

**PETIT BOIS  
MITIGATION BANK**

**PROSPECTUS FOR A PROPOSED  
MITIGATION BANK  
APPROXIMATELY 587.5 ACRES  
CAMERON PARISH, LOUISIANA**

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**C-K Associates' Project No. 4061E**

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**PROSPECTUS FOR PETIT BOIS MITIGATION BANK  
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**I INTRODUCTION**

C-K Associates, LLC (C-K), acting as agent for the landowners, Resource Environmental Solutions, LLC (RES) and Third Louisiana Resource, LLC (TLR) respectfully presents this prospectus to establish the proposed 587.5-Acre Petit Bois Mitigation Bank (PBMB), to the United States Corps of Engineers, New Orleans District (CEM VN) and Louisiana Department of Natural Resources (LDNR), Coastal Management Division (CMD). The proposed PBMB is located in Cameron Parish, LA (Figure 1 Vicinity Map).

The PBMB is approximately 578.6 acres and will provide 263.8 acres of re-established bottomland hardwood forested wetland ecosystem, 210.2 acres of rehabilitated bottomland hardwood forested wetland ecosystem, 41.4 acres of re-established baldcypress/tupelo swamp ecosystem and 63.2 acres of enhanced freshwater marsh ecosystem at the PBMB in two phases (Figure 2 Restoration Plan). An 8.9-acre area of shallow open water will be placed under the conservation servitude; however, this area is not proposed for restoration or enhancement (i.e. non mitigation credit acre). Phase 1 will include the northern portion of the project area yielding 263.8 acres of bottomland hardwood re-establishment and 16.4 acres of baldcypress/tupelo swamp re-establishment. Phase 2 will include the southern portion yielding 210.2 acres of bottomland hardwood rehabilitation, 25.0 acres of baldcypress/tupelo swamp rehabilitation and 63.2 acres of freshwater marsh enhancement (Figure 2 Restoration Plan).

The PBMB is within the South Fork Black Bayou (Bayou) watershed, which is within the Louisiana Gulf Coastal Marsh (LGCM). The PBMB is located between upland prairie terrace and South Fork Black Bayou. The PBMB will provide a riparian buffer zone that filters water from the prairie terraces.

**II BANK GOALS AND OBJECTIVES**

The goal of the PBMB is to restore and enhance approximately 578.6 acres of former rice fields now used as cattle pastures, scrub/shrub pasture, Chinese tallow (*Triadica sebifera*) forest and freshwater marsh. The objectives are as follows:

1. To restore and enhance historical wetland functions and values associated with bottomland hardwood forests, baldcypress/tupelo swamps and freshwater marshes such as surface water retention, stream flow maintenance, nutrient cycling, aquatic productivity and plant and wildlife habitat.
2. To re-establish 263.8 acres of bottomland hardwood forest and rehabilitate 210.2 acres of bottomland hardwood forest through surface hydrology restoration, invasive species control and native vegetative plantings.
3. To re-establish 41.4 acres of baldcypress/tupelo swamp by contour and elevation modifications to the existing irrigation canals and native vegetative

- plantings
4. To enhance 63.2 acres of freshwater marsh through hydrology restoration and invasive species control.
  5. To serve as a bottomland hardwood, baldcypress/tupelo swamp and marsh mitigation area offering for sale habitat credits as compensation for unavoidable impacts to wetlands associated with Coastal Use Permits (CUP), issued by the Louisiana Department of Natural Resources (LDNR) Coastal Management Division (CMD) and Department of the Army (DA) permits authorized under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, issued by the U.S. Army Corps of Engineers (USACE), New Orleans District (CEM VN).
  6. To serve as an umbrella mitigation bank authorizing the Sponsor to re-establish and rehabilitate approved sites as bottomland hardwoods and baldcypress as well as enhance approved sites for fresh marsh within USGS Cataloging Unit 08070206 (Figure 4 USGS Hydrologic Units). Any credits resulting from the Sponsor's efforts would be used to compensate for wetland impacts associated with USACE and LDNR authorized projects. Procedures for approval of additional tracts shall be defined in a formal mitigation banking instrument.

### **III ESTABLISHMENT OF MITIGATION BANK**

The Sponsor proposes to re-establish 263.8 acres of bottomland hardwood forested wetland ecosystem from pasture in Phase 1 by surface hydrology restoration and native vegetative plantings. Phase I will re-establish 16.4 acres of baldcypress/tupelo swamp by contour and elevation modifications to the existing irrigation canals and native vegetative plantings.

Phase 2 will rehabilitate 210.2 acres of bottomland hardwood forested wetland ecosystem from Chinese tallow forest by surface hydrology restoration, invasive species control and native vegetative plantings. Phase 2 will also include the enhancement of 63.2 acres of freshwater marsh by surface hydrology restoration and invasive species control. Phase 2 will rehabilitate 25.0 acres of baldcypress/tupelo swamp by contour and elevation modifications to the existing irrigation canals and native vegetative plantings.

The mitigation activity involves primarily reforestation using bare-root seedlings, hydrological modifications such as degrading artificial ditches, levees and plugging drains either created or modified to facilitate drainage of the site; and controlling invasive species utilizing herbicidal treatment. By degrading the existing irrigation ditches and plugging select culverts will allow water to remain on site and provide a more natural, sheet flow hydrology to the site. Coupled with native vegetative plantings and exotic species control, this approach will facilitate the goal of the PBMB. These activities have long been utilized in wetland restoration and mitigation projects and are proven methods. Therefore, these activities are technically feasible by way of utilizing existing methods and restoration techniques. The Sponsor acknowledges that control of invasive species will be intensive due to the prevalent or potentially prevalent seed source of Chinese

tallow adjacent to the project site. The surrounding land use is either abandoned pasture land which is dominated by Chinese tallow or active pasture which, if abandoned, will likely regenerate with a dominance of Chinese tallow.

#### **A. Vegetative Re-Establishment, Rehabilitation and Enhancement**

The bottomland hardwood (263.8 acres) and baldcypress/tupelo swamp (16.4 acres) re-establishment activities in Phase 1 will be accomplished by preparing the site as needed (mowing, herbicide, etc.) during the fall of 2008 and by planting an appropriate species mixture indicative of bottomland hardwood baldcypress/tupelo swamp ecosystems (Table 1) during the non-growing season (i.e., December - March) of 2008-2009.

The bottomland hardwood (210.2 acres) and baldcypress/tupelo swamp (25.0 acres) rehabilitation activities in Phase 2 will be accomplished by preparing the site by removing the existing invasive species through shredding, herbicide application, cultivating during the fall of 2009 and by planting an appropriate species mixture indicative of bottomland hardwood and baldcypress/tupelo swamp ecosystems (Table 1) during the non-growing season (i.e., December - March) of 2009-2010.

Enhancement activities on 63.2 acres of existing freshwater marsh in Phase 2 will be accomplished by herbicide treatments targeting invasive and undesirable species such as black willow and Chinese tallow.

The restoration areas will be planted using a mixture of both hard mast and soft mast species which are identified in Table 1 and will be planted during the non-growing season (i.e., December - March). Seedlings will be planted within a 538 seedlings per acre (9ft. x 9ft. spacing). The anticipated schedule for planting is the non-growing season of 2008-2009 for Phase 1 and the non-growing season of 2009 for Phase 2. Site preparation will be conducted prior to planting by mechanical and/or chemical means such as mowing, disking, ripping, shredding, and herbicidal application. Invasive and undesirable species control will be conducted throughout the entire project area.

#### **B. Surface Hydrology Restoration**

Select areas along the existing non-wet spoil banks along the northern boundary will be breached (approximately 30 feet per breach) and select culverts will be removed or plugged to provide a more natural exchange of water throughout the project area (Figure 4 Hydrology Restoration Plan). The existing irrigation canals within the project area will be filled with earthen material from the existing spoil banks and contoured to reflect a more natural, vegetated drain/slough.

Select spoil banks and canals within the existing pasture/agriculture area will be filled to the existing level of the adjacent agriculture fields. The spoil banks along the eastern drainage canal and South Fork Black Bayou will remain (i.e. drainage servitude areas). Existing rice field levees within Phase 1 have been removed during recent cultivation activities. The existing rice field levees within the Chinese tallow forested areas of Phase

2 will be removed during the site preparation. The anticipated schedule for hydrologic restoration activities will occur in 2008 or 2009 for Phase 1 and 2009 or 2010 for Phase 2.

The Sponsor does not anticipate any long-term structural management requirements needed to assure hydrologic restoration. The result of the hydrology restoration will be to increase retention time of surface water and saturation time of the site which will reduce nonpoint source runoff and increase water quality. There are no known outside hydrological disturbances on or adjacent to the site which would affect hydrologic restoration over which the Sponsor has no control.

#### **IV PROPOSED SERVICE AREA**

The proposed mitigation bank is located in Section 9, Township 12 South and Range 8 West at latitude 30°01'52.06" north and longitude 93°11'12.95" west. More specifically, the project area is located approximately 1 mile east of LA Highway 385 (Gulf Highway) and approximately 1 mile south of the CalCam Line Road and Tom Hebert Road intersection.

The PBMB is located within United States Geological Survey (USGS) Cataloging Unit 08080206, which contains over 670,000 acres and includes a large area of Cameron Parish and Calcasieu Parish. Projects impacting jurisdictional waters and/or special aquatic sites within this cataloging unit where determined appropriate by the CEMVN, could use the bank to compensate for wetland impacts. Because the PBMB is located in USGS Cataloging Unit 08080206, the proposed service area will be the USGS Cataloging unit. The Accounting Unit (i.e., 080802) would serve as the secondary service area as appropriate; however, the use of the PBMB beyond the cataloging unit will be determined by the CEMVN on a case-by-case basis. This particular primary watershed contains much of the city of Lake Charles including the entire southern part which has experienced much growth especially south of the I-210 loop. It also includes the entire city limits of Sulphur and West Lake which is a major industrial area. The secondary watershed contains the west side of Lake Charles which includes the 1-10 corridor in which considerable growth and development can be anticipated.

A portion of the property is located with the Louisiana Coastal Wetland Conservation Plan Boundary and will be open to tidal influences upon completion of the project. Due to the tidal influence being re-introduced to the site, the PBMB should be considered for Louisiana coastal mitigation credits.

#### **V GENERAL NEED AND TECHNICAL FEASIBILITY**

According to the Louisiana's Department of Environmental Quality (LDEQ) website for the Nonpoint Source Pollution unit, the proposed PBMB will accommodate the Calcasieu River Basin Watershed Protection Program by reducing non-point source pollution within the watershed by removing the cattle from the site and restoring bottomland hardwood and baldcypress to the pasture areas. The PBMB will also reduce non-point source

pollution by reducing nutrients and suspended solids from surface water runoff.

The PBMB will help reduce non-point source pollution by removing cattle from the area and restoring the area to a forested and marsh ecosystem. The pastures are actively managed for cattle grazing. These pastures were historically farmed for rice production as evidenced by the remaining rice field levees and irrigation canals as well as historical aerial photographs. The fallow scrub/shrub pasture is unmanaged agricultural land that is utilized for cattle grazing. The Chinese tallow forests are essentially monocultures consisting of invasive and noxious species. The PBMB will remove the fallow scrub/shrub and Chinese tallow forests by shredding and restore them to a more natural forested system by planting bottomland hardwood species. The natural drainage within the area will be restored by removing existing rice field levees and degrading existing agricultural drains by cultivation activities such as disking.

In the South Fork Black Bayou watershed, sheet flow has been altered to facilitate rice cultivation. Natural drains have been channelized, and rice levees have been constructed to retain surface water. The drainage ditch and rice levees will be degraded to natural level to re-introduce natural sheet flow across the soil surface. The soils are hydric, which indicates there were historical periods of frequent soil saturation and/or inundation. Therefore, the restoration of surface hydrology by re-establishing a natural sheet flow will successfully restore the historic wetland functions and values.

## **VI OWNERSHIP ARRANGEMENTS AND LONG TERM MANAGEMENT STRATEGY**

It is the intention of the Sponsor to establish the property as a mitigation bank. Third Louisiana Resource, LLC is the legal owner of the property and the proposed Sponsor, Long-Term Steward and Long-Term Manager of the project. Third Louisiana Resource, LLC is partly owned and managed by Resource Environmental Solutions, LLC (RES). C-K Associates, LLC (C-K) is the authorized agent for Third Louisiana Resource, LLC.

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The PBMB will be monitored and maintained by Third Louisiana Resource, LLC or a designated long-term steward. A conservation servitude will be placed on approximately 578.6 acres of the PBMB (Figure 5 Conservation Servitude). Success criteria will be established for initial success (end of year one), target year three success, and target year five success. The PBMB will have a mitigation bank instrument that will serve as the regulatory document requiring specified performance standards.

## **VII SPONSOR QUALIFICATIONS**

RES is a wetlands mitigation company specializing in wetland mitigation and wetland bank management. RES' management and staff have a combined 30 years of experience with wetlands delineation, permitting, mitigation bank development and mitigation bank management. To date RES entities have completed two mitigation banks within the New Orleans and Vicksburg Corps of Engineers Districts and are in the process of developing several more throughout the Galveston, New Orleans and Vicksburg Corps Districts. A profile of RES projects and the RES staff can be found at [www.resmitigation.com](http://www.resmitigation.com).

## **VIII ECOLOGICAL SUITABILITY**

### **A. Existing and Surrounding Land Use**

The current land use conditions are active pasture management for livestock and was recently and historically used for rice production. Forested areas that do remain consist primarily of invasive species which re-colonized abandoned agricultural areas. Some of these areas remain abandoned while others are actively utilized by livestock for foraging and shade. The surrounding land use is largely the same as the project site.

The habitats within the project area consist of former rice fields now used as cattle pastures, scrub/shrub pasture, Chinese tallow (*Triadica sebifera*) forest and freshwater marsh (Figure 6 Existing Conditions). The pastures are actively managed for cattle grazing. The fallow scrub/shrub pasture is unmanaged agricultural land that is utilized for cattle grazing. The Chinese tallow forests are essentially monocultures consisting of invasive and noxious species. The observed height and diameter of the Chinese tallow trees suggests that these areas were former rice fields that were abandoned approximately 10-15 years ago. The topography within the Chinese tallow forests is flat with residual, interior rice levees. The freshwater marsh occurs in a low-lying area adjacent to South Fork Black Bayou. The northern portion of the freshwater marsh is impounded by residual irrigation canals and rice field levees. The surrounding land use is 75% cropland and pasture, 20% non-forested wetlands, 2% reservoirs, 1% commercial and services, 1% forested wetlands and 1% residential (Figure 7 Surrounding Land Use).

## **B. Existing Vegetation**

The cattle pastures were recently cultivated during the initial field investigation; therefore, the following vegetation consists of remnant species and adjacent species. The herbaceous vegetation includes coffeeweed (*Sesbania drummondii*), waxmyrtle (*Morella cerifera*), softstem rush (*Juncus effusus*), poverty rush (*Juncus tenuis*), field paspalum (*Paspalum dilatatum*), maidencane (*Panicum hemitomom*), blunt spikerush (*Eleocharis obtusa*), sedges (*Carex spp.*), grassleaf rush (*Juncus marginatus*), mallow (*Hibiscus aculeatus*) and frog fruit (*Phyla nodiflora*).

The vegetation within Chinese tallow forests is dominated by Chinese tallow in the tree layer while waxmyrtle, swamp privet (*Forestiera acuminata*), common privet (*Ligustrum sinense*) and Chinese tallow comprise the scrub/shrub layer. Blunt spikerush, swamp bedstraw (*Galium tinctorium*), cutleaf coneflower (*Rudbeckia laciniata*), dogfennel (*Eupatorium capillifolium*), seaside golden rod (*Solidago sempervirens*), Virginia wild rye (*Elymus virginicus*), blue flag (*Iris virginica*), fragrant flatsedge (*Cyperus odoratus*), blackberry (*Rubus betulifolius*), boneset (*Eupatorium perfoliatum*), southern waxy sedge (*Carex glaucescens*), green dragon (*Arisaema dracontium*), sedge, softstem rush, poverty rush and Chinese tallow dominate the herbaceous layer.

