

Anahuac Wetlands Mitigation Bank Prospectus

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SWG ANAHUAC WETLANDS MITIGATION BANK PROSPECTUS

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Proposed Mitigation Bank Name: Anahuac Wetlands Mitigation Bank

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1. Objectives:

The overall goal of the Anahuac Wetlands Mitigation Bank (AWMB or Bank) is to restore 121.43 acres of riverine herbaceous and scrub-shrub wetlands. This goal will be achieved through the following objectives:

The objectives of this Bank are to:

1. Recreate, to the extent practicable, high quality wetland habitat
2. Restore and enhance site hydrology to recreate historic drainages and overland flow patterns to the greatest practicable extent, and
3. Restore native vegetation to farmed areas to mimic the native habitat and aquatic resources that historically existed on the site prior to agricultural development and as found on the Anahuac NWR surrounding the Bank to the west, south, and east.

These objectives will be accomplished through the re-establishment and creation of freshwater marsh areas within existing farmed fields, through re-establishment of hydrology, re-grading as necessary and replanting of native species typically found in the targeted habitat types.

The rising demand for coastal residential development, mainly beachfront and bay-front canal subdivisions throughout the upper Texas coast, continues to be very high compared to that of the rest of the country. For instance, development of Galveston Island over the past 20 years utilized and developed a large percentage of the remaining undeveloped properties in the Galveston area. Based on review of aerial photography, the only remaining undeveloped tracts are located either on Bolivar Peninsula, located directly east of Galveston Island via the Bolivar Ferry or near Freeport located directly west of Galveston Island via the San Luis Pass Bridge. Undeveloped coastal property in these areas is typically composed of both freshwater and tidally influenced wetlands and coastal prairie uplands. Due to the high cost of coastal property and the minimal amount of uplands located on these tracts, reduction and elimination measures and alternatives are inherently limited, thus resulting in significant amounts of freshwater and tidal wetland impacts to meet residential/commercial development requirements. Because of this rising demand for residential housing and associated facilities in coastal areas, it is reasonable to assume that a significant need for high quality coastal wetland mitigation will be needed within the next 20 years given the current pace and trajectory of coastal development.

The Bank site was chosen due to close proximity to the upper coastal bay system and potential coastal impact sites, its enhancement and restoration potential, and its ideal, ecologically significant location directly adjacent to the Anahuac National Wildlife Refuge (NWR), which represents one of the largest areas of existing publicly preserved wetlands within the region. The surrounding Anahuac NWR is a critical resting area for migrating waterfowl/songbirds, including threatened and endangered species such as the peregrine falcon, bald eagle, black rail, brown pelican, reddish egret, and white-faced ibis. Recognizing the ecologically sustainable landscape scale need and social benefits of wetland banking,

The Bank also abuts the Gulf Coastal Plains Wetlands Mitigation Bank. The GCPWMB is located at the confluence of East Bay and Elm Bayous, and was designed with an unrestricted, open channel tidal connection to East Bay Bayou. the southern end of GCPWMB was designed to create and connect tidally influenced low and high marsh wetlands with associated tidal pools, tidal channels, and associated mudflats. The northern end was designed to be coastal prairie and freshwater herbaceous coastal marshes and shrub wetlands interconnected with a shallow slough channel. The permitting of AWMB will further enhance GCPWMB and add approximately 168 acres of interconnected restored and preserved freshwater wetlands and coastal prairie to one of the largest areas of existing, publicly preserved wetlands (ANWR) within the region.

The restoration of riverine herbaceous resources will include low marsh, high marsh, wet prairie, and upland prairie. Final acreage of these resources are currently being evaluated in the restoration design and

will be provided in the Mitigation Banking Instrument.

Resource Type	Restored	Enhanced	Created	Preserved
Riverine Herbaceous	121.43	-	-	-
Coastal Upland Prairie	46.75	-	-	-
Totals:	168.18			

This Bank was previously part of the Gulf Coastal Plains Wetlands Mitigation Bank (GCPWMB), Phases 11 and 12. While this Bank will operate independently from GCPWMB, the restoration of this system will provide additional ecological uplift to GCPWMB.

2. Project Location (UTM and Lat/Long in DD):

The Bank includes a 168 acre tract located within a larger parent tract, wholly owned by East Bay Farms and is adjacent to the Anahuac National Wildlife Refuge in southern Chambers County. More specifically, the site is located on the United States Geological Service (USGS) Stanolind Reservoir topographic quadrangle, coordinates 29°40'10.4"N 94°24'25.6"W.

3. Baseline Conditions:

Two Approved Jurisdictional Delineations have been issued by the U.S. Army Corps of Engineers, Galveston District for this site (Appendix A). The Bank is entirely composed of 168 acres of prior converted (PC) areas. The southern 100 acres has a Conservation Easement placed on from a previous engagement with an approved AJD dated December 8, 2016. The northern 68 acres is currently being farmed. It was issued an AJD March 11, 2010. Site conditions have not changed since issuance of the original JD and is currently being updated and reviewed by USACE.

A. Historical Information Review

Prior to performing site reconnaissance activities the following were conducted: 1) review Natural Resource Conservation Service (NRCS) county soil survey maps; 2) review Federal Emergency Management Agency (FEMA) flood plain maps; 3) review USGS topographic maps; 4) interpret current and historical aerial photography.

The Bank is located adjacent to the National Anahuac Wildlife Refuge, which is composed of tidally influenced wetlands dominated by smooth cordgrass (*Spartina alterniflora*), needlerush (*Juncus roemerianus*), and leafy three-square (*Scirpus robustus*), freshwater wetlands dominated by giant cutgrass (*Zizaniopsis milacia*) and California bulrush (*Scirpus californicus*), and coastal prairie uplands containing little blue-stem (*Scizachyrium scoparium*) and bushy bluestem (*Andropogon glomeratus*). Based on these observed habitats on the Anahuac NWR, the banking site historically contained similar habitat types prior to agricultural conversion, thus could potentially offset impacts to freshwater wetlands within the service area.

B. Soil Survey Evaluation

Original site reconnaissance activities occurred in 2013. At that time, the Soil Survey of Chambers County (1976) and the National Resource Conservation Service (NRCS) Web Soil Survey (2010), the dominant soils located on the Bank site are mapped as Beaumont-Morey-Lake Charles and Harris-Veston-Ijam Associations. Field site visits confirmed that the southern end of the Bank were identified as

Beaumont clay (Be), Harris clay (Ha), which are classified as hydric soils in Chambers County by the NRCS according to the 2010 state hydric soils list for Texas. Since then, NRCS reclassified associations in the 2020 updated Web Soil Survey of Chambers County. Field samples from prior-converted fields indicate modification through the agricultural practices of tilling, grading, drainage ditching and leveeing. Despite the effects of tilling and drainage, the soils still contain relict hydric soil characteristics and indicators, and are suitable for wetland restoration purposes.

The Soil Survey of Chambers County (2020) was reviewed to determine the types of soils that would most likely be present on the subject property. The soils data indicate that the dominant soils on the site are of the Beaumont-Morey-Lake Charles and Harris-Veston-Ijam Associations. Specifically, these soils are identified as League clay (LegA) and Labelle clay (LeaA), previously categorized under Beaumont clay (see Figure 4). This area was regularly flooded for rice production and/or waterfowl management during the fall. League clay and Labelle clay are not considered a hydric soil, although review of historic aerials show that some of the areas within this mapped area may be wetlands. Site reconnaissance activities gives us reason to believe that the site is still predominately Beaumont Clay despite the Soil Survey Mapping.

League clay (LegA) is nearly level soil on the coastal prairie. Areas of this soil are broad and irregular in shape and are 30 to several hundred acres in size. The slope ranges from 0 to 1 percent but average 0.5 percent. The surface is covered by a mulch of fine, discrete, very hard aggregates. Gilgai micro relief is distinct in undisturbed areas but is not apparent in cultivated fields. Crops grow moderately well on this soil. Most of the acreage is cultivated, and the rest is used for improved pasture or native grazing. Rice is the main crop, grain sorghum is a minor crop. Bermuda grass and dallies grass are the main plants used for improved pasture. Native grasses are mainly Andropogon, Paspalum, and Panicum species. In a few places, pine and hardwoods have encroached. The trees grow well, but few are used for commercial timber. The areas that have trees are used mostly for subdivisions, home sites, and shopping centers. This soil is somewhat poorly drained. Surface runoff and internal drainage are high. Permeability is very slow, and the available water capacity is high. In some areas the surface cracks when the soil is dry. Rainwater enters the cracks rapidly but then moves very slowly into the soil. League clay is not listed as a hydric soil, although review of historic aerials show that some of the areas within the mapped area may be wetlands.

Labelle clay (LeaA) is a nearly level, non-saline soil. Typically, this soil has a surface layer of strongly acid, very dark gray loam. The subsoil to a depth of 36 inches is medium acid silty clay loam that is very dark gray. From 36 to 60 inches the subsoil is clay that is dark gray and neutral in the upper part and gray and moderately alkaline in the lower part. This soil is somewhat poorly drained, surface runoff is high, and permeability is slow. This soil is mainly used as cropland, which consist of rice, grain sorghum, and soybeans. Labelle clay is not listed as a hydric soil, although review of historic aerials show that some of the areas within the mapped area may be wetlands.

Given the criteria and techniques employed by the NRCS for the survey process, it was considered probable that the boundaries depicted on the survey could contain certain inaccuracies. The minimum mapping area for any given soil in the NRCS survey is ten (10) acres, with the probability of imprecise boundary delineation being relatively high. Therefore, as part of site reconnaissance activities, on-site soil evaluations were performed to describe, classify, and document the hydric or non-hydric characteristics of the primary soils on the subject property.

C. Floodplain Evaluation

The assessment of the flood hydrology of the site was completed by evaluating FEMA floodplain maps to determine if the property lies within or adjacent to the 100 and/or 500-year floodplain. After analysis of FEMA mapping published on August 18, 1992, the entirety of the tract is located within the 100-year floodplain of East Bay Bayou and Elm Bayou. However, a levee system around the entire tract prevents flooding during normal rainfall events. Historically, only extreme high water conditions caused during

tropical storms and hurricanes have breached the levees.

In addition to FEMA maps, probable flow patterns and evidence of inundation and/or periods of saturation in potential wetland areas were evaluated on-site. The floodplain boundary locations are depicted more specifically on the FEMA maps located in Figure 2.

D. Topography Evaluation:

USGS maps indicate little topographic relief within the fields on-site. The site is surrounded by levees, with stormwater runoff flowing toward drainage ditches created throughout the site that eventually discharge into Elm and East Bay bayous. The USGS Stanolind Reservoir topographic quadrangle map indicates an elevation of 2 feet above mean sea level (see Figure 3).

LIDAR elevation data from Texas Natural Resource Information Systems (TNRIS) Coastal LIDAR collection (see Figure 7) was obtained and utilized in developing the proposed conceptual wetland restoration plan. Unfortunately, the benchmark elevation data for the LIDAR elevation data was not provided by TNRIS. The data was used to compare the mapped elevation of marsh on adjoining properties relative to the elevation of the existing agricultural fields within the Bank in conjunction with historical aerials to aid in the conceptual design of the Bank.

E. Aerial Photography:

The proposed tract has been used for rice production since 1930. Review of historic aerials of the project site, taken on 8 April 1930, suggest an historic landscape of freshwater marsh interspersed with coastal prairie was present prior to agricultural conversion.

Wetlands generally occur as historical features on the landscape and usually maintain their basic configurations and appearances over a long period of time. However, vegetation communities naturally progress through several stages of predominance as wetlands age and become mature, or as natural successional perturbations such as fire are repressed in a landscape. Additionally, topographical and hydrological characteristics may be changed by natural processes or by man-induced alterations in or near wetland areas, resulting in altered community structures. While field verification remains essential to wetland identification, historical aerial photography played a vital role in the evaluation of changes in wetland features and variations over extended periods of time. Early historical aerial photography from 1930 was used extensively in the preliminary evaluations made on the site to determine historic wetland types and where they occurred prior to agricultural conversion.

Both black and white aerial photographs from 1930 and infrared aerial photographs of the site from 1995 and 2004 were studied extensively for the presence of wetland indicators that recur over time. Black and white photographs contain features which may outline the subtle changes in shading and contrast where wetland vegetation or soils may occur. Anaerobic soils are often of a different hue, due to hydrous conditions and vegetation patterns associated with such soils. Due to the hydroperiod and vegetation variation, these areas can be distinguished from surrounding uplands. Black and white photography becomes a primary method for interpretive delineation since wetland areas may often be very distinctive. Infrared photographs provide views of the site as a complete unit where areas and systems of high water content become more easily defined. Such areas are slightly cooler colored than the surrounding areas and will appear on the false color imagery as variations in shading. Areas that consistently appeared as possible wetlands were marked for field confirmation. This same process also identified areas that appeared as transitional or upland. From these photographic interpretations, a preliminary "rough" delineation pattern was established and incorporated into the planned site reconnaissance.

F. Land Use and Management History:

The tract has been in agricultural use for over 75 years and was an active farm. The tract is following a

crop rotation plan using crops such as milo, rice, and hay. Every third year a parcel lays fallow for rest. Presently the tract is composed of tilled, dry fields.

F.1 Site Reconnaissance

Site reconnaissance was conducted in February 2008 by contractors hired by East Bay Farms, LLC. The site was evaluated for the presence of jurisdictional wetlands by sampling and analyzing the hydrology, soils, and vegetation. The Bank has not changed between 2008 and present day.

F.2 Hydrology

The site hydrology is currently an actively managed levee, ditch and control-structure system used for agricultural and waterfowl management purposes. Only ditched remnants of the site's natural, pre-conversion hydrology remain, and natural overland flow now only occurs across fields to the agricultural ditch network. This ditch/control structure network is managed to regulate hydrology to flood and drain the fields as necessary. A surface water pump is also located on the eastern side of the site for irrigation purposes. The pump functions to draw down the fields through the ditch network and pump water back into the and bayous prior to cultivation or when a dry crop is in rotation. Water flow is directed by control structures to the desired fields. This same ditch network also serves to drain the fields as required. These pumps will no longer be in use post-restoration.

F.3 Geology and Soils

Although the soils on the site did not exactly match the descriptions given in the NRCS Chambers County Soil Survey report, from site sampling it was concluded that the survey was reasonably accurate in identifying the basic soil series found on the property as Beaumont clay (Be) and Morey silt loam, leveled (Mo).

F.4 Vegetation Communities

Vegetation communities were evaluated to determine wetland and upland areas. At the time of the site reconnaissance, the project area was composed of two agricultural fields with tilled, dry soil.

Resource Type	Linear feet in Project Area	Acres in Project Area
Prior Converted Croplands	-	168
Totals:		168

Restoration of these areas will provide optimal ecological and hydrological functions locally and regionally. The Bank will be composed of non-tidal freshwater wetlands. An aerial black and white image of the area from 1930 was utilized to interpret the natural hydrology of the site prior to agricultural conversion. This image was utilized as an approximate template for the overall construction design of the bank. The historic aerial imagery will serve to facilitate locating remnant topographic depressions within the freshwater portion of the bank that will be restored, and for re-creating historic drainage patterns. The Bank appeared to contain multiple tributaries and shallow internal drains that eventually fed into Elm Bayou along the eastern boundary of the tract. While the tributaries will not be restored, the overall drainage of the site will follow the same patterns of the tributaries into Elm Bayou. The elevation of the area is relatively flat between these tributaries, thus historically multiple shallow freshwater depressional wetlands with transitional wet prairie occurred throughout the landscape and held large quantities of fresh water for waterfowl and other wildlife. The mapped and confirmed hydric soils for the property also indicate that much of the prairie that historically occurred was most likely wet prairie with some areas of possible upland prairie in the northeastern most section of the bank.

The interim Riverine HGM assessment is used to determine the quality of jurisdictional wetlands to be enhanced and preserved. The site will have a baseline value of "0" because wetlands are non-jurisdictional upland areas that cannot be assessed using the interim HGM. The interim Riverine HGM will be applied after wetland construction to assess the change in quality function and value of the enhanced, created, and preserved areas. A construction completion report would be submitted to the U.S. Army Corps of Engineers, Galveston District for review and approval.

G. Wetland Creation and Restoration:

Non-Tidal Wetlands Re-establishment – The non-tidal wetlands in the project area will be re-established by locating remnant depressional areas, and as necessary, through regrading into freshwater depressional wetlands and expanses of transitional coastal prairie. Where required, freshwater depressional marshes will be constructed to an elevation sufficient to establish a semi-permanently to seasonally inundated hydroperiod. Depressional marshes will be located as much as practicable in former historic wetland areas identified from the 1930s historic black and white aerial, with transitional coastal prairie habitat between the deeper marsh depressions. Coastal prairie will be re-established to the extent practicable and will act as important areas of upland buffer for wildlife feeding, nesting and denning areas.

Upland pimple mounds will be reconstructed and created throughout the area by leaving remnants of breached levees, which will provide vital upland wildlife habitat and refugia. Periodic ditch blocks will also be placed within ditches to prevent premature drainage and draw down of the water table. Levee breaches at appropriate intervals in combination with culverts will be utilized between fields to equalize water flow. Breaches and culverts will be dispersed properly to approximate natural sheet flow across the site and intercept drainage pathways.

The primary mechanisms for rehydration of the freshwater portion of the bank will be through retention of rainwater and re-direction of surface water runoff and offsite discharge onto the site from several historic tributaries of Elm Bayou. With the plugging of the ditch system and termination of draining the property continuously during agricultural rotation, the water table on the site is also expected to rise and provide an additional source of hydrology. Retention of surface water to sufficiently rehydrate to the design seasonal high water level will be accomplished by several strategically located water control structures. Connections will also be re-established via low water crossings to historic tributaries of Elm Bayou that drained through the property prior to leveeing, which will serve to rehydrate the northeastern section of the bank. The control structure elevations and weirs will be set at an appropriate elevation to establish the targeted hydroperiods for re-establishing freshwater marsh, as well as prevent tidal inundation.

Hydrography of restored and created wetlands will vary in depth from saturated to slightly inundated at grade to from 0-6 inches in Zone A, and 6-12 inches in Zone B within the freshwater marshes, and from 12-18 inches in Zone C (historic tributaries) and deepest zones of depressional freshwater marshes. A total of 121.43 acres of non-tidal freshwater wetlands in the project area. Coastal prairie buffer areas will be incorporated as transitional habitat around and between restored and re-created depressional freshwater wetlands in order to mimic the natural wetland depressional/coastal prairie habitat matrix that historically existed in this area, and as observed in remaining undisturbed wetlands in the surrounding area and NWR.

The created non-tidal wetlands will be planted with mature plugs of desirable herbaceous hydrophytic species that are present within the adjacent ANWR and are typical of coastal depressional marshes. Species typical of depressional freshwater marsh include sand spike rush (*Eleocharis montevedinsis*), square-stem spike rush (*Eleocharis quadrangulata*), swamp smartweed (*Polygonum hydropiperoides*), California bulrush (*Scirpus californicus*), giant cut-grass (*Zizaniopsis miliacea*) and purple thalia (*Thalia dealbata*) within the non-tidal wetlands. Native coastal prairie species will also be seeded and planted, as appropriate, in transitional areas between depressional freshwater marsh areas. Typical grass species selected for re-vegetation of coastal prairie include Gulf cordgrass (*Spartina spartinae*), sedges (*Carex* spp.), Bushy bluestem (*Andropogon glomeratus*), smooth cordgrass (*Spartina bakerii*), big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), yellow indiagrass (*Sorghastrum nutans*), eastern gamagrass (*Tripsacum dactyloides*), hairy awn muhly grass (*Muhlenbergia capillaries*), tanglehead (*Heteropogon contortus*), Texas wintergrass (*Nassella leucotricha*), a variety of native *Panicum* spp. and *Paspalum* spp. Characteristic forbs selected for re-seeding and planting will include native *Aster* spp., Indian paintbrush (*Castilleja indivisa*), poppy mallows (*Callirhoe* spp.),

Phlox spp., bluebonnets (*Lupinus* spp.) and evening primroses (*Oenothera* spp.)

4. Establishment and Operation:

Credits will be determined using the Interim Hydrogeomorphic Model (HGMi) for Riverine herbaceous wetlands for proposed restoration activities. The HGMi functional assessment will evaluate the existing conditions of the site (baseline condition), and then evaluate the proposed restored areas based on conditions expected to occur following site restoration (post-activity). This ecological gain will be utilized to quantify the amount of mitigation credits the wetland bank will generate. In addition, the Sponsor anticipates developing a credit release schedule based on predefined milestones in the operation, construction, and maintenance of the Bank during the review process with the USACE and the IRT. The credit release schedule and defined monitoring benchmark schedule will be defined in the bank's MBI.

It is the role of the Bank Sponsor to create, maintain, and report a ledger of all credit/debit transactions. In an effort to ensure fair compensatory mitigation, all debit calculations will need to be performed using iHGM scoring to insure equality, or an IRT approved conversion. The ledger will be forwarded to the Corps of Engineers, Galveston District on an annual basis with all pertinent information. This information will include the permit identification number, permittee name, amount of wetlands approved for impact at the project site, number of credits purchased as compensation, date of purchase, and number of credits remaining available at the bank.

A. Monitoring Requirements

East Bay Farms, LLC (Sponsor) will monitor the development of wetlands. A monitoring program will provide the basis for determining if the bank is meeting specific performance criteria for credit releases, maintenance objectives and appropriately assessing increased wetland functions and values.

In order to provide documentation of success of the restorative efforts, the Bank Sponsor will perform routine monitoring of the ecological conditions of the Bank. Monitoring reports will clearly demonstrate whether performance standards are being met and a credit release (if applicable) is warranted. The monitoring schedule and frequency proposed for the Bank will include annual assessments for a minimum of 10 years. Reports will be submitted to the USACE by January 31st of each year.

Vegetation plots will be established at minimum 1 plot for every Wetland Assessment Area (WAA), and iHGM assessments performed in years eligible for credit releases to evaluate improvements and ecological lift in areas receiving wetland credit. Plot selection will be semi-randomized, but all credited habitat types will be represented. Parameters such as species composition and species density will be surveyed along with visual assessments of percent cover of the shrub and herbaceous species.

To monitor shallow groundwater levels within the area affected by the berm, monitoring wells will be installed. The monitoring well locations will be determined by utilizing the expected inundation depth/area derived from topographic surveys and from geotechnical data obtained from soil bores. This demonstrated the required depth of saturation of surface water within the soils for the appropriate amount of time during the growing season to qualify as wetlands. The majority of the wells will be installed along the periphery of established/re-established wetlands for determination of wetland boundaries, but wells will be installed along the gradient of water depths to get an overall picture of the groundwater levels across the area. This data will be collected and reported along with soil pit data and IHGM scores to corroborate the efficacy of establishment/re-establishment measures.

A common design for monitoring wells is ones installed using direct push technology and constructed of 2 in PVC plastic pipe. These monitoring wells are screened from the ground surface to 5 ft below ground surface. A sand pack is installed around the screen with a 6-in bentonite plug on the surface. This may reflect the

monitoring design to be used, but the final decision will be made under the guidance of a professional design engineer. The soils will be logged for color and texture during installation.

B. Performance Standards

Performance standards describe the standards of success of the proposed mitigation activities. Construction shall be completed within 5 years of bank approval, or 2 years from first credit transaction.

