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The April 10, 2008 USACE/EPA Final Mitigation Rule (2008 Mitigation Rule) outlines 12 Fundamental Components to be uniformly addressed in all compensatory mitigation plans (33 CFR 332.4(c)(2) through (c)(14)) for the purposes of developing successful compensatory mitigation projects and facilitating effective compliance measures. According to the 2008 Mitigation Rule, "the level of detail of the mitigation plan should be commensurate with the scale and scope of the impacts." The information below outlines the 12 Fundamental Components of Dagger Island Partners, Ltd. proposed compensatory mitigation plan.

# I. Objective of the Compensatory Mitigation Plan

#### A. Method of Compensation

1. A significant amount of the proposed mitigation is based on re-establishing the natural tidal regime so that the pre-GIWW landscape will naturally re-establish. The original permitted mitigation areas totaled 385 acres. Based upon review of geospatial files obtained from HDR, it is the professional judgment of BEI, that the total mitigation areas total 345.04 acres. Within the 345.04 acres approximately 50 acres are existing upland spoil areas from dredge placement and will not be protected in perpetuity. Sensitive resources between the upland spoil areas and the GIWW will also not be preserved in perpetuity. The updated plans depict approximately 295.05 acres of preservation in perpetuity via a conservation easement, deed restriction, or comparable instrument. With the total impacts to sensitive resources totaling 40.84 this is approximately a 9:1 conservation easement to impact ratio.

#### **Seagrass Mitigation**

A change from vegetated shallow water to unvegetated shallow water from the time of permit issuance to present day accounted for a 19.93-acre reduction in seagrass impacts. At the time of the 2006 survey conducted by HDR, widgeon grass (*Ruppia maritima*) was not observed. During a 2007 survey, widgeon grass was observed within the impact footprint and throughout the property boundary. Widgeon grass is a transient pioneer species typically found in hypersaline conditions such as the impact area. The original permit called for creation and enhancement of seagrass from widgeon grass (*Ruppia maritima*) to shoal grass (*Halodule wrightii*) and turtle grass (*Thallasia testudinum*). As widgeon grass was not observed in the impact area during the June 2018 survey, it is the professional judgment of BEI that it was also not thriving anywhere within the property boundary. Therefore, BEI no longer proposes creation of seagrass as mitigation.

The present-day impacts to seagrass total 0.57 acres, BEI has modified the mitigation plan to include the re-establishment of seagrass at a 5:1 mitigation ratio within the 115-acre semi-permanently inundated shallow water preservation area. By re-establishing the hydrologic regime of the pre-GIWW habitat conditions, it is the professional judgment of BEI that the vast majority of the preserved 115 acres will establish shoal grass and, in the long term, turtle grass. This establishment will adequately mitigate for the 0.57 acres of seagrass impacts.

#### **Vegetative Mitigation**

The present-day conditions within the impact area show a reduction of 2.61 acres of tidal/sand flats and an increase of 2.64 combined acres of high marsh and vegetated flats. This makes the total

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combined high marsh and vegetated flats impacts 8.32 acres and 0.95 acres, respectively. The mitigation plan proposes to preserve approximately 64.7 acres of high marsh and vegetated flats combined and creation of 3.15 acres of high marsh. This plan creates approximately 40% of the impacted high marsh and preserves at 7:1 preservation to impact ratio. It is the professional judgment of BEI, that the benefit from preserving approximately 63 acres of high marsh and creating an additional 40% of the high marsh impacts far outweigh the increased acreage of high marsh within the impact area. The high marsh acreage between the upland spoil islands and the GIWW will not be preserved in perpetuity.

The acreage of low marsh (0.07 acres) did not change from the 2006 survey to the 2018 survey, therefore no changes to the mitigation plan have been proposed. The mitigation will be provided by 8.7 acres of low marsh being naturally recruited as a result from reestablishing the hydraulic of the pre-GIWW habitat conditions.

The original permitted mitigation for sand/algal flats stated approximately 103.5 acres would be preserved. As a reduction in impacts to sandflats has occurred, the sandflat area between the upland spoil islands and the GIWW will not be preserved in perpetuity.

#### **Shallow Unvegetated Water**

In the original permit mitigation plan, 20.5-acres of the shallow water impacts were to seagrass, leaving 5.93-acres of unvegetated shallow water impacts. BEI did not propose changes to the mitigation for shallow water impacts. It is the professional judgment of BEI, that increasing the natural tidal regime and preserving 115-acres of semi-permanently inundated shallow water habitat at a 3:1 ratio adequately compensates for impacts to shallow water. Within the preserved shallow water habitat, there is a high probability that seagrass will establish as outlined in the mitigation plan.