The scrub/shrub pasture consists of Chinese tallow and waxmyrtle in the scrub/shrub layer. Saltmeadow cordgrass (*Spartina patens*), peelbark St. Johnswort (*Hypericum fasciculatum*), maidencane and poverty rush dominate the herbaceous layer.

Dominant vegetation in the freshwater marsh area includes black willow (*Salix nigra*) and Chinese tallow in the tree layer and Chinese tallow in the scrub/shrub layer. Herbaceous vegetation consists of giant cutgrass (*Zizaniopsis miliacea*), marshpepper knotweed (*Polygonum hydropiper*), southern cattail (*Typha domingensis*), lizards' tail (*Saururus cernuus*) and bulltongue arrowhead (*Sagittaria lancifolia*). Waterspangle (*Salvinia minima*) dominates areas of open water within the freshwater marsh.

## **C. Existing Hydrology**

The hydrology site has been altered to facilitate flooding and draining associated with rice production. Water from within the project area drains via sheet flow into various culverts and levee breaks into man-made rice field irrigation canals. These canals drain to the south into the freshwater marsh area and then into South Fork Black Bayou, through the Gulf Intracoastal Waterway (GIWW), through the Calcasieu Locks, and into the Calcasieu River and eventually into the Gulf of Mexico (Figure 8 Existing Hydrology). The site is tidally influenced in the lower elevations via the South Fork of Black Bayou which is reflected by differences of daily water levels in the GIWW east of the Calcasieu Lock as recorded at USACE

gage 76880. Hourly data from the 15<sup>th</sup> (10<sup>th</sup> for December) of each month in 2008 reveal an average water level fluctuation of 0.7 feet (0.6 feet without September which reflects influence from Hurricane Ike). This and other supporting data is found in Appendix C.

#### **D. Soils**

The project area is underlain by GB: Ged muck clay, LE: Larose muck, Mt: Mowata-Vidrine silt loams and Mr: Morey silt loam (NRCS 2008)<sup>1</sup> (Figure 9 Published Soils). The GB, LE and Mt series are listed as hydric soils whereas the Mr series is listed as non-hydric (NRCS 2008)<sup>2</sup>. During the field investigation and baseline assessment, C-K confirmed the presence of hydric soils, based on the Field Indicators of Hydric Soils (NRCS 2002).

#### **E. Known Encumbrances**

The project site proposed for mitigation is free of any mortgage, liens, encumbrances, easements, servitudes, or restrictions. A drainage servitude granted to the Cameron Parish Police Jury in 1948 occurs along South Fork Black Bayou and the unnamed drainage canal to the east. The servitude is not located within the project site proposed for restoration and enhancement and acreage reported within this prospectus is not currently proposed for the conservation servitude. The servitude gives right of access for maintenance to the specified drainage ditches/canals. The servitude states that channel widening may not exceed 20 feet in width and equipment must travel the immediate side of the drainage in efforts to prevent impacts to adjacent properties. Given most of the drainages are at or exceed this limit, nor further widening of the existing channels may occur. Any spoil material from maintenance activities such as dredging or snagging is to be placed alongside the existing drainage and spreading minimized. Any impacts to adjacent properties must be remedied at the expense of the Cameron Parish Police Jury. The Sponsor has maintained a 10-foot buffer between the project area and the area under servitude (the buffer area is not included in the project conservation servitude area). All drainage pathways from within the project site into the aforementioned drainages will be blocked, preventing any potential impacts from activities within the drainage servitude from affecting the proposed mitigation areas; therefore, the activities authorized by this servitude will have no adverse effects on the hydrology restoration within the project site.

#### **F. Previous Land Uses**

Historically (pre-agricultural development), this area would have been a transition of riparian forestland to coastal prairie habitat. The pastures within the project area were historically farmed for rice production as evidenced by the remaining rice field levees and irrigation canals as well as historical aerial photographs. The Chinese tallow forests were former rice fields that were abandoned approximately

10-15 years ago. The historical land use of the adjacent properties, as evidenced through historical aerial photos dating back to 1940, included coastal prairie habitats, agriculture fields and pastures.

**G. Zoning and Existing/Proposed Development**

Cameron Parish is largely rural, undeveloped and contains no incorporated areas. There is no zoning and no known development which affects the project site.

**H. Historical Hydrology**

The historical hydrology of the site was sheet flow from the northern portion toward the south and into the South Fork Black Bayou which subsequently drained into the Calcasieu River which emptied into the Gulf of Mexico. Lower elevations of the site experience tidal exchange via the South Fork Black Bayou.

**I. Jurisdictional Determination**

A jurisdictional determination was obtained from CEMVN (MVN-2008-02222) by letter dated October 14, 2008 and is included as Appendix A.

**IX WATER RIGHTS AND HYDROLOGICAL INFLUENCES**

The project area is comprised 263.4 acres of agricultural pastures, 28.8 acres of impounded marsh, 48.3 acres of existing freshwater marsh, 16.6 acres of other waters of the U.S., 18.1 acres of scrub/shrub pasture, 10.3 acres of spoil banks and roads and 202.0 acres of Chinese tallow forests. The project area is forced drained through a series of culverts into the interior irrigation drains/canals. Spoil banks are located along the sides of the irrigation drains/canals. The spoil bank along the banks of South Fork Black Bayou allows limited tidal influence in the marsh areas through multiple breached locations outside of the project area. The tidal influence to areas north of the marsh is hindered by the spoil banks located along the existing irrigation drains/canals. The hydrological restoration, which included the restoration of tidal influence into the project area, will require the degradation of these spoils banks along the existing irrigation drains/canals. The spoil banks along South Fork Black Bayou and the eastern drainage canal (under drainage servitude) will remain as tidal influence is not hindered by their existence.

There are no proposed temporary or long-term structural management requirements for this project. The main water source is rainfall and surface runoff from surrounding areas. The water from within the project area drains via sheet flow into various culverts and levee breaks into man-made rice field irrigation canals and then into South Fork Black Bayou. The water table for the Mowata-Vidrine silt loam soil series is at the surface to 2 feet below the surface during the period of December through April (SCS 1995). The water table for the Ged muck clay soil series is ponded with several inches of water most of the time (SCS 1995). The Larose soil is ponded with several inches of fresh water

most of the time and the water table is 2 feet above the surface to 0.5 feet below the surface, during periods when the soil is not flooded (SCS 1995). The water table for the Morey silt loam is at the surface to 2 feet below the surface during the period of December through April (SCS 1995).

The hydroperiod is largely dependent upon tidal levels and rain events which influence the level of South Fork Black Bayou. According to the National Wetlands Inventory (NWI) maps, the habitats in the southern portion of the project area contain non-tidal water regime modifiers including temporarily flooded, seasonally flooded, permanently flooded and permanently flooded with a special modifier for diked/impounded. The Chinese tallow forests along the southern portion of the project area experience temporary flooding during the growing season. During field observations of this area, water apparently remains present longer than described by the NWI maps due to relic rice field levees which prevent water from draining into the adjacent marshes and canals. Southern portions of the Chinese tallow forest area (where relic rice field levees are not present) as well as the adjacent freshwater marsh can experience extended periods of flooding especially during the early growing season. Although surface water is usually absent by the end of the growing season, the soil remains saturated year round. Lower elevations along South Fork Black Bayou remain flooded throughout the growing season. The pond located in the southwest corner of the project area remains permanently flooded throughout the year. According to the NWI maps, the agriculture/pastures in the northern portion of the project area are listed as upland areas which do not contain a water regime modifier. The agriculture/pastures experience forced drainage through multiple culverts and irrigation ditches that drain the fields into South Fork Black Bayou. These areas may experience temporary ponding after large rain events, but typically remain dry year round.

The approximate contributing drainage area is 5,200 acres. This area was calculated using Light Detection and Ranging Data (LIDAR) contours and USGS topographic maps to determine surrounding elevations and drainage patterns. The drainage area is bound on the north by the Plateau Petit Bois, to the east by an unnamed drainage canal, to the south by South Fork Black Bayou and to the west by existing natural drain (Figure 10 Drainage Area).

## **X MAINTENANCE PLAN**

### **A. General**

All existing interior fences will be removed. The site will be monitored and maintained by the Sponsor/ Long-Term Steward. Details of the maintenance plan will be defined in further detail in the Mitigation Banking Instrument.

### **B. Invasive Species Control**

Invasive and exotic flora such as Chinese tallow will be controlled by either cutting, herbicide treatment or a combination of these methods.

### **C. Forest Management**

Upon or after crown closure, timber harvesting/thinning will only be approved if the MBRT determines that such activities are needed to maintain or enhance the ecological value of the site and shall be performed by the Sponsor/Long-term Steward. Measures to control the encroachment of exotic/invasive vegetation after the thinning operation shall be implemented.

## **XI ADAPTIVE MANAGEMENT**

In the event that initial plantings do not meet milestones, the Sponsor will replant until the success criteria is achieved. Details of the milestones will be defined in further detail in the Mitigation Banking Instrument. If wetland hydrology is not present on all planted areas by Year 5, the Sponsor shall document in the monitoring report those areas where attention is needed. In coordination with the MBRT, the Sponsor will develop an adaptive hydrologic management plan to address hydrologic shortfalls and identify corrective measures to be taken. The adaptive hydrologic management plan will be implemented in Year 5 upon the approval of the MBRT.

## **XII ACCOUNTING PROCEDURES, METHODS FOR DETERMINING CREDITS, AND RELEASE OF CREDITS**

The proposed mitigation must be specified in a mitigation instrument, which is written by the Sponsor and approved/signed by the Interagency Review Team (IRT). The IRT consists of the CEMVN and CMD, who jointly chairs the team; the Environmental Protection Agency (EPA), the United States Fish and Wildlife Service (USFWS), and the LDWF.

The Sponsor proposes that 263.8 acres can be used as compensatory mitigation through the re-establishment of a bottomland hardwood forested wetland ecosystem, 210.2 acres through the rehabilitation of bottomland hardwood forested wetland ecosystem, 41.4 acres through the re-establishment of a baldcypress/tupelo swamp ecosystem and 63.2 acres through enhancement of a freshwater marsh ecosystem. There are several assessment models available to determine the potential for restoring/enhancing functions of the Bank's wetlands. At present, CEMVN uses the Wetland Value Assessment (WVA) and the Modified Charleston Method (MCM) to determine both the amount of credits necessary to replace forested wetland functions impacted by authorizing projects and the credits necessary to replace forested wetland functions impacted by authorizing projects and the credits available in a mitigation project. However, the District may determine that other methods may be more appropriate for this habitat to assure that the national goal of "no-net loss" of wetlands is achieved. The number of credits will be defined in the Mitigation Banking Instrument.

Credits will be released incrementally upon achievement of certain milestones such as, but not limited to, approval and signature of the wetlands banking instrument, tree

planting, exotic species control, completed hydrology restoration, etc. Milestones will be developed during the evaluation of the banking proposal.

### **XIII PERFORMANCE STANDARDS, FINANCIAL ASSURANCES, AND LONG-TERM PROTECTION**

Monitoring of the project area will be required over the operational life of the area. Monitoring requirements would be developed based on the credit release milestones and as a mechanism to evaluate the progress of the bank as predicted by the wetland assessment.

Monitoring reports prepared by the Sponsor shall include information regarding the species planted, survivorship of plantings, plant coverage, plant richness, percent exotic/invasive species, invasive species control, measures to control predation/grazing of mitigation plantings, replacement planting, structure removal, water inundation/saturation levels, etc. Permanent monitoring plots would be established and located in such a manner that they are representative of the planted area. Plot centers will be permanently marked and all trees within the plot radius will be permanently tagged and numbered.

Financial Assurance will be in the form of two escrow accounts, a Construction and Establishment Fund (Short-Term Account) and a Long-Term Maintenance and Protection Fund (Long-Term Account). Short-Term funds may be released back to the Sponsor following successful attainment of performance standards. The amount of the principle deposited in the Long-Term Account will remain in place in perpetuity and interest of which may be used by the Long-Term Steward to maintain the bank in perpetuity.

The Owner shall execute a conservation servitude (pursuant to the Louisiana Conservation Servitude Act, R.S. 9:1271 *et seq.*) on all acreage identified as the “project area” and record it in the Mortgage and Conveyances Records Office of Cameron Parish. The Holder shall be approved by the MBRT prior to its execution. The Holder shall be qualified to hold this Conservation Servitude by virtue of being 1) a governmental body empowered to hold an interest in immovable property under the laws of the State of Louisiana or the United States of America; or 2) a charitable corporation, charitable association, or charitable trust, qualified under § 501(c)(3) of the U.S. Internal Revenue Code, the purposes or powers of which include:

- Retaining or protecting the natural, scenic, or open-space values of immovable property;
- Assuring the availability of immovable property for agricultural, forest, recreational or open-space use;
- Protecting natural resources;
- Maintaining or enhancing air or water quality; or

- Preserving the historical, archaeological or cultural aspects of unimproved immovable property.

The conservation servitude will be binding to and runs with the title of the property. The servitude generally specifically prohibits activities (dumping, filling, etc.), that would reduce the quality of the wetlands. The easement will also specify permissive activities such as hunting, fishing, recreational use and mineral exploration given the activity does not negatively affect the functions and values of the restored wetlands. Forest management within the conservation servitude could be allowed given that this activity is meant to maintain or improve the overall ecological function of the site. Any negative impacts to the area from permissive activities will require permitting and subsequent mitigation for adverse impacts. *However, it is understood that the conservation servitude shall not prohibit hunting, fishing, trapping, non-consumptive recreational pursuits and exploration and production of minerals. Exploration and production of minerals shall be conducted in accordance with all applicable laws and regulations. The Sponsor acknowledges that such activities have the potential to reduce the total amount of credits available in the bank, depending on the extent of the impacts to the mitigation wetlands.*

The Sponsor (or Long-Term Steward)/ Owner, or its heirs, assigns or purchasers shall be responsible protecting lands contained within the Bank in perpetuity, unless bank lands are transferred or sold to a state or federal resource agency or non-profit conservation organization. The conservation servitude shall incorporate the Banking Instrument by reference and bind the Sponsor (or Long-Term Steward)/Owner, its heirs, assigns, and future owners to complying with the terms of this copy of the Banking Instrument. In the Banking Instrument, a specific “Holder” for the conservation servitude will be identified.

#### **XIV CONCLUSION**

In summary, the proposed restoration and enhancement areas have the potential to provide 263.8 acres of re-established bottomland hardwood forested wetland ecosystem, 210.2 acres of rehabilitated bottomland hardwood forested wetland ecosystem, 41.4 acres of re-established baldcypress/tupelo swamp ecosystem and 63.2 acres of enhanced freshwater marsh ecosystem. The removal of livestock and re-establishment of forest vegetation will result in improved water quality through a reduction in non-point source runoff. The enhancement of the existing freshwater marsh has the potential to create viable habitat for fish and wildlife such as migratory and resident birds (waterfowl, neo-tropical migrants, etc.); alligators (*Alligator mississippiensis*) and fur-bearing mammals; and both game and non game species.

#### **XV REFERENCES**

Louisiana Department of Environmental Quality (2008) *Nonpoint Source Management Plan* [website]. Louisiana Department of Environmental Quality. Accessed October 17, 2008.  
Available URL: <http://nonpoint.deq.louisiana.gov/wqa/NPSManagementPlan.htm>

Natural Resources Conservation Service (2002) *Field Indicators of Hydric Soils in the United States, A Guide for Identifying and Delineating Hydric Soils, Version 5.0*. G.W. Hurt, Whited, P.M., and Pringle, R.F. (eds.). U.S. Department of Agriculture, Natural Resources Conservation Service, Ft.Worth, TX.