The following standards shall be used to determine the minimum level of success for an implemented bank:

1. Conservation Easement: The Sponsor shall dedicate the Bank in perpetuity, with a USACE approved, in coordination with the IRT, conservation easement held by a third party. The Sponsor shall provide a certified true copy of the recorded conservation easement.
2. Financial Assurances: The Sponsor shall secure USACE approved, in coordination with the IRT, short-term and long-term financial assurances. The Sponsor shall also provide certified true copies of the recorded financial assurance documents and/or insurance policies to the USACE.
3. The completion of construction and stabilization of hydrologic features, marsh substrate elevations, and wetland depressional areas. The Bank will be constructed and planted within 24 months of credit transaction.
4. The Sponsor shall install a minimum of one continuous water level recorder for each WAA, unless otherwise approved by the USACE, in coordination with the IRT. The Sponsor shall monitor hydrologic improvements relative to targeted hydrologic regimes ensuring at a minimum, that wetland hydrology criteria described in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0) (Atlantic and Gulf Coastal Plain Regional Supplement) of November 2010 are met. This will include documentation of precipitation conditions (normal, wet, or dry) during the monitoring period using a National Food Security Act Manual WETS analysis, the Palmer Drought Severity Index, or other suitable metric.
5. Noxious and invasive species, if present, must comprise less than five (5%) percent actual cover of the herbaceous or other strata. These species are defined as those species listed All noxious and invasive species currently listed by the Texas Department of Agriculture (TDA 2007) (Texas Register, Volume 32, Number 23, June 8, 2007, Pages 3077-3422) and shall also include with this standard Macartney Rose (*Rosa bracteata*), deep-rooted sedge (*Cyperus entrearianus*) and common reed (*Phragmites australis*).
6. Within three (3) years of completing construction, a minimum, fifty percent (50%) overall cover of desirable, native wetland plant species appropriate to the targeted water must be met within each respective wetland assessment area, unless otherwise approved by the USACE, in coordination with the IRT.
7. Within seven (7) years of completing construction, a minimum, seventy-five percent (75%) overall cover of desirable, native wetland plant species appropriate to the targeted water and salinity regimes must be met within each respective wetland assessment area, unless otherwise approved by the USACE, in coordination with the IRT.

C. Accounting Procedures

Credit Ledgers

Sponsor will establish and maintain a system for tracking the production of credits, credit transactions, and financial transactions between Sponsor and permittee. Credit production, credit transactions, and financial transactions must be tracked on a bank basis and separately for each individual permit. Credits will be debited from the ledger once a financial transaction and credit transfer has occurred (Transaction). The Sponsor will notify the USACE of each Transaction and provide the USACE a copy of the ledger entry within 15 days of each Transaction. Sponsor will inform the IRT of the status of credits reserved on an independent submittal.

Each ledger entry will include the following information:

- Permit applicant name, address, and telephone number
- Permit number
- 8-digit HUC and county locations
- Brief description of the project impacts
- Number of credits provided
- Remaining balance of Bank credits
- Date of Transaction

The number of FCUs for each functional category shall be debited on a 1:1 basis for impacts within the Primary Service Area and on a 1.5:1 basis for impacts within the Secondary Service Area. A minimum of one-tenth (0.1) FCU for each functional category shall be debited from the ledger for each transaction. If the number of credits required for compensation is a non-integer, then it shall be rounded up to the nearest one-tenth credit.

The Sponsor shall also provide an annual statement of the account to USACE by January 31 of each year until all credits have been withdrawn or the bank is closed/terminated.

The Sponsor shall be responsible for maintaining the bank's credit ledger in the Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS), to the extent allowed by the USACE. If allowed, all credit transactions shall be entered into the database no later than seven calendar days after the transaction has occurred or the USACE reserves the right to suspend credit sales until sales transactions are deemed current and compliant. RIBITS mandatory information fields include the following:

1. Jurisdiction Type
2. Transaction Date
3. Credits Debited
4. USACE Permit Number (Format: SWG/Yr/Permit # (e.g. SWG-2000-00150))
5. Name of Permittee
6. Credit Classification (if applicable, with functional assessment subcategories identified; (e.g. iHGM identify amounts within each functional category TSSW/RSEC/MPAC, etc.)
Compliance with RIBITS reporting does not supersede the requirement of the sponsor to submit individual transaction reports.

5. Proposed Service Area(s):

The service area is the watershed, ecoregion, physiographic province, and/or other geographic areas within which the mitigation bank is authorized to provide compensatory mitigation required by DA permits. Service areas must be appropriately sized for each credit type to ensure that the aquatic resources provided will effectively compensate for adverse environmental impacts across the entire service area respectively.

The primary service area, wholly contained within the USACE-SWG District and state of Texas, for the AWMB is identified as the East Galveston Bay USGS 8-digit Hydrologic Unit Code (HUC) (12040202). The primary service area includes portions of Chambers, Liberty, Jefferson, and Galveston Counties. Impacts occurring within the primary service area shall be debited on a 1:1 basis.

The secondary service area, wholly contained within the USACE-SWG District and state of Texas, for the AWMB is identified as the portions of the Sabine Lake USGS 8-digit HUC (12040201) that occur within the Western Gulf Coastal Plains Level 3 Eco-region. The secondary service area includes portions of Chambers, Liberty, Jefferson, and Orange Counties. Impacts occurring within the secondary service area shall be debited on a 1.5:1 basis.

Compensation will be provided in the form of riverine non-forested wetland credits. The bank shall not compensate for any adverse impacts to the following: 1) Waters of the U.S. including wetlands that are under tidal influence; 2) Wetlands that occur on barrier islands or peninsulas; and, 3) Wetland impacts on lands or facilities owned by TPWD.

On a case by case basis, the USACE, after coordination with the IRT, may authorize use of the bank outside the primary and secondary service areas or to offset impacts to out-of-kind wetland habitat types when doing so is appropriate, practicable, and environmentally preferable.

6. Need and Technical Feasibility:

The Bank project area is currently and has been historically, for over 75 years, an active agricultural farm. The site has been plowed, leveled, levied, and ditched during this time so that any historic resource functional quality that once existed is now absent. The Bank will offset impacts to freshwater wetlands within the Houston/Galveston/Beaumont area. Credits from the Bank will be available to offset unavoidable impacts to wetlands from activities such as federal, state, and local projects including dredging or infrastructure related activities, private projects such as residential and commercial developments, parks and recreational facilities, oil and gas activities, refinery projects, and port activities.

The site was chosen due to close proximity to the upper coastal bay system and potential coastal impact sites, its enhancement and restoration potential, its adjacency to the Gulf Coastal Plains Wetlands Mitigation Bank, and its ideal, ecologically significant location directly adjacent to the Anahuac National Wildlife Refuge (NWR), which represents one of the largest areas of existing publicly preserved wetlands within the region. The surrounding Anahuac NWR is a critical resting area for migrating waterfowl/songbirds, including threatened and endangered species such as the peregrine falcon, bald eagle, black rail, brown pelican, reddish egret, and white-faced ibis. Recognizing the ecologically sustainable landscape scale need and social benefits of wetland banking, East Bay Farms, LLC respectfully submits this prospectus to pursue wetland banking opportunities on the site.

7. Any and all easements and/or encumbrances:

The Bank property contains small portions of an easement held by the Trinity Water Control District for the boundary levees along Elm Bayou where connections will be established. Other than the portions of this easement, there are no other easements or encumbrances encompassed by the Bank that will be utilized as mitigation. The Bank boundary is overlain on the East Bay Farms property boundary survey (Figure 6-1) to illustrate that no other easements, rights-of-way or encumbrances are included within the Bank phase areas.

8. Proposed Ownership Arrangement and Long-term Management Strategy:

All real property to be included within the Bank is owned fee simple by the Landowner and is pledged by the Sponsor for use in the Bank consistent with this MBI. The Sponsor shall be responsible for developing, operating, and maintaining the Bank subject to the requirements of the MBI, but may convey ownership or sponsorship of the Bank to a successor as provided below. The inclusion of the Landowner's property in the Bank and the granting of a CE restricting future land uses for the benefit of the Bank shall not convey or establish any property interest on the part of any party to this instrument nor to any purchaser of Bank credits. The MBI does not authorize, nor shall it be construed to permit, the establishment of any lien, encumbrance, or other claim with respect to the property, with the sole exception of the right on the part of USACE to require Sponsor to implement components of the MBI, including recording any CE, required as a condition of the issuance of a permit under Section 404 of the Clean Water Act for discharges of dredged and fill material into waters of the U.S., including wetlands, associated with construction and operation and maintenance of the Bank. The physical ownership of Bank property (land) and the Bank operating rights (sponsorship) are separable components and may be transferred independently.

The Landowner may convey fee simple title to, or other forms of property interest in, any property included within the Bank, provided the necessary site protection instrument is recorded for any property that is the subject of a previously withdrawn credit. In the event of a transfer in land ownership, the Sponsor/landowner will make a reasonable effort to ensure that the property is conveyed to an environmentally responsible party.

The Sponsor may transfer sponsorship of the Bank to another public entity (such as a non-profit land trust), a governmental entity, or private entity/individual, provided that the USACE approves the transfer and the new Sponsor agrees to abide by the terms of this MBI or a USACE-approved, modified or amended MBI. Any such request shall be submitted in writing to the USACE. The USACE reserves the right to review and approve any party to whom responsibility for construction, maintenance, or monitoring may be transferred under the MBI. USACE approval shall not be unreasonably withheld. Upon approval of the transfer, all obligations for future performance of the original Sponsor shall be terminated. Unless a substitute financial assurance mechanism is established, all unused funds in the financial assurances, as well as the right to draw against the account, will be transferred to the new Sponsor.

A. Protective Real Estate Mechanism

The Sponsor shall dedicate the Bank in perpetuity as an aquatic ecosystem preserve using a conservation easement held by a third party. The executed conservation easement by reference thereto, will function as the legal mechanism protecting the functions provided by the Bank via the prohibition of non-compatible land uses. The Bank shall not be disturbed, except by those USACE-approved activities that would not adversely affect the intended extent, condition, and function of the Bank or those activities specifically provided for in the MBI, or revision thereof. Conveyance of any interest in the property shall be subject to the conservation easement.

B. Land Use Provisions

Once released for preservation in perpetuity to an agreed upon third-party, such as an appropriate not-for-profit conservation organization, the property may be used for educational and recreational purposes.

C. Maintenance and Management Plan

The Sponsor will be responsible for all maintenance and management activities required for the Bank through the final credit release and thereafter in accordance with the Long-Term Management Plan and long-term requirements of the MBI. The short-term maintenance requirements of this section and of the LTMP consists of activities that will ensure the AWMB will be managed in perpetuity as a non-tidal herbaceous wetland preserve. As with any long-term environmental restoration or compensatory mitigation project, the site requires management to ensure that ecological performance standards are maintained. This

section outlines specific management and maintenance activities that will be undertaken to ensure the Bank is able to operate in perpetuity. Regularly scheduled site visits and monitoring activities will identify areas of concern. When necessary, corrective action plans will be submitted to the USACE and IRT for review, comment, and approval per the provisions that will be provided in the MBI.

The Sponsor will ensure that all hydrologically restored features and facilities (i.e., fences, roads, trails, backfilled/plugged ditches, stabilized spoil breaches, and low-water crossings) will be properly maintained to reach performance standards and provide effective access for management and monitoring activities identified in the MBI. Roadway entrance points to the AWMB property from the northern access roadway will be outfitted with locked gates.

Vegetative maintenance and long-term management practices such as mechanical vegetation control, selective herbicide treatments, prescribed burning, and temporary plantings intended to suppress invasive or weedy species or to stabilize exposed soil, will be employed by the Sponsor as needed and required to attain performance measures and ensure long-term sustainability of the Bank. These methods may also be utilized in initiating appropriate adaptive management strategies.

The Bank will be monitored and maintained by the Sponsor to ensure compliance with Performance Standards. Following each monitoring event, TAC species control will be implemented as necessary to ensure compliance with Performance Standards. Control efforts will largely focus on selective herbicide treatments, but may include other means, such as prescribed burning or mechanical efforts. Signage and/or paint will be placed along the perimeter fences of the Bank to discourage trespass. Boundary line/fence maintenance will be conducted as necessary to ensure that the Bank perimeter is readily identifiable and capable of preventing trespass.

D. Nuisance and Exotic Species Control

A critical component of successful vegetative restoration will be the effective control of nuisance and exotic species. Due to an historic presence of *Phragmites australis* (common reed) and *Typha domingensis* (southern cat-tail) on the property, an initial herbicide application to areas of an implemented phase two (2) months prior to seeding or planting will be conducted to control re-establishment of these nuisance native species as well as nuisance exotic plants listed on the Texas state noxious weeds list from §19.300 of the Texas Administrative Code (TAC), and non-listed invasive exotics *Macartney rose* (*Rosa bracteata*) and deep-rooted sedge (*Cyperus entrerianus*). During construction and earthwork, treated nuisance and exotic vegetative materials will be grubbed and stockpiled for composting or burning, or buried at a sufficient depth to prevent vegetative re-propagation. Post vegetative restoration, maintenance events utilizing herbicide and/or manual removal, as required, will be conducted semi-annually at the beginning and end of the growing season within a minimum of the first three years after planting or seeding or until an implemented phase attains the functional performance measures of less than 5% coverage of noxious and invasive species. Beginning in year four or the first year post attainment of the noxious and invasive species performance measure, noxious and invasive species will be controlled annually thereafter at the beginning of each growing season.

Herbicides chosen for use and application rates will be according to published technical guidance from the USDA, University of Florida Institute of Food and Agricultural Sciences (IFAS), or the NRCS Texas Plant Materials Centers for effective control and eradication of *Phragmites australis*, *Typha domingensis*, *Rosa bracteata*, *Cyperus entrerianus* or any of the Texas state-listed noxious weeds, pursuant to Rule §19.300 of the TAC that recruit into or colonize implemented phases. Nuisance native species *Phragmites australis* and *Typha domingensis*, and invasive exotic species *Rosa bracteata* and *Cyperus entrerianus* will be controlled to a coverage of less than 5% for an implemented phase. Invasive noxious species as listed in Rule §19.300, TAC on the Texas state noxious weeds list will also be controlled to a coverage of less than 5%.

9. Qualifications of Sponsor and Sponsor's Agent:

The principals, members, and managers of East Bay Farms, LLC have extensive experience in environmental services, engineering, construction, agriculture, silviculture, wildlife and land management, and business management. Managers are currently permitting several wetland mitigation banking projects in the Galveston District. All project construction, monitoring, and short-term management will be accomplished by East Bay Farms, LLC and The Earth Partners, LP. A summary of the experience of the Sponsor, the Sponsor's Agent, and key personnel within the Earth Partners (TEP) includes the following:

- East Bay Farms, LLC permitted and constructed the first fresh and salt water tidal wetland in Texas as part of the Gulf Coast Plains Mitigation Bank project.
- With a total of approximately 30,000 Lf of in-channel stream restoration, TEP has permitted and constructed the Houston-Conroe Mitigation Bank.
- TEP has permitted and constructed the Tarkington Bayou Wetlands Mitigation Bank, consisting of restoration, re-establishment, establishment and enhancement of riverine herbaceous, scrub-shrub, and forested wetlands across a 1,500 acre site, as well as the improvement of 28,500 intermittent and perennial streams.
- One of TEP's flagship projects has been the removal of invasive brush species on Texas rangelands and recycling said brush as a biofuel for export.
- During their Black Hills Forest Restoration, TEP discovered new ways to convert the low value biomass (tree fall) created by an infestation of pine beetle into a variety of consumer products, thereby minimizing the overall carbon release of the site.
- Through their many forest restoration and preservation projects, TEP has developed and sold over \$1 billion in carbon credits.

10. Ecological Suitability of the Site:

According to the Soil Survey of Chambers County (1976) and the most current National Resource Conservation Service (NRCS) Web Soil Survey (2010), the dominant soils located on the Bank site are mapped as Beaumont-Morey-Lake Charles Associations. A soils map for the Bank site is provided in Figure 4. Specifically, these soils are identified as League clay (LegA) and Labelle clay (LeaA) which are all classified as hydric soils in Chambers County by the NRCS according to the 2010 state hydric soils list for Texas. The majority of the Bank site is composed of League clay and Labelle clay. Field samples from prior-converted fields indicate modification through the agricultural practices of tilling, grading, drainage ditching and leveeing. Despite the effects of tilling and drainage, the soils still contain relict hydric soil characteristics and indicators, and are suitable for wetland restoration purposes.

11. Assurance of Water Rights:

A water rights permit from TCEQ is not required because the project will not involve placing structures within any watercourse to obtain waters of the state for use in the site. The hydrology of the proposed bank will be driven by onsite rainfall and runoff from adjacent contributing drainage areas. In accordance with Texas Civil Statutes, Article 5414a (Small Bill), the Sponsor has not planned changes to, will not derive credits from, or place a conservation easement on any public streambed.

12. Literature Cited

Checklist of the Vascular Plants of Texas. Stephen L. Hatch, K.N. Gandhi, and Larry E. Brown, July 1990, Texas Agricultural Experiment Station, Texas A&M University, College Station, Texas.

Grasses of Texas, The. Frank W. Gould, 1975. Texas Agricultural Experiment Station, Texas A&M University, College Station, Texas.

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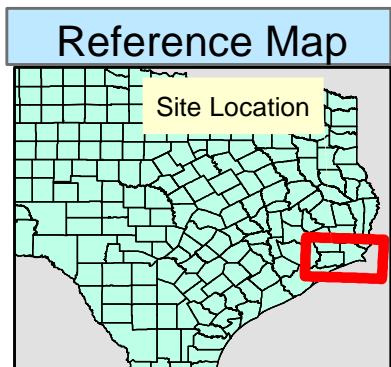
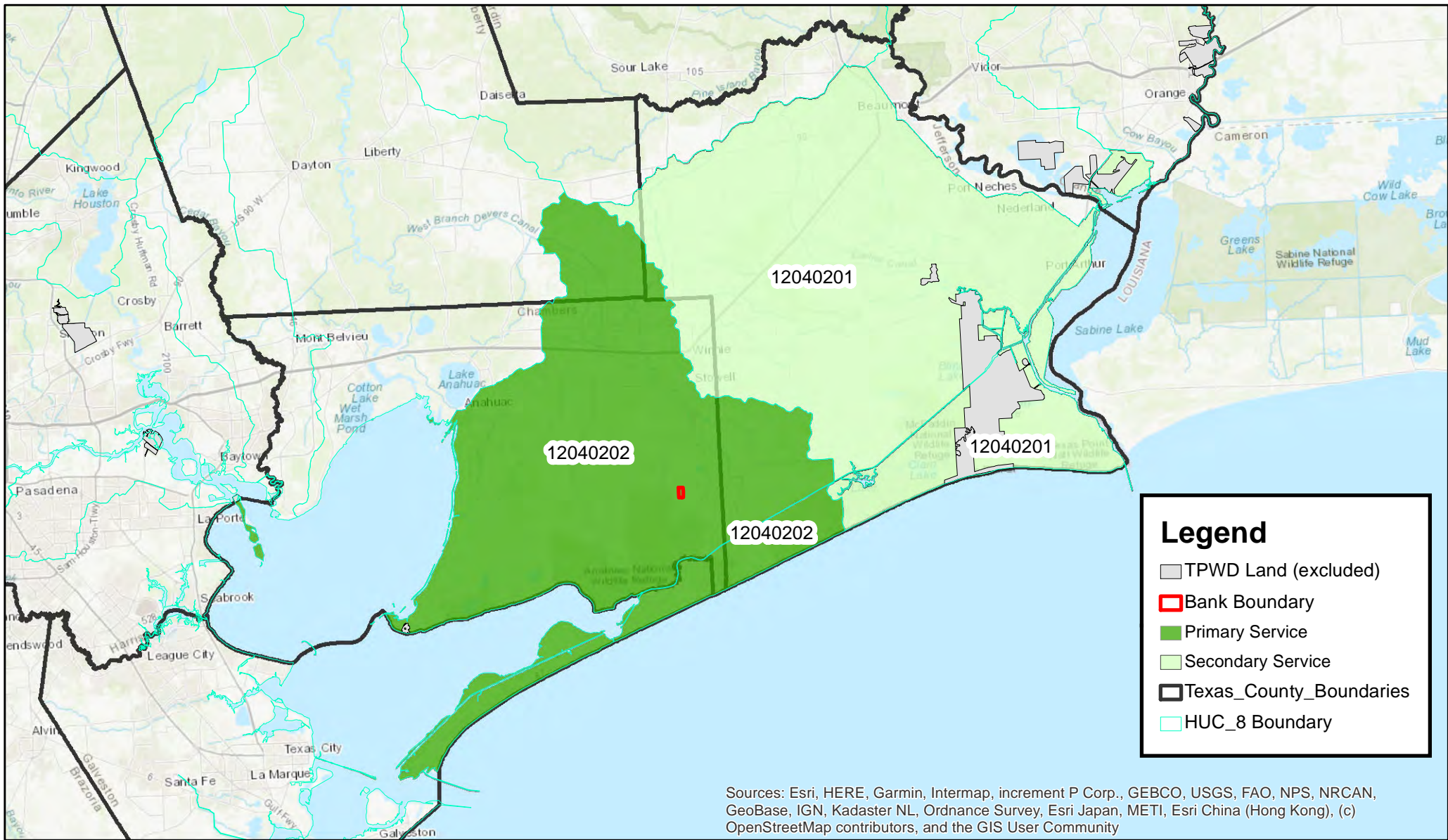
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Web Soil Survey of Chambers County, Texas. Jack Crout, 2020, United States Department of Agriculture Soils Conservation Service in cooperation with the Texas Agricultural Experiment Station and the Chambers County Flood Control District, Chambers County, Texas. Accessed online at <
<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>>

Trees, Shrubs, and Woody Vines of the Southwest. Robert A. Vines, 1960, The University of Texas Press, University of Texas, Austin, Texas.

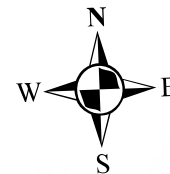
Wetlands Delineation Manual. U.S. Army Corps of Engineers, 1987, U.S. Army Corps of Engineers, Vicksburg, Mississippi.

