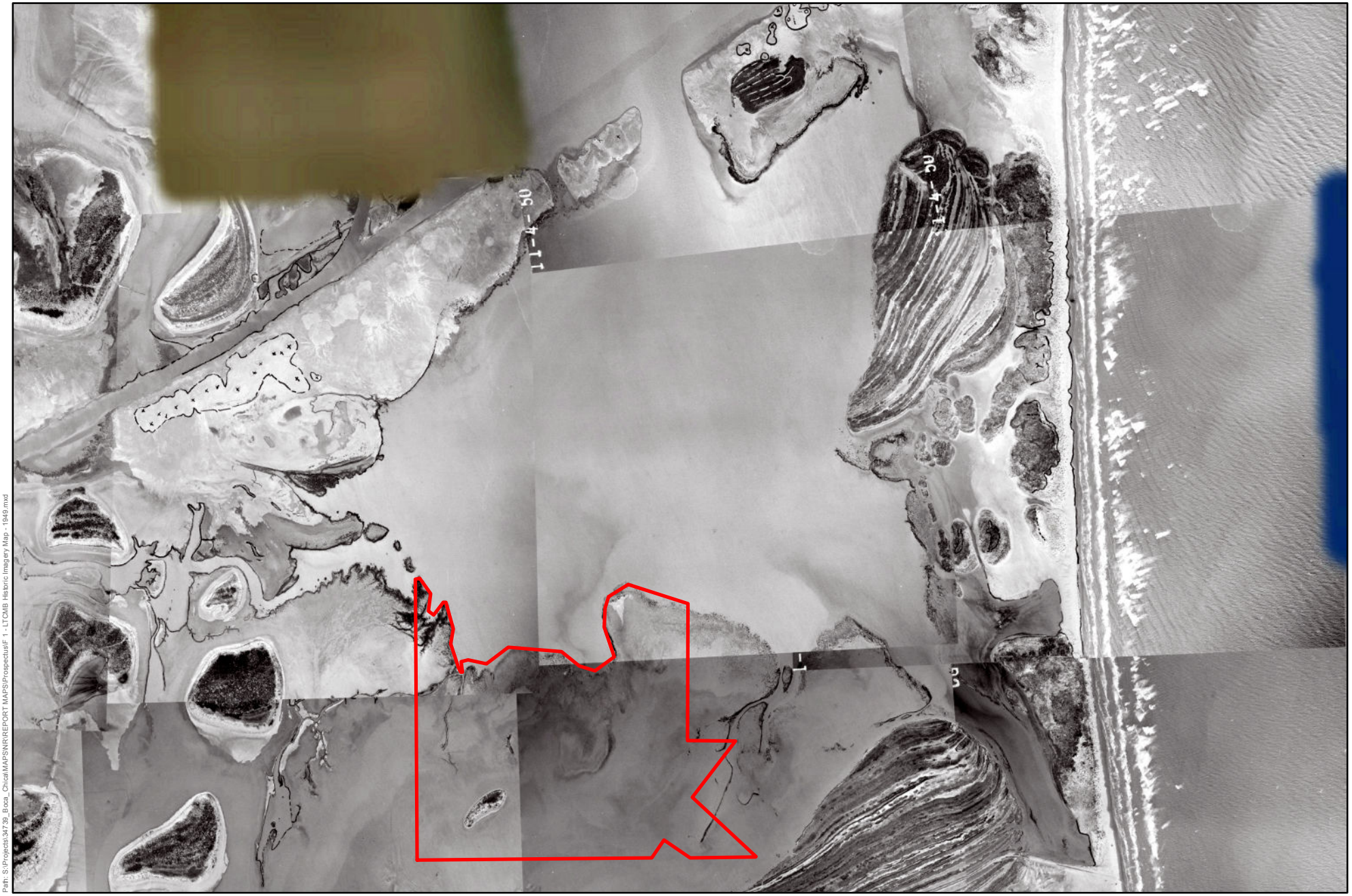
	Skelton Patent 324 - 16,904 acres (surveyed in 1936, patent conveyed in March 1939)			Deed to Caldwell - 3,250 acres (Northern portion along meandering shore out of Skelton Patent - conveyed December 1960)			Nav. Dis. Patent 703 -2,826.84 acres (Property adjoining Skelton survey to the North - surveyed November 1960, patent conveyed January 1961)			Sellers/Rampart Capital (1,265.52 acres to Sellers June 1974, foreclosed by Rampart September 1995)		Deed to State of Texas from Navigation District (Property adjoining Skelton survey to the North out of Nav. Dist. tract- 3,419.86 acres known as South Bay, conveyed February 1986)			Rampart Capital/ LTCM Property (May 2017)	
	Note: 1						Notes: 1 and 2			Notes: 1,4,5 and 8		Notes: 1 and 2			Notes: 3, 6 and 7	
	call	distance (v)	distance (ft)	call	distance (v)	distance (ft)	call	distance (v)	distance (ft)	call	distance (ft)	call	distance (v)	distance (ft)	call	distance (ft)
1	S 49˚30' E	1333.7	3704.73	"along the meandering shore of the Laguna Madre" no metes and bounds description			S 43˚ 07' 30" E	1337.65	3704.59	S 43˚ 07' 30" E	1439.1	N 43˚ 07' 30"W	1337.65	3704.59	N77˚59'00"E	120.63
2															S 36˚16'01" E	481.41
3															S 07˚33'09" W	447.67
4															S 54˚16'28"E	163.04
5															N 37˚34'12" E	401.24
6															N 86˚26'04" E	63.19
7															S 16˚04'36" E	698.35
8	S 14˚ 45' E	360	1000				S 14˚ 59' 20" E	360	1000	S 14˚ 59' 20" E	1000	N 14˚ 59' 20" W	360	1000	S 10˚ 14' 06" W	390.52
9															S 18˚ 16' 51" E	631.8
10															S 25˚33'40" E	127.47
11	N 83˚ 0' E	320	888.89				N 82˚ 45' 40" E	320	888.89	N 82˚ 45' 40" E	888.89	S 82˚ 45' 40" W	320	888.89	N 82˚ 05' 10" E	46.56