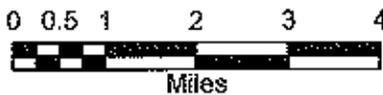
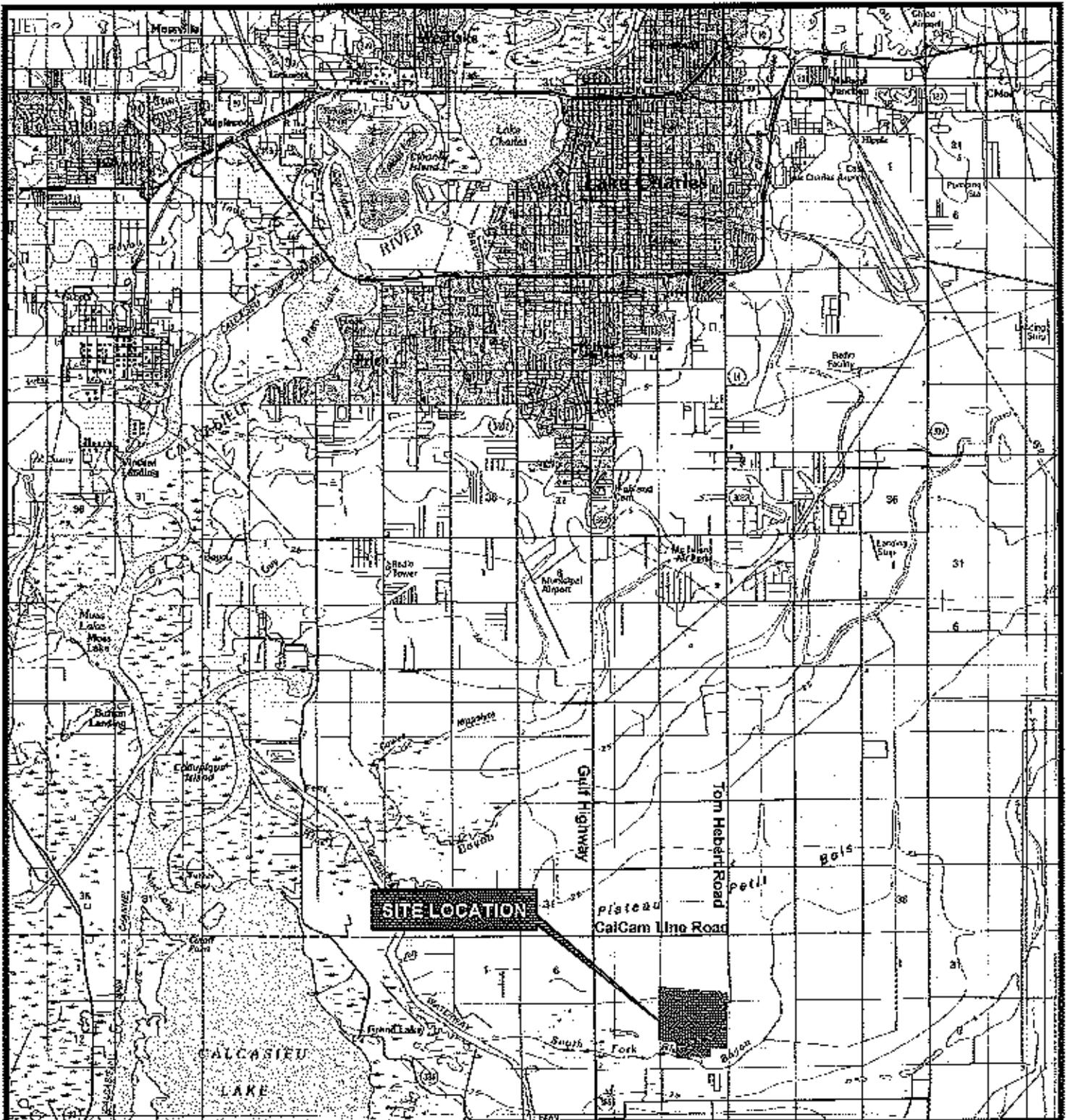
Natural Resources Conservation Service (2008)<sup>1</sup> *Web Soil Survey* [website]. U.S. Department of Agriculture, Natural Resources Conservation Service, *Soil Survey Staff*. Accessed June 17, 2008. Available URL: <http://websoilsurvey.nrcs.usda.gov/app/>

Natural Resources Conservation Service (2008)<sup>2</sup> *National Hydric Soils List by State* [website]. U.S. Department of Agriculture, Natural Resources Conservation Service, *Soil Survey Staff*. Accessed June 17, 2008. Available URL: <http://websoilsurvey.nrcs.usda.gov/app/>

Soil Conservation Service (1995) *Soil Survey of Cameron Parish, Louisiana*. U.S. Department of Agriculture Soil Conservation Service. April 1995.

United States Army Corps of Engineers (1987) *Corps of Engineers Wetland Delineation Manual*. USACE Waterways Experiment Station Technical Report Y-87-1.

# **FIGURES**



**Reference**

U.S.G.S. 100 MINUTE SERIES QUAD MAP, LAKE CHARLES, LA



**THIRD LOUISIANA RESOURCE, LLC**  
 BATON ROUGE, LOUISIANA  
 PETIT BOIS MITIGATION BANK PROSPECTUS

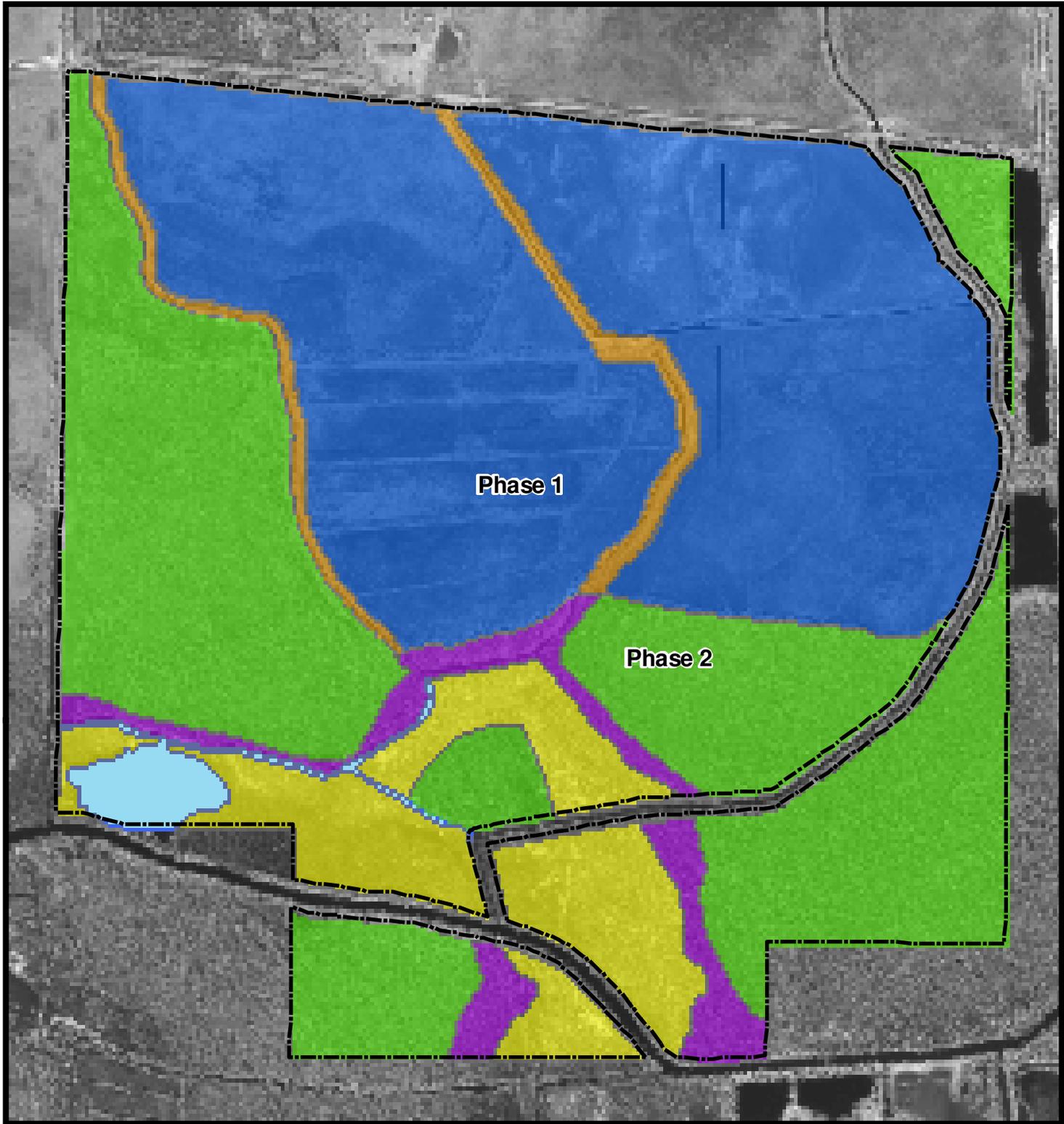
**VICINITY MAP**

CAMERON PARISH

**CK ASSOCIATES, LLC**  
 ENVIRONMENTAL & ENGINEERING  
 CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	LAW
Approved:	TEW
Date:	07/15/2008
Dwg. No.:	A4061E-10

**FIGURE 1**



**Legend**

-  Proposed Conservation Servitude
-  Phase 1 Bottomland Hardwood Re-establishment (263.8 acres)
-  Phase 1 Cypress/Tupelo Re-establishment (16.4 acres)
-  Phase 2 Bottomland Hardwood Rehabilitation (210.2 acres)
-  Phase 2 Cypress/Tupelo Rehabilitation (25.0 acres)
-  Phase 2 Freshwater Marsh Enhancement (63.2 acres)
-  Water (Non-mitigation 8.9 acres)



**Reference**

BASE MAP 2005 DIGITAL ORTHOPHOTO, LAKE CHARLES SW QUAD



**THIRD LOUISIANA RESOURCE, LLC**  
 BATON ROUGE, LOUISIANA  
 PETIT BOIS MITIGATION BANK PROSPECTUS

**RESTORATION PLAN**

CAMERON PARISH



**ASSOCIATES, LLC**  
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Drawn:	BLN/AV9.2
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Date:	11/19/2008
Dwg. No.:	A4061E-30

**FIGURE 2**

A4061E-30 - RESTORATION PLAN, FIG 2.mxd



- Proposed Conservation Servitude
- Primary Service Area (08080206)
- Secondary Service Area (080802)



**Reference**

BASE MAP DERIVED FROM ESRI STREETMAP USA



**THIRD LOUISIANA RESOURCE, LLC**  
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PETIT BOIS MITIGATION BANK PROSPECTUS

**USGS HYDROLOGIC UNITS**

CAMERON PARISH

**CK**  
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ENVIRONMENTAL & ENGINEERING  
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Approved:	TEW
Date:	11/24/2008
Dwg. No.:	A4061E-47

**FIGURE 3**

A4061E-47 - USGS HYDROLOGIC UNITS, FIG. 3.mxd



**Legend**

-  Proposed Conservation Servitude
-  Culverts to Remain
-  Culverts to be Plugged/Removed
-  Proposed Breach (30 feet)
-  Stream Restoration (Baldcypress/Tupelo)
-  Other Waters
-  Spoil Banks
-  Drain to be Filled
-  Spoil Banks to be Removed



**Reference**

BASE MAP 2005 DIGITAL ORTHOPHOTO, LAKE CHARLES SW QUAD



**THIRD LOUISIANA RESOURCE, LLC**  
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PETIT BOIS MITIGATION BANK PROSPECTUS

**HYDROLOGY RESTORATION PLAN**

CAMERON PARISH

**CK** ASSOCIATES, LLC  
ENVIRONMENTAL & ENGINEERING CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	LJW
Approved:	TEW
Date:	11/19/2008
Dwg. No.:	A4061E-31

**FIGURE 4**

A4061E-31 - HYDROLOGY RESTORATION PLAN FIG 4.mxd



**Legend**

 Proposed Conservation Servitude (587.5 acres)



**Reference**

BASE MAP 2005 DIGITAL ORTHOPHOTO, LAKE CHARLES SW QUAD



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PETIT BOIS MITIGATION BANK PROSPECTUS

**CONSERVATION SERVITUDE**

CAMERON PARISH

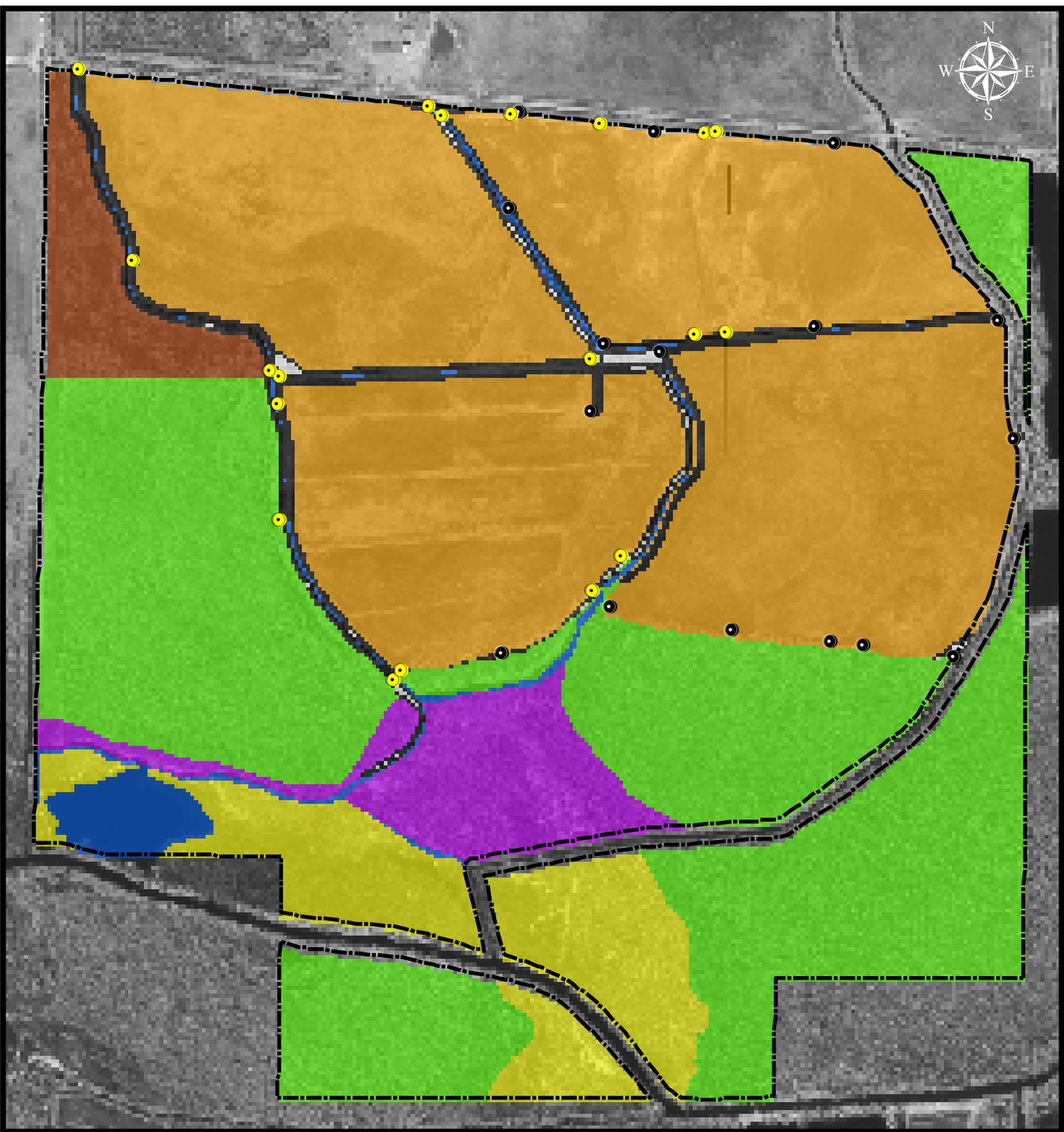


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ENVIRONMENTAL & ENGINEERING  
CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	LJW
Approved:	TEW
Date:	11/19/2008
Dwg. No.:	A4061E-33

