MITIGATION PLAN
SWG-2007-01475
SPOONBILL BAY HOLDINGS, L.P.

Spoonbill Bay Holdings, L.P. (Applicant) proposes to impact a total of 11.67 acres of Waters of the U.S. for the purpose of constructing a proposed waterfront canal residential development and associated boat launch. More specifically, the Applicant proposes to impact 9.10 acres of adjacent non-tidal (freshwater) wetlands; 2.14 acres of tidal wetlands; and 0.43 acres of Section 10 Waters of the U.S. within a 98.00-acre tract of land with direct access to Farm-to-Market Road (FM) 3005 and direct access to West Galveston Bay for recreational boating.

The proposed project is located within a 98.00-acre tract of land, located between FM 3005 and West Galveston Bay, northeast of Mendocino Drive, in Galveston County, Texas. The USGS Quad reference map is *San Luis Pass* and *Sea Isle* and the center of the project area is located approximately at UTM NAD 83 Zone 15 coordinates 297,296.00 E; 3,222,977.00 N (**Attachment A**).

1) Goals and Objectives

A. Non-Tidal Wetland Enhancement & Creation

In order to appropriately compensate for the 9.10 acres of impacts to jurisdictional non-tidal (freshwater) wetlands, the Applicant is proposing to enhance the 7.80 acres of avoided existing non-tidal (freshwater) wetlands on-site and create 4.53 acres of non-tidal (freshwater) wetlands within the existing uplands on-site (**Attachment A**).

According to the Interim Riverine/Herbaceous Shrub HGM study conducted by Berg-Oliver Associates, Inc. (BOA), the existing 9.10 acres of non-tidal (freshwater) wetlands proposed to be impacted have a total function of *6.64 physical Functional Credit Units (FCUs), 5.87 biological FCUs, and 5.14 chemical FCUs.*

The proposed enhanced 7.80 acres of non-tidal (freshwater) wetlands will be avoided entirely and only planted with desirable shrub and herbaceous vegetation to improve the quality of the existing vegetation (**Attachment B**). The proposed 4.53 acres of created non-tidal wetlands will be excavated to a maximum depth of six (6) inches to meet the existing non-tidal wetland topography to ensure adequate hydrology to the area and planted with desirable native hydrophytic vegetation (**Attachment B**).

The proposed enhanced 7.80 acres of non-tidal wetlands will produce a net gain of *5.963 physical FCUs, 6.190 biological FCUs, and 5.117 chemical FCUs* at year 1 and a net gain of *6.273 physical FCUs, 7.073 biological FCUs, and 5.668 chemical FCUs* at year 5 (**Attachment C**).

The proposed created 4.53 acres of non-tidal wetlands will produce a net gain of *3.244 physical FCUs, 3.398 biological FCUs, and 2.672 chemical FCUs* at year 1 and at net gain of *3.381 physical FCUs, 3.775 biological FCUs, and 2.975 chemical FCUs* at year 5. Resulting in a total non-tidal wetland functional lift of 2.*597 physical FCUs; 3.718 biological FCUs; and 2.649 chemical FCUs* at year 1 and *3.044 physical FCUs; 4.978 biological FCUs; and 3.503 chemical FCUs* at year 5 (**Attachment C**).

B. Tidal Wetland Creation

In order to compensate for the impacts to 2.14 acres of jurisdictional tidal wetlands, the Applicant is proposing to establish and construct 3.16 acres of tidal wetlands on-site. The 3.16 acres will include a high marsh, low marsh, and subtidal marsh that will sustain a constant inundation of -0.75 feet from normal tidal flux (**Attachment A**).

According to the Interim Tidal Fringe HGM study conducted by BOA in October 2014, the existing 2.14 acres of tidal wetlands proposed to be impacted have a total function of *1.91 biological FCUs, 2.14 botanical FCUs, 1.43 physical FCUs, and 0.70 chemical FCUs* (**Attachment D**).

The proposed created 3.16 acres of tidal wetlands will produce a net gain of *2.50 biological FCUs, 2.21 botanical FCUs, 1.77 physical FCUs, and 0.88 chemical FCUs* at year 1 and produce a net gain of *3.11 biological FCUs, 3.16 botanical FCUs, 1.77 physical FCUs, and 1.27 chemical FCUs* at year 5. Resulting in a total 3.16-acre created tidal wetland functional lift of *0.59 biological FCUs, 0.07 botanical FCUs, 0.34 physical FCUs, and 0.57 chemical FCUs* at year 1 and *1.20 biological FCUs, 1.02 botanical FCUs, 0.34 physical FCUs, and 0.57 chemical FCUs* at year 5 (**Attachment D**).