12															N 06˚05'02" W	268.47
13															N 76˚29'25" E	179.98
14															S77˚59'02" E	475.73
15	N 43˚ 45' E	300	833.34				N 43˚ 30' 40" E	300	833.34	N 43˚ 45' E	833.38	S 43˚ 30' 40" W	300	833.34	N 52˚38'08"E	691.82
16	S 79˚ 45' E	270	750				S 79˚ 59' 20" E	270	750	S 79˚ 59' 20" E	750	N 79˚ 59' 20" W	270	750	S 85˚ 19' 32" E	1352.33
17	S 57˚ 0' E	320	888.89				S 57˚ 14' 20" E	320	888.89	S 57˚ 14' 20" E	888.89	N 57˚ 14' 20" W	320	888.89	S 52˚ 01' 20" E	572.53
18	S 79˚ 30' E	265	736.11				S 79˚ 44' 40" E	264.86	735.72	S 79˚ 44' 30" E	735.72	N 79˚ 44' 40" W	264.86	735.72	S 72˚ 33' 17" E	414.74
19	N 46˚ 30 E	200	555.56				N 46˚ 13' 20" E	200.28	555.56	N 42˚ E	555.56	S 46˚ 13' 20" W	200.28	555.56	N 54˚06'38" E	601.3
20	N 14˚ W	520	1444.45				N 14˚ 13' 00" W	520.28	1445.23	N 14˚ E	1445	S 14˚ 13' 00" E	520.28	1445.23	N 19˚02'40"W	797.72
21															N 03˚29"05" E	480.79
22	N 40˚ E	270	750				N 39˚ 45' 30" E	270.11	750.31	N 42˚ 00' E	750	S 39˚ 45' 30" W	270.11	750.31	N 15˚ 03' 56" E	300.36
23															N 57˚44'09" E	589.23
24	S 71˚ E	1240	3444.45				S 71˚ 14' 30" E	1237.64	3437.9	S 71˚ 04' 30" E	3437.09	N 71˚ 14' 30" W	1237.64	3437.9	S 70˚ 53' 17" E	1607.55
25	**The distance of lines 24 and 25 are combined to account for the shoreline calls of the 106 acre save and except tract**														Adjustment	1803.00
26	S 41˚ 45' E	560	1555.56				S 41˚ 59' 30" E	560	1555.56	S 41˚ 59' 30" E	1555.46	N 41˚ 59' 30" W	560	1555.56	Balance of save and except tracts	
27	N 47˚ 45' E	600	1666.67				N 47˚ 30' 30" E	600	1666.67	N 47˚ 45' E	1666.67	S 47˚ 30' 30" W	600	1666.67		
28	S 43˚ 30' E	620	1722.23				S 43˚ 42' 30" E	620.29	1723.03	S 43˚ 42' 30" E		N 43˚ 42' 30" W	620.29	1723.03		

