

# Forest Management Plan

## **Landowners: Chestnut Carbon Acquisitions, LLC**

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*This plan is modified from the template developed by the American Tree Farm System, Natural Resources Conservation Service, and the U.S. Forest Service Forest Stewardship Program.*

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# Property Description

## Legal property description

Approximately 29% of the property is forested, and approximately 71% pasture use. The property is located approximately 5 miles from Locksburg, AR. The Parcel ID # is 002-00677-003, 002-00680-000, 002-00682-000 & 002-00691-000. Maps identifying property boundaries are detailed throughout the document (p. 6, 12 and 21).

## Property Location

The property is located on Greyland Rd. and Saline Bluff Rd. near Locksburg AR in Sevier County, which is within the Northern limits Gulf Coastal Plain. This area is considered moderate in climate and has rolling topography with many hills and valleys. Due to the topography, many streams and rivers are located in this region of the state. Native mixed hardwood forests and loblolly pine plantations are prevalent.

## Property Statistics

Total ownership acreage: 884  
Total forested acreage: 253  
Total acreage covered by this plan: 884  
Number of unique stands of trees: 1  
Do you reside on the property? No

## Basic topography

This parcel is on a slope ranging from 330 feet in elevation to 390 feet at its highest point

- Complex topography (many steep ravines and aspects) -5%
- Simple topography (few ravines and changes of aspect) - 95%

Percent of land that is: Flat (<5% grade) 95 Gentle Slope (6 to 20% grade) 5

Steep Slope (> 21% grade) \_\_\_\_\_

**Road Conditions** (check):      Excellent (80% accessible)      Good (at least 50%)  
☐      ☒

Fair (at least 25%) ☐      Poor (less than 10%) ☐

## Watershed

This property is located within the Edwards-Trinity Aquifer System.



## Property History

This property has historically been used as a cattle farm with sections for recreational use such as hunting and fishing. The prior owner has done little to no timber harvesting or forest management on the timbered acreage and has run cattle on the open pasture acreage. There has been some past liming, fertilization, and herbicides used on the pasture acreage. Some of the better field acreage was cut for hay.

## Forest Management Goals

The landowner intends to manage this forest to maintain and enhance forest health and wildlife habitat and to provide a viable and thriving forest for future generations. They wish to address forest health issues, practice silviculture that aids in regeneration of an ecologically sound forest and maintain soil and water quality. They intend to utilize the property for personal recreation and as a limited community resource for education and low-impact activities, such as hiking or fishing.