**FIGURE 5**

A4061E-33-Conservation Servitude - Fig5.mxd



**Legend**

- Proposed Conservation Servitude
- Culverts
- Gaps
- Agriculture/Pasture (263.4 acres)
- Impounded Marsh (28.8 acres)
- Freshwater Marsh (48.3 acres)
- Other Waters of the U.S. (16.6 acres)
- Wet Scrub/Shrub Pasture (18.1 acres)
- Spoil Banks and Roads (10.3 acres)
- Wet Chinese Tallow Forest (202.0 acres)



**Reference**

BASE MAP 2005 DIGITAL ORTHOPHOTO, LAKE CHARLES SW QUAD



**THIRD LOUISIANA RESOURCE, LLC**

BATON ROUGE, LOUISIANA

PETIT BOIS MITIGATION PROSPECTUS

**EXISTING CONDITIONS**

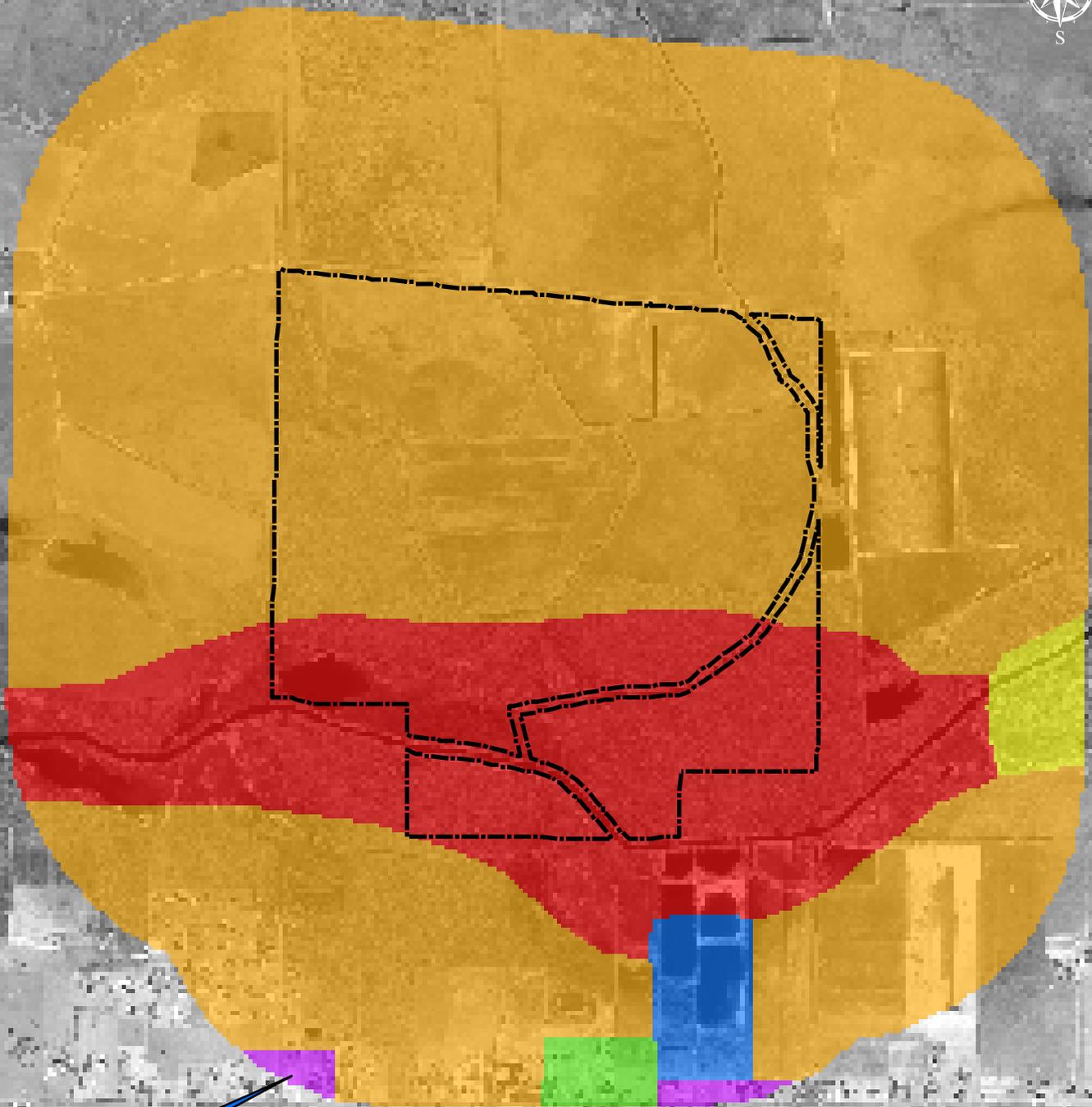
CAMERON PARISH

**ASSOCIATES, LLC**  
ENVIRONMENTAL & ENGINEERING  
CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	LJW
Approved:	TEW
Date:	11/19/2008
Dwg. No.:	A4061E-26

**FIGURE 6**

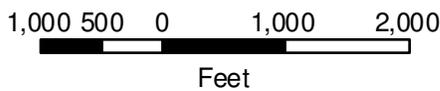
A4061E-26 - EXISTING CONDITIONS FIG 3.mxd



**1/2 MILE BUFFER**

**Legend**

- Proposed Conservation Servitude
- Nonforested wetland
- Commercial and services
- Reservoirs
- Cropland and pasture
- Residential
- Forested wetland



**Reference**

BASE MAP 2005 DIGITAL ORTHOPHOTO, LAKE CHARLES SW QUAD  
 COORDINATES IN STATE PLANE NAD 83 LOUISIANA SOUTH (1702) FEET



**THIRD LOUISIANA RESOURCE, LLC**

BATON ROUGE, LOUISIANA

PETIT BOIS MITIGATION PROSPECTUS

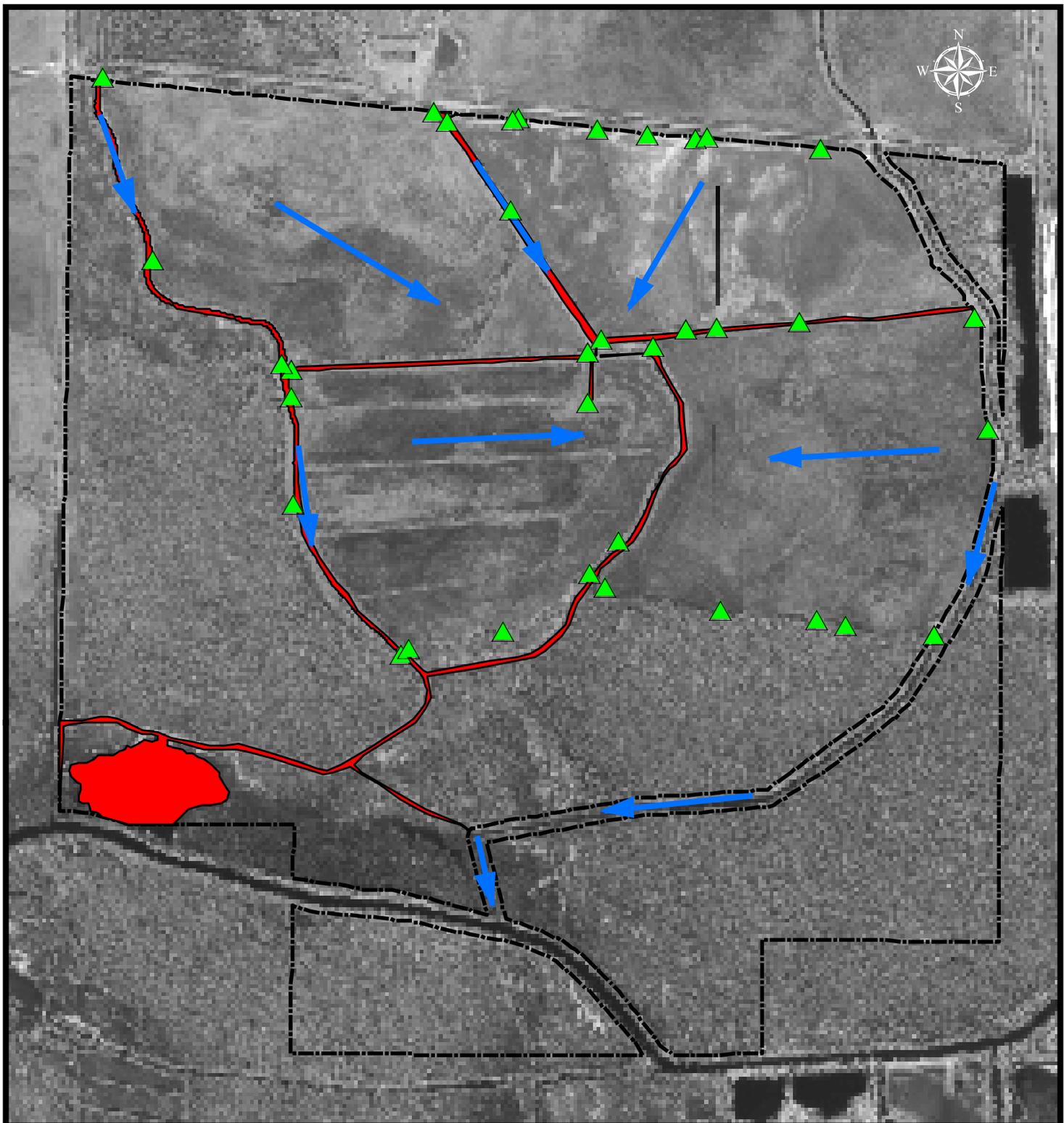
**SURROUNDING LAND USE**

CAMERON PARISH

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 ENVIRONMENTAL & ENGINEERING  
 CONSULTANTS

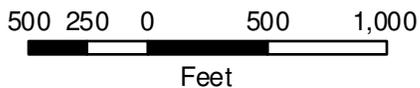
Drawn:	BLN/AV9.2
Checked:	LJW
Approved:	TEW
Date:	11/19/2008
Dwg. No.:	A4061E-27

**FIGURE 7**



**Legend**

-  Proposed Conservation Servitude
-  Existing Drainage Pathways
-  Culverts
-  Existing Flow Direction



**Reference**

BASE MAP 2005 DIGITAL ORTHOPHOTO, LAKE CHARLES SW QUAD

**THIRD LOUISIANA RESOURCE, LLC**  
BATON ROUGE, LOUISIANA

PETIT BOIS MITIGATION BANK PROSPECTUS

**EXISTING HYDROLOGY**

CAMERON PARISH



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Approved:	TEW
Date:	11/19/2008
Dwg. No.:	A4061E-29

**FIGURE 8**



**Legend**

- Proposed Conservation Servitude
- GB: Ged muck clay
- LE: Larose muck
- Mr: Morey silt loam
- Mt: Mowata-Vidrine silt loams
- W: Water



**Reference**

- 1) Base Map 2005 Digital Orthophoto, Lake Charles SW Quad
- 2) The GB, LE and Mt series are listed as hydric soils while the Mr series is listed as non-hydric according to the National and State Hydric Soils List



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PETIT BOIS MITIGATION BANK PROSPECTUS

**PUBLISHED SOILS MAP**

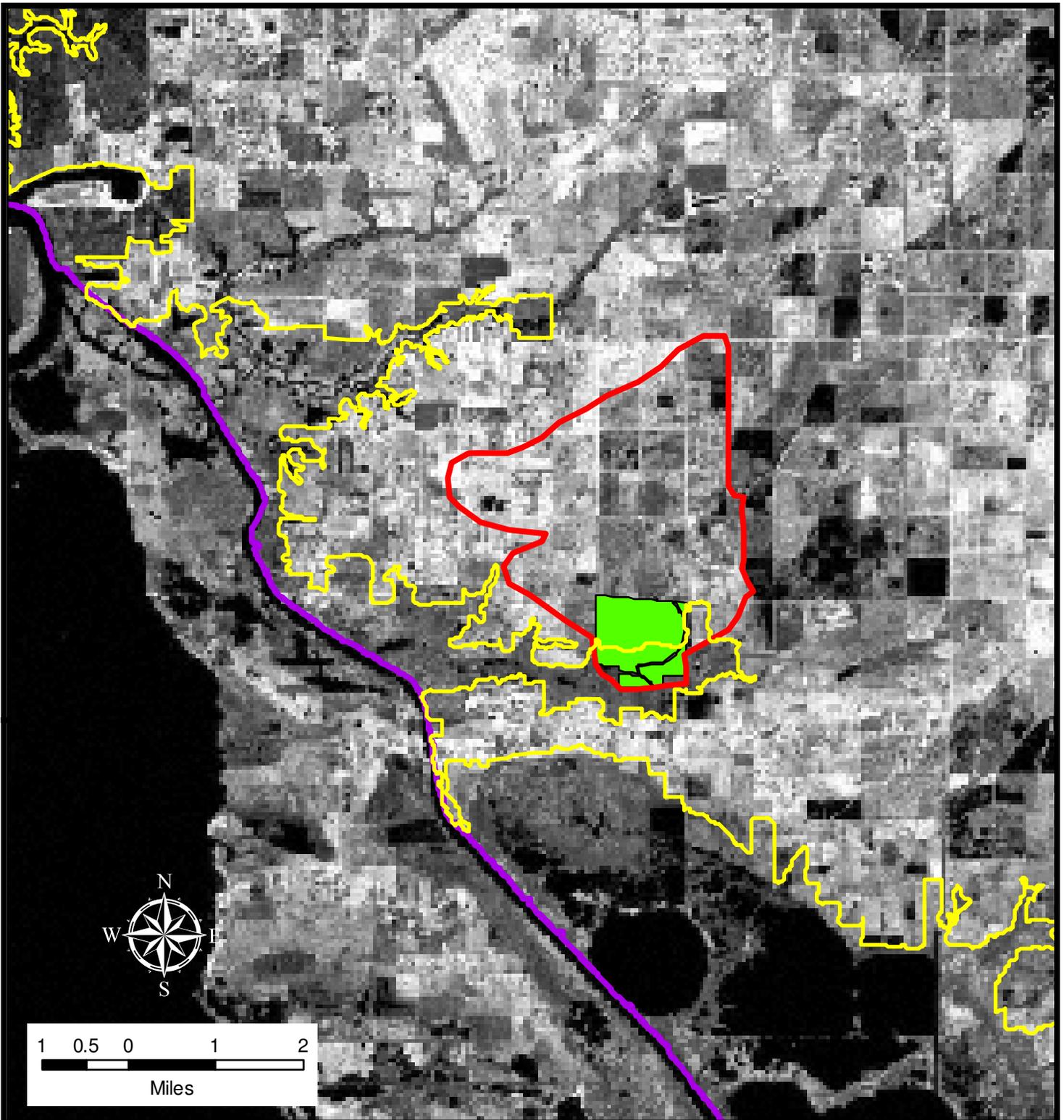
CAMERON PARISH

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Approved:	TEW
Date:	11/19/2008
Dwg. No.:	A4061E-28

**FIGURE 9**

A4061E-28 - PUBLISHED SOILS MAP - FIG 9.mxd



**Legend**

-  Louisiana Coastal Wetland Conservation Plan Boundary
-  Louisiana Coastal Zone Boundary
-  Approximate Drainage Area
-  Proposed Conservation Servitude

**Reference**

BASE MAP 2002 LANDSAT IMAGERY



**THIRD LOUISIANA RESOURCE, LLC**  
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PETIT BOIS MITIGATION BANK PROSPECTUS