NOTES

1. Many calls and distances in the Skelton survey, Navigation District survey, State of Texas survey and Seller/Rampart survey are the same as indicated with the light green and pink highlighting. The green highlighting indicates that the distances are the same. The pink highlighting indicates that the calls are the same. Comparing the Skelton survey, Navigation District survey, State of Texas survey and Seller/Rampart surveys, where there are differences, they are minor.
2. The Nav District survey and the State of Texas survey have the same calls and distances but in reverse. The Navigation District survey was performed beginning Southeast and the State of Texas survey was performed beginning Northwest
3. The 2017 Rampart/LTCM survey has much more detail of the meandering shores, in some places having as many as 7 calls and distances for where there was only one before. Therefore, there is great deal of difference in the calls and distances. This is due to much more sophisticated surveying equipment and some accretion.
4. Line 1 - Sellers/Rampart metes and bounds - The difference in distance is due to the fact that the this tract picks up partially into Skelton and Nav District call at the tracts Northwest corner.
5. Line 20 - Sellers/Rampart metes and bounds - This was a typographic error in the metes and bounds description. It should have been SW instead of SE
6. Line 24 - Rampart/LTCM survey - The survey stops at this point because of the 106.3577 acre tract transferred by Sellers to Texas A & M which has approximately 1,803 feet along the shoreline.
7. Line 25 - Rampart/LTCM survey - This is the adjustment which is not on the survey and only provided to show that the distance is comparable with the other surveys and metes and bounds description.
8. Line 28 - Sellers/Rampart metes and bounds - There is no distance for this point stating only that this line goes to where it intersects with the 1000 acre tract.

APPENDIX E:

Google Earth Historical Images of South Bay Area



Path: S:\Projects\34739_Boca_Chica\MAPS\NR\REPORT MAPS\Prospectus\F 1 - LTCMB Historic Imagery Map - 1949.mxd

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COASTAL MITIGATION BANK

GOOGLE EARTH HISTORIC IMAGERY OF SOUTH BAY - 1949
CAMERON COUNTY, TEXAS

FIGURE 1

Project Area

Background:	
Scale:	1:40,000
Created By:	JS
Approved By:	KC
SWCA Project No.:	34739
Date Produced:	December 18, 2017

NAD 1983 StatePlane Texas South FIPS 4205 Feet

0 0.5 1 Miles

0 0.5 1 1.5 Kilometers

Path: S:\Projects\34739_Boca_Chica\MAPS\NR\REPORT MAPS\Prospectus\F 2 - LTCMB Historic Imagery Map - 1962.mxd

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GOOGLE EARTH HISTORIC IMAGERY OF SOUTH BAY - 1962
CAMERON COUNTY, TEXAS

FIGURE 2

Project Area

Background:	
Scale:	1:40,000
Created By:	JS
Approved By:	KC
SWCA Project No.:	34739
Date Produced:	December 27, 2017

