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MITIGATION PLAN FOR MARQUETTE'S MARINA AT WEST BEACH AND PRESERVE AT WEST BEACH PROJECTS, GALVESTON COUNTY, TEXAS

USACE PROJECT NUMBERS: SWG-2007-01956 and 01958
HJN 080022 PA

PREPARED FOR:

MARQUETTE GALVESTON INVESTMENTS
SOUTH ELGIN, ILLINOIS

PREPARED BY:

HORIZON ENVIRONMENTAL SERVICES, INC.

NOVEMBER 2008

Marquette Galveston Investments
SWG-2007-01956 (Marina)
SWG-2007-01958 (Preserve)
Mitigation Plan
Sheet 1 of 10

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1.0 INTRODUCTION

The Marquette (Applicant) property encompasses two separate projects and two permit applications that have been filed separately, but concurrently to facilitate a smooth and efficient United States Army Corps of Engineers (USACE) permitting process while providing the public and review agencies with the total project scope. The Preserve at West Beach (Preserve) constitutes approximately 547 acres and includes the area immediately adjacent to Stewart Road along with the strip of land between Stewart Road and the Gulf of Mexico. The Marina at West Beach (Marina) constitutes approximately 332 acres and includes all property north of Stewart Road and roughly 30 acres immediately adjacent to and south of Stewart Road. This mitigation plan applies to both permit applications.

2.0 JURISDICTIONAL IMPACTS

Impacts to jurisdictional waters and wetlands from the various aspects of the two projects are illustrated on the permit drawings in Appendix A and summarized in Table 1. A brief description of impacts for both projects is provided below.

TABLE 1: WETLAND IMPACTS AND PROPOSED MITIGATION (ACRES)

Preserve at West Beach = Tracts 1-5 and 7, Marina at West Beach = Tract 6

Tract	1	2	3	4	5	6	7	TOTAL
Upland	45.38	3.12	78.10	80.44	84.02	182.91	103.23	**577.20**
Palustrine	18.88	19.47	27.80	29.88	7.87	7.55	47.58	**159.03**
Estuarine	0	0	0	0	1.3	141.72	0	**143.02**
Total Area	**64.26**	**22.59**	**105.90**	**110.32**	**93.19**	**332.18**	**150.81**	**879.25**
Upland Impact	29.67	0	38.73	27.77	57.36	123.80	80.32	**357.65**
Palustrine Impact	17.51	0	3.66	1.18	3.17	1.74	24.84	**52.10**
Estuarine Impact	0	0	0	0	0	2.45	0	**2.45**
Total Impact	**47.18**	**0**	**42.39**	**28.95**	**60.53**	**127.99**	**105.16**	**412.20**
Upland Avoided	15.71	0	24.14	9.84	16.44	3.31	22.92	**92.36**
Palustrine Avoided	1.37	0	5.92	9.47	4.66	0	22.73	**44.15**
Estuarine Avoided	0	0	0	0	1.3	0	0	**1.30**
Total Avoided	**17.08**	**0**	**30.06**	**19.31**	**22.4**	**3.31**	**45.65**	**137.81**
Upland Preserved		*3.12*	*15.22*	*42.83*	*10.22*	*55.80*		**127.19**
Palustrine Preserved		*19.47*	*18.23*	*19.23*	*0.04*	*5.81*		**62.78**
Estuarine Preserved						*139.27*		**139.27**
Total Preserved		*22.59*	*33.45*	*62.06*	*10.26*	*200.88*	*0*	**329.24**

Note: All conservation areas are to be established in development year 1.

The 332 acres allocated for the Marina development (Tract 6) will include access and circulation channels as well as various neighborhood commercial features and housing options (see Appendix A). The Preserve development (Tracts 1-5 and 7) will consist of 547 acres that will include single family lots, multi-family lots, condominiums, as well commercial areas (see Appendix A).