**DRAINAGE AREA**

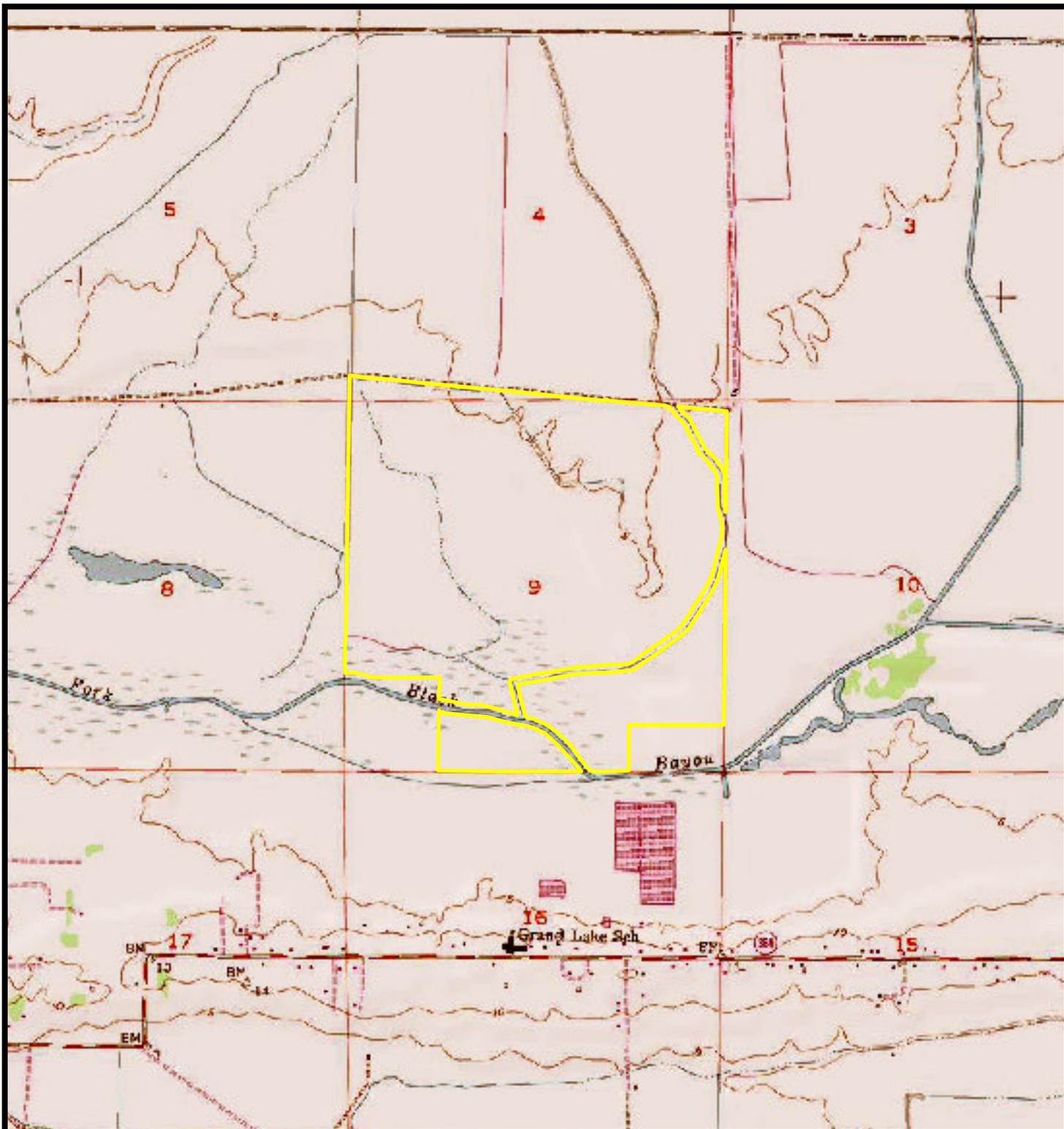
CAMERON PARISH



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ENVIRONMENTAL & ENGINEERING  
CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	LJW
Approved:	TEW
Date:	11/19/2008
Dwg. No.:	A4061E-34

**FIGURE 10**



 Proposed Conservation Servitude



**Reference**

BASE MAP 24K USGS QUAD MAP, LAKE CHARLES SW QUAD



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PETIT BOIS MITIGATION PROSPECTUS

**24K USGS QUAD MAP**

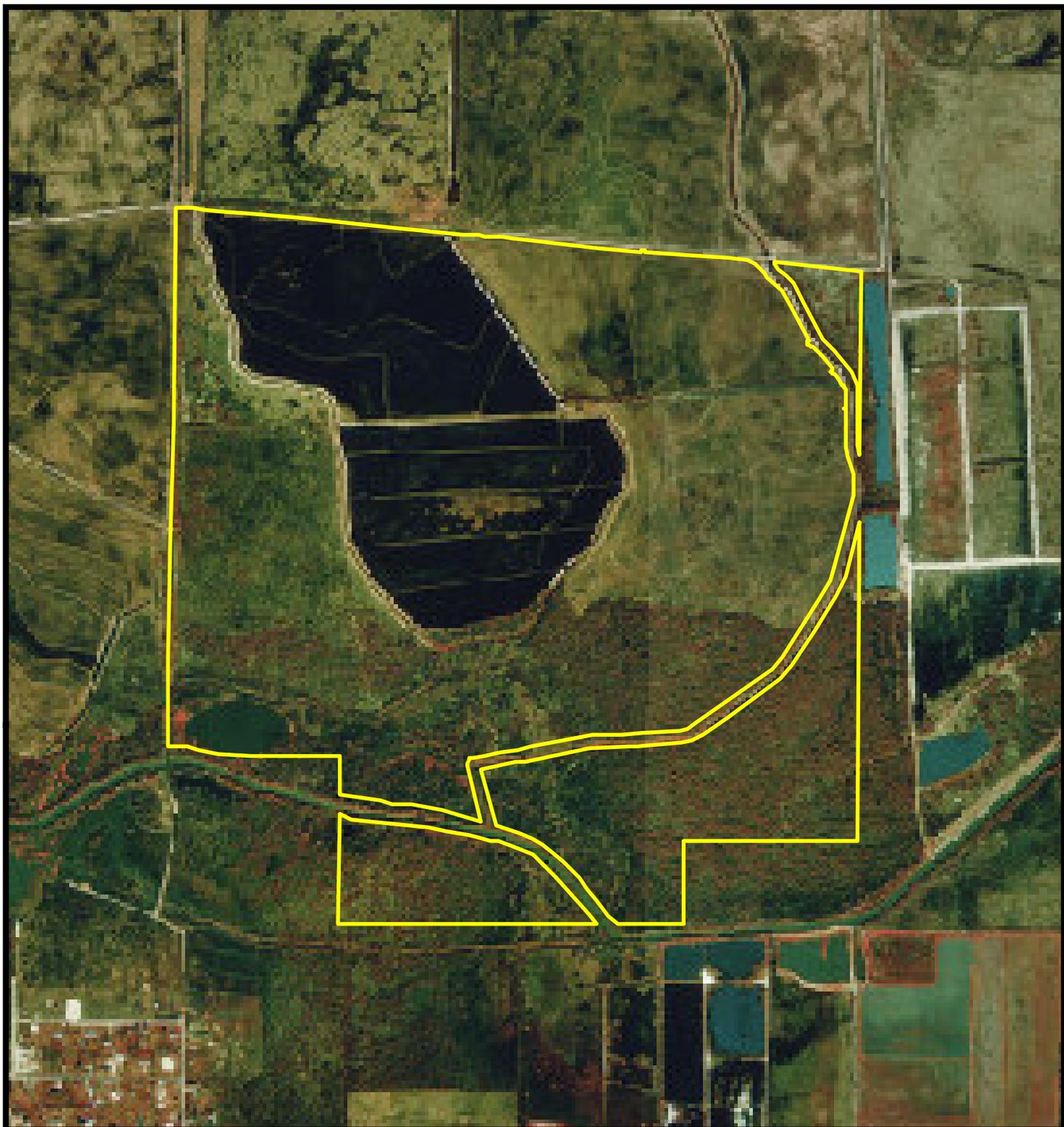
CAMERON PARISH



**ASSOCIATES, LLC**  
ENVIRONMENTAL & ENGINEERING  
CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	LJW
Approved:	TEW
Date:	11/19/2008
Dwg. No.:	A4061E-41

**FIGURE 11**



Proposed Conservation Servitude



**Reference**

BASE MAP 1998 CIR AERIAL IMAGERY, LAKE CHARLES SW QUAD, "SE AND SW QUADS"



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PETIT BOIS MITIGATION PROSPECTUS

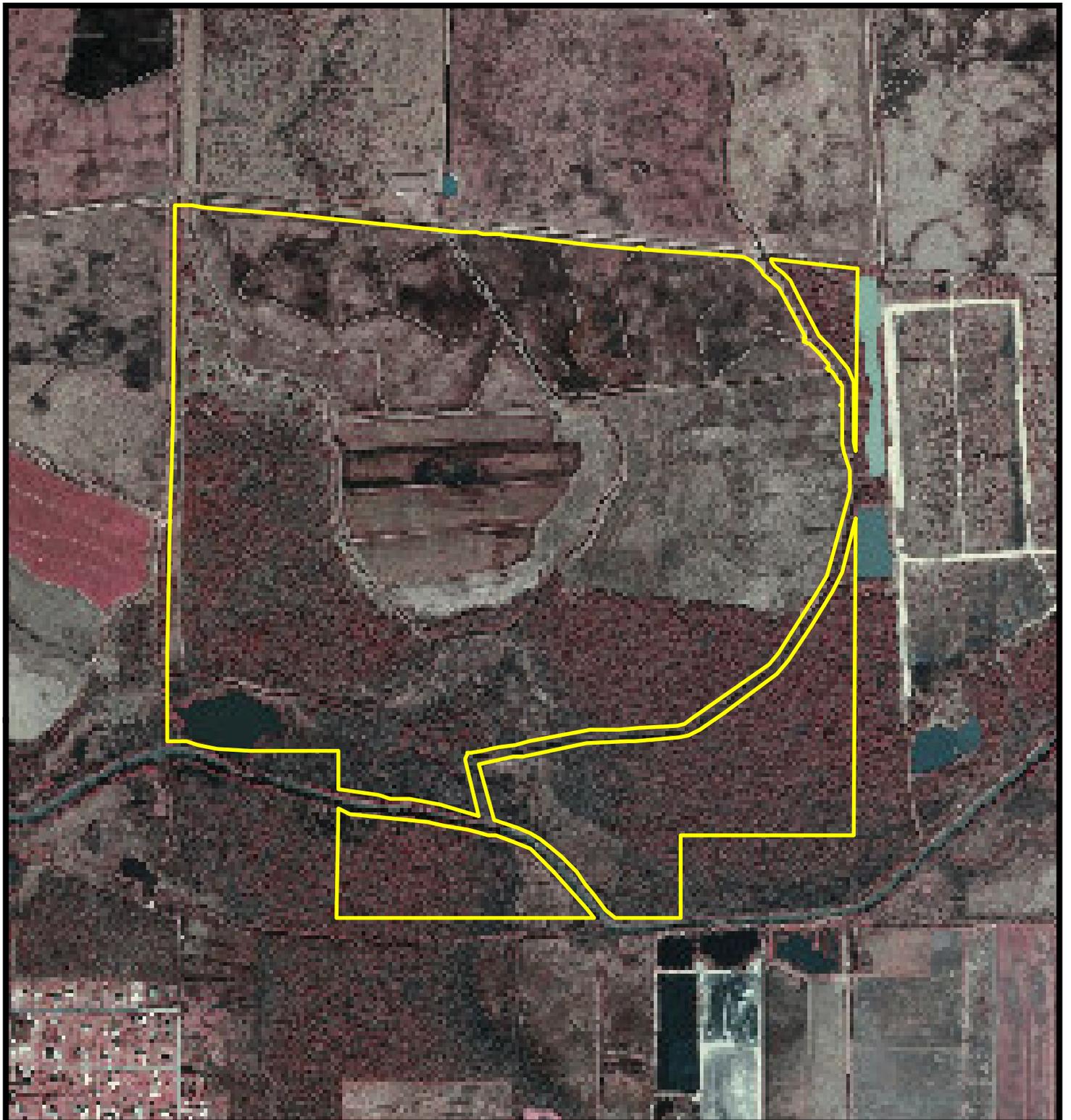
**1998 AERIAL PHOTO**

CAMERON PARISH

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ENVIRONMENTAL & ENGINEERING  
CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	LJW
Approved:	TEW
Date:	11/19/2008
Dwg. No.:	A4061E-42

**FIGURE 12**



Proposed Conservation Servitude



0 500 1,000 2,000 3,000

Feet

**Reference**

BASE MAP 2004 CIR AERIAL IMAGERY, LAKE CHARLES SW QUAD, "SE AND SW QUADS"



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PETIT BOIS MITIGATION PROSPECTUS

**2004 AERIAL PHOTO**

CAMERON PARISH

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CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	LJW
Approved:	TEW
Date:	11/19/2008
Dwg. No.:	A4061E-43

**FIGURE 13**



Proposed Conservation Servitude



**Reference**

BASE MAP 2005 CIR AERIAL IMAGERY, LAKE CHARLES SW QUAD, "SE AND SW QUADS"



**THIRD LOUISIANA RESOURCE, LLC**

BATON ROUGE, LOUISIANA

PETIT BOIS MITIGATION PROSPECTUS

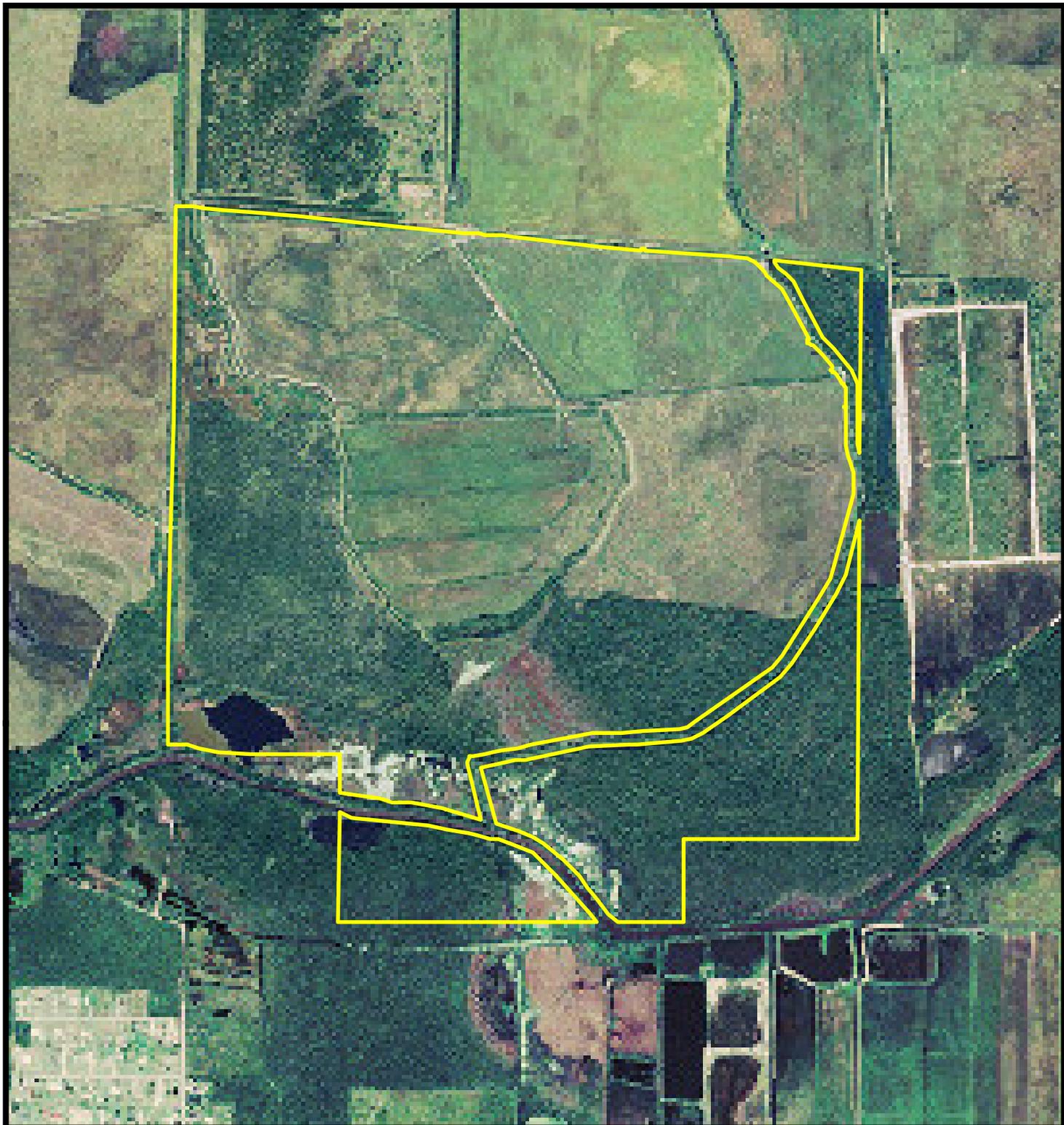
**2005 AERIAL PHOTO**

CAMERON PARISH

**CK ASSOCIATES, LLC**  
ENVIRONMENTAL & ENGINEERING CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	LJW
Approved:	TEW
Date:	11/19/2008
Dwg. No.:	A4061E-44

