

**SIENNA PLANTATION
WETLAND MITIGATION BANK
PROSPECTUS**

**MILLER ROAD
305 ACRES
FORT BEND COUNTY, TEXAS**



**PREPARED FOR
REGENT SIENNA PLANTATION PARTNERSHIP L.P.
HOUSTON, TEXAS**

**BERG & OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE, ENGINEERING AND LAND USE CONSULTANTS
HOUSTON, TEXAS
REPORT NO: 6585
DECEMBER 2007**

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I. INTRODUCTION

The information provided herein is submitted by Berg Oliver Associates, Inc. as authorized by Mr. James T. Price, President of ASWT, Inc., a consultant for Regent Sienna Plantation Partnership L.P. (Regent). The request is that a tract of land owned by Regent be authorized to sell credits for approved Section 404 impacts as a wetland mitigation bank, to be called the Sienna Plantation Wetland Mitigation Bank (SPWMB).

The proposed bank would be created as a large-scale wetland complex available for regional wetland compensation that would be managed and maintained in perpetuity. The objective of the bank is to provide replacement of the various functions and values of wetlands and other aquatic resources that would be lost as a result of authorized impacts.

The consolidation of multiple small mitigation projects by creating this bank would allow for better economic planning, implementation, and maintenance. Additionally, the bank would produce wetlands of greater function and value due to their location, size, high level of commitment to assure wetland functions, and the long-term management of the ecosystem. Further, this bank likely would reduce administrative costs and delays in issuing permits by the U.S. Army Corps of Engineers; Galveston District for proposed activities that would qualify for use of the bank. The expected benefits of the bank include water quality management, fish and wildlife habitat restoration and creation, flood control, conservation of biological diversity, education, recreation, and aesthetics.

The proposed SPWMB would be on a 305 acre tract located on Miller Road in Fort Bend County, Texas. More specifically, the site is located on the United States Geological Service (USGS) Thompsons topographic quadrangle, coordinates 29° 27.20'N and 95° 30.54'W. Based on a preliminary wetland survey of the site, it is estimated that approximately 80 acres of forested wetlands currently exist on the site. Historical aerial photography indicates that the majority of the site was dominated by forested wetland at one time. It appears that there is an opportunity to restore wetlands on the site based on position in the landscape, proximity to hydrologic sources, soil type, and an available seed source. It is estimated that approximately 180 additional acres of wetlands could be restored and/or created while the existing 80 acres of wetlands be enhanced, maintained, and preserved, both for perpetuity.

There is tremendous need for a wetland mitigation bank in and around the Fort Bend County area. The metropolitan-Houston area growth rate is very high compared to that of the rest of the country. Hence, the strong demand for development that provides housing, shopping, and services. Fort Bend County is no exception.

The proposed bank site was chosen due to close proximity to the Brazos River, potential impact sites, and enhancement/preservation potential. Recognizing the need and social and economic benefits of wetland banking, Regent Sienna Plantation Partnership L.P. decided to pursue wetland banking opportunities on the site.

The proposed bank would be available compensation for approved Department of the Army (DA) permits for impacts to any jurisdictional non-tidal waterbody located in the Brazos River basin, including but not limited to forested and emergent wetlands, drainage features and streams. There would not be a need for coordination with the Texas Coastal Management Plan because the site does not contain waters which are tidally influenced. In addition, mitigating impacts to tidal waters at the bank would be prohibited.

II. ESTABLISHMENT OF THE BANK

A. CURRENT CONDITIONS OF THE PROPERTY

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.

1. Soil Survey Evaluation

Prior to site reconnaissance activities, the Soil Survey of Fort Bend County (1943) was reviewed to determine the types of soils that would most likely be present on the subject property.

The soils data indicated that the dominant soils on the site were of the Miller-Norwood-Pledger Associations. Specifically, these soils were identified as Miller silt loam, 0 to 1 percent slopes (Mc), Miller silty clay loam, 0 to 1 percent slopes (Md), Norwood silty clay loam, 0 to 1 percent slopes (Nb), and Roebuck clay, 0 to 1 percent slopes (Ra).

