

PUBLIC NOTICE

June 28, 2021

United States Army
Corps of Engineers
New Orleans District
Attn: Regulatory Branch, ODR
7400 Leake Ave.
New Orleans, Louisiana 70118-3651

Project Manager:
David Soileau
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Application #: MVN-2020-00180-MD

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).

LITTLE WOODS PLATEAU MITIGATION BANK IN CALCASIEU PARISH

NAME OF APPLICANT: Delta Land Services, 1090 Cinclare Drive, Port Allen, LA 70767.

LOCATION OF WORK: The 616.2-acre site is located approximately 4.5 miles southeast of the Lake Charles Municipal Airport and immediately northwest of the intersection of Helms Road and Louisiana Highway 397, in Calcasieu Parish as shown on attached drawings (Latitude: 30.073955° N, Longitude: -93.154199° W). The project site is located in the Calcasieu Basin, within the Lower Calcasieu Watershed, Hydrologic Unit 08080206.

CHARACTER OF WORK: Proposed activities consist of degrading all agricultural surface drainage and irrigation channels, removing all culverts and water control structures, backfilling three cattle ponds to natural grade, degrading a perimeter berm, preparing planting beds, and planting bottomland hardwood tree species. In situ spoil material would be deposited and graded on site to natural elevations to restore natural wetland hydrology.

The comment period on the requested Department of the Army Permit will close **20 days** from the date of this 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 request, and must be submitted so as to be received before or by the last

day of the comment period. Letters and/or comments concerning the subject permit application must reference the Applicant's Name and the Permit Application Number, and can be emailed to the Corps of Engineers project manager listed above, or forwarded to the Corps of Engineers at the address above, **ATTENTION: REGULATORY BRANCH, ODR, David Soileau.**

Individuals or parties may also request an extension of time in which to comment on the proposed work by mail or by emailing the specified project manager listed above. Any request for an extension of time to comment must be specific and substantively supportive of the requested extension and received by this office prior to the end of the initial comment period. The Section Chief will review the request and the requestor will be promptly notified of the decision to grant or deny the request. If granted, the time extension will be continuous and inclusive of the initial comment period and will not exceed a total of 30 calendar days.

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.

The possibility exists that the proposed work may damage or destroy presently unknown archeological, scientific, prehistorical, historical sites, or data. As necessary, copies of this public notice will be sent to the State Archeologist, State Historic Preservation Officer and federally listed tribes regarding potential impacts to cultural resources.

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. Based on the Information Planning and Consultation (IPaC) tool for Endangered Species in Louisiana, as signed on January 27, 2020, between the U.S. Army Corps of Engineers, New Orleans and the U.S. Fish and Wildlife Service, it has been determined that the project would have no effect to the West Indian manatee (*Trichechus manatus*) or the red-cockaded woodpecker (*Picoides borealis*).

This notice initiates the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. The applicant's proposal may result in the destruction, alteration, and/or disturbance of **N/A acres** 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 LA Department of Environmental Quality before a Department of the Army 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 invited to communicate the information contained in this notice to any other parties whom you deem likely to have interest in the matter.

Martin S. Mayer
Chief, Regulatory Branch

Enclosures

**PROSPECTUS FOR THE PROPOSED
LITTLE WOODS PLATEAU
MITIGATION BANK**

MVN-2020-00180-SR

**Calcasieu Parish
Louisiana**

January 13, 2021



**DELTA LAND SERVICES, LLC
1090 CINCLARE DRIVE
PORT ALLEN, LOUISIANA 70767**

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1. INTRODUCTION

Delta Land Services, LLC (DLS) has prepared this prospectus in accordance with 33 CFR § 332.8(d)(2) to establish and operate the 616.2-acre Little Woods Plateau Mitigation Bank (LWPMB). The proposed mitigation bank (Bank) will be established to provide compensatory mitigation for unavoidable impacts to “Waters of the United States¹” authorized through the issuance of Department of the Army (DA) Permits by the U.S. Army Corps of Engineers (USACE) New Orleans District (CEMVN) pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act of 1972.

1.1 Site Location, Regional Description, and Climate

The Bank is located approximately 11 miles due south of the Interstate 10 (I-10) and the Interstate 210 Loop (I-210) intersection in Lake Charles, Calcasieu Parish, Louisiana. More specifically, the northeast corner of the Bank is approximately four miles east-south-east of the Lake Charles Municipal Airport at the southwest corner of Tom Stegal Road and Louisiana Highway 397. Within the Public Land Survey System (PLSS), the Bank is in Sections 23 and 26 of Township 11 South, Range 8 West (Figures 1 and 2). The approximate center point is Latitude 30.07943° N and Longitude 93.15275° W².

The Bank is within the Gulf Coast Prairies (150A) Major Land Resource Area (MLRA) of the Atlantic and Gulf Coast Lowland Forest and Crop Region (LRR T) (NRCS 2006). The Gulf Coast Prairie MLRA is north of the Gulf Coast Marsh MLRA (151) and south of the Western Gulf Coast Flatwoods MLRA (152B), which is a major migration corridor for Nearctic-Neotropical birds (Barrow et al. 2005). Regarding the Ecoregions of Louisiana, the Bank is in the Northern Humid Gulf Coastal Prairies Level IV Ecoregion (34a) within the Western Gulf Coastal Plain Level III Ecoregion (34) (Daigle et. al 2006). The Bank is within the Government Ditch-South Fork Black Bayou Subwatershed (Hydrologic Unit Code [HUC] 080802060203) of the Lower Calcasieu Watershed (HUC 08080206) (Figure 3).

According to Light Detection and Ranging Data (LIDAR), the site ranges from approximately sea level to 12 feet (North American Vertical Datum [NAVD] 2009; Figure 4)³. The Bank is located within the 100-year flood zone per the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM; Figure 5).

¹ 33 CFR § 328 defines waters of the United States as it applies to the jurisdictional limits of the authority of the Corps of Engineers under the Clean Water Act. Waters of the United States include those waters listed in 33 CFR § 328(a). The lateral limits of jurisdiction in those waters may be divided into three categories (i.e., territorial seas, tidal waters, and non-tidal waters, which are further described in 33 CFR § 328.4 (a), (b), and (c).

² All geographic coordinates are based on the North American Datum of 1983 (NAD83).

³ All elevations are purported using North American Vertical Datum (NAVD)

The average annual precipitation is 52.4 inches (Soil Conservation Service 1988). Of this, nearly 29 inches (55%) usually falls between April and September. From 2010 to 2019, the average annual rainfall was 61.6 inches with a minimum and maximum annual rainfall of 35.9 and 75.9 inches, respectively (Table 2)⁴. The average winter temperature is 53°F and the average daily minimum temperature is 43°F (Soil Conservation Service 1988). The average summer temperature is 81°F with an average daily maximum of 90°F. The growing season is approximately 275 days and is based on ambient low temperature of greater than 28°F for two out of 10 years. The elevation of Calcasieu Parish ranges from sea level to approximately 95 feet mean sea level (MSL).

2. PROJECT GOALS AND OBJECTIVES

The Bank will restore⁵ (i.e., re-establish⁶ and rehabilitate⁷) 502.9 acres of gallery forested wetlands⁸ (bottomland hardwood forests, BLH) along the Government Ditch that originates south of Iowea, LA (Table 1, Figure 6). Access features (access points and perimeter trails) and utility rights-of-way will be maintained as non-mitigation acreage. The access features will facilitate monitoring and maintenance during Bank construction, establishment, long-term management, and recreational use of the property.

The restoration of the forested wetlands will provide additional wetland functions⁹ and values not realized under existing land use conditions (e.g., chemical sequestration, flood storage, gallery forest restoration, migratory bird habitat, native fauna habitat, and outdoor recreational experiences). The land uses within one mile of the Bank perimeter are predominantly agriculture (i.e., managed pasture, unmanaged pasture, and cropland) (Figure 7). Existing land uses within and surrounding the Bank are described in section 3.1.2.

Current Bank land uses are rice production and grazing cattle. Current rice production utilizes an off property deep-water well irrigation system and an extensive interior levee system, which separates the Bank from the watershed and

⁴Climod: <http://climod.nrcrcc.cornell.edu/runClimod/346f138661643e81/3/>; Lake Charles Regional Airport, Louisiana. Station ID# 165078.

⁵ Restoration is defined in 33 CFR § 332.2 as the *manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.*

⁶ Re-establishment is defined in 33 CFR § 332.2 as the *manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.*

⁷ Rehabilitate is defined in 33 CFR § 332.2 as the *manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function but does not result in a gain in aquatic resource area.*

⁸ Gallery forest as described in Vidrine (2010).

⁹ Wetland function is defined in 33 CFR § 332 as the *physical (i.e., water storage [USGS 1997]), chemical (i.e., nutrient transformation [USGS 1997]), and biological processes (i.e., organic matter production [USGS 1997]) that occur in ecosystems.*

reduces wetland functional capacity. Furthermore, Chinese tallow (*Triadica sebifera*¹⁰) is aggressively colonizing the pasture areas of the Bank.

Barrow and Renne (2001) determined that migrant species diversity is significantly greater in native, riparian forests (gallery forest) than Chinese tallow forests due to increased insect biomass such as Lepidopteran larvae (Barrow and Renne 2001). Chinese tallow habitat may provide cover for migrants yet lacks forage resources. Therefore, the removal and long-term control of Chinese tallow will increase habitat quality for migratory species.

Localized and downstream water quality will improve by allowing or improving back flooding from the Government Ditch drainage system and roadside ditches into the Bank. Removing the interior drainage features will decompartmentalize the active crop lands, increase the duration and frequency of surface-water retention time for vegetative nutrient uptake, reduce stream sediment load, and decrease chemical runoff by increasing flood storage capacity.

Specifically, the objectives are to restore and protect the physical, chemical, and biological functions of a severely degraded wetland ecosystem:

- restoration and protection of historic, self-sustaining surface hydrology within the Bank through activities such as backfilling artificial drainages, degrading man-made surface features (interior levees and unimproved farm roads), and afforestation with native, wetland tree and shrub species;
- re-establish 262.6 acres of gallery forested wetlands through soil surface grading, hydrologic reconnection, and afforestation;
- rehabilitate 240.3 acres of gallery forested wetlands by removing Chinese tallow, hydrologic reconnection, and afforestation;
- restore 98.3 acres of hardwood forest buffer as well as maintain herbaceous buffer to the east and south of the project area; and
- provide for long-term protection through the execution of a perpetual-term conservation servitude and establishment of a long-term fund to cover annual expenditures associated with monitoring, maintenance, and management of the Bank.

3. ECOLOGICAL SUITABILITY OF THE SITE / BASELINE CONDITIONS

Implementing the Bank will restore a gallery, forested wetland by re-establishing wetland hydrology and a native tree and shrub community. The Bank will improve the physical, chemical, and biological wetland characteristics and support the aquatic resources and functions stated in 33 CFR § 332.8(d)(2)(vii)(B). Historic

¹⁰ All scientific plant names in this report are from USACE National Wetland Plant Database (USACE 2020) http://wetland-plants.usace.army.mil/nwpl_static/v34/home/home.html Accessed December 16, 2020.

and current site conditions of the Bank and adjacent land uses are discussed within this section.

The Bank lies within the Government Ditch Subwatershed, which the headwaters originate approximately 10.5 miles northeast of the Bank and approximately 3.5 miles southeast of Iowa, Louisiana (Figure 8). The upstream runoff from the Government Ditch subwatershed will provide flood water, sediments, organic matter to the Bank. Localized rainfall will provide surface water connection to adjacent lands which will naturally drain through the Bank, the Government Ditch, South Fork Black Bayou, Gulf Intracoastal Waterway (GIWW), Calcasieu Lake, and eventually into the Gulf of Mexico. Including the restored perimeter buffer, the Bank will provide an additional 601.2 acres of restored, native habitat to the existing conservation corridor in the lower reaches of the Government Ditch-South Fork Black Bayou Subwatershed as described in section 3.1.2.3.

The Bank is approximately 20.5 miles north of the Gulf of Mexico coastline, and it will provide habitat for resident wildlife and migrating Nearctic-Neotropical species (Barrow et al. 2005, NRCS 2005, Vermillion et al. 2008). Gautreaux (1975) and Barrow et al. (2005) define coastal forests as wooded communities within approximately 62 miles of the Gulf Coast. Additionally, Barrow et al. (2005) delineated the coastline of Cameron Parish as “consistent abundant habitat” in the Northwest Region of the Gulf of Mexico. Facultative wetland forest and shrub species are habitat components that provide foraging cover (e.g., twig buds, flowering parts, hard mast, and soft mast), resting cover (e.g., understory, mid-story and evergreen canopies), and escape cover from predators (e.g., raptors and mammals) (Barrow et al. 2005). Louisiana Natural Heritage Program (LNHP 2009) purported that baygalls likely occurred in the coastal prairie system. Baygalls are typically shrub-dominated or mature swamps having evergreen shrubs comprising the midstory and understory strata.

3.1 Land Use

3.1.1 Historical Land Use

Due to channelization of the natural waterways (i.e., straightening and deepening), surmising the historic, natural dendric patterns of the Government Ditch-South Fork Black Bayou Subwatershed is difficult. However, there are remnant stream curvatures that remain as part of the Government Ditch and various drainage laterals. Historically, the Southwest Louisiana Coastal Prairie was composed of three general habitats: meandering, dendric stream patterns, gallery forests along the streams (terraces, bottomlands, and swamps), and prairie coves (non-wetland and wetland). The gallery forests were comprised of upland and wetland communities (e.g., swamp, bottomland hardwood, flatwoods, baygalls; (LNHP 2009). The coastal prairie areas are described as herbaceous coves located between the gallery forests.

Vidrine (2010) noted that restoration of gallery forests within the prairie ecosystem may be required in prairie restoration efforts to create sustainable ecosystems. The gallery forests were the riparian wetland and upland forests along the streams and bayous with defined habitat edges between the gallery forests and prairie (LNHP 2009).

The gallery forest of the Bank falls within the Calcasieu Prairie (Newton 1972, Allen 2006, LNHP 2009). The Bank soils are predominantly Judice soils, which are depressional, flat topography and are wooded under natural conditions¹¹. Afforestation will occur on two soils types: 1) Judice and 2) Mowata-Vidrine. The area surrounding the Bank is comprised of pasture and crop land. Prior to 1940 and through present, Bank land use was for agricultural purposes (e.g., rice and livestock; Figures 9 - 16).

3.1.2 Existing / Current Land Use

The Bank and adjacent land uses consist of grassland / pasture and croplands with few, large home sites along the north-east perimeter boundary (Figures 15 and 16). Site photographs of the existing conditions are provided in Attachment A. The current land use of the Bank is pasture and rice cropland.

Watershed land use is presented as three geographic areas encompassing the Bank.

1. Land use within one-mile of the Bank perimeter is hay / pasture (44.2%), cropland (28.5%), conservation area (22.6%), developed land (2.5%), herbaceous wetlands (2.0%), shrubland (0.1%), and woody wetlands (0.1%) (Figure 7).
2. Land use within the Government Ditch-South Fork Black Bayou Subwatershed are grassland / pasture (41.8%), cropland (28.5%), conservation area (14.5%), herbaceous wetlands (6.2%), developed (3.7%), woody wetlands (2.3%), shrubland (1.3%), evergreen forest (1.0%), open water (0.7%), deciduous forest (<0.1%), and mixed forest (<0.1%) (Figure 18).
3. The aggregate of four, adjacent 12-digit HUCs (aggregate Subwatersheds) consists of Indian Bayou Canal (080802020401), Wild Island-Bell City Drainage Canal (080802020402), Black Bayou (080802020202), and Government Ditch-South Fork Black Bayou (080802020203) (Figure 19). Land uses within the aggregate Subwatersheds are grassland/pasture (35.6%), cropland (36.5%), herbaceous wetlands (11.9%), developed (5.4%), conservation area (4.7%), woody wetlands (3.6%), open water

¹¹ U.C. Davis Soil Resource Laboratory (2020) *Soil Web Soil Survey*. Accessed January 23, 2020 URL: http://casoilresource.lawr.ucdavis.edu/soil_web/ssurgo.php

(0.9%), shrubland (0.9%), evergreen forest (0.4%), deciduous mixed forest (0.1%).

3.2 Soils

Soils mapped within the Bank are Judice silty clay (Ju) and Mowata-Vidrine silt loam (Mt) (SCS 1988; U.C. Davis Soil Resource Laboratory 2020; Figure 20). Ju and Mt soils are in Hydrologic Group D, which have a high runoff potential when thoroughly wet, restrictive water movement, and a high clay component. The Bank soils were mapped as having primarily hydric components (NRCS 2017). Soil samples displayed hydric indicators at 19 of the 19 data points in the Bank area (DLS 2020). Observed hydric soil indicators were depleted matrix (F3), Redox Dark Surface (F6), Depleted Dark Surface (F7), and coast prairie redox (A16). Based on an examination of historic aerial photography, agricultural soil disturbances have been prevalent throughout the Bank prior to the 1940's. These soils have been influenced by agricultural manipulation for crop production and livestock production (e.g., cultivation, water leveling, impounding, erosion, soil compaction, monoculture crop production, and cattle grazing).

The Judice series consists of very deep, poorly drained, very slowly permeable soils formed in clayey sediments on terraces of the late Pleistocene age. These nearly level soils are in broad, slightly-depressional areas with 0-1% slope. Judice soils are hydric and wooded under natural conditions¹².

The Mowata-Vidrine association is listed as a partially hydric soil, whereas the Mowata soils are inter-mound hydric soils and Vidrine soils non-hydric soils of the mima mound complex common in the Southwest Louisiana coastal prairie. The Mowata series consists of very deep, poorly-drained and very slowly permeable soils, which are nearly level with slopes from 0 to 1%. The Vidrine series consists of very deep, moderately well-drained to poorly drained, and slowly permeable soils, which are narrow to broad mounds with 0-3% slope.

3.3 Hydrology

3.3.1 Contributing Watershed

The Bank is located within the 8-digit, Lower Calcasieu Watershed (approximately 1,269 square miles; Figure 3). More specifically, the Bank lies within the Government Ditch-South Fork Black Bayou Subwatershed (approximately 55 square miles), which the headwaters originate southeast of Iowa, Louisiana (Figure 8). The Government Ditch drainage system provides flood water, sediments, organic matter, and runoff water from agricultural areas north of the Bank. Localized rainfall events provide surface water for waterflow connectivity to

¹² U.C. Davis Soil Resource Laboratory (2020) *Soil Web Soil Survey*. Accessed January 23, 2020 URL: http://casoilresource.lawr.ucdavis.edu/soil_web/ssurgo.php

land adjacent to the Bank. Under the present surface conditions (man-made topography), the Bank impedes sheet flow to the Government Ditch.

3.3.2 Historical Hydrology and Drainage Patterns

In review of the Lake Charles S.W., 1942 15-minute quadrangle map, the topography and drainage patterns flow from northeast to southwest (Figure 8). Observations of the existing stream channel indicate channel straightening and deepening for drainage purposes (i.e., Government Ditch leading from Iowa, LA into South Fork Black Bayou).

3.3.3 Existing/Current Hydrology and Drainage Patterns

The Bank is positioned within the 100-year flood plain (Figure 5). Drainage for pasture and croplands is gravity drained and the man-made drainage features inhibit water flow to and from the Government Ditch (Figures 8 and 21). The cropland (rice fields) flow into the Government Ditch; however, the spoil levee, riser water control structures, and earthen berms stop normal surface flows from the Government Ditch.

Rainfall within the Government Ditch Subbasin affects the Bank hydrology and hydrology of adjacent areas. Above normal, consecutive rainfall events may occur within any season of the year and surface flooding is normal (highlighted cells in Table 2). From 2010 to 2019, the annual rainfall at the Lake Charles Regional Airport ranged from 35.9 inches to 75.9 inches with a mean of 61.6 inches (Table 2). Monthly rainfall averages ranged from 3.30 inches to 8.6 inches. High rainfall events are common from April to October although high rainfall events occur throughout the year. Therefore, the frequency and duration of surface saturation is expected to occur at least once a year. In example, from 2010 to 2019, at least one abnormally high rainfall period of one to three months occurred in eight of 10 years (2012 through 2019) and two of 10 years experienced drought conditions (2010 and 2011, Table 2).

The active agricultural fields (rice) are impounded, gravity-drained, and irrigated by an off property water-well. The natural surface elevation slopes towards the Government Ditch. Outbound water flow utilizes riser control structures to release excessive water into the Government Ditch.

Ebb and flow water movement within the pasture is facilitated by partial openings (degraded culverts) leading to the Government Ditch system (Figure 22). In addition, within the pasture areas, remnant rice levees block surface flow. Within the rice fields, existing levees, drainage laterals, and riser water control structures impound surface water, impede surface flow, and stop back flooding. The cropland does not back flood unless sequential high rainfall events have occurred. Restoring hydrology will be successful as interior levees and perimeter berm will be degraded or gapped, interior drainageways will be swaled, and spoil-bank gaps

will be implemented to cease impounding and allow ebb and flow water movement (Figures 24 and 25). In addition, surface water flow from the surrounding land will not be impeded as it currently occurs.

Soil sample data for the wetland delineation indicated that 18 of the 19 data points exhibited wetland hydrology (DLS 2020). The observed primary hydrology indicators include Surface Water (A1), Saturation (A3), and Oxidized Rhizospheres (C3) and secondary Indicators observed were Surface Soil Cracks (B6), Crayfish Burrows (C8), and the FAC-Neutral Test (D5).

3.3.4 Jurisdictional Wetland Determination

The Preliminary Jurisdictional Determination (PJD, MVN-2020-00180-SR) was approved on April 7, 2020 (Attachment B). The PJD review area was 940.4 acres, which includes 897.1 acres of wetland, 3,785 feet of nonwetland waters of South Fork Black Bayou, and 5,380 feet of nonwetland waters. The delineated wetlands include the entire area of the Bank mitigation area (616.2 acres).

3.4 Vegetation

3.4.1 Historical Plant Community

As indicated on the 1942 15-minute and 1955 7.5-minute quadrangle maps, the Bank and the adjacent area were described as Plateau Petit Bois (i.e., translation Little Woods Plateau; Figures 2 and 8). Approximately, 91% of the Bank soils are mapped as Judice silty clay (Judice). Judice soils are hydric and described as wooded under natural conditions¹³. The historic quadrangle and web soil descriptions indicate that prior to agricultural conversion, the Bank and surrounding areas were forested. Historically, Plateau Petit Bois was a collection of forested terraces, baygalls, and mottes along the original, natural drainage patterns of the Government Ditch channel.

3.4.2 Existing Plant Community

For each habitat type, cropland and pasture, the plant species were observed over all wetland data points. Bare soil and rice stubble are common in the cropland acres. Graminoids were dominant in the pasture areas and encroaching, woody species were common.

Cropland habitat: cultivated field (bare soil) and rice stubble (*Oryza sativa*).