NAD 1983 StatePlane Texas South FIPS 4205 Feet

0 0.5 1 Miles

0 0.5 1 1.5 Kilometers

Path: S:\Projects\34739_Boca_Chica\MAPS\NR\REPORT MAPS\Prospectus\F 3 - LTCMB Historic Imagery Map - 1995.mxd

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GOOGLE EARTH HISTORIC IMAGERY OF SOUTH BAY - 1995
CAMERON COUNTY, TEXAS

FIGURE 3

Project Area

Background:	
Scale:	1:40,000
Created By:	JS
Approved By:	KC
SWCA Project No.:	34739
Date Produced:	December 27, 2017

NAD 1983 StatePlane Texas South FIPS 4205 Feet

0 0.5 1 Miles

0 0.5 1 1.5 Kilometers

Path: S:\Projects\34739_Boca_Chica\MAPS\NR\REPORT MAPS\Prospectus\F 4 - LTCMB Historic Imagery Map - 2017.mxd

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GOOGLE EARTH HISTORIC IMAGERY OF SOUTH BAY - 2017
CAMERON COUNTY, TEXAS

FIGURE 4

Project Area

Background:	
Scale:	1:40,000
Created By:	JS
Approved By:	KC
SWCA Project No.:	34739
Date Produced:	December 27, 2017

NAD 1983 StatePlane Texas South FIPS 4205 Feet

0 0.5 1 Miles

0 0.5 1 1.5 Kilometers

APPENDIX F:

Legal Opinion Rendered by David E. Cowens, Esquire of the Law Firm of McLeod, Alexander, Powel & Apffel, P.C. (MAPA) on September 29, 2017

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September 29, 2017

Re: Opinion regarding ownership of Lower Laguna Madre Mud Flat Owned by Lower Texas Coastal Mitigation, LLC (LTCM) within the so-called 1936 Skelton Vacancy

---

Lower Texas Coastal Mitigation, LLC
16401 Country Club Drive
Crosby, Texas 77532

Gentlemen:

Scope of Opinion

Lower Texas Coastal Mitigation, LLC (LTCM) has requested my office to review issues with regard to property owned by LTCM located adjacent to the southern Laguna Madre area known as South Bay. Specifically LTCM requests that my office render an opinion as to whether the State of Texas maintains a colorable claim to ownership of the mud flats within LTCM's property.

Limitations of Opinion

This opinion is not meant to qualify as an abstract of title, title examination or opinion of title as defined by the Texas Title Examination Standards. This opinion also does not address the issue of mineral interests which may or may not be owned by LTCM. This opinion is limited to information provided by the client, vacancy and land patent data from the Texas General Land Office, Texas judicial and Attorney General holdings and opinions, scientific data received from client and information available in the public domain. The author has not been made aware of unrecorded deeds or agreements which may affect the opinion.

Skelton Vacancy

The original deed to LTCM described its property as 1,265 gross acres, more or less, save and except multiple tracts, being out of Share 1 and II, of the SAN MARTIN GRANT A-6 and the H.

M. Skelton Vacancy Award, A-269, (S. F. 12924), Cameron County, Texas,[1] which equate to approximately 960 acres. The Skelton Vacancy Award is documented by the Texas General Land Office (GLO).

On March 10, 1926, one H.M. Skelton, claiming a vacancy lying between the San Martin and the Santa Isabel grants of approximately 26,000 acres of lands, filed an application for survey and purchase with the GLO under the provisions of then Article 5432 of the Revised Civil Statues as amended by SB 127 in 1919. More than ten years later the GLO Commissioner notified Skelton that his application had been approved with respect to a tract of 16,904 acres, classified as mineral land and valued at $1.00 per acre, and on the same day Skelton executed and filed with the Commissioner an application and obligation to purchase school land for $16,904.40, of which $422.61 was paid forthwith, the balance to be paid with interest over a period of years.[2] In 1939, the lands were awarded to Skelton.[3]

The GLO maintains a "scrap file" with records relating to the Skelton vacancy application and approval.[4] The GLO files include survey field notes and Attorney General Opinions related to the application.