2) Baseline Information

The 98.00-acre tract of land is located between FM 3005 and West Galveston Bay, northeast of Mendocino Drive, in Galveston County, Texas. The subject property is directly bordered by undeveloped land to the northeast and southwest. Existing residential developments can be found approximately 0.80 miles to the northeast and 0.40 miles to the southwest of the subject property. West Galveston Bay is directly adjacent to the northern portion of the property and FM 3005 borders the southern portion of the property.

A wetland delineation was verified by the USACE in June 2017. As a result, the subject property contains 16.90 acres of jurisdictional non-tidal (freshwater) wetlands, 11.99 acres of jurisdictional tidal wetlands, 2.74 acres of non-jurisdictional sand flats, and 2.89 acres of jurisdictional Section 10 Waters of the U.S. In upland areas, the subject property was dominated by hogwort (*Croton capitatus*), annual ragweed (*Ambrosia artemisiifolia*), rattlepod (*Sesbania drummondii*), gulf cordgrass (*Spartina spartinae*), and southern dewberry (*Rubus trivialis*). In non-tidal wetlands, the subject property was dominated by marsh seedbox (*Ludwigia palustris*), rattlepod (*Sesbania drummondii*), swamp smartweed (*Persicaria hydropiperoides*), gulf cordgrass (*Spartina spartinae*), and grass-leaf rush (*Juncus marginatus*). In tidal wetland areas, the subject property was dominated by saltgrass (*Distichlis spicata*), dwarf saltwort (*Salicornia bigelovii*), gulf cordgrass (*Spartina spartinae*), and smooth cordgrass (*Spartina alterniflora*). The sand flat habitats were mostly denude of vegetation, but some contained sparse patches of turtleweed (*Batis maritima*) and dwarf saltwort (*Salicornia bigelovii*).

According to the Web Soil Survey of Galveston County, the 98.00-acre tract of land is underlain by Mustang fine sand, slightly saline-Strongly saline complex (Ms), Mustang fine sand, saline (Mp), Mustang-Nass complex (Mt), and Galveston-Nass complex (Gc). The entire subject property is located within the mapped tidal surge zone of West Galveston Bay.

3) Site Selection

In order to comply with the Final Compensatory Mitigation Rule (2008) the Applicant initially proposed to purchase the appropriate number of mitigation credits through an approved mitigation bank. However, there are no approved mitigation banks that serve the area of the proposed project site. In addition, there are no in-lieu fee programs available in this area. Therefore, as a secondary option, the Applicant has agreed to construct permittee responsible mitigation by enhancing the 7.80 acres of existing and avoided

non-tidal (freshwater) wetlands, creating 4.53 acres of non-tidal (freshwater) wetlands within the existing upland areas, enhancing 7.80 acres of existing non-tidal wetlands, and creating 3.16 acres of tidal wetlands. The 4.53 acres of created non-tidal (freshwater) wetlands will be located directly adjacent to existing and avoided and enhanced 7.80 non-tidal (freshwater) wetlands.

4) Mitigation Work Plan

The construction of the created wetland habitat (both tidal and non-tidal) will begin within twelve (12) months following the initiation of construction within permitted jurisdictional areas. The USACE, Regulatory Branch, Chief of Compliance will be notified in writing when the mitigation and project construction has begun.

The on-site mitigation will be completed, including planting, within twelve (12) months of the initiation of the construction in jurisdictional areas. Within sixty (60) days following the completion of the mitigation area, the USACE, Regulatory Branch Chief of Compliance will be supplied with the following information: A) an as-built plain view drawing of the boundaries of the wetland area surveyed by a Registered Professional Surveyor, and B) based on the survey, total acreage of created wetlands.