(see Appendix A). The Preserve development (Tracts 1-5 and 7) will consist of 547 acres that will include single family lots, multi-family lots, condominiums, as well commercial areas (see Appendix A).

The Preserve and Marina sites consist primarily of upland coastal prairie, palustrine wetlands, dune swales, and estuarine wetlands. Jurisdictional determinations conducted by Berg Oliver & Associates (USACE approved October 28, 2005) and Klebieko (USACE approved November 15, 2005) identified the presence of § 404 and § 10 jurisdictional wetlands on the project area. The project area includes three major habitat categories, including: (1) palustrine wetlands; (2) estuarine wetlands; and (3) upland prairie. The total site presently contains 302.05 acres of jurisdictional wetlands as shown in Table 1 and the attached permit drawings (Appendix A). These jurisdictional wetlands consist of the following types:

- Estuarine Wetlands (143.02 acres): The estuarine wetlands are primarily located adjacent to the West Galveston Bay north of Stewart Road (Tract 6). Some are also adjacent to and south of Stewart Road, and these are connected to tidal water by a bridge under Stewart Road.

- Palustrine Wetlands (159.03 acres): The palustrine wetlands are largely located south of Stewart Road (Tracts 1-5 and 7). A few small palustrine wetlands are present on Tract 6. Most palustrine wetlands on the property lie along drainage patterns where rainfall collects and is detained as it flows toward West Galveston Bay. Palustrine wetlands also occur parallel to the beach in dune swales, which generally run for relatively long distances parallel to the beach. Palustrine wetlands are additionally found on the property as isolated low spots where water collects and stands.

The development plan for The Preserve and Marina ensures that virtually all of the estuarine wetlands will be conserved intact with less than 3 acres being impacted by construction of the marina and circulation channel to Eckert's Bayou. The Conservation Zone under The Marina permit will include and permanently protect the majority of the estuarine wetlands (139.27 acres). The palustrine wetlands will experience more change since approximately 52 acres, principally located between FM 3005 and Stewart Road, are proposed to be filled for development purposes. The creation of the 329 acre Conservation Zone provides the primary compensation for the loss of palustrine wetlands. The Conservation Zone will enhance the ecological value of the remaining wetlands by eliminating cattle grazing, which will allow the native vegetation to achieve higher species diversity, structure, and biomass. Additionally, the Conservation Zone will permit the recovery of adjacent upland coastal prairies that provide food and shelter for numerous species that utilize the palustrine wetlands.

3.0 MITIGATION PLAN OVERVIEW

The mitigation plan will consist primarily of on-site components. On-site mitigation will focus on preservation and restoration of herbaceous wetlands and associated upland habitats within the proposed 329 acre Conservation Zone.

Total direct impacts to all wetlands and waters of the United States equal 54.55 acres. Total mitigation proposed is 329.24 acres. Table 1 shows a complete listing of impacts and mitigation acreage per development tract. Establishment of the Conservation Zone will occur during the first year following permit issuance.

3.1 The Conservation Zone

The Conservation Zone will run nearly the entire three mile length of the property and will include property addressed within both USACE applications. The proposed Conservation Zone will contain three distinct types of habitat:

Estuarine habitat, saltwater wetlands or very shallow, vegetated/un-vegetated shallows (139 acres).

Palustrine habitat, jurisdictional wetlands are generally brackish or freshwater (65 acres).

Upland habitat, essentially coastal prairies, most of which have been heavily grazed in recent years (125 acres).

The Conservation Zone will provide protection for these habitats and create a major permanent ecological conservation zone for West Galveston Island. The diversity and size of the habitats included within the Conservation Zone represents a unique contribution made possible by the development of The Preserve and Marina. Developers normally utilize much smaller and relatively isolated mitigation projects to compensate for unavoidable development impacts. As a result, smaller and more isolated mitigation sites frequently suffer from long-term ecological deterioration. The continuity and size of the Conservation Zone (329 acres) should adequately buffer the mitigation site from such hazards. As a practical matter, the Conversation Zone is large enough to provide mitigation for both the two USACE permit applications for The Preserve and Marina, and the gains from the Conservation Zone are divided between the two projects.

