



MEMORANDUM

To: [REDACTED] - U.S. Department of Agriculture (USDA) – Natural Resources Conservation Service

CC: [REDACTED] - USDA – Natural Resources Conservation Service (NRCS)
[REDACTED] – USDA-NRCS
[REDACTED] – [REDACTED]

From: Brian Thomas – Carbon Rho, LLC

Date: December 6, 2023

Subject: Wetlands Reserve Program Compatible Use Permit Application - Timber Stand Improvement

In accordance with guidance provided by the U.S. Department of Agriculture – Natural Resources Conservation Service (NRCS) Wetlands Reserve Program (WRP), this memo has been prepared by Carbon Rho, LLC (C_ρ) on behalf of [REDACTED] (RDR) in support of a Compatible Use Permit Application (CUPA) for timber stand improvements activities. WRP Easement Contract No. [REDACTED] was originally executed in July 2001, as part of the enrollment of the parcel into the WRP. The property was purchased by RDR in July 2020 and enrolled in C_ρ's Carbon Accretion and Riparian Benefits (CARB) project in September 2023.

C_ρ understands the parcel was previously managed in accordance with NRCS guidance for compatible use, including the maintenance of access roads, seasonal flooding of migratory game bird habitat, seasonal mowing as well as maintenance of firebreaks/access paths, and ground preparation for food plots. Additional activities proposed as part of this CUPA are associated with opportunities for timber stand improvements within the easement, including but not limited to the following:

- Ground preparation and reforestation of suitable portions of the easement;
- Selective thinning to ensure growth of resilient native bottomland hardwood timber stands; and
- Management of invasive species as well as species susceptible to high mortality rates.

Reforestation Activities

C_ρ and RDR have identified several areas that are suitable for reforestation or native mixed bottomland timber species and/or timber stand improvements (**Attachment 1**). Based on a review of current and historical aerial photos, the ground cover conditions of the areas identified generally include:

- Previously unplanted areas.
- Understocked woodland (e.g. areas of failed plantations or very poor hardwood survival); and/or
- Areas exhibiting successive growth of invasive species or species with high observed mortality.

Invasive or undesirable species identified include large shrubs (baccharis), invasive pear, cedar, and locust. These invasive or undesirable species are prevalent in successive growth zones where original WRP reforestation activities either failed or were not performed. According to Texas A&M Horticulture Sciences, Baccharis (an example of an undesirable native species) spreads quickly and often suppresses growth of beneficial forage plants. Baccharis is also deep-rooted and consumes a

disproportionate amount of water, while also being very flammable. Once established it is very difficult to eradicate. Similarly, green ash exhibits a prolific growth rate and is a native tree; however, when green ash exists in monoculture stands, it is also considered an undesirable species for habitat improvement on the easement. Green ash stands often are the dominant successive growth within moist soil units that have not been maintained. Given the presence of the emerald ash borer in the region and widespread mortality observed on similar easements; monitoring and management of ash mortality and regeneration is an important management objective.

Reforestation – Proposed Species

Reforestation activities performed as part of the CARB project focuses on reestablishing or enhancing mixed bottomland timber stands, which is well aligned with the goals of the WRP. Reforestation activities will include planting native species including, but not limited to, bur oak, cherrybark oak, chinkapin oak, nuttall oak, pin oak, southern red oak, shumard oak, water oak, white oak, willow oak, cypress. These species may be interplanted with fast growing native species (e.g. eastern cottonwood or improved sweetgum). Interplanting oaks with these pioneering species causes vigorous growth versus oak-on-oak competition. Eventually, the oak species will overtop the sweetgum, allowing the crown to expand. The resulting oak crown expansion will result in acorn production, thus enhancing the wildlife value of the stand (Rousseau, 2019). Upon USDA approval, interplanted sweetgum or cottonwoods may be harvested in accordance with a timber stand improvement plan after 15-20 years of growth.

A soil map of the tract is provided as **Attachment 2**. Based on existing successful hardwood stands and clay-dominant soil composition for over 85% of the easement, mixed hardwood species are expected to thrive in the areas designated for reforestation. The 2024 seedling reservation consists of the following species:

- water oak (35%);
- nuttall oak (24%);
- willow oak (12%);
- pin oak (6%);
- chinkapin oak (5%),
- cherrybark, Shumard, and southern red oak (each less 4% or less); and
- lesser quantities of other species including sycamore, pecan, cypress.

Approximately 23,000 bareroot seedlings have been reserved for planting in January or February of 2024 based on a target rate of approximately 500 trees per acres. Row spacings will generally be maintained at 12-foot on center. The seedlings have been sourced from the Arkansas Department of Agriculture - Baucum Nursery located in North Little Rock, Arkansas.