**FIGURE 14**



Proposed Conservation Servitude



**Reference**

BASE MAP 2005 AERIAL IMAGERY, LAKE CHARLES SW QUAD, "SE AND SW QUADS"



**THIRD LOUISIANA RESOURCE, LLC**

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PETIT BOIS MITIGATION PROSPECTUS

**2007 AERIAL PHOTO**

CAMERON PARISH



Drawn:	BLN/AV9.2
Checked:	LJW
Approved:	TEW
Date:	11/19/2008
Dwg. No.:	A4061E-45

**FIGURE 15**

# **TABLES**

**Table 1: Restoration Species and Percent Composition**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Percent Composition</b>
Nuttall oak	<i>Quercus nuttalli</i>	20%
willow oak	<i>Quercus phellos</i>	20%
water oak	<i>Quercus nigra</i>	10%
bitter pecan	<i>Carya x lecontei</i>	5%
overcup oak	<i>Quercus lyrata</i>	5%
green ash	<i>Fraxinus pennsylvanica</i>	5%
Drummond red maple	<i>Acer rubrum</i> var. <i>drummondii</i>	5%
sweetgum	<i>Liquidambar styraciflua</i>	5%
common persimmon	<i>Diospyros virginiana</i>	5%
sugarberry	<i>Celtis laevigata</i>	5%
American elm	<i>Ulmus americana</i>	5%
baldcypress	<i>Taxodium distichum</i>	5%
mayhaw	<i>Crataegus opaca</i>	5%

**Table 2: Vegetative Structure within the Overstory of Existing Chinese Tallow Forest**

Species	Avg. SPA	Avg. BA/Acre	Average DBH	Relative SPA	Relative BA	Type
Chinese tallow	223.33	35.45	5.39	87.01%	89.29%	Non Mast
<b>Subtotal</b>	<b>223.33</b>	<b>35.45</b>	<b>5.39</b>	<b>87.01%</b>	<b>89.29%</b>	
sugarberry	3.33	1.45	8.94	1.30%	3.66%	Soft Mast
waxmyrtle	30.00	2.80	4.14	11.69%	7.05%	Soft Mast
<b>Subtotal</b>	<b>33.33</b>	<b>4.25</b>	<b>6.54</b>	<b>12.99%</b>	<b>10.71%</b>	
<b>Totals</b>	<b>256.67</b>	<b>39.71</b>	<b>6.16</b>	<b>100%</b>	<b>100%</b>	

**Table 3: Vegetative Structure within the Midstory of Existing Chinese Tallow Forest**

Species	Stems	SPA	Relative SPA	Cover	Relative Cover	Type
Chinese tallow	91	9100	56.17%	25.00%	18.37%	Non Mast
<b>Subtotal</b>	<b>91</b>	<b>9100</b>	<b>56.17%</b>	<b>25.00%</b>	<b>8.94%</b>	
sugarberry	1	100	0.62%	5.00%	3.67%	Soft Mast
waxmyrtle	58	5800	35.80%	18.33%	13.47%	Soft Mast
Chinese privet	12	1200	7.41%	40.00%	29.39%	Soft Mast
<b>Subtotal</b>	<b>71</b>	<b>7100</b>	<b>43.83%</b>	<b>63.33%</b>	<b>55.16%</b>	
Open Space	0	0	0	47.76%	35.10%	
<b>Total</b>	<b>162</b>	<b>16200</b>	<b>100.00%</b>	<b>136.10%</b>	<b>100.00%</b>	

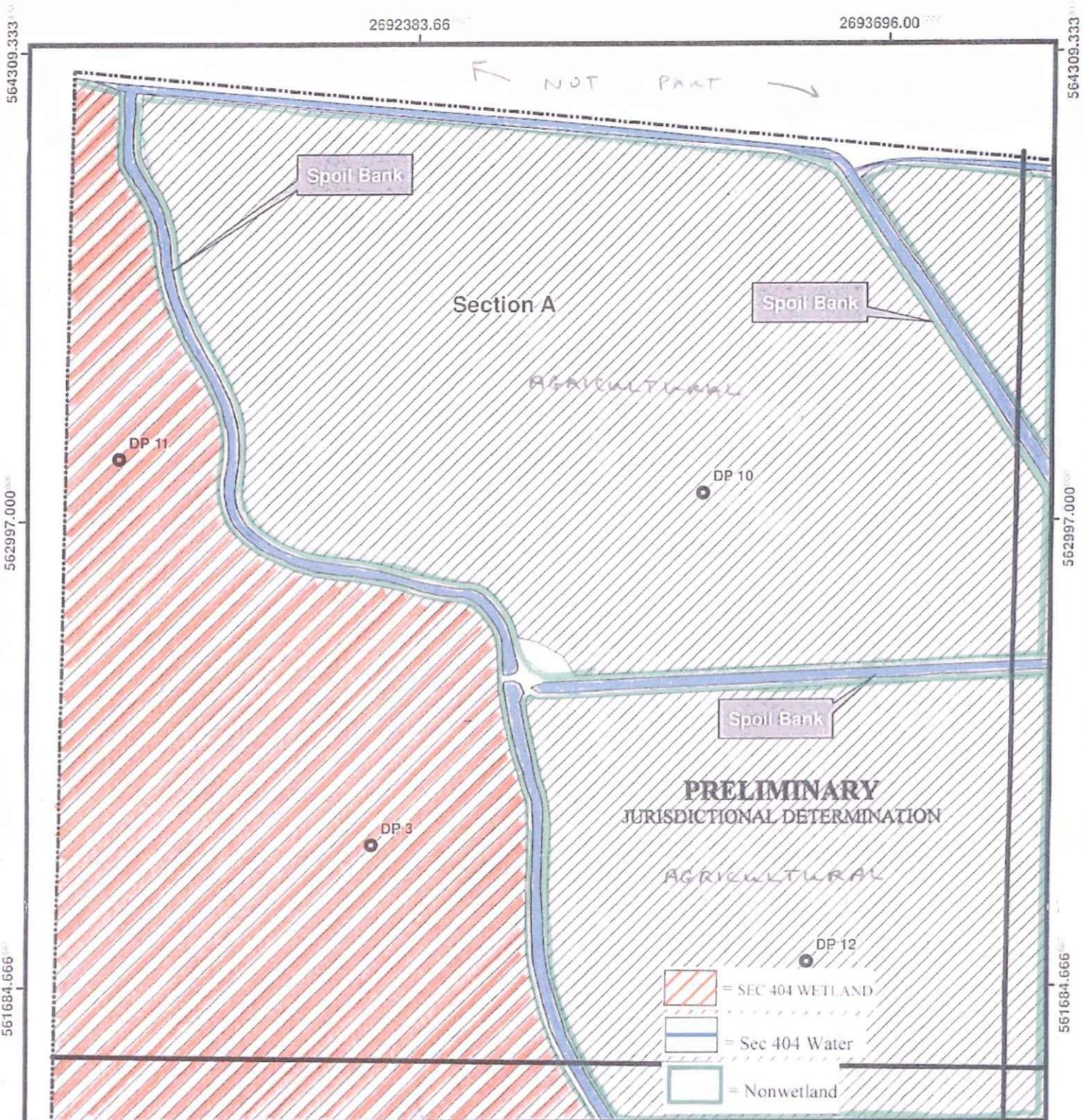
**Table 4: Vegetative Structure within the Understory of Existing Chinese Tallow Forest**

Species	Stems	SPA	Relative SPA	Cover	% Relative Cover	Type
Chinese tallow	295	29500	77.84%	7.50%	13.04%	Non Mast
<b>Subtotal</b>	<b>295</b>	<b>29500</b>	<b>77.84%</b>	<b>7.50%</b>	<b>13.04%</b>	
waxmyrtle	51	5100	13.46%	5.00%	8.70%	Soft Mast
Chinese privet	2	200	0.53%	5.00%	8.70%	Soft Mast
parsley-leaf hawthorn	1	100	0.26%	5.00%	8.70%	Soft Mast
sugarberry	30	3000	7.92%	5.00%	8.70%	Soft Mast
<b>Subtotal</b>	<b>84</b>	<b>8400</b>	<b>22.16%</b>	<b>20.00%</b>	<b>34.78%</b>	
Bare Ground	0	0	0.00%	30.00%	52.17%	
<b>Total</b>	<b>379</b>	<b>37900</b>	<b>100.00%</b>	<b>57.50%</b>	<b>100.00%</b>	

**Table 5: Mitigation Summary Table**

<b>Existing Habitat</b>	<b>Phase</b>	<b>Acres</b>	<b>Proposed Habitat</b>	<b>Mitigation Type</b>
Non-Wet Agricultural Pasture	I	263.8	Bottomland Hardwoods	Re-establishment
Non-Wet Agricultural Pasture	I	16.4	Baldcypress/Tupelo Swamp	Re-establishment
<b>Phase Total</b>	<b>I</b>	<b>280.2</b>		
Wet Scrub/Shrub	II	18.1	Bottomland Hardwoods	Rehabilitation
Wet Chinese Tallow Forest	II	192.1	Bottomland Hardwoods	Rehabilitation
Wet Chinese Tallow Forest	II	25.0	Baldcypress/Tupelo Swamp	Rehabilitation
Freshwater Marsh	II	63.2	Freshwater Marsh	Enhancement
<b>Phase Total</b>	<b>II</b>	<b>298.4</b>		
<b>Bank Total</b>	<b>I &amp; II</b>	<b>578.6</b>		
Water (Non-mitigation)	II	8.9	Water (Non-mitigation)	

# **APPENDIX A**



**Legend**

Project Area (617.32 acres) Map 1 of 4

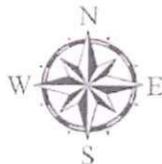
**USACE** Acct. # MVN-2008-02222-SC  
 B: Newman, consultant's field data. Lat. 30.0311, Long. -93.1869  
 Section 9, T12S, R8W, Cameron Parish, La. fsv8-26-08gmc

Data Points



**Reference**

BASE MAP 2005 DIGITAL ORTHOPHOTO, LAKE CHARLES SW QUAD  
 COORDINATES IN STATE PLANE NAD 83 LOUISIANA SOUTH (1702) FEET



**RESOURCE ENVIRONMENTAL SOLUTIONS, LLC**  
 BATON ROUGE, LOUISIANA

**SECTION A WETLANDS MAP**

CAMERON PARISH

**CK ASSOCIATES, LLC**  
 ENVIRONMENTAL & ENGINEERING CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	TEW
Approved:	TEW
Date:	06/12/2008
Dwg. No.:	A4061E-03

**FIGURE 3**

G:\3.mxd  
A4061E-02 - SEC 9 A WETL

564309.333

2695008.33

2696320.66

564309.333

← NOT PART →

562997.000

561684.666

562997.000

561684.666

Section B

AGRICULTURAL

Spoil Bank

DP 9

Spoil Bank

DP 4

DP 13

Spoil Bank

AGRICULTURAL

AGRICULTURAL

PRELIMINARY JURISDICTIONAL DETERMINATION

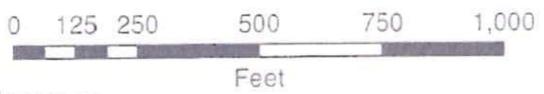
-  = Sec 404 Wetland
-  = Sec 404 Water
-  = Nonwetland

**Legend**

 Project Area (617.32 acres) **Map 2 of 4**

**USACE** Acct. # MVN-2008-02222-SC  
B. Newman, consultant's field data Lat 30.0311, Long -93.1869  
Section 9, T12S, R8W, Cameron Parish, La fsv8-26-08gmc

 Data Points



**Reference**

BASE MAP 2005 DIGITAL ORTHOPHOTO, LAKE CHARLES SW QUAD  
COORDINATES IN STATE PLANE NAD 83 LOUISIANA SOUTH (1702) FEET



**RESOURCE ENVIRONMENTAL SOLUTIONS, LLC**  
BATON ROUGE, LOUISIANA

PETIT BOIS

**SECTION B WETLANDS MAP**

CAMERON PARISH

**CK ASSOCIATES, LLC**  
ENVIRONMENTAL & ENGINEERING CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	TEW
Approved:	TEW
Date:	06/12/2008
Dwg. No.:	A4061E-04

**FIGURE 4**

IG-4.mxd  
JB WETLA  
A4061E-04 - SE

2692383.66

2693696.00

Section C

AGRICULTURAL

Spoil Bank

Spoil Bank

DP 2

DP 8

South Fork Black Bayou

Spoil Bank

NOT

PRELIMINARY JURISDICTIONAL DETERMINATION PART

-  = Sec 404 Wetland
-  = Sec 404 Water
-  = Sec 10/404 Navigable Water
-  = Sec 10/404 Tidal Wetland
-  = Nonwetland

Legend

 Project Area (617.32 acres) Map 3 of 4

USACE Acct. # MVN-2008-02222-SC  
B Newman, consultant's field data Lat 30.0311, Long -93.1869  
Section 9, T12S, R8W, Cameron Parish, La fsv8-26-08gmc