#### Mitigation Habitat Creation

3.15 acres of high marsh

Mitigation Habitat To Be Re-Established/Naturally Recruited As A Result Of The Project Include

- 115 acres of semi-permanently inundated shallow water habitat
- 8.7 acres of low marsh habitat
- 2.85 acres of seagrass within 115 acres of semi-permanently inundated shallow water

Mitigation Habitat Preservation (in perpetuity via a conservation easement, deed restriction, or equivalent instrument)

- Approximately 3.15 acres of created high marsh
- Approximately 115 acres of semi-permanently inundated shallow water habitat and all naturally recruited shallow water habitat within
- Approximately 8.7 acres of low marsh
- Approximately 1.7 acres of vegetated flats
- Approximately 103.5 acres of sand/algal flats\*
- Approximately 63 acres of high marsh habitat\*

TOTAL: Approximately 295.05 Acres (\*Sensitive resources between the upland spoil islands and the GIWW will not be preserved.)

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# B. <u>Manner in which the resource functions of the mitigation will address the needs of the watershed or</u> region

The site's present-day condition is largely a result of previous impacts from dredging of the GIWW and subsequent placement of dredge material onsite, which altered the natural landscape, creating dredge spoil islands where previously there had been shallow seagrass habitat. A significant amount of the proposed mitigation is based on re-establishing the natural tidal regime so that the pre-GIWW landscape will naturally re-establish. This type of mitigation will likely provide a greater overall habitat value by enhancing and preserving the existing habitat functions and by creating new low marsh and shallow water habitat.

#### II. Site Selection

The site selection was based on preserving and creating compensatory mitigation on-site and on property owned by the applicant. The implementation of the project will re-establish the hydrologic regime in the surrounding vicinity. The chosen mitigation site will preserve these benefits.

#### **III. Site Protection Instrument**

Within 60-days of the start of permanent construction in jurisdictional areas, the permittee will consummate and record with the County Clerk of San Patricio County, restrictive covenants for the 295.05 acres of compensatory mitigation.

#### IV. Baseline Information (Impact and Compensation Site)

#### A. <u>Ecological Characteristics of the Impacted Site</u>

A habitat characterization of the proposed project site was conducted between the dates of February 2, 2006 to April 6, 2006 by HDR. From June 25 to June 27, 2018, BEI was onsite and performed an updated wetland delineation of the impact footprint, verified the upper boundary of wetlands parallel to the shoreline, verified habitat types, and conducted a seagrass survey. The comparison of habitat acreage from the 2006 survey to the June 2018 survey has been shown below in Table 1.

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# Ingleside, Aransas County, Texas August 6, 2018

Table 1. Habitat Impact Comparison between 2006 and 2018

SWG-2006-01397 Total Habitat Impact Comparison Between 2006 & 2018			
Habitat Type	2006 (Acres)	2018 (Acres)	Difference (Acres)
Low Marsh	0.07	0.07	0
Shallow <u>Unvegetated</u> Water	5.93* <sup>1</sup>	25.78	19.85
Seagrass	20.5	0.57	-19.93
Sand Flat	7.76	5.15	-2.61
High Marsh	6.32	8.32	2
Vegetated Flat	0.31	0.95	0.64
Upland (Native)	11.11*2	11.87	0.76
Upland (Spoil)	0.93	0.82	-0.11
Total Habitat	52.93	53.53	0.6*3
Total Impact	40.89	40.84	-0.05

#### \*Notes:

- 1. Of the 26.43-acres of shallow water habitat noted in 2006, 20.5-acres of that was seagrass. This has been reflected in the total impact calculation above.
- 2. In HDR's permitted plans, the upland (native) habitat was noted as being 17.11-acres. However, based on spatial data received from HDR, upland (native) is 11.11-acres.
- 3. The 0.6-acre gain in habitat type, even though the impact footprint has not changed, is due to the HDR footprint not including the seagrass area along the western edge of the GIWW.

#### B. Ecological Characteristics of the Compensation Site

A habitat characterization of the proposed project site was conducted between the dates of February 2, 2006 to April 6, 2006 by HDR. The results of this survey were used to create the original mitigation plan. The plans were updated by BEI to reflect the revised mitigation plan.

#### V. Determination of Credits

Mitigation ratios were based upon the original permitted mitigation plan created by HDR. Mitigation ratio are as follows.

- 3:1 Semi-permanently Inundated Areas (Shallow water habitat) & Low Marsh Habitat
- 7:1 High Marsh Habitat and Vegetated Flats
- 20:1 Sand Flats
- 5:1 Seagrass
- 7:1 Overall Compensatory Mitigation to Impact Ratio

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#### VI. Mitigation Work Plan

#### A. High Marsh Creation

Approximately 3.15 acres of existing upland spoil islands located on the eastern edge of the property will be excavated to elevations consistent with nearby reference high marsh areas. High marsh species will be allowed to naturally vegetate the excavated areas. Construction of high marsh areas will be mechanically excavated 'in the dry'. A reference survey of adjacent high marsh areas will be conducted prior to construction in order to establish precise target elevations. Signage will be installed in an effort to prohibit human activity within the high marsh creation areas. The mitigation plan is to be implemented upon beginning work in jurisdictional wetlands. Mitigation construction will begin within sixty days of impacts to jurisdictional areas.