In his application H.M. Skelton stated that he was applying for approximately 26,000 acres of lands but noted that

> Also a part of this 26,000 acre tract is underwater, and is probably not subject to sale, and a small tract within the bounds of this larger tract is leased by the State as a bird refuge, this application is intended to cover all the land lying between the San Martin Grant, Santa Ysabel Grant and the Laguna Madre, with the exceptions hereabove set out.[5]

Skelton himself contemplated and acknowledged that when the final survey was made for the vacancy it would only include land which was not underwater. The application further noted that part of the boundary would extend to "the shores of the Laguna Madre."[6] The GLO archival documents include a May 1926 survey from the Cameron County Surveyor who also noted the boundary extending to "the Shore Line of the Laguna Madre as the same is now established."[7] This survey reduced the area to approximately 18,000 acres.[8] The Texas Attorney General reviewed the application and made the following comment:

> It seems to me that the calls of the patent of this Mexican grant for the Laguna Madre would serve to extend its lines beyond course and distance calls to the actual shore lines of the

1 See title instruments conveying title to LTCM
2 Esperson v. C.I.R., 127 F.2d 370, 371 (5th Cir. 1942); see also Guaranty Petroleum Company v. Armstrong, 609 S.W.2d 529 (Tex. 1980). All amounts were ultimately paid. Receipts totaling $16,904.40 are contained within the archive files of the GLO – see footnote 4 below.
3 Esperson v. C.I.R, *supra,* at 371. *See also* State Patent found at Volume 71A, No. 324 of the State Patent records.
4 http://www.glo.texas.gov/ncu/SCANDOCS/archives_webfiles/arcmaps/webfiles/landgrants/PDFs/5/2/9/529103.pdf.
5 *Id.* at page 6 (February 15, 1926 Letter from H. M. Skelton to the Commissioner of General Land Office.
6 *Id* at page 8 (Surveyor's Field Notes).
7 *Id.* at page 12 (1926 Survey Field Notes).
8 *Id.*

> Laguna Madre as of the date of the patent.[9]

In that same letter the Attorney General's Office delayed a finding that no action was needed by its office to allow owners within the San Martin Patent to provide comments on the application.

On November 9, 1936 after several years of delays and challenges as to whether an actual vacancy existed, the Attorney General ruled in favor of Skelton. The Attorney General concluded that the lands falling within the borders of the proposed vacancy were not part of the Laguna Madre and refuted the GLO's claim that a good portion of the area was accreted land that had once been part of the Laguna Madre:

> Laguna Madre is the Spanish equivalent for the word mother sea, or high sea. It is the name applied to the stretch of salt water lying between the main land on the west and Brazos, Padre and Mustang Islands on the east. I do not believe the Laguna Madre covered these western low areas [the vacancy area] at the time surveys were made and field notes for patent written. If it had reached this far west, there would be visible signs of its presence attested by old shore lines, marine shells, salt deposits, etc. My investigations lead me to believe that sea water at ordinary high tide does not reach even as far west as the yellow line on the map…
>
> . . . .
>
> The hills or lomas are of sand dune origin. They, together with their slopes, are now covered with vegetation and trees, evidencing the fact that many years have elapsed since Laguna Madre covered these western low areas.[10]

The Attorney General's office went on to state that "the area involved was never properly an arm of the Laguna", and that

> it is well to remember that this alleged vacancy is not properly an accretion at all. It was dry ground during most the year even in 1828. It has not been added to the "shore line" by accretion[11]

The Attorney General also held that "the area has not been subject to the ebb and flow of the tides since long before the survey was made and the grants were patented."[12] The Attorney General's office ruled that the land could be surveyed and sold under the law. Following a new survey, a December 1936 Application filed by Skelton further reduced the acreage to be purchased to 16,904.40 acres.[13] In reducing the acreage, the 1926 Cameron County survey was amended to include hand written interlineations adding the words "along its meanders" after the words "Laguna Madre."[14] The survey filed with the field notes clearly delineated the "meanders" of the Laguna

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9 *Id.* at 17 (December 21, 1927 from C.W. Trueheart, Assistant Attorney General, to J.T. Robison, Commissioner of General Land Office.