A. Non-tidal (Freshwater) Wetland Enhancement & Creation

The Applicant is proposing to enhance the existing and avoided 7.80 acres of non-tidal (freshwater) wetlands and create 4.53 acres of non-tidal (freshwater) wetlands within the existing upland areas. The 4.53 acres of created non-tidal (freshwater) wetlands will be located directly adjacent to existing non-tidal (freshwater) wetlands along the southern portion of the subject property. By creating non-tidal wetlands in this location, a larger and more contiguous non-tidal (freshwater) wetland habitat will be established. The wetlands will be engineered to allow for variation in water level and will be planted with desirable hydrophytic herbaceous vegetation that can flourish in various water depth conditions. Two (2) culverts will be placed below the entrance road of the property in order to allow for continuous flow and exchange of water between wetlands on either side of the roadway. This will provide hydrology to the entire wetland complex as well as provide runoff filtration for the entire site.

Planting will take place within six (6) months following the start of construction in jurisdictional areas and the wetlands will be planted on three (3) to four (4) foot centers to maximize aerial coverage of desirable vegetation.

The proposed created non-tidal (freshwater) wetlands will be created by planting a mix of desirable hydrophytic herbaceous species including, but not limited to, pickerel-weed (*Pontederia cordata*), arrowhead (*Sagittaria sp.*), iris (*Iris sp.*), soft rush (*Juncus effusus*), and squarestem spike rush (*Eleocharis quadrangulata*). The exact composition of planted species will be dependent upon the species availability at the time of planting. A complete list of desirable wetland vegetation species is located under **Attachment B**.

B. Tidal Wetland Creation

The Applicant is proposing to create 3.16 acres of tidal wetlands on-site and constructed in the form of high marsh, low marsh, and subtidal marsh. The created 3.16 acres of tidal wetlands will be located near existing marsh habitat along the eastern-most boundary of the property. The tidal wetlands will border the eastern edge of the proposed circulation canal to provide erosion control and act as a buffer between the proposed development and existing marsh habitat. The tidal mitigation wetlands will be engineered to allow for variation in water level and will be planted with desirable hydrophytic herbaceous vegetation that can flourish in normal tidal flux.

The proposed 3.16 acres of tidal wetlands will be created by planting a mix of desirable hydrophytic herbaceous species including, but not limited to: widgeongrass (*Ruppia maritima*), smooth cordgrass (*Spartina alterniflora*), saltgrass (*Distichlis spicata*), turtleweed (*Batis maritima*), dwarf saltwort (*Salicornia bigelovii*), Chickenclaws (*Sarcocornia ambigua*), or Jesuit's bark (*Iva frutescens*) (**Attachment B**). The exact composition of planted species will be dependent upon the species availability at the time of planting. Planting will take place within twelve (12) months following the start of construction within jurisdictional areas and the wetlands will be planted on three (3) to four (4) foot centers to maximize aerial coverage of desirable vegetation.

5) Site Protection and Maintenance

The Applicant will place a USACE approved deed restriction on the 4.53 acres of non-tidal created wetlands, 7.80 acres of enhanced non-tidal wetlands, and 3.16 acres of created tidal wetlands within thirty (30) days from completion of construction of the mitigation area. The Applicant will provide the USACE, Regulatory Branch, Chief of Compliance a copy of the recorded deed restriction within thirty (30) days from the date the restriction is recorded. The Applicant will submit a copy of the deed restriction to the USACE for approval prior to recording the deed restriction with the county clerk.

The Applicant will be responsible for the maintenance of the mitigation area in perpetuity. The Applicant will notify the USACE thirty (30) days prior to any change in ownership of the mitigation area. If the Applicant does transfer ownership, the Applicant's obligations with respect to the mitigation area hereunder shall transfer to any such subsequent owner of the mitigation area. The Applicant will also transfer the permit to the subsequent owner and will notify the USACE that the permit has been transferred within thirty (30) days prior to change of ownership.

6) Performance Standards

The Applicant agrees to maintain the integrity of the mitigation area so as to inhibit its degradation due to structural erosion during the monitoring period. In addition, the mitigation area will be monitored for noxious plant species in the created wetland areas. Noxious plant species, specifically Chinese tallow (*Triadica sebifera*) and black willow (*Salix spp*) will be eradicated by physical removal or careful hand application of herbicide approved for use in aquatic areas if they exceed 10% of the created wetland areas.

The 7.80 acres of enhanced non-tidal wetlands and 4.53 acres of created non-tidal wetlands will be considered to have met minimum success criteria (MSC) if, for two consecutive years, the mitigation areas attain 70% areal coverage of "desirable" native vegetation which are considered FACW or wetter.