#### B. Preservation

Within 14 months of receipt of a Department of the Army permit, the permittee will consummate and record with the County Clerk of San Patricio County, restrictive covenants for the approximate 295.05 acres of compensatory mitigation excluding upland spoil areas and sensitive resources between the upland spoil areas and the GIWW.

#### VII. Maintenance Plan

A significant amount of the proposed mitigation is based on re-establishing the natural tidal regime, so that the pre-GIWW landscape will naturally re-establish. The natural landscape should not require maintenance. If during yearly monitoring events substantial changes from the proposed mitigation are not sufficient, the applicant will include these results in the monitoring report and will set up a meeting with the U.S. Army Corps of Engineers (USACE) to determine an agreed upon path forward.

#### **VIII. Performance Standards and Monitoring Requirements**

Dagger Island Partners, Ltd., will be responsible for monitoring the site for a total of 5 years. The intent of the monitoring is two-fold. In addition to tracking the success of preserved, naturally recruited and created habitats through quantitative assessments of vegetative cover (as described below), this monitoring will also capture general observations about relative changes due to the indirect influence of changes in hydrology. In particular, changes in sand/algal flats will be emphasized. A pre-construction aerial photograph of the site will be taken immediately prior to construction. Additionally, 6 months after completion of dredging activities an aerial photograph will be taken and a monitoring survey to establish existing baseline conditions will be conducted.

#### **High Marsh Creation**

The amount of aerial coverage of the target vegetation, in percent, will be monitored within high marsh mitigation areas and recorded in subsequent reports. Monitoring reports will include photo documentation and will be submitted to the USACE Corpus Christi Regulatory Office at 6-months, 1-year, 2-years, 3-years, 4-years, and 5-years following the initial creation of the above habitat.

1. If 15% aerial coverage of the target habitat is not achieved after 1-year in the high marsh creation mitigation areas, a meeting will be conducted with Dagger Island Partners, Ltd., and USACE to determine if additional changes need to be made to the mitigation plan.

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- 2. If 35% aerial coverage of the target habitat is not achieved after 2-years the applicant shall, within 30 days of the anniversary of commencing mitigation work, devise a plan to plant the areas with target vegetation. The plan will be submitted to the USACE Corpus Christi Regulatory Office for approval and planting will begin within 30 days of receiving approval.
- 3. If 70% aerial coverage of the target habitat is not achieved by the end of the third year and sustained for the remaining two years of monitoring in the initial areas, a meeting will be conducted with Dagger Island Partners, Ltd. and USACE to determine if additional planting is needed or if changes need to be made to the mitigation plan.

#### Low Marsh

The amount of aerial coverage of the target vegetation, in percent, will be monitored within the mitigation area and recorded in subsequent reports. Monitoring reports will include photo documentation and will be submitted to the USACE Corpus Christi Regulatory Office and the US Fish and Wildlife Service at 6-months, 1-year, 2-years, 3-years, 4-years, and 5-years following the initial creation of the above habitat.

- 1. If 15% aerial coverage of the target habitat is not achieved after 1-year, a meeting will be conducted with Dagger Island Partners, Ltd. and USACE to determine if changes need to be made to the mitigation plan.
- 2. If 35% aerial coverage of the target habitat is not achieved after 2-years, the applicant shall, within 30 days of the anniversary of commencing mitigation work, devise a plan to plant the areas with target vegetation. The plan will be submitted to the USACE Corpus Christi Regulatory Office for approval and planting will begin within 30 days of receiving approval.
- 3. If 70% aerial coverage of the target habitat is not achieved by the end of the third year and sustained for the remaining two years of monitoring, a meeting will be conducted with Dagger Island Partners, Ltd., and USACE to determine if changes need to be made to the mitigation plan.

#### **Shallow Water and Seagrass**

The amount of aerial coverage of the target habitats will be monitored via aerial photography and ground truthing within the mitigation areas. Subsequent reports, including photo documentation, will be submitted to the USACE Corpus Christi Regulatory Office and the US Fish and Wildlife Service at 6-months, 1-year, 2-years, 3-years, 4-years, and 5-years following the initial creation of the above habitat. If the target habitat declines to less than that of the proposed mitigation, a meeting will be conducted with Dagger Island Partners, Ltd. and USACE to determine if additional planting is needed or if changes need to be made to the mitigation plan.

1. If 15% aerial coverage of at least 2.85 acres of the 115 acres of shallow water has not been achieved after 1-year in the sea grass mitigation areas, a meeting will be conducted with Dagger Island Partners, Ltd. and USACE to determine if additional changes need to be made to the mitigation plan.