Miller silt loam, 0 to 1 percent slopes (Mc), is a well drained and productive soil of the Brazos River bottom lands. This component is on floodplains on river valleys on coastal plains. Water movement in the most restrictive layer is moderately low. Typically, this soil ranges in color from brown to reddish brown and in texture from very fine sandy loam to loam. This soil is slowly permeable and the shrink-swell potential is high. This soil is rarely flooded and not considered hydric.

Miller silty clay loam, 0 to 1 percent slopes (Md), is a productive and drought resistant soil occurring on low ridges or shallow swales which is slowly permeable. The surface layer ranges from 4 to 12 inches in thickness and from reddish brown to dark reddish brown in color.

A dark-gray to dark grayish-brown substratum occurs in parts of many areas of this soil. This soil is crumbly in the upper part when moist and very sticky and plastic when wet. This soil does not meet hydric criteria.

Norwood silty clay loam, 0 to 1 percent slopes (Nb), is a well drained soil with a low shrink-swell potential. Organic matter content in the surface horizon is about 1 percent. In many places the 16 to 46 inch layer is stratified with lenses of clay and fine sandy loam. This soil is typically a dark brown to light reddish brown in color and moderately permeable. This soil is not considered hydric.

Roebuck clay, 0 to 1 percent slopes (Ra), is a poorly drained soil that occupies the natural depressions of the Brazos River floodplain. The surface layer ranges from 0 to 15 inches and is a dark brown, calcareous clay. The 15 to 42 inch layer is a reddish brown clay with dark gray and yellowish brown spots. Both layers are slowly permeable. Roebuck clay is not considered a hydric soil.

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.

2. Floodplain Evaluation

Assessment of the hydrological characteristics of the site were 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 January 3, 1990, the entirety of the tract is located within the 100-year floodplain of the Brazos River. A remnant of Cow Bayou also transects the property.

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 Appendix C.

3. Topography Evaluation:

Site reconnaissance also included observations of the property's general topography and the location of landscape features such as depressions,

ridges, and levees.

These features could determine wetland patterns and their associated hydrologic functions. Topography was evaluated by reviewing topographic maps published by the USGS, aerial photography, and on-site observations.

USGS maps indicate topographic relief of one (1) foot within the proposed site with stormwater runoff flowing generally toward the south and southwest toward the South Texas Water Company Canal. The USGS Thompson Quad topographic quadrangle map indicates an elevation of 55 feet above mean sea level.

4. Aerial Photography:

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. Additionally, topographical and hydrological characteristics may be changed by natural processes or by man-induced alterations in or near wetland areas. While field verification remains essential to wetland identification, historical aerial photography played a vital role in the evaluation of wetland features and variations over extended periods of time. Aerial photography was used extensively in the preliminary evaluations made on the site.

These photographs were studied extensively for the presence of wetland indicators that recur over time. Black & 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 & 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 than the surrounding areas and will appear on the false color imagery as variations in shading. Areas which consistently appeared as possible wetlands were marked for field confirmation. The same process also identified areas that appeared as marginal or upland. From these photographic interpretations, a preliminary "rough" delineation pattern was established and incorporated into planned site reconnaissance.

a. Land Use and Management History:

It appears that the site was forested after review of the 1939 aerial photograph, however in the 1960 aerial it appears that portions of the site were cleared and used for agricultural activities.

The site appears to have been utilized primarily for agricultural activities until Regent Sienna Plantation Partnership L.P. purchased the property in 2005.

Site Reconnaissance

Site reconnaissance was conducted on June 12, 2007 by Aron Edwards from Berg♦Oliver Associates, Inc. The site was evaluated for the presence of jurisdictional wetlands by sampling and analyzing the hydrology, soils, and vegetation.

1. Geology and Soils

Although the soils on the site did not exactly match the descriptions given in the NRCS Fort Bend County Soil Survey report, the survey was reasonably accurate in identifying the basic types of soils found on the property. The soils data indicated that the dominant soils on the site were identified as Miller silt loam, 0 to 1 percent slopes (MC), Miller silty clay loam, 0 to 1 percent slopes (Md), Norwood silty clay loam, 0 to 1 percent slopes (Nb), and Roebuck clay, 0 to 1 percent slopes (Ra).