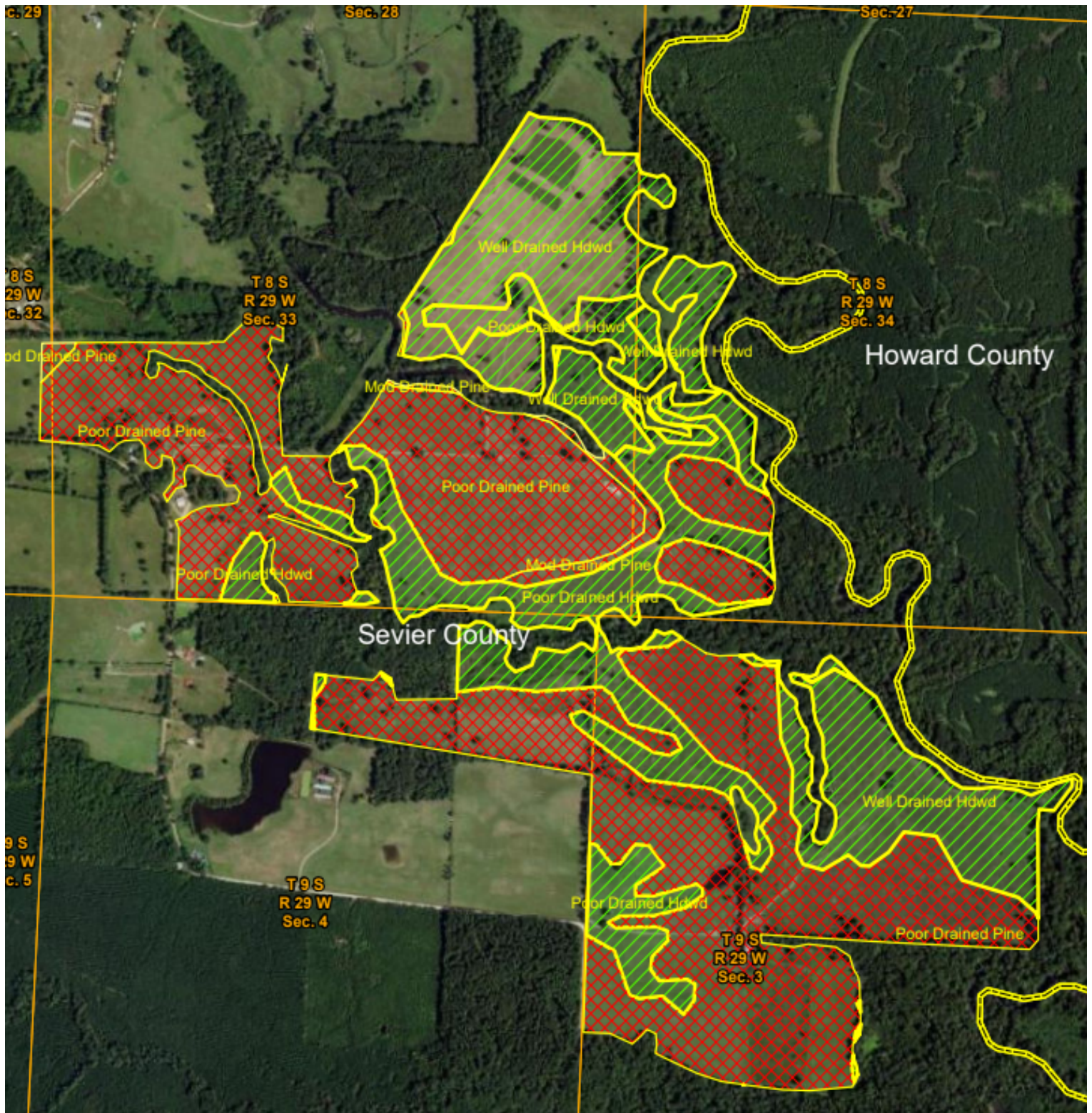
Economic objectives include managing carbon sequestration, accessing the carbon market, and long-term sustainable management for merchantable timber. Currently there is no plan to harvest or implement a timber stand improvement approach.

Additional silvicultural methods will be implemented in the fall to assist forest regeneration and the development of diverse wildlife habitat. There will be a total of 574 acres planted in a mixture of hardwood and softwood seedlings. Pure pine and hardwood plantations will be planted across the landscape given appropriate soil types/soil drainage classes are applicable with species selection. See planting map for detailed area of seedling placement (p. 5-6). The management goals of the landowner align with the FSC stewardship recommendations of sustainable forestry practices, which will be adhered to throughout the plan.