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- 2. If 35% aerial coverage of at least 2.85 acres of the 115 acres of shallow water has not been achieved after 2-years, the applicant shall, within 30 days of the anniversary of commencing mitigation work, devise a plan to plant approximately 2.85 acres of seagrass within the 115 acres of shallow water. The plan will be submitted to the USACE Corpus Christi Regulatory Office for approval and planting will begin within 30 days of receiving approval.
- 3. If 70% aerial coverage of at least 2.85 acres of the 115 acres of shallow water has not been achieved by the end of the third year and sustained for the remaining two years of monitoring, a meeting will be conducted with Dagger Island Partners, Ltd., and USACE to determine if changes need to be made to the mitigation plan.

#### Preservation

A pre-construction survey will be conducted immediately prior to construction using aerial photography to identify specific habitat characteristics. If necessary, the survey will include a site visit to verify specific habitats as identified by the aerial photograph. The amount of aerial coverage of the target vegetation, in percent, and the overall condition of sand/algal flats will be monitored within the preserved areas. Post-construction survey reports, including photo documentation, will be submitted to the USACE Corpus Christi Regulatory Office and the US Fish and Wildlife Service at 6-months, 1-year, 2-years, 3-years, 4-years, and 5-years following the initial creation of the above habitat. Post-construction surveys will be conducted using aerial photography in comparison to the pre-construction survey. If necessary, the surveys will include site visits to verify specific habitat changes (if any) as identified by the aerial photograph.

If the preserved and re-established habitats mentioned above show significant change in the designated areas within 6 months from the monitoring survey, a meeting will be conducted with Dagger Island Partners, Ltd. and USACE to determine if changes need to be made to the mitigation plan.

The preservation areas will continue to be monitored and if the areas exhibit significant changes at the 1-year intervals, meetings will be conducted with Dagger Island Partners, Ltd. and USACE to discuss potential necessary changes needed to the mitigation plan. If the preserved areas are determined by USACE as not successful at the end of 5 years from the end of construction, alternative mitigation will be discussed with the USACE.

#### IX. Long-term Management Plan

Long-term management of the site will be the responsibility of Dagger Island Partners, Ltd. Approximately 295.05 acres will be preserved in perpetuity via a conservation easement, deed restriction, or comparable legal instrument, excluding high marsh and sand flat habitat between the upland spoil islands and the GIWW.

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## X. Adaptive Management

If results of the monitoring indicate that the mitigation is not successful, the applicant will coordinate with the USACE in an attempt to agree upon the appropriate course of action. In the event of a discreet storm event or other "Act of God", Dagger Island Partners, Ltd. will discuss with the USACE how to best bring the site up to performance standards.

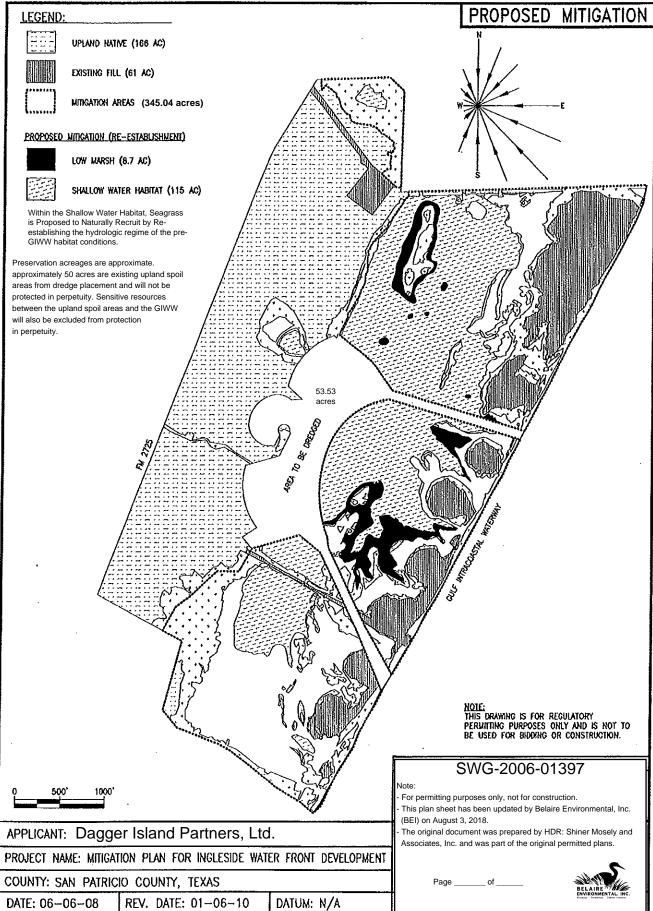
## XI. Financial Assurances

Financial Assurances for the mitigation site will be provided via either an escrow account or bond and will be financially-based off the costs associated with Sections VIII and IX, above. The applicant will work with USACE personnel and their environmental consultant to determine an appropriate escrow account amount or bond amount to insure the completion of Sections VIII and IX, above.