FIGURES



Anahuac Wetlands Mitigation Bank Service Area Map

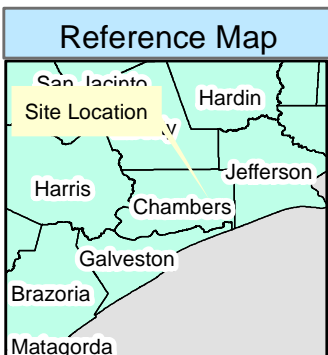
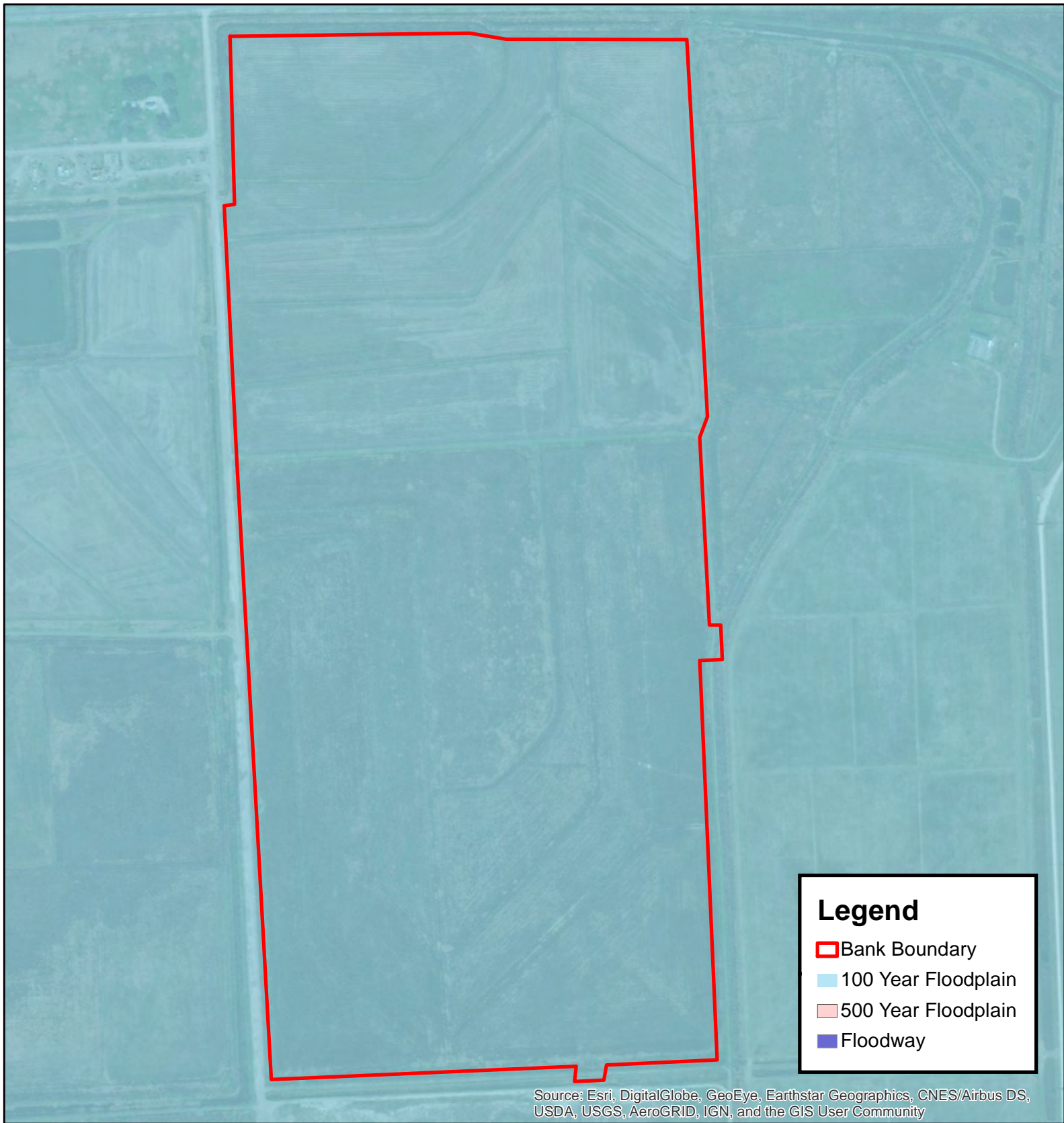
Figure 1



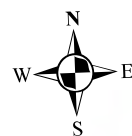
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0 2.75 5.5 11 16.5 22 Miles



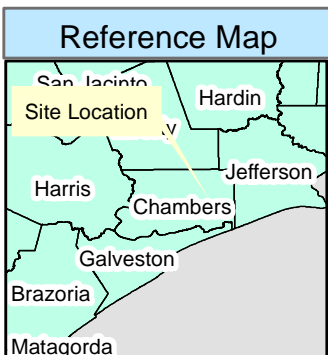
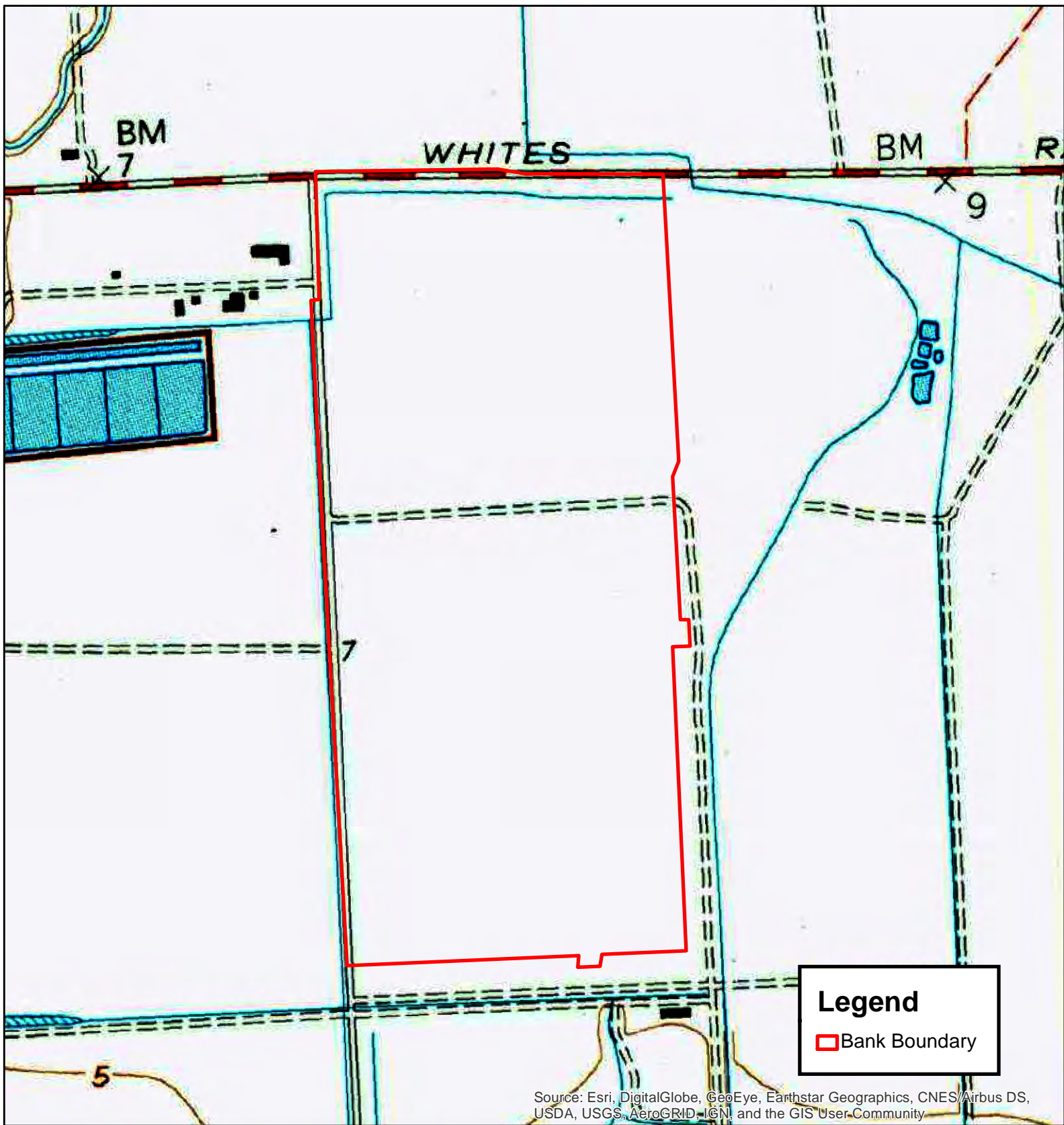
Anahuac Wetlands Mitigation Bank FEMA 100-Year Flood Plain



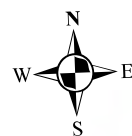
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Figure 2



Anahuac Wetlands Mitigation Bank 1994 United States Geological Survey Topographic Map

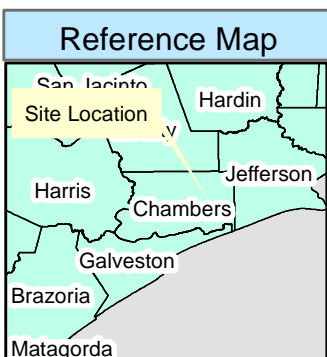
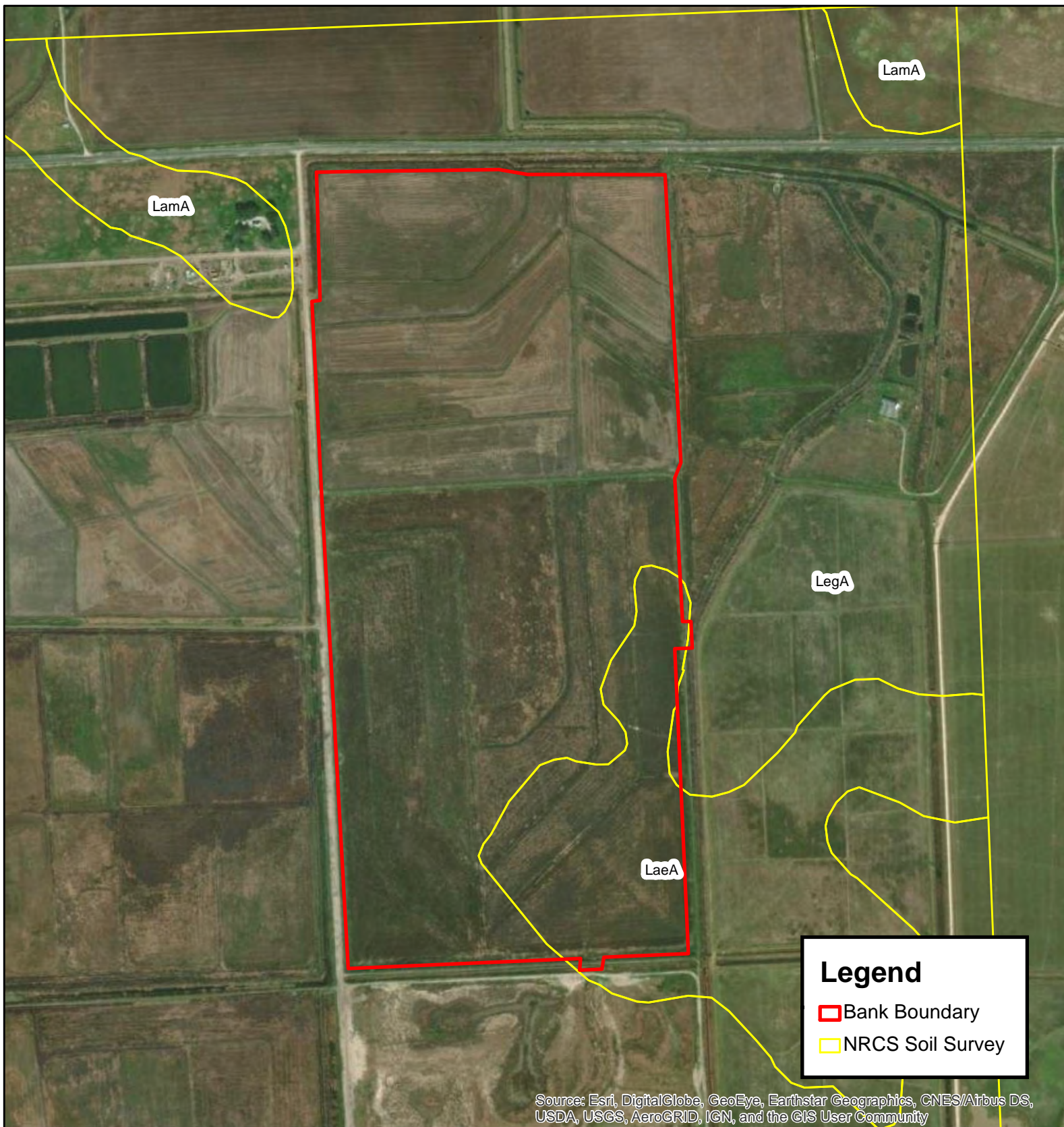


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Figure 3

0 60 120 240 360 480 Yards



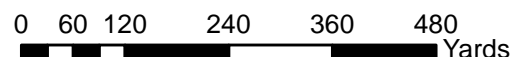
Anahuac Wetlands Mitigation Bank USDA Natural Resource Conservation Service Soils Survey

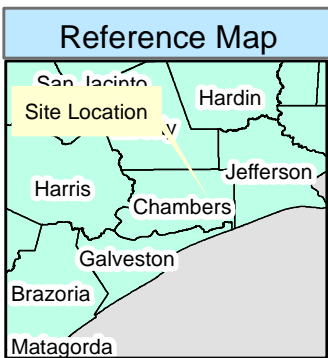
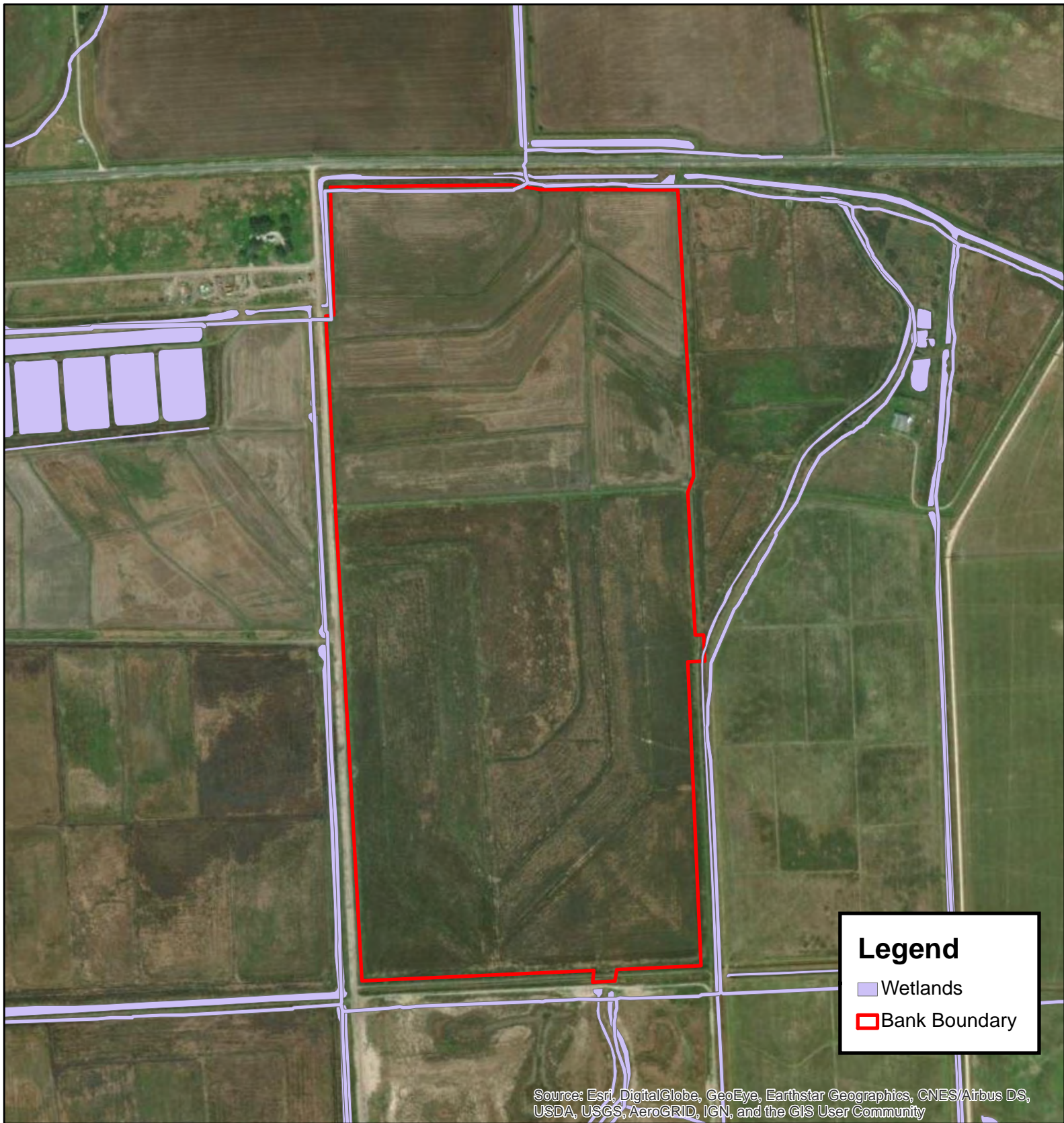


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Figure 4 23





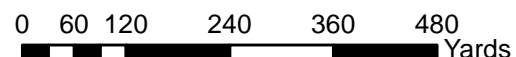
Anahuac Wetlands Mitigation Bank National Wetlands Inventory Map

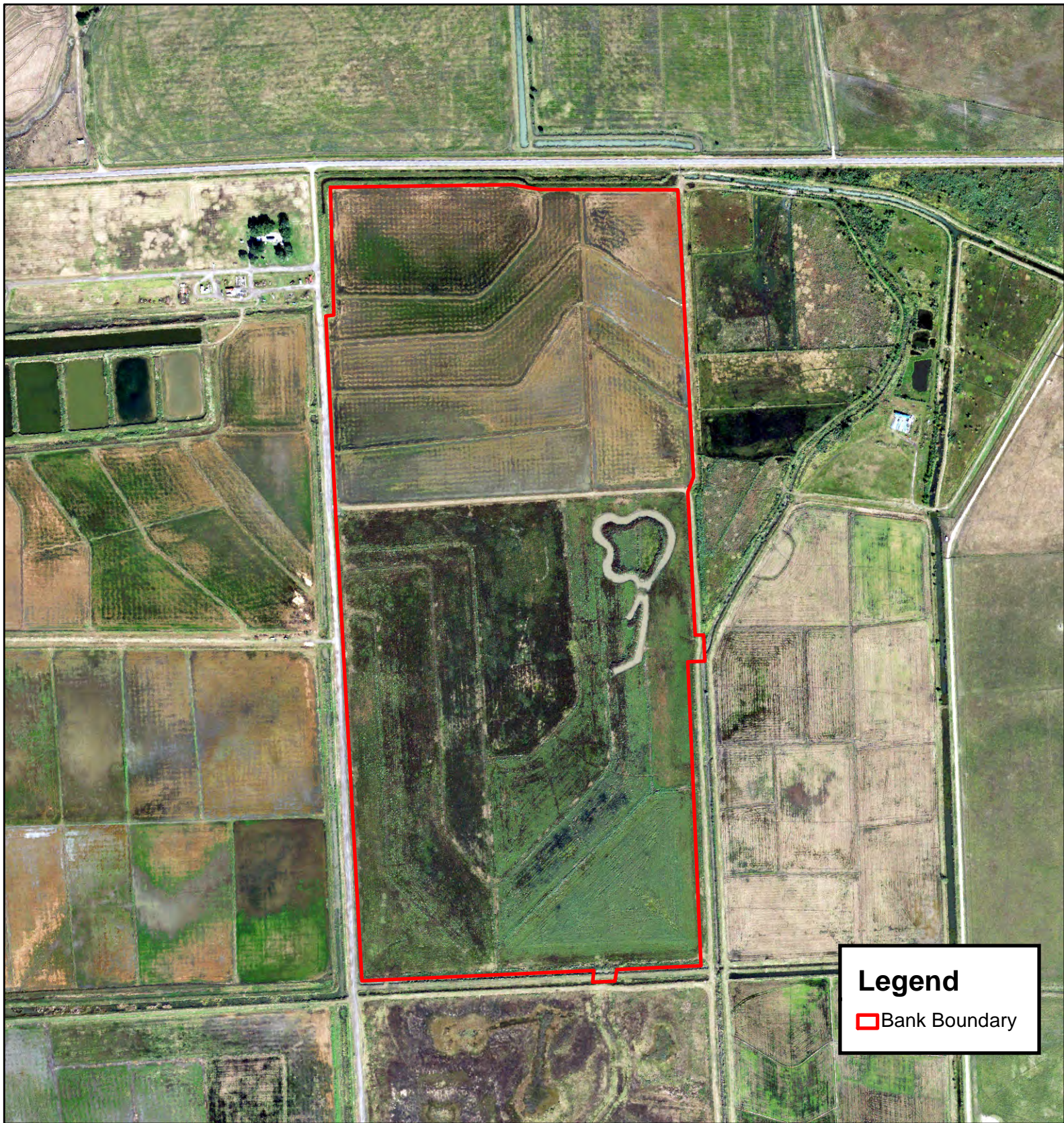


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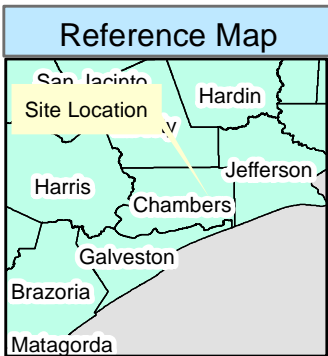
Figure 5 24





Legend

Bank Boundary



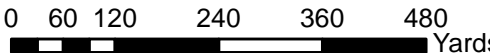
Anahuac Wetlands Mitigation Bank
Aerial Imagery - 2018

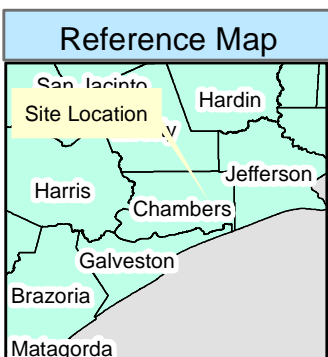
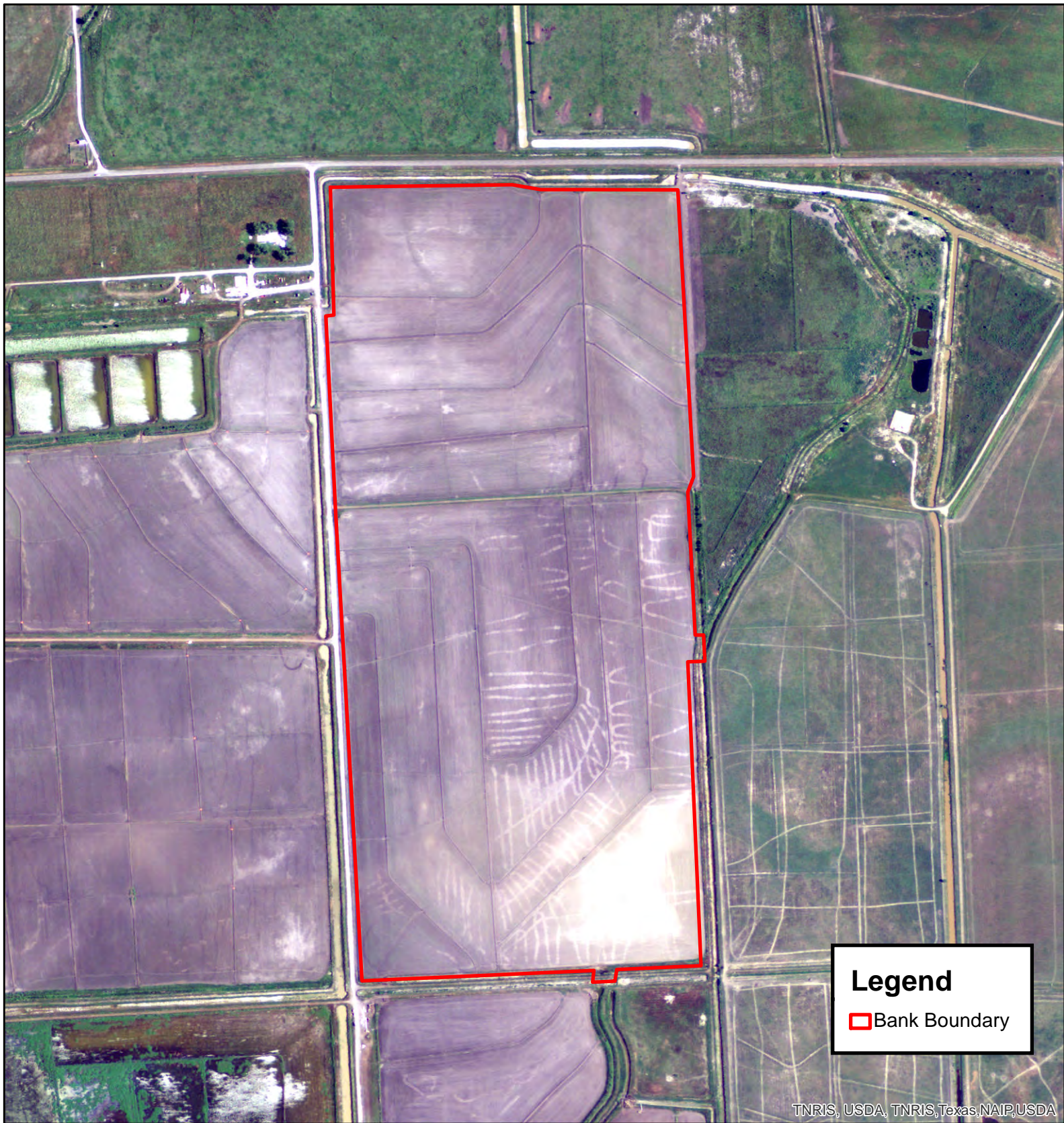


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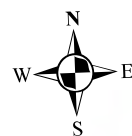
Figure 6-1 25