The 3.16 acres of created tidal mitigation wetlands will be considered to have met minimum success criteria if, for two consecutive years, the mitigation area attains 60% aerial coverage of any of the following: widgeongrass (*Ruppia maritima*), smooth cordgrass (*Spartina alterniflora*), saltgrass (*Distichlis spicata*), turtleweed (*Batis maritima*), dwarf saltwort (*Salicornia bigelovii*), Chickenclaws (*Sarcocornia ambigua*), or Jesuit's bark (*Iva frutescens*). Once the mitigation areas have been determined to have met the minimum success criteria, the U.S. Army Corps of Engineers, Regulatory Branch, Chief of Compliance will be notified in writing within thirty (30) days that the mitigation area has met minimum success. The USACE, Regulatory Branch, Chief of Compliance will make the final determination that the mitigation area has met MSC and will decide when monitoring of the mitigation area will cease; with monitoring not exceeding five (5) years if MSC is met within the five (5) year monitoring period.

7) Monitoring Plan

The Applicant will conduct an initial transplant survival survey seven (7) days after the site has been planted and will conduct a follow up survey forty-five (45) days after initial planting. A copy of this transplant survival study will be sent in to the USACE, Regulatory Branch, Chief of Compliance with information relating to the total number of plant species planted and total number of plant species which survived. If less than 35% of the planted species survive, additional planting efforts will take place in order to achieve aerial coverage of greater than 35%.

The mitigation areas will be monitored on a quarterly basis for the first year following the completion of the constructed mitigation areas and transplant survival survey. Thereafter, the mitigation area will be monitored annually on the approximate construction anniversary for an additional four (4) years and a copy of the annual monitoring report will be submitted to the USACE, Regulatory Branch Chief of Compliance until MSC has been met. Monitoring shall continue for a minimum of five (5) years and will be considered complete when the mitigation has met the MSC and the proposed HGM lift is achieved.

Mitigation monitoring reports will be submitted to the USACE, Regulatory Branch, Chief of Compliance and will include the following information: *A) a summary of the percent ground cover and species composition at fixed pre-established observation points; B) list of dominant vegetation and their indicator status; and C) photo documentation of the mitigation area.*

8) Long Term Management Plan

Once the mitigation areas are established, the created wetlands will be self-sustaining. Hydrology into and out of the mitigation areas will be controlled by engineering design of the surrounding area. The sole source of hydrology for non-tidal wetlands will be natural precipitation and runoff and will fluctuate on the seasonal rainfall basis. Culverts will provide increased circulation of water and nutrients between areas of these constructed non-tidal, wetlands and existing, natural wetlands, creating a more self-sustaining habitat. Tidal wetlands will receive hydrology mainly from tidal influences, with minimal input from natural precipitation and runoff. Circulation channels will allow for transport of water and nutrients in and out of these constructed tidal wetlands. The Applicant is responsible for the long-term management of the mitigation area. The Applicant will notify the USACE thirty (30) days prior to any change in ownership of the mitigation area.

9) Adaptive Management Plan

The mitigation areas will be re-planted if 70% aerial coverage of "desirable" vegetation species is not achieved within three (3) years following the completion of the construction. If the mitigation areas do not meet MSC after the fifth (5^{th}) year of monitoring, the Applicant will re-coordinate with the USACE, Regulatory Branch, Chief of Compliance to review the mitigation plan. At that time, appropriate changes to the mitigation plan will be made until the mitigation area meets the MSC.

In the event of Force Majeure that significantly impacts the success of the mitigation areas; the Applicant will work with the USACE to develop a restoration plan for the mitigation areas.

Force Majeure is defined as substantial damage caused by a natural or human-caused catastrophic event or a deliberate or unlawful act, that the USACE in consultation with the Applicant, determined has had significant adverse impact on the quality of aquatic functions, native vegetation, soils, or wildlife of the mitigation areas and is beyond control of the Applicant. A natural catastrophic event includes, but is not limited to, a flood of equal or greater magnitude than the 100-year flood event, as well as debilitating disease, wildfire, or regional pest infestation. A human-caused catastrophic event includes, but is not limited to war, insurrection, riot or other civil disorders, spill of a hazardous or toxic substance, or fire. A