Pasture: common carpetgrass (*Axonopus fissifolius*), Bermudagrass (*Cynodon dactylon*), broomsedge bluestem (*Andropogon virginicus*), Bahiagrass (*Paspalum notatum*), common spikerush (*Eleocharis palustris*), sand spikerush (*Eleocharis*

¹³ U.C. Davis Soil Resource Laboratory (2020) *Soil Web Soil Survey*. Accessed January 23, 2020
URL: http://casoilresource.lawr.ucdavis.edu/soil_web/ssurgo.php

montevidensis), green flatsedge (*Cyperus virens*), sawtooth blackberry (*Rubus argutus*), Vasey's grass (*Paspalum urvillei*), squarestem spikerush (*Eleocharis quadrangulata*), tall horned beaksedge (*Rhynchospora macrostachya*), Chinese tallowtree, wax myrtle (*Morella cerifera*), Canada goldenrod (*Solidago canadensis*), smutgrass (*Sporobolus indicus*), eastern baccharis (*Baccharis halimifolia*), sugarcane plumegrass (*Saccharum giganteum*), erect centella (*Centella erecta*), common rush (*Juncus effusus*), needle spikerush (*Eleocharis acicularis*), swamp smartweed (*Persicaria hydropiperoides*), and fescue sedge (*Carex festucacea*).

3.5 General Need for the Project in this Area

The primary factors for the general need of the LWPMB are listed below.

- The restoration and protection of the Bank will extend the conservation area corridor and restore gallery forest along the Government Ditch drainageway.
- The restoration and protection of the Bank will reduce sediment runoff and improve the quality of water flowing downstream into the Calcasieu River Estuary.
- The Bank has documented presence of wetland indicators (i.e., hydric soils, hydrology, and hydrophytic vegetation).
- The restoration of the gallery forest corridor along the Government Ditch will benefit native flora, native fauna, and migratory species (e.g., insects, birds, and bats).

The Bank is within 20 miles of the Gulf of Mexico coastline and will strategically continue the conservation area corridor along the Government Ditch and South Fork Black Bayou that is important to native and migratory species (Figures 18 and 19). It is estimated that 80,000 birds per mile of migration front arrive on the Louisiana coastline each day during peak spring migration, which places a tremendous strain on available food sources. In terms of species diversity, more than half of the 160 species of North American Nearctic-Neotropicals migrate through the Louisiana Cheniers (Barrow and Fontenot 2006). Both the number of migrating birds and species diversity adds considerable value for the restoration and long-term management of the Bank as forested ecosystem (gallery forest) (Barrow et al. 2005).

The restored forested wetlands will reduce surface runoff and increase soil infiltration (Richardson et al. 2001). Organic matter surface deposition and root development in the soil will increase, soil bulk density will decrease, hydraulic conductivity will increase, soil saturation potential will increase, and the formation of redoximorphic features will be enhanced. Soil organic carbon is critical to soil reduction and the formation of low chroma colors will increase as soil organic material increases from the deposition of leaf litter, coarse woody debris, and decaying root material (Collins and Kuehl 2001).

4. ESTABLISHMENT OF THE MITIGATION BANK

The Bank will be technically restored per 33 CFR § 332.8(d)(2) (ii) and 33 CFR § 332.8(d)(2) (iv), and the assurance of sufficient water rights will support the long-term sustainability of the Bank per 33 CFR § 332.8(d)(2)(vii)(A).

4.1 Site Restoration Plan

The restoration plan describes the proposed hydrologic and vegetative work necessary for wetland restoration. The PJD serves jurisdictional wetland reference, which the Bank is currently managed for agricultural purposes (i.e., actively farmed, agronomic croplands and actively grazed pastures). The agronomic croplands are designated as prior-converted farmland (PC) and have been in active crop production within the last five years (Attachment C). Under the Final Rule, prior converted croplands are not included as “Waters of the United States” (Docket Number EPA-HQ-OW-20180149; published on April 21, 2020; effective date June 22, 2020). The actively farmed croplands are re-establishment restoration and pasture wetlands are rehabilitation restoration.

To initiate restoration, agricultural operations will permanently cease. Major drainage canals / ditches (i.e., the Government Ditch and Government Ditch Lateral) providing upstream and adjacent landowner drainage will remain in place; however, gaps will be placed in the drainage ditch spoil banks to facilitate water flow and the release of surface water resulting from localized rainfall events. Interior pasture and rice ditches will be swaled and rice levees will be degraded to natural elevations to restore surface water flow. The Bank will be afforested with the appropriate mixture of native hard and soft mast. Hydrologic and vegetative restoration will allow surface and flood water to flow through the Bank, increase the frequency and duration soil saturation for hydric soil development, reduce non-point source runoff, and increase water quality by increasing nutrient uptake by the forested community.

A preliminary Louisiana Rapid Assessment Method (LRAM) was prepared to determine the credit assessment for the Bank (Attachment D). The actively farmed cropland (cropland) is impounded by a perimeter berm, which impedes the hydrologic connection with surrounding land except for area-wide flooding events such as Hurricane Harvey. Similarly, the Government Ditch levee system impedes the release of flood waters resulting from localized high rain events. Therefore, the cropland does not have an ebb and flow nexus. Restoring actively farmed cropland is re-establishment and restoring pastureland is rehabilitation.

4.1.1 Hydrologic Plan

The hydrologic plan is designed as a flow through system. During rainfall events, the Government Ditch drainage system will flow through and release surface water draining from the surrounding landscape into restored forested wetlands, which flows into the natural drainage system of South Fork Black Bayou leading into Calcasieu Lake by way of the Gulf Intracoastal Waterway (GIWW). The hydrology plan will restore wetland functions and allow unhindered natural drainage. Hydrologic restoration will allow surface water storage in restored wetlands, enhance soil saturation for hydric soil development, improve water quality through nutrient immobilization by vegetation, and reduce nonpoint source runoff flowing into Calcasieu Lake.

No long-term structural management implements will be required to sustain wetland hydrology. The perimeter access trails and pipeline rights-of-way (ROW) will not inhibit hydrology (Figure 24). Culverts and irrigation structures will be removed, and gaps will be placed in the spoil banks of the Government Ditch. The low-lying, perimeter berms hindering water flow into the Bank area will be degraded or gapped. Interior farm roads (unimproved soil surface) and rice levees will be degraded, to the extent practical, to natural elevation to provide for natural surface drainage (sheet flow). Internal drainage ditches will be swaled to assist with water movement into and out of the Bank. Approximately 103,449 cubic yards of *in situ* spoil will be degraded to natural elevation in the re-established, forested wetlands (Figures 25 and 25-A [inset A]). Approximately 43,051 cubic yards of *in situ* spoil will be degraded to natural elevation in the rehabilitated forested wetlands (Figures 25, 25-B [inset B]). Approximately 17,532 cubic yards of *in situ* spoil will be graded into three existing cattle ponds to restore natural elevation for rehabilitated forested wetlands (Figures 25 and 25-B). To provide additional illustration of the hydrology / topography work to be completed, the cross-sections are shown on Figures 26-A through 26-R. The cross-sections are listed and described below:

- proposed wetland re-establishment of actively farmed cropland by
 - degrading active rice field levees (A-A', B-B', C-C'),
 - degrading unimproved farm roads (D-D', F-F'),
 - removing culverts from internal ditches (E-E'),
 - filling an internal irrigation ditch system (G-G'),
 - removing culverts and gapping the Government Ditch spoil bank (N-N'),
 - implementing gaps in the Government Ditch (O-O'), and
 - degrading the perimeter berm (P-P').
- proposed wetland rehabilitation of pasture by
 - filling cattle ponds (H-H'/I-I', J-J'/K-K', L-L'/M-M'),
 - removing culverts and implementing gaps (N-N'),
 - implementing gaps in the Government Ditch (O-O'),
 - degrading the perimeter berm (P-P'),

- removing culverts and implementing gaps in the Government Ditch spoil bank (Q-Q'), and
- filling and swaling a relict rice field drainage ditch (R-R').

4.1.2 Vegetative Work

The Bank will be restored as a BLH gallery forest (Table 1, Figure 6). Wetland restoration activities will include site preparation in the summer-fall prior to the winter planting season. Planting of tree and shrub species will occur in the winter from January through February. Site preparation activities within the restoration area will be accomplished through herbicide treatments, cultivation by surface tillage to a depth of approximately six (6) inches and ripping the soil at equidistant intervals (9 to 10 feet) to a depth of approximately 18 inches to increase water infiltration (Allen et al. 2004). Afforestation will include the planting of native tree and shrub species during the first planting season (January-February) following site preparation. The species selected will be site-appropriate in terms of habitat design and moisture regime. The distribution of the trees and shrubs will create a mosaic of hard mast and soft mast species to provide seasonally available forage and shelter (Barrow et al. 2005).

The potential planting list is a selection of species founded on professional experience and a review of literature (LNH 2009, Lester et al. 2005, Burns and Honkala 1990, Barrow et al. 2005) (Table 3). The proposed species are OBL, FACW, and FAC per the National Wetland Plant List (USACE 2020). However, to increase habitat diversity for Nearctic-Neotropicals, two (2) FACU species, live oak (*Quercus virginiana*) and red mulberry (*Morus rubra*) may be included in the planting assemblage. Although these species are designated as FACU, they are known to exist in wetland habitats dominated by FAC to FACW species.

To increase the diversity and production of mast forages, emphasis will be placed on establishing a BLH forest community that is restored by afforesting with hard and soft mass species. Hard and soft mast species will account for approximately 60% and 40% of the tree and shrub species planted, respectively. The exact species and quantities for planting will be determined by the availability of such species from commercial nurseries providing localized ecotype seedlings. Initial planting densities will be a minimum of approximately 538 stems per acre (approximately at 9-foot by 9-foot spacing). Seedlings will be mixed prior to planting so that areas are not comprised of a single species (Twedt and Best 2004). At least 6 different species will be planted in both the BLH restoration acreage as well as the restored forested buffer acreage.

4.2 Technical Feasibility

The construction work required to develop the Bank is routine and feasible. Construction work will consist of filling artificial drains, degrading rice levees, implementing perimeter gaps and Government Ditch gaps, Chinese tallow removal, planting site preparation, and afforestation. The large project size, rural location, connectivity to the conservation corridor, abundant rainfall, high ground water levels, and a dominance of hydric soils indicate a high probability for the successful restoration of a gallery BLH wetland.

4.3 Current Site Risks

DLS does not foresee any adverse impacts to the Bank resulting from the continued existence and operation of neighboring land uses. Therefore, adjacent landownership / management will not affect the construction, establishment, and long-term success of the Bank. Adjacent land use consists of rice farming, cattle grazing, and minor residential development. There are no existing hydrologic disturbances on the Bank, which DLS or the Owner does not control. The Bank will provide hydrologic connections to the Government Ditch from the adjacent lands and roadside drainage ditches for wetland development and local drainage needs.

4.4 Long-Term Sustainability of the Site

Long-term funding, management and sustainability will consist of a long-term management / maintenance account, monitoring, vegetation management, invasive species control, boundary maintenance, and site protection. The BLH gallery forested wetlands will be managed to increase and maintain the biological, chemical, and physical wetland functions of the Bank, which will provide forested habitat capable of supporting populations for priority wildlife species (e.g., native wildlife and Nearctic-Neotropical migrants). Invasive species control will include control of nuisance invasive species such as Chinese tallow, Macartney rose (*Rosa bracteata*), and feral hogs (*Sus scrofa*). A long-term management plan will be included with the mitigation banking instrument which will detail long-term management needs, costs and identify a funding mechanism in accordance with 33 CFR § 332.7 (d). DLS (Long-term Steward) and the Owner (South Fork Holdings, LLC) shall be responsible protecting lands contained within the bank in perpetuity.

5. PROPOSED SERVICE AREA

The service area for the Bank includes the following watersheds: Lower Calcasieu Subbasin (HUC 08080206), Upper Calcasieu (HUC 08080203), Whiskey Chitto (Ouiska Chitto) (HUC 08080204), and West Fork Calcasieu (HUC 08080205)

(Figure 23). These watersheds collectively comprise the Calcasieu River Basin as defined by the Louisiana Department of Environmental Quality (LDEQ 1999)¹⁴.

Bank restoration will consolidate the mitigation for BLH impacts within a single, strategic location. The Bank will benefit the watershed by restoring and protecting a large block of wetland habitat as a part of the conservation corridor along South Fork Black Bayou and the Government Ditch, which will offset the cumulative effect of smaller, spatially fragmented projects.

6. OPERATION OF THE MITIGATION BANK

The proposed Bank will be operated, as stated in 33 CFR § 332.8(d)(2)(ii) and will follow the proposed ownership arrangements and long-term management strategy for the Bank, as stated in 33 CFR § 332.8(d)(2)(v.)

South Fork Holdings, LLC (Sponsor / Owner) will comply with all conditions of Sponsorship required by the CEMVN. The Bank will be established and operated through mitigation bank procedures, which includes but is not limited to, the review process, modifications, permit coordination, project implementation, financial assurance mechanisms, credit determination, accounting procedures, credit withdrawals, and credit use. Details on the operation of the Bank will be further described in the Draft MBI per 33 CFR § 332.8(d)(6).

6.1 Project Representatives

Sponsor: Delta Land Services, LLC
1090 Cinclare Drive1008
Port Allen, LA 70767
Attn: Hunter Shows
Phone: 225-343-3900
Electronic Mail: hunter@deltaland-services.com

Landowner: South Fork Holdings, LLC
1090 Cinclare Drive1008
Port Allen, LA 70767
Attn: D. Winship Songy
Phone: 225-343-3900
Electronic Mail: winship@deltaland-services.com

6.2 Qualifications of the Sponsor

DLS will serve as the Sponsor, Agent, and Owner of the Bank and is a land management and restoration company whose technical staff includes Certified Wildlife Biologists, Professional Wetland Scientists, Certified Ecological

¹⁴ Louisiana Department of Environmental Quality [LDEQ] (1999) *Watershed Protection Programs: Calcasieu River Basin*. Accessed March 3, 2020. Available URL: <http://nonpoint.deq.state.la.us/99manplan/99calcasieu.pdf>.

Restoration Practitioners, and Certified Foresters. In addition, DLS has specialists experienced in wetland construction activities such as heavy equipment operation, vegetation establishment, herbicide application, and contractor management. The biographies of DLS personnel are available at www.deltaland-services.com .

As a Sponsor or Restoration Manager, DLS currently operates 31 approved wetland and/or stream mitigation sites totaling 19,487.6 acres in four USACE districts including CEMVN, Vicksburg (CEMVK), Galveston (CESWG) and Forth Worth (CESWF). In addition to mitigation banking, DLS serves as the responsible party for the establishment and maintenance of 3,548.1 acres of 37 approved Permittee-Responsible Mitigation (PRM) wetland and stream projects within CEMVN and CESWG.

6.3 Proposed Long-Term Ownership and Management Representatives

DLS will serve as the Sponsor, owner, and long-term steward of the Bank. However, the Sponsor may appoint a long-term steward if such an appointment is approved by the CEMVN. The anticipated long-term management will consist of monitoring, invasive species control, site management, boundary maintenance, and site protection.

6.4 Site Protection

To provide conservation protection, DLS shall execute a perpetual conservation servitude (pursuant to the Louisiana Conservation Servitude Act, R.S. 9:1271 *et seq.*) on all acreage identified as the Bank and record it in the Mortgage and Conveyances Records Office of Calcasieu Parish. DLS will utilize a not-for-profit conservation group as the entity that will hold the servitude.

6.5 Long-Term Strategy

Long-term management will consist of monitoring, vegetation management, invasive species control, boundary maintenance, site protection, and the funding of such activities. The forest will be managed to maintain or increase the biological, chemical, and physical wetland functions and to achieve / maintain the desired forest conditions to provide forested habitat for supporting populations of migratory and native wildlife species. A long-term management plan will be included with the MBI, which will detail long-term management needs / costs and identify a funding mechanism in accordance with 33 CFR § 332.7(d). The Sponsor (or Long-term Steward) and the Owner (or its heirs, assigns or purchasers) shall be responsible protecting lands contained within the Bank in perpetuity.

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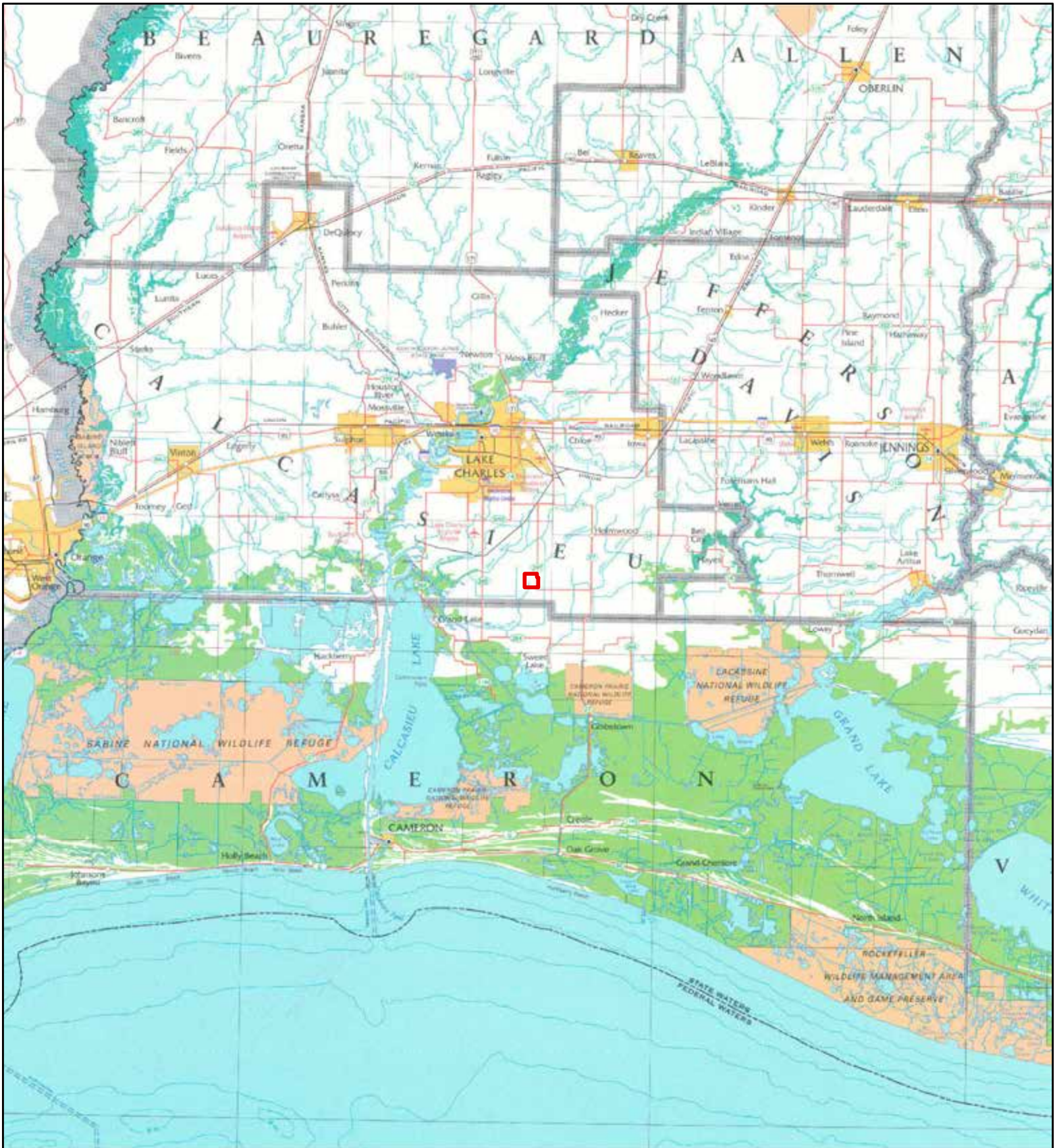
Table 1. Current Conditions and Restoration Mitigation Types, Little Woods Plateau Mitigation Bank, Calcasieu Parish, Louisiana.

Current Conditions	Restored Wetlands	Acres
Actively farmed cropland	BLH re-establishment	262.6
Pasture	BLH rehabilitation	240.3
Total Mitigation (acres)		502.9
Restored Forested Buffer	Non-mitigation	98.3
Government Ditch	Non-mitigation	4.9
Rights-of-way	Non-mitigation	4.4
Government Ditch Maintenance	Non-mitigation	3.7
Access trails	Non-mitigation	1.1
Other waters	Non-mitigation	0.9
Total Non-mitigation (acres)		113.3
Total Acres		616.2

Table 3. Planting Composition of Re-established and Rehabilitated Bottomland Hardwood Forest at the Little Woods Plateau Mitigation Bank, Calcasieu Parish, Louisiana.

#	Scientific Name	Common Name	Wetland Indicator Status ¹	Planting Composition Range
Hard Mast Species (approximately 60%)				
1	<i>Carya aquatica</i>	water hickory	OBL	≤20%
2	<i>Quercus pagoda</i>	cherrybark oak	FACW	≤20%
3	<i>Quercus lyrata</i>	overcup oak	OBL	≤20%
4	<i>Quercus laurifolia</i>	laurel oak	FACW	≤20%
5	<i>Quercus michauxii</i>	swamp chestnut oak	FACW	≤20%
6	<i>Quercus nigra</i>	water oak	FAC	≤20%
7	<i>Quercus phellos</i>	willow oak	FACW	≤20%
8	<i>Quercus shumardii</i>	Shumard oak	FAC	≤20%
9	<i>Quercus texana</i>	Texas red oak	FACW	≤20%
10	<i>Quercus virginiana</i>	live oak	FACU	≤20%
Soft Mast Species (approximately 40%)				
1	<i>Acer rubrum</i>	red maple	FAC	≥10%
2	<i>Celtis laevigata</i>	sugarberry	FACW	≥10%
3	<i>Cephalanthus occidentalis</i>	buttonbush	OBL	≥10%
4	<i>Cornus foemina</i>	swamp dogwood	FACW	≥10%
5	<i>Crataegus opaca</i>	mayhaw	OBL	≥10%
6	<i>Crataegus viridis</i>	green hawthorn	FACW	≥10%
7	<i>Diospyros virginiana</i>	common persimmon	FAC	≥10%
8	<i>Fraxinus pennsylvanica</i>	green ash	FACW	≥10%
9	<i>Ilex decidua</i>	deciduous holly	FACW	≥10%
10	<i>Liquidambar styraciflua</i>	sweetgum	FAC	≥10%
11	<i>Morus rubra</i>	red mulberry	FACU	≥10%
12	<i>Persia borbonia</i>	red bay	FACW	≥10%
13	<i>Platanus occidentalis</i>	American sycamore	FACW	≥10%
14	<i>Salix nigra</i>	black willow	OBL	≥10%
15	<i>Taxodium distichum</i>	baldcypress	OBL	≥10%
16	<i>Ulmus americana</i>	American elm	FAC	≥10%

***Not all species included in this table will be planted. Planting will consist of at least 6 species (species richness ≤ 6)



 Project Area (616.2 ac)



15 7.5 0 15



Miles

Little Woods Plateau Mitigation Bank

VICINITY MAP

Calcasieu Parish, LA

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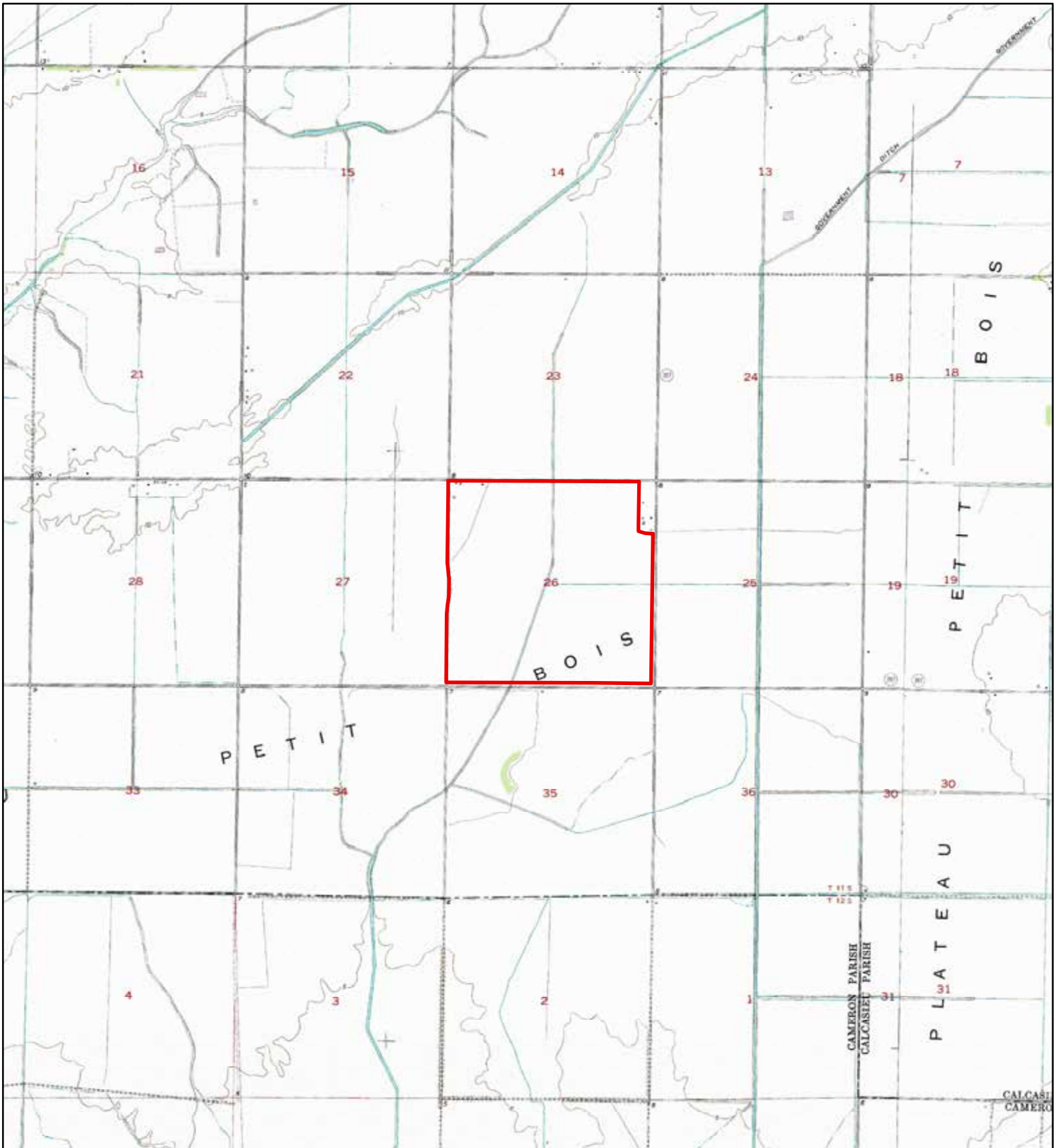
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Date : 11/02/2020

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FIGURE 1



 Project Area (616.2 ac)



4,000 2,000 0 4,000



Feet

*Lake Charles South West Quadrangle

Little Woods Plateau Mitigation Bank

**USGS 7.5 MINUTE
QUADRANGLE**

Calcasieu Parish, LA

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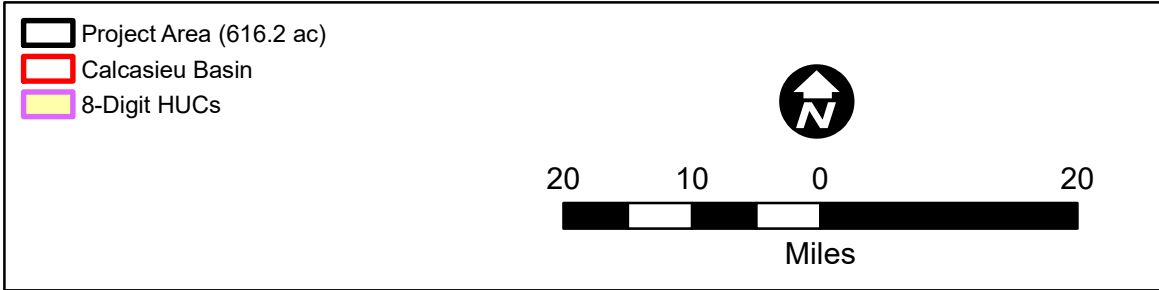
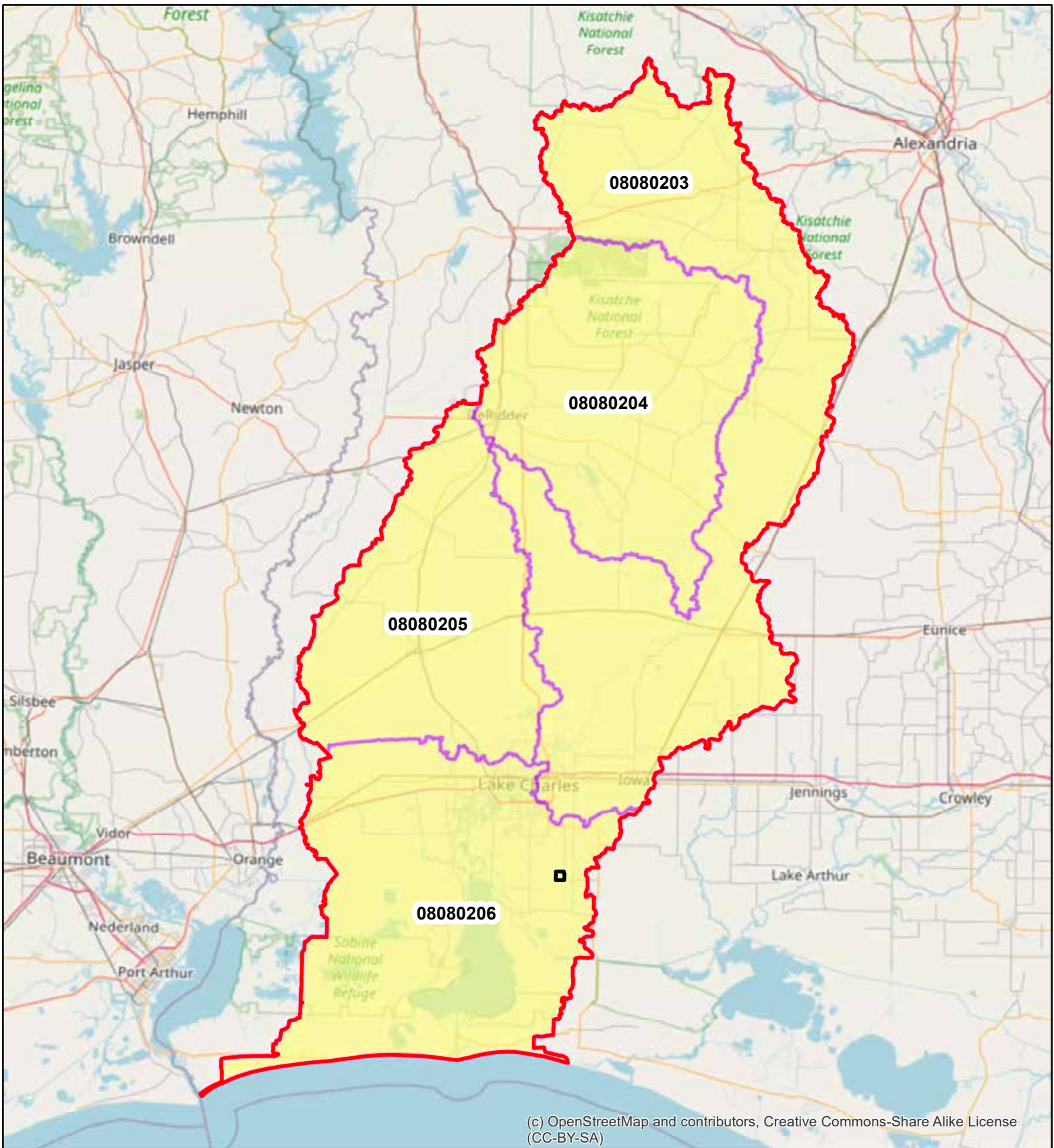
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Date : 11/02/2020

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FIGURE 2



Little Woods Plateau Mitigation Bank

USGS HUC AND RIVER BASIN MAP

Calcasieu Parish, LA


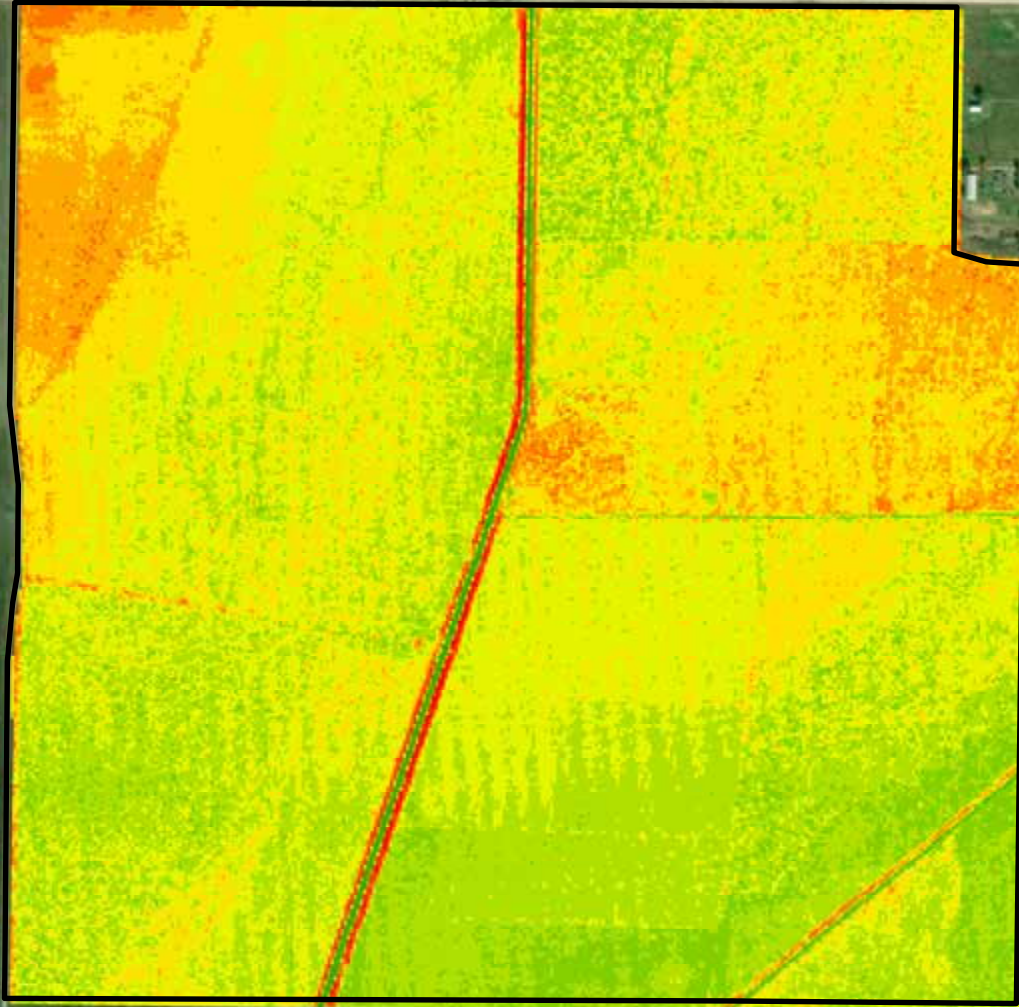
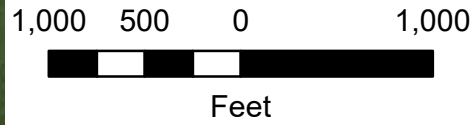
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Approved : CMM	
Date : 11/02/2020	
Map No. : F03_BASIN_HUC_map.mxd	

FIGURE 3



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Project Area (616.2 ac)

Lidar (Feet NAVD)



0.1 - 1.9
2 - 3.9
4 - 5.1
5.2 - 5.5
5.6 - 5.8
5.9 - 6.3
6.4 - 6.8
6.9 - 7.6
7.7 - 8.8
8.9 - 11.9

Little Woods Plateau Mitigation Bank

LIDAR Digital Elevation Model

Calcasieu Parish, LA

Created : TSC/ArcView10.7.1

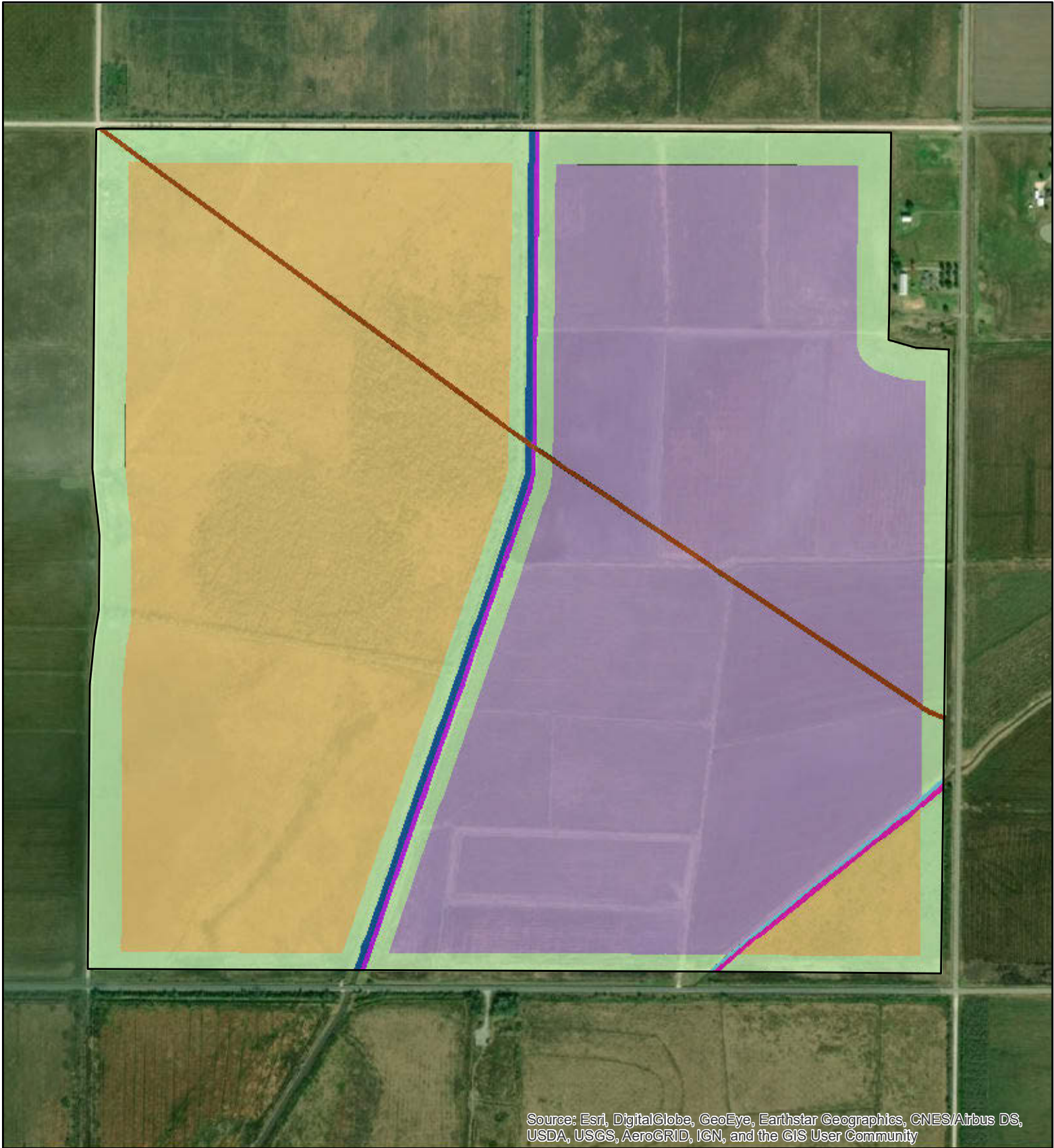
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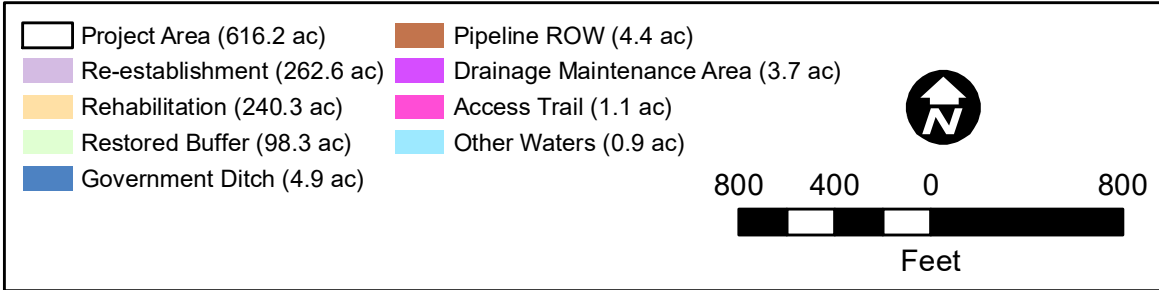
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FIGURE 4



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



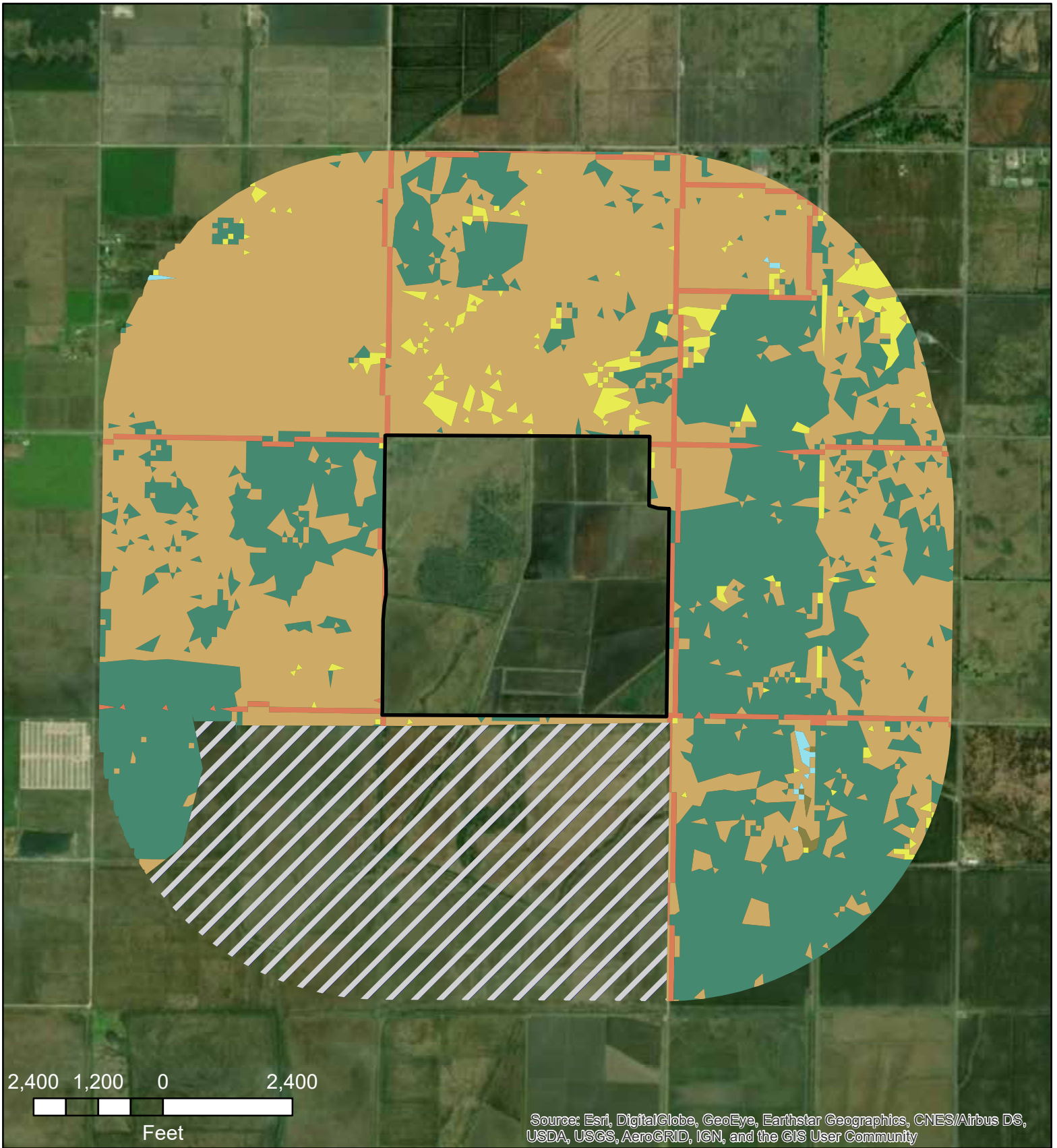
Little Woods Plateau Mitigation Bank

MITIGATION FEATURES MAP

Calcasieu Parish, LA

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Approved : CMM	
Date : 11/02/2020	
Map No. : F06_MitigationFeatures.mxd	

FIGURE 6



- Project Area (616.2 ac)
- Developed Land (2.5%)
- Grassland/Pasture (44.2%)
- Herbaceous Wetlands (2.0%)
- Cropland (28.5 %)
- Shrubland (0.1%)
- Conservation Area (22.6%)
- Woody Wetlands (0.1%)



Little Woods Plateau Mitigation Bank

**LAND USE AND LAND COVER
WITHIN 1-MILE**

Calcasieu Parish, LA

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Approved : CMM

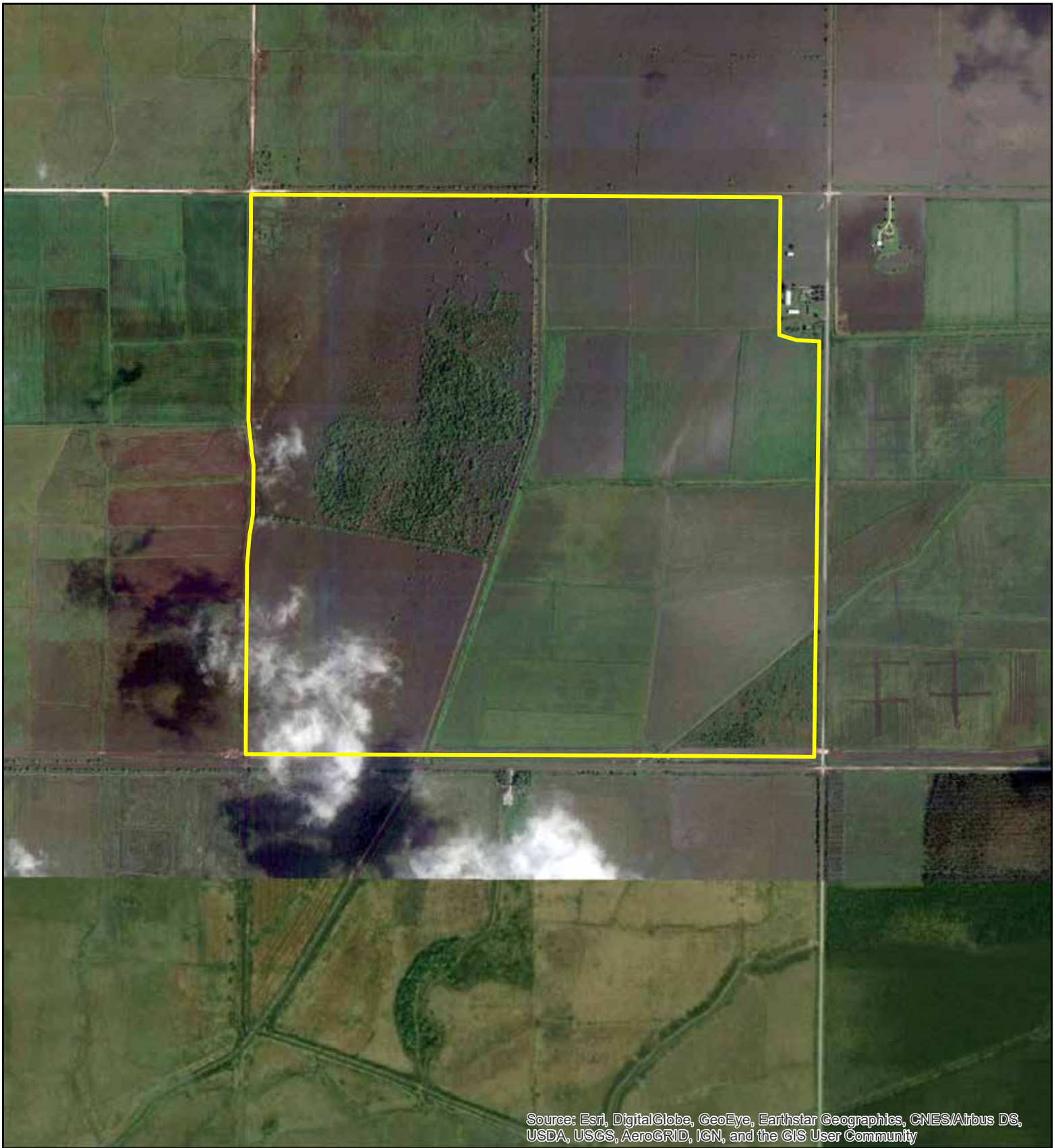
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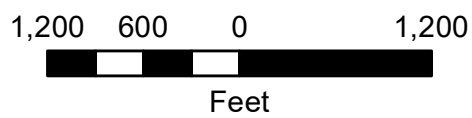
*2011 National Land Cover Data Set (NLCD) <https://gdg.sc.egov.usda.gov/GDGOrder.aspx>

FIGURE 7



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

 Project Area (616.2 ac)



Little Woods Plateau Mitigation Bank

2018 AERIAL IMAGERY

Calcasieu Parish, LA

Created : TSC/ArcView10.7.1

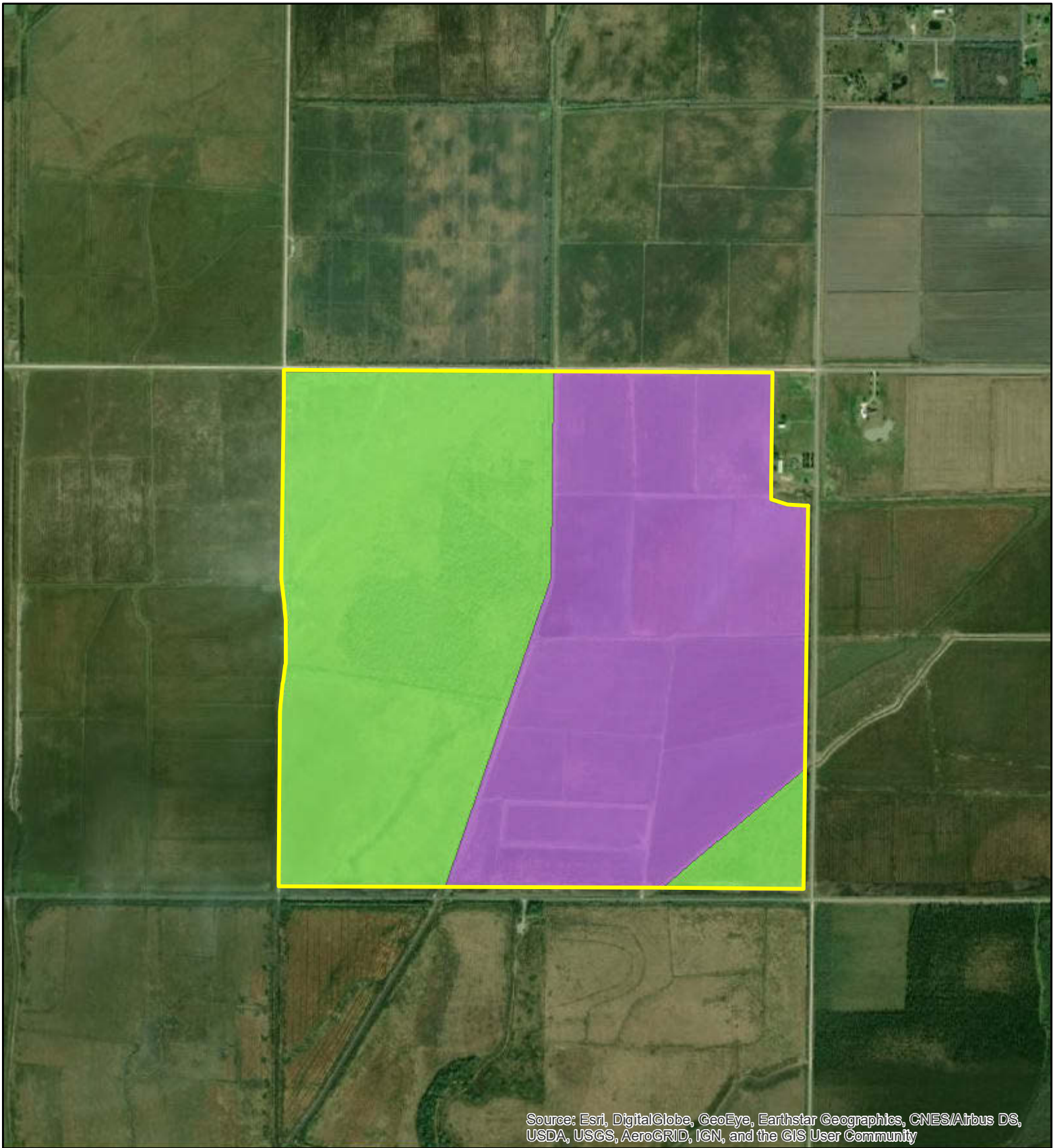
Approved : CMM

Date : 11/02/2020

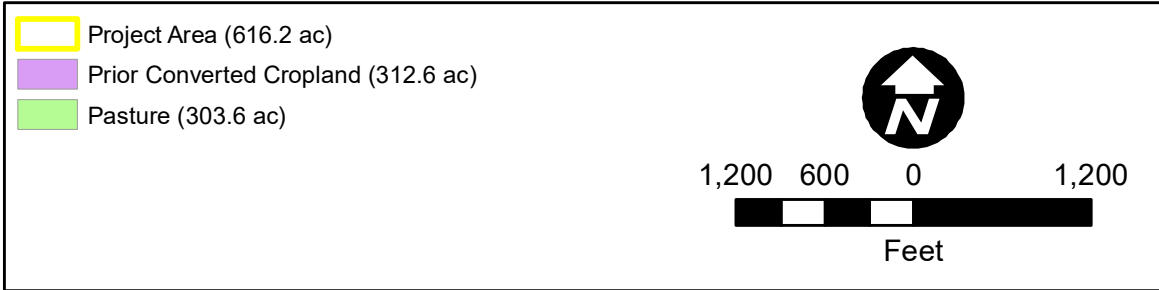
Map No. : F16_2018_map.mxd




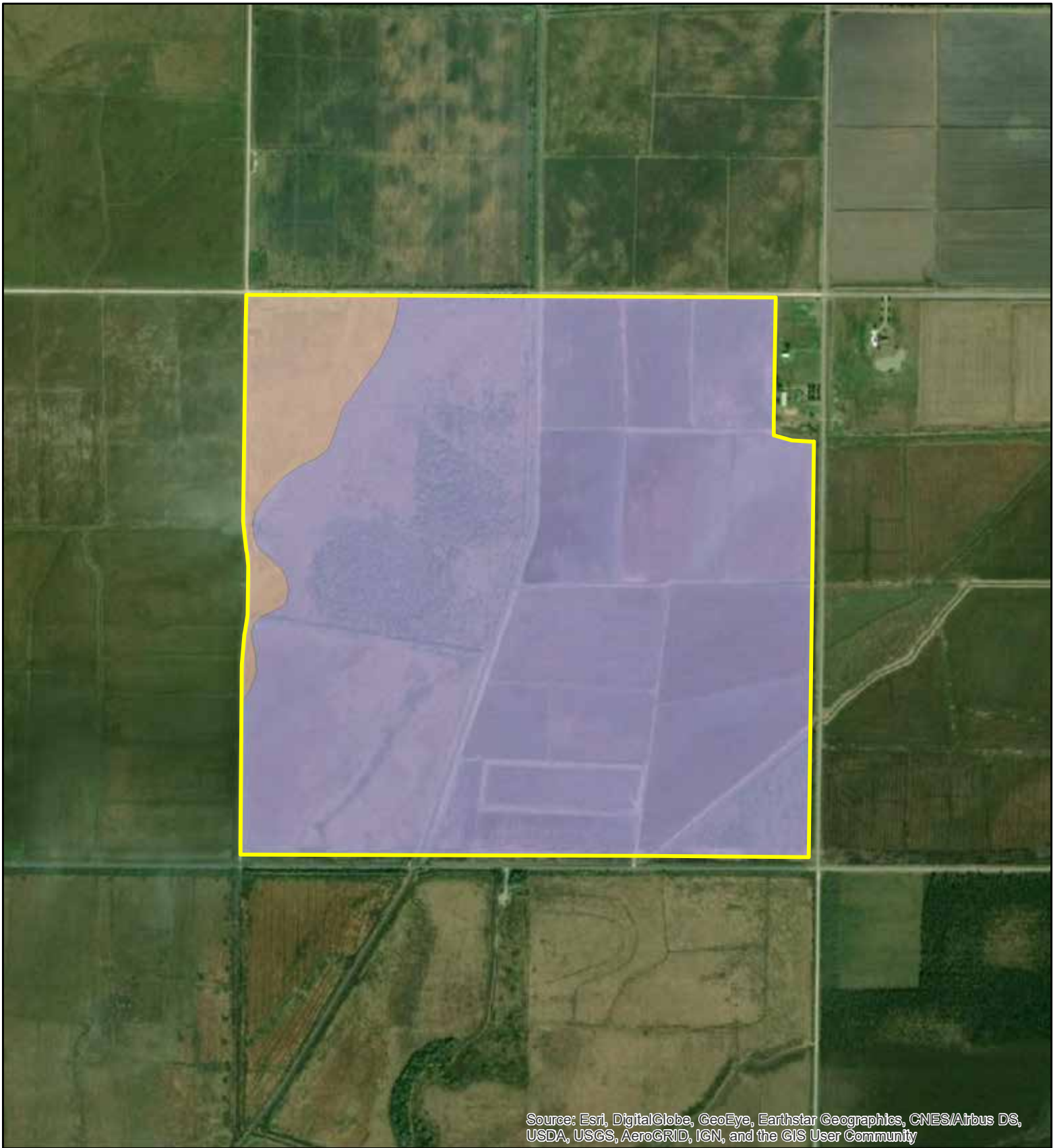
FIGURE 16



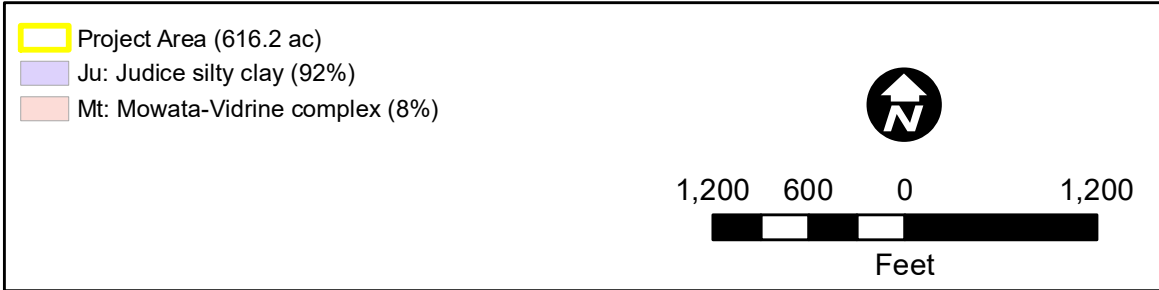
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Little Woods Plateau Mitigation Bank	
PROJECT AREA LAND USE MAP	
Calcasieu Parish, LA	
Created : TSC/ArcView10.7.1	
Approved : CMM	
Date : 11/02/2020	
Map No. : F17_BankLandUse	
FIGURE 17	



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Little Woods Plateau Mitigation Bank

SSURGO MAP

Calcasieu Parish, LA


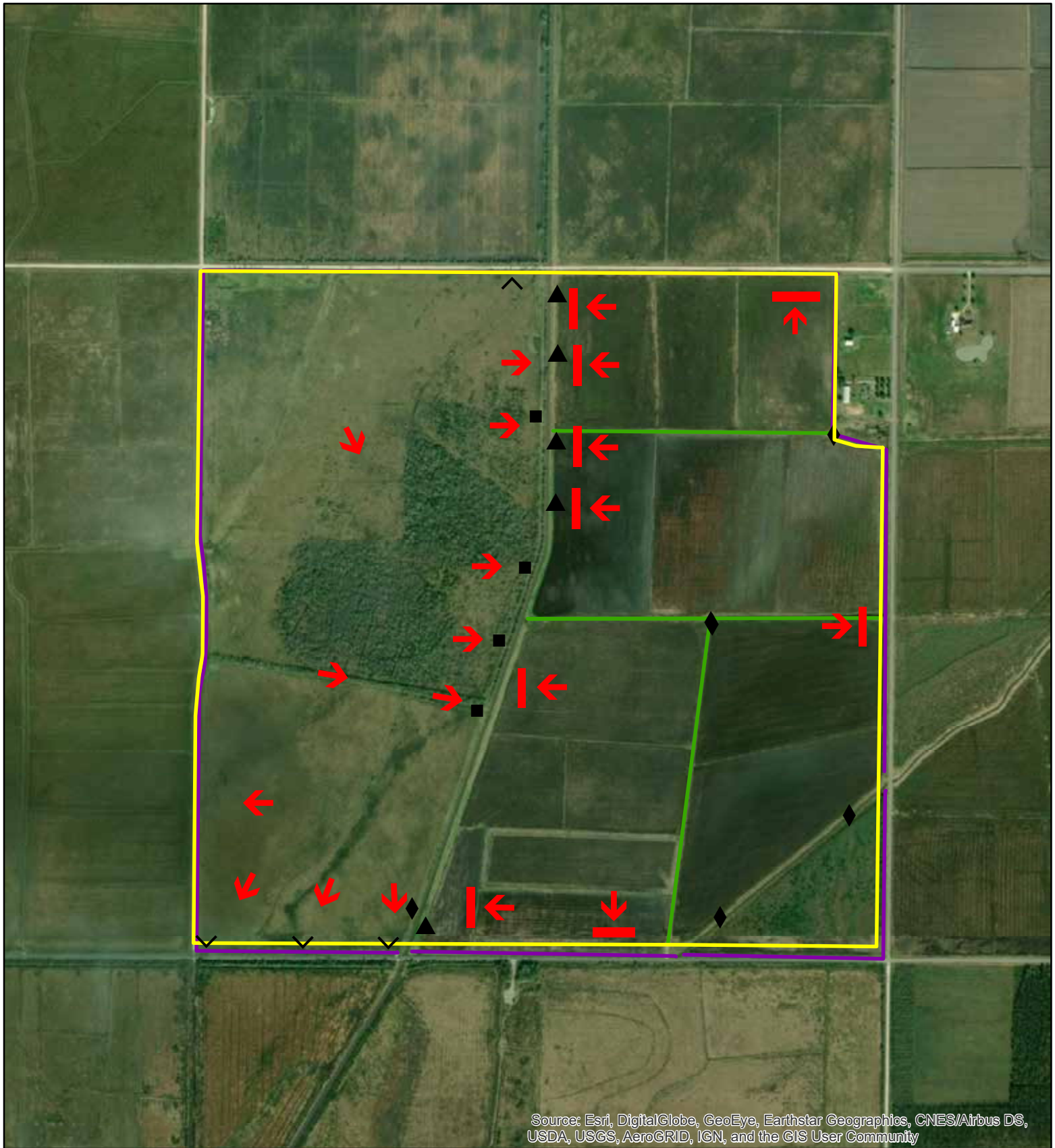
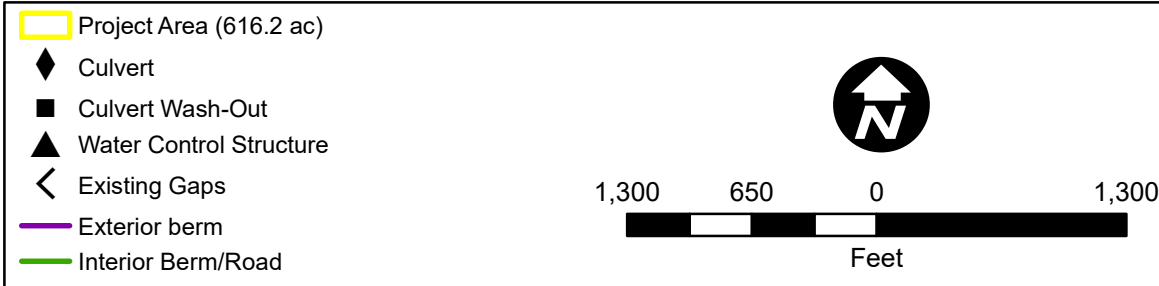
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Approved : CMM	
Date : 11/02/2020	
Map No. : F20_SSURGO_map.mxd	

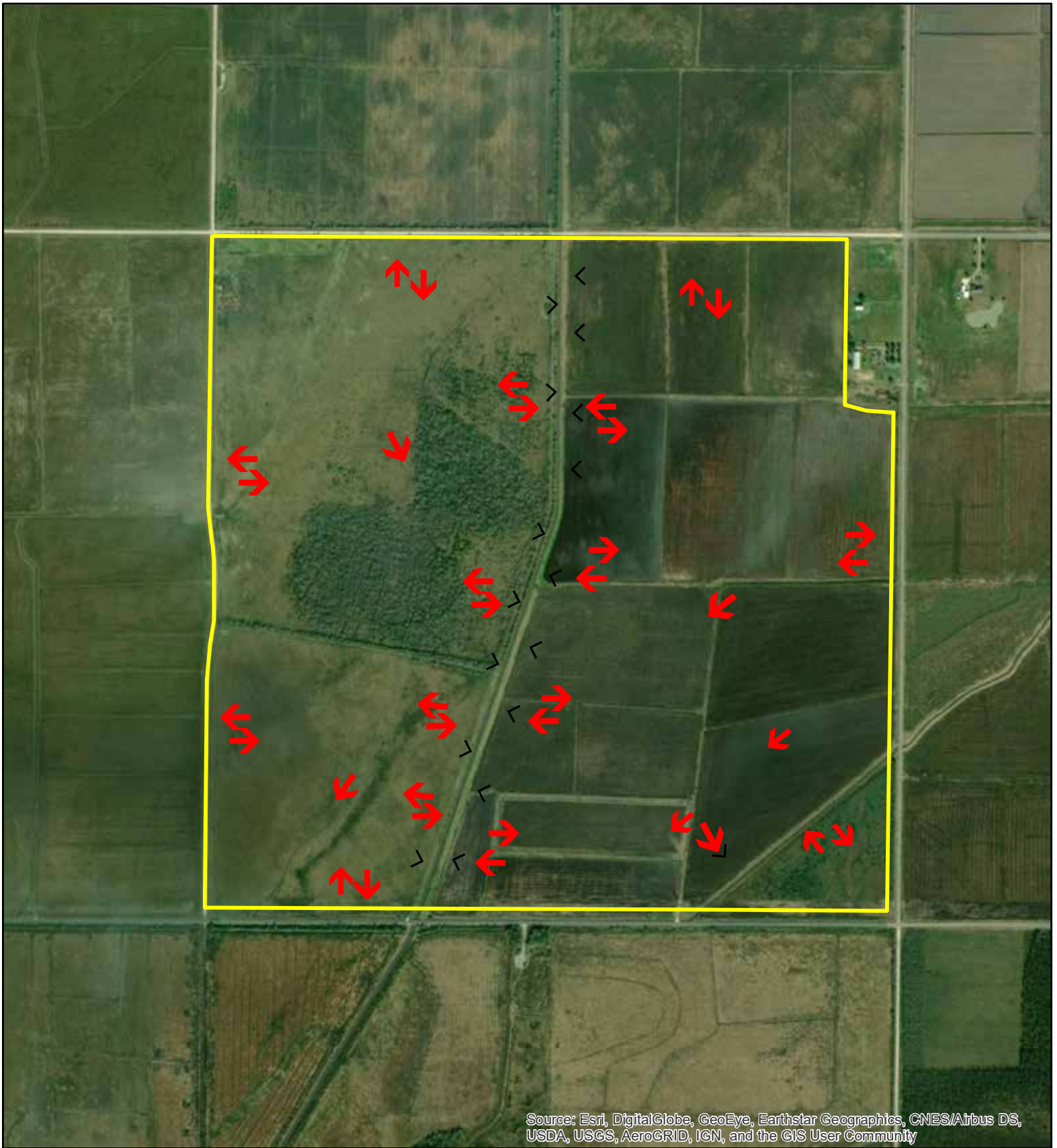
FIGURE 20



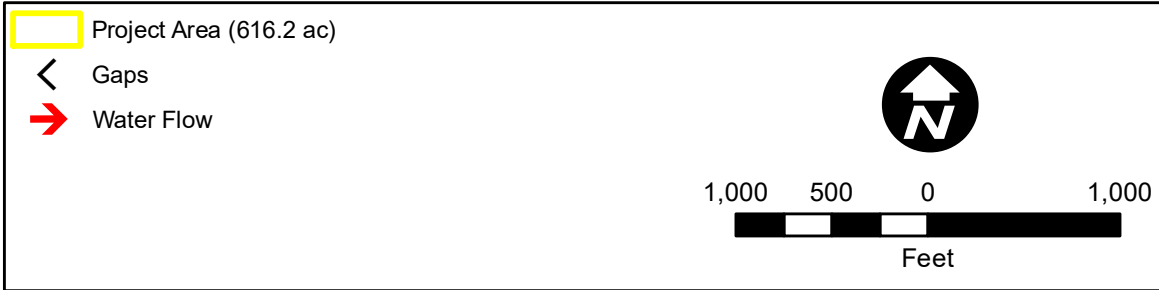
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community




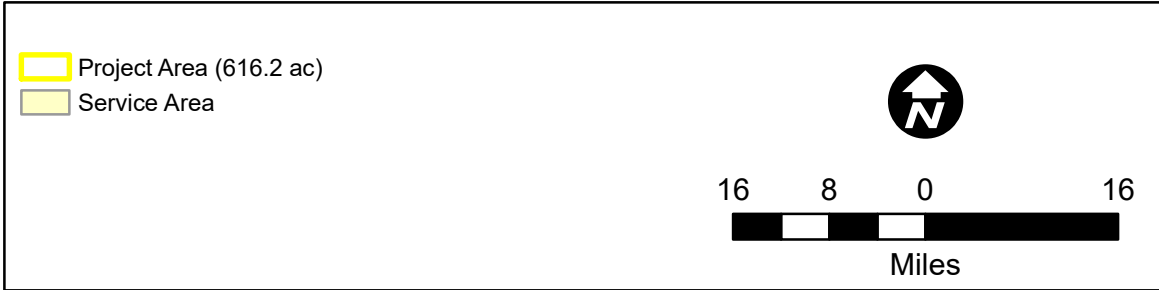
LITTLE WOODS PLATEAU MITIGATION BANK	
EXISTING HYDROLOGY	
Calcasieu Parish, LA	
Created : TCS/ArcView10.7.1	
Approved : CMM	
Date : 11/02/2020	
Map No. : F21_EX_HYDROLOGY.mxd	
FIGURE 21	



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



LITTLE WOODS PLATEAU MITIGATION BANK	
PROPOSED HYDROLOGY	
Calcasieu Parish, LA	
Created : TCS/ArcView10.7.1	
Approved : CMM	
Date : 11/02/2020	
Map No. : F22_PRO_HYDROLOGY.mxd	
FIGURE 22	



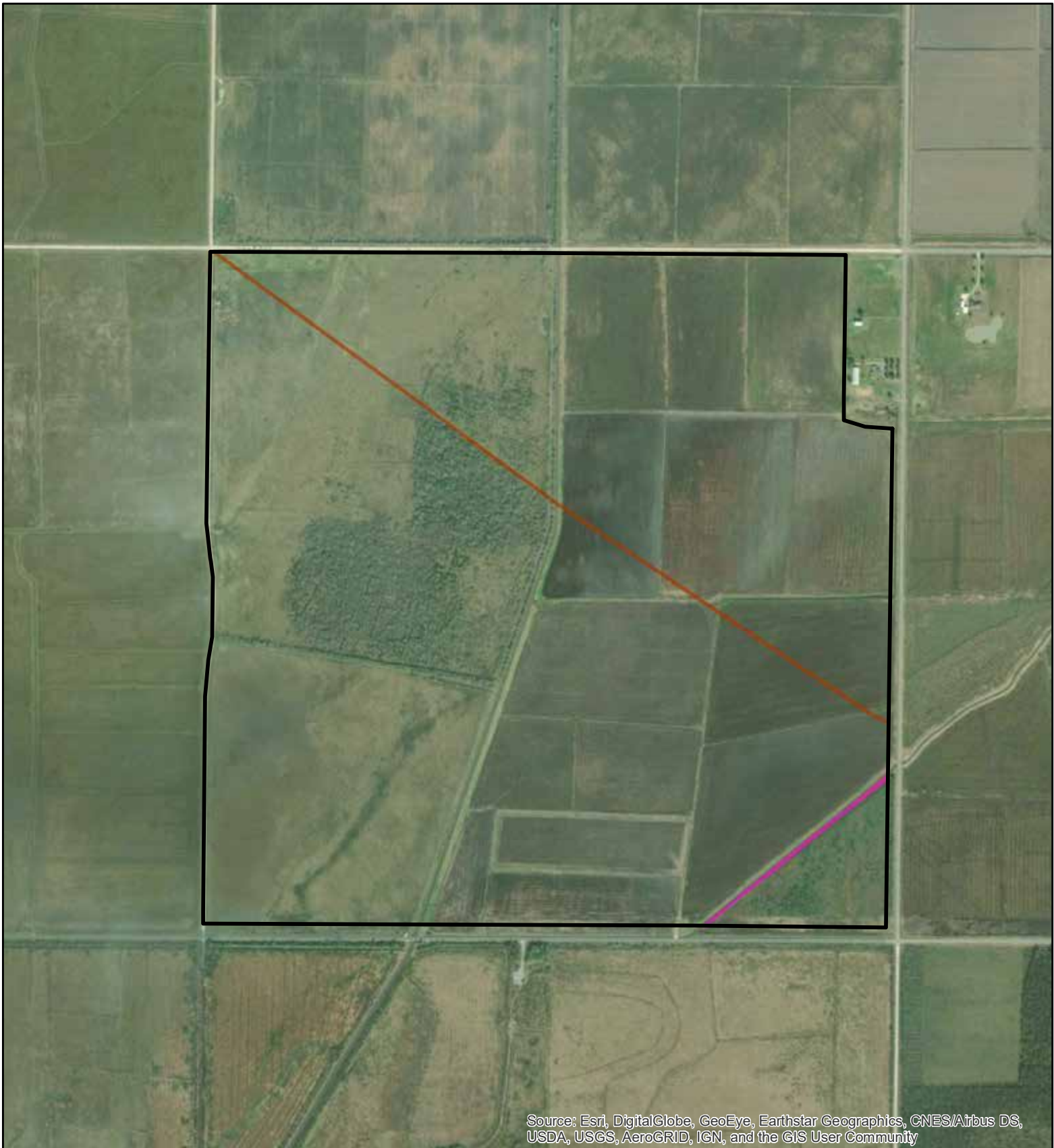
Little Woods Plateau Mitigation Bank

BANK SERVICE AREA

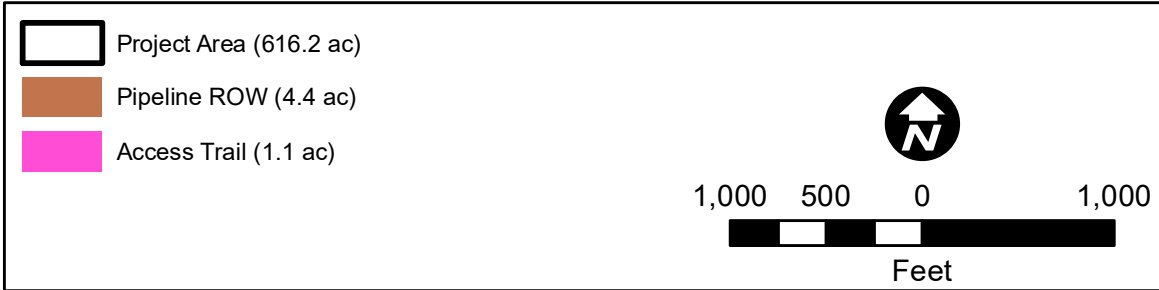
Calcasieu Parish, LA

Created : TSC/ArcView10.7.1	
Approved : CMM	
Date : 11/02/2020	
Map No. : F23_BLH_Service_Area.mxd	

FIGURE 23



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Little Woods Plateau Mitigation Bank

ACCESS TRAILS AND PIPELINE ROW

Calcasieu Parish, LA


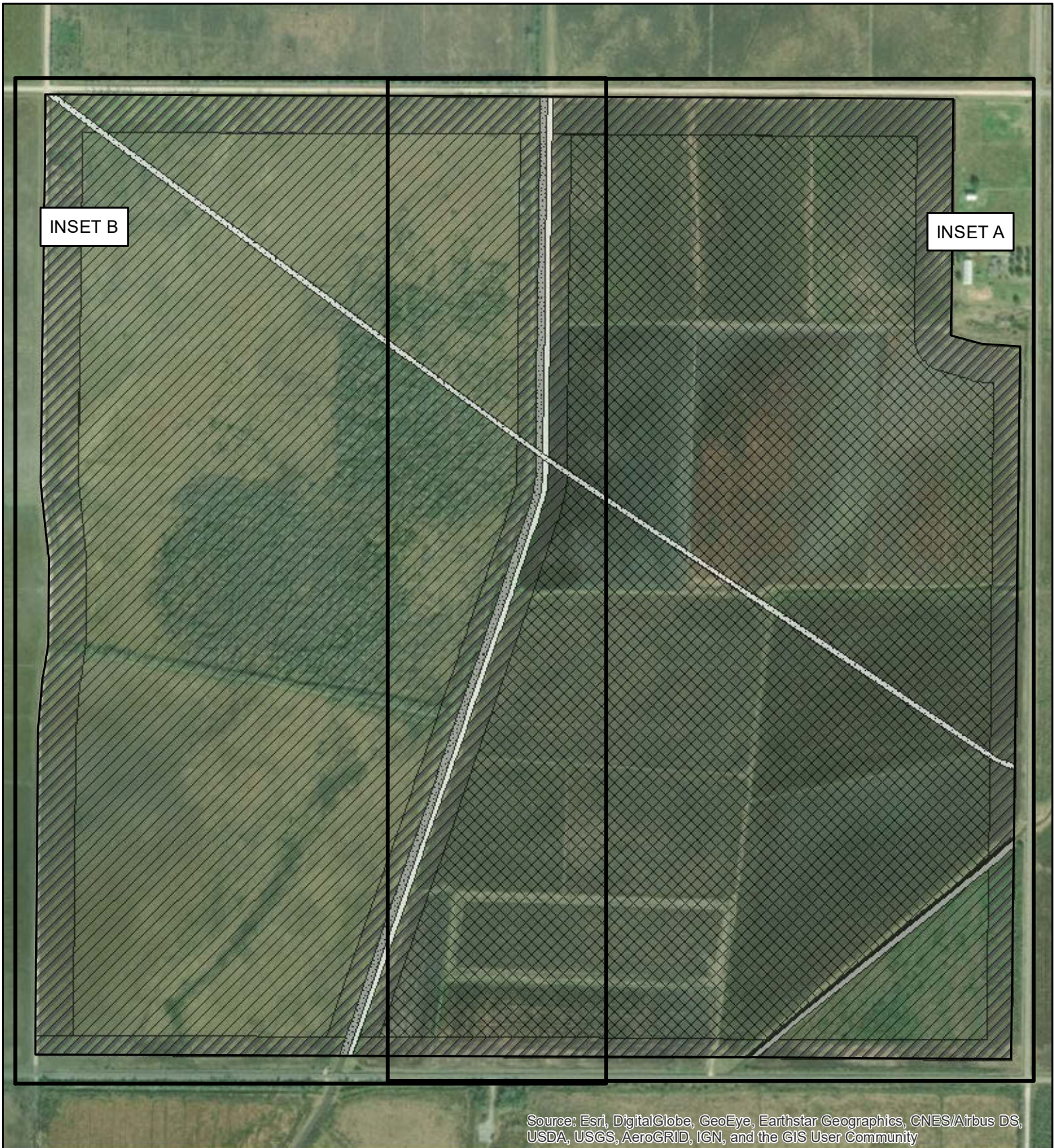
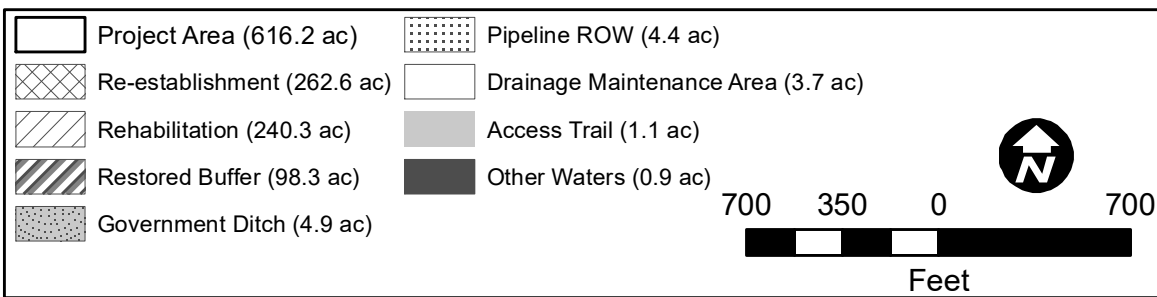
Created : TSC/ArcView10.7.1	
Approved : BWD	
Date : 11/3/2020	
Map No. : F24_AccessandROW.mxd	

FIGURE 24



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Little Woods Plateau Mitigation Bank

HYDROLOGIC PLAN OVERVIEW

Calcasieu Parish, LA


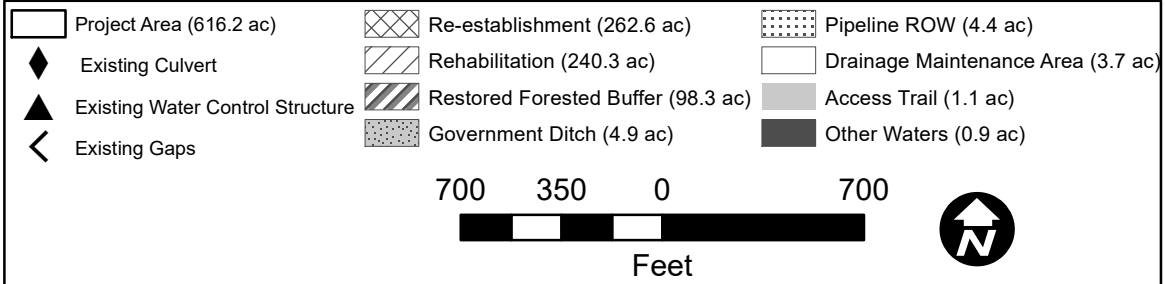
Created : TSC/ArcView10.7.1	
Approved : BWD	
Date : 4/14/2020	
Map No. : F24 Plan Map.mxd	

FIGURE 25



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



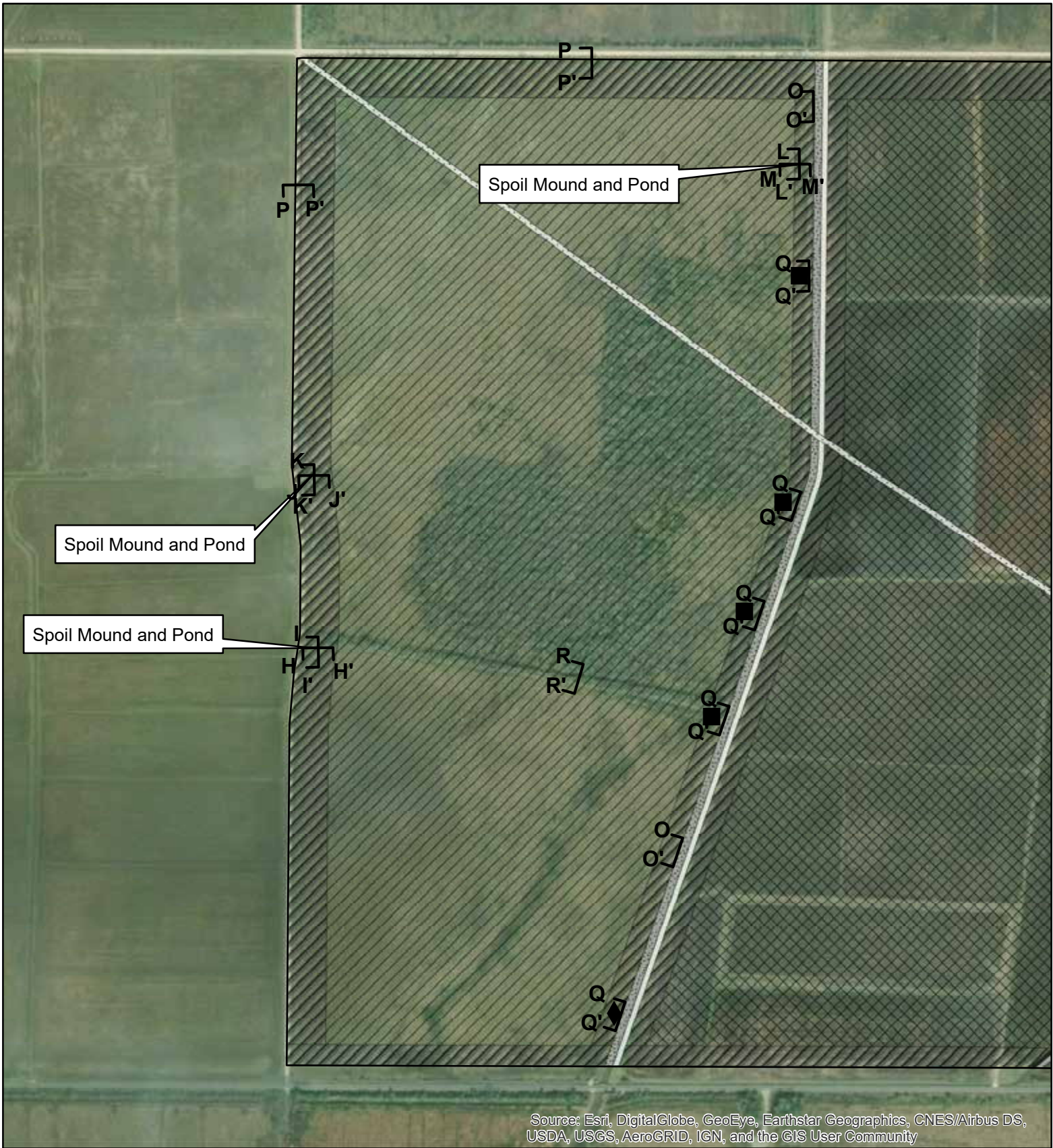
Little Woods Plateau Mitigation Bank

**HYDROLOGIC PLAN
INSET A**

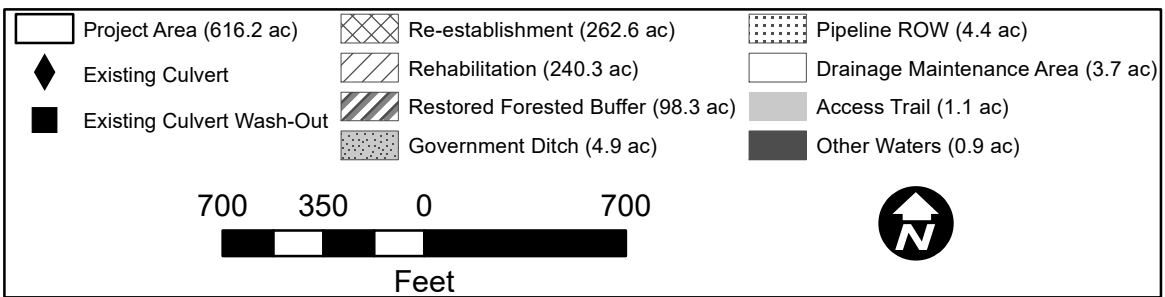
Calcasieu Parish, LA

Created : TSC/ArcView10.7.1	
Approved : BWD	
Date : 4/14/2020	
Map No. : F24_Plan_Map_C.mxd	

FIGURE 25-A



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

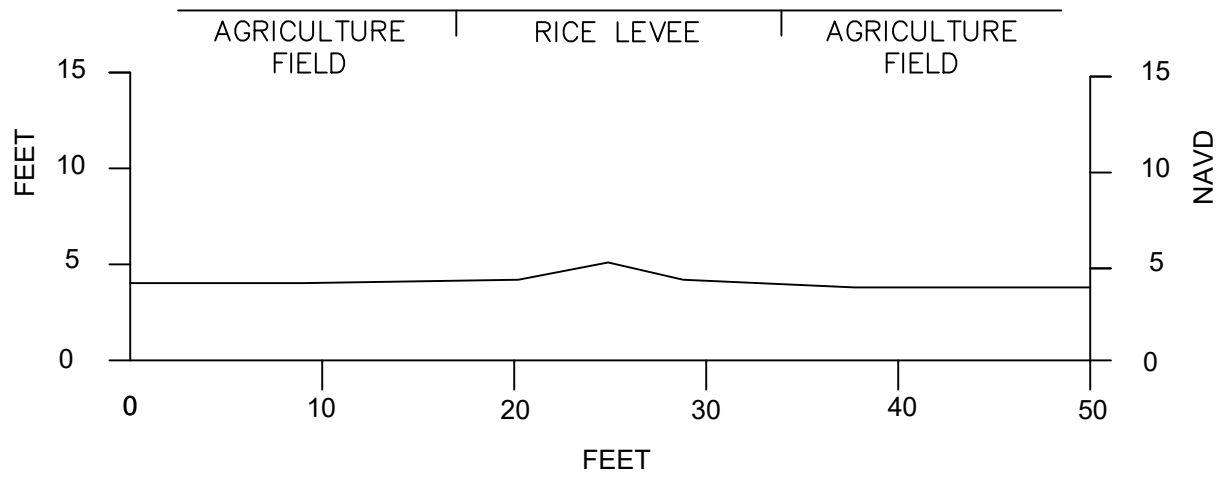
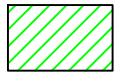
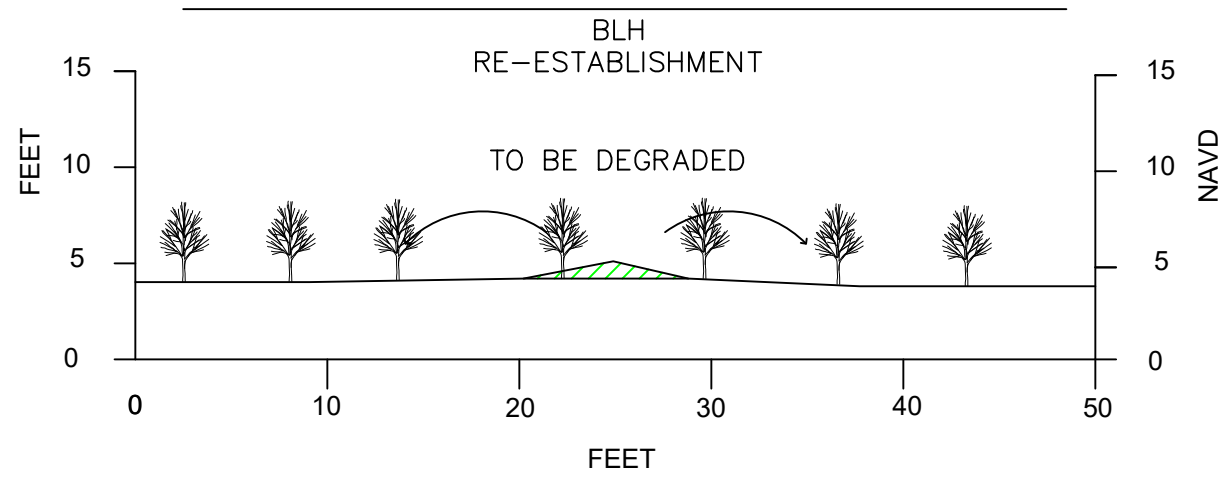


Little Woods Plateau Mitigation Bank
HYDROLOGIC PLAN
INSET B

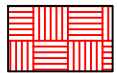
Calcasieu Parish, LA

Created : TSC/ArcView10.7.1	
Approved : BWD	
Date : 4/14/2020	
Map No. : F24_Plan_Map_C.mxd	

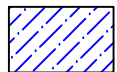
FIGURE 25-B

A**EXISTING CROSS-SECTION A****A'****A****PROPOSED CROSS-SECTION A****A'**

PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



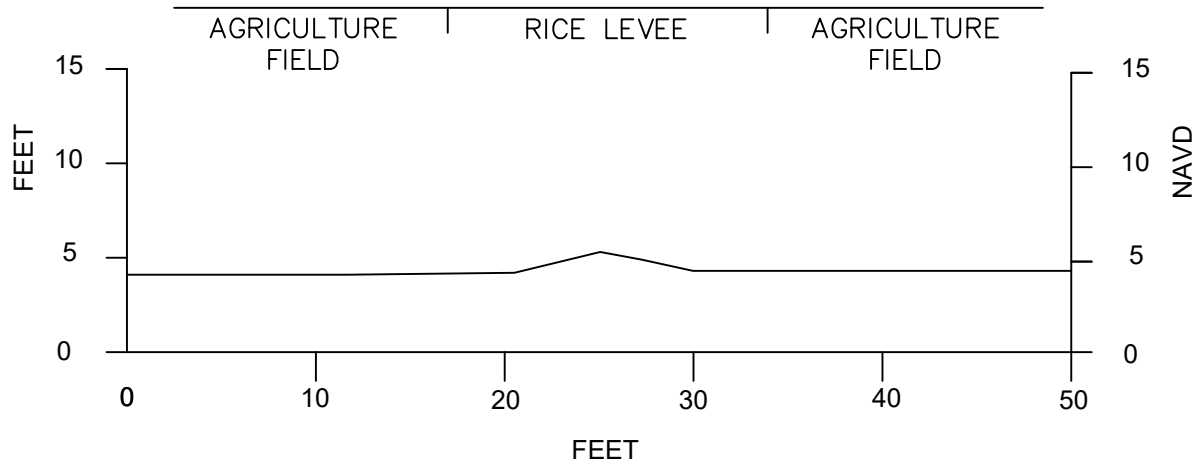
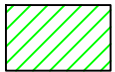
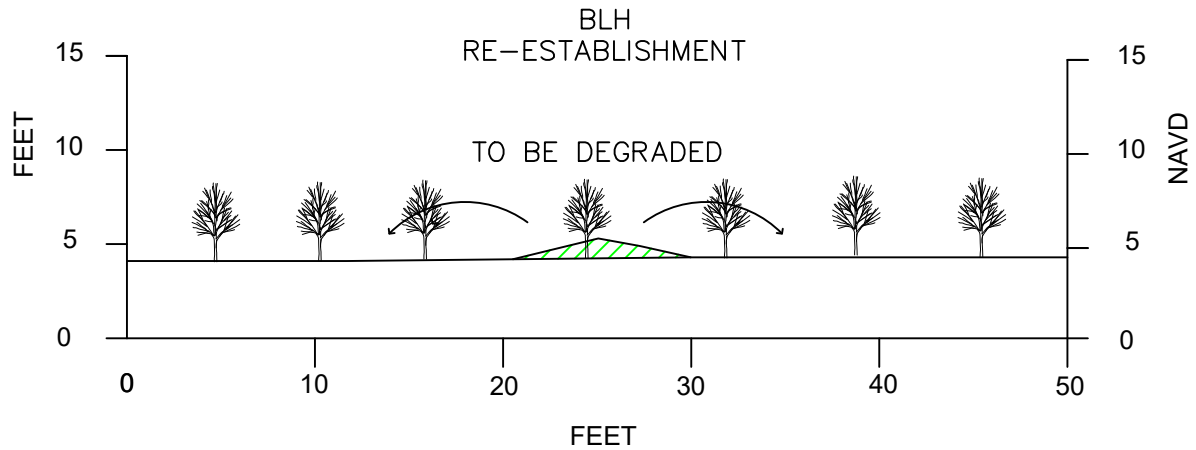
EXISTING WATER

Little Woods Plateau Mitigation Bank**CROSS-SECTION A**

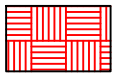
CALCASIEU PARISH, LA

Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg

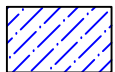
**FIGURE 25-A**

B**EXISTING CROSS-SECTION B****B'****B****PROPOSED CROSS-SECTION B****B'**

PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



EXISTING WATER

Little Woods Plateau Mitigation Bank**CROSS-SECTION B**

CALCASIEU PARISH, LA

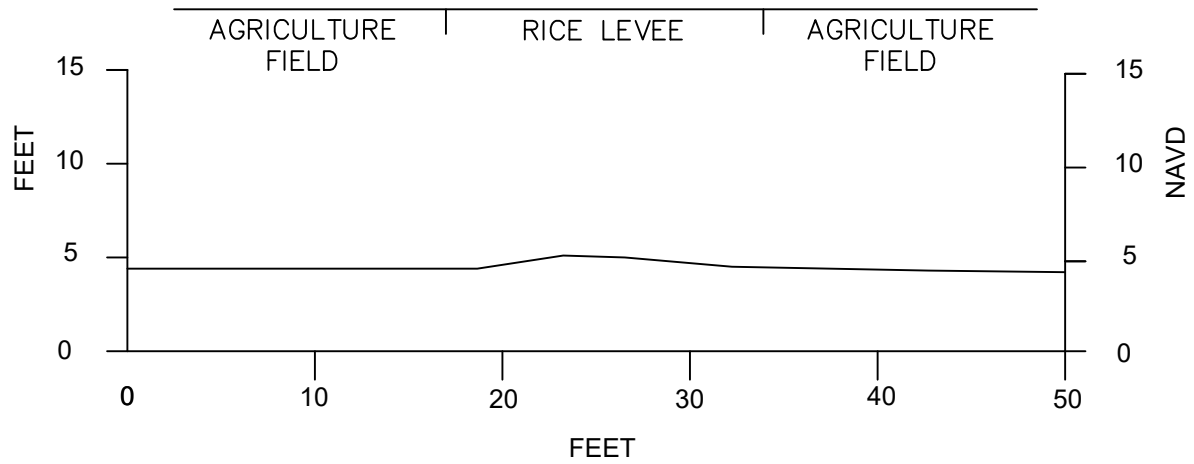
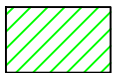
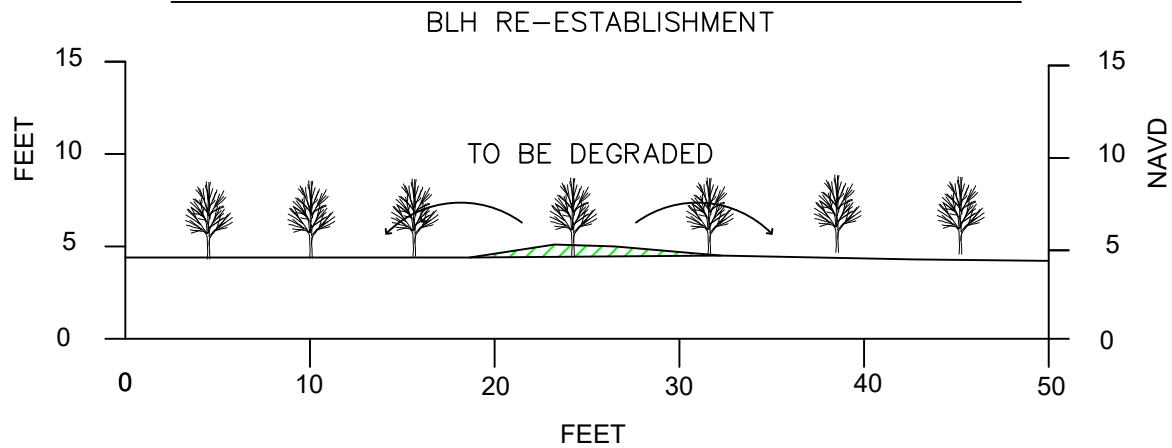
Created: HJS/AutoCAD

Approved: BD

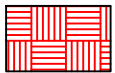
Date: 3/31/2020

Dwg. No.: LWPMB_xsections.dwg

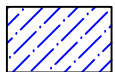
**FIGURE 25-B**

C**EXISTING CROSS-SECTION C****C'****C****PROPOSED CROSS-SECTION C****C'**

PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



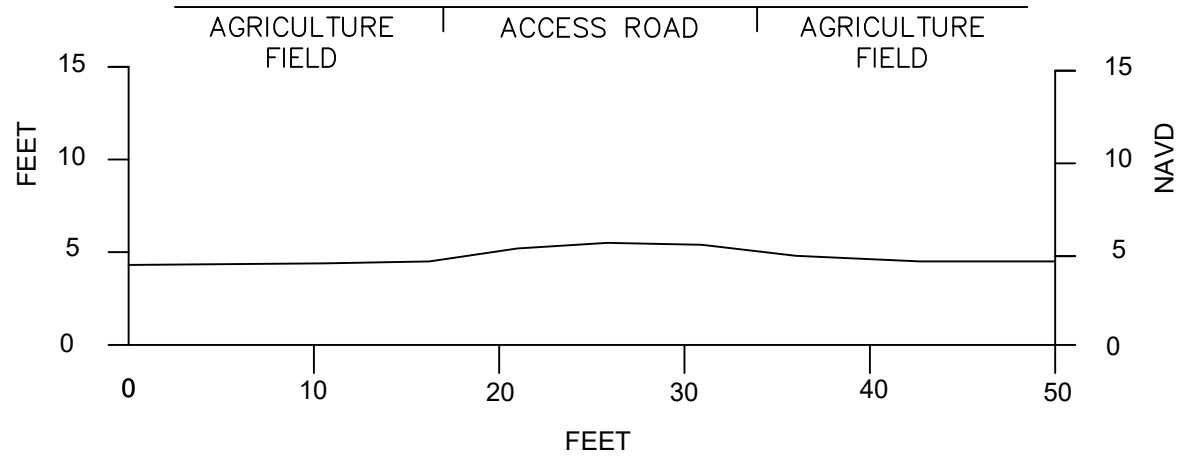
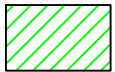
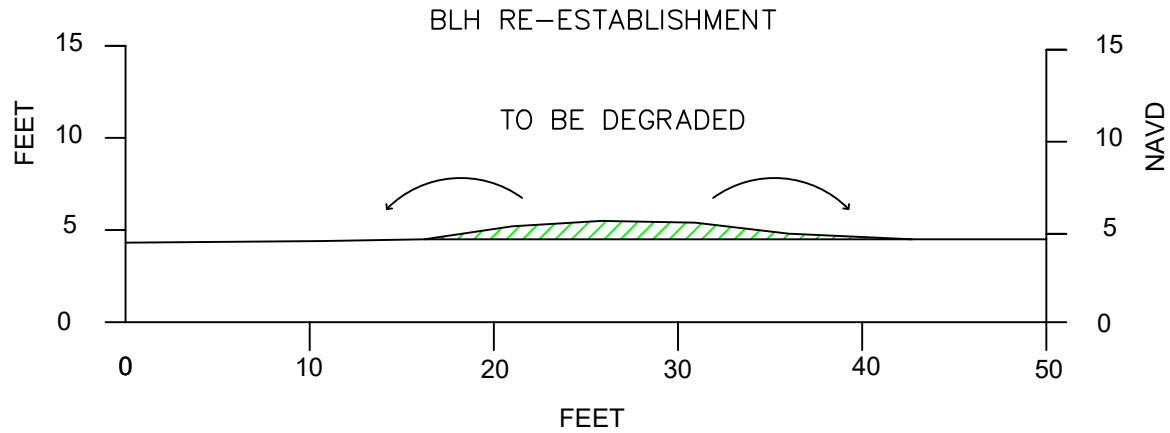
EXISTING WATER

Little Woods Plateau Mitigation Bank**CROSS-SECTION C**

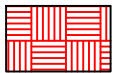
CALCASIEU PARISH, LA

Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg

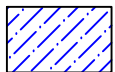
**FIGURE 25-C**

D**EXISTING CROSS-SECTION D****D'****D****PROPOSED CROSS-SECTION D****D'**

PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



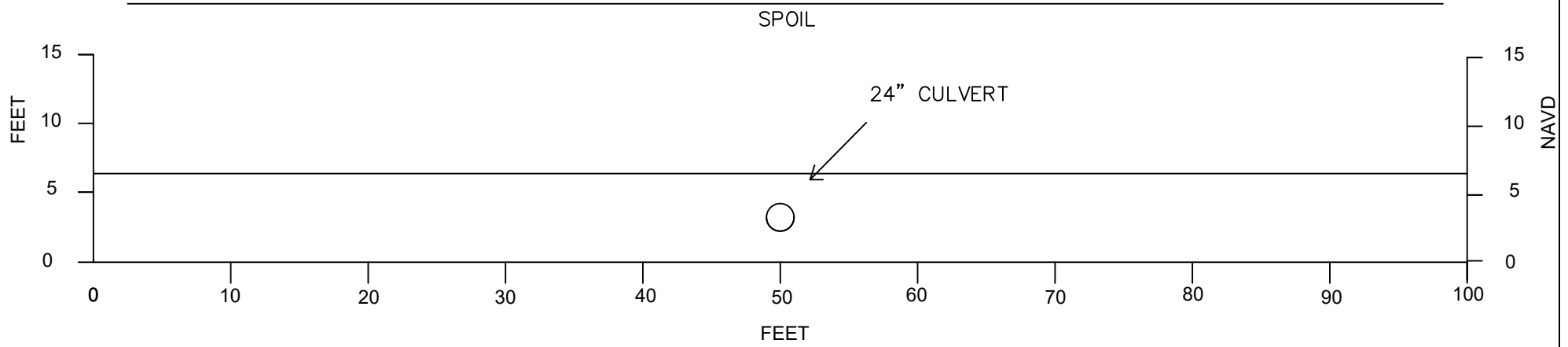
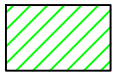
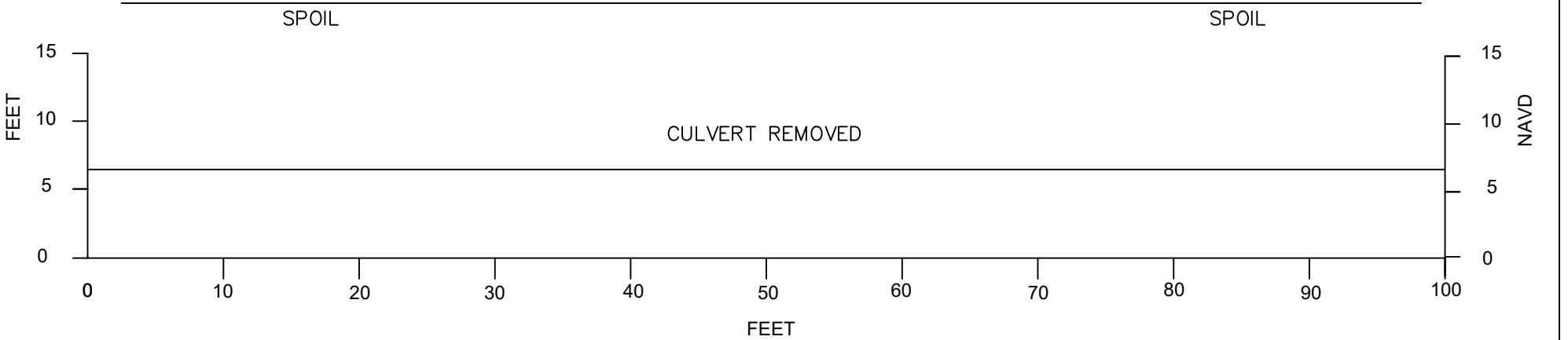
EXISTING WATER

Little Woods Plateau Mitigation Bank**CROSS-SECTION D**

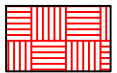
CALCASIEU PARISH, LA

Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg

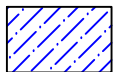
**FIGURE 25-D**

E**EXISTING CROSS-SECTION E****E'****E****PROPOSED CROSS-SECTION E****E'**

PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



EXISTING WATER

Little Woods Plateau Mitigation Bank**CROSS-SECTION E**

CALCASIEU PARISH, LA

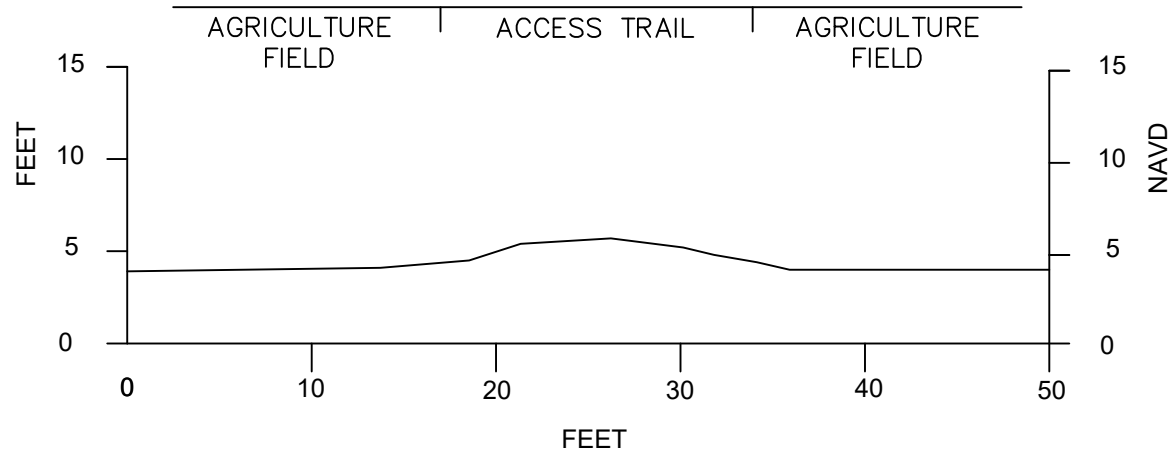
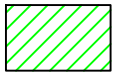
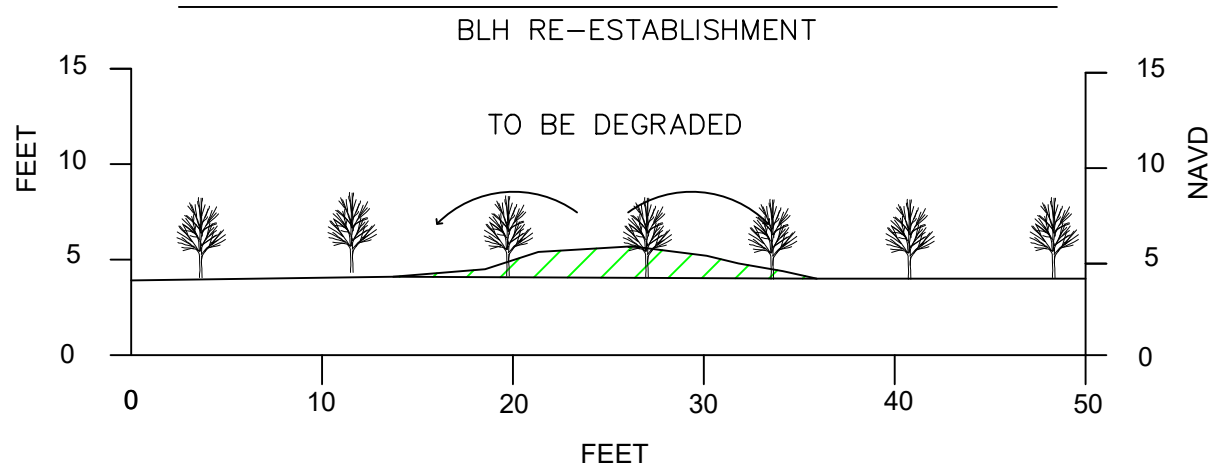
Created: HJS/AutoCAD

Approved: BD

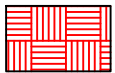
Date: 3/31/2020

Dwg. No.: LWPMB_xsections.dwg

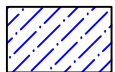
**FIGURE 25-E**

F**EXISTING CROSS-SECTION F****F'****F****PROPOSED CROSS-SECTION F****F'**

PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



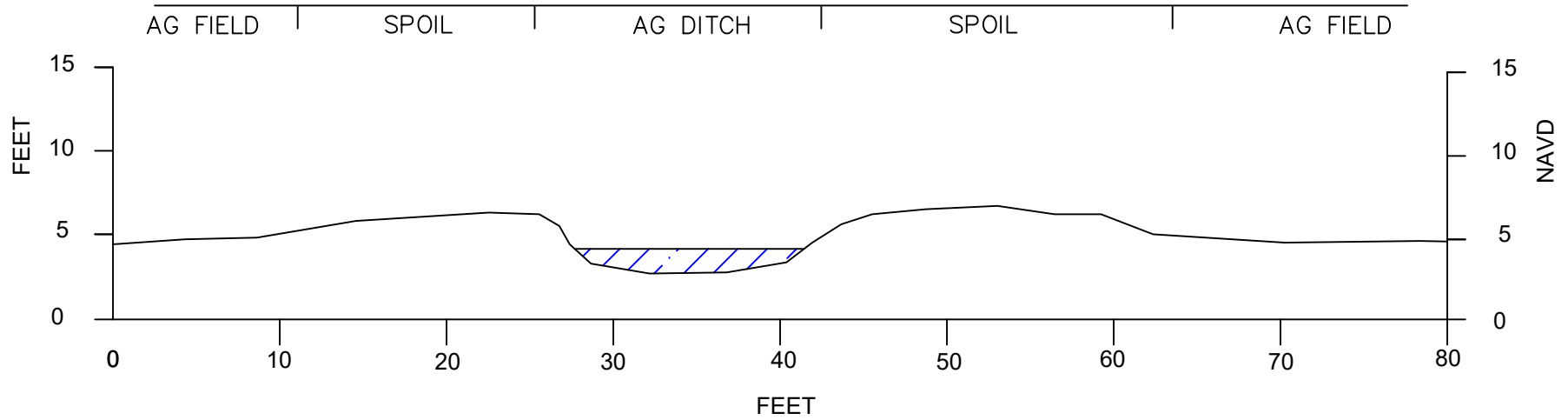
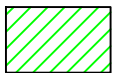
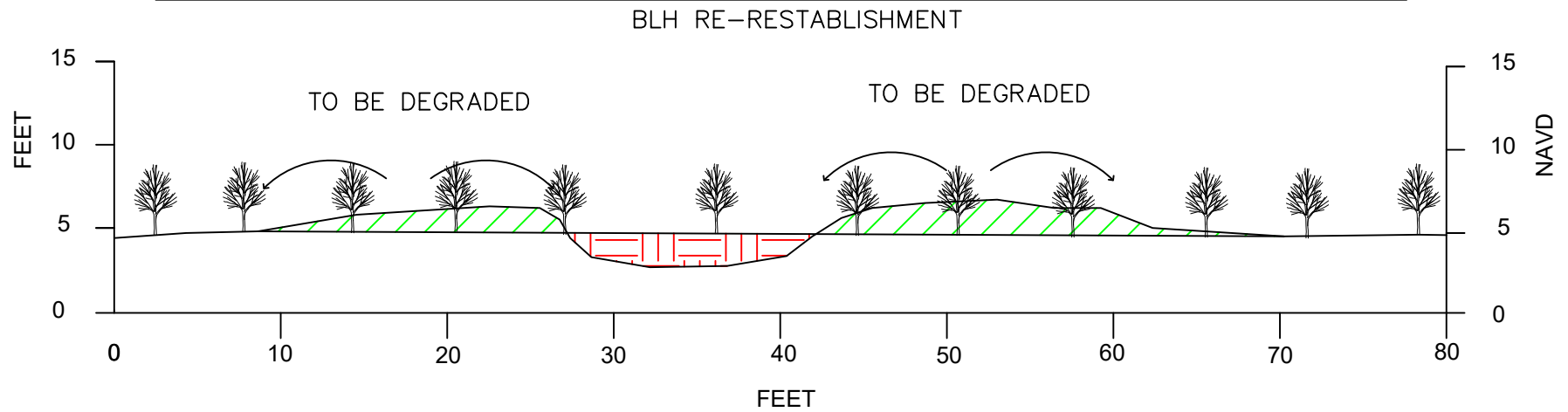
EXISTING WATER

Little Woods Plateau Mitigation Bank**CROSS-SECTION F**

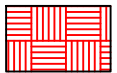
CALCASIEU PARISH, LA

Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg

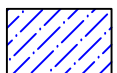
**FIGURE 25-F**

G**EXISTING CROSS-SECTION G****G'****G****PROPOSED CROSS-SECTION G****G'**

PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



EXISTING WATER

Little Woods Plateau Mitigation Bank**CROSS-SECTION G**

CALCASIEU PARISH, LA

Created: HJS/AutoCAD

Approved: BD

Date: 3/31/2020

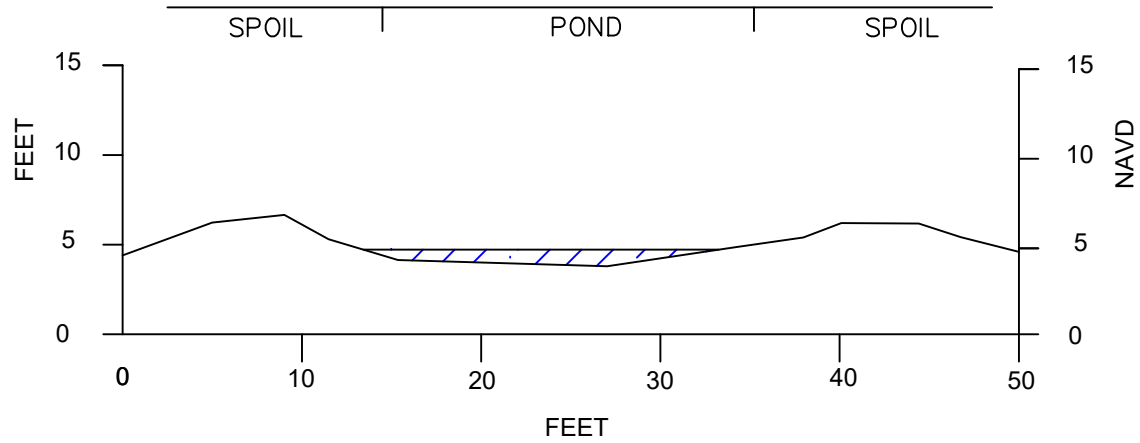
Dwg. No.: LWPMB_xsections.dwg

**FIGURE 25-G**

H

H'

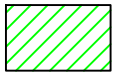
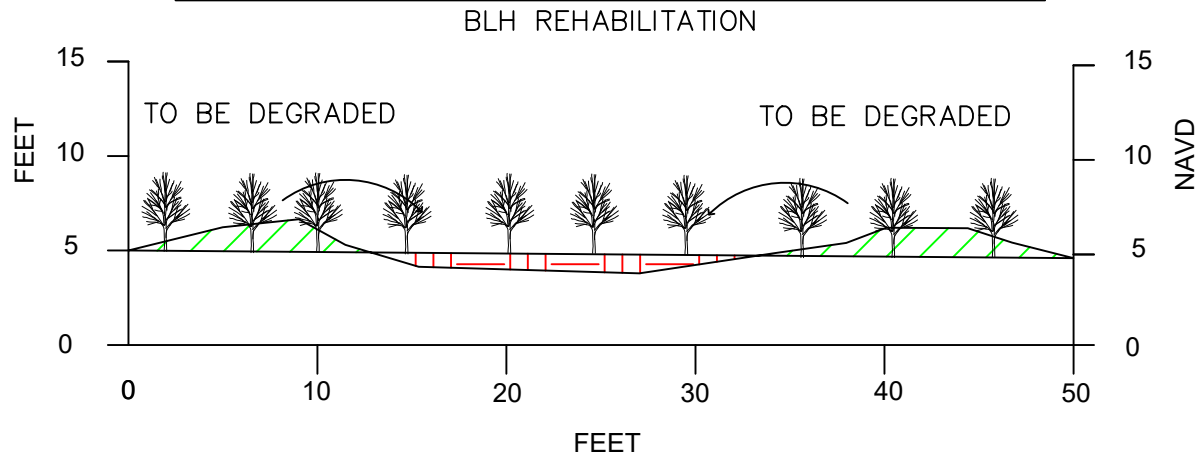
EXISTING CROSS-SECTION H



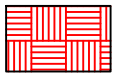
H

H'

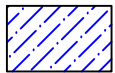
PROPOSED CROSS-SECTION H



PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



EXISTING WATER

Little Woods Plateau Mitigation Bank

CROSS-SECTION H

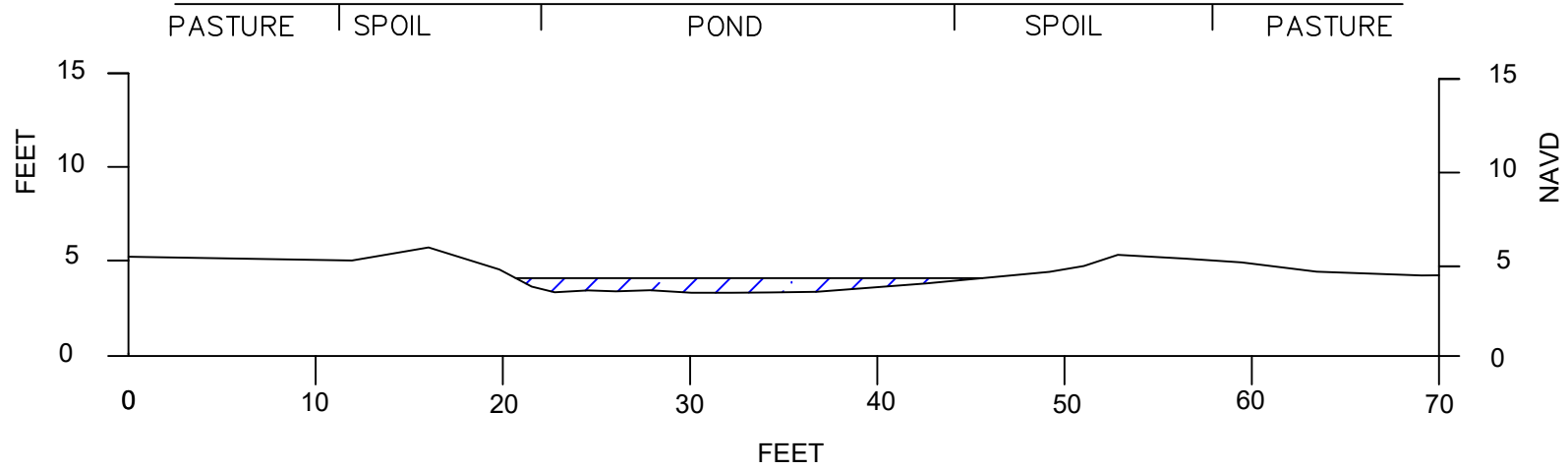
CALCASIEU PARISH, LA

Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg

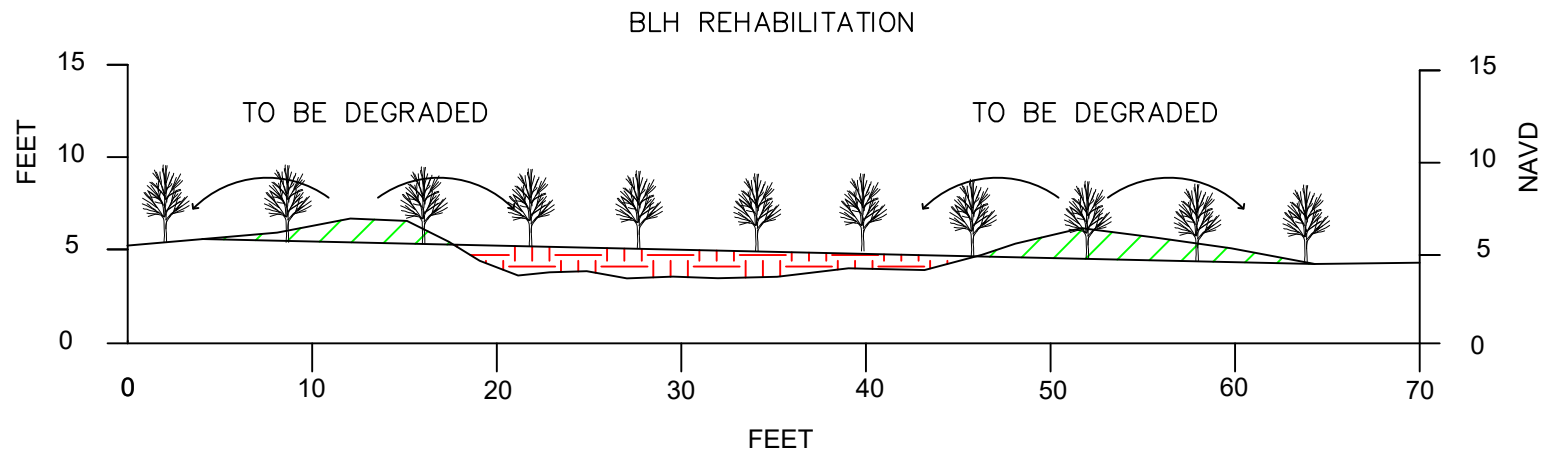


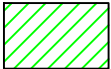
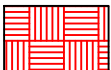
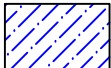
FIGURE 25-H

EXISTING CROSS-SECTION I



PROPOSED CROSS-SECTION I



-  PROPOSED EXCAVATION
-  PROPOSED EARTHEN FILL
-  EXISTING WATER

Little Woods Plateau Mitigation Bank

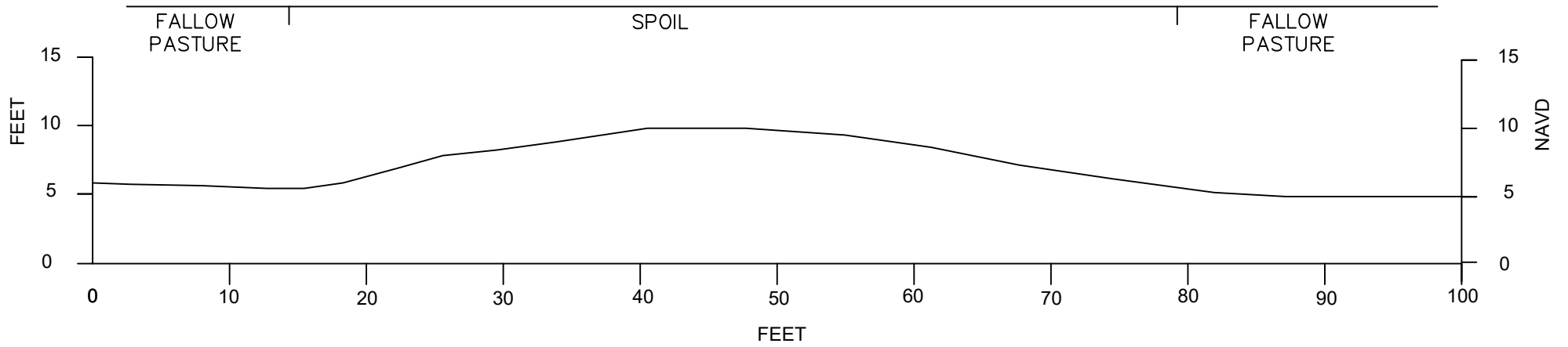
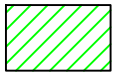
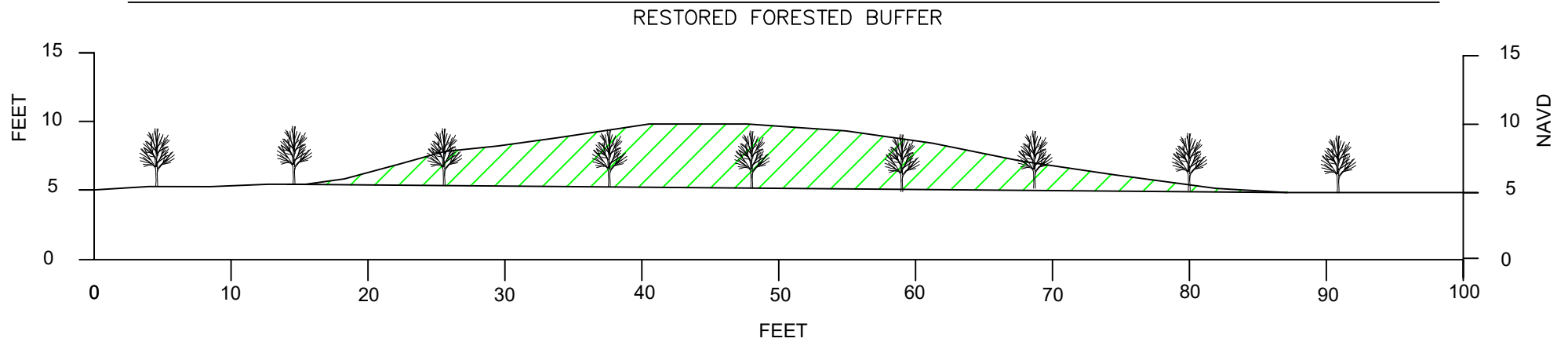
CROSS-SECTION I

CALCASIEU PARISH, LA

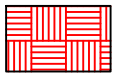
Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg



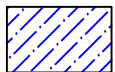
FIGURE 25-I

J**EXISTING CROSS-SECTION J****J'****J****PROPOSED CROSS-SECTION J****J'**

PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



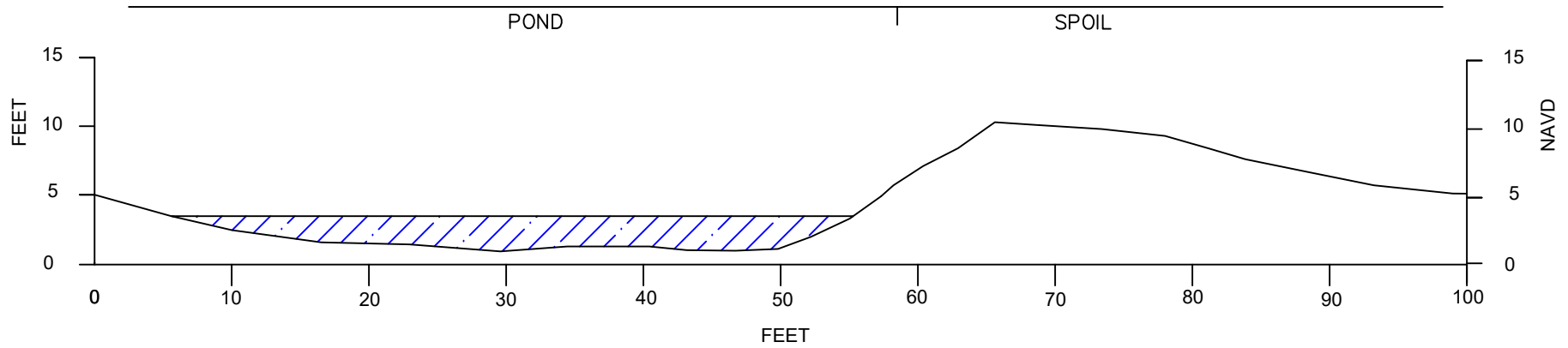
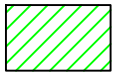
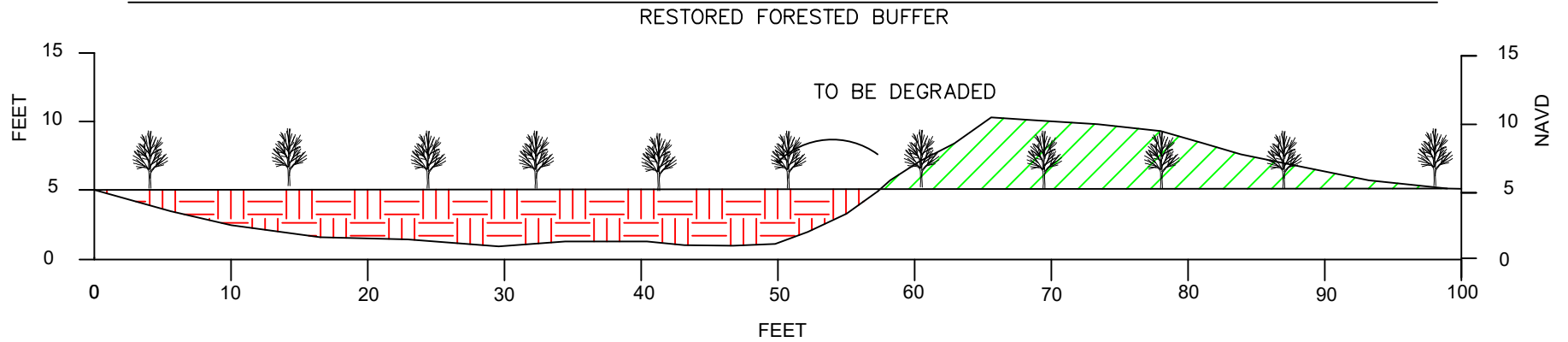
EXISTING WATER

Little Woods Plateau Mitigation Bank**CROSS-SECTION J**

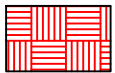
CALCASIEU PARISH, LA

Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg

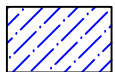
**FIGURE 25-J**

K**K'****EXISTING CROSS-SECTION K****K****K'****PROPOSED CROSS-SECTION K**

PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



EXISTING WATER

Little Woods Plateau Mitigation Bank**CROSS-SECTION K**

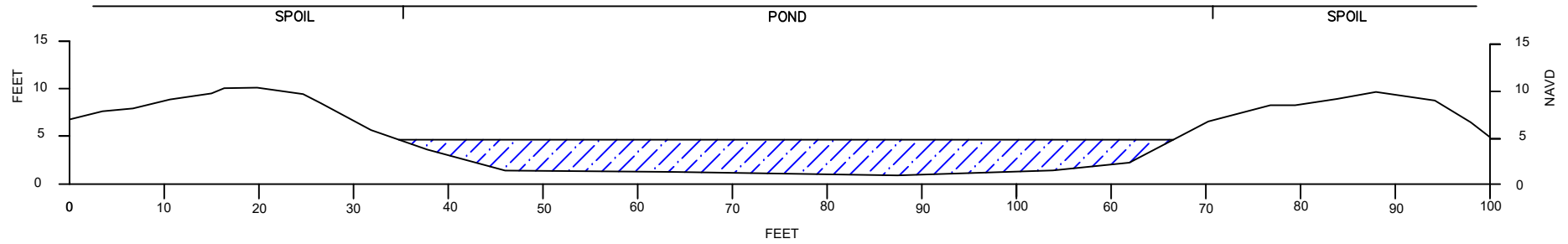
CALCASIEU PARISH, LA

Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg

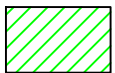
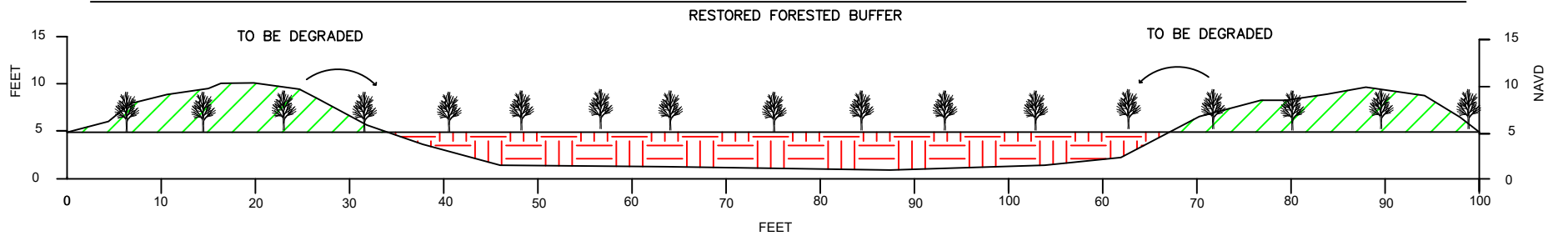
**FIGURE 25-K**



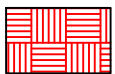
EXISTING CROSS-SECTION L



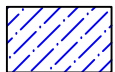
PROPOSED CROSS-SECTION L



PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



EXISTING WATER

Little Woods Plateau Mitigation Bank

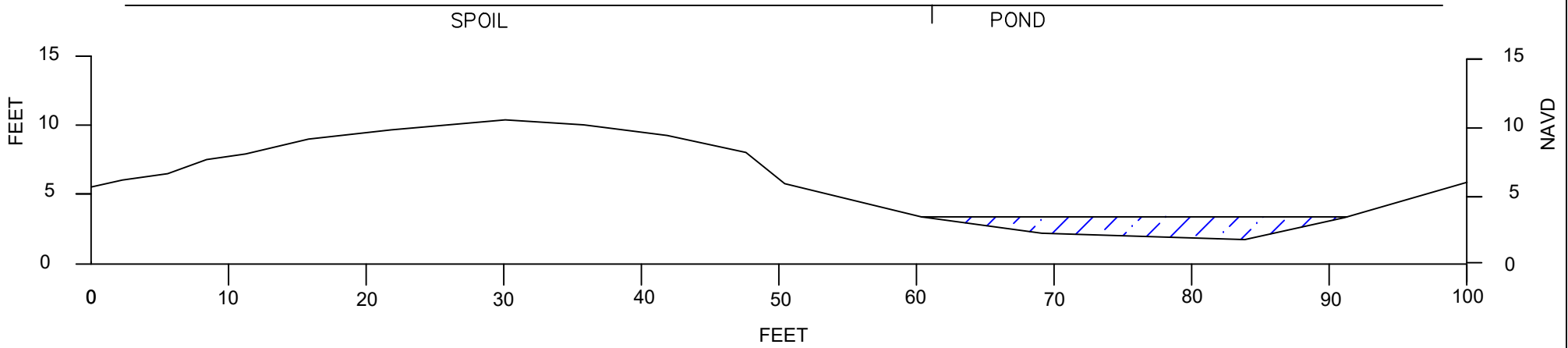
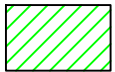
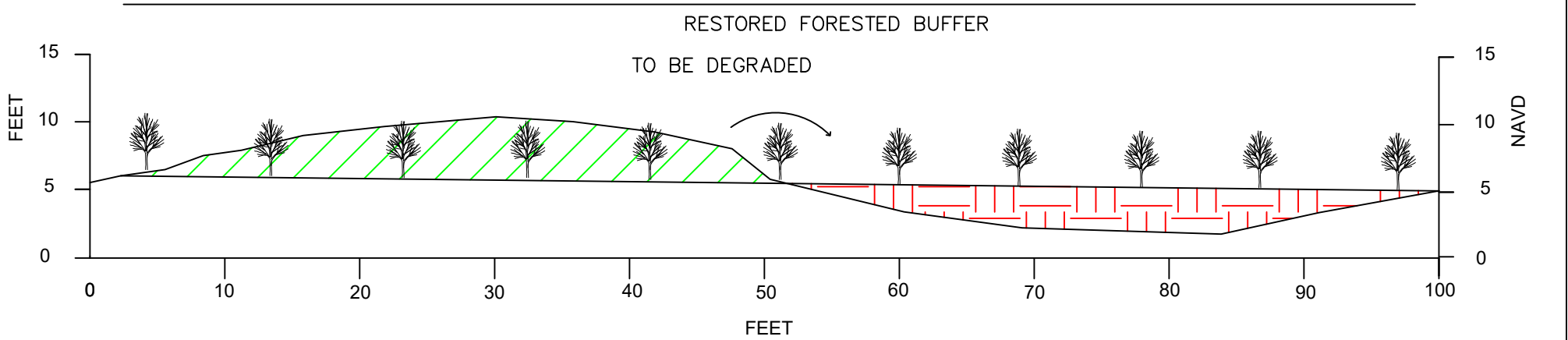
CROSS-SECTION L

CALCASIEU PARISH, LA

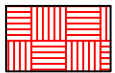
Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg



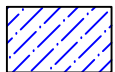
FIGURE 25-L

M**EXISTING CROSS-SECTION M****M'****M****PROPOSED CROSS-SECTION M****M'**

PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



EXISTING WATER

Little Woods Plateau Mitigation Bank**CROSS-SECTION M**

CALCASIEU PARISH, LA

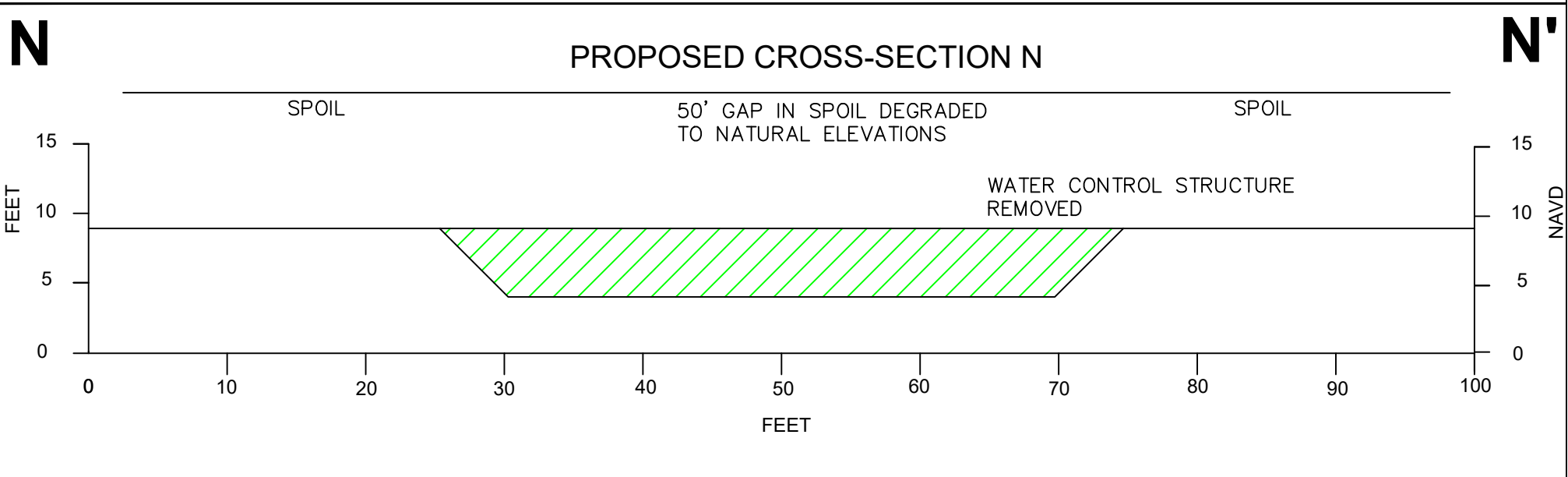
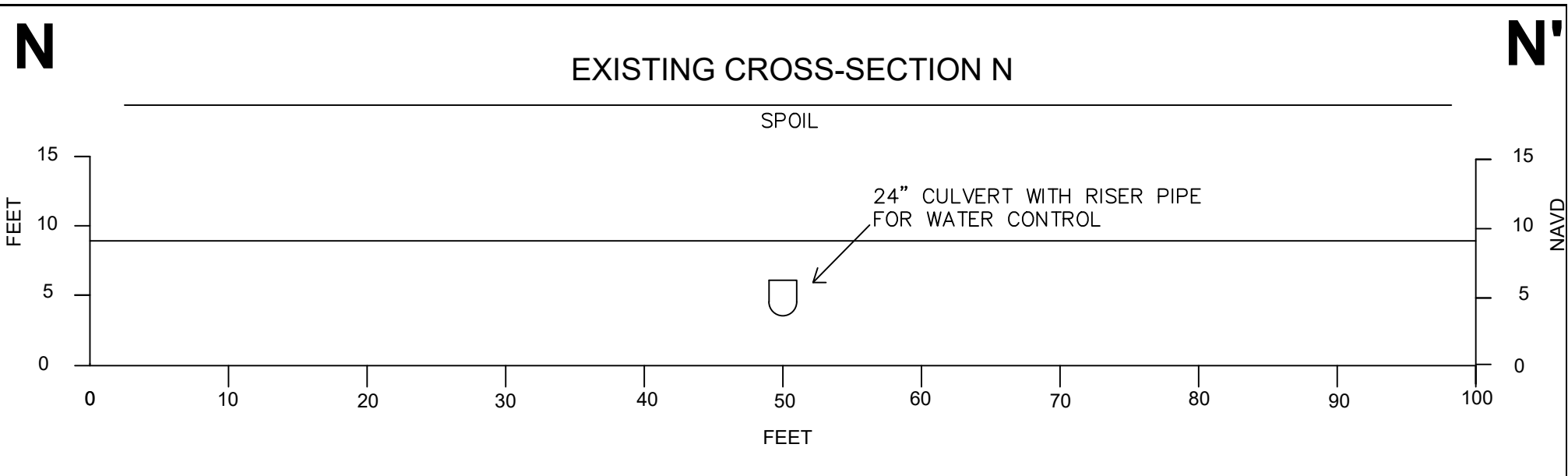
Created: HJS/AutoCAD

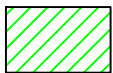
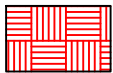
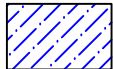
Approved: BD

Date: 3/31/2020

Dwg. No.: LWPMB_xsections.dwg

**FIGURE 25-M**



-  PROPOSED EXCAVATION
-  PROPOSED EARTHEN FILL
-  EXISTING WATER

Little Woods Plateau Mitigation Bank

CROSS-SECTION N

CALCASIEU PARISH, LA

Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg


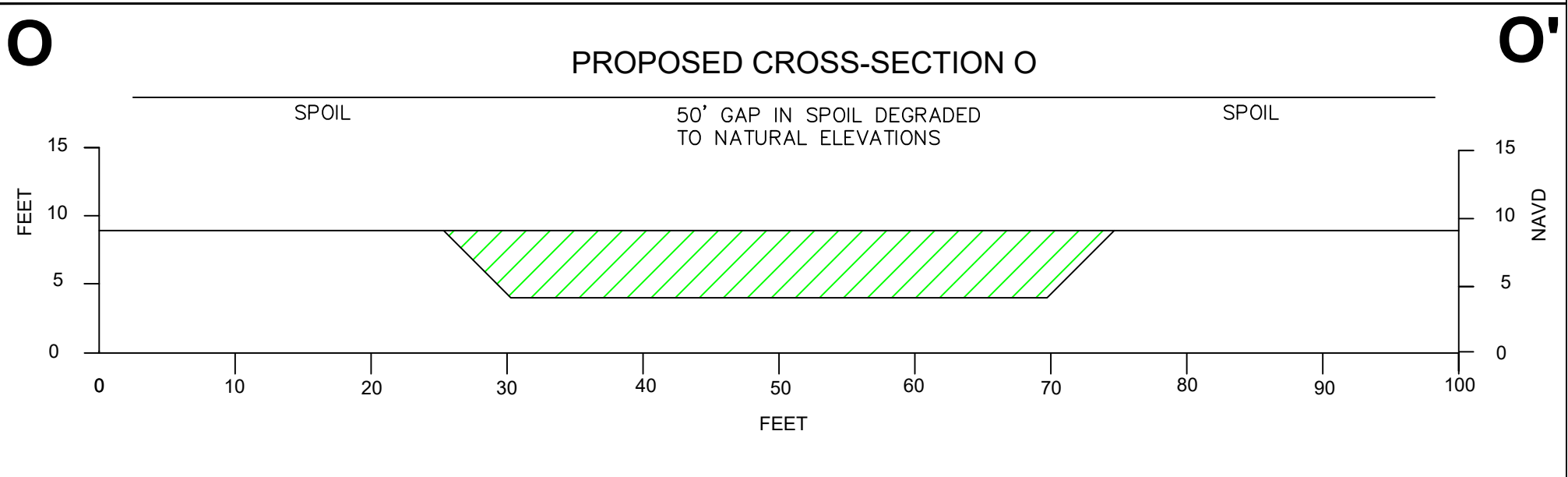
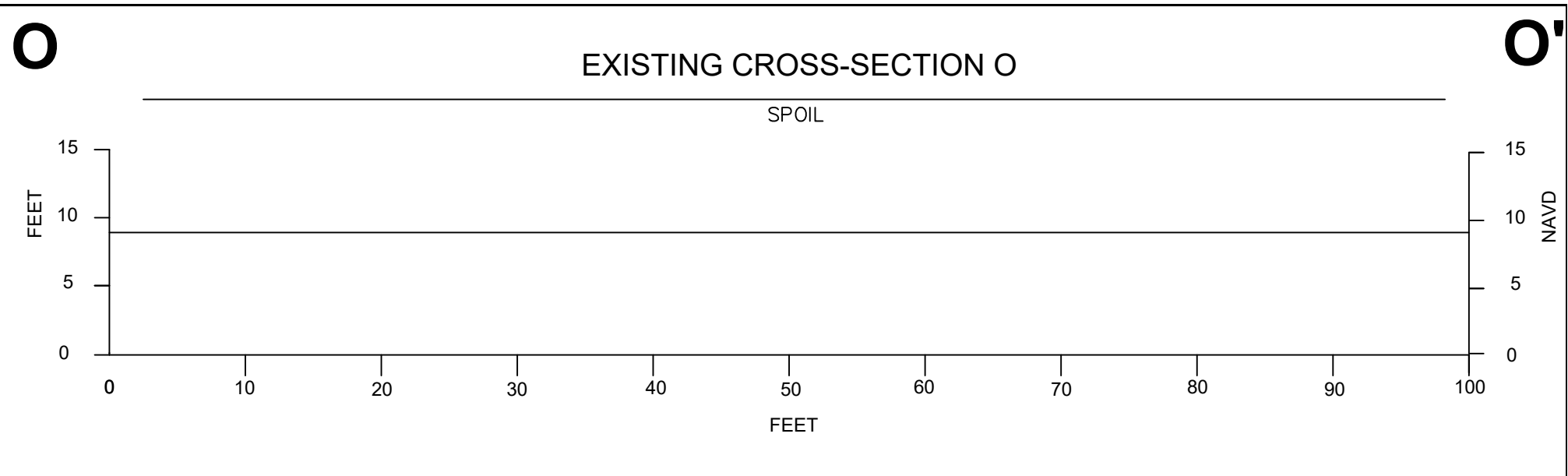


FIGURE 25-N



- PROPOSED EXCAVATION
- PROPOSED EARTHEN FILL
- EXISTING WATER

Little Woods Plateau Mitigation Bank

CROSS-SECTION O

CALCASIEU PARISH, LA

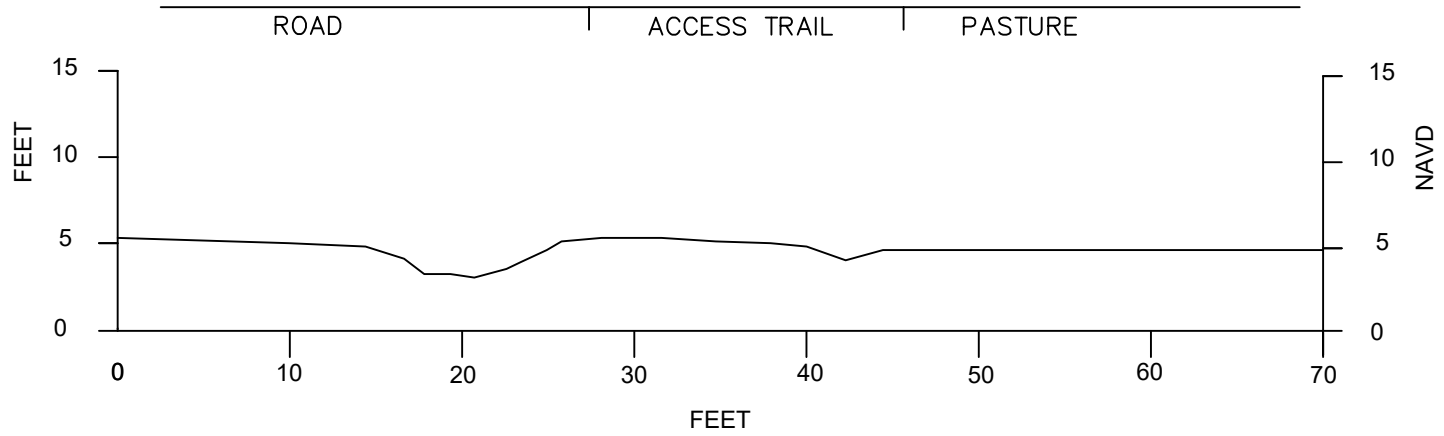
Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg

FIGURE 25-O

P

P'

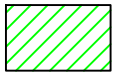
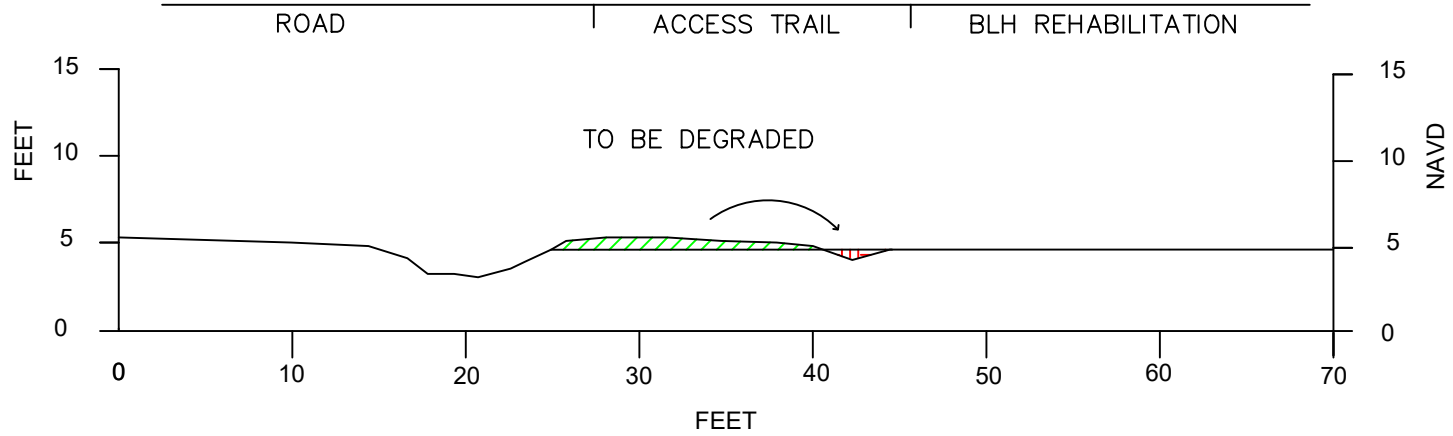
EXISTING CROSS-SECTION P



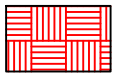
P

P'

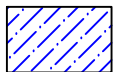
PROPOSED CROSS-SECTION P



PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



EXISTING WATER

Little Woods Plateau Mitigation Bank

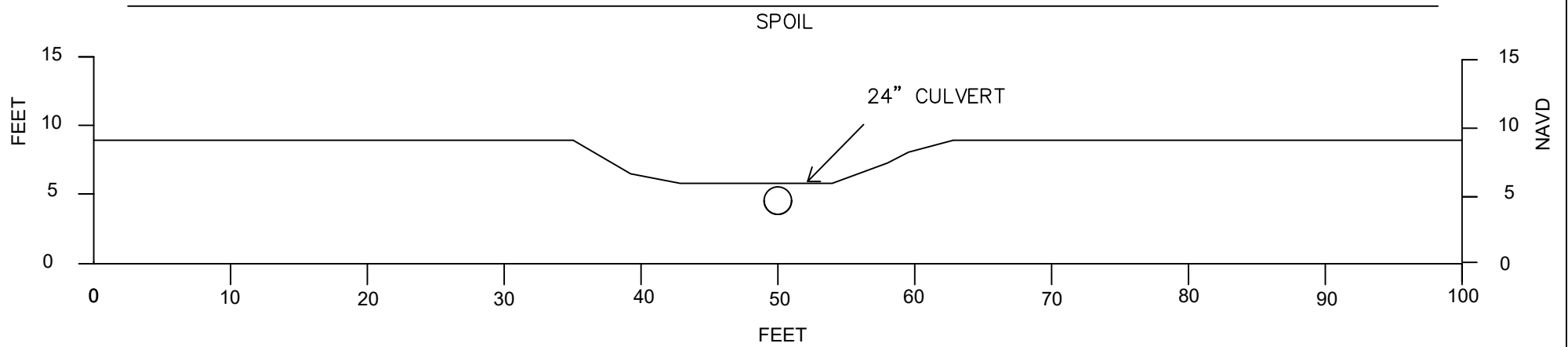
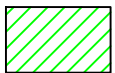
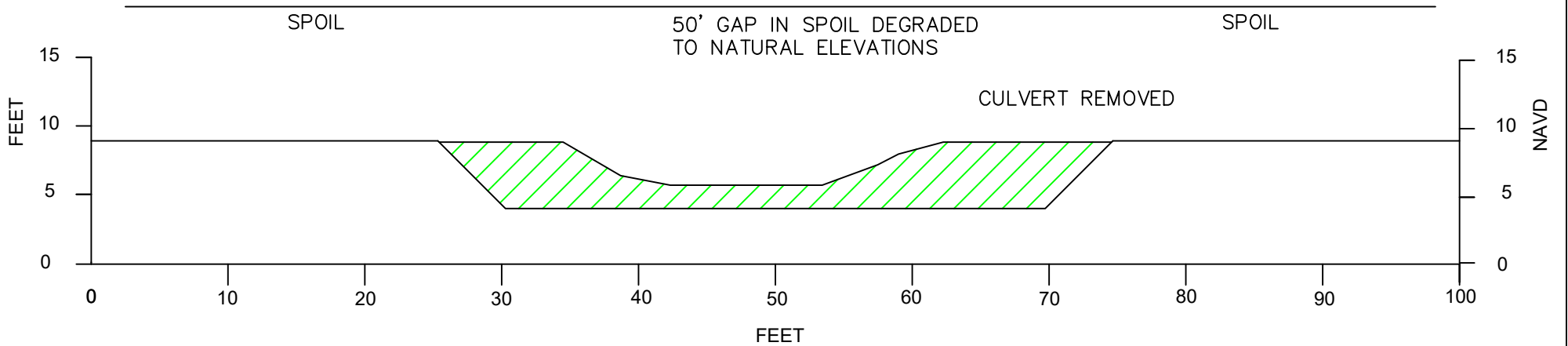
CROSS-SECTION P

CALCASIEU PARISH, LA

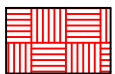
Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg



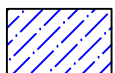
FIGURE 25-P

Q**Q'****EXISTING CROSS-SECTION Q****Q****Q'****PROPOSED CROSS-SECTION Q**

PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



EXISTING WATER

Little Woods Plateau Mitigation Bank**CROSS-SECTION Q**

CALCASIEU PARISH, LA

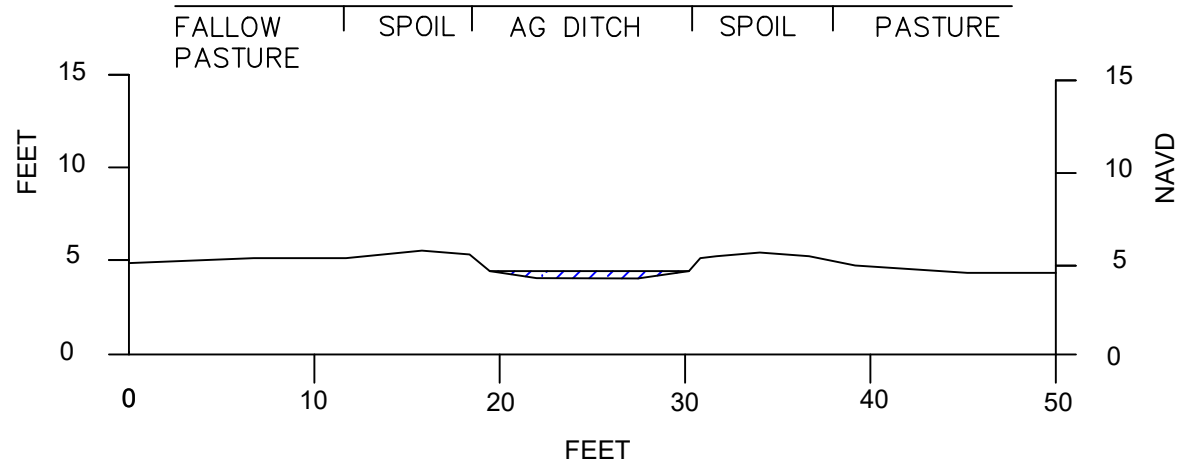
Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg

**FIGURE 25-Q**

R

EXISTING CROSS-SECTION R

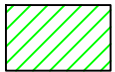
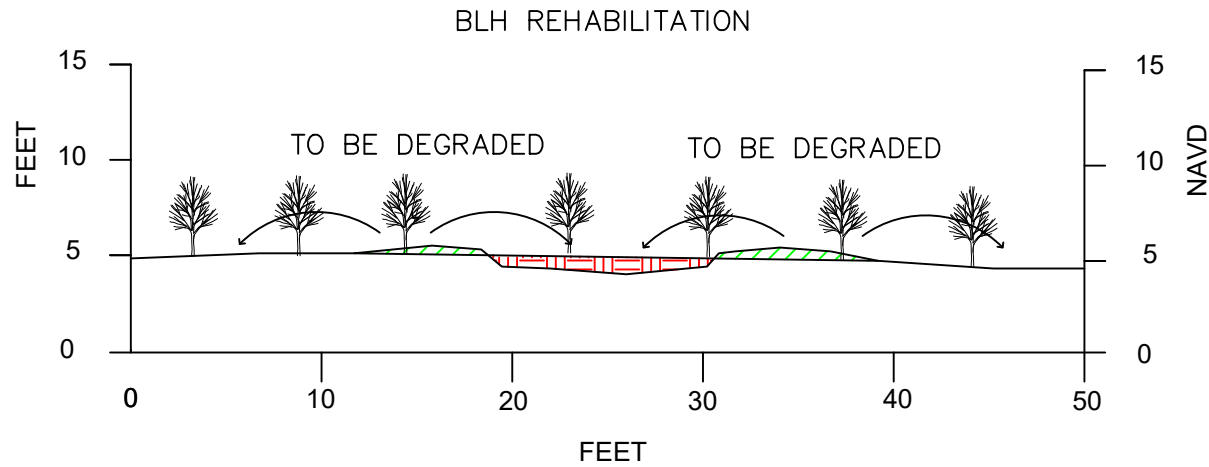
R'



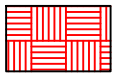
R

PROPOSED CROSS-SECTION R

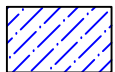
R'



PROPOSED EXCAVATION



PROPOSED EARTHEN FILL



EXISTING WATER

Little Woods Plateau Mitigation Bank

CROSS-SECTION R

CALCASIEU PARISH, LA

Created:	HJS/AutoCAD
Approved:	BD
Date:	3/31/2020
Dwg. No.:	LWPMB_xsections.dwg



FIGURE 25-R