Anahuac Wetlands Mitigation Bank

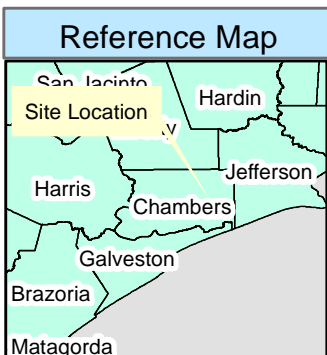
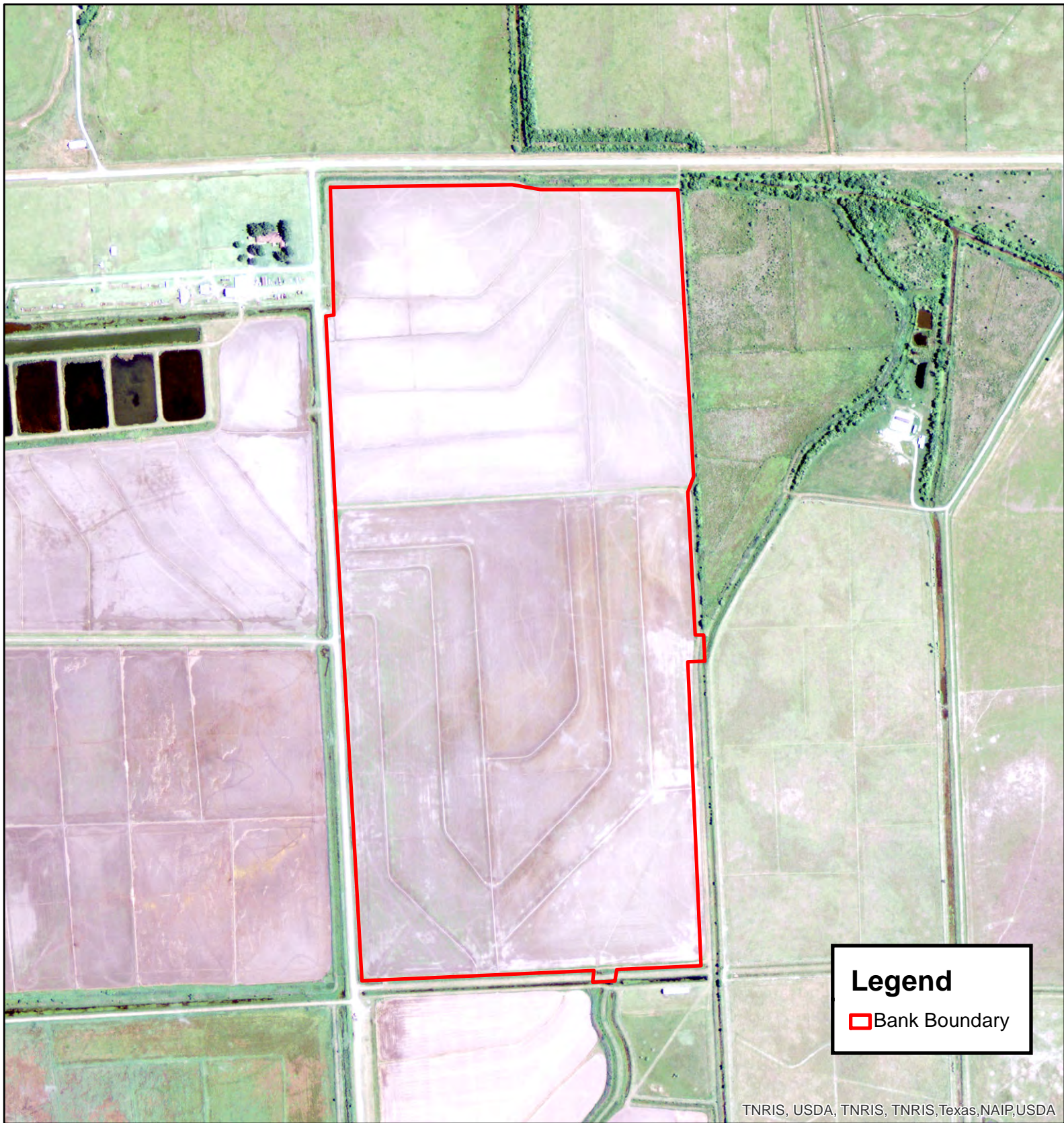
Aerial Imagery - 2010



Created By: KK
Date: 4/26/2021



Figure 6-2



Anahuac Wetlands Mitigation Bank

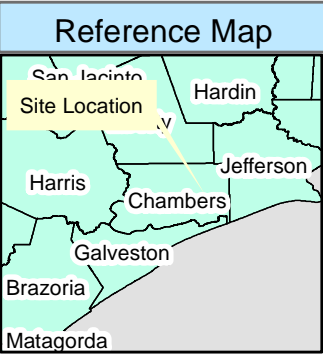
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Date: 4/26/2021



Figure 6-3



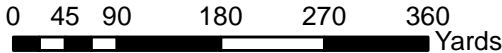
Anahuac Wetlands Mitigation Bank CIR - 1996

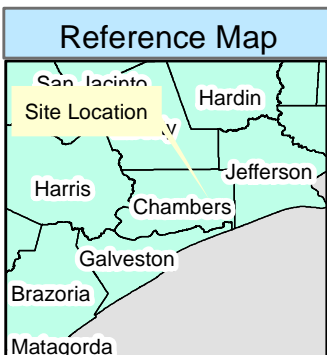
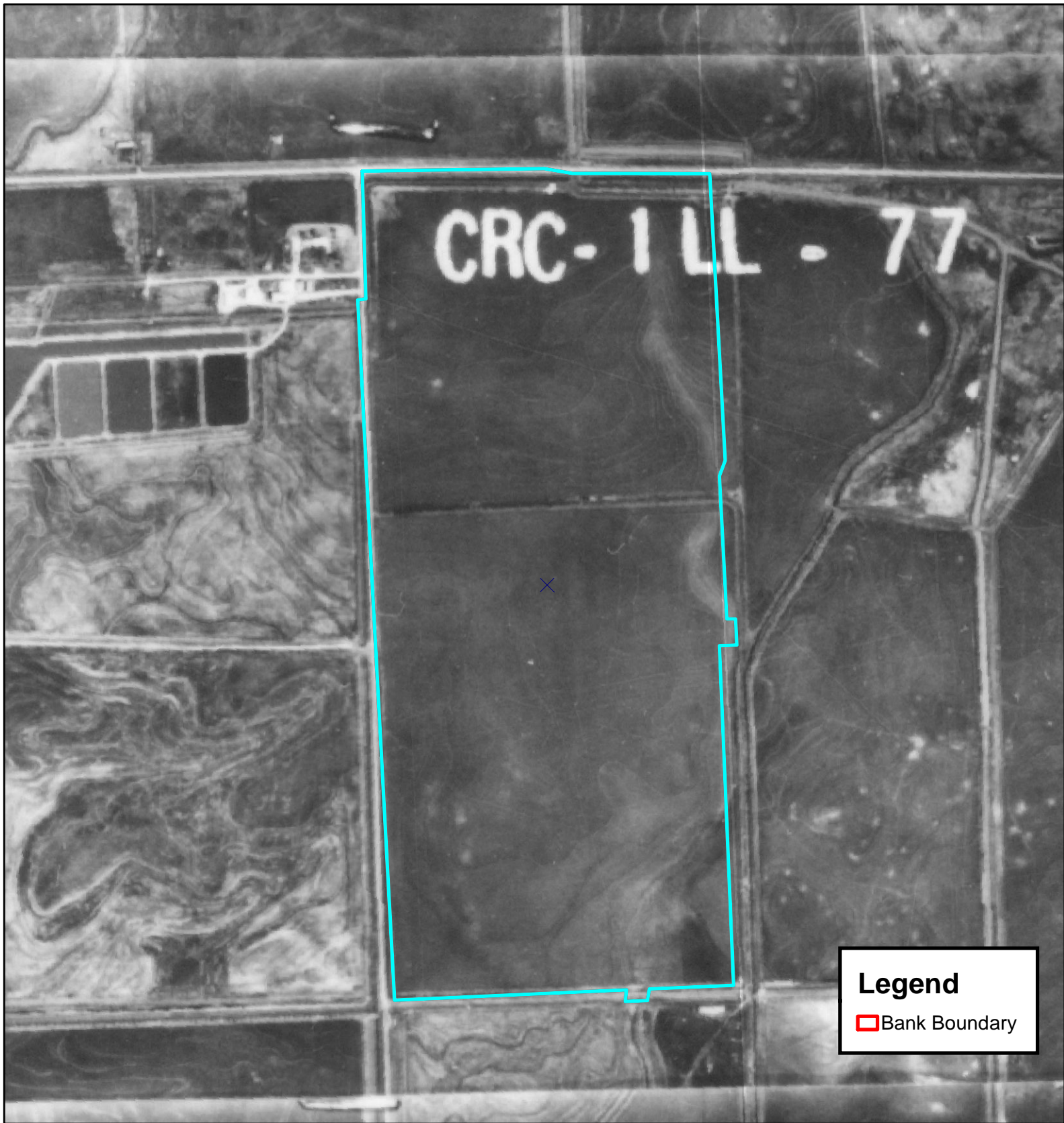


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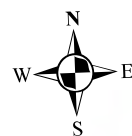
Figure 6-4





Anahuac Wetlands Mitigation Bank

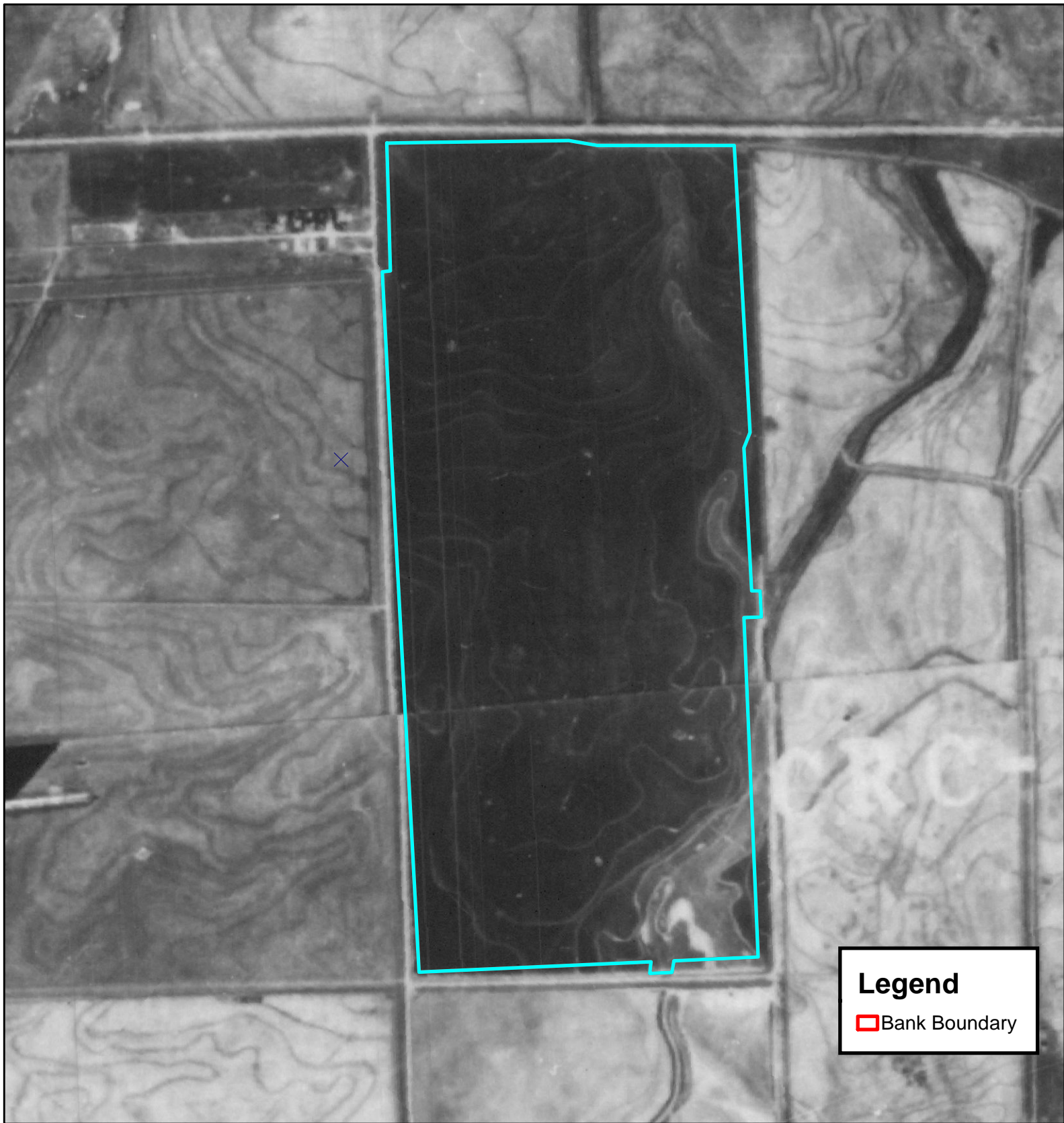
Aerial Imagery - 1970



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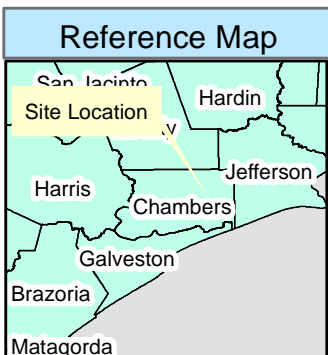


Figure 6-5



Legend

Bank Boundary



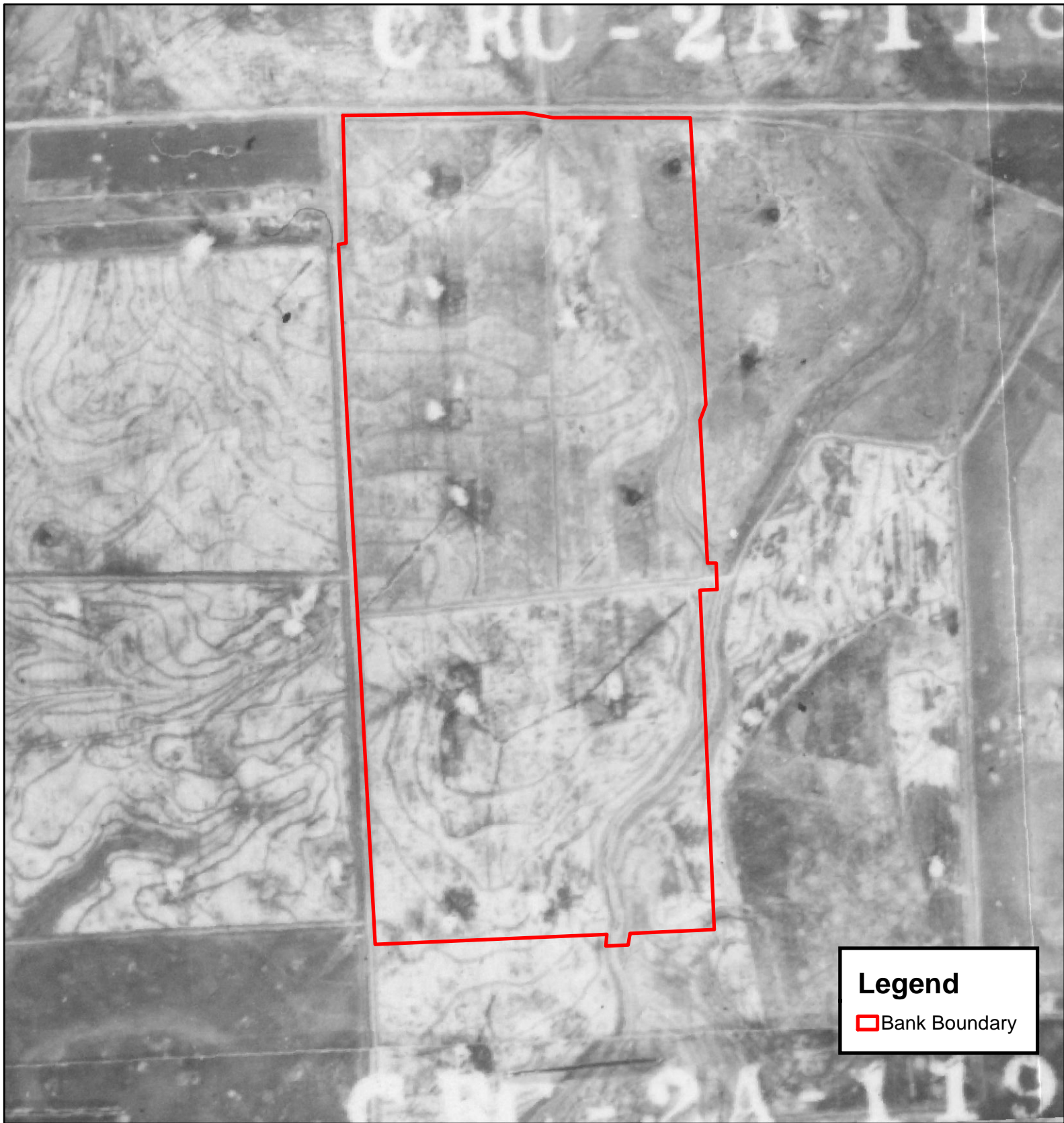
Anahuac Wetlands Mitigation Bank Aerial Imagery - 1953



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Date: 4/26/2021

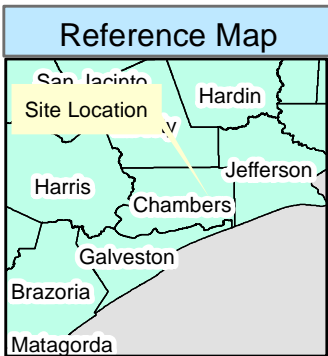


Figure 6-6



Legend

Bank Boundary



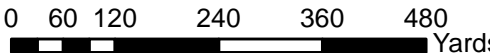
Anahuac Wetlands Mitigation Bank Aerial Imagery - 1941

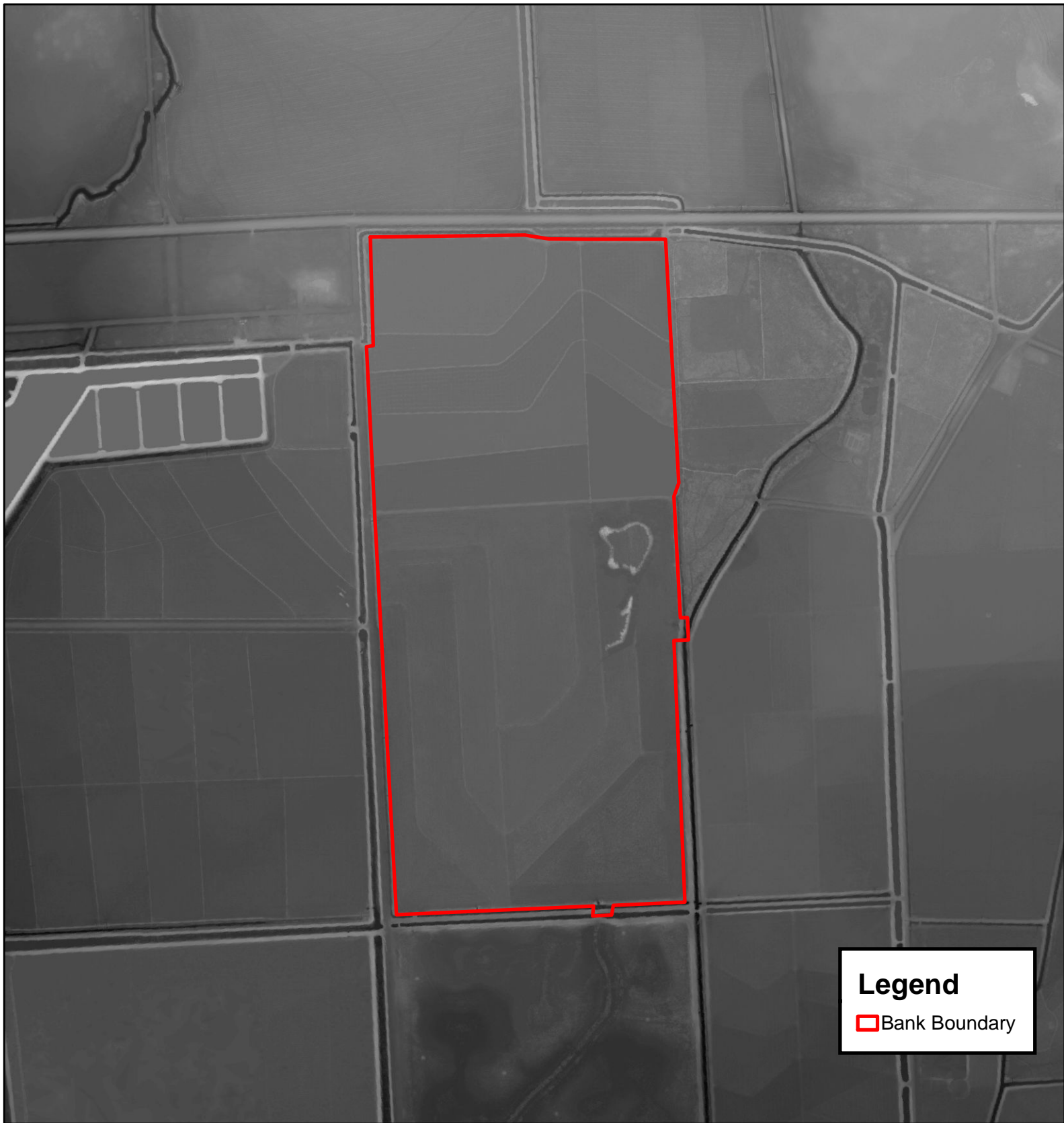


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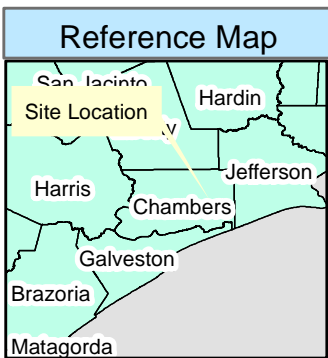
Figure 6-7