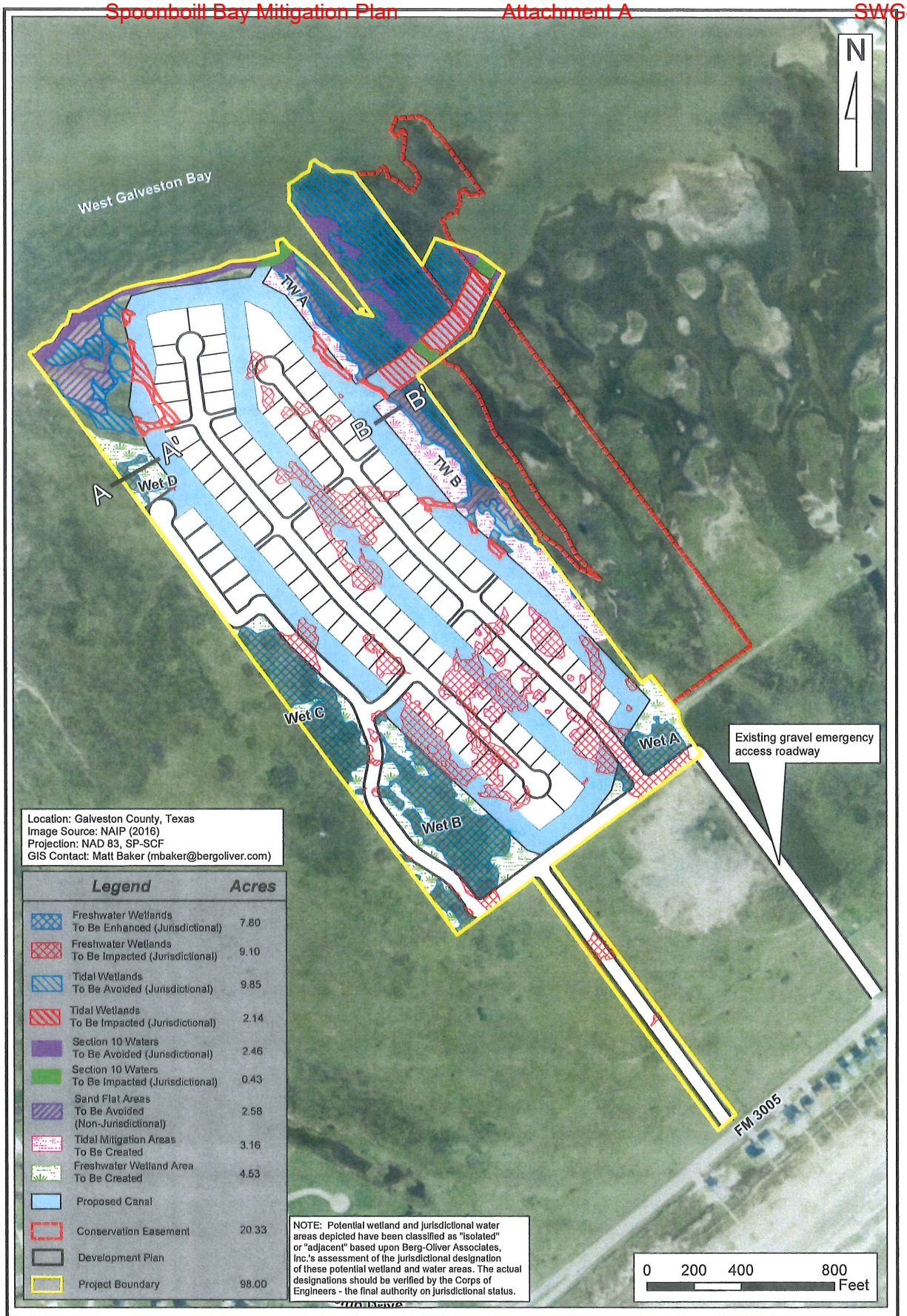
deliberate and unlawful act includes, but is not limited to, the dumping of a hazardous or toxic substance, as well as significant acts of vandalism or arson.

10) Financial Assurances

The Applicant will be financially responsible for creation of the mitigation area and for any subsequent maintenance required to achieve the MSC.

11) Long Term Financing

The Applicant will be responsible for any long term financial responsibility of the mitigation area.