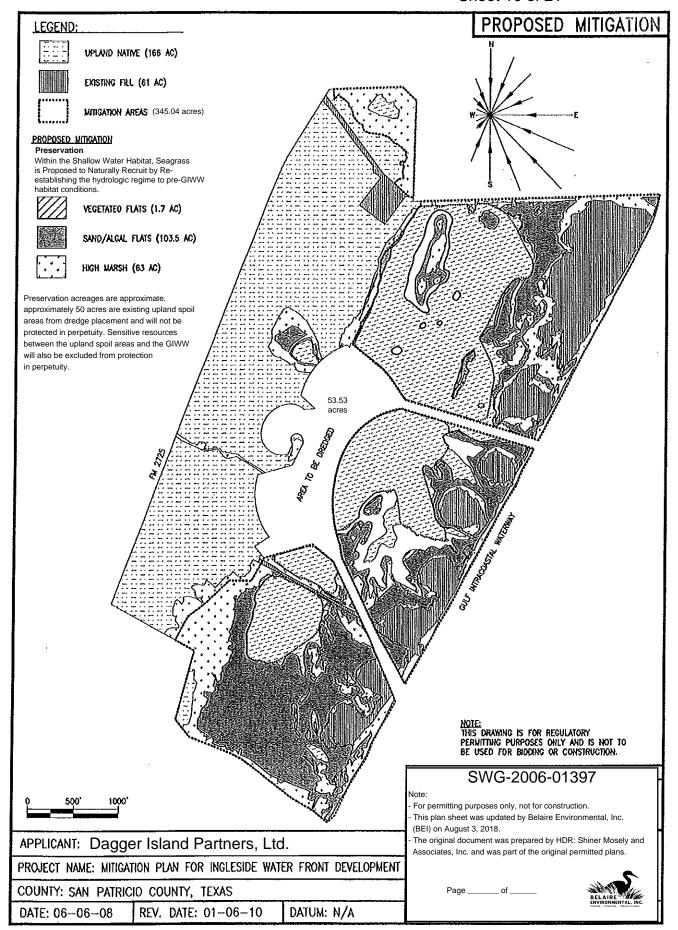
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To correct this in the permit record, BEI included the additional 0.6 acres to the project footprint., for a dredge footprint of 53.53 acres.

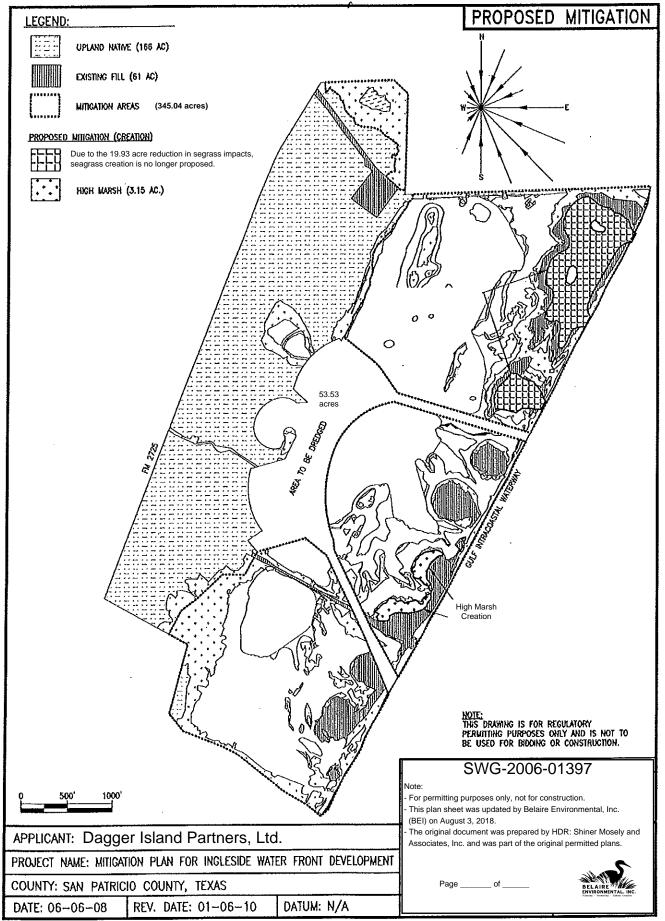
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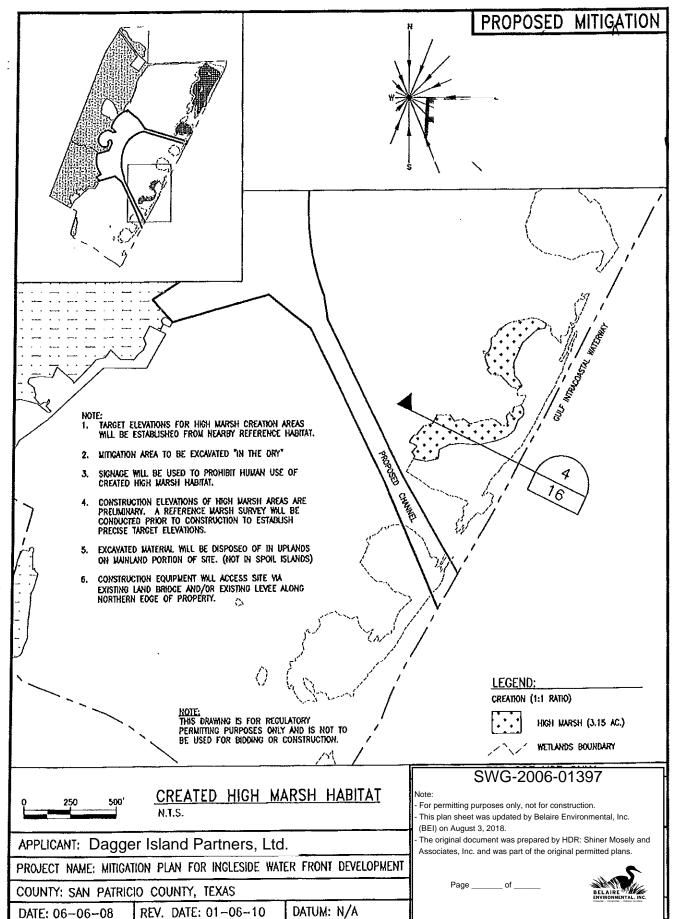