Reforestation – Proposed Vegetative Management & Ground Preparation Alternatives

Ground preparation activities will generally comply with NRCS best management practices, Cp's Sustainable Forest Management Plan, and the Texas A&M Forest Service (TFS) *Technical Guidelines for East Texas Tree (Hardwood) Establishment and Quality Assurance* (hereafter referred to as the "*Hardwood Technical Guide*"). The condition of existing vegetation in the proposed areas of reforestation will affect the means of ground preparation selected. As practicable, the following hierarchy of preferred mechanical and chemical methods of vegetation management will be performed prior to ground preparation:

- Mowing: existing grasses and small woody stems would be mowed to the lowest height practicable.
- Herbaceous Weed Control: Cp has teamed with a professional forestry consulting firm as well as experienced subcontractors who apply Arsenal™ and other herbaceous weed control (HWC) agents using drones. HWC delivery via drone ensures application directly to the desired treatment area during periods of dormancy for native hardwood species. When areas have been identified for reforestation at least 6-months prior to planting, Arsenal™ or similar herbicide will be used to eliminate grasses and herbaceous weeds in the early summer months prior to additional ground preparation for planting the bareroot seedlings.
- Prescribed Fire: prescribed burning of grasses and undesirable and/or invasive species, may be the most effective tool for preparing areas for planting hardwood seedlings. However, much of the easement remains too wet through the ideal seasonal window for use of prescribed fire. If prescribed fire is used as a vegetative management practice, preparation and burning shall comply with the Texas A&M Agrilife Extension – Texas Prescribed Burn Handbook. Planning of the fire shall include preparation of a prescribed burn plan, and field activities shall be implemented by a certified prescribed burn manager.
- Mulching: When ground conditions, existing vegetation, seasonal timing of vegetation removal or other conditions hinder the use of the aforementioned practices, a low ground pressure, mechanical forestry mulcher or masticator may be used. The mulcher shreds existing vegetation and can incorporate organic matter into the upper 6-inches of topsoil.

Vegetative management and related ground preparation methods shall avoid disturbance of wetland vegetation, except in cases where deep discing of moist soil units is performed in accordance with existing NRCS approved management practices. Best management practices shall be implemented to control runoff and prevent the discharge of sediment from prepared areas into Waters of the United States. Although application of HWC agents would occur during dormant periods for existing hardwoods, application methods shall ensure that drift during application is avoided. In no case will HWC agents be applied after bud swell has occurred on either seedlings or adjacent stands of existing hardwoods to prevent unintentional mortality events.

2024 Ground Preparation

Due to the late season site-conditions, up to five separate areas consisting of up to 50-acres are scheduled for reforestation activities in February of 2024. These areas are designated on **Attachment 1** and generally include:

- Previously unplanted areas with grasses and minor woody vegetation; and
- Easily accessible areas adjacent or near to existing roadways

These areas, including areas in existing moist soil units, generally consist of unplanted areas that allow for vegetative removal by close mowing, discing of topsoil for ground preparation and overspray of HWC immediately after planting of the bareroot seedlings. However, if these areas are not accessible with pneumatic-tired equipment a masticator will be used to remove existing vegetation and incorporate cuttings into the topsoil as part of the ground preparation. Use of mechanical planting equipment is also part of successful ground preparation, when practicable. Additional details concerning seedling planting is provided below.

Future Ground Preparation

Ground preparation for planting activities occurring either during 2025 or in future years will have additional lead time, which may allow for more flexible vegetative management and ground preparation in advance of reserving and planting bareroot seedlings. The preferred vegetative management practices will be implemented in the spring and summer months prior to the next winter seedling planting season, in accordance with the previously described hierarchy of management practices.

Management of Seedlings and Planting

Bareroot seedlings shall be sourced from a regionally appropriate nursery and lifted from growing beds after dormancy, typically in late November or December. Transportation, storage and on-site management of the seedlings shall follow the *Hardwood Technical Guide*. To the extent practicable machine planting is preferred as it typically results in a higher survival rate. In addition, machine planting promotes consistent depth of penetration, seedling placement depth/spacing, and better root-to-soil contact in variable soil conditions. Although areas designated for planting in 2024 will be accessible for machine planting, site accessibility, soil conditions and other site constraints will likely require that bareroot seedlings be hand planted in some areas. Hand planting of seedlings shall be performed in accordance with the *Hardwood Technical Guide*.