ON-SITE MITIGATION AND AVOIDANCE
SITE LOCATION MAP

Project #: 9293 N-VFN
For: Spoonbill Bay Holdings, L.P.
Location: FM 3005
Galveston County, Texas

REVISIONS
10/14/16 by DBE
7/10/17 by ADY
10/19/17 by DBE

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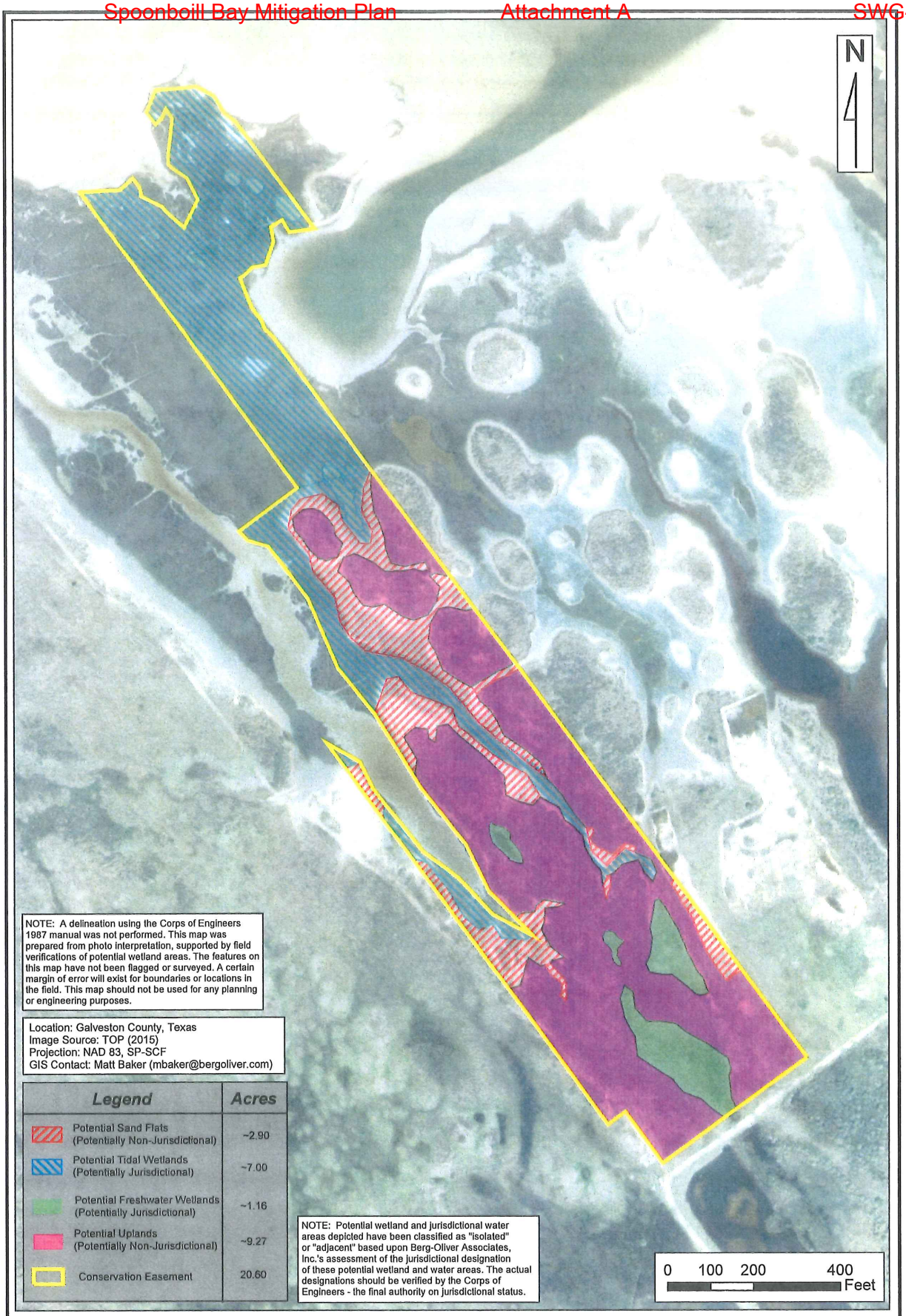

CONSERVATION EASEMENT HABITAT TYPES
SITE LOCATION MAP

Project #: 9293 N-WD
For: Spoonbill Bay Holdings, L.P.
Location: FM 3005
Galveston County, Texas