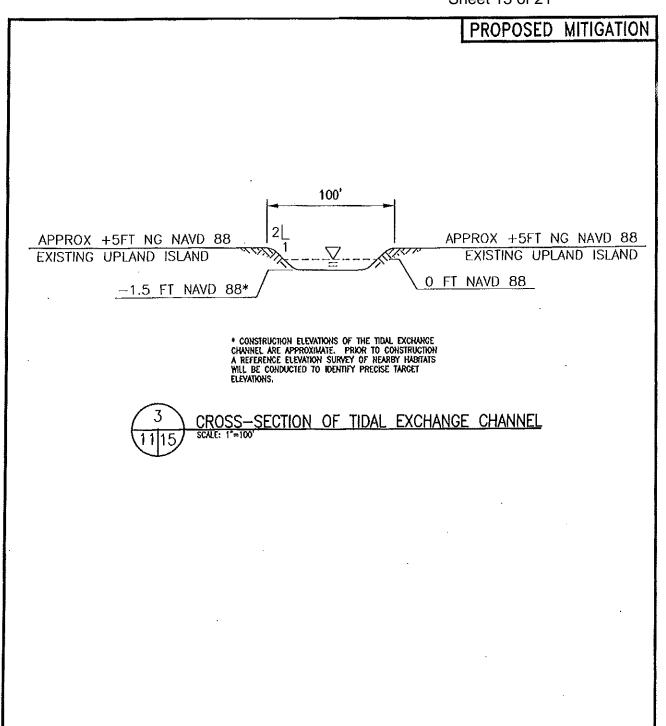
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BE USED FOR BIDDING OR CONSTRUCTION.

APPLICANT: Dagger Island Partners, Ltd.

PROJECT NAME: MITIGATION PLAN FOR INGLESIDE WATER FRONT DEVELOPMENT

COUNTY: SAN PATRICIO COUNTY, TEXAS

DATE: 06-06-08 REV. OATE: 01-06-10 DA

DATUM: N/A

## SWG-2006-01397

Note

For permitting purposes only, not for construction.