To help maintain the long-term function and value of the Conservation Zone and ensure sustainable wetlands preservation within The Preserve and Marina, the Applicant incorporated a number of provisions into the Conservation Zone plan. The entire area (329 acres) of land included within the Conservation Zone will be subject to a permanent conservation easement. If the Applicant is successful in permitting The Preserve and Marina, the conservation easement will represent a legally enforceable land preservation agreement prepared for the purposes of conservation. The easement will impose restrictions on the use and development of this land that will be legally enforceable against future landowners and be recorded in local land records as part of the chain of title for the land. The Conservation Zone may include carefully routed nature observation trails that will link with the public trail system within The Preserve and Marina.

Under the terms of a Development Agreement with the City of Galveston, the Applicant has agreed that within 12 months of receipt of the USACE permits that it will transfer or sell the Conservation Zone, subject to the terms of the agreed conservation measures, to a qualified

501(c)(3) charitable entity, a governmental entity, or to the Master Association. The Applicant will provide the City with advance notice of such transfer or sale. If the USACE permits are legally contested, then the transfer or sale will not be completed until the legal challenge is concluded.

The Applicant has designed the development portion of the project to reduce the development footprint of the project area and minimize potential adverse impacts on the Conservation Zone through the use of buffer zones, careful drainage planning, avoidance and minimization of transportation and utility corridors through the Conservation Zone, and the location of high-rise structures away from the Conservation Zone.

3.2 Mitigation Packages for the Preserve and Marina Development Tracts

The Preserve development (Tracts 1-5 and 7) will consist of 547 acres that will include single family lots, multi-family lots, condominiums, as well commercial areas and will impact 50.36 acres of palustrine wetlands habitat and 233.85 acres of upland prairie habitat. The Preserve development tracts will permanently preserve and protect 56.97 acres of palustrine wetland habitat and 71.39 acres of upland prairie habitat within the portions of the Conservation Zone situated on these tracts (see Appendix A, Sheet 6 of 12 for The Preserve Development).

The 332 acres allocated for the Marina development (Tract 6) will include access and circulation channels as well as various neighborhood commercial features and housing options and will impact 2.45 acres of estuarine wetlands habitat as well as 1.74 acres of palustrine wetlands habitat and 123.80 acres of upland prairies habitat. The Marina development tract will preserve and protect the long-term function and value of 139.27 acres of estuarine wetlands habitat as well as 5.81 acres of palustrine wetland habitat and 55.80 acres of upland prairie habitat within the portions of the Conservation Zone situated on these tracts (see Appendix A, Sheet 8 of 10 for The Marina Development). The Marina development tract will also include 2.75 acres of estuarine restoration and reclamation within the preserved area (see Section 3.3).

3.3 Estuarine Restoration/Reclamation Area

In addition to preservation of the 329 acres, the Applicant will perform restoration work on a man-made pond that was excavated in estuarine wetlands many years ago (Tract 6). This open-water pond lies within the proposed preserve area of Tract 6 and is immediately adjacent to tidal State Lands (Figure 1). The pond is approximately 2.75 acres in size. The pond currently averages 2 to 3 feet deep over much of its extent with the eastern end being slightly shallower. The Applicant proposes to re-establish marsh elevations (approximately mht as referenced to adjacent *Spartina alterniflora* marsh) by creation of marsh mounds over approximately 75% of the pond with dredged materials from excavation of the marina and entrance channel (Figure 2). The marsh mounds will be planted with *Spartina alterniflora* on 3 ft centers. This will result in a diverse mixture of marsh and open water channels that will provide excellent habitat for estuarine organisms and wading birds. Connection to tidal waters will be afforded on the west end of the pond by existing tidal marsh and marsh channels, and on the east end by connection to the marina entrance channel. A berm that is currently along the west end of the pond will be scraped down to marsh elevation to allow improved tidal exchange and ingress/egress by estuarine organisms. The opening to the marina entrance