Legend

 Bank Boundary



Anahuac Wetlands Mitigation Bank
2018 LiDAR

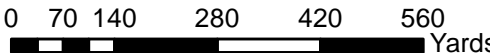


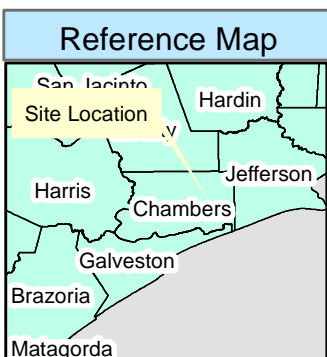
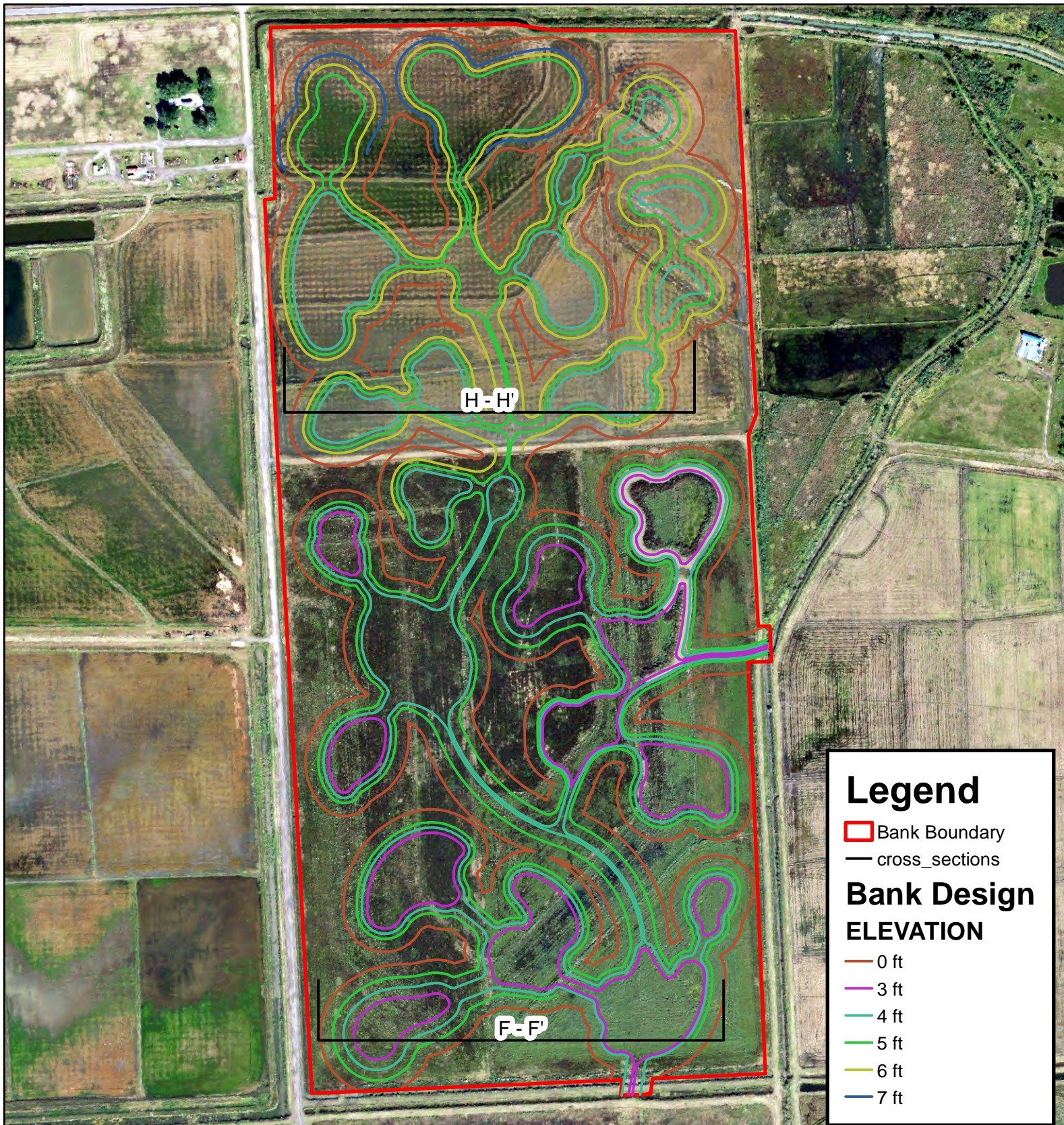
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Date: 4/26/2021



the earth partners

Figure 7 32





Anahuac Wetlands Mitigation Bank Conceptual Restoration Plan

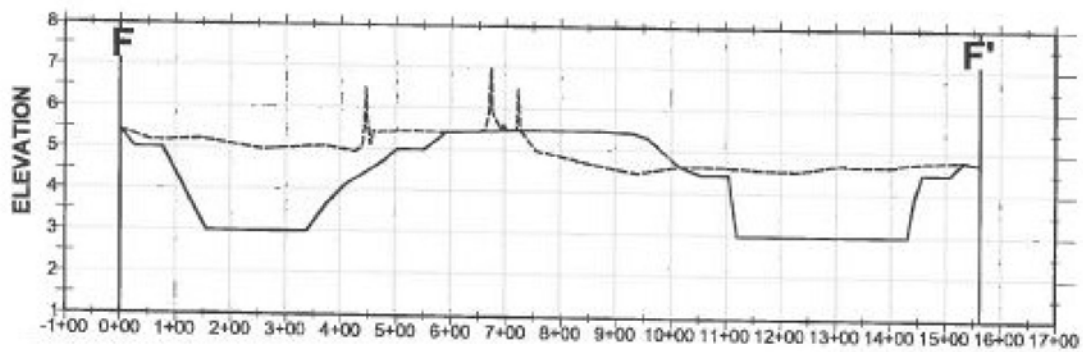


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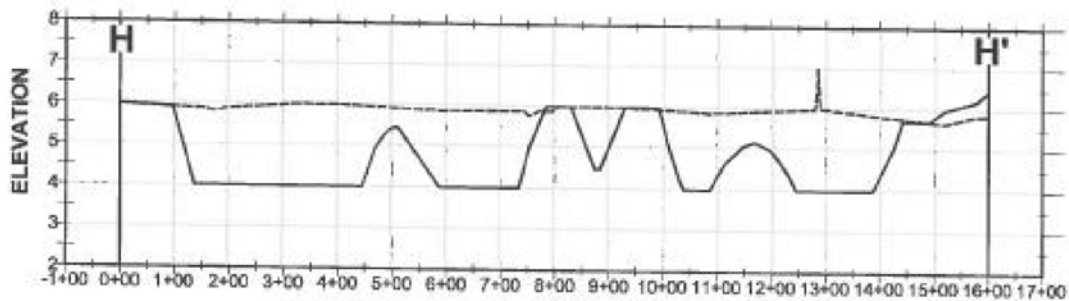


Figure 8-1 33

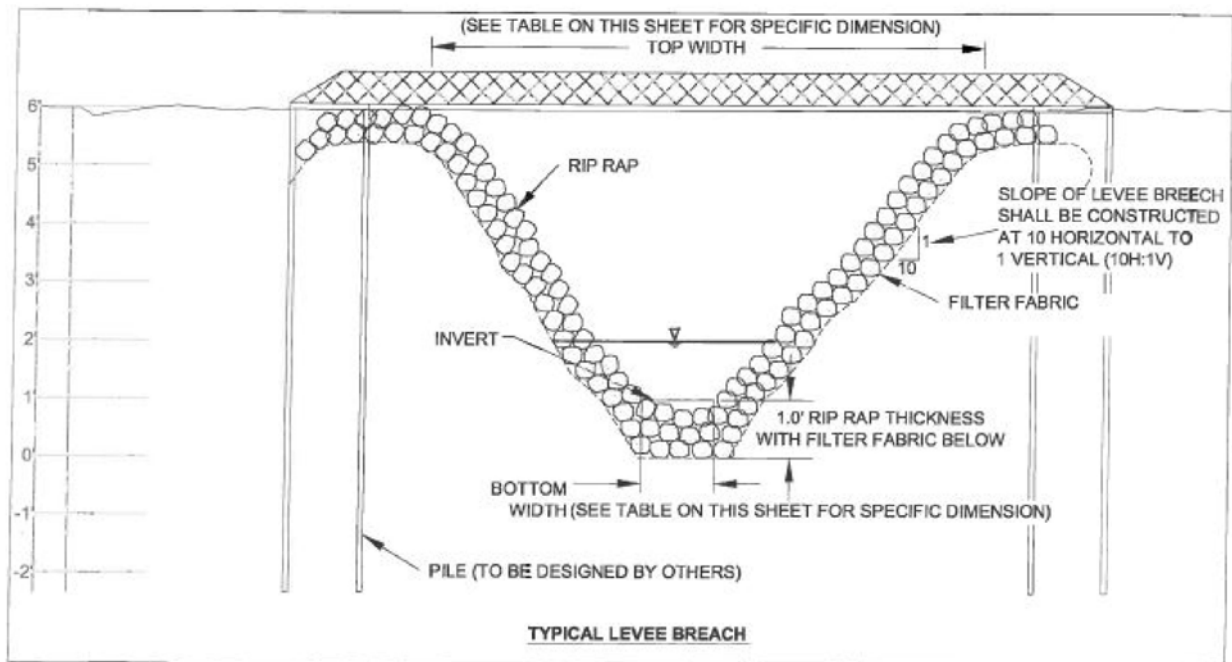
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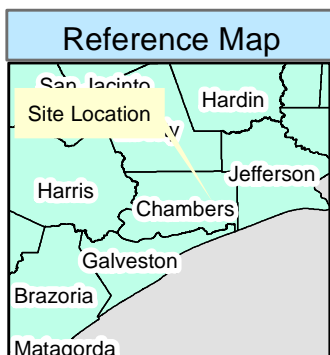
SECTION F - F'



SECTION H - H'



TYPICAL LEVEE BREACH



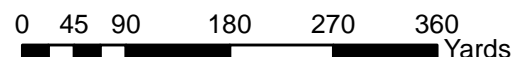
Anahuac Wetlands Mitigation Bank Cross Sections



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Figure 8-2 34



APPENDIX A



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

December 8, 2016

Compliance Branch

SUBJECT: **SWG-2008-01091**; Gulf Coastal Plains Wetland Mitigation Bank, Approved Jurisdictional Determination, 99.65-Acre Phase 11 (Field 7) Mitigation Project Site, Center Tract is Approximately 1.92 Miles West of the Intersection of Farm to Market 124 and Whites Ranch Road and 0.57 Miles South, Chambers County, Texas

Ms. Pamela Fetterman
ecoGenesis, LLC.
4152 Independence Ct, C-7
Sarasota, Florida 34234

Dear Ms. Fetterman:

This letter is in response to a jurisdictional determination request dated September 6, 2016, from ecoGenesis, LLC, on behalf of Gulf Coastal Plains Wetland Mitigation Bank. The request was to "renew the jurisdictional determination for Phase 11 of the GCPWMB". This request involved a 99.65-acre project site. The site is located approximately 1.92 miles west of the intersection of Farm to Market 124 and Whites Ranch Road and 0.57 miles south, Chambers County, Texas (map enclosed).

The Corps has evaluated the consultant-provided information, a November 30, 2016, off-site document review and findings of a previous AJD on the larger mitigation tract encompassing the subject site that was completed on March 11, 2010. Based on this evaluation, the Corps has determined the 99.65-acre project site contains NRCS mapped and verified prior converted croplands with appropriate cropping history. As such, any aquatic resources that may exist on the site are not waters of the United States. Therefore, the site is not subject to Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act, and the discharge of fill material onto the tract does not require a Department of the Army permit.

This determination has been conducted to identify the limits of the United States Army Corps of Engineers (USACE) CWA jurisdiction for the site identified in this request. However, this determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985 as amended. If you or your tenant are USDA program participants or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

This letter contains an approved jurisdictional determination for your subject site. If you wish to appeal the approved jurisdictional determination, please see the enclosed sheets regarding the administrative appeal process for jurisdictional determinations: Notification of Appeals Process (NAP) fact sheet and Request for Appeal (RFA) form. If you object to this determination, you may request an administrative appeal under USACE regulations at 33 CFR Part 331. If you request to appeal this determination, you must submit a completed RFA form to the Southwestern Division Office at the following address:

Mr. Elliott Carman
Administrative Appeal Review Officer, CESWD-PD-O
U.S. Army Corps of Engineer Division, Southwestern
1100 Commerce Street, Room 831
Dallas, Texas 75242-1731
Telephone: 469-487-7061; FAX: 469-487-7199

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete; that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within **60 days** of the date of the NAP. It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter.

This approved jurisdictional determination is based on the subject area's "Prior Converted Cropland" (PCC) non-jurisdictional status. As such this determination is valid for 5 years from the last year the subject field was in FSA recorded, cropped, managed or maintained agricultural commodity production. As of the date of this determination, provided documents confirm the last agricultural commodity was planted on this tract in 2013, therefore the PCC designation will expire December 31, 2018. If the subject area were to remain in agricultural production, this determination would then be valid for 5 years, unless new information warrants a revision prior to the expiration date.

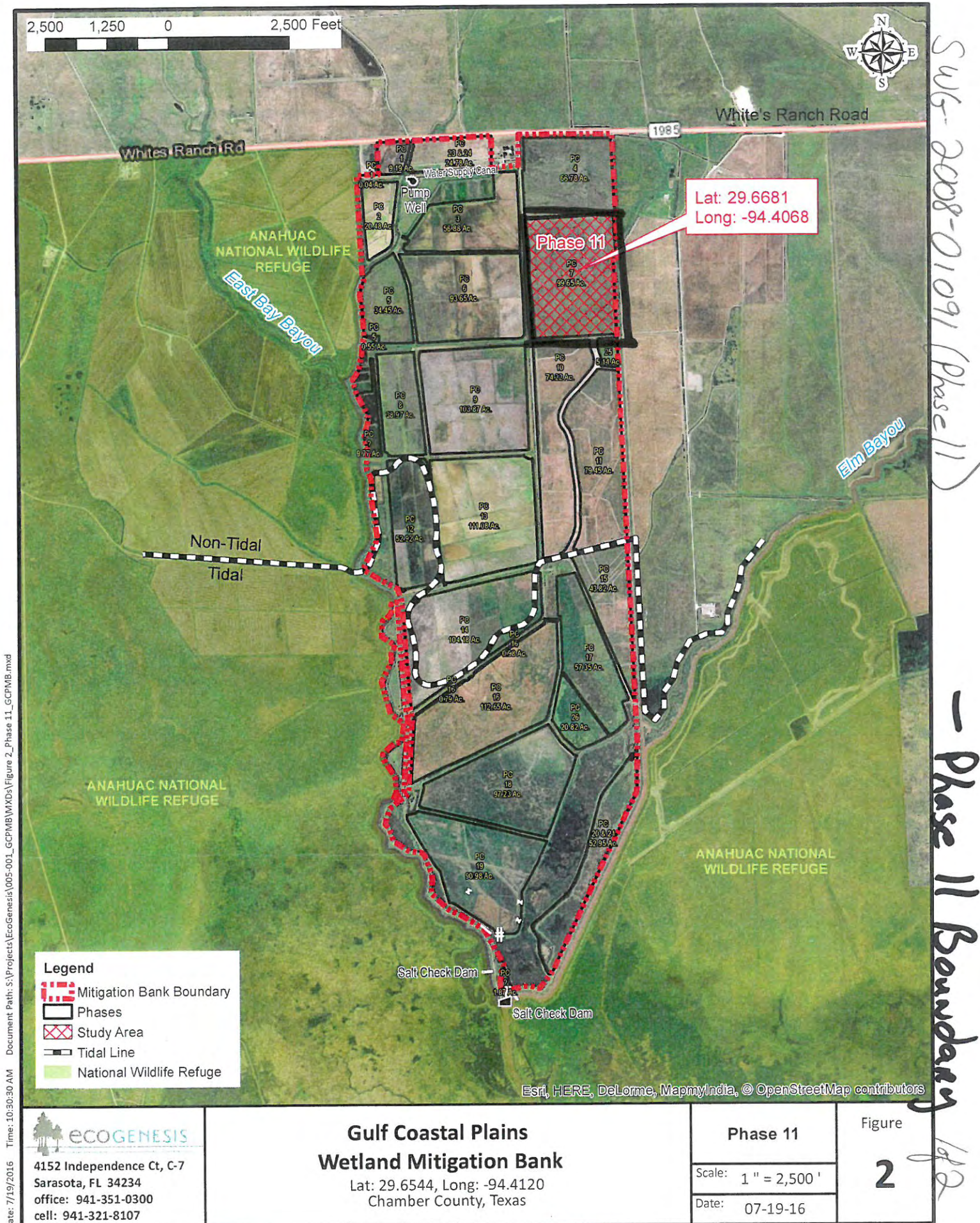
If you have any questions concerning this jurisdictional determination, please reference file number **SWG-2008-01091** and contact me at the letterhead address or by telephone at 409-766-6380. To assist us in improving our service to you, please complete the survey found at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0 and/or if you would prefer a hard copy of the survey form, please let us know, and one will be mailed to you.

Sincerely,

A handwritten signature in black ink, appearing to read "John Davidson", is written over the typed name.

John Davidson
Team Lead
Compliance Branch

Enclosure



Date: 7/19/2016 Time: 10:30:30 AM Document Path: S:\Projects\EcoGenesis\005-001_GCPMB\MXDs\Figure 2_Phase 11_GCPMB.mxd



4152 Independence Ct, C-7
Sarasota, FL 34234
office: 941-351-0300
cell: 941-321-8107

**Gulf Coastal Plains
Wetland Mitigation Bank**
Lat: 29.6544, Long: -94.4120
Chamber County, Texas

Phase 11

Scale: 1" = 2,500'

Date: 07-19-16

Figure

2

SWG 2008-01091 Gulf Coast Plains Mitigation Bank

2013 Google Aerial

2008-01091 Gulf Coast Mit B Phase 11



2008-01091



Field 7

Google earth

1000 ft



11-28-2008 16:10 - 9m2

2012

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: ECOGENESIS, LLC	File Number: SWG 2008-01091	Date: 12/08/2016
Attached is:		See Section below
<input type="checkbox"/>	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
<input type="checkbox"/>	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
<input type="checkbox"/>	PERMIT DENIAL	C
<input checked="" type="checkbox"/>	APPROVED JURISDICTIONAL DETERMINATION	D
<input type="checkbox"/>	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at

<http://www.usace.army.mil/Missions/CivilWorks/Regulatory/ProgramandPermits/appeals.aspx> or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Ms Diana Stevens
Project Manager CESWG-RD-C
U.S. Army Corps of Engineers
P.O. Box 1229
Galveston, Texas 77553-1229
409-766-6380 FAX: 409-766-3931

If you only have questions regarding the appeal process you may also contact:

Mr. Elliott Carman
Administrative Appeals Review Officer (CESWD-PD-O)
U.S. Army Corps of Engineers
1100 Commerce Street, Suite 831
Dallas, Texas 75242-1317
469-487-7061

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.

Date:

Telephone number:



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

REPLY TO
ATTENTION OF:

MAR 11 2010

Regulatory Branch

SUBJECT: SWG-2008-01091; Gulf Coastal Plains Wetland Mitigation Bank

Ms. Susie Alford
Berg ♦ Oliver Associates, Inc.
14701 St. Mary's Lane, Suite 400
Houston, Texas 77079

Dear Ms. Alford:

Pursuant to 33 CFR 332.8(d)(7) and Compensatory Mitigation for Losses of Aquatic Resources (73 Fed. Reg. 19594, 10 April 2008), we are transmitting the attached Interagency Review Team (IRT) comments for the Gulf Coastal Plains Wetland Mitigation Bank - Draft Mitigation Banking Instrument (DMBI). The IRT review of the DMBI began on November 3, 2009.

The enclosed comments represent concerns which could lead to a formal objection from one or more of the IRT members. Therefore, the concerns raised must be given full consideration before we can make a decision to accept a final banking instrument. We need your information, including the full Interim Hydrogeomorphic report, to address the issues raised. You may submit additional information or revise your plans to help resolve the issues.

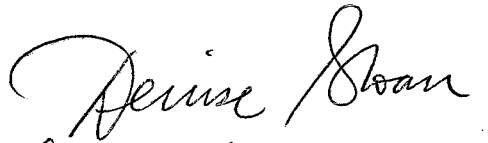
In addition, we have concluded the verification of the delineation of waters, including wetlands, and concur that there are 31.21 acres of adjacent wetlands, 17.59 acres of adjacent fringe wetlands of open waters and 13.21 acres of a redirected tributary of East Bay Bayou and Galveston Bay. Enclosed are a combined Notification of Administrative Appeal Options and Process (NAP) and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA to the Southwestern Division Office at the following address:

James E. Gilmore, Appeal Review Officer
US Army Engineer Division, Southwestern
1100 Commerce Street, Suite 831
Dallas TX 75242-1317
Telephone: 469-487-7061; FAX: 469-487-7190

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, meets the criteria for appeal under 33 C.F.R. Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination.

We look forward to working with you and the IRT in the evaluation of this proposal. If you have any questions, please reference file number SWG-2008-01091 and contact Mr. Sam J. Watson - IRT Chair, at the letterhead address, by telephone at 409-766-3946, or email at sam.watson@usace.army.mil.

Sincerely,


for Casey Cutler
Chief, Policy Analysis Section

Enclosures

Copies Furnished:

Ms. Moni Belton, US Fish & Wildlife Service, 17629 El Camino Real, Suite 211, Houston, Texas 77058

Mr. Jim Herrington, EPA, Region VI, Wetlands Section, TAMU AG Extension, 720 East Blackland Road, Temple, Texas 76502

Mr. Rusty Swafford, National Marine Fisheries Service, 4700 Avenue U, Galveston, Texas 77550

Mr. Dan Kessee, Natural Resources Conservation Service, USDA-NRCS Texas, 101 South Main Street, Temple, Texas 76501

Mr. Jamie Schubert, Texas Parks & Wildlife Department, TPWD-Dickinson Marine Lab, 1502 East FM 517, Dickinson, Texas 77539

Mr. Tony Williams, Texas General Land Office, Coastal Coordination Council, 1700 North Congress Avenue, Austin, Texas 78701-1495

Mr. Mark Fisher, Texas Commission on Environmental Quality, Water Planning & Assessment Division, Mail Code 150, P.O. Box 13087, Austin, Texas 78711-3087

APPENDIX B

**Cultural Resources Desktop Review
Anahuac Wetlands Mitigation Bank
Chambers County, Texas**



Authored by:
Jenny M. Simpson

Stone Point Services, LLC
11827 County Road 41
Tyler, TX 75706

Submitted to:
The Earth Partners

A handwritten signature in black ink, appearing to read "Todd McMakin", is positioned above the printed name.

Todd McMakin
Principal Investigator

May 12, 2021

Executive Summary

Stone Point Services has been authorized by The Earth Partners to conduct a desktop review for the proposed 68.86-hectares (170.22-acres) Anahuac Wetlands Mitigation Bank in Chambers County, Texas. The purpose of this review is to identify the likelihood of encountering cultural resources within the area of potential effect (APE) and to provide guidance for developers on whether additional work is warranted. As part of this desktop review, the Texas Archeological Sites Atlas and the National Register of Historic Places (NRHP) database were reviewed to identify previous surveys and previously recorded archeological sites within 1.6-kilometers (1-miles) of the subject property. The purpose of this research is to identify the likelihood that unidentified archeological or historic resources may be present within the tract. Since the subject property has never been surveyed for cultural resources, the desktop review will serve as a baseline for outlining additional work, if needed.

No archeological sites and no previous archaeological surveys have been identified within 1-mile (1.6-kilometers) of the project area. The Mitigation Bank subject property has not been surveyed for cultural resources. Moderate potential exists for prehistoric resources within the proposed Anahuac Wetlands Mitigation Bank given its proximity to potable water and aquatic resources. Historic aerial images from 1961 show a potential farmstead near the northwest corner of the proposed mitigation bank on an adjacent property and a structure at the southeast corner on an adjacent property. At no time did any structures appear within the subject property in historic aerial images or topographic maps. There are currently several two-track ranch roads in this area, and the property consists of mainly agricultural fields or pastures as it has been since the earliest aerial image in 1961 and on a topographic map from 1943. An intermittent stream appears in the southeast corner of the subject property in both historic imagery as well as topographic maps. It is the recommendation of Stone Point Services, LLC that a formal archeological survey be completed for this project if a Federal nexus is identified (i.e, US Army Corps of Engineers permitting). As the soils within the subject property are imprinted on sediments deposited prior to human occupation of North America, it is anticipated that deep testing will not be necessary. If required, the archeological survey should focus primarily on the areas within 100-meters (328-feet) of the intermittent stream where archaeological resources are more likely to be present.

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Chapter 1: Introduction

Stone Point Services has been authorized by The Earth Partners to conduct a desktop review for the proposed 68.86-hectares (170.22-acres) Anahuac Wetlands Mitigation Bank in Chambers County, Texas (Figures 1-3). The purpose of this review is to identify the likelihood of encountering cultural resources within the area of potential effect (APE) and to provide guidance for developers on whether additional work is warranted. As part of this desktop review, the Texas Archeological Sites Atlas and the National Register of Historic Places (NRHP) database were reviewed to identify previous surveys and previously recorded archeological sites within 1.6-kilometers (1-miles) of the subject property. The purpose of this research is to identify the likelihood that unidentified archeological or historic resources may be present within the tract. Since the subject property has never been surveyed for cultural resources, the desktop review will serve as a baseline for outlining additional work, if needed.