10 *Id.* at 27-8 (November 9, 1936 Letter Opinion from Llewellyn B. Duke, Assistant Attorney General, to J.H. Walker, Commissioner of General Land Office) (parenthetical added for clarification).

11 *Id.* at 30.

12 *Id.* at 32.

13 *Id.* at 15 (Application and Obligation to Purchase School Land Without Settlement dated December 12, 1936).

14 *Id.* at 38-40 (December 10, 1936 Plat of Survey No. 316 executed by E.M. Ridley Surveyor of Cameron County,

Madre at the northern boundary of the patent.[15]

After objections were filed by third parties to the sale of the patent to Skelton, the Attorney General's office again reviewed the transaction finding it to be valid.[16] Finally, on March 23, 1939 Governor W. Lee O'Daniel[17] executed a Patent recorded in Vol 71, No. 324 of the State Patent Records, which conveyed 16,904.40 acres to Gatewood Newberry, successor to Skelton.[18] The grant specifically describes the acreage by metes and bounds and notes the northern boundary of the property to be at the "line of the Laguna Madre along its meanders" and specifically detailing the metes and bounds of such "meanders."[19] The sum of $16,904.40 was paid for the land.[20] Texas law holds that the granting of a patent constitutes ratification and adoption of a survey.[21] One of the objecting parties, Mellie Esperson, filed a trespass to try title suit to challenge ownership over the vacancy awarded to Skelton but her case was dismissed.[22]

The history of the grant, as revealed through historical public documents and judicial opinions reveals that the property within the boundaries of the Skelton Vacancy, which includes LTCM's property, was not coastal lands, tidal lands, submerged lands or part of the Laguna Madre. The property, though at times muddy and in places marshy is, as the Attorney General noted in 1936 "dry ground" "not subject to the ebb and flow of the tides." Because of this, the Patent granted to Skelton and his successors and assigns in 1939 included all the property within its metes and bounds description with the northern boundary following shores of the Laguna Madre "as it meanders" and the property is not of the type typically subject to a claim of ownership by the State.

Description and Known Physical Characteristics of the LTCM Tract.

The LTCM property consists of a rectangular-shaped tract of land 1.35 miles long by 1.30 miles wide. The landscape in the vicinity (within approximately 5 miles) of the property is relatively flat with elevations ranging from sea level to 30 feet. The LTCM Property is bordered on the north by the southernmost tip of the Laguna Made, commonly called South Bay. It lies within the Laguna Madre Barrier Islands and Coastal Marshes (Level IV) ecoregion of the Western Gulf Coastal Plain (Level III).[23] This ecoregion is generally described as flat topography naturally comprised of grassland toward the shore and patches of forest or savanna in inland areas.[24]

Texas and his assistant V. L. Conrad).

15 *Id.* at 46 (Map Showing Vacant Land signed by V. L. Conrad, Asst. Surveyor). The GLO files indicates some confusion as to the Surveyor's authority to amend the survey but this was resolved and the survey was approved for the patent.

16 *Id.* at 57 (March 17, 1937 Letter from Llewellyn B. Duke, Assistant Attorney General to William H. McDonald, Commissioner of General Land Office).

17 Also known as "Pappy O'Daniel." https://tshaonline.org/handbook/online/articles/fod11.

18 *Id.* at 75-77 (Deeds).

19 *Id.* at 82-84 (Patent).

20 *Id.* at 93-4.

21 Griffith v. Rife, 72 Tex. 185, 12 S.W. 168 (1888); State v. Humble Oil & Refining Co., 187 S.W.2d 93 (Tex. App. 1945, n. w. h.); La. Ry. & Nav. Co. v. State, 298 S.W. 462 (Tex. Civ. App. – Dallas 1945); aff'd. Tex.Com.App., 7 S.W.2d 71 (1928).