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"Do Not Scale This Drawing"

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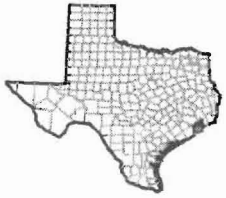
MAP SOURCE:
LAND VISION

0 120 240
FEET



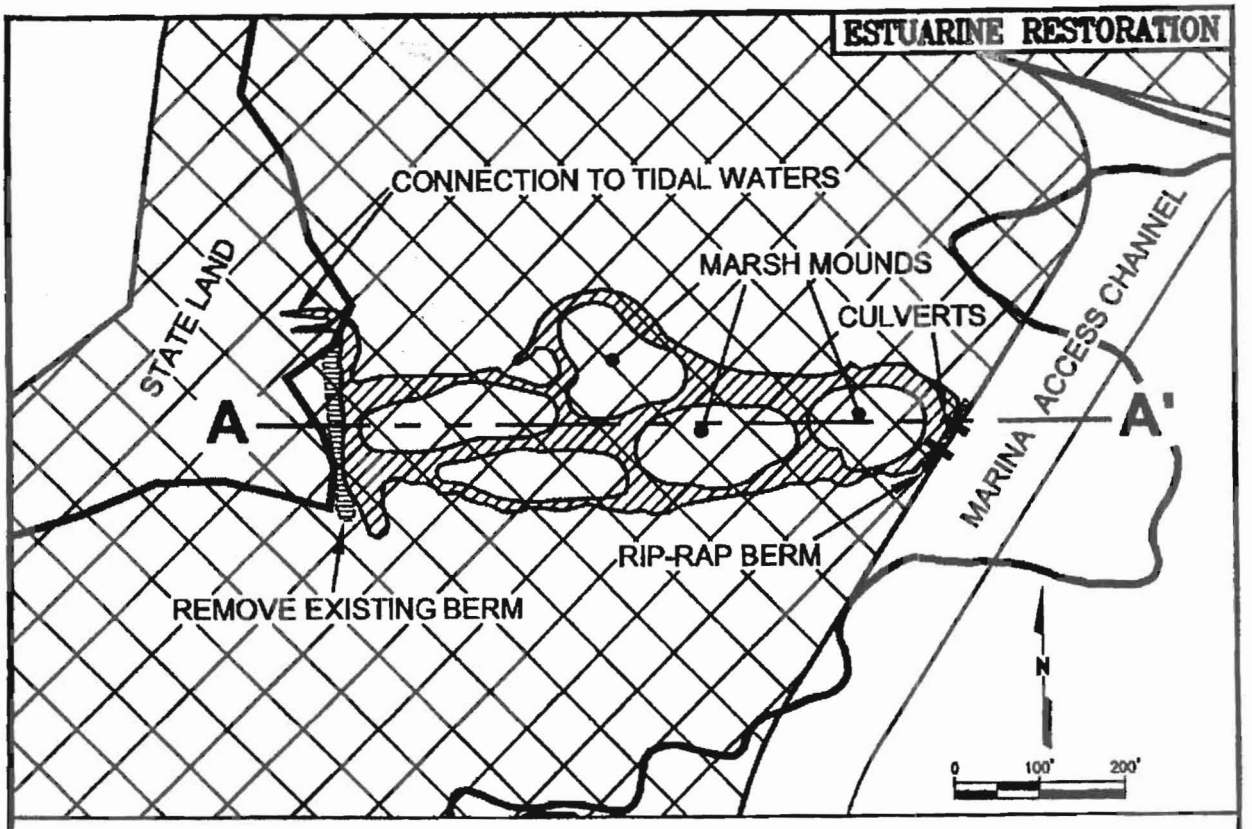
Horizon
Environmental Services, Inc.