REVISIONS
10/14/16 by DBE
10/16/17 by MDB

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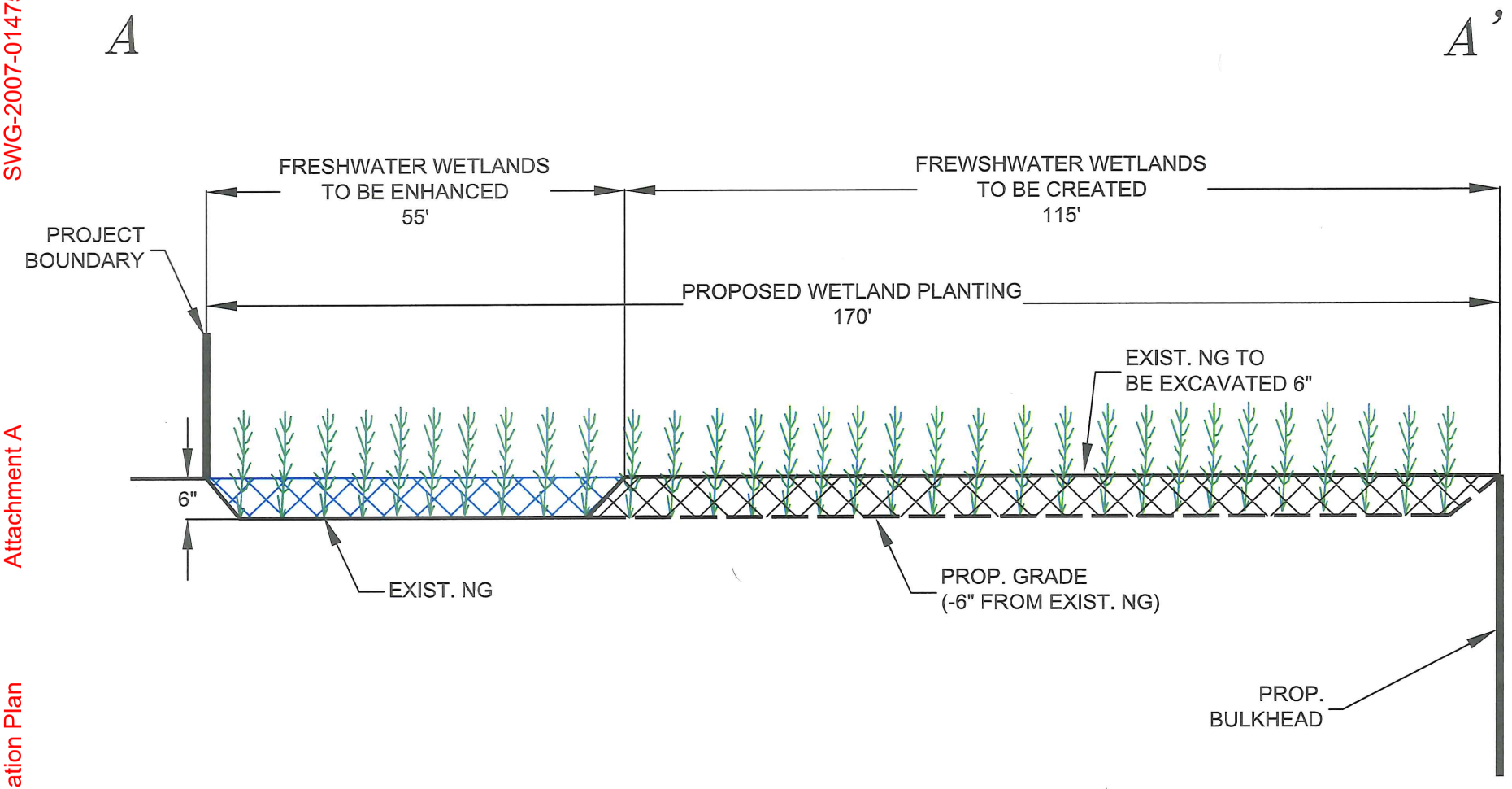

PROPOSED FRESHWATER WETLAND CREATION
TYPICAL CROSS SECTION A–A'

PROJECT #: 9293 N–VFN
FOR: Spoonbill Bay Holdings, L.P.
LOCATION: FM 3005
Galveston County, Texas

REVISIONS:
Oct. 19, 2017 by MBaker

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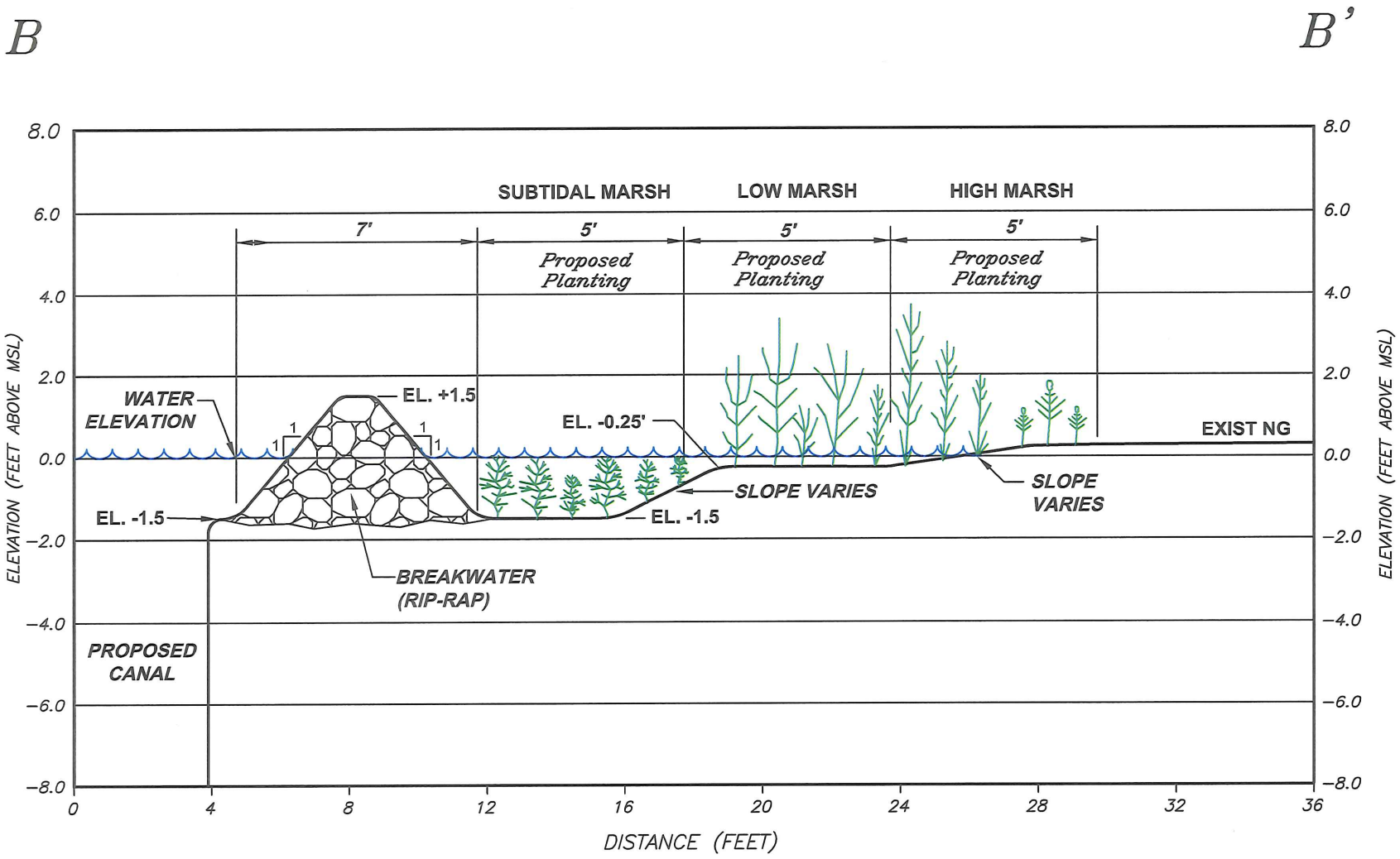

PROPOSED TIDAL WETLAND CREATION
TYPICAL CROSS SECTION B–B'

PROJECT #: 9293 N–VFN
FOR: Spoonbill Bay Holdings, L.P.
LOCATION: FM 3005
Galveston County, Texas

REVISIONS:
Oct. 19, 2017 by MBaker

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