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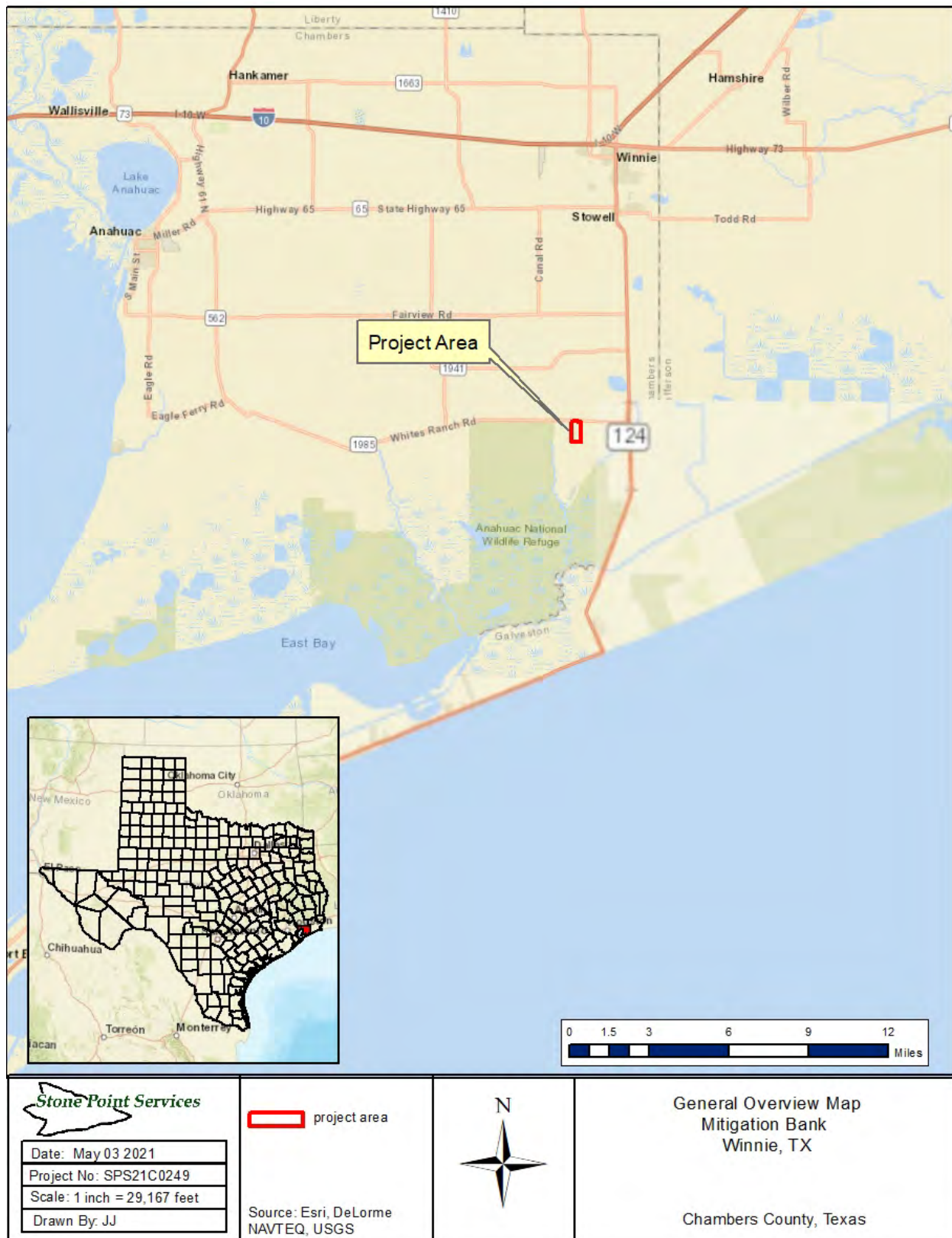


Figure 1: Map showing the location of the project area.

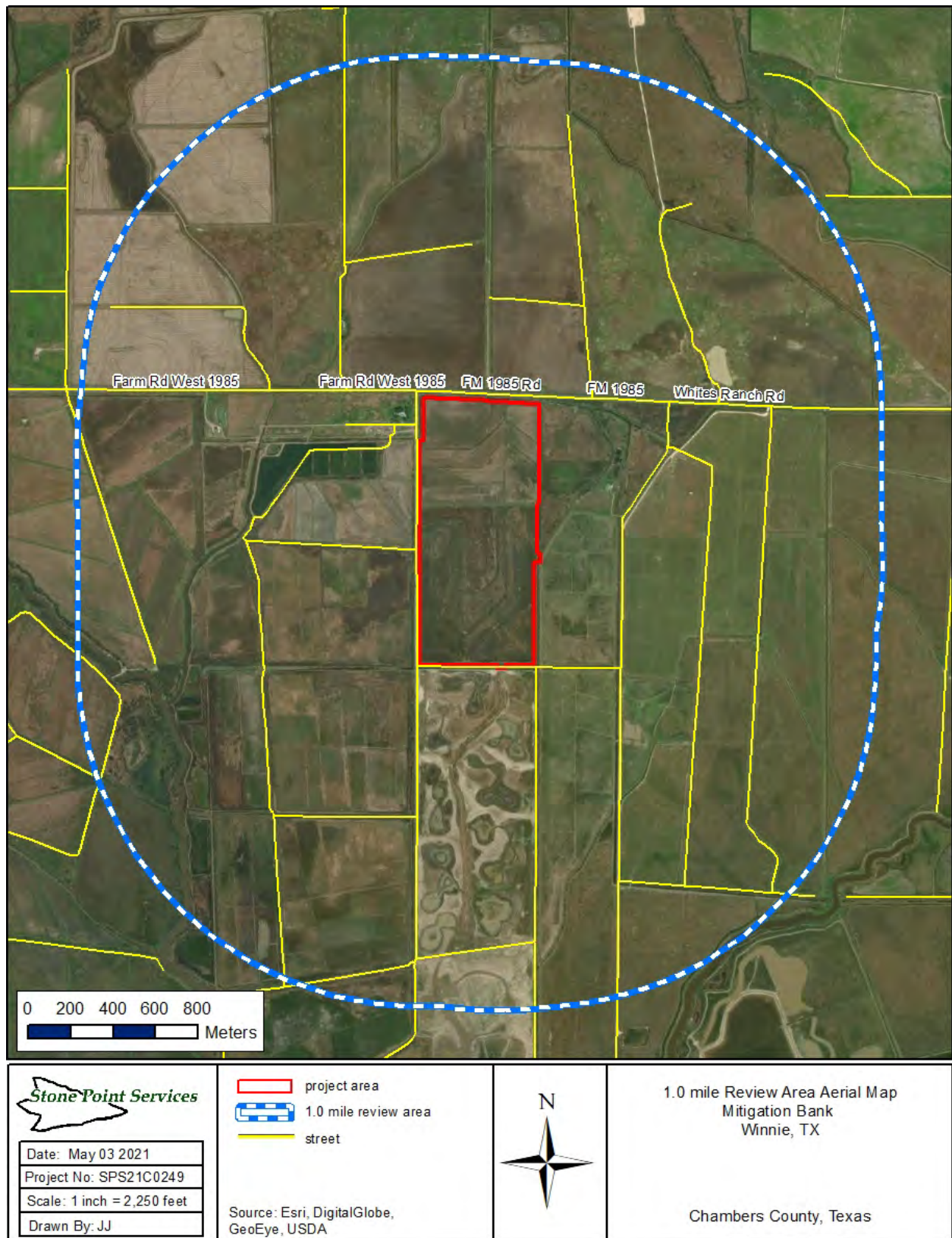


Figure 2: Aerial map showing the project location

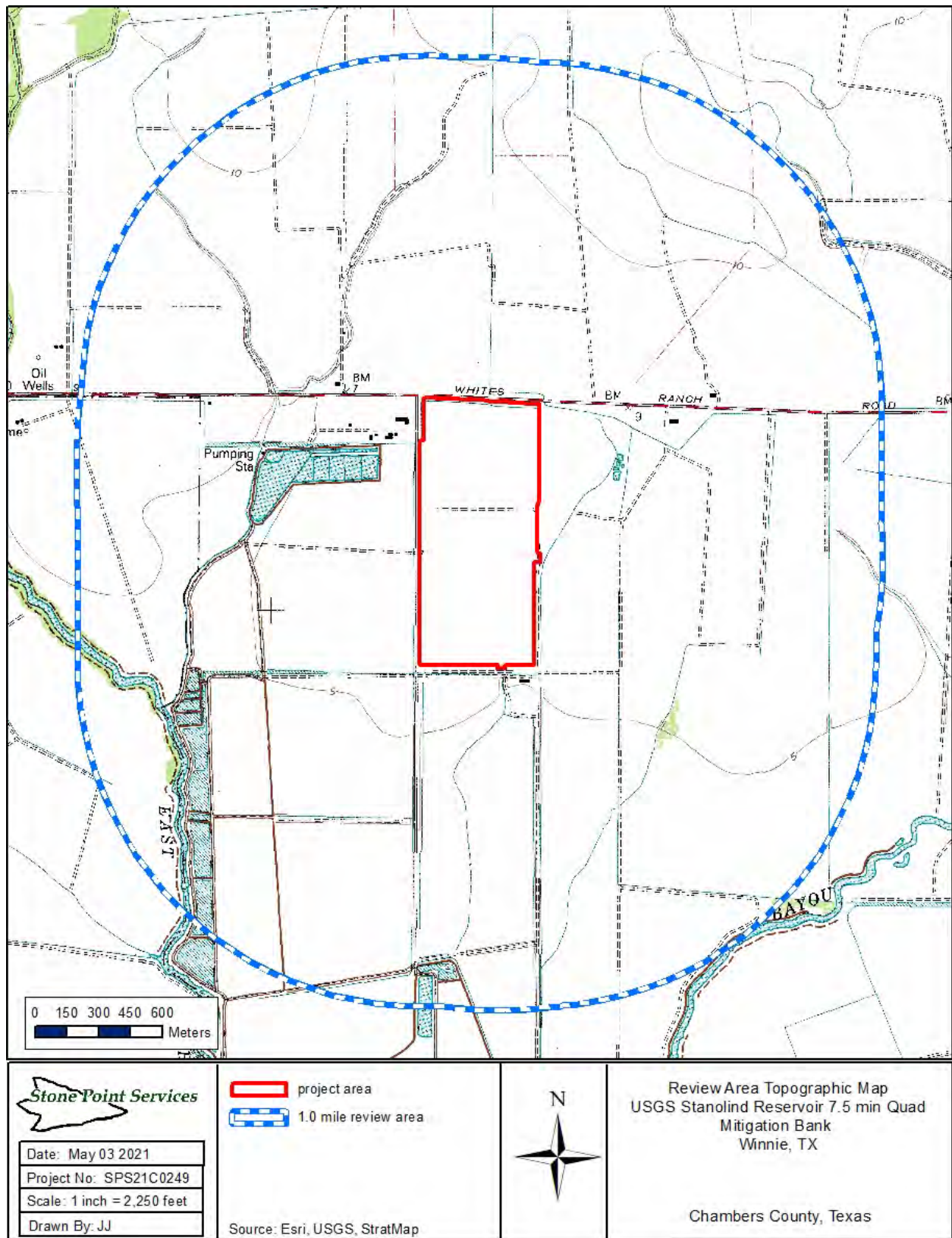


Figure 3: USGS Standolind Reservoir 7.5 Minute quadrangle showing the project area

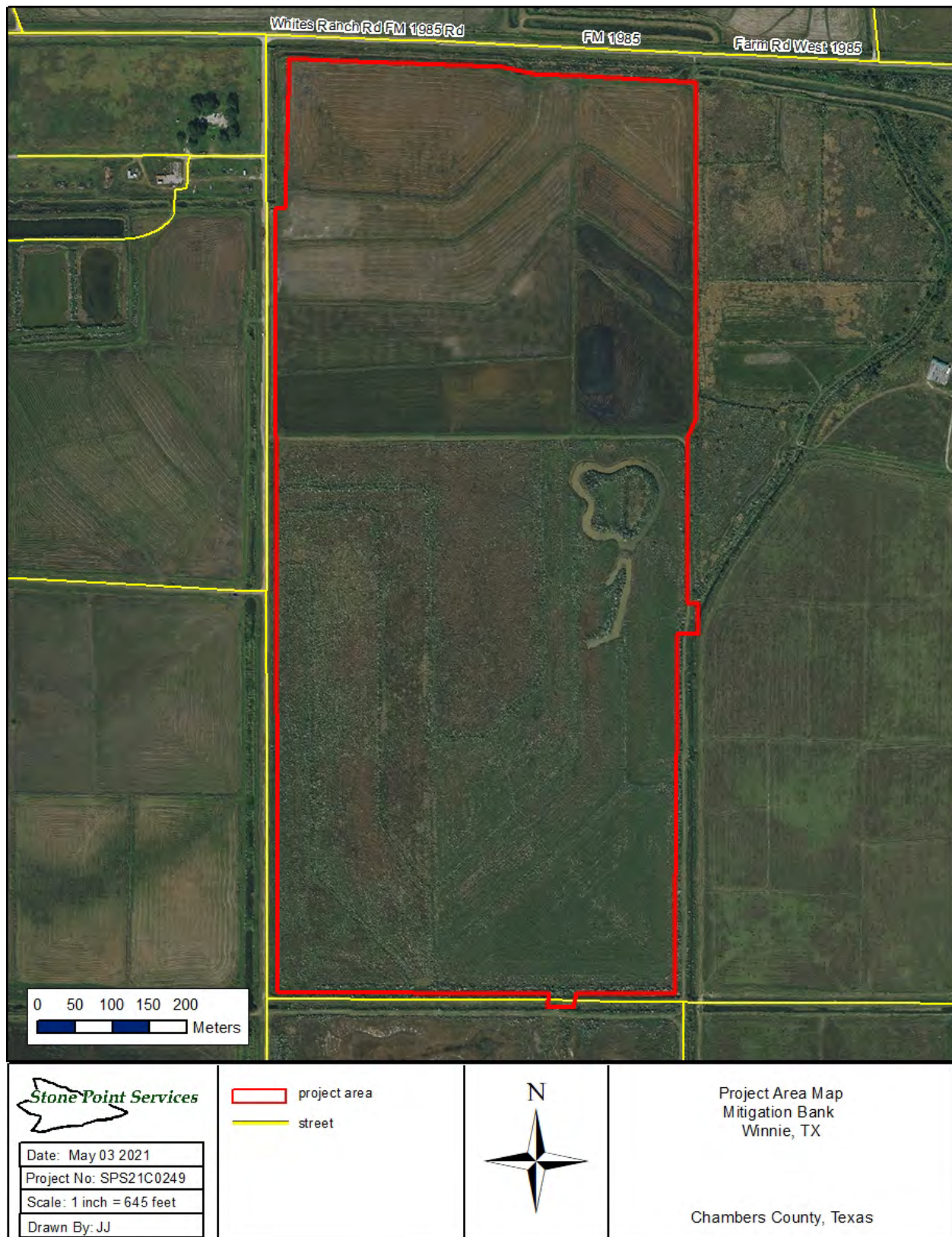


Figure 4: Aerial image of project area

Chapter 2: Natural and Cultural Setting

Environmental Setting

The subject property is located in Chambers County, near the town of Winnie, Texas. Chambers County lies within the Gulf Prairies and Marshes region of Texas (TPWD 2004). Vegetation in the county typically consists of remnant tall grass prairies, oak parklands and oak mottes. In general, this region is nearly level, slowly drained and dissected by streams and rivers. The present survey area lies within grassy agricultural land and is bisected by an unnamed stream in the southeast corner of the property (Figure 5).



Figure 5: View north of the subject property from FM 1985/White's Ranch Road (image courtesy of Google 2021)

Flora and Fauna

This region is located within the Austroriparian biotic province (Blair 1950; Dice 1943) and supports a broad range of flora and fauna. Animals that historically may have been used for food, shelter, and clothing (or perhaps for tools) in Chambers County include: white-tailed deer (*Odocoileus virginianus*), fox squirrel (*Sciurus niger*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), bison (*Bison bison*), beaver (*Castor canadensis*), black bear

(*Ursus americanus*), wild turkey (*Meleagris gallopavo*), quail (*Colinus virginianus*), and other smaller birds and rodent species (Davis and Schmidly 1994; Skokan et al. 1997).

Most of the habitats include primarily tall grass prairies and oak parklands. Typical species found in the Gulf Prairies and Marshes region included pine (*Pinus spp.*), dogwood (*Cornus florida*), black hickory (*Carya texana*), common persimmon (*Diospyros virginiana*), sweetgum (*Liquidambar styraciflua*), greenbriar (*Smilax spp.*), white oak (*Quercus alba*), poison oak (*Toxicodendron pubescens*), blackberry (*Rubus fruticosus*), wax myrtle (*Myrica spp.*), and others typical of upland and transitional settings (McMahan et al. 1984:25). Some species noted during this survey include longleaf pine (*Pinus palustris*), sweetgum (*Liquidambar styraciflua*), various species of oak (*Quercus spp.*), and beautyberry (*Callicarpa americana*).

Geology and Soils

The survey area is located in Chambers County, south of the cities of Anahuac and Winnie, TX. The underlying geological unit for this project area is the Beaumont Formation (Figure 6). This formation, of Pleistocene age, is characterized by clay and mud of low permeability, high water retention capacity, high compressibility, high to very high shrink-swell potential, and poor drainage. Geologic units include interdistributary muds, abandoned channel-fill muds, and ancient overbank fluvial muds. The surface is almost featureless, characterized by relict river channels shown by meander patterns and pimple mounds on relic meander belt ridges, separated by areas of low, relatively smooth, featureless backswamp deposits without pimple mounds. The Beaumont Formation extends to a depth of approximately 30 meters (100 feet) (USGS 2021).

Soils

The US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) *Soil Survey of Chambers County, Texas* (NRCS 2021) was used in determining soils within the project area (Figure 7; Table 1).

Soils within the project area include:

League clay, 0 to 1 percent slopes (LegA)

Labelle clay loam, 0 to 1 percent slopes, rarely flooded (LaeA)

The League series consists of very deep, somewhat poorly drained, very slowly permeable soils. These nearly level soils formed in clayey fluvio-marine deposits derived from the Beaumont Formation. Slope ranges from 0 to 1 percent. The Labelle series consists of very deep, somewhat poorly drained soils. These nearly level soils formed in loamy fluvio-marine deposits of the Beaumont Formation. Slope ranges from 0 to 1 percent. These soils are imprinted on sediments deposited during the Pleistocene and formed by joint action of the sea and a river or stream (fluvio-marine deposits). The clayey soils within the subject property are formed in weathered sediments derived from the Beaumont Formation. A series of thermoluminescence (TL) ages obtained on the Beaumont Formation indicate that sediments accumulated to create this deposit

during Oxygen Isotope Stages (OIS) 10 through 5a (Blum and Aslan 2006; Blum and Price 1998; Durbin et al. 1997). Thermoluminescence ages within this bracket suggest an age of approximately 374 to 71 thousand years before present (kyrs BP) (Lisiecki and Raymo 2005). Soils data does not indicate the presence of Holocene alluvial veneers, nor the depositional environment to form unmapped alluvial deposits. The soils within the subject property are imprinted on sediments deposited prior to human occupation of North America. Additionally, no Holocene-aged sediments are noted to be present atop the League clay or Labelle clay loam.

The above soils typically have the following horizonation:

Table 1: Soils within the project area

<i>Soil type</i>	<i>Horizon</i>	<i>Depth (cm)</i>	<i>Color</i>	<i>Texture</i>
<i>League</i>	Ap	0-15 cm	Dark gray (10YR 4/1)	Clay
	Bw	15-28 cm	Very dark gray (10YR3/1)	Clay
	Bss1	28-56 cm	Very dark gray (10YR3/1)	Clay
	Bss2	56-76 cm	Very dark gray (10YR3/1)	Clay
	Bss3	76-91 cm	Dark gray (10YR 4/1)	Clay
	Bssg1	91-117 cm	Gray (2.5Y 5/1)	Clay
	Bssg2	117-150 cm	Gray (2.5Y6/1)	Clay
	Bssg3	105-203 cm	Gray (2.5Y 6/1)	Clay
<i>Labelle</i>	Ap	0-7 cm	Very dark gray (10YR3/1)	Clay loam
	A	7-21 cm	Very dark gray (10YR3/1)	Silty clay loam
	Bt	21-51 cm	Very dark gray (10YR3/1)	Silty clay loam
	Btss1	55-92 cm	Very dark gray (10YR3/1)	Silty clay
	Btss2	92-121 cm	Dark gray (10YR4/1)	Silty clay loam
	Btkssg1	121-164 cm	Gray (10YR6/1)	Silty clay
	Btkssg2	164-203 cm	Light gray (10YR7/1)	Clay loam

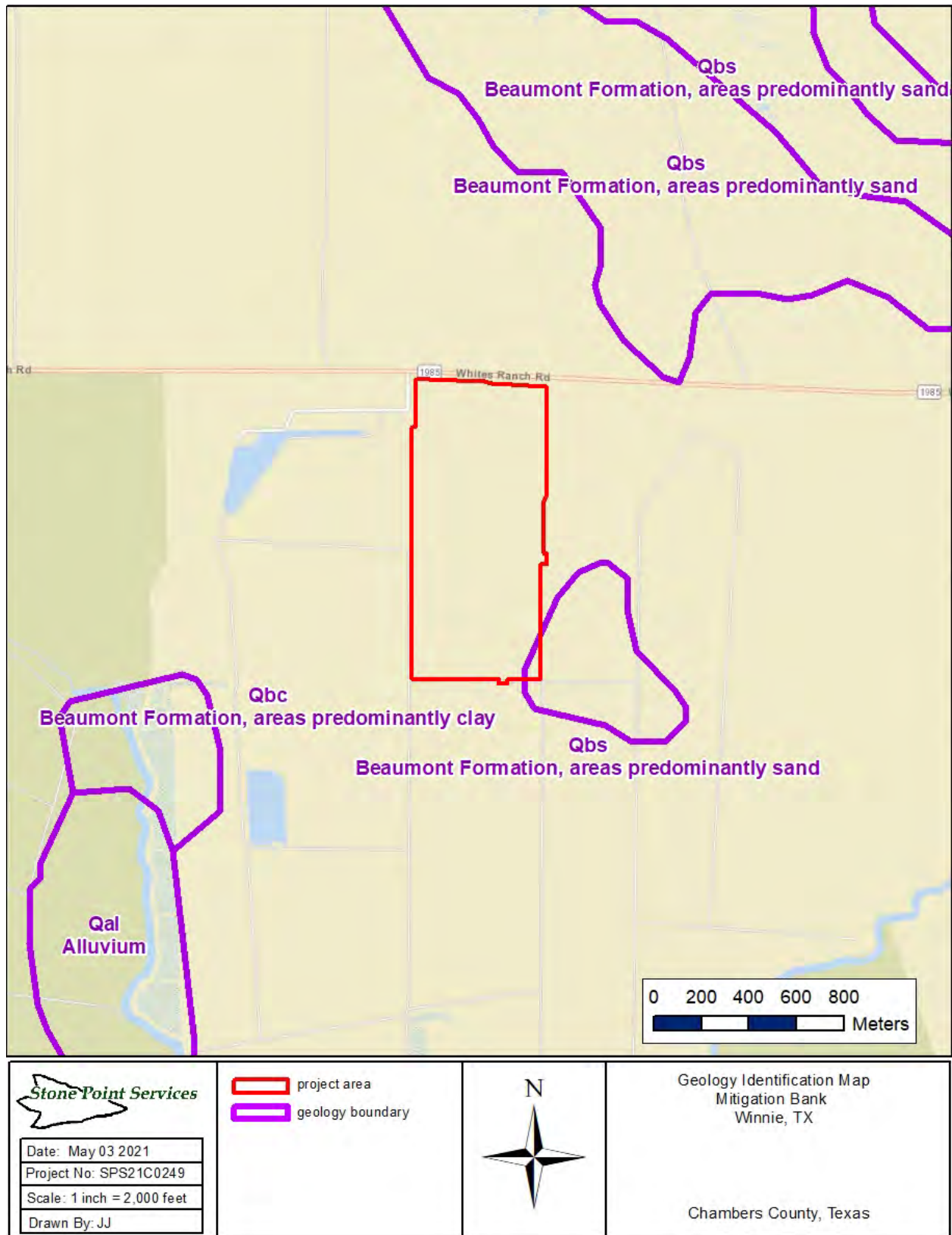


Figure 6: Map showing geology types in the project area.