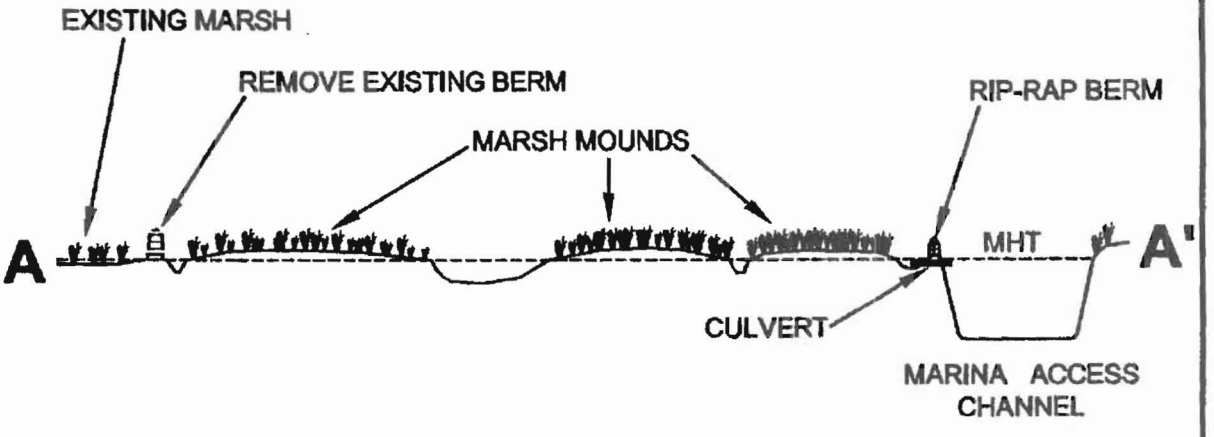
LEGEND

- PRESERVE AREAS (389.9 Ac.)
- OPEN SPACE AREAS (144.9 Ac.)
- WETLANDS
- ESTUARINE RESTORATION (2.75 Ac)

FIGURE 1

ESTUARINE RESTORATION AREA
MARQUETTE GALVESTON INVESTMENTS, LLC
GALVESTON, TEXAS





CROSS-SECTION A-A'

FIGURE 2

APPLICANT: MARQUETTE GALVESTON INVESTMENTS			PERMITTING AGENT: Horizon Environmental Services, Inc. 1507 S. IH-35; AUSTIN, TEXAS 78741 Ph: 512-328-2430
PROJECT NAME: THE MARINA AT WEST BEACH			
COUNTY: GALVESTON COUNTY, TEXAS			
DATE: 10/24/2008	REV. DATE: 10/24/08	DATUM: N/A	SWG-2007-01956

channel will be protected from erosion by a rip-rap berm with small culverts that will allow organisms to move back and forth with tidal exchanges.

3.4 Construction Phase Stormwater Management

During construction, appropriate temporary erosion and sedimentation controls will be emplaced and maintained such as silt fencing, rock berms, filter dikes, temporary seeding, and temporary on-site containment basins. Temporary stormwater management best management practices of the TCEQ will be followed. The project will require and will comply with the TPDES regulations for construction stormwater management.

3.5 Management Goals and Actions

The proposed mitigation areas (except for the 2.5 acres of enhanced estuarine habitat) are long and well established ecosystems of sufficient size and remoteness to be generally self sustaining in the long-term with minimal management requirements. Of primary importance will be control of invasive plants such as Chinese tallow, deep-rooted sedge, and giant salvinia, and control of unauthorized motorized access by the public (4-wheelers and off-road vehicles). The possible occurrence of invasive species will be monitored for during each annual inspection.