2. Topography

The USGS Thompson topographic quadrangle map indicates an elevation of 55 feet above mean sea level with little elevation change. The area is characterized as floodplain and containing bottomland forest.

3. Vegetation Communities

Vegetation communities were evaluated to determine wetland and upland areas. The project area is dominated by herbaceous cover with occasional dense forested areas. The upland areas are dominated by common bermuda grass (*Cynodon dactylon*), bahia grass (*Paspalum notatum*), and vasey grass (*Paspalum urillei*). The wetlands are dominated by green soft rush (*Juncus effusus*), sand sedge (*Eleocharis montevidensis*), horned beak rush (*Rynchospora corniculata*), and spike rush (*Eleocharis montana*) in herbaceous areas.

The forested areas are dominated by Chinese tallow trees (*Sapium*

sebiferum), sugar-berry trees (*Celtis laevigata*), and water oaks (*Quercus nigra*).

5. Hydrology

Hydrological characteristics of the site were assessed 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 January 3, 1990, the entirety of the tract is located within the 100-year floodplain of the Brazos River. A remnant of Cow Bayou also transects the property.

CONCEPTUAL DEVELOPMENT PLAN

1. Existing Wetlands

There are approximately 80 acres of wetlands on the proposed bank site. Enhancement opportunities exist in these wetlands by removal of noxious species such as Chinese tallow.

2. Wetland Creation and Restoration

The tract has been altered by levees and grazing. The goal of the bank is to restore the hydrology and native vegetation. Using the Hydrogeomorphic (HGM) Assessment, areas will be identified that can be created, enhanced, or restored for an optimum habitat resource. Once success criteria conditions have been met, a delineation according to the 1987 COE Wetland Delineation Manual would be performed to determine the quantity and location of wetlands in the bank.

III. OPERATION OF THE BANK

A. WETLAND ASSESSMENT METHODOLOGY

The existing wetlands that would be preserved would be assessed for immediate credit availability. A Hydrogeomorphic (HGM) Assessment would be performed to determine the quality of the other areas to be enhanced, created, and preserved.

An HGM would be run annually to assess the change in quality function and value. This assessment would be submitted to the U.S. Army Corps of Engineers, Galveston District for review and approval.

B. CREDITING AND DEBITING PROCEDURES

Preservation credits of existing wetland acreage would be released immediately. Future credits would be released and available for purchase upon approval of the HGM assessment.

The amount of credits sold from the bank would be based on the HGM findings and best professional judgment of the Corps of Engineers Project Manager as to the quality of those waters. Once individual credits are sold, a log would be maintained by Regent Sienna Plantation Partnership L.P. and forwarded to the Corps of Engineers; Galveston District on an annual basis with all pertinent information. This information would 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.

C. MONITORING REQUIREMENTS

Monitoring for noxious species would be conducted annually until all available credits are purchased and the bank is turned over to a third-party for long-term preservation.

D. LONG-TERM MAINTENANCE/MANAGEMENT

An agreed upon third-party entity would take over long-term maintenance and management of the bank site once all credits have been purchased.

E. PROTECTIVE REAL ESTATE MECHANISM

The bank would be maintained under a conservation easement held by an entity such as Ducks Unlimited, which would allow for hunting in specific areas of the property.

F. LAND USE PROVISIONS

Once released for preservation in perpetuity to an agreed upon third-party, such as Ducks Unlimited, the property may be used for educational and recreational purposes. Specifically, a hunting camp may be created in a set aside area.

IV. **CONCLUSION**

The request herein is that a 305 acre tract of land owned by Regent Sienna Plantation Partnership L.P. be authorized to create a wetland mitigation bank called the Sienna Plantation Wetland Mitigation Bank. If you have any questions or comments, do not hesitate to contact me at (281) 589-0898.

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V. LITERATURE CITED

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