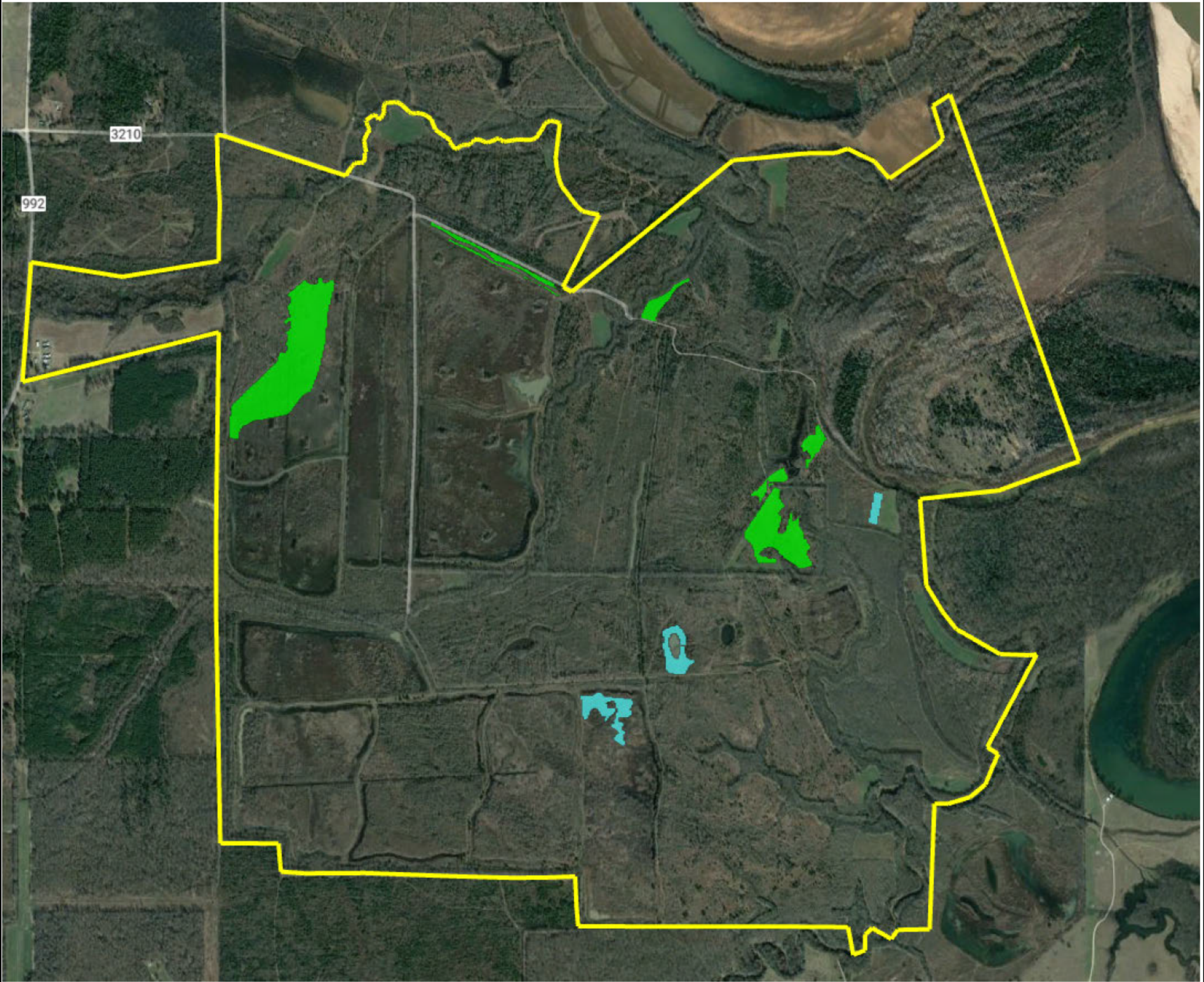
Existing Timber Improvement

Over time C_p and RDR will present additional timber stand improvement opportunities to USDA as part of an on-going inventory process for the property, which is a requirement of the CARB project. These opportunities may include, but are not limited to, thinning of overcrowded stands to enhance growth of native bottomland hardwood timber and hack-and-squirt programs to manage undesirable vegetation and invasive species. These activities will not be conducted without prior approval of the USDA-NRCS.