22 Esperson v. C.I.R., 127 F.2d 370, 371 (5th Cir. 1942).

23 Griffith, et al., Ecoregions of Texas, found at ftp://newftp.epa.gov/EPADataCommons/ORD/Ecoregions/tx/TXeco_Jan08_v8_Cmprsd.pdf

24 *Id.*

Along the northern border of the LTCM site, black mangroves (*Avicennia germinans*) for the most part visibly outline the meandering shores of the Laguna Madre. In the southwestern corner of the site, a small dune feature called Loma Plata is present. This feature is a dune formation of wind-blown clay known as a loma. The LTCM site includes two distinct soil types based on a NRCS Web Soil Survey for the area, Barrada clay and Point Isabel clayloam (NRCS 2015).[25]

Historical USGS topographic maps show the area as "sand and mud" but not submerged.[26] LTCM consultants, SWCA Environmental Consultants, confirm that while some areas of the property can be covered by shallow water due to wind conditions the property is not submerged lands and is not within the waters of the Laguna Madre.[27] The land is not "tidal" or "tidewaters."

Texas Law Issues Regarding Submerged Land and No Legal Estoppel Against the State of Texas

In rendering this opinion the author recognizes and acknowledges several black letter doctrines of law. First, generally, claims of estoppel cannot be enforced against the state of Texas.[28] Second, the Texas Open Beaches Act and similar laws places a public easement on certain beaches in Texas. Third, the State owns the coastal land submerged by the Gulf of Mexico as well as certain submerged areas such as river beds.[29]

However, a recorded patent containing specific metes and bounds descriptions, as well as determinations by the GLO, the Attorney General and The Texas Court of Appeals and Supreme Court who all ruled that the Laguna Madre was not part of the Gulf of Mexico, tidal or submerged property, and a survey approved by the State when issuing that the Skelton patent, are not a matter of estoppel. It is a conveyance which is valid and can be enforced in a court of law. Further, as ruled by the Attorney General's office as early as 1936, LTCM's property is not coastal land submerged by the Gulf of Mexico or "submerged lands" as that term is defined under Texas law. The present day physical characteristics of the LTCM property support this finding as well.

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25 *Id.*

26 Geological Survey (U.S.). SW ¼ Port Isabel Quadrangle, map, 1955; Reston, Virginia.

27 The Texas Parks and Wildlife Service identifies a "paddling trail" just outside the boundaries of the LTCM property in the Laguna Madre for use for kayakers. https://tpwd.texas.gov/fishboat/boat/paddlingtrails/coastal/south_bay/. See also http://www.stxmaps.com/go/img/sbay-trl.pdf. The maps supplied by the TPWS match the USGS topographic maps indicating the meandering shore of the Laguna Madre. The water ends where the shores of the Laguna Madre begin.

28 Texas Company v. State, 154 Tex. 494, 281 S.W.2d 83 (1955).

29 The Texas Water Code provides that the "water of the ordinary flow, underflow, and tides of every. bay or arm of the Gulf of Mexico . in the state is the property of the state." . Tex. Water Code Sec. 11.02 1. See also State v. Bradford, 121 Tex. 515, 50 S.W.2d 1065, 1069 (1932) ("The rule long has been established in this state that the state is the owner of the soil underlying the navigable waters, such as navigable streams, as defined by statute, lakes, bays, inlets, and other areas within tidewater limits within its borders."); Lorino v. Crawford Packing Co., 142 Tex. 51, 175 S.W.2d 410, 413 (1943). The Texas Parks and Wildlife Code similarly provides that "the beds and bottoms and the products of the beds and bottoms of the public rivers, bayous, lagoons, creeks, lakes, bays, and inlets in this state and of that part of the Gulf of Mexico within the jurisdiction of this state are the property of this state." Tex. Parks & Wildlife Code 1.011(c).