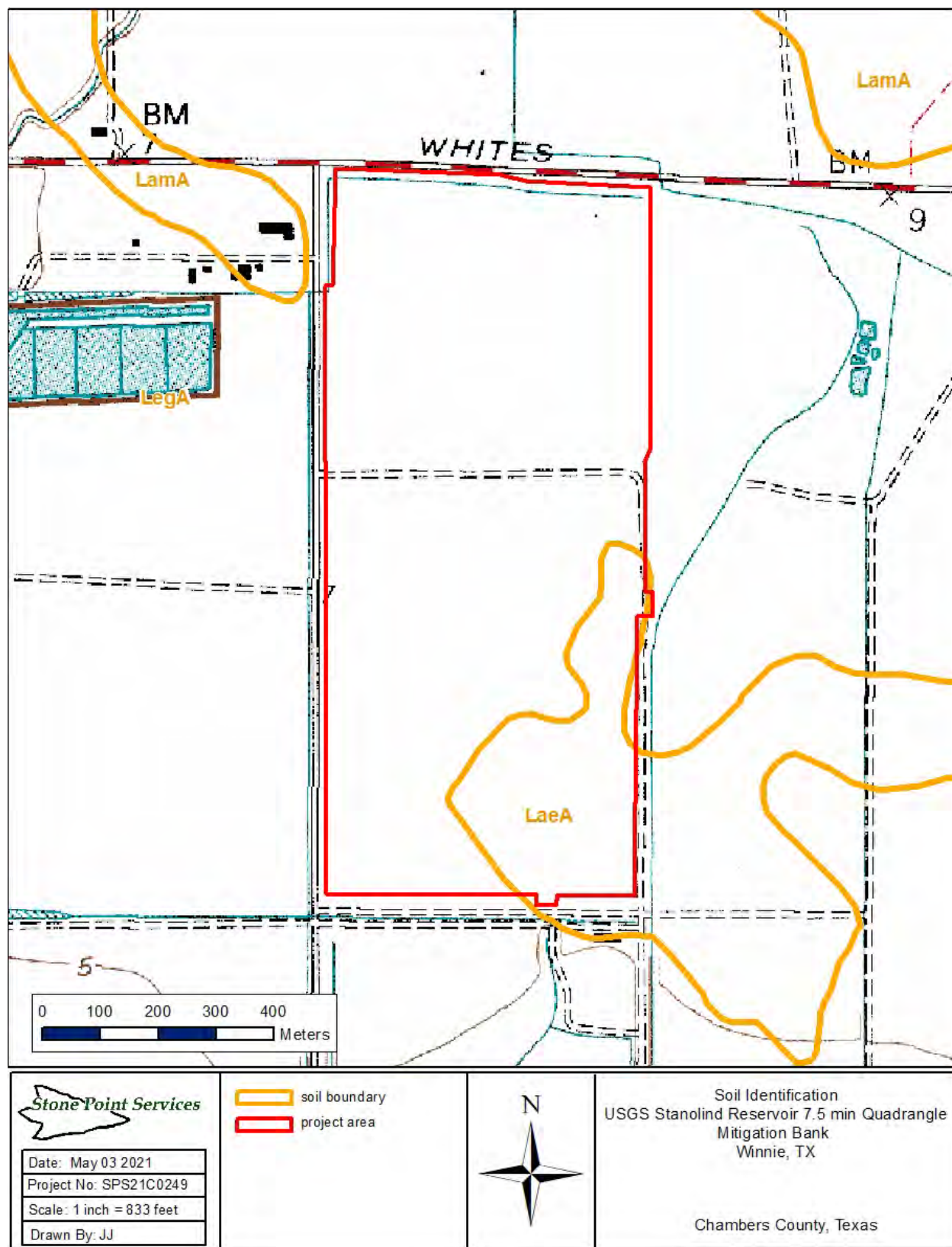


Figure 7: Soil types within the APE

As can be seen in Table 1, NRCS soils data indicates that the project area contains topsoil horizons comprised of dark gray or very dark gray clay or clay loam. Available soils data indicates a topsoil depth range of up to approximately 21-centimeters (8-inches) thick within the Labelle series and as thin as 15-centimeters (6-inches) within the League series. These soils are imprinted on sediments deposited during the Pleistocene and formed by joint action of the sea and a river or stream (fluviomarine deposits). The clayey soils within the subject property are formed in weathered sediments derived from the Beaumont Formation. A series of thermoluminescence (TL) ages obtained on the Beaumont Formation indicate that sediments accumulated to create this deposit during Oxygen Isotope Stages (OIS) 10 through 5a (Blum and Aslan 2006; Blum and Price 1998; Durbin et al. 1997). Thermoluminescence ages within this bracket suggest an age of approximately 374 to 71 thousand years before present (kyrs BP) (Lisiecki and Raymo 2005). Soils data does not indicate the presence of Holocene alluvial veneers, nor the depositional environment to form unmapped alluvial deposits. The soils within the subject property are imprinted on sediments deposited prior to human occupation of North America. Subsoil contexts in these soil settings are of too old an age to contain in-situ archaeological deposits, and subsoil horizons should be seen as an acceptable marker to terminate shovel tests. Subsoils across the project area range in characteristics from very dark gray to light gray clay or silty clay. While not formally identified in soil survey maps, any localized alluvial contexts that do exist may contain thin soil veneers covering older stable surfaces and should be fully explored in accordance with CTA standards and guidelines for intensive terrestrial survey (CTA 2020).

Understanding Soil Horizons

The purpose of discussing soils within the context of an archaeological survey is to identify the types of deposition and subsequent soil transformations that have occurred on a site. Understanding the depositional environment provides a better understanding of how deep below the surface any archaeological materials may be anticipated and possible post-depositional processes that may affect archaeological interpretations. The following descriptions are noted from shallowest to deepest. These designations are intended to help the reader understand the master soil horizons and subordinate horizon designations noted in the above table. A brief description of master horizon types is provided below:

O horizon: This is generally a shallow litter or organic layer of soils, very recent in age.

A horizon: This is typically the ground surface, or topsoil layer, if no O horizon is present. As this horizon represent the ground surface, archaeological artifacts are often present within this horizon/layer.

E horizon: The E horizon consists of an intermediate level between the A horizon and the B (subsoil) horizon. The E horizon describes an eluviated, or leached portion of a soil profile where silicate clays or minerals have been translocated to deeper horizons via soil forming processes.

B horizon: These are subsoil genetic horizons, meaning these horizons form in place below the topsoil through weathering processes. These portions of the soil column are often formed through illuviation (such as the vertical translocation of silicate clays by water).

C horizon: This horizon describes unaltered parent material

R horizon: This is the bedrock layer.

Subordinate distinctions and numeric identifiers after a master horizon designation indicates that a master horizon has undergone specific soil forming processes and, in certain cases, exhibits vertical variation between related genetic horizons. As an example, a Btg1 horizon indicates a subsurface horizon where clays have been translocated from upper eluvial horizons and iron has been reduced or removed during soil formation, or that saturation with stagnant water has preserved a reduced state (gleying). This would be the first of at least two vertically subdivided horizons that exhibit general morphological attributes of silicate clay accumulation and gleying; yet are differentiated by depth on the basis of specific physical or chemical differences.

It must be noted that although archaeologists are experienced in determining soils types, we are not soil scientists, nor are we all geomorphologists. A field description of a soil type may vary/differ from the soils designated by the NRCS for a specific area. The degree of sunlight, soil moisture, and personal observations can lead to variation during soil profile descriptions. Additionally, topography, erosion, deposition, and/or artificial impacts may lead to differences in soil horizon thickness between NRCS data collected in advance of an archaeological survey and actual project area soil thicknesses observed during fieldwork. For an expanded description of soil forming factors, processes, and interpretive strategies, see Schoeneberger and colleagues (2012) and Goldberg and Macphail (2006).

Climate and Conditions

The survey area is in a humid and subtropical region. The average summer temperature is approximately 27 degrees Celsius (82 degrees Fahrenheit) with an average daily maximum temperature of 33 degrees Celsius (93 degrees Fahrenheit) and the average winter temperature is 7 degrees Celsius (44 degrees Fahrenheit) with an average daily minimum of 0.5 degrees Celsius (33 degrees Fahrenheit). Average annual precipitation is 109 centimeters (43 inches). At the time of survey, temperatures were on average 7 degrees Celsius (45 degrees Fahrenheit) in January and 32 degrees Celsius (90 degrees Fahrenheit) in September.

Cultural Setting

Chambers County lies within east Texas, where the general archaeological record ranges from roughly 9500 BC during the Paleoindian period to the modern era (Table 2). Prehistoric temporal divisions are usually determined by changes in prehistoric diet and by the types of materials (artifacts) used. In many instances, periods are somewhat subjective. In most cases, tribal affiliation is not assigned to any particular group until well into the late prehistoric periods. For the majority of prehistory, groups are associated with periods rather than distinct cultural divisions. In other words, archeologists will often refer to a "Middle Archaic" population, rather than noting a specific culture. In some areas, such distinctions are possible, but it is somewhat rare. Table 2 provides an overview of the culture periods of this region. For more detail, please see Perttula (2004).

Table 2: East Texas Cultural Sequence

Dates	Period
9500 - 7000 BC	Paleoindian
7000 - 200 BC	Archaic
200 BC - AD 800	Woodland
AD 800 - 1680	Caddo
AD 800 - 1000	• Formative Caddo
AD 1000 - 1200	• Early Caddo
AD 1200 - 1400	• Middle Caddo
AD 1400 - 1680	• Late Caddo
AD 1500 - 1950	Historic
AD 1542 - 1800	Spanish and French Influence
AD 1800- 1821	American Immigration
AD 1821 - 1836	Mexican State
AD 1836 - 1846	Republic of Texas
AD 1846	Texas becomes a US state
AD 1861 - 1865	Civil War
AD 1865 - 1900	Post-Civil War
AD 1900 - Present	Modern era

Prehistoric Overview

Prehistoric temporal divisions are usually determined by changes in diet and by the types of materials (artifacts) used. In many instances, periods are somewhat subjective. In most cases, tribal affiliation is not assigned to any particular group until well into the late prehistoric periods. For most of prehistory, groups are associated with periods rather than distinct cultural divisions. In other words, archeologists will often refer to a "Middle Archaic" population, rather than noting a specific culture. In some areas, such distinctions are possible, but it is somewhat rare.

Paleoindian Period (9500 - 7000 BC)

The Paleoindian Period is the least understood period in east Texas prehistory due to the low number of sites investigated that date to this period. In addition, minimal radiocarbon dates and the general lack of stratigraphically intact sites results in a poor understanding of this period. The subsistence strategy relied heavily on big game hunting with a high selectivity for specific tool types. It appears that the social organization of the Paleoindian Period was loosely structured.

These societies appear to have included social groups loosely organized around a central nuclear family. Most Paleoindian sites are very small and located near smaller streams and tributaries. Tools were made of high-quality materials and sometimes non-local lithic material was used. In addition, Paleoindians commonly refurbished and recycled tools (Story 1990). The diagnostic artifacts associated with the Paleoindian Period in east Texas include Clovis, Dalton, San Patrice, and Scottsbluff projectile points and Albany scrapers, Red River Knives, and Dalton Adzes.

Archaic Period (7000 - 200 BC)

The Archaic Period is defined by its change in subsistence strategy and a modification in tool manufacturing techniques. Tools were more often made of local materials, were less well made, and they were rarely recycled. Due to its large expanse of time, the Archaic Period is subdivided into three stages with tentative dates: Early (7000 - 4000 BC), Middle (4000 - 2000 BC), and Late (2000 - 200 BC).

Subsistence in the Early Archaic focused on hunting with a greater reliance on gathering. Story (1990) notes small and widely distributed sites reflecting high mobility within a still undefined territory. Dart points associated with the Early Archaic include Cossatot, Dawson, Karl, Keithville, Palmer, and Wells (Story 1990). Foraging was a primary type of subsistence strategy during the Middle Archaic. The increase in the use of plant food brought about a greater diversity in tool types, including polished stone tools, mortars and pestles, and a variety of chipped stone tools. Dart points associated with the Archaic include the Big Sandy, Calf Creek, Johnson, Carrollton, Morrill, Evans, Lone Oak, Trinity, and Wesley (Story 1990). During the Late Archaic, an increase in the number of archeological sites and their size indicates an exploitation of all available food resources within the geographic boundaries of any specific group. The following types of projectile points are typical of the period: Ellis, Ensor, Palmillas, Yarbrough, Gary, and Kent (Kenmotsu and Perttula 1993).

Woodland Period (200 BC - AD 800)

The Woodland Period is characterized by the introduction of pottery and the bow and arrow in northeast Texas. Although some occupations were small and of a short duration, many others indicated an increase in population density and a longer occupation. The presence of burial mounds in some parts of northeast Texas represents status differentiation within these cultures. The Woodland Period is characterized by an abundance of Gary points, expanded stem points, and early ceramic styles such as Sandy Paste Wares, Williams Plain, Cooper Boneware, Marksville, and Troyville. There is some difficulty in dating Woodland Period sites because many contain aspects of both the Late Archaic and the Formative Caddo.

Caddo Period (AD 800 - 1680)

The Caddo Period is divided into stages relating to the development of the Caddo, the culture that dominated the area: Formative Caddo (AD 800- 1000), Early Caddo (AD 1000 - 1200), Middle Caddo (AD 1200 - 1400), and Late Caddo (AD 1400 - 1680). Each stage is defined by its associated distinctive tools and pottery. Alba, Bonham, Scallorn, and Catahoula arrow points,

and Copena knives are typical tools. Holly Fine Engraved, Hickory Fine Engraved, Spiro Engraved, Kiam Incised, Coles Creek Incised, and Weches Fingernail Impressed ceramics are examples of the Formative Caddo stage (Perttula 1995). The Early Caddo stage is typically associated with Sanders Engraved, Hickory Fine Engraved, Sanders Plain, and Canton Incised ceramics (Perttula 1995). Arrow points from this stage are similar to those of the Formative Caddo.

Formative and Early Caddo Period sites are generally small and are usually found on terraces adjacent to water sources, with mounds located near major rivers. Early Caddo sites are more numerous than formative Caddo Sites and they tend to indicate a general hunting and gathering adaptation, supplemented with horticulture (Perttula et al. 1986:54-55). Maize has been identified in Early Caddo sites. Middle Caddo sites appear to be more common than Early Caddo sites, with most occupations located on elevated landforms along major and minor tributaries and rivers. The Middle Caddo culture appears to be more heavily reliant on agricultural production. The Late Caddo show significant regional variation. The Late Caddo Period lasted into historic times and is marked by Caddo-European contact. During the 1790s other Indians such as the Choctaw, Delaware, and Cherokee migrated from east of the Mississippi River into Caddo territory. Due to the competition for land and resources there developed an animosity between the Caddo and the newcomers. Today, descendants of the prehistoric Caddo live in northeast Texas and in Oklahoma (Newcomb 1961).

Historic Overview

The historic period begins at approximately AD 1500 when European explorers reached North America. Early European explorers that reached Texas during the sixteenth century include Alonso Alvarez de Pineda, Cabeza de Vaca, and survivors from the Hernando de Soto entrada who entered northern Texas in an attempt to reach New Spain. Beginning in the late 1660s, the French mounted a series of expeditions into Mississippi and the Ohio Valley, and later Texas, led by René-Robert Cavelier and Sieur de La Salle. It was not until the late 17th century and into the early 18th century, however, that Texas would become heavily influenced by the Spanish and French who had effectively taken up territory to the south and east.

The following history of Chambers County and Baytown is taken primarily from the Texas State Historical Association website (Kleiner 2020; Young 2020).

Chambers County was formed in 1858 from Liberty and Jefferson counties, and organized the same year with Wallisville as its county seat. The county seat was changed to Anahuac in 1908. In 2014, the population was reported as 38,145.

Previous Investigations

Stone Point Services, LLC completed a Texas archeological site file review on May 7, 2021 for the Mitigation Bank one mile review area, utilizing the site files at the Texas Archeological Sites Atlas online database. No archeological survey projects have been identified within 1-mile (1.6-

kilometers) of the subject property. No archeological sites have been previously recorded within 1-mile (1.6-kilometers) of the subject property.

Chapter 3: Probability Assessment

This desktop review has identified a moderate potential for encountering cultural resources within the subject property. The area to be surveyed includes a total of approximately 68.86-hectares (170.22-acres). The unnamed intermittent stream in the southeast corner of the subject property has not been surveyed for cultural resources, but the potential exists for prehistoric resources within proximity to the creek. Historic aerial images from 1961 show a potential farmstead near the northwest corner of the proposed mitigation bank on an adjacent property (Figure 8). The aerial image from 1952 depicts a farmstead present to the west of the project area at the northwest corner and a structure at the southeast corner on an adjacent property. At no time did any structures appear within the survey area in historic aerial images or topographic maps (Figure 9). There are currently a few two-track ranch roads in this area, and the area is agricultural fields or pastures as it has been since the earliest aerial image in 1961 and topographic map in 1943.

There is no evidence that the APE has been significantly impacted beyond agricultural activities. A review of the NRHP database and the Texas Archeological Sites Atlas (2021) identified no archaeological resources in this area.

The potential for encountering prehistoric archeological sites is moderate along the unnamed tributary of Trout Creek. The potential for historic resources is low within the subject property (Figure 9). Moderate potential areas are those areas within reasonable proximity to water sources that could indicate that a prehistoric site is more likely (Figures 10-11). Assessment of the topography and stream morphology suggests that the highest probability area for cultural resources is located across the southeast portion of the project area due to presence of the intermittent stream. While no historic structures are evident in the available imagery, unidentified ranching or farming structures or features may be present within this area that predate imagery.

Assessment for Deeply-Buried Soils and Mechanical Prospection

The soils present across the Subject Property consist of the League clay and Labelle clay loam soil series (NRCS 2021). These soils are imprinted on sediments deposited during the Pleistocene and formed by joint action of the sea and a river or stream (fluviomarine deposits). The clayey soils within the Subject Property are formed in weathered sediments derived from the Beaumont Formation. A series of thermoluminescence (TL) ages obtained on the Beaumont Formation indicate that sediments accumulated to create this deposit during Oxygen Isotope Stages (OIS) 10 through 5a (Blum and Aslan 2006; Blum and Price 1998; Durbin et al. 1997). Thermoluminescence ages within this bracket suggest an age of approximately 374 to 71 thousand years before present (kyrs BP) (Lisiecki and Raymo 2005). Soils data does not indicate the presence of Holocene alluvial veneers, nor the depositional environment to form unmapped alluvial deposits. The soils within the Subject Property are imprinted on sediments deposited

prior to human occupation of North America. Additionally, no Holocene-aged sediments are noted to be present atop the League clay or Labelle clay which might potentially bury Archaeological material in deep contexts. Due to the age of the soils and lack of appreciable Holocene-aged deposits, no mechanical prospection for deeply-buried archaeological sites should be implemented during a cultural resources survey of the Subject Property.

It is the recommendation of Stone Point Services, LLC that a formal archeological survey be completed for this project. The archeological survey should focus attention on the areas within 100-meters of the intermittent stream where historic sites may be identified.