 Data Points



Reference

BASE MAP 2005 DIGITAL ORTHOPHOTO, LAKE CHARLES SW QUAD  
COORDINATES IN STATE PLANE NAD 83 LOUISIANA SOUTH (1702) FEET



RESOURCE ENVIRONMENTAL SOLUTIONS, LLC  
BATON ROUGE, LOUISIANA  
PETIT BOIS

SECTION C WETLANDS MAP

CAMERON PARISH



Drawn:	BLN/AV9.2
Checked:	TEW
Approved:	TEW
Date:	06/12/2008
Dwg No.:	A4061E-05

FIGURE 5

560372.333

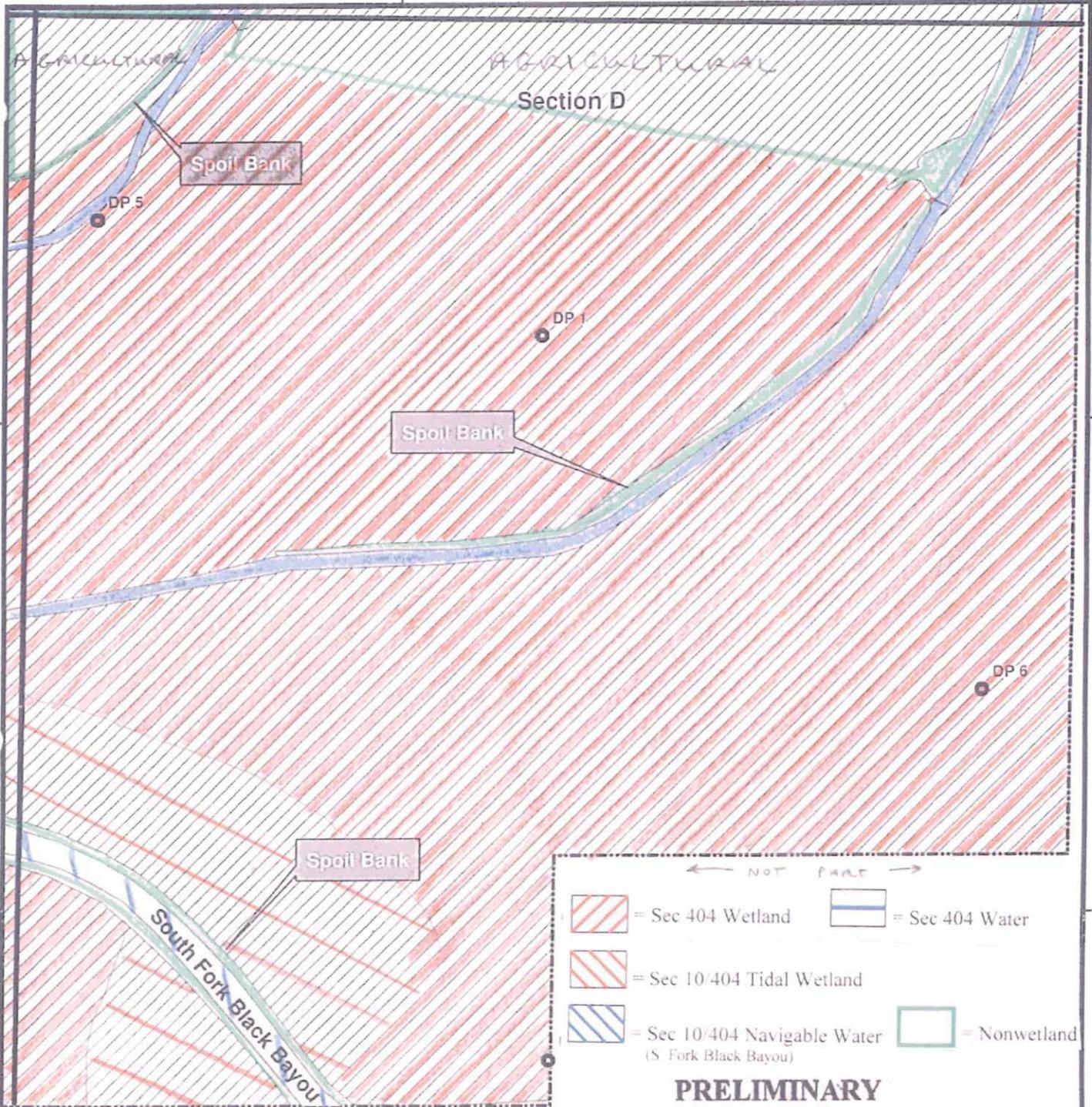
560372.333

559060.000

559060.000

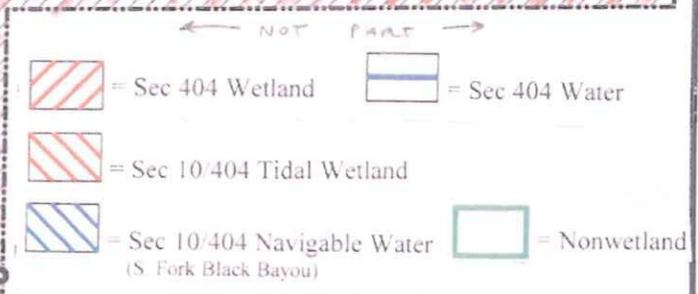
G:\5.mxd

A:\PROJECTS\05\_SE\G.WETL



560372.333  
559060.000

560372.333  
559060.000



**PRELIMINARY**  
**JURISDICTIONAL DETERMINATION**

**Legend**

[Dashed Box] Project Area (617.32 acres) **Map 4 of 4**

**USACE** Acct. # MVN-2008-02222-SC  
B Newman, consultant's field data. Lat 30.0311, Long -93.1869  
Section 9, T12S, R8W, Cameron Parish, La. fsv8-26-08gmc

● Data Points



**Reference**

BASE MAP 2005 DIGITAL ORTHOPHOTO, LAKE CHARLES SW QUAD  
COORDINATES IN STATE PLANE NAD 83 LOUISIANA SOUTH (1702) FEET



**RESOURCE ENVIRONMENTAL SOLUTIONS, LLC**  
BATON ROUGE, LOUISIANA  
PETIT BOIS

**SECTION D WETLANDS MAP**

CAMERON PARISH

**CK ASSOCIATES, LLC**  
ENVIRONMENTAL & ENGINEERING CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	TEW
Approved:	TEW
Date:	06/12/2008
Dwg No.:	A4061E-06

**FIGURE 6**

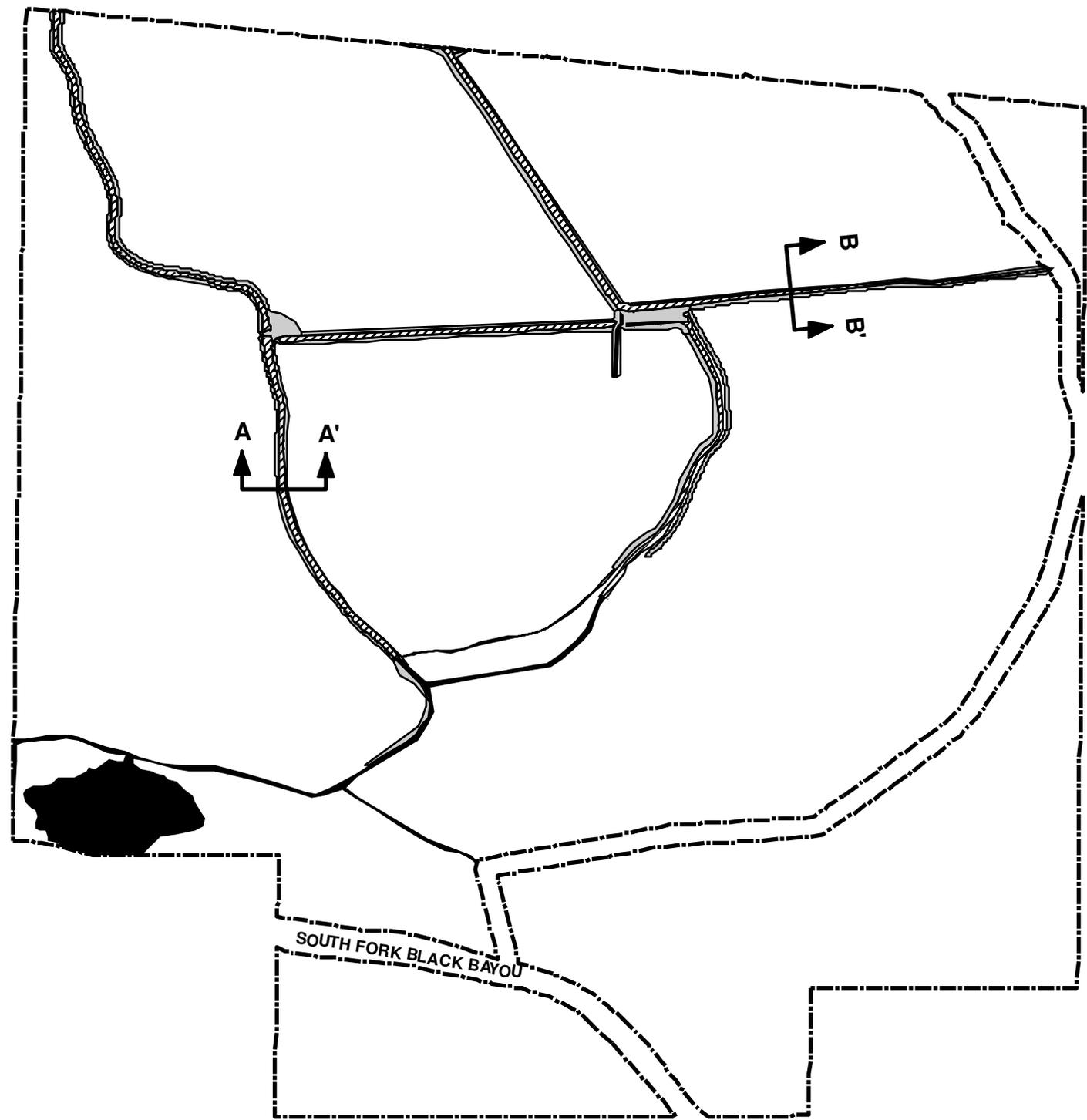
A4061E-06-06-01.D WETL

## **APPENDIX B**

2692000.000000 2693000.000000 2694000.000000 2695000.000000 2696000.000000

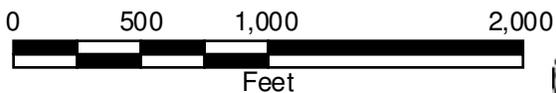
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563000.000000  
562000.000000  
561000.000000  
560000.000000  
559000.000000

564000.000000  
563000.000000  
562000.000000  
561000.000000  
560000.000000  
559000.000000



**Legend**

-  Proposed Conservation Servitude (587.5 acres)
-  Other Waters to be Filled (6.9 acres)
-  Other waters to be Avoided (9.7 acres)



**Reference**

COORDINATE SYSTEM:NAD 83 STATE PLANE LOUISIANA SOUTH  
FIPS (1702) FEET



**THIRD LOUISIANA RESOURCE, LLC**

BATON ROUGE, LOUISIANA  
PETIT BOIS MITIGATION BANK

**PLAN VIEW**

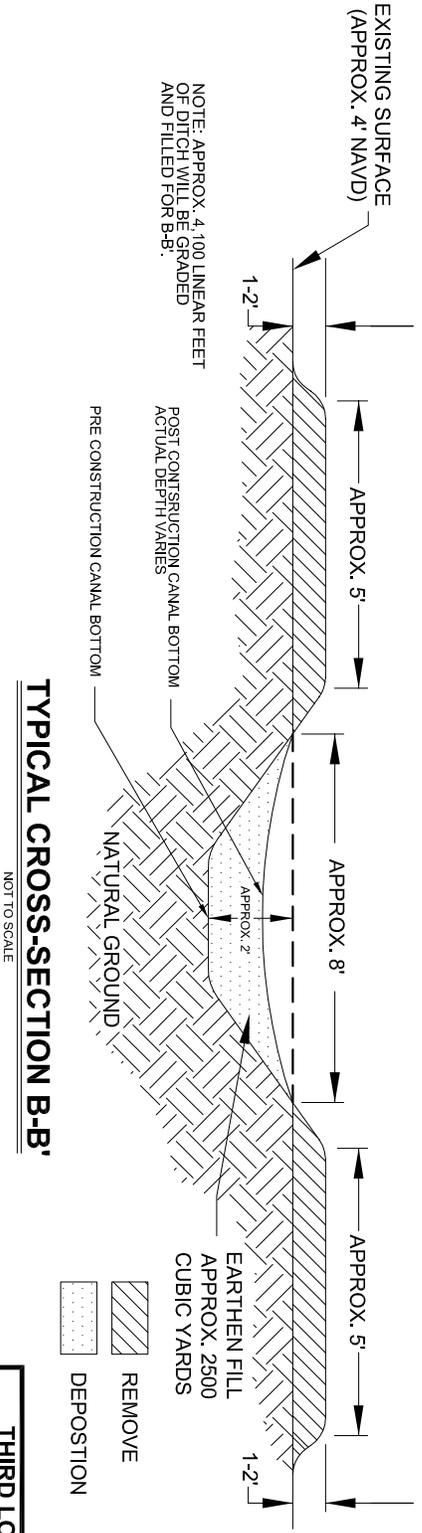
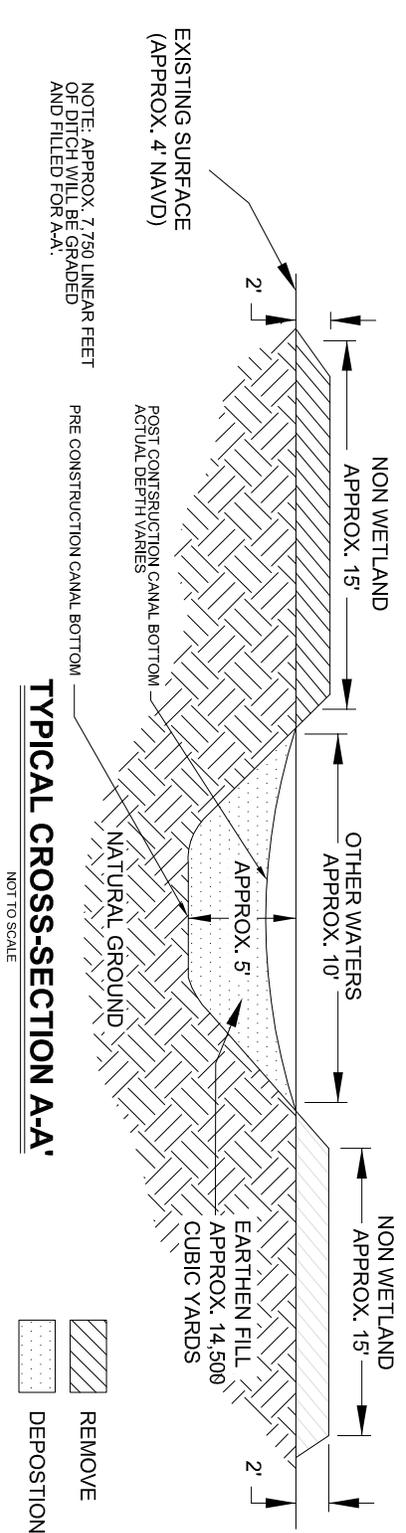
CAMERON PARISH



**ASSOCIATES, LLC**  
ENVIRONMENTAL & ENGINEERING  
CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	LJW
Approved:	TEW
Date:	11/25/2008
Dwg. No.:	A4061E-48

**FIGURE 3**



**NOTES:**  
1. ELEVATIONS IN NAVD FROM LIDAR.

<b>THIRD LOUISIANA RESOURCE, LLC</b>	
BATON ROUGE, LOUISIANA	
PETIT BOIS MITIGATION BANK PROSPECTUS	
<b>CROSS-SECTIONS</b>	
CAMERON PARISH, LA	
Drawn:	LJW/JCAD
GT Checked:	-
Checked:	
Approved:	
Date:	11/19/08
Dwg. No.:	A4061E-35
<b>FIGURE 8</b>	



**CK ASSOCIATES, LLC**  
ENVIRONMENTAL & ENGINEERING CONSULTANTS

## **APPENDIX C**

**Table 1: Calcasieu Saltwater Barrier Channel, Tidal Gage Data 2008**

<b>Month</b>	<b>Avg. Monthly Water Level (ft.)</b>	<b>Min. Monthly Water Level (ft.)</b>	<b>Max. Monthly Water Level (ft.)</b>	<b>Average Montly Water Level Range</b>
January	1.51	-0.17	2.69	2.86
February	1.60	0.11	2.88	2.77
March	No Data	No Data	No Data	No Data
April	1.78	0.48	2.86	2.38
May	1.91	0.82	2.55	1.73
June	1.80	1.10	2.83	1.73
July	1.73	0.55	2.26	1.71
August	1.43	0.83	2.07	1.24
September*	2.64	0.03	9.81	9.78
October	1.73	0.79	2.64	1.85
November	1.44	0.57	2.39	1.82
December	1.40	0.65	2.00	1.35
		<b>Avg. Yearly Min.</b>	<b>Avg. Yearly Max.**</b>	
		0.52	2.52	

Notes:

1) Data converted from MLG (Mean Low Gulf) to NAVD88 (1988 North American Vertical Datum, 1.07ft. conversion factor).

2) Source: [www.rivergauges.com](http://www.rivergauges.com)

(<http://www2.mvr.usace.army.mil/WaterControl/shefdata2.cfm?sid=73472&d=345&dt=E>)

\* The data for the month of September includes the storm events of Ike and Gustav.

\*\*The Avg. Yearly Max. does not include the months of September and March.