ATTACHMENT 1

SITE PLAN

PROPOSED COMPATIBLE USE: REFORESTATION



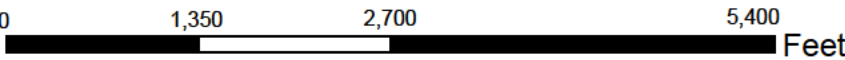
2024 - Reforestation Areas (Approx. 50-Acres)



Future Hardwood Reforestation Areas
(Typical Future Reforestation Areas Requiring Mechanical Vegetation Removal)

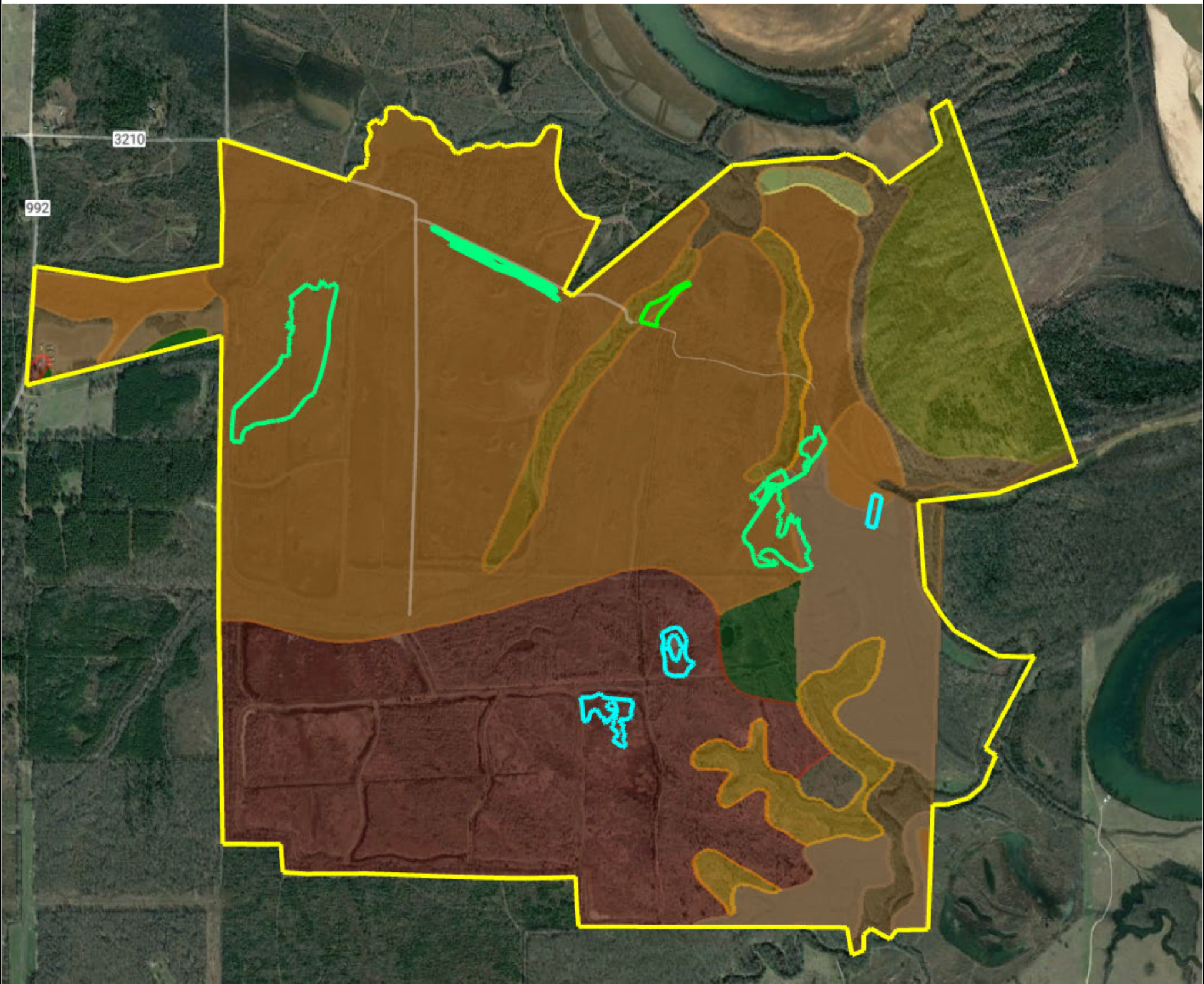





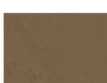
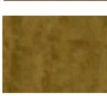
Site Plan
Proposed Compatible Use - Reforestation



ATTACHMENT 2
USDA SOIL CLASSIFICATION MAP

Attachment 2



-  Muldrow Clay (Approx. 45% of tract)
-  Wrightsville Rodessa Complex (Approx. 27% of tract)
-  Severn Very Fine Sand (Approx. 8% of tract)
-  Billyhaw Clay (Approx. 7% of tract)
-  Morse Clay (Approx. 6% of tract)



USDA Soil Classification Map