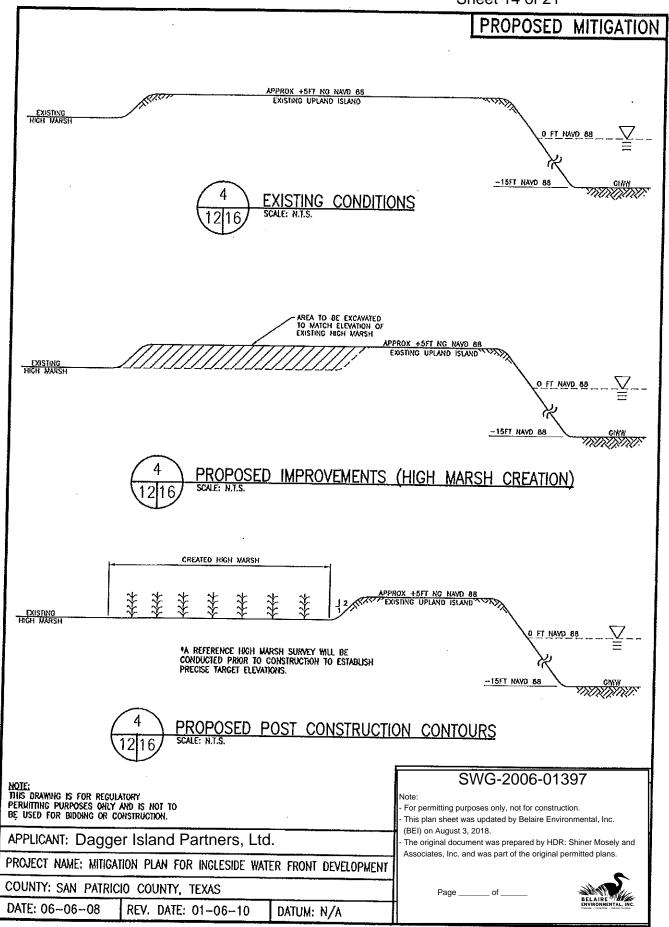
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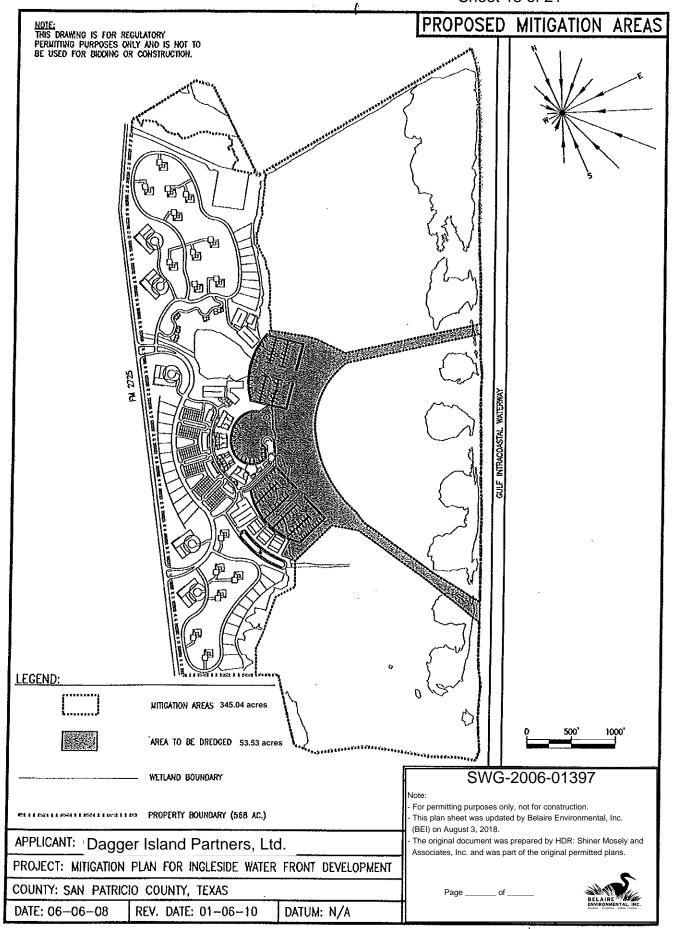
(BEI) on August 3, 2018.

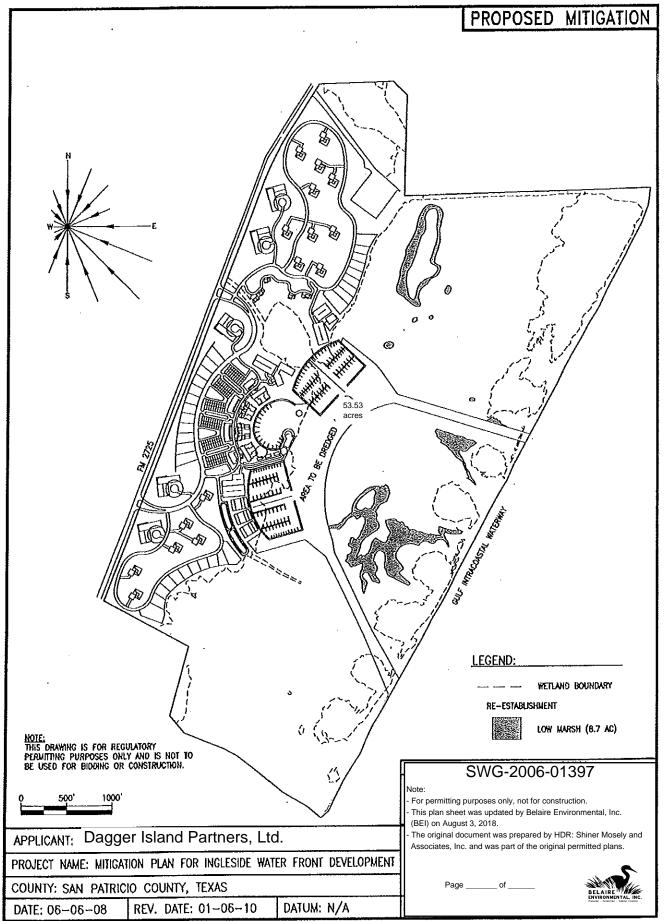
The original document was prepared by HDR: Shiner Mosely and Associates, Inc. and was part of the original permitted plans.