To help maintain the long-term function and value of the Conservation Zone and ensure sustainable wetlands preservation within The Preserve and Marina, the Applicant incorporated a number of provisions into the Conservation Zone plan. The entire area (329 acres) of land included within the Conservation Zone will be subject to a permanent conservation easement. If the Applicant is successful in permitting The Preserve and Marina, the conservation easement will represent a legally enforceable land preservation agreement prepared for the purposes of conservation. The easement will impose restrictions on the use and development of this land that will be legally enforceable against future landowners and be recorded in local land records as part of the chain of title for the land. The Conservation Zone may include carefully routed nature observation trails that will link with the public trail system within The Preserve and Marina.

Under the terms of a Development Agreement with the City of Galveston, the Applicant agreed that within 12 months of receipt of the USACE permits that it will transfer or sell the Conservation Zone, subject to the terms of the conservation easement, to a qualified 501(c)(3) charitable entity, a governmental entity, or to the Master Association. The Applicant will provide the City with advance notice of such transfer or sale. If the USACE permits are legally contested, then the transfer or sale will not be completed until the legal challenge is concluded.

4.0 MITIGATION MONITORING AND REPORTING

The permittee will designate a responsible party or position, in writing, to coordinate with the USACE on mitigation plan compliance and site inspections. The permittee will also establish a self-monitoring program that includes annual written compliance reports to the USACE due October 1 of each year, beginning 1 October of the initial year, and continuing for 5 years beyond final completion of mitigation efforts for each mitigation unit as it is completed. The report will address

schedule changes and provide a summary of all activities that occurred during the reporting period. The first report will document pre-construction site conditions, including photographs and maps. Successive reports will document survivorship, cover, relative "health," recruitment, and percentage of nuisance species present (if applicable). If the above-stated success criteria are not achieved, remedial actions will be recommended and USACE approval will be sought.

In addition to the annual monitoring reports, the permittee will submit a final written compliance report to the USACE within 30 days of completion of all construction and mitigation work. This report will include: a) a statement that the authorized work and required mitigation was done in accordance with USACE authorization, including all general and specific conditions; b) a summary of all construction and mitigation activities; c) a comparison of the post-construction and pre-construction site conditions; d) a detailed description of all impacts to "waters of the United States"; e) a map showing the final configuration of mitigation areas and features; f) the species, number, and acreage of the vegetation planted; the final topographic elevations of the project; and a map describing the location of the plantings; g) a discussion about erosional damage and whether disturbed areas are adequately vegetated; and h) photographs and maps, as appropriate, to illustrate the information presented.

4.1 SCHEDULE AND MONITORING

The establishment of the preserve areas will be implemented concurrent with beginning of site construction activities (anticipated year 1 after USACE permit issuance). The 2.75 acre estuarine restoration of the man-made pond will occur concurrent with construction of the marina (anticipated year 5-10 after USACE permit issuance). The mitigation site will be monitored by a qualified mitigation specialist, biologist, or ecologist at the end of the first 5 years to document condition. A report will be provided to the USACE, along with on-site photos. The planting of the restored estuarine marsh (2.75 acres) will be deemed successful if 80% aerial coverage of *Spartina alterniflora* or other suitable herbaceous species is achieved by the end of the fifth growing season. If the success criteria have not been achieved, additional plants will be installed, as deemed necessary, to achieve stated goals. Two additional end-of-growing-season monitoring events will be added if supplementary plantings are performed. An initial report will be provided to the USACE, along with on-site photos, by 1 October of the initial year of planting.

5.0 SUMMARY

This proposed mitigation plan has sought to provide the maximum on-site, in-kind mitigation practicable. The proposed mitigation incorporates 329 acres of preservation of wetlands and associated uplands similar to those that are anticipated to be impacted. Supplemental on-site mitigation, in the form of restoration of a high-quality tidal wetland complex, will compensate for temporal and permanent impacts and protect those habitats in perpetuity.