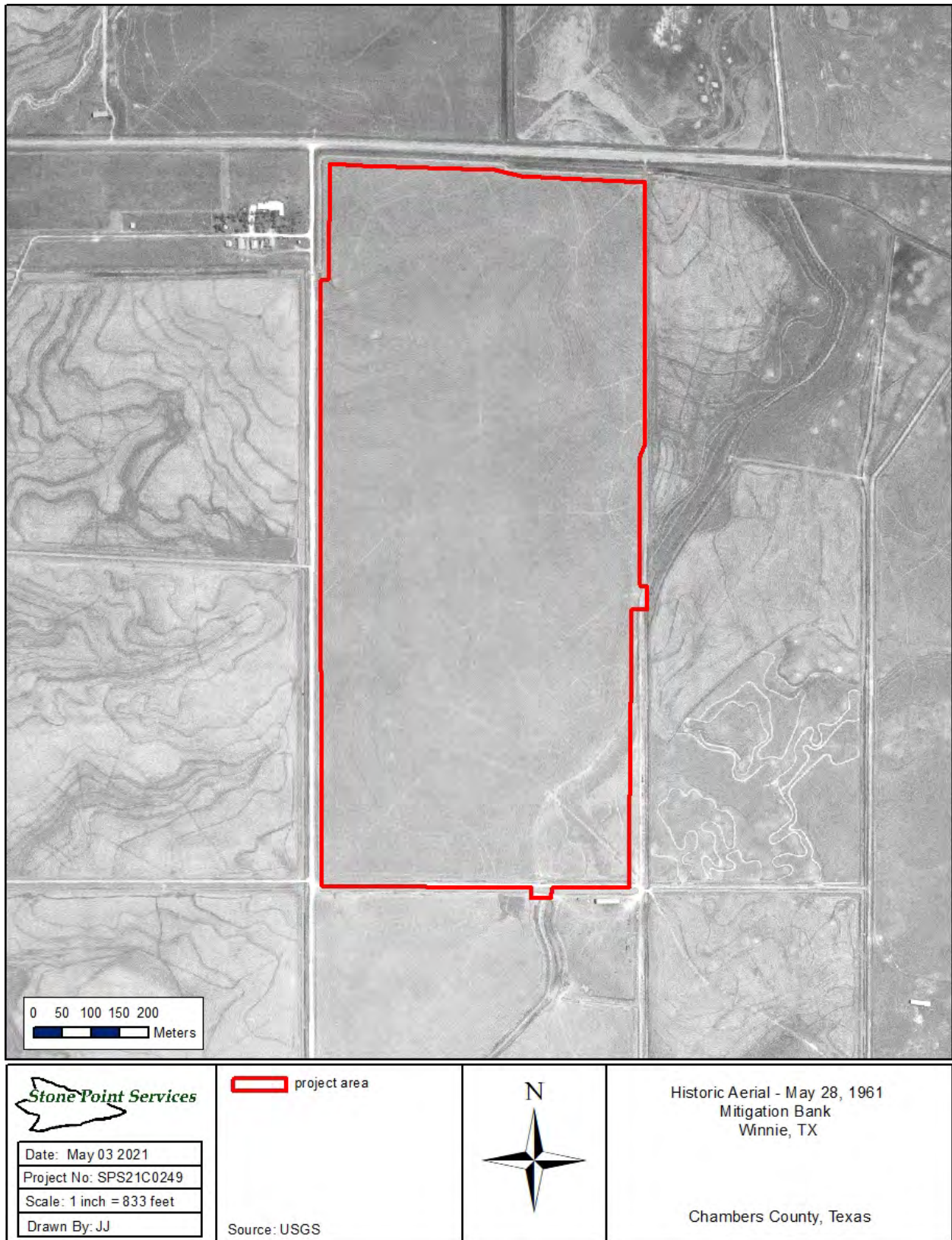


Figure 8: 1961 aerial image showing the project area

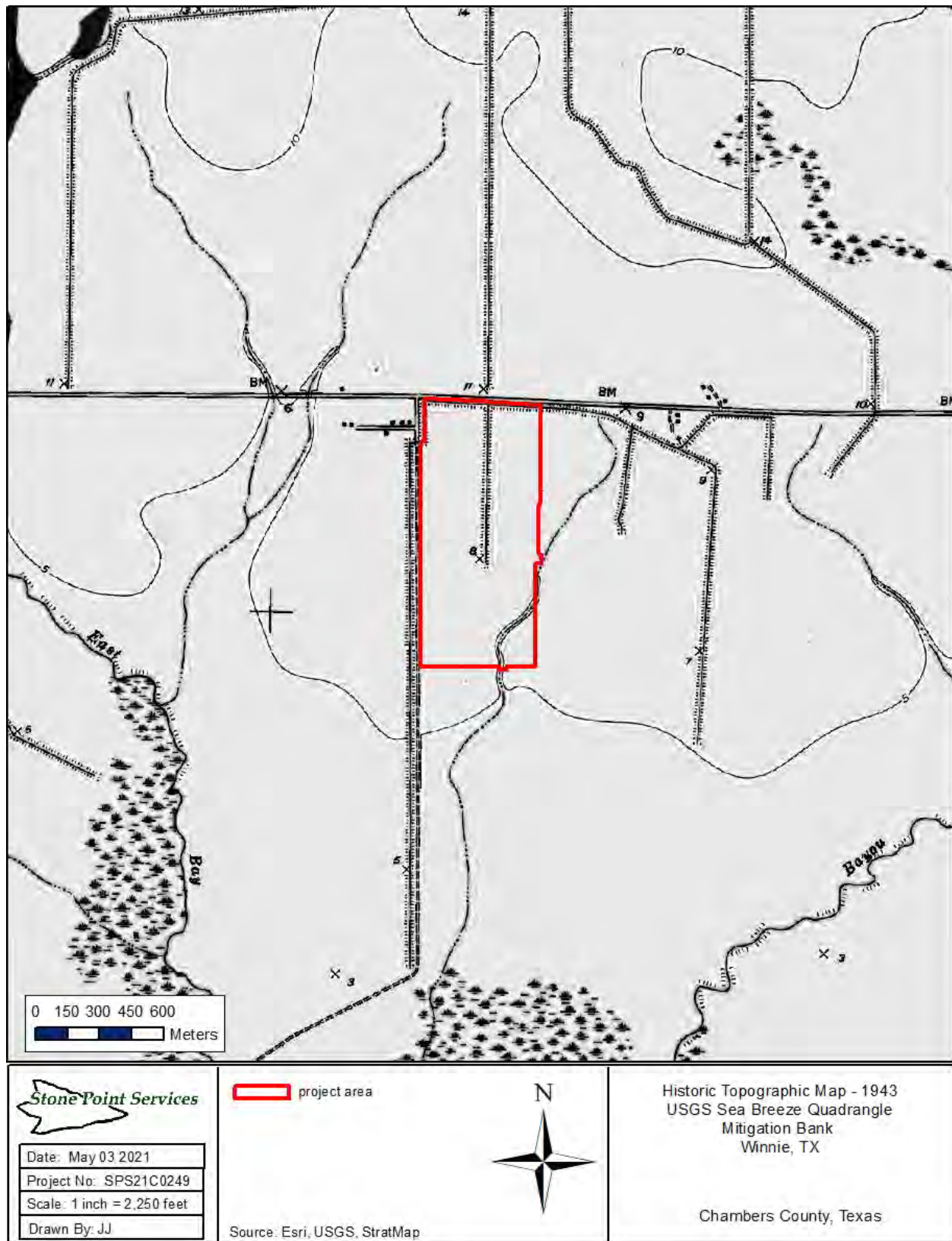


Figure 9: USGS Sea Breeze Topographic Quadrangle Map from 1943

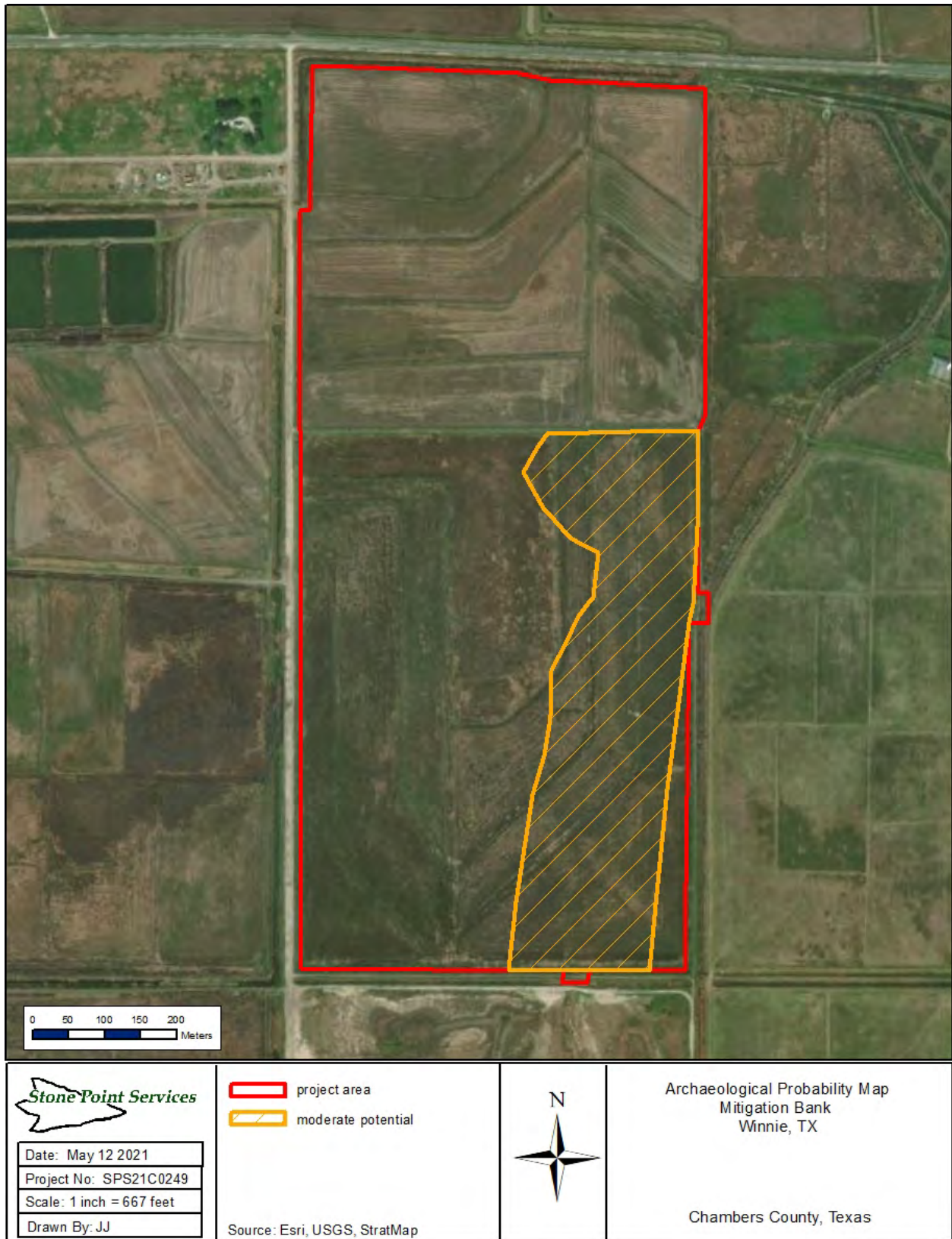


Figure 10: Map indicating the moderate probability area

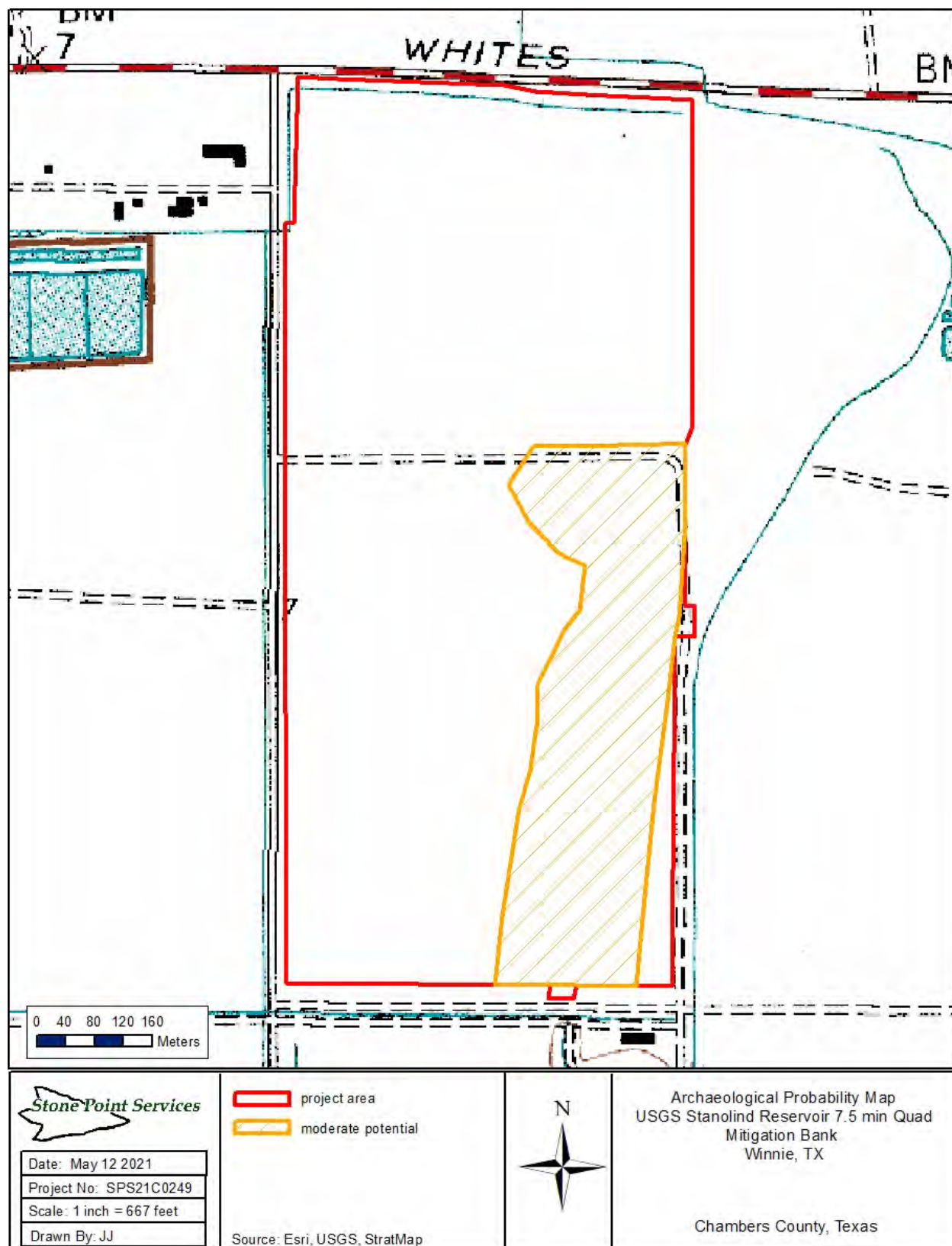


Figure 11: Topographic map indicating the moderate probability area

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APPENDIX C

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Anahuac Wetlands Mitigation Bank (AWMB)

LOCATION

Chambers County, Texas



DESCRIPTION

Some(The objectives of this Bank are to recreate, to the extent practicable, high quality wetland habitat through the restoration and enhancement of site hydrology to recreate historic drainages and overland flow patterns to the greatest practicable extent; and to restore native vegetation to farmed areas to mimic the native habitat and aquatic resources that historically existed on the site prior to agricultural development and as found on the Anahuac NWR surrounding the proposed bank to the west, south, and east.

The proposed AWMB is a 168 acre wetland mitigation bank. AWMB is located within a larger

parent tract, wholly owned by East Bay Farms and is adjacent to the Anahuac National Wildlife Refuge in southern Chambers County. More specifically, the site is located on the United States Geological Service (USGS) Stanolind Reservoir topographic quadrangle, coordinates 29°40'10.4"N 94°24'25.6"W.

It is anticipated the project will be permitted in 2023 and restoration efforts will begin by the end of 2023. The full project should be complete and all credits released by 2030.)

Local office

Texas Coastal Ecological Services Field Office

☎ (281) 286-8282

📠 (281) 488-5882

4444 Corona Drive, Suite 215
Corpus Christi, TX 78411

<http://www.fws.gov/southwest/es/TexasCoastal/>

http://www.fws.gov/southwest/es/ES_Lists_Main2.html

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME

STATUS

West Indian Manatee *Trichechus manatus*

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

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

Threatened

Marine mammal

Birds

NAME

STATUS

Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis*

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/10477>

Threatened

Piping Plover *Charadrius melodus*

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/6039>

Threatened

Red Knot *Calidris canutus rufa*

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/1864>

Threatened

Reptiles

NAME

STATUS

Green Sea Turtle *Chelonia mydas*

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/6199>

Threatened

Hawksbill Sea Turtle *Eretmochelys imbricata*

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/3656>

Endangered

Kemp's Ridley Sea Turtle *Lepidochelys kempii*

Wherever found

There is **proposed** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/5523>

Endangered

Leatherback Sea Turtle *Dermochelys coriacea*

Endangered

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/1493>

Loggerhead Sea Turtle *Caretta caretta*

Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/1110>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general

public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

American Golden-plover *Pluvialis dominica*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

American Oystercatcher *Haematopus palliatus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8935>

Breeds Apr 15 to Aug 31

Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Sep 1 to Jul 31

Black Rail *Laterallus jamaicensis*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/7717>

Breeds Mar 1 to Sep 15

<p>Black Skimmer <i>Rynchops niger</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/5234</p>	Breeds May 20 to Sep 15
<p>Buff-breasted Sandpiper <i>Calidris subruficollis</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9488</p>	Breeds elsewhere
<p>Clapper Rail <i>Rallus crepitans</i></p> <p>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds Apr 10 to Oct 31
<p>Dunlin <i>Calidris alpina arctica</i></p> <p>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds elsewhere
<p>Gull-billed Tern <i>Gelochelidon nilotica</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9501</p>	Breeds May 1 to Jul 31
<p>Hudsonian Godwit <i>Limosa haemastica</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds elsewhere
<p>King Rail <i>Rallus elegans</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/8936</p>	Breeds May 1 to Sep 5
<p>Le Conte's Sparrow <i>Ammodramus leconteii</i></p> <p>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds elsewhere
<p>Least Tern <i>Sterna antillarum</i></p> <p>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds Apr 20 to Sep 10
<p>Lesser Yellowlegs <i>Tringa flavipes</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9679</p>	Breeds elsewhere

<p>Long-billed Curlew <i>Numenius americanus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/5511</p>	Breeds elsewhere
<p>Magnificent Frigatebird <i>Fregata magnificens</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds elsewhere
<p>Marbled Godwit <i>Limosa fedoa</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9481</p>	Breeds elsewhere
<p>Prothonotary Warbler <i>Protonotaria citrea</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Apr 1 to Jul 31
<p>Reddish Egret <i>Egretta rufescens</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/7617</p>	Breeds Mar 1 to Sep 15
<p>Ruddy Turnstone <i>Arenaria interpres morinella</i></p> <p>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds elsewhere
<p>Seaside Sparrow <i>Ammodramus maritimus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 10 to Aug 20
<p>Semipalmated Sandpiper <i>Calidris pusilla</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds elsewhere
<p>Short-billed Dowitcher <i>Limnodromus griseus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9480</p>	Breeds elsewhere
<p>Swallow-tailed Kite <i>Elanoides forficatus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/8938</p>	Breeds Mar 10 to Jun 30

Whimbrel *Numenius phaeopus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9483>

Willet *Tringa semipalmata*

Breeds Apr 20 to Aug 5

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wilson's Plover *Charadrius wilsonia*

Breeds Apr 1 to Aug 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow Rail *Coturnicops noveboracensis*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9476>

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

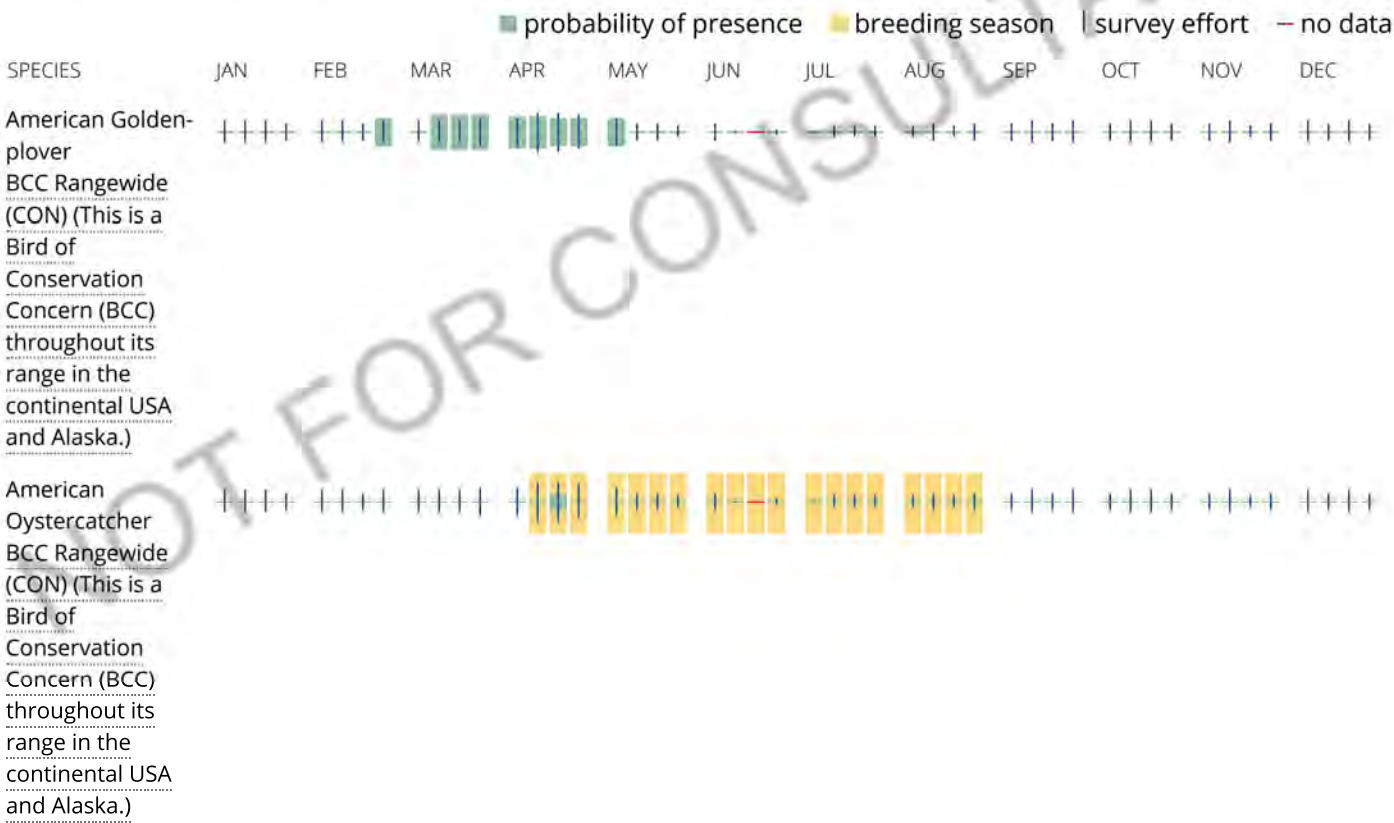
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

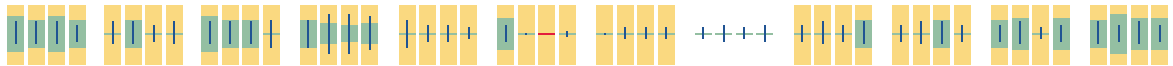
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald Eagle
Non-BCC
Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Black Rail
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Black Skimmer
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Buff-breasted Sandpiper
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Clapper Rail
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)





Least Tern
 BCC - BCR (This is a
 Bird of
 Conservation
 Concern (BCC) only
 in particular Bird
 Conservation
 Regions (BCRs) in
 the continental
 USA)

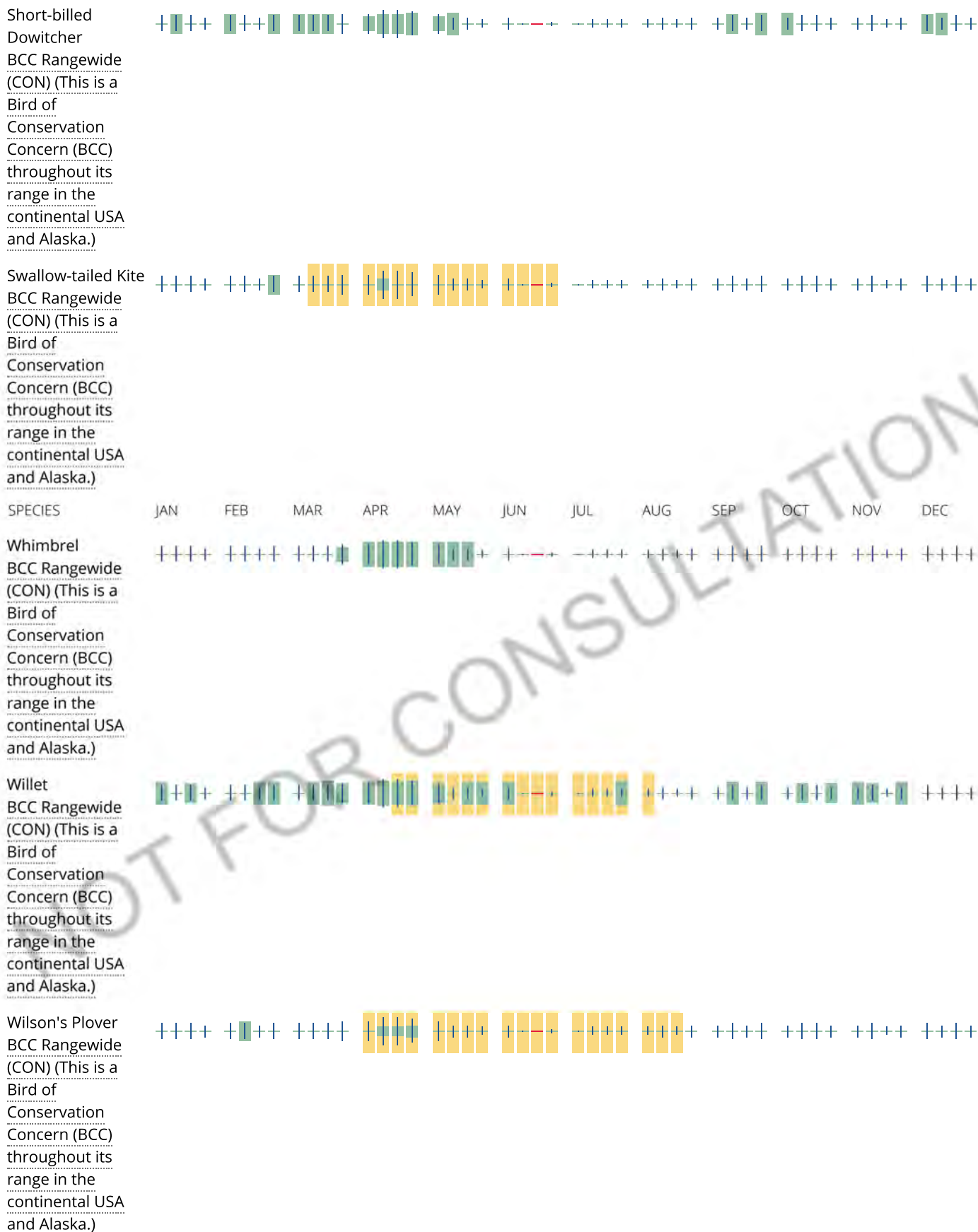
Lesser Yellowlegs
 BCC Rangewide
 (CON) (This is a
 Bird of
 Conservation
 Concern (BCC)
 throughout its
 range in the
 continental USA
 and Alaska.)

Long-billed Curlew
 BCC Rangewide
 (CON) (This is a
 Bird of
 Conservation
 Concern (BCC)
 throughout its
 range in the
 continental USA
 and Alaska.)

Magnificent
 Frigatebird
 BCC Rangewide
 (CON) (This is a
 Bird of
 Conservation
 Concern (BCC)
 throughout its
 range in the
 continental USA
 and Alaska.)

Marbled Godwit
 BCC Rangewide
 (CON) (This is a
 Bird of
 Conservation
 Concern (BCC)
 throughout its
 range in the
 continental USA
 and Alaska.)





Yellow Rail
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Marine mammals

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

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries³ [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the [Marine Mammals](#) page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take (to harass, hunt, capture, kill, or attempt to harass, hunt, capture or kill) of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

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

The following marine mammals under the responsibility of the U.S. Fish and Wildlife Service are potentially affected by activities in this location:

NAME

West Indian Manatee *Trichechus manatus*
<https://ecos.fws.gov/ecp/species/4469>

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

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

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

This location overlaps the following wetlands:

FRESHWATER POND

[PUBHx](#)

[PUBGx](#)

RIVERINE

[R4SBCx](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION