JOINT PUBLIC NOTICE

November 10, 2014

United States Army
Corps of Engineers
New Orleans District
Regulatory Branch
Post Office Box 60267
New Orleans, La. 70160-0267

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Project Manager
Jacqueline Farabee
Permit Application Number
MVN-2014-02546 MR

State of Louisiana
Department of Environmental Quality
Post Office Box 4313
Baton Rouge, La. 70821-4313
Attn: Water Quality Certifications

(225) 219-3225/FAX (225) 325-8250
Project Manager
Elizabeth Johnson
WQC Application Number
WQC # 141106-01

Interested parties are hereby notified that a permit application has been received by the New Orleans District of the U.S. Army Corps of Engineers pursuant to: [ ] Section 10 of the Rivers and Harbors Act of March 3, 1899 (30 Stat. 1151; 33 USC 403); and/or [X] Section 404 of the Clean Water Act (86 Stat. 816; 33 USC 1344).

Application has also been made to the Louisiana Department of Environmental Quality, for a Water Quality Certification (WQC) in accordance with statutory authority contained in Louisiana Revised Statutes of 1950, Title 30, Chapter 11, Part IV, Section 2074 A(3) and provisions of Section 401 of the Clean Water Act (P.L.95-17).

WALDHEIM MITIGATION BANK IN ST. TAMMANY PARISH

NAME OF APPLICANT: All State Financial Company, LLC, c/o Biological Surveys, Inc. P.O. Box 94, Covington, LA 70434 (TBrown52@bellsouth.net)

DESCRIPTION: Removal of three 36-inch culverts and surrounding fill (for a distance of approximately 40 feet in length), construction of a low water crossing , removal of approximately 17 cubic yards of fill currently blocking the flow of the Abita Creek and redistribution of excavated material on the site. All work is being done to restore hydrology to the area for the purpose of constructing a mitigation bank.

LOCATION: The site is located in Covington, Louisiana approximately 1.75 miles north of the LA 21/ LA 1083 intersection, in St. Tammany Parish at Latitude 30.560473 N, Longitude -89.981958 W. The Project is located within the Liberty Bayou-Tchefuncte River Watershed, Hydrologic Unit 08090201.

The comment period for the Department of the Army Permit and the Louisiana Department of Environmental Quality WQC will close **20 days** from the date of this joint public notice. Written comments, including suggestions for modifications or objections to the proposed work, stating reasons thereof, are being solicited from anyone having interest in this permit and/or this WQC request and must be mailed so as to be received before or by the last day of the comment period. Letters concerning the Corps of Engineers permit application must reference the applicant's name and the Permit Application Number, and be mailed to the Corps of Engineers at the address above, **ATTENTION: REGULATORY BRANCH**. Similar letters concerning the Water Quality Certification must reference the applicant's name and the WQC Application

number and be mailed to the Louisiana Department of Environmental Quality at the address above.

The application for this proposed project is on file with the Louisiana Department of Environmental Quality and may be examined during weekdays between 8:00 a.m. and 5:00 p.m. Copies may be obtained upon payment of costs of reproduction.

Corps of Engineers Permit Criteria

The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people.

The U.S. Army Corps of Engineers is soliciting comments from the public, federal, state, and local agencies and officials, Indian Tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the U.S. Army Corps of Engineers to determine whether to make, modify, condition, or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

No properties listed on the National Register of Historic Places are near the proposed work. The possibility exists that the proposed work may damage or destroy presently unknown archeological, scientific, prehistorical, historical sites, or data. Copies of this notice are being sent to the State Archeologist and the State Historic Preservation Officer.

Our initial finding is that the proposed work would neither affect any species listed as endangered by the U.S. Departments of Interior or Commerce, nor affect any habitat designated as critical to the survival and recovery of any endangered species.

This notice initiates the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. The applicant's proposal would result in the destruction or alteration of N/A acre(s) of EFH utilized by various life stages of red drum and penaeid shrimp. Our initial determination is that the proposed action would not have a substantial adverse impact on EFH or federally managed fisheries in the Gulf of Mexico. Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the National Marine Fisheries Service.

If the proposed work involves deposits of dredged or fill material into navigable waters, the evaluation of the probable impacts will include the application of guidelines established by the Administrator of the Environmental Protection Agency. Also, a certification that the proposed

activity will not violate applicable water quality standards will be required from the Department of Environmental Quality, before a permit is issued.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing.

You are requested to communicate the information contained in this notice to any other parties whom you deem likely to have interest in the matter.

The applicant has certified that the proposed activity described in the application complies with and will be conducted in a manner that is consistent with the Louisiana Coastal Resources Program. The Department of the Army permit will not be issued unless the applicant received approval or a waiver of the Coastal Use Permit by the Department of Natural Resources.

Martin S. Mayer
Chief, Regulatory Branch

Attachments

WALDHEIM MITIGATION BANK PROSPECTUS

ST. TAMMANY PARISH, LOUISIANA

OCTOBER 2014

Sponsor: ASFC, LLC
321 Veterans Blvd., Suite 201
Metairie, LA 70005

Agent: Biological Surveys Inc.
P O Box 94
Covington, LA 70433

Consultant: The Nature Conservancy
P O Box 4125
Baton Rouge, LA 70821

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1.0 INTRODUCTION

This Waldheim Mitigation Bank Prospectus has been prepared by The Nature Conservancy (hereinafter TNC) for ASFC, LLC (hereinafter Sponsor) in accordance with the 2008 Final Rule "Compensatory Mitigation for Losses of Aquatic Resources," Department of the Army, Corps of Engineers (33 CFR Part 332, Federal Register 2008), and with the guidance provided by the New Orleans District Corps of Engineers (CEMVN) via the Corps' Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS) website (ribits.usace.army.mil/). Content in this Prospectus follows that required in 33 CFR Part 332.8(d)(2) to provide a summary of the information regarding the proposed Waldheim Mitigation Bank at a sufficient level of detail to support informed public and Interagency Review Team (IRT) comment. A mitigation bank is a site where resources (e.g., wetlands, streams, riparian areas) are restored, established, enhanced and/or preserved for the purpose of providing compensatory mitigation for unavoidable impacts to waters of the US that result from activities authorized by US Department of Army permits under Section 404 of the Clean Water Act and/or Section 10 or the Rivers and Harbors Act, or other approved environmental requirements.

The proposed Waldheim Mitigation Bank (WMB) is a 1,382-acre site located in northeastern St. Tammany Parish near the community of Waldheim (Figure 1) and contains 991.2 acres of degraded wetlands within a larger 2,200-acre tract owned by the Sponsor and Regent Lands Inc. (Figures 2). The site drains into Abita Creek and is part of the larger Liberty Bayou – Tchefuncte watershed. Rehabilitation through physical, chemical and biological repairing of several aquatic functions will provide pine wetland credits for use for unavoidable, permitted losses of similar wetland habitat types. The Sponsor plans to use a portion of the bank credits for its own mitigation needs and provide the remainder to approved applicants.

1.1 Site Location and Ownership

The WMB is located approximately 6 miles northeast of the Town of Abita Springs near the community of Waldheim, St. Tammany Parish, Louisiana (Figure 1). An iconic feature in the area is the now retired Waldheim Fire Tower located on the Sponsor property. The area in the proposed mitigation bank is approximately 1,382 acres, occupying portions of Sections 26, 34 and 35 in Township 5 South, Range 12 East, and portions of Sections 3, 4 and 10 in Township 6 South, Range 12 East. It is found on the Bush, Louisiana, US Geological Survey 7.5 minute quadrangle (Figure 3a), with the remainder of the Sponsor property also on the Waldheim quadrangle. The Proposed bank has relatively dissected topography, as more clearly shown on 2-foot contour LiDAR imagery (Figure 3b). Coordinates for the approximate center of the proposed bank property are latitude 30° 33' 44.672" North, longitude 89° 58' 41.075" West.

Located within a larger tract owned by the Sponsor and Regent Lands Inc., the bank property is composed primarily of degraded forested wetlands (Figure 4) with a 200-foot-wide outer upland zone along the lower reaches of adjacent slopes ("Wetland Buffer") on most of the bank plus some relatively small upland inclusions (Figure 2). Larger upland zones that lie outside of the proposed mitigation bank have been designated as "Priority Uplands" and may be permanently protected by a conservation servitude that is distinct from the conservation

servitude that will be placed on the bank property (the "Second Conservation Servitude") (see Section 6.4). The Second Conservation Servitude will not be made a part of or a requirement of the proposed mitigation bank. Protection of Priority Uplands, via the Second Conservation Servitude, will further enhance the ability to perform long-term management of the bank (e.g., prescribed burning, invasive plant management, protection of hydrological integrity). It is likely that Priority Uplands will, at a minimum, remain mostly timberland and be subject to management restrictions that are similar to those placed WMB. The objective of providing some form of conservation management on Priority Uplands is to ensure that management of those areas does not conflict with bank goals and objectives. Subject to available funding, Priority Uplands will be restored to their natural habitat of upland longleaf pine woodland. The remainder of the tract, designated as "Secondary Uplands" and "Commercial" areas may also be encumbered by the Second Conservation Servitude that may limit activities on those tracts to further enhance management potential for WMB. Sensitively planned and compatible development may be allowed on Secondary Uplands and Commercial areas (see further discussion in Section 6.4).

Surrounding land use of the proposed Waldheim Mitigation Bank is primarily rural timberland and low-density suburban development (Figure 5). WMB is part of a larger region termed the "Money Hill Conservation Area," which has been recognized by TNC and others as one of the most ecologically important regions in Louisiana and the East Gulf Coastal Plain (see Section 3.3 for further discussion). The Money Hill Conservation Area is considered a conservation priority because 1) it contains one of the last remaining functional sites supporting a mosaic of quality or restorable longleaf pine forests and pine wetlands in southeast Louisiana; 2) it supports the federally-listed gopher tortoise and Louisiana Quillwort, both globally threatened species; 3) it supports at least 4 globally-rare plant communities plus more than 40 state and 10 globally at-risk species of plants and animals, as well as over 120 species of birds, at least 13 of which are considered high conservation priorities in the Partners in Flight (PIF) East Gulf Coastal Plain Bird Conservation Plan; and 4) it is a potential restoration area for the federally-listed Red-cockaded Woodpecker and Dusky Gopher Frog. The MHCA was identified as a high priority in the East Gulf Coastal Plain Ecoregional Plan that includes portions of five states (The Nature Conservancy 1999, 2001a, 2001b).

The conservation area includes over 12,000 acres that are currently under conservation management as mitigation banks or permitee-responsible mitigation areas (Figure 1). Additionally, other private lands within the Conservation Area are enrolled in voluntary conservation agreements with the Louisiana Department of Wildlife and Fisheries ("LDWF"). WMB will become an important component of this conservation area and will contribute significantly to biodiversity and wetland habitat conservation, limit further land fragmentation, contribute to hydrologic restoration within the Abita Creek watershed and facilitate application of prescribed fire on the broader landscape.

1.2 Driving Directions to Site

Driving directions to the WMB are as follows: From I-12 in Covington, LA, travel north approximately 3 miles on US 190 to LA Hwy 21. Go east on LA 21 for approximately 9 miles to WMB access road.

1.3 Current Land Condition

WMB is currently dominated by young thickets of off-site slash and loblolly pine (*Pinus elliottii* and *P. taeda* respectively; Figure 4) in predominantly former longleaf pine (*P. palustris*) habitat (all plant nomenclature herein follows USDA NRCS Plants Database; weblink: http://plants.usda.gov). Other than the bayhead streams and swamps, the site was most recently clear-cut in the early to mid- 1990's. Prior and subsequent fire suppression has allowed for off-site species to dominate the site, including numerous native that now form dense thickets. Current cover, by habitat type (heavily stocked upland pine forest, heavily to moderately encroached wet pine savanna, open pine savanna wetland, bayhead streams and swamps and wild game food plots) is provided in Table 1). See section 3.2.1 below for additional information on current site conditions.

2.0 PROJECT GOALS AND OBJECTIVES

The primary goal of the proposed Waldheim Mitigation Bank project is restoration of 991.2 acres of degraded and highly altered wet pine savanna and associated wetlands and 383.8 acres of non-wet pine savanna buffer, 301 acres of which are within 200 feet of wetlands and 82.8 remaining acres that are more than 200 feet from wetlands (see Wetland Buffer in Table 1 below). Protection, restoration and management of Wetland Buffer are considered necessary to restore and maintain local hydrology and native biodiversity within adjacent wetlands especially due to the large amount of seepage hydrology on the WMB (see Sections 3.1 and 3.2). Once restored, the wetland-upland complex within WMB will support a fully functional, sustainable longleaf pine wetland system similar to that present on the area prior to European settlement.

The Sponsor's restoration work will reverse degradation of the proposed bank and will increase aquatic resource functions by restoring natural composition and structure of indigenous habitats, reintroducing or improving natural processes such as fire and hydrology, and by removing the bank property from commercial forest management and/or residential and commercial development. The latter activities are prevalent in one of the fastest growing parishes in Louisiana (St. Tammany Economic Development Foundation, 2014).

Because WMB will include a significant portion of the upper watershed of Abita Creek, the proposed work will enhance water quality and quantity within Abita Creek and some of its tributaries. Benefits that will accrue from restoration work will include sediment reduction in wetlands and streams, prolonged hydro-periods and floodwater retention, groundwater recharge, stream water quality improvement, wildlife diversity and habitat improvement,

including that for rare and endangered species, and habitat connectivity and sustainability improvement.

Sponsor's proposed work will produce wetland "credits" that result from restoration of wetland structure, composition and processes, wetland plant and animal communities, and hydrology. These credits can be used to help compensate for permitted unavoidable impacts in the area associated with US Army Corps of Engineers (USACE) permits through Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

The primary objective for the WMB will be rehabilitating the composition, structure and functionality of 991.2 acres of degraded wet longleaf pine savannas and associated habitats on the site. There is no doubt that fire-sustained longleaf pine woodlands and savannas historically dominated the local landscape; only bayheads and stream bottoms were spared frequent fires (see discussion under 3.1 below). High quality, functioning longleaf pine wetland natural communities have become very rare in southeast Louisiana and indeed range-wide as a result of increased development, habitat fragmentation, lack of natural fire regimes and other land management activities (Smith 1991). Restoring open pine wetland community composition, structure and functional processes will promote native plant and animal communities indigenous to longleaf pine savanna systems in the area, including an array of grassland birds, many of which are species of conservation concern today (U.S. Fish and Wildlife Service 2008). Restoring key processes (functionality), primarily fire and hydrology, will be instrumental in promoting and maintaining native plant and animal communities, and to allow the area to perform other important wetland functions, such as flood retention, water quality improvement and biological productivity.

Specifically, the project goals and objectives for WMB are to rehabilitate and protect in perpetuity the physical, chemical, and biological functions of longleaf pine savanna wetlands and bayhead streams/swamps on the WMB as follows:

- Rehabilitate open longleaf pine wetland composition and structure important for an extraordinary number of associated plants (many rare, and many endemic or near endemic) and resident and migratory (e.g., migratory birds) wildlife species dependent on open pineland conditions.
- Re-establish surface and ground water hydrology by removal or amelioration of artificial features affecting natural drainage patterns (e.g., old railroad tram line and Abita Creek diversion channels), and by reduction of tree and shrub density across the site (reducing evapotranspiration and increasing water available downslope).
- Replant approximately 795.9 acres of historic longleaf pine savanna wetlands with suitable genetic stock of longleaf pine
- Conduct prescribed burning every 1 to 4 years on all of the bank site (1,375 acres) to rehabilitate and maintain indigenous pine savanna and bayhead composition and structure
- Expand the area already dedicated to pine wetland conservation in the immediate area (5 other pine wetland mitigation banks or mitigation areas exist in the region), thereby creating a relatively large block of close-proximity

conservation lands approaching approximately 14,000 acres in size (including WMB) to help minimize habitat fragmentation, maximize smoke sheds and the ability to conduct prescribed burns, foster connections (i.e., corridors) between extant habitat conservation areas, and prepare for a future surrounding land-use of higher density suburban development

- Improve water quality, promote sediment retention, and reduce non-point source pollution and chemical runoff by habitat and natural processes restoration and removing the area from commercial timber management and/or potential residential and commercial development
- Ensure long-term viability of the project by employing targeted restoration strategies, including:
    - Reliance upon adaptive management as needed as the project progresses and making any mid-course corrections as dictated by restoration results and current research on longleaf pine wetland system restoration practices.
    - Project monitoring at a frequency and intensity to determine if the compensatory mitigation project is on track to meet performance standards and whether management plan modifications are needed.
    - Invasive species control across not only WMB but potentially on adjacent uplands controlled by Sponsor and Regent Lands Inc. and other adjacent private lands.
    - Establishment of financial assurances for long-term management to cover annual expenditures associated with maintenance and management of WMB.
    - Execution of perpetual conservation servitude to provide for long-term bank protection.
    - Possible placement of restrictions on adjacent lands currently owned by Sponsor and Regent Lands Inc. to enhance and/or facilitate management of WMB.

TABLE 1. Existing Habitat Conditions and Proposed Restoration and Mitigation Types on WMB.

Existing Habitat Condition	Proposed Restoration Type	Proposed Mitigation Type	Proposed Mitigation Acres
Moderately encroached wet pine savanna	Wet longleaf pine savanna	Rehabilitation 1	344.8
Heavily encroached wet pine savanna	Wet longleaf pine savanna	Rehabilitation 1	394.9
Open savanna wetland	Wet longleaf pine savanna	Rehabilitation 2	30.2
Bayhead streams and swamps	Bayhead streams/swamps	Rehabilitation 2	158.5
Bayhead streams and swamps	Bayhead streams/swamps	Rehabilitation 1	36.8
Heavily stocked upland pine forest < 200' of wetlands	Upland longleaf pine woodland	Wetland Buffer	301.0
Heavily stocked upland pine forest > 200' of wetlands	Upland longleaf pine woodland	Wetland Buffer	82.8
Food Plots	Wet longleaf pine savanna	Restoration	26.0
Non-mitigation Features	----------	----------	7.0
Total Bank Acres			1,382.0
Total Wet Mitigation Acres			991.2
Total Mitigation Acres (wet plus upland buffer)			1,375.0

3.0 ECOLOGICAL SUITABILITY OF THE SITE

3.1 Historical Ecological Characteristics of the Site

3.1.1 Geology

The proposed Waldheim Mitigation Bank occurs in the East Gulf Coastal Plain ("EGCP") Ecoregion as defined by TNC (TNC 2001a). The EGCP Ecoregion is a portion of Bailey's larger Outer Coastal Plain Mixed Forest Province (Bailey 1994). Ecoregions are defined as broad regions that possess similar soils, topography, plant and animal species, climate, hydrology and other natural processes. The EGCP ecoregion is physically characterized by generally subtle topography, a warm to hot, humid, maritime climate, and soils derived from unconsolidated

sands, silts and clays, transported to the ecoregion by weathering of the Appalachian Mountains and other northern areas. As part of the Southeast Coastal Plain region, other shared features include a high percentage of land area in wetlands, the historically dominant role of frequent fire over a great majority of the landscape, a diversity of river and stream systems and significant large-scale disturbance events (tropical storms/hurricanes).

WMB is located primarily on what has been termed the Pleistocene High Terraces geologic formation that, in Louisiana, extends approximately from WMB northward to the state line with Mississippi and from the Pearl River floodplain west to the Mississippi River floodplain (Snead and McCulloh 1984). This geologic terrace is dissected and relatively hilly in contrast to the adjoining Pleistocene Prairie Terrace to the south which is relatively flat and shows little dissection. The area in St. Tammany Parish where the Prairie Terrace is found is considered part of the Gulf Coast Flatwoods region, which is named for broad expanses of poorly-drained flats that were historically dominated by longleaf pine (Daigle et al. 2006). The close juxtaposition of WMB to the intersection of these two geologic terraces has influenced both hydrology and vegetation, as discussed below.

3.1.2 Historical Habitat Conditions and Hydrology

According to old historical accounts (e.g., Lockett 1874) and early and mid-1800's U.S. Government General Land Office survey records (e.g., Gray 1821) that contain accounts of witness trees and anecdotal observations, the majority of the hills and flats of St. Tammany Parish were dominated by longleaf pine woodlands and savannas (Smith 2004; Daigle et al. 2006). Historically (up until the early 1900's), the majority of WMB supported upland longleaf pine woodlands on upper slopes and ridge tops, wetland longleaf pine savanna habitats on middle and lower slopes and flats and edges of drains, and bayhead streams and swamps along drains and depressional areas (Figure 7; LDWF 2004). All of these types were highly fire-dependent communities, with the exception of the deepest and wettest bayhead swamps and drainages that only burned in the driest of years. Frequent surface fire, burning mainly through the herbaceous litter and pine needles on the ground, was arguably the most significant functional process that created and maintained the composition, structure and character of these habitats.

The original wet longleaf pine savanna habitat of the region was a very open "forest" (canopy cover averaged less than 50% and more appropriately referred to as "woodland" or "savanna"), with the scattered trees almost exclusively longleaf pine, growing over a dense ground cover of grasses, sedges and forbs (Smith 1996). Low tree density in wet pine savannas was probably attributable to a number of wetland site and soil characteristics, among them: 1) longleaf regeneration is impeded by standing water, which precludes seedling establishment (perhaps the most important factor), 2) high water tables and heavy subsoils inhibit deep root development, thereby encouraging shallow rooting of longleaf, making it more prone to wind-throw, and 3) wetlands are not the ideal environment for longleaf, and trees growing there are under stress, making them more susceptible to insect or disease attack.

The hydrology of WMB was driven by rainfall on and above (north of) WMB, and surface-intersecting high water tables and resulting ground water discharge/seepage on slopes. Pine savanna wetlands developed on slopes here and in similar places in the region due to the water table being at or very near the surface over much of the year as ground water discharge/surface seepage, over much of the year.

Approximately 991.2 acres of wetland are found on WMB, with wet longleaf pine savannas estimated to have historically occupied approximately 795.9 acres of that total (Table 1). These wetland areas are today occupied by moderately to heavily encroached and degraded savannas with a moderate to heavy in-growth of off-site pines, hardwoods and brush. Currently, none of WMB is in a longleaf habitat type. Bayhead streams and swamps are estimated to have historically comprised approximately 195.3 acres of the tract.

As discussed above, WMB is located primarily on the Pleistocene High Terraces geologic formation but lies immediately north of the Pleistocene Prairie Terraces formation that underpins the pine flatwoods region of the area (Snead and McCulloh 1984). Being thus positioned, the floristic composition of the wetlands that occupy much of WMB is strongly influenced by the flora of the flatwoods, with numerous species in common, including a wide variety of sedges, grasses and characteristic wetland forbs, including pitcher plants (*Sarracenia* spp.).

The historic wet longleaf pine savannas on the tract occurred on gentle mid and lower slopes and almost flat areas fringing bayhead forests along drains. These slopes and "flats" are mapped as Savannah and Stough soils and to a limited degree as Myatt soils (USDA Soil Conservation Service 1990). Both Savannah and Stough soils are officially considered non-hydric but areas mapped as having these soil types in St. Tammany Parish are commonly recognized by experts to support jurisdictional wetlands in many places in the local region (e.g., personal communication, John Bruza, retired wetland scientist, CEMVN). Pine savanna wetlands developed on slopes due to the water table being at or very near the surface (often as ground water discharge/surface seepage) over much of the year. Direct local upslope precipitation and downslope at/near surface water tables for much of the year is believed to be the primary driver of this wetland development. For this reason all of the uplands within the bank boundary are considered important buffers to help maintain the hydrology for existing wetlands downslope.

Bayhead streams and swamps occupied the topographically lowest settings on WMB. These are wet floodplain habitats dominated by a particular set of wet-site hardwoods, slash pine and shrubs, in an assemblage quite distinct from bottomland hardwood forest found along larger streams in the general area. Streams along which bayheads occur on the property include Abita Creek, Tenmile Branch, Stratman Branch, Coon Fork, and Big Branch and tributaries thereof.

3.1.3 Historical Fire Regime

Frequent fire from lightning and burning by Native Americans created and maintained longleaf pine savannas and associated habitats in the longleaf pine range of the south (Garren 1943), and certainly on the land that is now WMB. Fires are estimated to have occurred on the order of once every 1 to 4 years in the upland longleaf pine woodlands and wet longleaf savannas of the area. Some of these fires burned up to or very close to active channels of drains, which naturally confined most trees and shrubs of the bayhead community to a relatively narrow zone flanking those drains. The nature of vegetation and the fuels they provide, combined with the usual wetness of bayheads, act to reduce fire frequency and intensity, and the habitat typically burned all the way to the stream channel only during periods of extended drought. Thus, these habitats are typically dominated by more fire-sensitive hardwoods with scattered slash pine, rather than longleaf pine.

3.1.4 Previous land uses of the site and adjacent properties

Following the harvest of the virgin timber early in the 20th Century, the property was managed primarily as working timberland, with the last timber harvest occurring in the early to mid-1990's (see young regenerating forest in Figures 9a and 9b and photographs in Appendix 1). It is probable that grazing of cattle and perhaps horses and/or sheep occurred in the 1800's and early 1900's, as much of the parish was subject to open grazing at that time. WMB has been used for recreational hunting, mainly for white-tailed deer, for many years. Other than periodic timber harvests and hunting, little else has occurred on the WMB property in recent years.

The vast majority of adjacent and surrounding lands were historically occupied by longleaf pine woodlands in the higher hills and wet longleaf pine savannas on slopes and flats of the region. As occurred on WMB, the original forests of longleaf pine were mostly harvested in the early 1900's, over about a 30 year period, after which time the virgin forests in the region had been essentially liquidated (Smith 2002). Following harvest of the virgin timber, these areas slowly became more populated as a greater number of people settled in the area. Plantations of tung-oil tree (*Vernicia* [=*Aleurites*] *fordii*) were established in many places in the local region in the 1930's and 1940's, but these plantations were abandoned once cheaper petroleum based products were developed to use in the place of tung oil.

Commercial forest management, comprised of naturally regenerated forests or plantations of pines other than longleaf, eventually became a major practice on much of the land on and near WMB. In more recent years, residential development has increased in the general vicinity. Adjacent lands encompass relatively low-density residential developments, but also include Money Hill Golf and Country Club to the east and southeast, and Grande Hills and Whippoorwill subdivisions to the north and northeast across Louisiana Highway 21. Other rural residences and managed timber land dominate the remainder of the area.

3.2 Current Ecological Characteristics of the Site

3.2.1. Current Site Conditions

The general current site conditions on the proposed Waldheim Mitigation Bank are shown in Figures 6a and 6b, with example photographs in Appendix 1. The area is currently in young timberland that is used primarily for recreational hunting, mainly for white-tailed deer. The previous forest that occupied the hills and slopes was removed during a series of harvests over the past century, most recently by a clear-cut harvest in the early to mid-1990's (Figure 9b). The forest currently present arose by natural regeneration after the most recent harvest and is characterized by extensive young pine thickets of slash pine and loblolly pine in both the upland (non-wet) and wetland areas on slopes and flats leading to bayhead drains (See Figure 4 for aerial photograph that illustrates generally high forest cover).

The great majority of pines on WMB are less than 12 inches diameter at breast height (dbh) and are very closely spaced as a rule (> 400 stems per acre estimated on average). Loblolly pine tends to mix equally with slash pine in the non-wet uplands, but slash pine becomes dominant to exclusive in the wetlands downslope. Longleaf pine, the once dominant tree in this landscape in both uplands and wetlands, excluding bayhead areas, is exceedingly scarce across the area. Hardwoods of various sizes, with the great majority being small trees < 6 inches dbh, are mixed in with the pines on the hills and on the wetland slopes. Midstory and understory brush is very dense in most places, and forms a more or less continuous cover over much of the area.

Wetlands found on slopes and flats can be generally characterized as being either heavily or moderately encroached savanna wetlands, with heavy to moderate growth of pines, hardwoods and brush (See Figure 6b and Appendix 1). These types are present in more or less equal proportions on WMB. Heavily encroached pine savanna zones are basically dense thickets of young pine and hardwoods mixed (approaching 100% canopy cover) with various shrub species. Essentially no native ground cover of grasses, sedges and forbs is apparent in heavily encroached stands. Moderately encroached areas are not as heavily stocked with trees and brush, though tree and shrub cover is still relatively dense and approaches 75% in many places. Remnant native ground cover species, including sedges, grasses and forbs are present in these areas. There is one relatively limited area (ca. 30 acres) that may be termed "open savanna wetland" that has significantly less tree and shrub cover and a more developed native ground cover.

The majority of these historic savanna wetlands on slopes and flats at WMB are found on areas mapped as having Savannah and Stough soils, both of which are officially considered non-hydric, but are known to support jurisdictional wetlands where they are mapped in many places within the local region. All of these wetlands were historically open longleaf pine savanna, with longleaf as the dominant tree, and supported a diverse ground cover of grasses, sedges, pitcher plants and other characteristic pine wetland forbs. Primarily due to lack of fire and forest

management, these wetland zones now support habitats that differ greatly from historical conditions. Due to unnaturally high tree and shrub stocking rates, high levels of evapotranspiration have caused soils to be drier than they would have been otherwise, including those in the upland buffers.

Bayhead streams and swamps occupy the topographically lowest settings on the tract, and are basically intact, although they likely occupy a larger footprint than they did historically, due to long-term fire exclusion. Those hardwood-dominated habitats exhibit few, if any, sign of recent logging history (although very old stumps indicate logging decades ago). Streams along which they occur on the property include the main channels and tributaries of Tenmile Branch, Stratman Branch, Abita Creek, Coon Fork and Big Branch. Bayhead streams are relatively narrow (averaging 50 – 100 yards wide) hardwood-dominated wetland forests along very small drains, whereas bayhead swamps are broader, more extensively developed wetland forests along somewhat larger drains and associated floodplains. Both settings support essentially the same types of hardwoods, shrubs and herbs, and are characteristically dominated by swamp black gum (*Nyssa biflora*), sweet bay magnolia (*Magnolia virginiana*), red maple (*Acer rubrum*), laurel oak (*Quercus laurifolia*) and tulip poplar (*Liriodendron tulipifiera*). Slash pine forms a minor component and pond cypress (*Taxodium ascendens*) is very rare in the bayheads.

Invasive, non-native (exotic) species appear to be present on the property only to a limited extent at this time. The species observed that are of most concern, based on potential to spread and become increasingly problematic, are a) cogon grass (*Imperata brasiliensis/cylindrica),* which was noted in 1 food plot on the tract but is abundant in nearby pastures, b) Chinese tallow tree (*Triadica sebifera*) and privet hedge (*Ligustrum sinense*), which were both noted along the edges of bayhead streams/swamps, and occasionally (especially privet) found in upland forests and c) Japanese climbing fern (*Lygodium japonicum)*, which was noted in a few places along interior roads. Tung-oil tree is occasional in the uplands on the tract, but is not considered a wetland invasive. No sign of feral hogs (*Sus scrufa*) was noted on the property.

Food plots, established by deer hunters, are very common on WMB. Typically, there are 3 to 6 plots along "shooting lanes" per location, often running in radial fashion from a centrally located deer hunting stand. These plots range from approximately 0.5 acres up to approximately 2 acres in total area occupied per location, though a few are larger. These plots have been cleared of trees and brush, and most appear to be disked annually in late summer/fall and planted with crops attractive to deer (e.g., clover, peas, oats). Most of these plot locations are located in savanna wetlands.

There are two main access roads from LA Highway 21 on upland ridges through the Priority Uplands. A number of unimproved dirt access roads traverse WMB. Most are primitive woods trails used by all-terrain vehicles (ATV's) that depart the main access roads in numerous places to access deer hunting stands and food plots.

3.2.2. Soils, Topography and Elevation

According to the most recent soil survey of St. Tammany Parish (USDA 1990), soils present on WMB that support wetlands include, in alphabetical order:

- Myatt fine sandy loam (hydric)
- Myatt fine sandy loam, frequently flooded (hydric)
- Ouachita and Bibb soils, frequently flooded (hydric)
- Savannah fine sandy loam (officially designated non-hydric but known to support wetlands where it is mapped in many locations, particularly on hillside ground water discharge/seepage zones)
- Stough fine sandy loam (officially designated non-hydric but known to support wetlands in many locations where it is mapped)

Of these, pine savanna wetlands on WMB occur primarily on Savannah (discharge/seepage zones) and Stough soils, and to a limited degree on Myatt soils. Non-wet uplands on WMB are primarily mapped as occurring on Savannah (minimal slope) soils (see Figure 10). Bayhead streams and swamps are found on Myatt fine sandy loam, frequently flooded, and to a very limited degree on Ouachita and Bibb soils, frequently flooded, in the far southeast part of WMB.

Soils at WMB have been influenced by the local topography, which consists of gently rolling hills with relatively broad flats along drainages. Elevation changes on the WMB are significant for the pine flatwoods region, ranging from a high of 108 feet above sea level on the north along LA Highway 21 to a low of 52 feet above sea level on the south (Figure 3b).

3.2.3 Watershed

WMB falls within the Abita River watershed (Hydrologic Unit Code (HUC) 12 Subwatershed: 080902010105; Figure 8). It is part of the larger Liberty Bayou – Tchefuncte Subbasin (HUC 8: 08090201). WMB contains some of the upper reaches of Abita Creek and its tributaries, which form the majority of the headwaters of Abita River, a Louisiana-designated Natural and Scenic Stream (Louisiana Department of Wildlife and Fisheries, 2014b) (Figure 1). Abita Creek works its way south and southwest from WMB and becomes Abita River, which forms a major tributary to the Bogue Falaya River, which in turn is a major tributary to the Tchefuncte River near Covington. Drainages on WMB include Abita Creek and its tributaries that feed into Abita Creek, either on near WMB: Tenmile Branch, Stratman Branch, Coon Fork and Big Branch.

3.2.4 Hydrology

3.2.4.1 Natural hydrology. The hydrology of WMB is driven by rainfall on and above (north of) WMB. This source of water sustains pine savanna wetlands on slopes and flats, and bayhead forests along streams. Pine savanna wetlands developed on slopes and flats here and in similar places in the region due to the water table being at or very near the surface during much of the year, often as groundwater discharge/surface seepage. Direct local precipitation that percolates into the ground along with downslope groundwater discharge at the surface, are believed to be the primary hydrological processes driving wetland development on middle and lower slopes and nearly flat areas flanking streams.

Bayhead streams and swamps occupy the floodplains along drainages on WMB, and are fed primarily by surface water run-off, but perhaps secondarily by ground water discharge at the edge of floodplains. These drainages on WMB are not permanent streams and can dry out during times of drought (often annually). Flooding of bayhead drainages is very rapid and flashy, with waters receding relatively quickly.

3.2.4.2 Current alterations to hydrology. A number of man-made features have altered natural hydrology on WMB (Figure 6a).

Old Railroad Tram. There is an old railroad tram ("dummyline") in the southeastern part of the tract. The tracks of the abandoned tram were originally constructed on a linear earthen berm. The tracks have been removed, but the berm remains and is evidence of logging of the virgin forest early in the 20th Century (Figure 6a). This tram feature was built to allow crossing of Tenmile Branch and the remaining berm is approximately 600 feet long, 2 to 3 feet high and 20 feet wide. Although 6 culverts are present, the berm, which extends across the primary floodplain, impedes normal surface water flow and causes temporary impoundment (days to weeks) of water following major rain events. In addition, culverts focus energy from concentrated water movement that results in some down-cutting immediately downstream from the culverts.

Off-set Stream Channelization. Four drainage channels in the northeast part of WMB have been constructed to improve stormwater movement under and away from Highway 21 (stream channelization segments "A" through "D" in Figure 6a). The ditched segments (both within and adjacent to natural channels) range from approximately 391 to 1,267 feet in length and are best seen in the 1998 aerial (Figure 9a). For the most part the drainage features do not directly affect the natural drains but parallel them in adjacent savannas and later reconnect back to the drains at the southern terminus of the ditch.

Two of the channelized areas (Channel Segments "A" and "C" in Figure 6a) extend well into WMB. Abita Creek, which flows along the eastern side of WMB, has been "channelized" for a distance of approximately 1,029 feet (approximately 679 feet on WMB; Channel Segment "A" in Figure 6a) with piles of spoil that average approximately 15 feet wide and 4 feet high placed on alternating sides of the creek. The piles of spoil on each side are not continuous and have occasional gaps; thus, impacts to surface flow are minimal. An unnamed tributary of Tenmile Branch has also been channelized in a similar fashion for a distance of 1,267 feet (approximately 917 feet on WMB; Channel Segment "C" in 6a).

Two of the channelized drains (Tenmile Branch and an unnamed tributary to Abita Creek) extend into WMB for less than 70 feet (Channel Segments "B" and "D" in Figure 6a). The spoil berms in all of these areas have been colonized by a variety of fairly large hardwood trees. Because of the relatively short distance on WMB, the age of the re-colonization and the fact that the spoil areas are gapped, no hydrologic restoration is planned in the channelized areas along LA Highway 21 at this time.

Abita Creek Diversions. On the mid-southeastern portion of the Waldheim Mitigation Bank, Abita Creek has been diverted from its natural floodplain into a straight channel (Channel Segment E in Figure 6a) that extends south and joins a longer second channel (Channel Segment F in Figure 6a) that extends from west to northeast and eventually curves south to rejoin the natural channel near the property boundary. It is thought this work was done to permit easier access by logging vehicles and equipment to an area east of the creek in this part of WMB.

It is not known when the Abita Creek channelization occurred, channels are readily visible on the 1998 aerial (Figure 9a), a close-up of which is shown in Figure 6a. It appears that dirt was acquired from a small borrow-pit dug southwest of the diversion point and used to fill the natural Abita Creek channel (see photo in Appendix 1) to divert it's flow into Channel Segment "E" and the eastern portion of Channel Segment "F". The western portion of Channel Segment "F" is a smaller channel dug from the borrow pit apparently to allow the pit to drain during wet events and permit the continued operation of the dirt extracting operation. These diversions remove Abita Creek from its natural channel during low to moderate flow periods for an approximate distance of 1,360 feet. Approximate dimensions of the channels are as follows:

- Channel Segment "E", 300 feet long, 3-6 feet wide and 3-5 feet deep
- Channel Segment "F" (eastern portion), 975 feet long and 3-6 feet wide and 3-5 feet deep
- Channel Segment "F" (western portion), 415 feet long, 3-5 feet wide and 2.5-3 feet deep.

Artificial Ponding by Woods Road. A primitive woods road on the mid-southeastern portion of WMB runs parallel to the property boundary and crosses a low area. There are no culverts on that portion of the road, which causes shallow, temporary ponding on the north side of the road (See Figure 6a). The area ponded is approximately 1 acre in size and has been colonized by various species of shrubs and small trees. The distance of the road berm is approximately 160 feet.

Dense young forests and heavy shrub cover. Dense forests of young pine and hardwoods along with heavy brush located upslope from and within savanna wetlands on WMB are almost certainly reducing surface and ground water flow into these wetlands (See Figure 6b, heavily stocked and heavily encroached types). The original longleaf pine woodlands and savannas were much less stocked with trees and brush than what is present currently. Research in pine woodlands in the southeastern U.S. has shown a clear linkage between vegetation density/tree stocking upslope and the amount of surface and ground water flow downslope (Edwards et al. 2012, McLaughlin et al. 2013). In general, the greater the density/stocking upslope, the less surface and ground water flow downslope, as a result of high rates of evapotranspiration from upslope vegetation.

Culverts. Culverts are present in a few places on roads crossing small drainages. Other than the issues noted above, there appear to be sufficient culverts on most roads and they do not appear to be causing any significant impedance of flow downstream or ponding upstream.

Ponds. Numerous scattered small ponds are present across the wetlands in the proposed bank (Figure 7). These old, artificial ponds do not appear to have any significant effect on site hydrology. There are no restoration plans for these ponds, but the acreage occupied by the ponds has been deducted from the bank wetland acreage (see Appendix 2).

Woods Roads. A number of unimproved roads and trails traverse the area. These roads are primarily un-ditched and are at grade (not elevated) and do not appear to affect hydrology. Small primitive woods trails used by all-terrain vehicles (ATV's) depart the main upland dirt roads in numerous places to access deer hunting stands and food plots and are also not thought to affect local hydrology, as they typically contain indigenous vegetation.

3.2.5 Jurisdictional Wetland Determination

A survey of wetlands present on the entire 2,200-acre Sponsor-owned tract was made in 2013 and submitted to CEMVN, who issued Preliminary Jurisdictional Determination MVN-2013-02257-SE ("PJD") on December 11, 2013 (Appendix 3). The proposed WMB boundary is shown along with the relevant portion of the PJD map in Figure 2. The PJD indicated that 998.2 acres of the acreage included with WMB are jurisdictional wetlands and 383.8 acres are non-wetland. [Note: A boundary correction has been submitted to obtain a revised, corrected JD map, but the acres provided incorporate the map correction]. Current ponds, spoil banks, road/tram berms and artificial stream channels occupy approximately 7 acres (Appendix 2), which reduces the total wetland acres to 991.2 Based upon IRT recommendations, the preliminary

jurisdictional wetland determination may need to be updated once a survey is completed on the tract and prior to completion of the mitigation banking instrument.

3.3 General Need for the Project in this Area

Establishment of Waldheim Mitigation Bank which will result in many benefits, including:

1. Providing a high-quality mitigation option for permitted activities within the proposed service area. WMB is in St. Tammany Parish, which is one of the fastest growing parishes in Louisiana and in the country (St. Tammany Economic Development Foundation 2014). Much of the growth is in the southern portion of the parish in the wet "flatwoods" region, thus resulting in a relatively high demand for pine savanna mitigation credits and, concomitantly, the potential to support multiple mitigation banks. The Sponsor plans to use a portion of the credits generated by the WMB for its own use and make the remaining available on the open market to approved applicants.

2. Having an additional commercial mitigation bank should increase competition for mitigation credits and thus potentially result in a positive effect on pricing for mitigation applicants.

3. Meeting several of the factors to qualify as a Priority mitigation area as per the CEMVN Modified Charleston Method (US Army Corps of Engineers, 2013), which includes a) benefits to state-designated Natural and Scenic Streams (WMB is located on Abita Creek which is up-steam from the state-designated Natural and Scenic Abita River), b) enhancement to other existing mitigation banks (there are four other mitigation bank units in the area), and c) benefits to rare and imperiled aquatic resources(WMB is part of the upper watershed for Abita Creek, which supports the endangered Louisiana Quillwort (*Isoetes louisianensis)* and numerous other rare wetland plant species tracked by the Louisiana Natural Heritage Program). Restoration of WMB could also provide additional habitat for state and federally-rare species of plants and animals that require upland and wetland pine savanna, including the threatened gopher tortoise (*Gopherus polyphemus*), which are known from the general vicinity, and several species of grassland birds.

4. Contribution to the goals of several conservation and land-use plans that have identified the area on and around WMB as a conservation priority. In 1999, The Nature Conservancy along with others, such as the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program, identified the Money Hill Conservation Area (Figure 1) as a priority conservation area in the East Gulf Coastal Plain (TNC 1999; 2001a; also see discussion above in Section 2). TNC has focused conservation efforts in this region since the mid 1990's, including the acquisition, restoration and management of 3 mitigation bank units and has worked with other mitigation bankers and landowners in the MHCA. Conservation land in the MHCA currently totals over 12,000 acres; however, many ecologists believe more protected area is needed to provide long-term population and habitat viability, particularly in growing urban landscapes (the minimum goal for lands under conservation management within MHCA is 20,000 acres). The proposed

Waldheim Mitigation Bank will greatly contribute to biodiversity and wetland habitat conservation of this region and reduce land fragmentation, hydrologic degradation and the challenges and complexity of prescribed burning.

The Louisiana Comprehensive Wildlife Conservation Strategy (Wildlife Action Plan), which was developed by the LDWF, identified longleaf pine uplands and wetlands in the EGCP ecoregion as a conservation priority (Lester et al. 2005). Other regional conservation and watershed plans that include at least portions of WMB are New Directions 2025 Land Use Plan (St. Tammany Parish Gov., 2003b), New Directions 2025 Critical and Sensitive Areas Plan (St. Tammany Parish Gov., 2003a) and St. Tammany Parish Greenprint (St. Tammany Parish Gov., 2007).

WMB is adjacent to Money Hill Golf and Country Club, which is owned by a private company that has entered into a Safe Harbor Agreement for Red Cockaded Woodpecker (RWC, Picoides borealis) with LDWF and the U.S. Fish and Wildlife Service. Should RCWs ever become established at Money Hill, WMB would provide important foraging habitat and potential for population expansion.

3.4 Technical Feasibility

There is little technical difficulty foreseen in achieving the restoration and management goals at the proposed Waldheim Mitigation. The work of TNC and others in similar situations in Louisiana and the Gulf South over the last 20+ years has shown that restoration of highly altered longleaf pine wetlands can be successfully accomplished by application of appropriate management actions. Since the early 1900's, when the virgin timber was harvested, the property has been significantly altered from its natural state. The original longleaf forest that once dominated the site was cleared and off-site pines and hardwood trees and shrubs reclaimed the site. The critical functional process of fire has been excluded and hydrology has been indirectly and directly impacted by a variety of activities. Required management activities will consist of prescribed fire, targeted hydrologic remediation, off-site timber and brush removal via both chemical and mechanical means, replanting with longleaf pine and invasive species control. All of these restoration methods have been successfully conducted at other pine savanna wetland mitigation banks (those operated by TNC and others) and other conservation lands in the area.

As is typical in a rural/urban interface, the most challenging of these management practices may be related to the use of prescribed fire in an increasingly developed landscape. Options for smoke management become limited as development approaches the boundaries of conservation areas and the ability to use fire as a management tool at WMB is critically important. This consideration was among the foremost in designing the WMB primary boundary and the protection levels for areas immediately surrounding WMB that are currently owned by the Sponsor. A second conservation servitude (as described in Section 1.1) may be placed on adjoining areas owned by the Sponsor to facilitate future use of prescribed fire, as well as promote hydrologic restoration and wetland system functionality within the bank.

In planning for and implementing prescribed burns on the proposed bank, the Sponsor will consult with TNC, an organization with a long track record of conducting safe and effective burns in the rural/urban interface in St. Tammany Parish. Hydrologic restoration activities planned entail relatively minor actions in targeted areas, and are not technically difficult or challenging. The Sponsor will provide financial assurances to provide for long-term management of the site.

4.0 ESTABLISHMENT OF THE MITIGATION BANK

4.1 Site Restoration Plan

4.1.1 Restoration Objectives

The following is a generalized description of desired future habitat conditions on the tract, and thus represents the restoration objectives for WMB.

- Relative extent and character of each habitat type will be similar to that estimated to have been present originally. In particular, wet longleaf pine savannas and bayhead streams and swamps will be restored to their original extent and character regarding composition and structure.
- Restore and sustain the physical, chemical, and biological functions of wetlands and adjacent wetland buffer in perpetuity.
- Open, scenic longleaf pine woodlands, dominated by longleaf pine, will characterize the non-wet upper slopes and ridge tops. Stocking density of longleaf pine in these areas will be higher than in adjacent wet longleaf pine savannas, but the forest will be an open woodland in aspect. Few hardwood trees will be mixed in with longleaf pine, other than a limited component of site and fire adapted upland oaks and other hardwoods.
- Pine wetlands and uplands will eventually (after many years) appear as an open pine woodland over a rich ground cover comprised mainly of warm season grasses and forbs. Longleaf stand density will be quite variable in these settings to replicate original character of longleaf pine woodlands, but will as a rule average $\leq$ 90 square feet basal area per acre in uplands and $\leq$ 50 square feet basal area per acre in wetlands.
- Forested stands will ultimately be uneven-aged, containing multiple age classes of longleaf pine, with a variety of age classes present on a typical acre.
- Shrub cover will be minimal in longleaf pine woodlands and savannas, with cover averaging less than 20%.
- Bayhead streams and swamps will characterize the deepest drains on the tract and will be dominated by mature swamp black gum, sweet bay, laurel oak, tulip poplar and red maple, but will include a minor component of slash pine in the overstory. The midstory and understory tree and shrub layer will typically be very well developed, and include a variety of evergreen and deciduous species.
- Invasive, non-native species will absent or rare anywhere on the tract and will not be considered a threat to plant community structure and composition and will not influence natural processes.

- Hydrologic regimes will be appropriate to sustain the wetland status and indigenous character of all native wetland habitats on the tract, as well as all associated native species.

4.1.2 Restoration Management

To achieve the above objectives, restoration will, by necessity, initially entail a variety of aggressive management practices. These practices will include commercial timber removal, mechanical and chemical control of invasive native and non-native species, and frequent prescribed burning. The use of these practices is necessary to "push" the area toward the condition state complex (structure and composition) outlined in the Restoration Objectives stated above. All practices must and will be implemented in a careful and ecologically compatible fashion that promotes the overall ecological integrity of the area.

The following is an overview of the principal management activities that will be needed for restoration and maintenance of the wetland habitats on the area.

Prescribed Fire. Prescribed fire will arguably be the most important regular management tool used on the tract. Fire will be applied in pine savanna wetlands and surrounding uplands, and, during drier periods, allowed to creep into bayhead streams and swamps to return those habitats to their historically limited distribution. Burning is essential for longleaf pine regeneration, control of unwanted hardwoods and shrubs, and rehabilitation/perpetuation of rich herbaceous ground-cover communities. Properly timed fires stimulate native herbaceous plants to grow vigorously, flower and produce seeds, stimulate longleaf pine to grow out of the "grass-stage", and control brown spot needle-blight on young longleaf.

The historical frequency and seasonality of fire should be reestablished through an aggressive, strictly regulated burning program. Historically, most fires occurred during the growing season, which in southeast Louisiana may be considered to be mid-March to late October, with the majority of fires concentrated between late March and mid-June (early thunderstorm season). Early to mid-growing season burns should be favored over late growing season or dormant season burns, though burns at other seasons may be applied to achieve particular objectives. Burn frequency should eventually be in line with the estimated historical frequency of fires in this region, that is, every 1 – 4 years in longleaf pine upland and wet savanna restoration areas. However, in the initial restoration years, burns will need to be applied more frequently (every 1 to 2 years) to reduce undesirable woody vegetation (in combination with mechanical and/or chemical treatments) and promote native herbaceous ground cover.

The prescribed fire program should be designed to restore the area to natural conditions and the support maintenance of those conditions in perpetuity. On-going observation of site conditions will permit modification of the prescribed fire schedule, if needed, to accomplish priority objectives. Existing fire breaks (natural or artificial), such as roads/trails and creek bottoms, should be used wherever possible to reduce unnatural disturbances to the site and allow burning in larger blocks to mimic natural fire behavior.

However, where the bank boundary deviates from such features, and where lands outside the bank are not planned to be burned, fire breaks will need to be installed by mechanical and chemical treatment. Much of the proposed bank boundary follows access trails and roads that can serve as fire breaks for fire units. Initial inspection indicates there will be approximately 5 burn units on the tract. Fire should be rotated among burn units so that the entire area is not burned at one time. An exception can be made to this guidance in the early years of restoration when an aggressive fire program will be needed.

Time Line: Application of frequent prescribed fire will be an initial and long-term management practice in wet longleaf pine savannas and upland longleaf pine woodland. Fire will occasionally burn through bayhead stream bottoms and into the edges of bayhead swamps. Initially, fires may be applied at a frequency greater than the estimated historical frequency of once every 1 – 4 years to help in the control of undesirable woody cover and restoration of the native ground cover. Where commercial removal of off-site timber is needed, timing of application of fire will be determined by a number of factors, including timber marketability (whether better burned or unburned) and estimated results of fires burning under different conditions (e.g., before cut or after). All longleaf pine savanna and woodland restoration areas should be burned at least once by the end of year 2.

Commercial Logging of Undesirable Pine and Hardwood. To facilitate restoration, commercial logging of unwanted and off-site trees will be needed in most of the uplands and some of the pine savanna wetlands included in WMB. Loblolly pine, slash pine and most hardwoods will need to be removed in wet longleaf pine savanna and upland longleaf pine woodland restoration areas. Because grassy ground cover is lacking in upland pine forests, logging may be designed to initially retain a minimal cover of off-site pine to provide fuels for future fires. All logging events will be carefully designed, implemented and monitored. Of particular note, much of the encroached wet savanna zones on slopes and flats will need to be very dry during logging events to prevent excessive soil rutting. In addition, all logging should follow a comprehensive timber deed that provides extensive direction and guidance to the logging contractor on how the logging should be conducted. All logging should be carefully monitored throughout implementation to ensure compliance with provided guidelines.
Note: logging can only be permitted in savanna wetlands under very dry conditions. If those conditions do not materialize in a reasonable time frame, chemical and mechanical methods will be the only practices available to remove unwanted brush and trees.

Time Line: This is an initial restoration activity that should be completed in the early restoration management of the site. If timber markets and weather conditions allow, all commercial timber removal operations should be completed by year 2.

Chemical and/or Mechanical Control of Slash and Loblolly Pine (Non-Merchantable), Hardwoods and Brush. Chemical and, possibly, mechanical methods will be needed initially in most areas to control undesirable small trees and large brush. Observations from other pine wetland restoration efforts in the region indicate that prescribed fire alone may not be sufficient to sufficiently reduce shrub cover. In moderately encroached savanna wetlands, highly controlled herbicide treatment with ground crews, followed closely by a prescribed fire, should be the first practice applied, and then evaluations made of the need for follow-up mechanical treatment, if any. In heavily encroached uplands and savanna wetlands, herbicide applications will be needed after logging to control undesirable brush. [Note: logging will only be permitted in savanna wetlands under very dry conditions to prevent rutting. If those conditions do not materialize in a reasonable time frame, chemical and mechanical methods will be the only practices available to remove unwanted brush and trees]. All herbicide applications should employ chemicals approved for use in wetlands and that are minimally damaging to herbaceous ground cover. Herbicide treatment protocols should be carefully designed and implemented, and monitored throughout implementation to ensure compliance with provided guidelines.

Mechanical treatment with appropriate mechanical methods (e.g., brush mowing, mechanical chopping) should be used in very thick areas inaccessible to herbicide ground crews. [Note: mechanical treatment will only be permitted in savanna wetlands under very dry conditions to prevent rutting]. Once such areas are mechanically treated, a follow-up herbicide application will be needed. In most cases, a prescribed burn will be prescribed following the mechanical/chemical brush treatment. Based upon results from other restoration projects in the area, it is likely that more than one herbicide application (a year or more apart) will be needed to fully control undesirable brush and trees.

Time Line: This is an initial restoration activity that should be completed in the early restoration management of the site. Undesirable brush and trees should be greatly controlled across the entire tract by year 3, and reach final desired parameters by year 4 (allowing for two herbicide treatments and a prescribed burn).

Longleaf Plantings. Because longleaf pine has essentially been eliminated from WMB, it will be necessary to plant longleaf pine seedlings in former longleaf pine uplands and wet savanna zones, which covers a great majority of WMB. Planting will follow logging and at least one prescribed burn in the uplands. In heavily encroached savanna wetlands, planting will follow logging or other mechanical treatment or herbicide application, and the application of at least one prescribed burn.

Seedlings will be planted at the appropriate season (ideally December through February) and as soon after logging or other brush/tree clearing activities as possible. Though final planting density in savanna wetlands will be determined by guidance provided in the MBI, a reasonable planting target is approximately 200-300 seedlings planted per acre. If more than this number of seedlings are planted and most survive, then a follow-up thinning will be needed. Eventual target longleaf abundance is for longleaf pine cover on any acre to fall within a range of 10% – 80%. Containerized longleaf seedlings should be used instead of bare-root seedlings for

greatest success. Seedlings should be those grown from seeds obtained from an area geographically and genotypically compatible with southeast Louisiana (e.g., southern Mississippi). Planting should be done as early in the dormant season as possible, and seedlings should be "high planted" in wetter sites.

Time Line: This is an initial restoration activity that should be completed fairly early in restoration management of the site. All initial longleaf plantings should be completed by year 3, following commercial logging of off-site pines and hardwoods in uplands and heavily encroached savanna wetlands (where appropriate), mechanical/chemical control of undesirable woody brush where needed, and application of at least 1 fire.

Chemical Control of Invasive, Non-Native Plants. The species observed that are of most concern, based on potential to spread and become increasingly problematic, are cogon grass, Chinese tallow tree, privet hedge and Japanese climbing fern. Cogon grass control will require application of appropriate chemicals at the correct season; it is probable that repeated applications will be required to completely kill patches. Tallow tree and privet hedge in pine savanna areas will be principally controlled by frequent fire. However, there are some problem areas, particularly along drains, that will need herbicide treatment. Although Japanese climbing fern is fairly widespread, in no areas is it considered a serious problem that warrants specific control. If the status of climbing fern changes in the future, it may be possible to implement limited control programs but it will be important to ensure that control efforts cause minimal collateral damage to desirable plants. Tallow and privet in bayheads and other fire-sheltered zones will need direct chemical treatment since fire will probably not be frequent enough to control them in those areas. Personnel should remain constantly vigilant for the appearance of other invasive non-native species, or the appearance of new infestations of known invasive plants. If any other problematic invasive species are detected, such as feral hogs, an appropriate treatment program should be devised and implemented.

Time Line: This is mainly an initial restoration activity that should be primarily completed in the early restoration management of the site, although ongoing monitoring and control will be needed in perpetuity. All initially identified invasive species infestations should be treated soon after the inception of management. On-going long-term monitoring for invasive species should be conducted and any problematic invasive species infestations should be treated as they are detected.

All identified cogon grass patches should be treated as early as possible in year 1, and prior to any mechanical restoration activities. Treatment of tallow and privet in bayhead forest zones and other areas should be performed by year 2. Follow-up treatments will be needed in perpetuity as this species is widely established in the local landscape (including a massive infestation in the fields elsewhere on the property) and will continually spread into the area.

Hydrology Remediation. As discussed in Section 3.2.4, several artificial features and conditions are significant and their remediation will result in improved wetland functions and services.

Railroad Tram. This feature is negatively affecting the bayhead steam community along Tenmile Branch. As shown in Appendix 4a, the Sponsor plans to remove the center three 36-inch culverts and surrounding fill for a distance of approximately 40 feet and create a low water crossing. The crossing will be constructed of suitable in-stream material or structures designed to stabilize the stream bed and remaining crossing. Suitable material may consist of "root wads" on slopes and small to large-sized rock imbedded in the substrate to prevent washing. Slopes will be re-graded and stabilized using appropriate bank stabilization practices, including matting, seeding and use of transplants if needed. Appropriate erosion control measures will be used to minimize input of sediment in the floodplain as a result of this work. The low-water crossing will serve to prevent the temporary impoundment that occurs during high rain events and disperse the energy that is now concentrated via the culverts to a broader reach of the floodplain. This activity is projected to help rehabilitate approximately 2,460 feet upstream of the current impairment, and equal amount downstream in an approximate 250-foot-wide floodplain in moderate flood events, thus effecting approximately 28.2 acres of bayhead stream natural community. More precise calculations will be included in the MBI.

Time Line: This is an early restoration activity that will be completed p*rior to initial credit release for the management unit.*

Abita Creek Diversion Channels. These features are negatively affecting the bayhead stream community along Abita Creek. As shown in Appendix 4b, the Sponsor plans to remove approximately 17 cubic yards of fill that is currently completely blocking the flow of Abita Creek during low to moderate flow (Appendix 1), and place the fill within the adjacent north section of Diversion Channel E. Appropriate stabilization measures will be taken, such as the use of root wads imbedded in the filled channel to prevent wash-out that would allow the artificial channel to be recaptured. The excavated area along Abita Creek will be converted to a low-water crossing using similar measures discussed above under Railroad Tram. Fill will also be placed in the western end of Channel F where it connects to the borrow pit to prevent continued flow into this channel. These activities will restore natural flow to approximately 1,360 feet downstream and 300 feet upstream in an approximate 225-foot-wide floodplain in moderate flood events, affecting approximately 8.6 acres of bayhead stream natural community.

Time Line: This is an early restoration activity that will be completed *prior to initial credit release for the management unit.*

Road Fill. A primitive woods road on the mid-southeastern portion of WMB has been built up for a distance of 160 feet, and is causing a shallow impoundment due to lack of a culvert (Figure 6a). The impoundment is affecting approximately 1 acre of pine savanna wetland, making the area significantly wetter and shrubbier than it would be otherwise. Future prescribed fires will have difficulty penetrating the area when standing water is present. The Sponsor plans to install a suitably sized culvert in this reach and remove any excess fill along the road (Appendix 4c).

Time Line: This is an early restoration activity that will be completed *prior to initial credit release.*

Natural Community Structure. Dense forests of young pine and hardwoods along with heavy brush located upslope from and within savanna wetlands on WMB are almost certainly reducing surface and ground water flow into these wetlands (See Figure 6b, heavily stocked and heavily encroached types). The original longleaf pine woodlands and savannas supported far fewer trees and shrubs than what is present currently. In general, the greater the density/stocking upslope, the less surface and ground water flow downslope, as a result of high rates of evapotranspiration from upslope vegetation. Activities to reduce stocking density of trees and shrubs, as detailed above in this section, include commercial logging, prescribed fire, chemical and mechanical treatments and replanting with longleaf pine at natural but much lower densities than commercial forests.

Time Line: Restoration of plant community structure and composition occurs in stages over time. However, initial forest thinning/removal treatments will happen during the initial restoration phase and will have immediate benefits to local hydrology. Those initial activates will be completed prior to initial credit release.

4.1.3 Food Plot Restoration

Twenty-six food plots in wetland zones range in size from 0.5 to over 2 acres, with a mean of approximately 1 acre. All food plots will be initially treated with herbicide to control native and non-native weeds. This action will be followed by seeding with a variety of conservative native savanna herbaceous species using seeds collected from the general vicinity.

4.1.4 Monitoring

The Sponsor will perform initial, interim and long-term monitoring, employing methods and on a schedule set by the MBI, to determine the effectiveness of implemented restoration actions, progress toward set restoration objectives, and whether or not adaptive management measures need to be implemented, such as control of previously undetected or newly arriving invasive species, replanting of longleaf pine, additional hydrologic remediation actions, or other restorative activities.

4.2 Current Site Risks

1. Because of the growing suburban landscape in the region, there is risk that smoke management issues may constrain the ability to used prescribed fire as a management tool. The Sponsor has designed the proposed bank and surrounding buffer areas to take smoke management into account.

2. Hydrologic disturbances over which the Sponsor has no or limited control include modifications to drainage systems to protect Louisiana Highway 21 and two private, recreation lakes on drainages that feed into Abita Creek. Louisiana Highway 21 borders the northwest portion of WMB. This highway has undoubtedly altered sheet flow and possibly stream drainage although the impacts to WMB are considered minimal. Similarly, there has been some channelization on Abita Creek and Tenmile Creek, but the effects are assumed to be limited to natural channel integrity and in-stream flow and do not seem to be affecting pine the forested wetlands within WMB. There is little that can be done to repair the stream channel alterations because they are part of a larger storm water management program in the region. If it is later determined that the stream alterations inhibit bank restoration efforts, the Sponsor will work with Louisiana Department of Transportation and St. Tammany Parish Office of Public Works to identify potential remediation strategies.

Two drainages that feed Abita Creek have been dammed to form lakes. One is north of WMB within the Grande Hills Subdivision on the headwaters of an un-named tributary to Tenmile Branch. The second is east of WMB within the Money Hill Golf and Country Club subdivision on Big Branch. The overflow from each lake enters the historic drainage and eventually flows to Abita Creek; however, most of the flow during periods of normal precipitation is held in the lakes. The impact of these lakes is unknown, but since much of the hydrology of the site is from direct rainfall and groundwater seepage, it does not appear to be significant within WMB.

3. An additional off-site hydrological is created by an old elevated wood's road that crosses Abita Creek on Money Hill Golf and Country Club property just south of the WMB boundary (Figure 6a). Although culverts are present on this section, some water is impounded during moderate flow events. Impounded conditions are temporary and are not thought to cause measurable harm to nearby wetlands on WMB. However, if it is determined that the adjacent portions of WMB are kept excessively wet, the Sponsor will work with Money Hill Golf and Country Club to improve drainage (e.g., add additional culverts).

4. WMB is zoned as low-density suburban districts A1-A and A2, as is the majority of the surrounding area. It is fully expected that much of the region will slowly develop as rural subdivisions or as planned unit developments with adjacent green-space. A relatively narrow strip along Louisiana Highway 21 that abuts WMB in Sections 26 and 27 is officially zoned moderate Highway Commercial (HC2), but it is currently undeveloped timberland (St. Tammany Parish Government 2014). The Sponsor may seek a similar zoning designation for that portion of the Sponsor's property between WMB and Highway 21 (identified as "commercial" in Figure

2). Several safeguards will be put in place (see sections 3.4 and 6.4) to help minimize any impacts if the commercially zoned areas owned by the Sponsor are developed.

5. An Option to Purchase the site exists between the landowners of the bank (Sponsor and Regent Lands LLC) and a third party (previous owner) until which potentially affects future land ownership. The Option to Purchase contemplates the creation of the bank and the third party has agreed to execute appropriate subordinations. Accordingly, if the third party exercises the option to reacquire the underlying fee, the bank Sponsor will not change and contemplated conservation servitudes will remain in place.

4.3 Long-Term Sustainability of the Site

There are no issues anticipated with long-term sustainability of Waldheim Mitigation Bank. WMB is of a sufficient size to allow for prescribed burning and hydrologic integrity. The hydrology of pine savanna wetlands is primarily driven by rainfall falling directly on-site, thus once initial hydrological restoration plans are implemented, there are will not be any long-term hydrological management or maintenance required. A conservation servitude will be placed on WMB prior to any credit release and the servitude holder will independently monitor the site annually to document compliance with the terms of the conservation servitude. Any violations detected during annual monitoring will be reported to the Corps of Engineers and the IRT will determine required remediation. The Sponsor will provide financial assurances as required in the 2008 Rule to ensure that long-term stewardship needs will be met (US Army Corps of Engineers 2008). Once all credits have been released, the Sponsor may decide to transfer fee title and/or long-term management responsibility to another party. Should that occur, Sponsor will also provide an endowment or other financial assurances to ensure appropriate long-term management of WMB.

5.0 PROPOSED SERVICE AREA

To provide compensation for permitted impacts to pine flatwood wetlands, the bank Sponsor proposes the USGS Hydrologic Cataloging Unit (HUC) 08090201, the Liberty Bayou – Tchefuncta (HUC 8 level) watershed as a primary service area (Figure 11). We propose a second service area to include the Tangipahoa watershed or HUC 08070205. The latter service area has some pine wetlands and currently no mitigation bank exists in the watershed that can provide pine wetland mitigation credits.

6.0 OPERATION OF MITIGATION BANK

Waldheim Mitigation Bank will be owned and operated by the Sponsor, ASFC, LLC, a Louisiana company. The landowners, ASFC LLC and Regent Lands, Inc. will be signatories to the MBI. A conservation servitude that encumbers all of WMB will be held by an approved third party conservation organization, such as The Nature Conservancy. Sponsor will seek technical assistance for land restoration and management from Sponsor's agent and consultant listed below, each of which have extensive experience managing and restoring lands similar to WMB.

6.1 Project Representatives

Sponsor and Landowner	ASFC, LLC Bruce Wainer, Partner 321 Veterans Blvd., Suite 201 Metairie, LA 70005 bruce@wainerco.com 504-834-5511
Agent:	Biological Surveys Inc. Thomas K. Brown, President P. O. Box 94 Covington, LA 70433 Tbrown52@bellsouth.net 985-893-1321 (Office); 985-373-4540 (mobile)
Consultant:	The Nature Conservancy Nelwyn McInnis P O Box 1657 Abita Springs, LA 70420 nmcinnis@tnc.org 985-809-1414 (office); 985-320-9284 (mobile)

6.2 Qualifications of the Sponsor and Landowners

The Sponsor, ASFC LLC, was established in 2013 for the acquisition and operation of Waldheim Mitigation Bank. ASFC LLC is a wholly-owned subsidiary of All State Financial Company, who purchased the larger 2,200-acre property and transferred it to ASFC and Regent Lands, Inc., a Louisiana Corporation formed in 1982, who will be working with the Sponsor to assure success of this project. Regent Lands and All State Financial have experience in residential and commercial real estate sales and development, and construction management. They have a long history of success in the greater New Orleans area, including St. Tammany Parish. Sponsor and landowner representative, Bruce Wainer, is an agent or partner in all three entities and has been a leader in a variety of civic projects in St. Tammany, such as helping establish the Tammany Trace and has recently donated an area along the Tchefuncte River for a Children's

Museum and Nature Center with planned nature trails. The Sponsor has engaged the services of agents listed above to direct establishment and restoration of WMB.
The Nature Conservancy (TNC) is the largest, private land-based conservation organization in existence with an extensive track record of successful science-based land management and restoration activities. The Louisiana Chapter of TNC has been a leader in pine wetland mitigation in Louisiana since 1991 and has helped to establish pine wetland restoration criteria and management strategies that are used by all pine wetland bank managers. TNC owns and operates pine wetland mitigation banks in both Southeast and Southwest Louisiana and has helped entrepreneurial banks become established in those same regions. Money Hill Conservation Area is a major conservation focus for TNC in Louisiana. Thus, protection and restoration of lands proposed for inclusion in WMB falls squarely within their conservation objectives.

Biological Surveys, Inc. was established in 1993 by biologist and BSI President Thomas K. Brown. Biological Surveys Inc. specializes primarily in wetlands consulting and has mainly focused on wetland delineation, wetland permitting, and endangered species and forestry consulting.

6.3 Proposed Long-Term Ownership and Management

After initial restoration work is completed and all credits have been sold, the plan is to transfer ownership, with Corps and IRT approval, to a conservation entity, such as The Nature Conservancy, that possesses a track record of successfully managing pine savanna wetlands and associated habitats. This entity will also become the long-term manager, using the funds set aside initially as financial assurances for this purpose.

6.4 Site Protection

Sponsor (ASFC LLC) and landowners (ASFC LLC and Regent Lands Inc.), or their heirs and assigns shall be responsible for maintaining and protecting the lands contained within the Waldheim Mitigation Bank in perpetuity. Protection will be facilitated via a conservation servitude held by a qualified, third-party, non-profit conservation organization, such as The Nature Conservancy, that will monitor the site annually in accordance with the terms of the conservation servitude. The boundary of the servitude will be the same as the 1,382-acre WMB boundary.

A second conservation servitude that encumbers the remainder of the 2,200-acre property owned by the landowners and adjacent to WMB (Priority Uplands, Secondary Uplands, Commercial; Figure 2) may be donated to an appropriate non-profit organization at or shortly after closing on the initial WMB servitude. The second servitude will not be a part of WMB, nor will the donation be a requirement for bank approval. However, it is understood that the purpose of the second servitude is to further enhance the sustainability of WMB. The second servitude will include three zones with increasingly comprehensive restrictions: Commercial, Secondary Uplands and Priority Uplands. Priority Uplands will be maintained as timberland. Subject to available funding, Priority Uplands will be restored to their natural habitat of upland longleaf pine woodland. The remainder of the tract, designated as Secondary Uplands and Commercial, will have minimal restrictions, but will still provide conservation benefits and will

support WMB objectives. Some of the limited restrictions planned for Secondary Uplands and Commercial areas include support for prescribed burning that will take place on the adjacent WMB, low density development requirements south of WMB to minimize the impacts of smoke on people, and general invasive species and water quality control measures.

The version of the WMB conservation servitude proposed for execution and recording in the real estate records of the Mortgage and Conveyance Office of St. Tammany Parish shall be provided to CEMVN for review and approval prior to filing. After filing, a copy of the recorded conservation servitudes, clearly showing the book, page and date of filing, will be provided to CEMVN. Any change to the WMB conservation servitude must be subject to a 60-day advance notification and approval by CEMVN.

6.5 Long-Term Strategy

Long-term management will consist primarily of monitoring, prescribed burning, invasive species control, boundary maintenance and site protection. Wetland habitats will be managed to increase and maintain the biological, chemical and physical wetland functions of WMB, which will provide important habitat capable of supporting populations of rare species and priority wildlife species (e.g., grassland birds). Once initial hydrological restoration actions are completed and proposed management plans are in place, it is assumed that hydrological conditions will be maintained without additional hydrologic management. Some forest management may be needed in the event of severe wind storms, or insect outbreaks such as southern pine bark beetle (*Dendroctonus frontalis*), damage from wildfire, or other unforeseen factors. In such an event, the Sponsor will submit a forest restoration management plan to the IRT for approval prior to initiation of any work. The forest management plan will be consistent with the goals and intent of the WMB MBI and conservation servitude. Additional environmental education or recreational activities may be desired in the future in addition to that discussed in this Prospectus or included in the MBI. All such activities will receive approval by the IRT prior to initiation. Should any direct or indirect negative impacts occur from these activities, that activity will be discontinued.

7.0 REFERENCES

Bailey, R.G., Avers, P.E., and McNab, W.H., editors, 1994. Ecoregions and subregions of the U.S. (map): Washington, D.C., U.S. Dept. of Agriculture-Forest Service: map scale 1:7,500,000.

Daigle, J.J., Griffith, G.E., Omernik, J.M., Faulkner, P.L., McCulloh, R.P., Handley, L.R., Smith, L.M., and Chapman, S.S. 2006. Ecoregions of Louisiana (color poster with map, descriptive text, summary tables, and photographs):Reston, VA, U.S. Geologic Survey (map scale 1:1,000,000).Weblink: http://www.epa.gov/wed/pages/ecoregions/la_eco.htm

Edwards, Pamela J.; Troendle, Charles A. 2012. Water yield and hydrology. In: LaFayette, Russell; Brooks, Maureen T.; Potyondy, John P.; Audin, Lisa; Krieger, Suzanne L.; Trettin, Carl C. Eds. 2012. Cumulative watershed effects of fuel management in the Eastern United States. Gen. Tech. Rep. SRS-161. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. Pp 229-281.

Garren, Kenneth. 1943. Effects of Fire on Vegetation of the Southeastern Unites States. The Botanical Review. Pp 620-634. *[It must be noted that this citation is but one of literally hundreds that refer to the dependence of longleaf pine systems on frequent fire. The realization of the importance of fire to the perpetuation of longleaf forests was slow in coming but now the fundamental role of fire is universally recognized by students of longleaf pine]*

Gray, Clinch. 1821. Field notes of a survey of Township 7 South Range 12 East, St. Helena Meridian, Louisiana. General Land Office, Washington, D.C. Weblink: https://wwwslodms.doa.la.gov/WebForms/DocumentViewer.aspx?docId=507.00724&category=H#2

Lester, G. D., S. G. Sorensen, P. L. Faulkner, C. S. Reid, and I. E. Maxit. 2005. LA Comprehensive Wildlife Conservation Strategy (Wildlife Action Plan), LA Dept. of Wildlife and Fisheries, Baton Rouge. 455pp.

Little, Elbert L. Jr. 1971. Atlas of United States Trees: Conifers and Important Hardwoods. U.S. Department of Agriculture: Forest Service, Misc. Pub. No. 1146. United States Government Printing Office, Washington, D.C.

Lockett, Samuel. 1874 (1969). Louisiana as it is: a geological and topographical description of the state. Lauren C. Post, Ed. LSU Press, Baton Rouge. 355pp.

Louisiana Dept. of Wildlife and Fisheries, Natural Heritage Program. 1986-2004. The natural communities of Louisiana. LDWF, Baton Rouge.

Louisiana Dept of Wildlife and Fisheries. 2014. Louisiana Natural and Scenic Rivers Descriptions and Map. Weblink: http://www.wlf.louisiana.gov/louisiana-natural-and-scenic-rivers-descriptions-and-map.

Louisiana Dept of Wildlife and Fisheries. 2014. Natural Communities Fact Sheets. Weblink: http://www.wlf.louisiana.gov/wildlife/natural-communities-fact-sheets

McLaughlin, Daniel, David Kaplan, and Matthew Cohen. 2013. Managing Forests for Increased Regional Water Yield in the Southeastern U.S. Coastal Plain. Journal of the American Water Resources Association. 49(4): 953-965.

Smith, Latimore. 1991. Louisiana Longleaf: an Endangered Legacy. Louisiana Conservationist, May/June 1991:24-27.

Smith, Latimore. 1996. Rare and sensitive natural wetland plant communities of interior Louisiana. Louisiana Natural Heritage Program, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA. 32 pp.

Smith, Latimore. 2004. The legendary longleaf pine forests of the Florida Parishes: Historic character and change at the hand of man. Pages 140 – 157 in A Fierce And Fractious Frontier: The curious development of Louisiana's Florida Parishes, 1699 – 2000, edited by Samuel C. Hyde Jr. LSU Press. 232 pp.

Snead, J. I. and R. P. McCulloh, comps. 1984. Geologic map of Louisiana. Louisiana Geological Survey, Baton Rouge. Scale 1:500,000.

St. Tammany Economic Development Foundation. 2014. Weblink: http://www.stedf.org/

St. Tammany Parish Government website. 2014. Zoning map for the Northeast Study Area of St. Tammany Parish pdf. Weblink: http://www.stpgov.org/files/Development-%20Planning/.

The Nature Conservancy. 1999. East Gulf Coastal Plain Ecoregional Plan. Internal report, Southeast Regional Office, Chapel Hill, NC. 50pp plus maps and appendices.

The Nature Conservancy 2001a. East Gulf Coastal Plain Ecoregional Plan, March 1999, Revised 2001. Unpublished document. Chapel Hill, NC. 36 pp + appendices.

The Nature Conservancy 2001b. Implementing Conservation by Design. Louisiana's Priority Conservation Areas: The First Fifteen. Internal document. The Nature Conservancy of Louisiana, Baton Rouge.

US Army Corps of Engineers. 2008. Compensatory Mitigation for Losses of Aquatic Resources, Final Rule; 40 CFR Part 230, Federal Register, Vol 73,No. 70, 19593 – 19687.

US Army Corps of Engineers, New Orleans District. 2013. Modified Charleston Method (MCM), March 2013 revision. 33 pages.

US Department of Agriculture, Natural Resources Conservation Service (2014). The PLANTS Database [website]. U.S. Department of Agriculture, Natural Resources Conservation Service, National Plant Data Center. Accessed August, 2014. Weblink: http://plants.usda.gov

US Environmental Protection Agency. 2008. Compensatory Mitigation for Losses of Aquatic Resources, 33 CFR Parts 325 and 332, Federal Register, Vol 73,No. 70, 19687 - 19705.

USDA Soil Conservation Service. 1990. Soil survey of St. Tammany Parish. USDA. 141 pp. + appendices.

U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. [Weblink: http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf]

FIGURES

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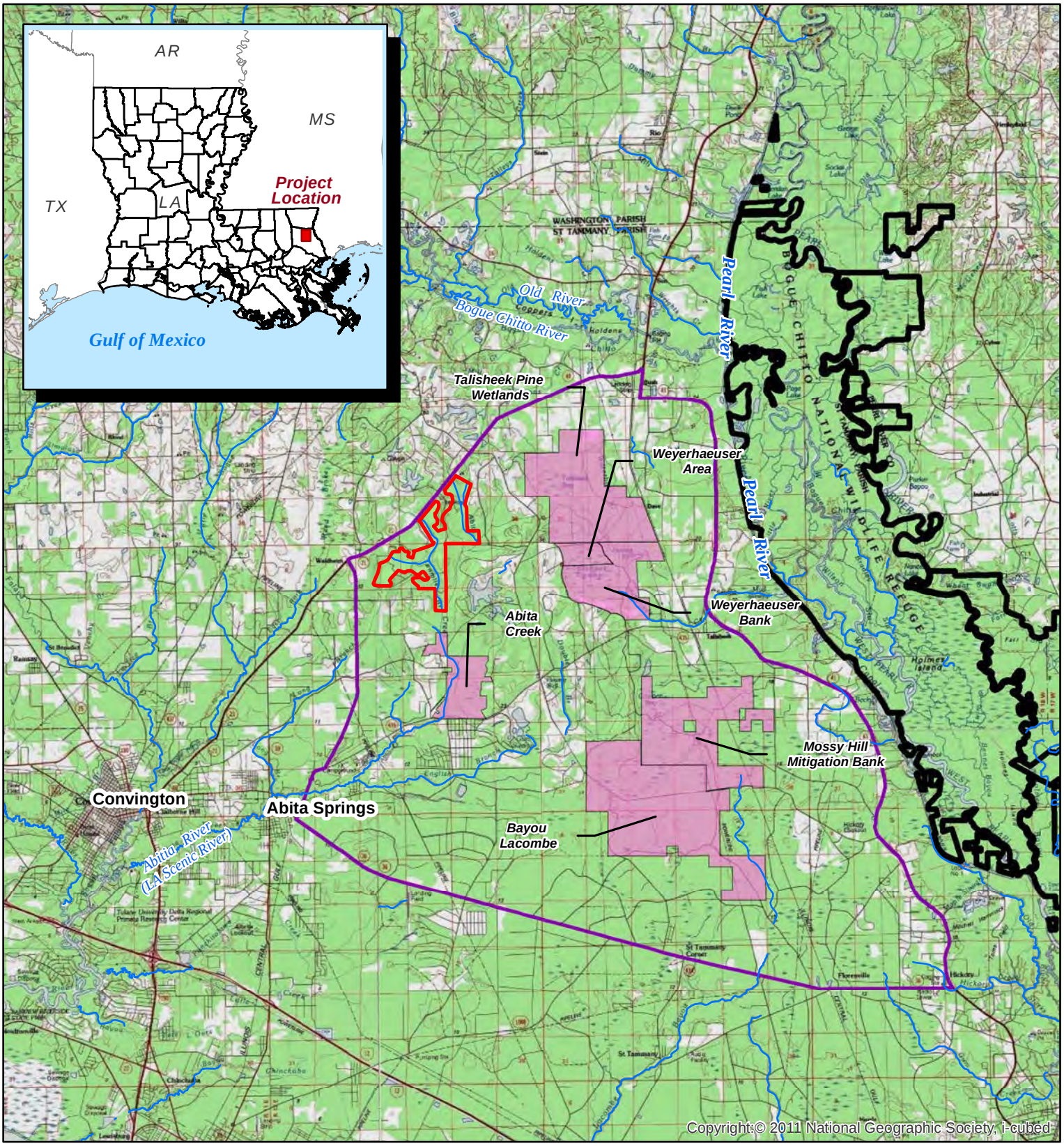
Figure 1. Vicinity Map - Waldheim Mitigation Bank
St. Tammany Parish, Louisiana



Waldheim Mitigation Bank
Bogue Chitto National Wildlife Refuge
Wetland Mitigation Banks
Money Hill Conservation Area
Rivers and Streams

N
W E
S

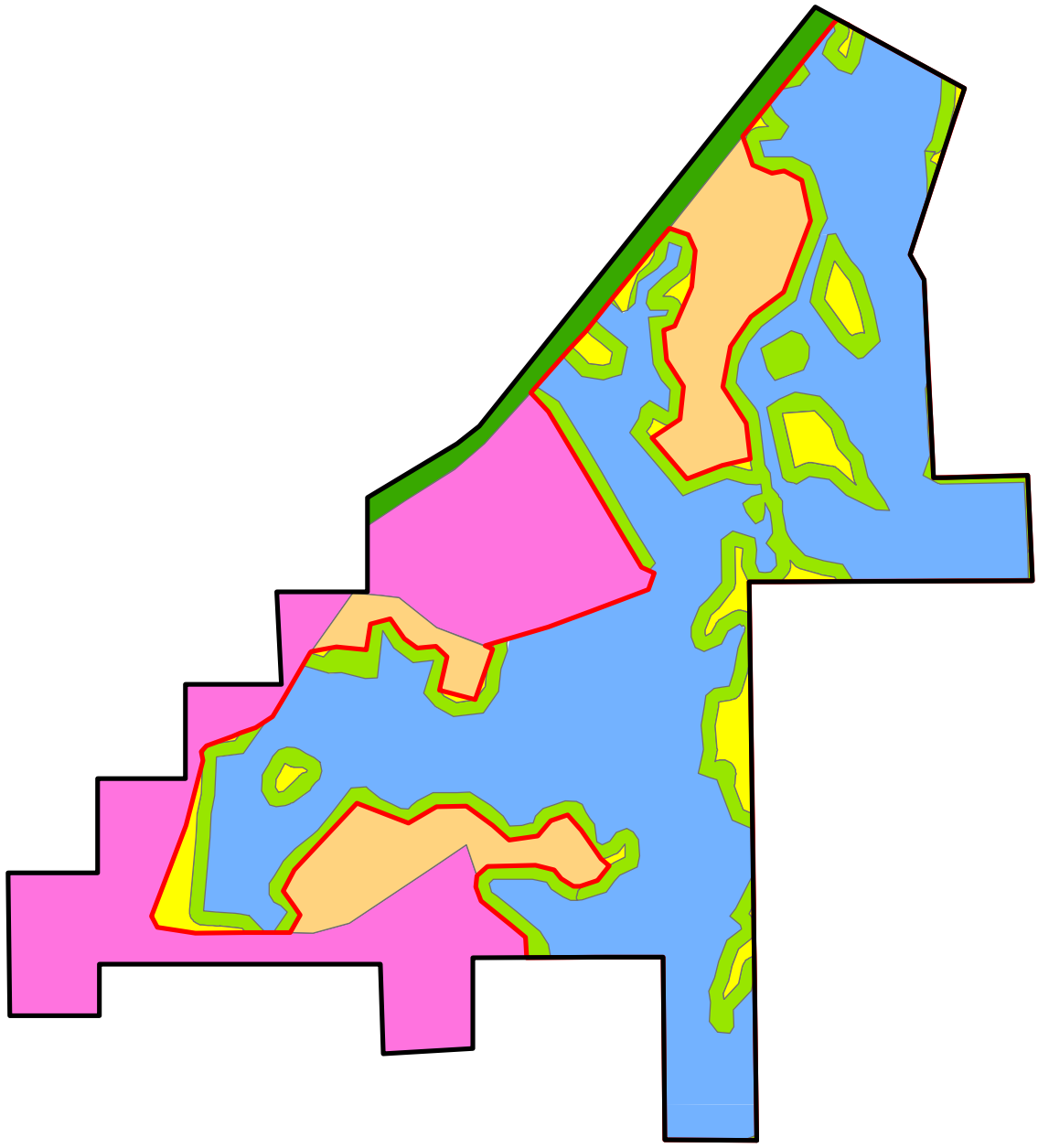
3 1.5 0 3
Miles

Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 7 October 2014

1:190,080
1 in = 3 miles

Source: USA Topo (ESRI)

Figure 2. Sponsor Property and Protective Buffers - Waldheim Mitigation Bank
St. Tammany Parish, Louisiana



2,250 1,125 0 2,250

Feet

- Sponsor Property Boundary: ± 2,200 ac
- Waldheim Mitigation Bank: ± 1,382 ac
- Priority Uplands: ± 240.9 ac
- Secondary Uplands: ± 480.6 ac
- Commercial: ± 71.4 ac
- Upland Buffer beyond 200': ± 82.8 ac
- Upland Buffer within 200': ± 301 ac
- Wetlands: ± 991.2 ac

N W E S

Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 8 October 2014

1:30,000
1 in = 2,500 ft

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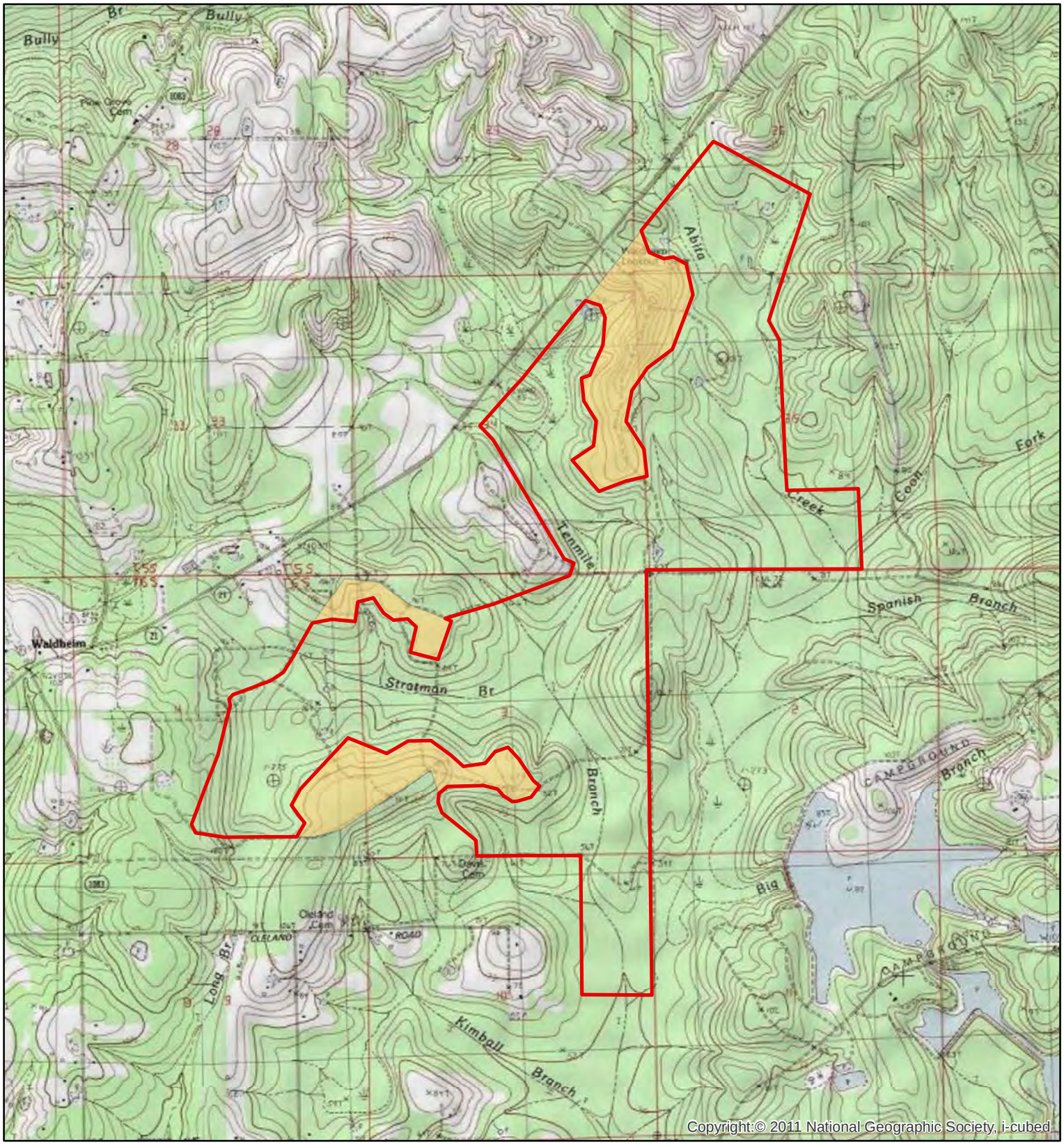
Figure 3a. Waldheim Mitigation Bank - Bush 7.5' Topographic Map
St. Tammany Parish, Louisiana



Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 08 October 2014

Waldheim Mitigation Bank
Priority Uplands

N
W E
S

2,500 1,250 0 2,500
Feet

1:30,000
1 in = 2,500 ft

Source: USA Topo (ESRI)

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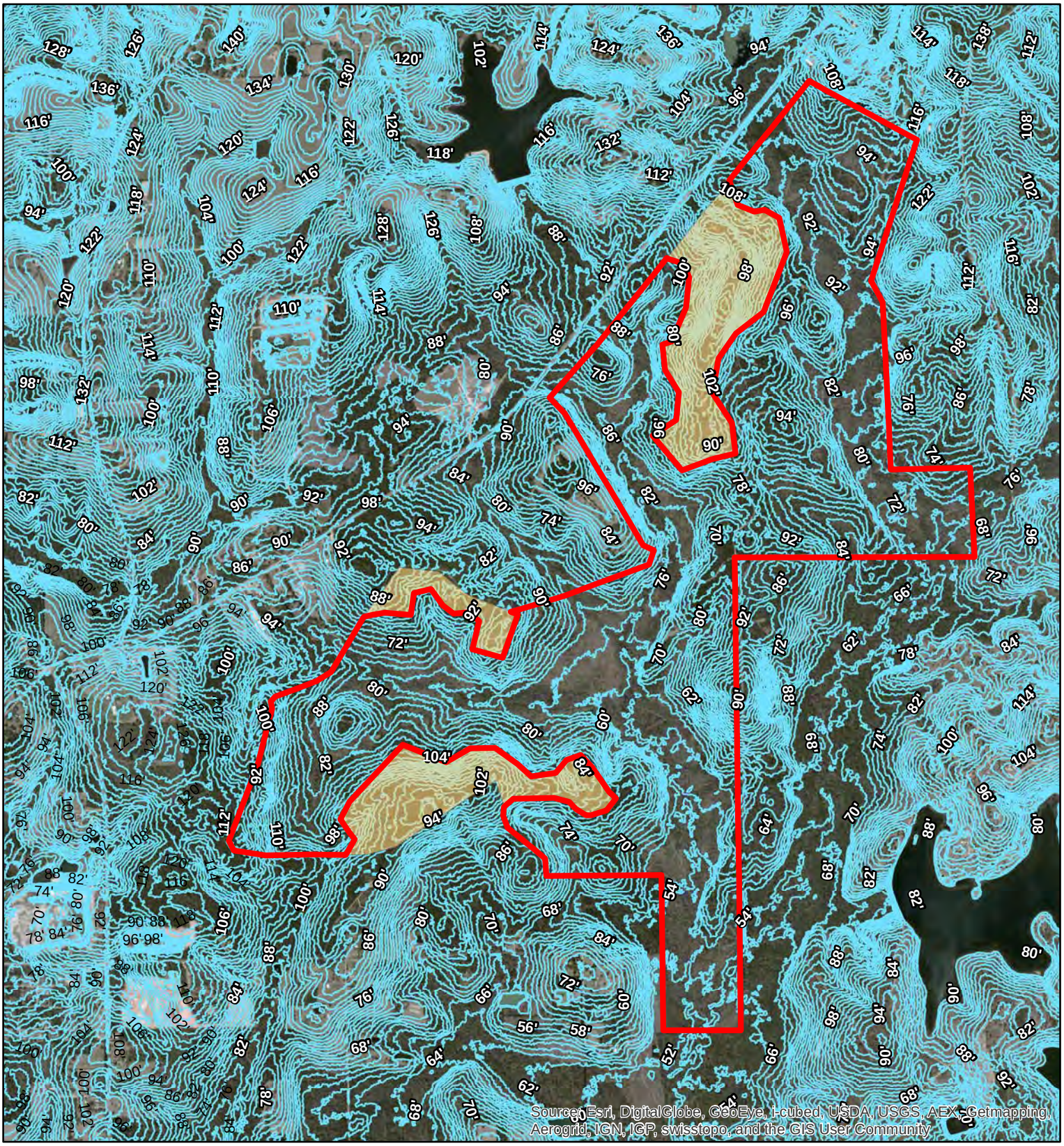
Figure 3b. Waldheim Mitigation Bank - Contour Map
St. Tammany Parish, Louisiana



Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 08 October 2014

Waldheim Mitigation Bank
Priority Uplands
Contours (2-ft)

N
W E
S

2,250 1,125 0 2,250
Feet

1:27,000
1 in = 2,250 ft

Source: World Imagery (ESRI)
LSU Atlas Lidar Data

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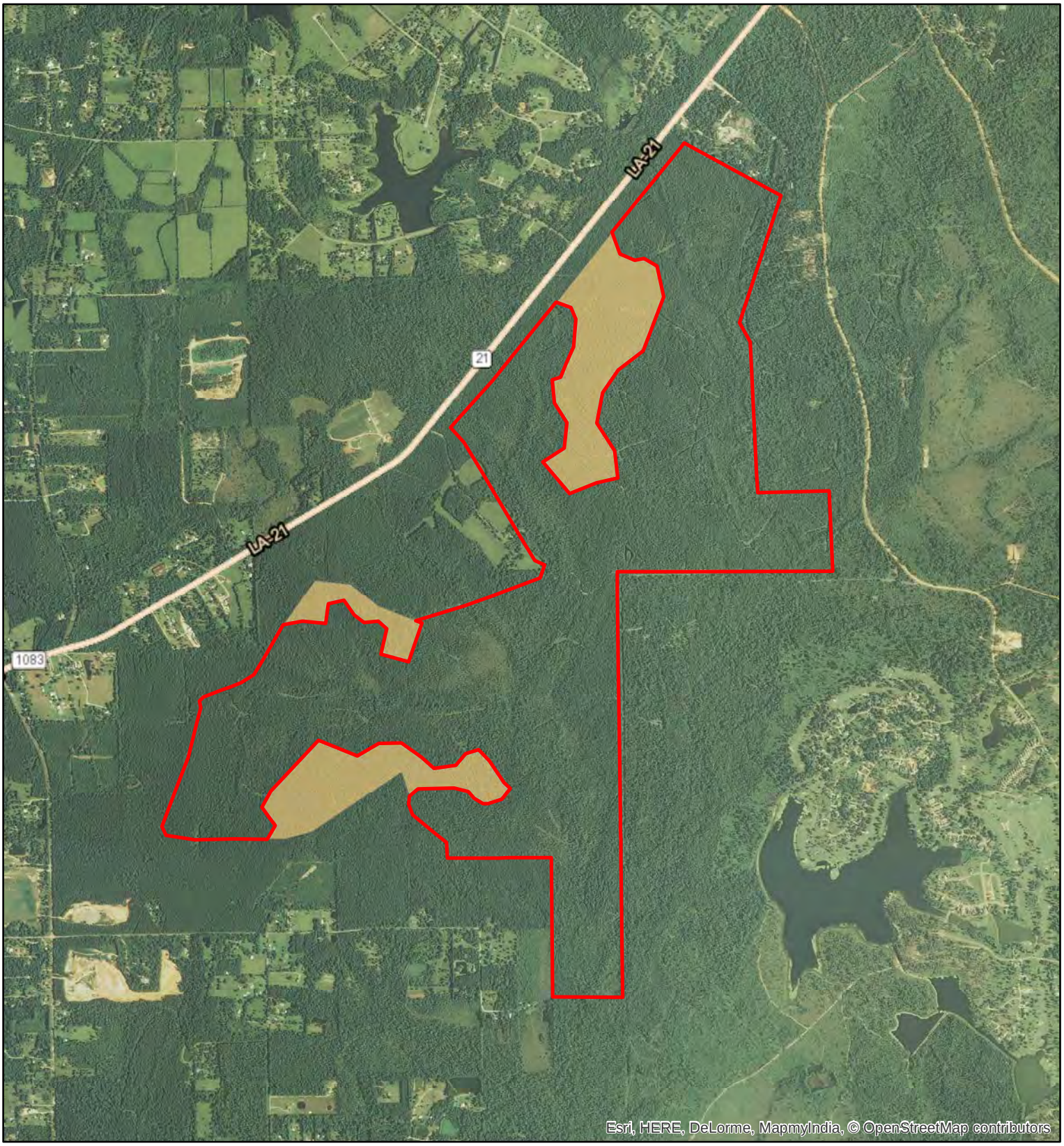
Figure 4. Waldheim Mitigation Bank - St. Tammany Parish, Louisiana



Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 08 October 2014

Waldheim Mitigation Bank
Priority Uplands

N
W E
S

2,500 1,250 0 2,500
Feet

1:30,000
1 in = 2,500 ft

Source: 2013 NAIP Imagery
World Transportation (ESRI)

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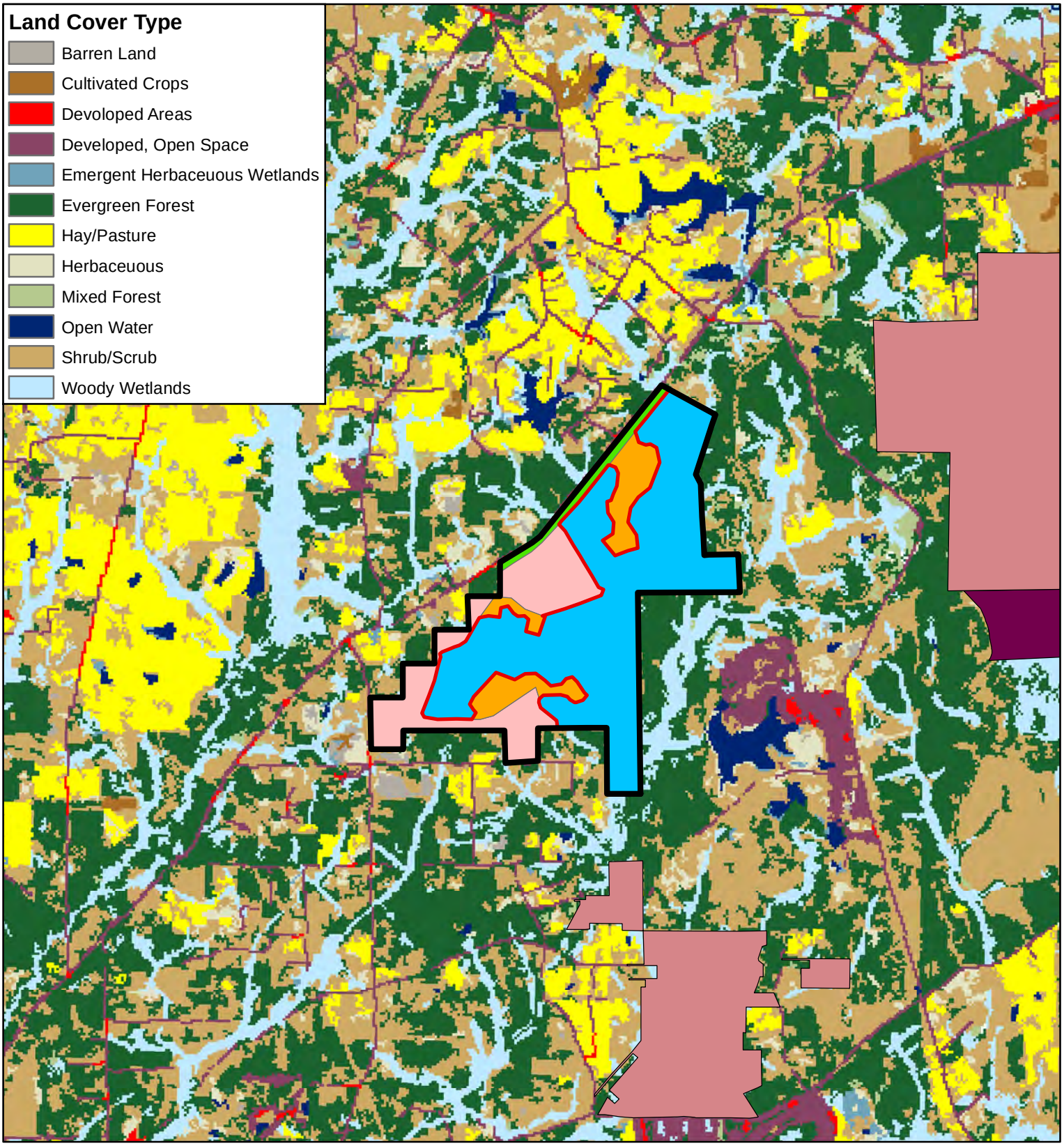
Figure 5. Surrounding Land Use - Waldheim Mitigation Bank
St. Tammany Parish, Louisiana



Waldheim Mitigation Bank
Priority Uplands
Secondary Uplands
Commercial
The Nature Conservancy Lands
Weyerhaeuser Mitigation Area
Sponsor Property Boundary

N
W E
S

1 0.5 0 1
Miles

Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 08 October 2014

1:63,360
1 in = 5,280 ft

Source: 2011 USDA NLCD (National Land Cover Dataset)

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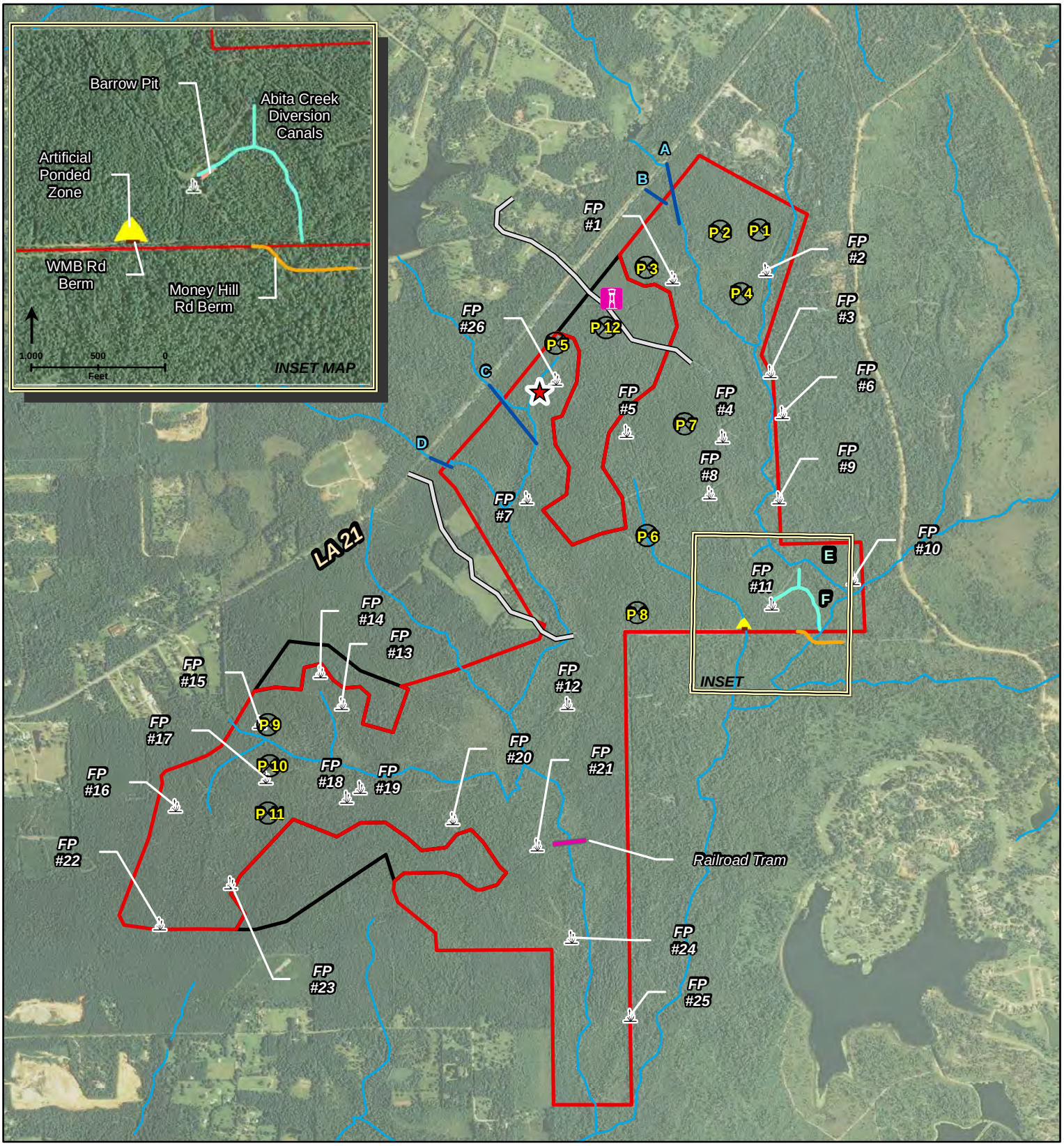
Figure 6a. Current Conditions - Waldheim Mitigation Bank
St. Tammany Parish, Louisiana



Ponds
Food Plot
Cogon Grass
Waldheim Lookout Tower
Abita Creek Diversion Channels
Money Hill Road Berm
Railroad Tram
Stream Channelization
WMB Road
Access Road
Drainages
Artificial Ponded Zone
Barrow Pit
Waldheim Mitigation Bank
Priority Uplands

N
W E
S

2,250 1,125 0 2,250
Feet

Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 08 October 2014

1:27,000
1 in = 2,250 ft

Source: 2013 NAIP Imagery

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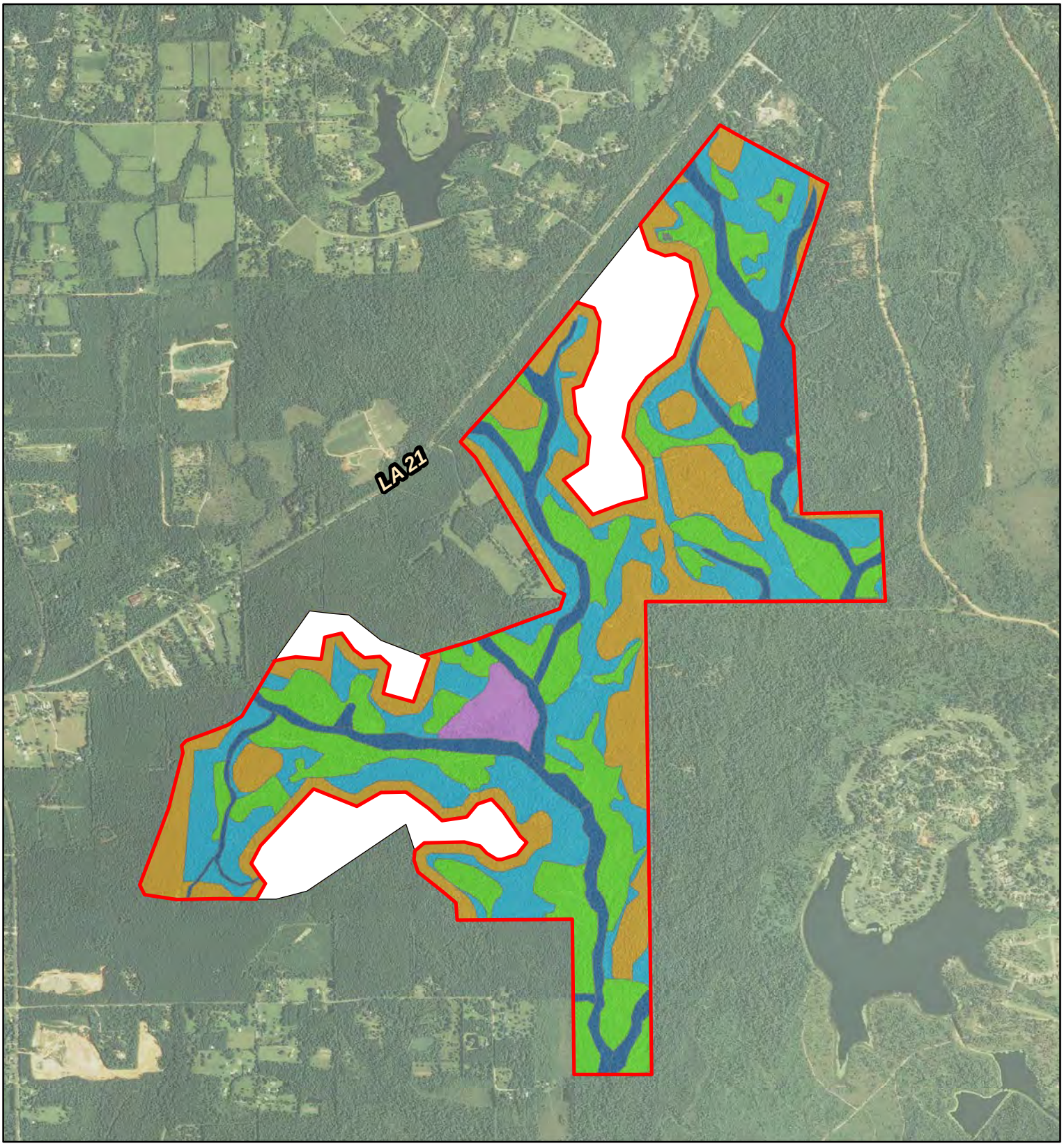
Figure 6b. Current Habitat Conditions - Waldheim Mitigation Bank
St. Tammany Parish, Louisiana



Current Habitat Conditions

- Heavily Stocked Upland Pine Forest: ± 383.8 ac
- Moderately Encroached Savanna Wetland: ± 344.8 ac
- Heavily Encroached Savanna Wetland: ± 394.9 ac
- Open Savanna Wetland: ± 30.2 ac
- Bayhead Streams/Swamps: ± 195.3 ac

- Waldheim Mitigation Bank
- Priority Uplands

N
W E
S

2,250 1,125 0 2,250
Feet

Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 08 October 2014

1:27,000
1 in = 2,250 ft

Source: 2013 NAIP Imagery

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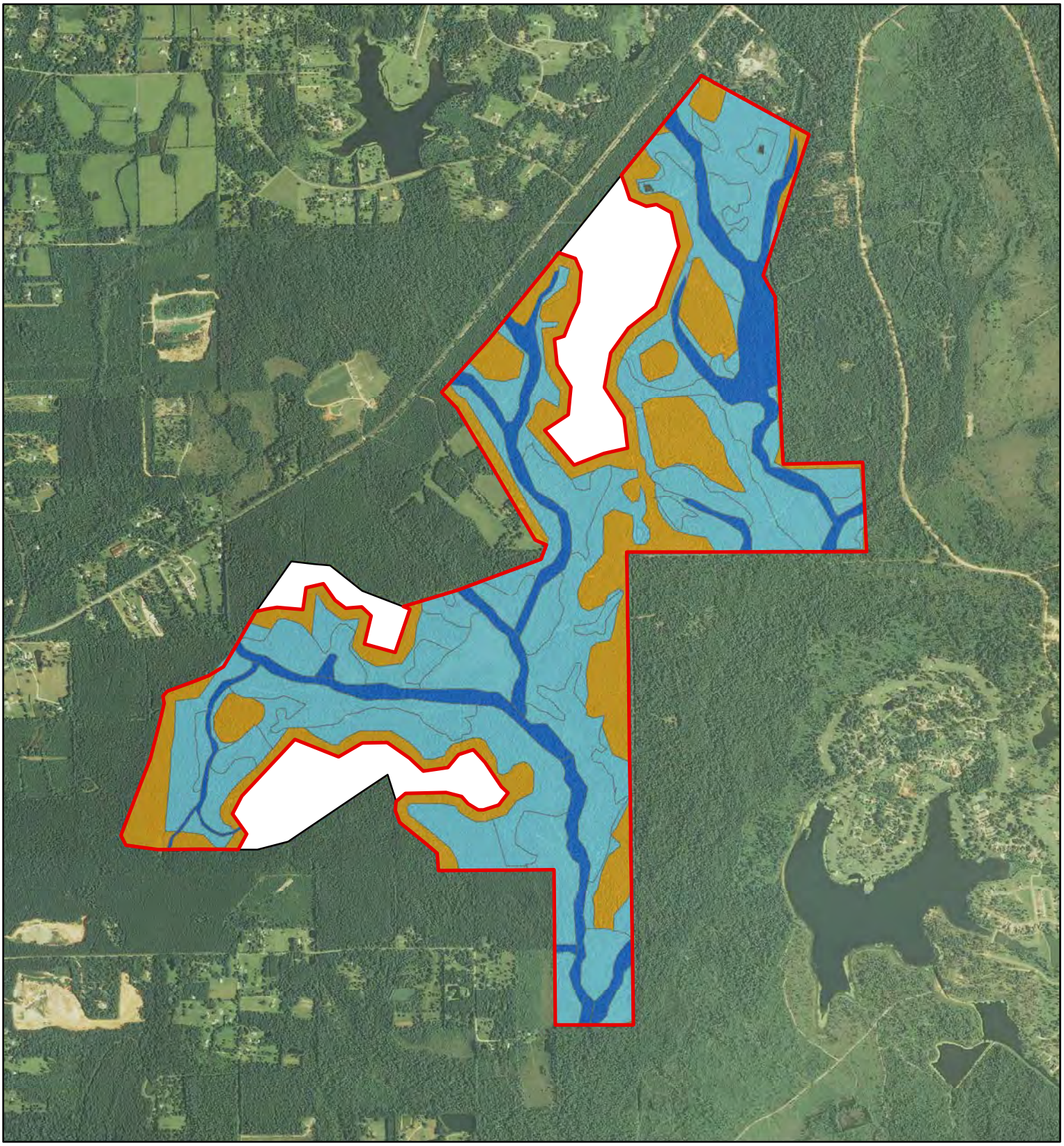
Figure 7. Estimated Historical Habitats/Natural Communites and Proposed Management Types - St. Tammany Parish, Louisiana



Waldheim Mitigation Bank

Priority Uplands

Historical Habitats/Management Types

Bayhead Streams/Swamps: ± 195.3 ac

Wet Longleaf Pine Savanna: ± 795.9 ac

Upland Longleaf Pine Woodland: ± 383.8 ac

N
W E
S

2,250 1,125 0 2,250
Feet

Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 08 October 2014

1:27,000
1 in = 2,250 ft

Source: 2013 NAIP Imagery
Types provided by TNC (L.Smith)

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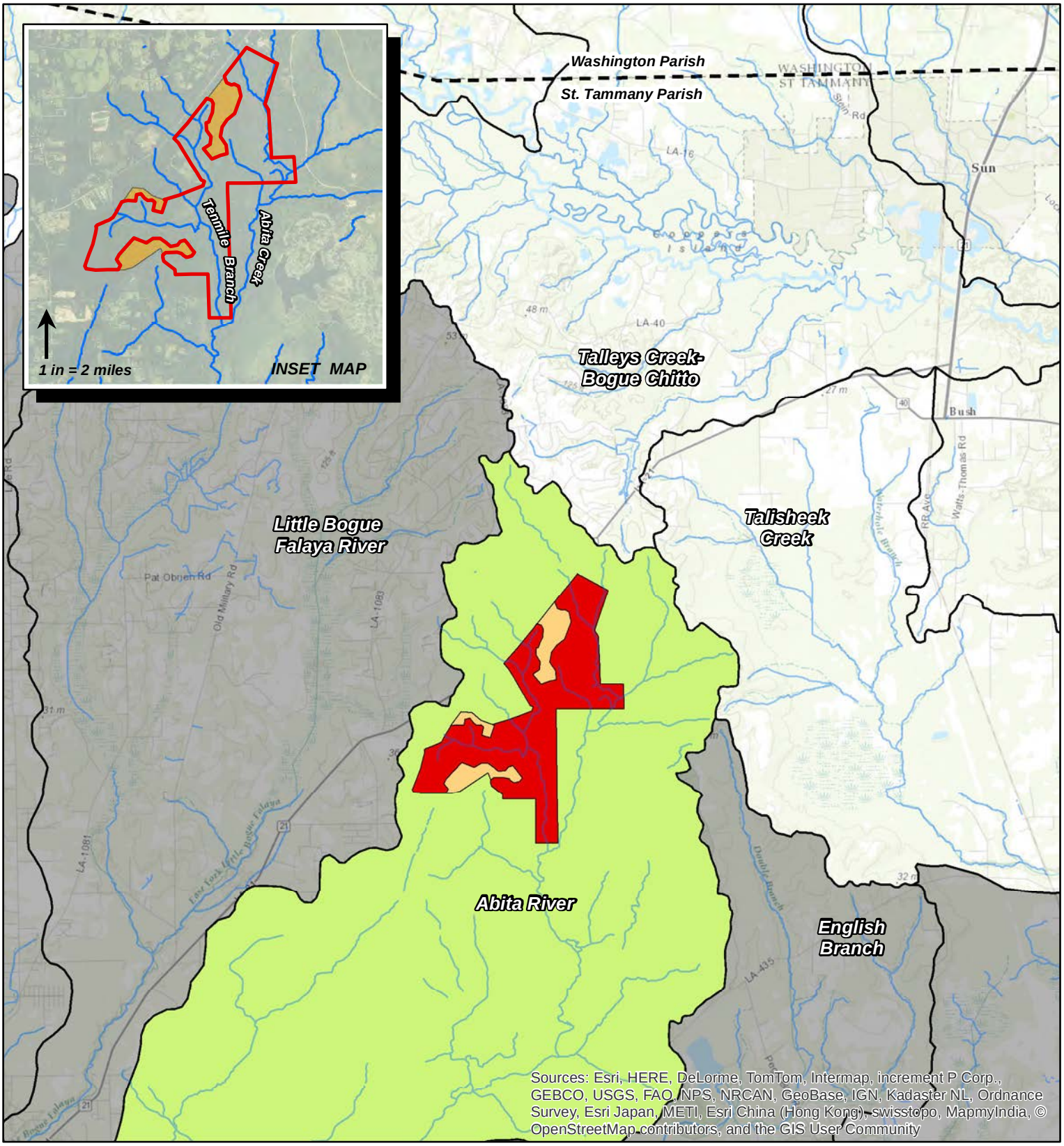
Figure 8. Abita River Watershed Map - Waldheim Mitigation Bank
St. Tammany Parish, Louisiana



Waldheim Mitigation Bank
Priority Uplands
Abita River Watershed (HUC 12)
Watershed Boundaries (HUC 12)
Primary HUC - 08090201
(Bayou Liberty - Tchefuncte)
Parish Boundary
Streams

N
W E
S

1.5 0.75 0 1.5
Miles

Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 08 October 2014

1:95,040

Source: USA Topo (ESRI)
USDA Watershed Boundary Dataset

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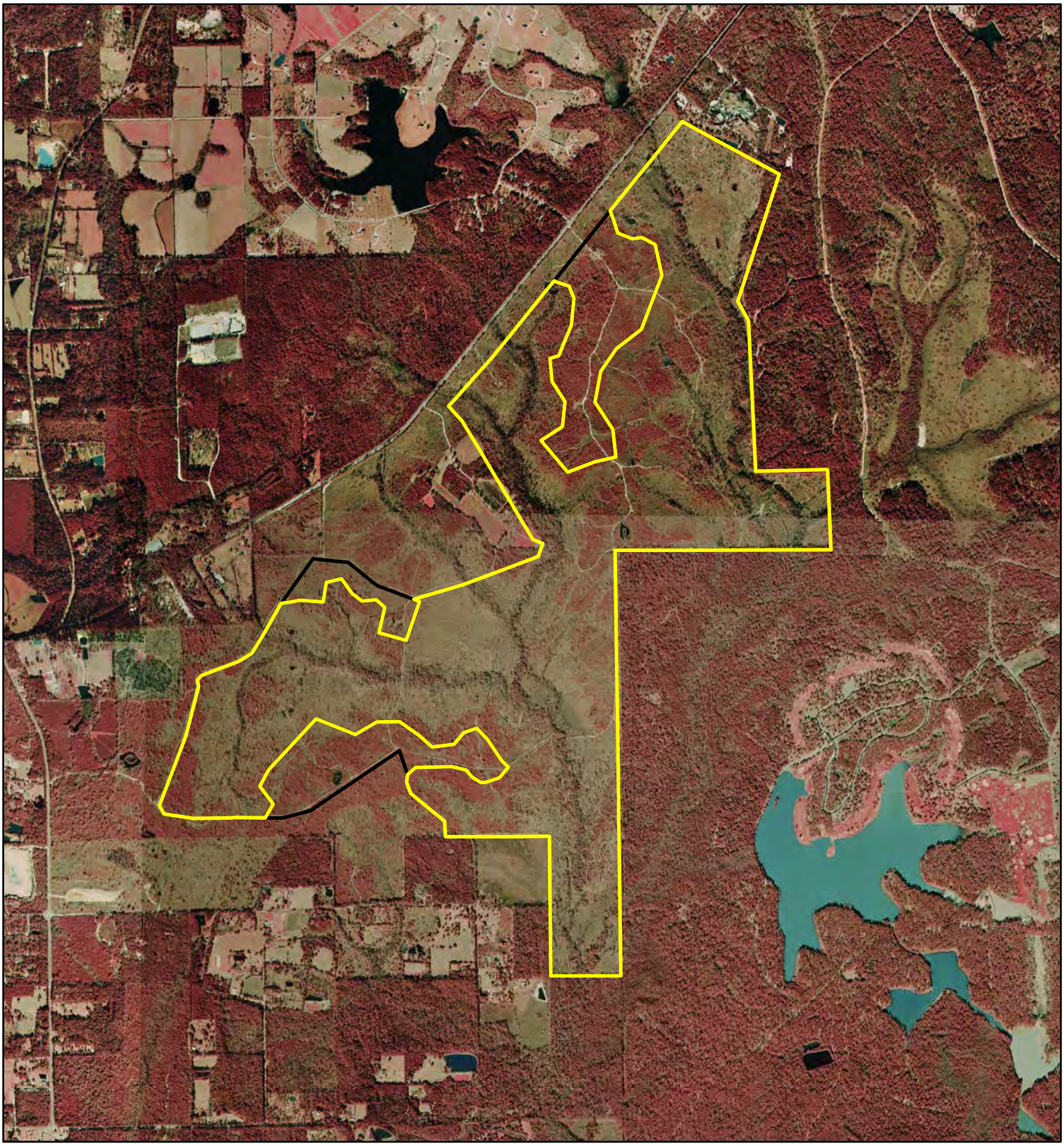
Figure 9a. Historical Aerial (1998) - Waldheim Mitigation Bank
St. Tammany Parish, Louisiana



Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 08 October 2014

Waldheim Mitigation Bank
Priority Uplands

N
W E
S

2,500 1,250 0 2,500
Feet

1:30,000
1 in = 2,500 ft

Source: LSU Atlas 1998 DOQQ Bush and Waldheim Quadrangles

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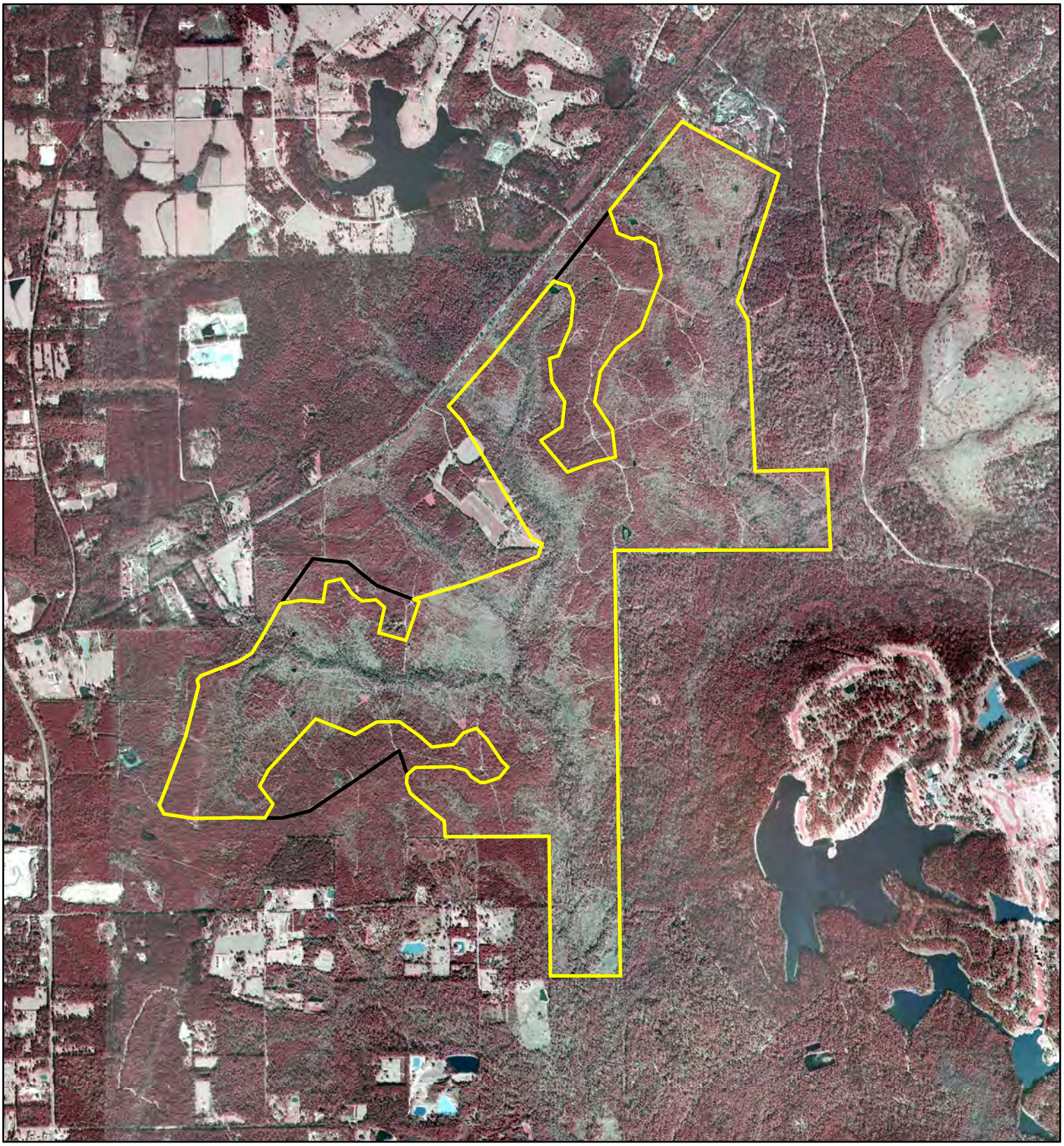
Figure 9b. Historical Aerial (2004) - Waldheim Mitigation Bank
St. Tammany Parish, Louisiana



Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 08 October 2014

Waldheim Mitigation Bank
Priority Uplands

N
W E
S

2,500 1,250 0 2,500
Feet

1:30,000
1 in = 2,500 ft

Source: LSU Atlas 2004 DOQQ
Bush and Waldheim Quadrangles

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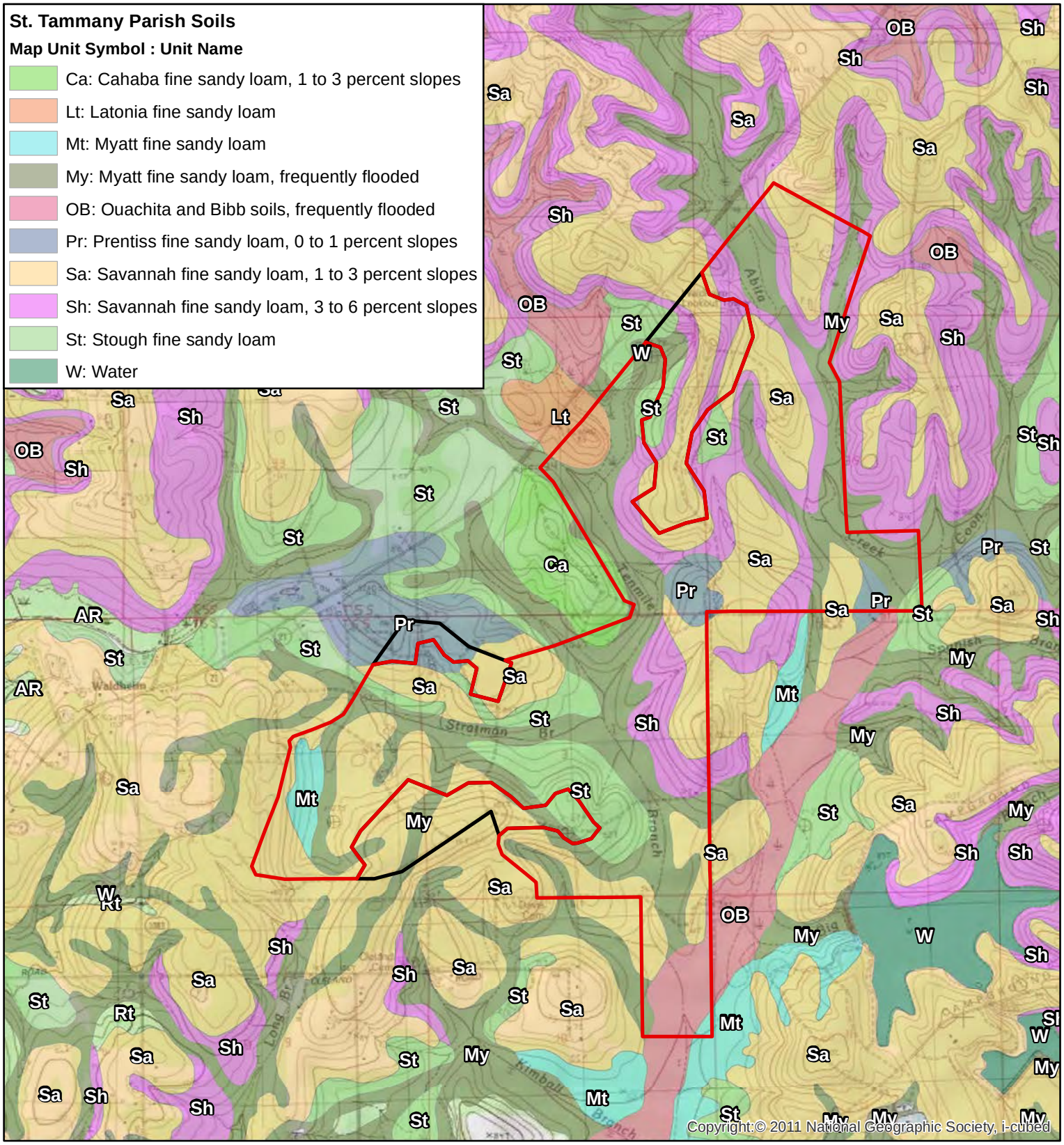
Figure 10. Soils Map - Waldheim Mitigation Bank
St. Tammany Parish, Louisiana



Waldheim Mitigation Bank
Priority Uplands

N
W E
S

2,500 1,250 0 2,500
Feet

Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 08 October 2014

1:30,000
1 in = 2,500 ft

Source: USA Topo (ESRI)
USDA SSURGO Soil Data

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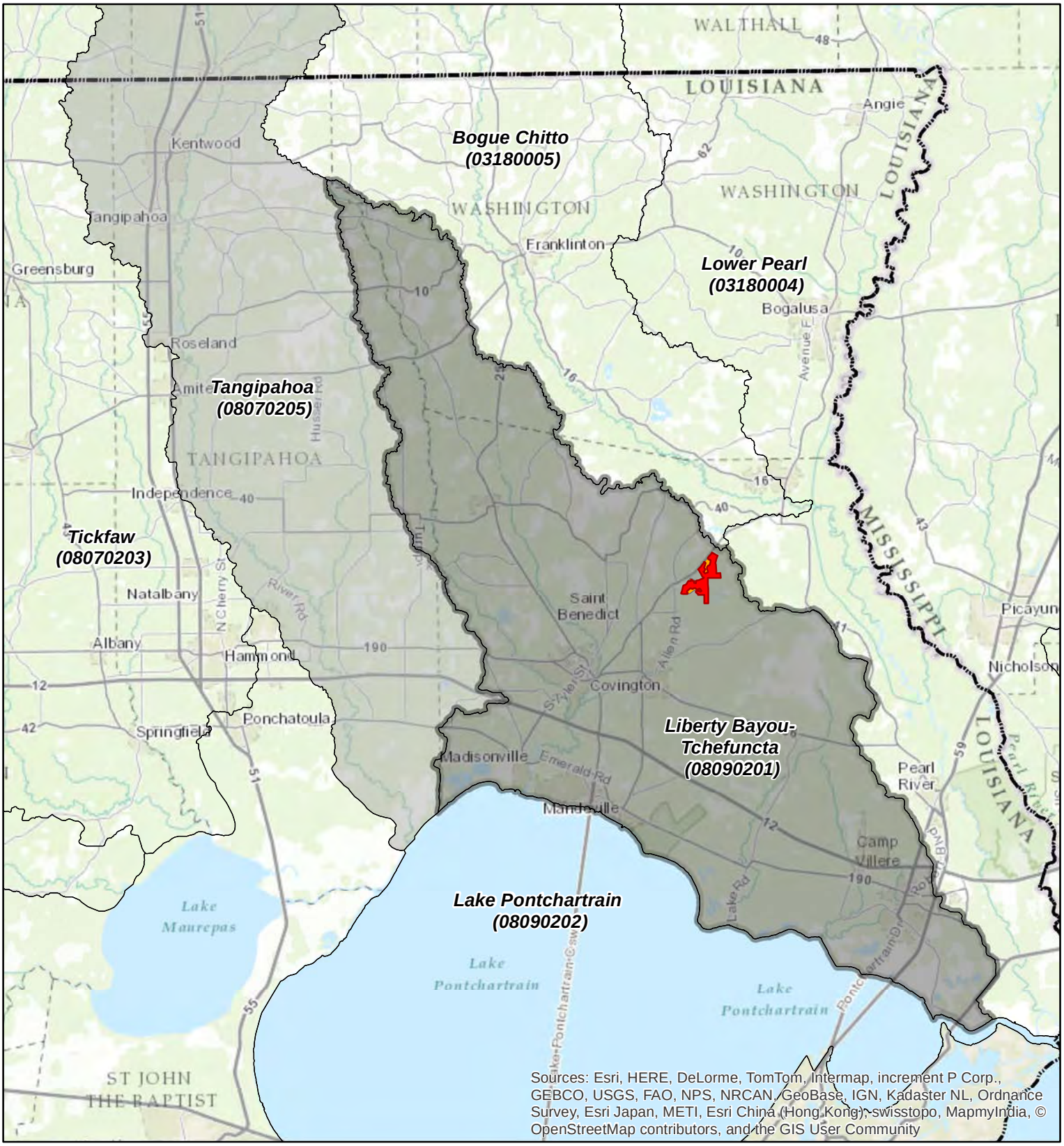
Figure 11. Geographic Service Area - Waldheim Mitigation Bank - St. Tammany Parish, Louisiana



Waldheim Mitigation Bank
Secondary Service Area
Priority Uplands
Watershed Boundaries
Primary Service Area

N W E S

8 4 0 8
Miles

Map Created by: Baton Rouge, Louisiana Field Office (JA)
Date: 08 October 2014

1:506,880
1 in = 8 miles

Source: 2013 NAIP Imagery
USDA Watershed Boundary Dataset

APPENDICES

APPENDIX 1
PHOTOGRAPHS

Photograph 1. Representative area of Heavily Stocked Upland Pine Forest

Photograph 2. Representative area of Heavily Encroached Savanna Wetland

Photograph 3. Representative area of Moderately Encroached Savanna Wetland

Photograph 4. Representative area of Moderately Encroached Savanna Wetland

Photograph 5. Representative area of Open Savanna Wetland

Photograph 6. Representative photo of woods road/atv trail

Photograph 7. Representative photo of Bayhead Stream when flowing

Photograph 8. Representative photo of Bayhead Swamp

Photograph 9. Representative photo of deer hunting stand and shooting lane

Photograph 10. Portion of dry Abita Creek drainage south of where diverted

Photograph 11. ATV trail on fill in Abita Creek drainage where diverted

Photograph 12. Channel E on north end

Photograph 13. Channel E where meets Channel F

Photograph 14. Wide example of Channel F

Photograph 15. Narrow section of diversion Channel F

Photograph 16. Borrow Pit

Photograph 17. Ponded area on south WMB boundary

APPENDIX 2. WETLAND IMPACTS CALCULATION INFORMATION

Non-wetland Features in Wetlands	Area (sq ft)	Distance (ft)	Avg. Width (ft)	Mitigation Type to Deduct From
Ponds				
P1	18216			Pine Sav Rehab 1
P2	12720			Pine Sav Rehab 1
P3	18687			Pine Sav Rehab 1
P4	12209			Pine Sav Rehab 1
P5	78408			Pine Sav Rehab 1
P6	8035			Pine Sav Rehab 1
P7	17510			Pine Sav Rehab 1
P8	42137			Pine Sav Rehab 1
P9	7103			Pine Sav Rehab 1
P10	9007			Pine Sav Rehab 1
P11	11401			Pine Sav Rehab 1
P12	10816			Pine Sav Rehab 1
Spoil from Off-set Stream Channelization				
Channel A	10185	679	15	Pine Sav Rehab 1
Channel B	990	66	15	Pine Sav Rehab 1
Channel C	13755	917	15	Pine Sav Rehab 1
Channel D	615	41	15	Pine Sav Rehab 1
Railroad Tram Berm	12000	600	20	Bayhead Rehab 2
Abita Creek Plug	525	35	15	Bayhead Rehab 2
South Road Berm	1600	160	10	Pine Sav Rehab 1
Artificial Channel Widths				
Channel A	8148	679	12	Pine Sav Rehab 1
Channel B	363	66	5.5	Pine Sav Rehab 1
Channel C	5044	917	5.5	Pine Sav Rehab 1
Channel D	225	41	5.5	Pine Sav Rehab 1
Channel E	1350	300	4.5	Pine Sav Rehab 1
Channel F - eastern portion	4388	975	4.5	Pine Sav Rehab 1
Channel F - western portion	1660	415	4	Pine Sav Rehab 1
Total Square Feet Impacted	**307097**			
Total Acres impacted	**7**			
Area of Pine Savanna Rehab 1 Impacted	**6.7**			
Area of Bayhead Rehab 2 Impacted	**0.3**			

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

DEC 11 2013

Operations Division
Surveillance and Enforcement Section

Mr. Thomas K. Brown
Biological Surveys, Inc.
Post Office Box 94
Covington, Louisiana 70433

Dear Mr. Brown:

Reference is made to your request, on behalf of All State Financial Company, for a U.S. Army Corps of Engineers' (Corps) jurisdictional determination on property located in multiple sections of Townships 5 and 6 South, Range 12 East, St. Tammany Parish, Louisiana (enclosed map). Specifically, this property is identified as the 2200 acre site on and south of Louisiana Highway 20 and east of Louisiana Highway 1083.

Based on review of recent maps, aerial photography, soils data, information provided with your request, and a brief site investigation, we have determined that part of the property is wetland and may be subject to Corps' jurisdiction. The approximate limits of the wetland are designated in red on the map. A Department of the Army (DA) permit under Section 404 of the Clean Water Act will be required prior to the deposition or redistribution of dredged or fill material into wetlands that are waters of the United States. Additionally, a DA permit will be required if you propose to deposit dredged or fill material into other waters subject to Corps' jurisdiction. Other waters that may be subject to Corps' jurisdiction are indicated in blue on the map.

You and your client are advised that this preliminary jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revision prior to the expiration date or the District Commander has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.

Should there be any questions concerning these matters, please contact Mr. Brandon Gaspard at (504) 862-1280 and reference our Account No. MVN 2013-02257-SE. If you have specific questions regarding the permit process or permit applications, please contact our Eastern Evaluation Section at (504) 862-2766. The New Orleans District Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please complete the survey on our web site at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

Robert A. Hoffer

for Martin S. Mayer
Chief, Regulatory Branch

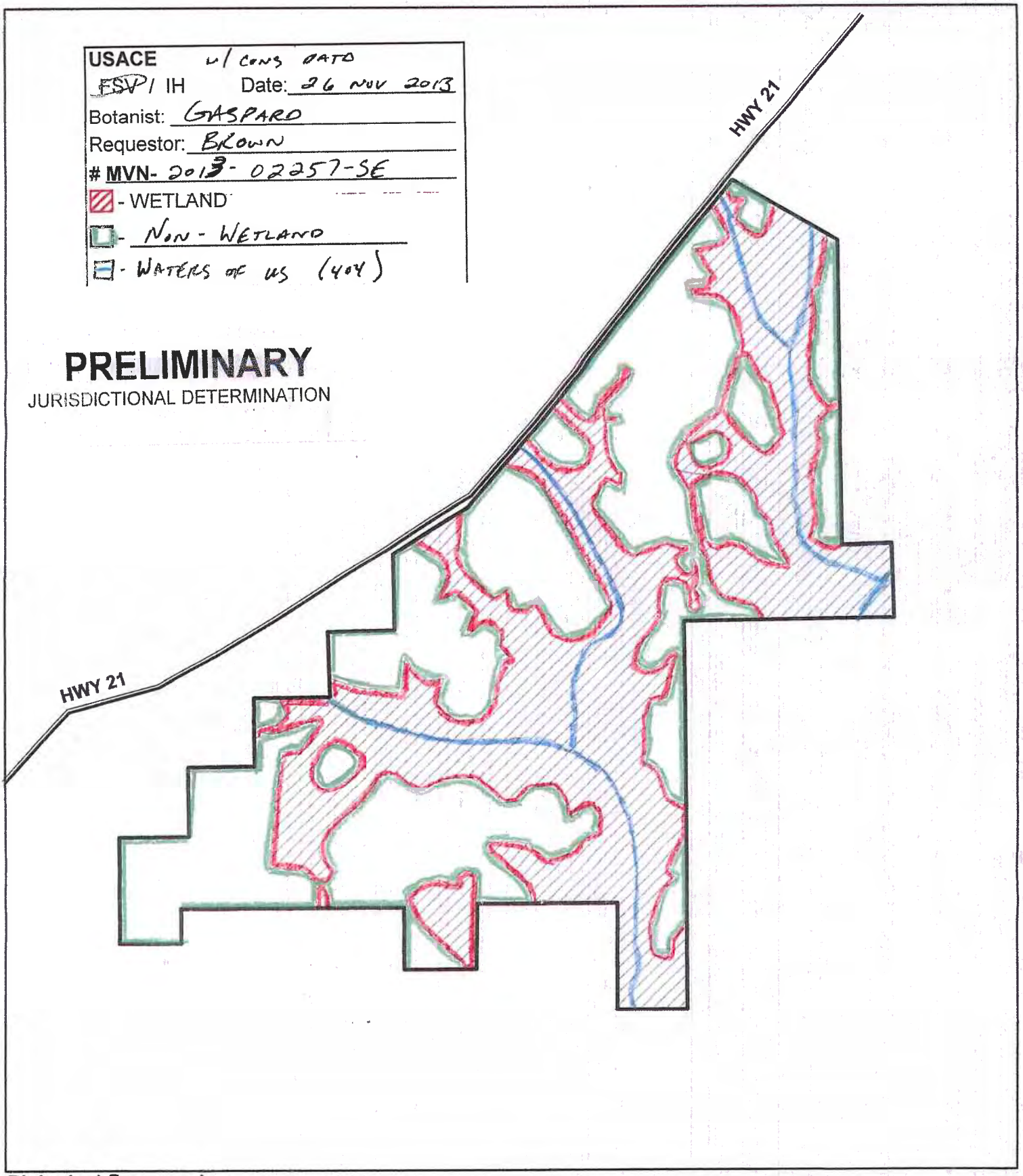
Enclosures

+/- 2200 Acres - Waldheim Property, Abita Springs, Louisiana

All State Financial Company

USACE w/ cons data
FSP / IH Date: 26 NOV 2013
Botanist: GASPARO
Requestor: BROWN
MVN- 2013- 02257-SE
- WETLAND
- NON - WETLAND
- WATERS OF US (404)

PRELIMINARY
JURISDICTIONAL DETERMINATION



Biological Surveys, Inc.
P.O. Box 94
Covington, LA 70433
Date: August26,2013

**Note this is NOT a Boundary Survey and should not be utilized as one.

Legend

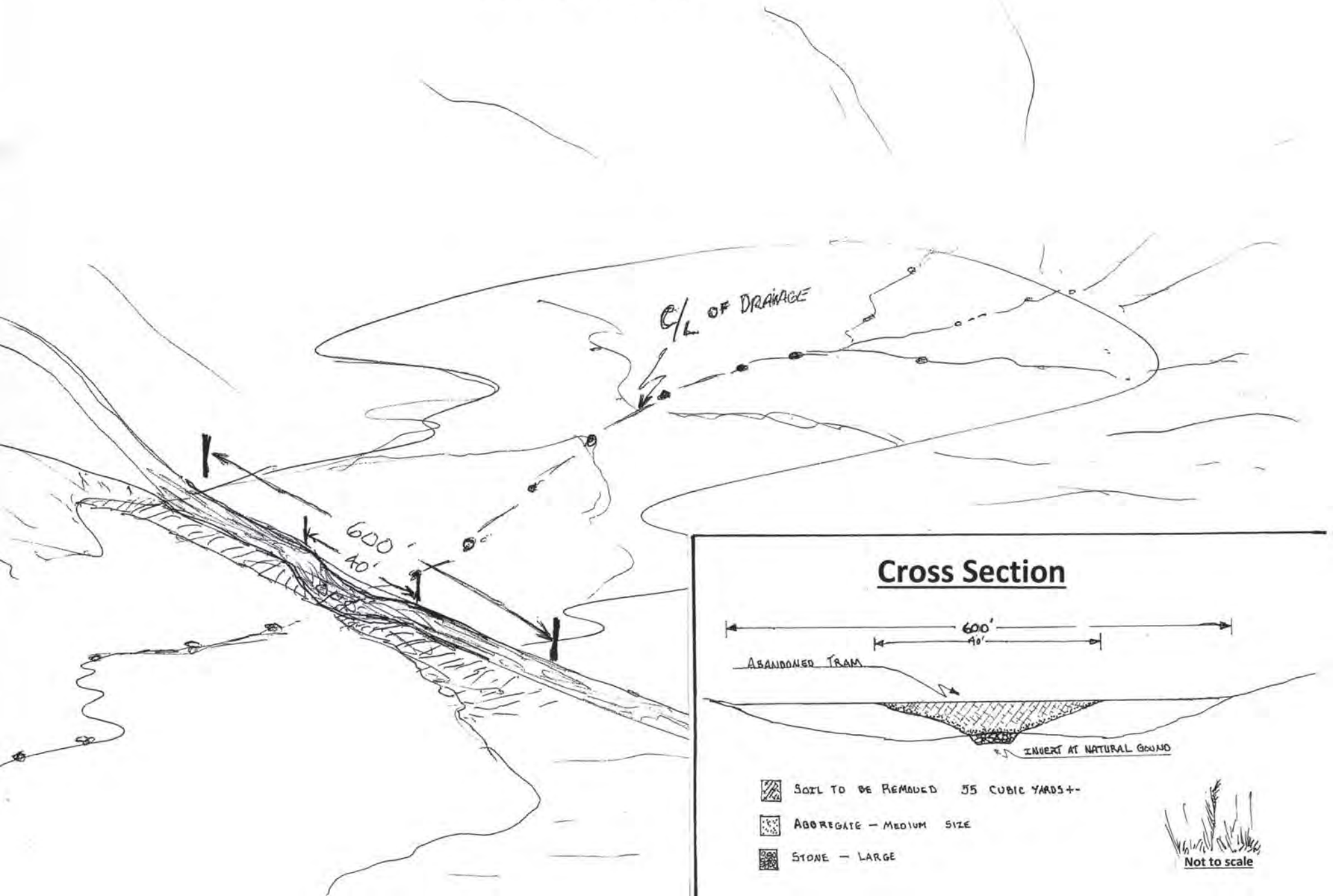
Property Boundary

0 1,500 3,000 6,000

N W E S

Appendix 4a

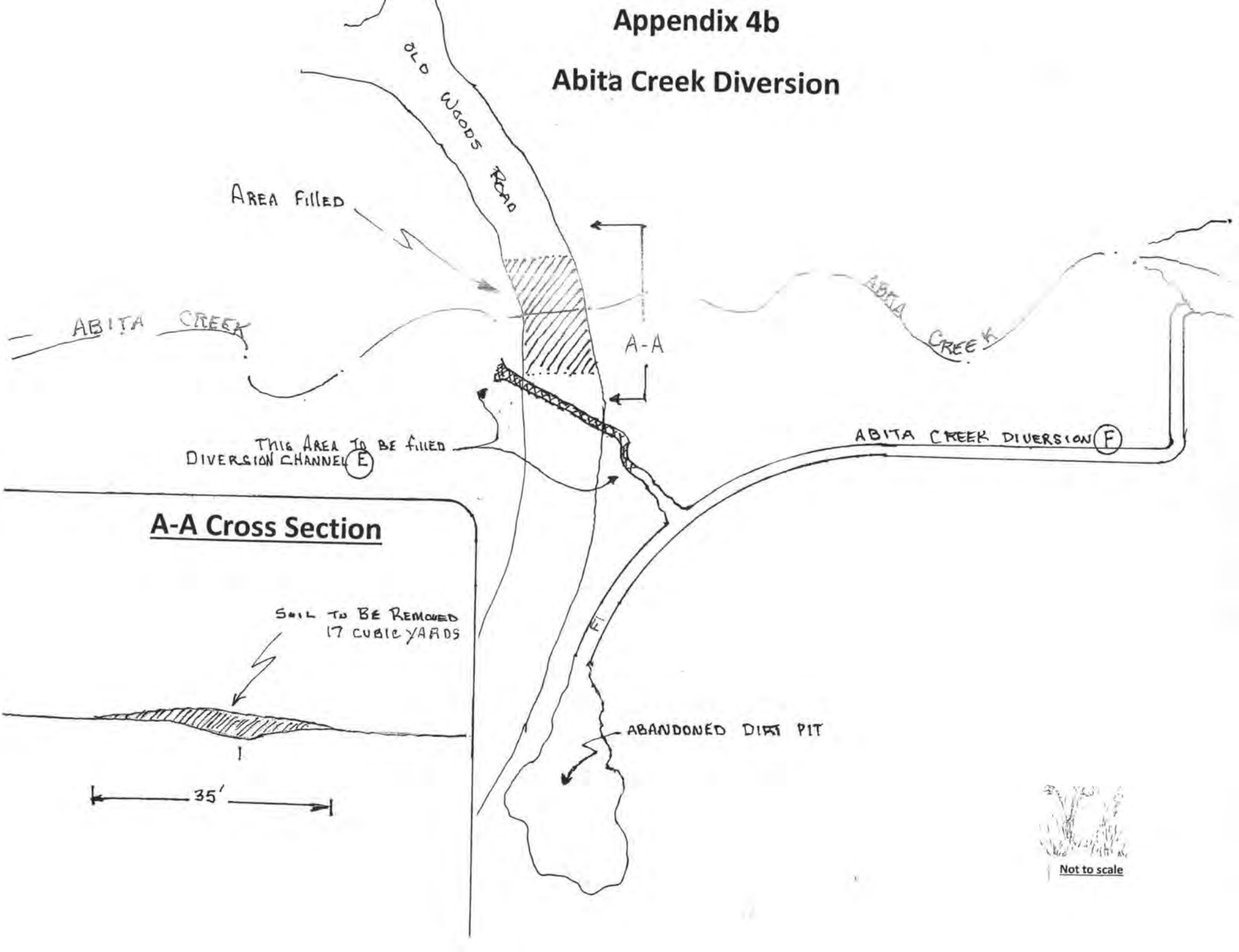
Rail Road Tram



Cross Section

Appendix 4b

Abita Creek Diversion



Appendix 4c

Culvert placement in woods