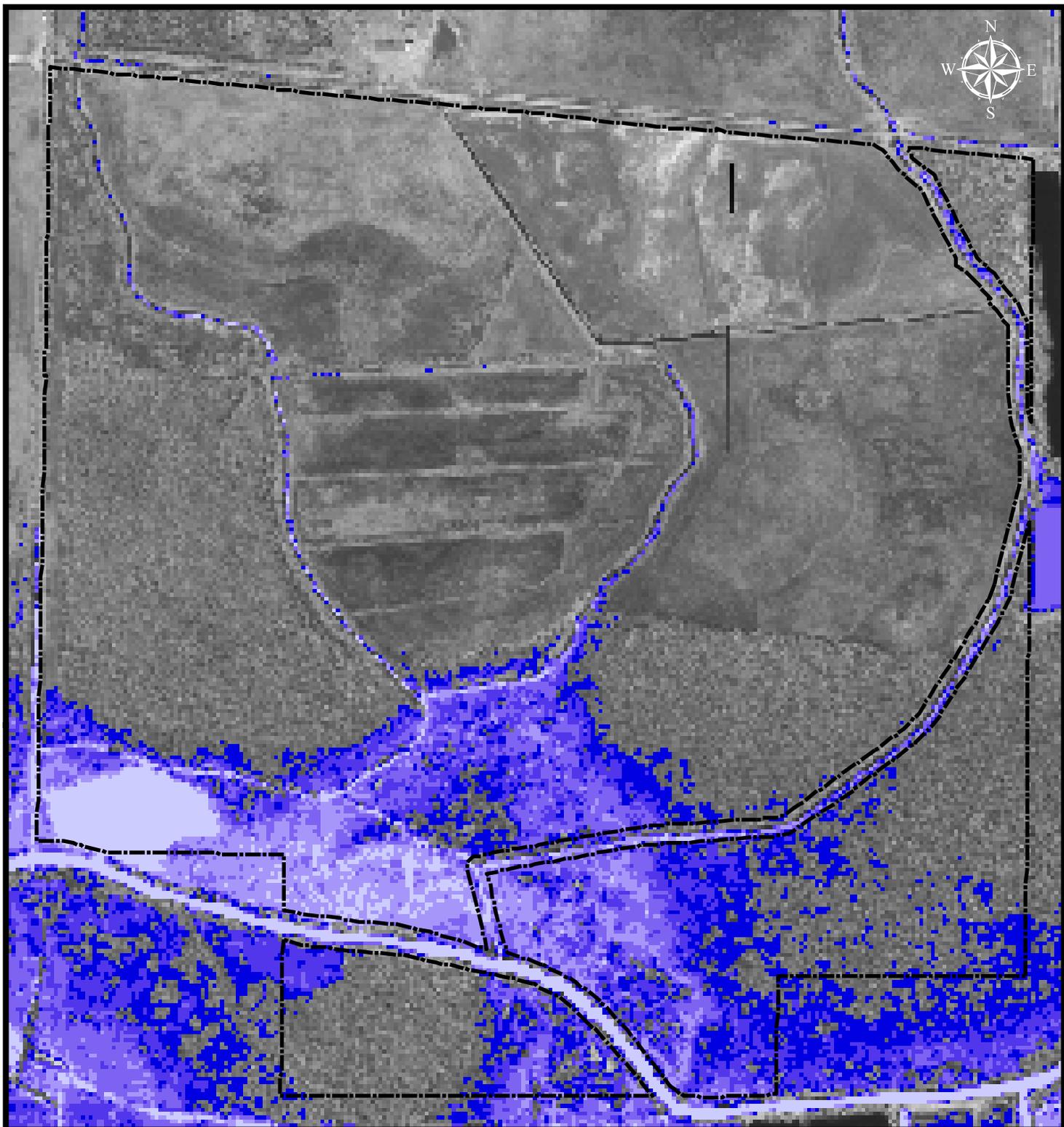
Date / Time	Elevation (Ft MLG)										
1/15/2008 23:00	2.26	2/15/2008 23:00	2.7	3/15/2008 23:00	2.45	4/15/2008 23:00	1.98	5/15/2008 23:00	2.41	6/15/2008 23:00	2.07
1/15/2008 22:00	2.19	2/15/2008 22:00	2.65	3/15/2008 22:00	2.46	4/15/2008 22:00	1.98	5/15/2008 22:00	2.49	6/15/2008 22:00	2.03
1/15/2008 21:00	2.24	2/15/2008 21:00	2.65	3/15/2008 21:00	2.37	4/15/2008 21:00	2	5/15/2008 21:00	2.64	6/15/2008 21:00	1.96
1/15/2008 20:00	2.2	2/15/2008 20:00	2.74	3/15/2008 20:00	2.55	4/15/2008 20:00	2.13	5/15/2008 20:00	2.77	6/15/2008 20:00	2.19
1/15/2008 19:00	2.1	2/15/2008 19:00	2.68	3/15/2008 19:00	2.58	4/15/2008 19:00	2.28	5/15/2008 19:00	2.84	6/15/2008 19:00	2.22
1/15/2008 18:00	2.17	2/15/2008 18:00	2.65	3/15/2008 18:00	2.53	4/15/2008 18:00	2.01	5/15/2008 18:00	2.71	6/15/2008 18:00	2.05
1/15/2008 17:00	2.12	2/15/2008 17:00	2.66	3/15/2008 17:00	2.51	4/15/2008 17:00	1.97	5/15/2008 17:00	2.77	6/15/2008 17:00	1.99
1/15/2008 16:00	2.1	2/15/2008 16:00	2.65	3/15/2008 16:00	2.51	4/15/2008 16:00	2.03	5/15/2008 16:00	2.71	6/15/2008 16:00	1.8
1/15/2008 15:00	2.08	2/15/2008 15:00	2.63	3/15/2008 15:00	2.33	4/15/2008 15:00	1.92	5/15/2008 15:00	2.76	6/15/2008 15:00	2.1
1/15/2008 14:00	2.15	2/15/2008 14:00	2.4	3/15/2008 14:00	2.44	4/15/2008 14:00	1.85	5/15/2008 14:00	2.69	6/15/2008 14:00	2.23
1/15/2008 13:00	2.26	2/15/2008 13:00	2.33	3/15/2008 13:00	2.4	4/15/2008 13:00	1.92	5/15/2008 13:00	2.7	6/15/2008 13:00	2.05
1/15/2008 12:00	2.13	2/15/2008 12:00	2.24	3/15/2008 12:00	2.31	4/15/2008 12:00	2.05	5/15/2008 12:00	2.68	6/15/2008 12:00	2.14
1/15/2008 11:00	1.97	2/15/2008 11:00	2.06	3/15/2008 11:00	2.23	4/15/2008 11:00	1.98	5/15/2008 11:00	2.73	6/15/2008 11:00	2.11
1/15/2008 10:00	1.95	2/15/2008 10:00	2.08	3/15/2008 10:00	2.12	4/15/2008 10:00	1.85	5/15/2008 10:00	2.78	6/15/2008 10:00	2.13
1/15/2008 9:00	1.92	2/15/2008 9:00	2.04	3/15/2008 9:00	2.46	4/15/2008 9:00	1.88	5/15/2008 9:00	2.54	6/15/2008 9:00	2.06
1/15/2008 8:00	2.12	2/15/2008 8:00	2.06	3/15/2008 8:00	2.17	4/15/2008 8:00	1.83	5/15/2008 8:00	2.63	6/15/2008 8:00	2
1/15/2008 7:00	2.06	2/15/2008 7:00	2.7	3/15/2008 7:00	2.21	4/15/2008 7:00	1.71	5/15/2008 7:00	2.75	6/15/2008 7:00	1.95
1/15/2008 6:00	2.17	2/15/2008 6:00	2.18	3/15/2008 6:00	2.55	4/15/2008 6:00	1.9	5/15/2008 6:00	2.74	6/15/2008 6:00	2.04
1/15/2008 5:00	1.88	2/15/2008 5:00	2.27	3/15/2008 5:00	2.22	4/15/2008 5:00	1.95	5/15/2008 5:00	2.56	6/15/2008 5:00	2.11
1/15/2008 4:00	1.83	2/15/2008 4:00	2.33	3/15/2008 4:00	2.42	4/15/2008 4:00	1.85	5/15/2008 4:00	2.54	6/15/2008 4:00	2.07
1/15/2008 3:00	1.9	2/15/2008 3:00	2.76	3/15/2008 3:00	2.47	4/15/2008 3:00	1.86	5/15/2008 3:00	2.73	6/15/2008 3:00	2.1
1/15/2008 2:00	1.97	2/15/2008 2:00	2.5	3/15/2008 2:00	2.62	4/15/2008 2:00	1.72	5/15/2008 2:00	2.46	6/15/2008 2:00	2.05
1/15/2008 1:00	2.16	2/15/2008 1:00	2.6	3/15/2008 1:00	2.54	4/15/2008 1:00	1.75	5/15/2008 1:00	2.32	6/15/2008 1:00	2.07
1/15/2008 0:00	2.29	2/15/2008 0:00	2.63	3/15/2008 0:00	2.57	4/15/2008 0:00	1.69	5/15/2008 0:00	2.33	6/15/2008 0:00	2.11

Max	2.29	Max	2.76	Max	2.62	Max	2.28	Max	2.84	Max	2.23
Min	1.83	Min	2.04	Min	2.12	Min	1.69	Min	2.32	Min	1.8
Difference	0.46	Difference	0.72	Difference	0.5	Difference	0.59	Difference	0.52	Difference	0.43

Avg Max 2.9525  
 w/o Sept 2.60364  
 Avg Min 2.225  
 w/o Sept 1.94909  
 Avg Difference 0.7275  
 w/o September 0.65455

Date / Time	Elevation (Ft MLG)	Date / Time	Elevation (Ft MLG)	Date / Time	Elevation (Ft MLG)	Date / Time	Elevation (Ft MLG)	Date / Time	Elevation (Ft MLG)	Date / Time	Elevation (Ft MLG)
7/15/2008 23:00	2.03	8/15/2008 23:00	2.48	9/15/2008 23:00	5.26	10/15/2008 23:00	3.21	11/15/2008 23:00	2.03	12/10/2008 23:00	1.51
7/15/2008 22:00	1.96	8/15/2008 22:00	2.34	9/15/2008 22:00	5.34	10/15/2008 22:00	3.35	11/15/2008 22:00	2.12	12/10/2008 22:00	1.62
7/15/2008 21:00	2.05	8/15/2008 21:00	2.22	9/15/2008 21:00	5.43	10/15/2008 21:00	3.36	11/15/2008 21:00	2.16	12/10/2008 21:00	1.6
7/15/2008 20:00	2.31	8/15/2008 20:00	2.38	9/15/2008 20:00	5.52	10/15/2008 20:00	3.4	11/15/2008 20:00	2.11	12/10/2008 20:00	1.61
7/15/2008 19:00	2.31	8/15/2008 19:00	2.49	9/15/2008 19:00	5.65	10/15/2008 19:00	3.35	11/15/2008 19:00	2.06	12/10/2008 19:00	1.69
7/15/2008 18:00	2.33	8/15/2008 18:00	2.39	9/15/2008 18:00	5.7	10/15/2008 18:00	3.52	11/15/2008 18:00	2.03	12/10/2008 18:00	1.6
7/15/2008 17:00	2.5	8/15/2008 17:00	2.35	9/15/2008 17:00	5.76	10/15/2008 17:00	3.32	11/15/2008 17:00	2.1	12/10/2008 17:00	1.64
7/15/2008 16:00	2.38	8/15/2008 16:00	2.36	9/15/2008 16:00	5.59	10/15/2008 16:00	3.32	11/15/2008 16:00	2.08	12/10/2008 16:00	1.63
7/15/2008 15:00	2.2	8/15/2008 15:00	2.41	9/15/2008 15:00	5.51	10/15/2008 15:00	3.15	11/15/2008 15:00	1.99	12/10/2008 15:00	1.65
7/15/2008 14:00	2.17	8/15/2008 14:00	2.39	9/15/2008 14:00	5.69	10/15/2008 14:00	2.99	11/15/2008 14:00	1.88	12/10/2008 14:00	1.59
7/15/2008 13:00	2.17	8/15/2008 13:00	2.68	9/15/2008 13:00	5.7	10/15/2008 13:00	2.99	11/15/2008 13:00	2.14	12/10/2008 13:00	1.66
7/15/2008 12:00	2.15	8/15/2008 12:00	2.26	9/15/2008 12:00	5.84	10/15/2008 12:00	2.99	11/15/2008 12:00	1.93	12/10/2008 12:00	1.57
7/15/2008 11:00	2.17	8/15/2008 11:00	2.31	9/15/2008 11:00	5.77	10/15/2008 11:00	3.1	11/15/2008 11:00	1.49	12/10/2008 11:00	1.59
7/15/2008 10:00	2.25	8/15/2008 10:00	2.44	9/15/2008 10:00	5.84	10/15/2008 10:00	2.99	11/15/2008 10:00	2.05	12/10/2008 10:00	1.68
7/15/2008 9:00	2.32	8/15/2008 9:00	2.37	9/15/2008 9:00	5.84	10/15/2008 9:00	3.14	11/15/2008 9:00	1.73	12/10/2008 9:00	1.63
7/15/2008 8:00	2.31	8/15/2008 8:00	2.08	9/15/2008 8:00	5.96	10/15/2008 8:00	3.25	11/15/2008 8:00	2.26	12/10/2008 8:00	1.72
7/15/2008 7:00	2.31	8/15/2008 7:00	2.23	9/15/2008 7:00	6.3	10/15/2008 7:00	3.32	11/15/2008 7:00	2.01	12/10/2008 7:00	1.92
7/15/2008 6:00	2.28	8/15/2008 6:00	2.25	9/15/2008 6:00	6.41	10/15/2008 6:00	3.34	11/15/2008 6:00	2.32	12/10/2008 6:00	1.98
7/15/2008 5:00	2.3	8/15/2008 5:00	2.3	9/15/2008 5:00	6.43	10/15/2008 5:00	3.32	11/15/2008 5:00	2.27	12/10/2008 5:00	2.05
7/15/2008 4:00	2.09	8/15/2008 4:00	2.34	9/15/2008 4:00	6.49	10/15/2008 4:00	3.31	11/15/2008 4:00	2.54	12/10/2008 4:00	2.14
7/15/2008 3:00	1.9	8/15/2008 3:00	2.35	9/15/2008 3:00	6.55	10/15/2008 3:00	3.26	11/15/2008 3:00	2.57	12/10/2008 3:00	2.17
7/15/2008 2:00	2.05	8/15/2008 2:00	2.37	9/15/2008 2:00	6.61	10/15/2008 2:00	3.27	11/15/2008 2:00	2.65	12/10/2008 2:00	2.18
7/15/2008 1:00	1.57	8/15/2008 1:00	2.33	9/15/2008 1:00	6.68	10/15/2008 1:00	3.26	11/15/2008 1:00	2.59	12/10/2008 1:00	2.25
7/15/2008 0:00	1.66	8/15/2008 0:00	2.36	9/15/2008 0:00	6.79	10/15/2008 0:00	3.31	11/15/2008 0:00	2.59	12/10/2008 0:00	2.27

Max	2.5 Max	2.68 Max	6.79 Max	3.52 Max	2.65 Max	2.27
Min	1.57 Min	2.08 Min	5.26 Min	2.99 Min	1.49 Min	1.51
Difference	0.93 Difference	0.6 Difference	1.53 Difference	0.53 Difference	1.16 Difference	0.76



**Legend**

-  Proposed Conservation Servitude
-  0 - 0.5
-  0.5 - 1
-  1 - 1.5
-  1 - 2
-  2 - 2.5



**Reference**

- 1) BASE MAP 2005 DIGITAL ORTHOPHOTO, LAKE CHARLES SW QUAD
- 2) CONTOURS DERIVED FROM DIGITAL ELEVATION MODELS, "LAKE CHARLES, SW" QUAD, NAVD88 FEET



**THIRD LOUISIANA RESOURCE, LLC**

BATON ROUGE, LOUISIANA

PETIT BOIS MITIGATION PROSPECTUS

**DEM CONTOURS**

CAMERON PARISH



**ASSOCIATES, LLC**  
ENVIRONMENTAL & ENGINEERING  
CONSULTANTS

Drawn:	BLN/AV9.2
Checked:	LJW
Approved:	TEW
Date:	12/11/2008
Dwg. No.:	A4061E-55

**FIGURE 1**