Judicial Precedent Involving Mud Flats Bordering the Laguna Madre

Both Texas Courts and the Texas Attorney General have rendered multiple opinions regarding the nature and ownership of mud flats common to the Laguna Madre. The gravaman of these opinions are as follows:

1. The Laguna Madre is not part of the Gulf of Mexico. As stated by the Texas Attorney General in his opinion dated September 24, 2003, "We conclude therefore that the body of water known as the Laguna Madre is separate from, and not a part of, the body of water called the Gulf of Mexico." [30]
2. Because the Laguna Madre is not part of the Gulf of Mexico, the State of Texas cannot claim to own mud flats within the Laguna Madre under state law granting title to "the water and the beds and shores of the Gulf of Mexico."[31]
3. The Laguna Madre is governed not by astronomic tidal forces from which it is insulated, like those exerted by the moon and sun, but by meteorological forces to which it remains open, like the wind and barometric air pressure.[32]
4. The presence of water over the mud flats in the Laguna Madre is due to meteorological, not astronomical forces and "variations in water levels due to daily tidal forces are minuscule."[33]
5. Private individuals can own mud flats in the Laguna Madre as they are neither part of the Gulf of Mexico, part of an inward water within tidal limits nor submerged land under the various applicable codes.[34] An area of similar topography within the Skelton Vacancy immediately adjacent to LTCM's property, a portion of which is along the shore of the Laguna Madre, was purchased by SpaceX for use as a wetlands mitigation site. Various State agencies, including the GLO, recognized Space X as the owner of that property in their approvals of Space X's mitigation plans. This indicates current agreements that this land is not subject to a claim of ownership by the State.
6. The location of the shoreline of the Laguna Madre has not changed. In the Kenedy case decided by the Texas Supreme Court in June 2002, the State of Texas contended on appeal to the Court of Appeals that "the inundation patterns on the mud flats has not changed since the time of the grants, the shoreline remains where the original grantors placed it."[35] The Supreme Court agreed "...conditions in the Laguna Madre, which has remained the

30 Tex. Atty. Gen. Op. GA-0107 (Tex.A.G.), 2003 WL 22433837; See also Luttes v. State, 324 S.W.2d 167 (Tex. 1958); Kenedy Memorial Foundation v. Dewhurst, 90 S.W.3d 268 (Tex. 2002); Butler v. Sadler, 399 S.W.2d 411 (Tex. Civ. App.-Corpus Christi 1966, writ ref'd n.r.e)

31 *Id.*

32 John G. and Marie Stella Kenedy Memorial Foundation v. Dewhurst, 90 S.W.3d 268 (2002). Because of this the mud flats do not fall within the prohibitions of Section 51.173 because the LTCM property is not "within tidewater limits."

33 *Id.* at 271.

34 The Texas Natural Resources Code defines "submerged lands" as:

> any land extending from the boundary between the land of the state and the littoral owners seaward to the low-water mark on any saltwater lake, bay, inlet, estuary, or inland water within the tidewater limits, and any land lying beneath the body of water.

Tex. Nat. Res. Code Section 33.004 (11).

35 John G. and Marie Stella Kenedy Memorial Foundation v. Dewhurst

same in this vicinity for two hundred years..."[36] The location of the shoreline on the LTCM tract described in the grant with metes and bounds and an accompanying survey is also supported by the SWCA Environmental Consultants reports, aerial photography, physical inspection and a metes and bounds survey.

Conclusion

LTCM's property is located within the Skelton Vacancy. Both the courts of Texas and the Attorney General's Office in various rulings has found that this area is neither submerged or on the Gulf of Mexico or an arm of the Gulf of Mexico subject to the tide. As such, legal grounds for the State of Texas to claim historical or current ownership of the LTCM property do not exist. If this matter were litigated in a court of law, it is more likely than not a court would reject any such claim of ownership by the state of Texas. Further, no "high tide" or "mean high tide" rule applies to this property. The Skelton Vacancy surveys approved by the State depict the boundaries of the LTCM property to be the meandering shores of the Laguna Madre as there is no actual tide relating to the property. The Attorney General's Office noted in its rulings in 1936 that sea water at ordinary high tide did not reach even as far west as the boundaries of the vacancy. Thus, LTCM would, more likely than not, prevail against the State in any dispute over this issue.

Very truly yours,

David E. Cowen

36 John G. and Marie Stella Kenedy Memorial Foundation v. Dewhurst