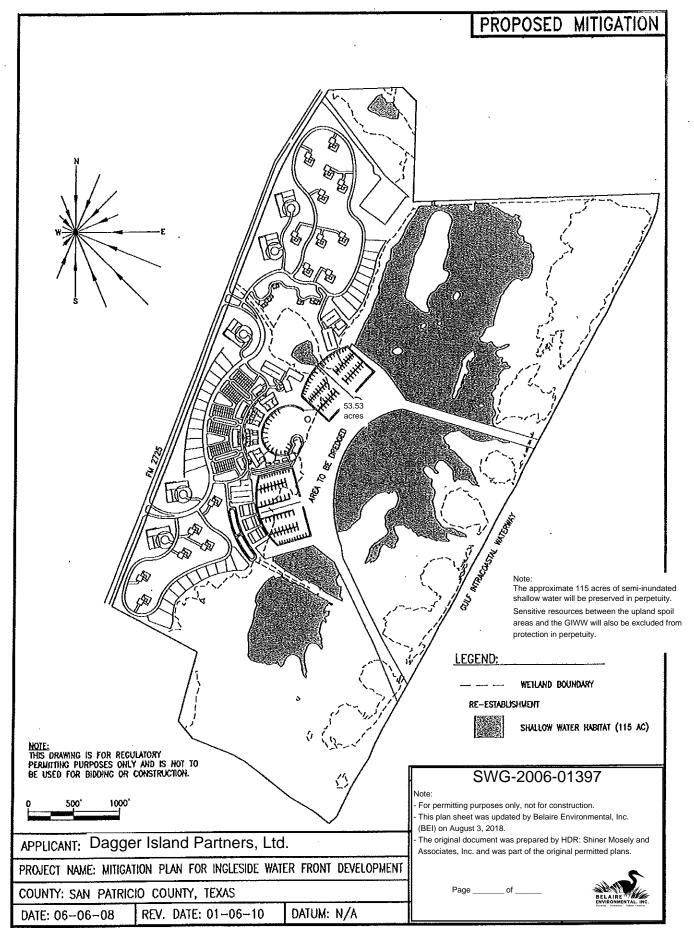
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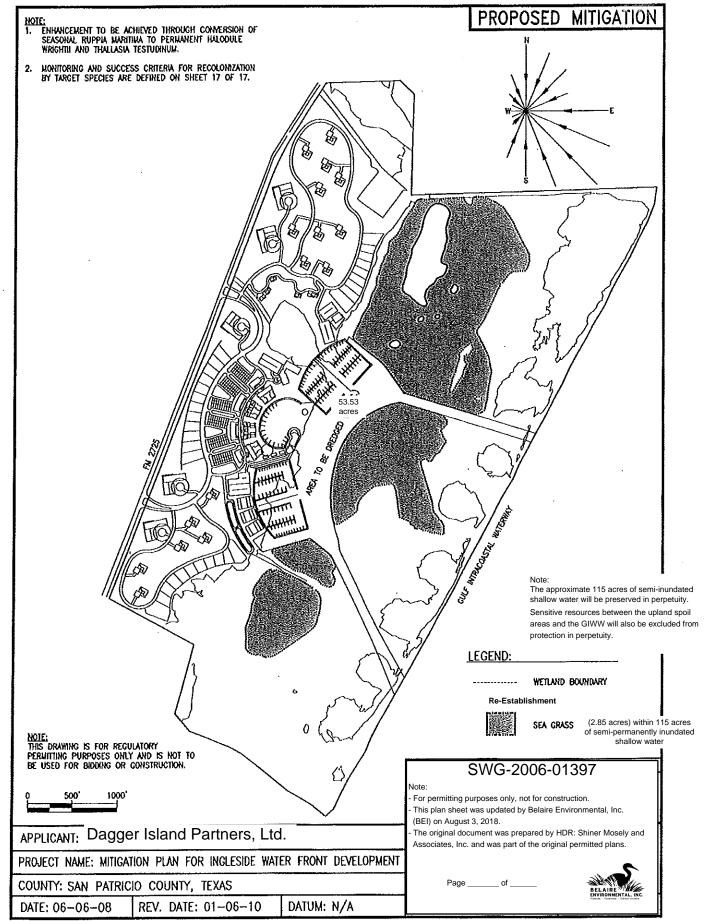








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