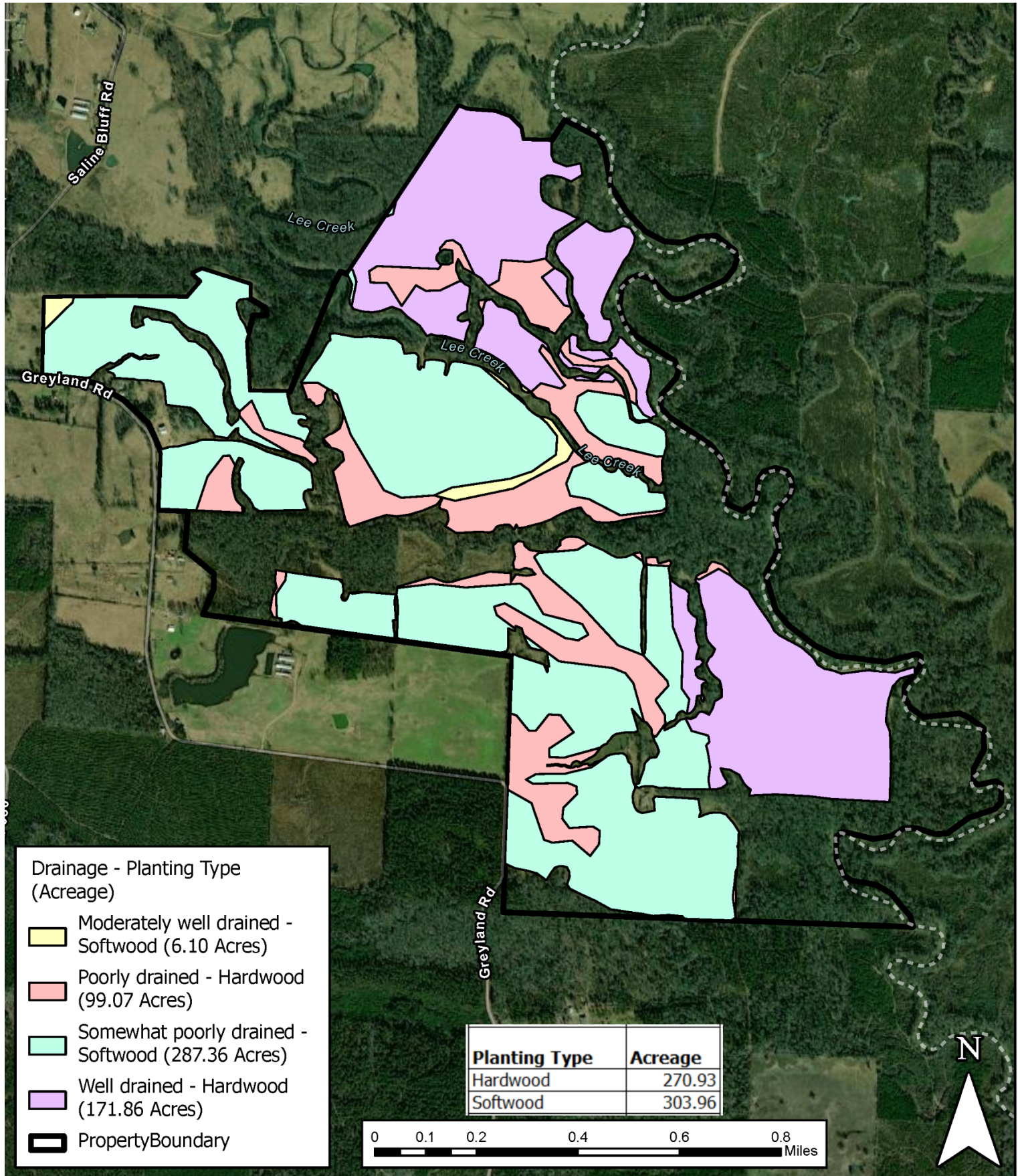
**Pine Plantation-** Approximately 304 acres of pine plantation are scheduled to be planted in early 2023. Plantations will be machine planted at 544 trees per acre with Mass Control Pollinated (MCP) bare-root seedlings and Open Pollinated (OP) grown at Arborgen Nursery in Sevier County, AR. Areas for pine planting were based on soil types to maximize carbon sequestration and forest productivity. Pine plantations can be managed using long-rotation, even-aged systems or uneven-aged systems depending on market conditions and equipment availability.

**Hardwood Plantation-** Approximately 271 acres of hardwood plantation are scheduled to be planted in early 2023. Plantations will be hand planted at 436 trees per acre of bare-root seedlings produced at Arborgen in Sevier County, AR and Native Forest Nursery in Chatsworth, GA. Areas for hardwood planting were based on soil types to maximize carbon sequestration and forest productivity. Hardwood plantations can be managed using long-rotation even-aged systems or uneven-aged systems depending on market conditions and equipment availability. The following hardwood species will be planted at 436 trees per acre: green ash, sweet gum, overcup oak, shumard oak, southern red oak, swamp chestnut oak, swamp white oak, white oak, pecan, hackberry and black walnut.

## SALINE BLUFF PLANTING MAPS







## **Forestry Laws/Practices**

Local Voluntary Forestry practices pertaining to forest management in Arkansas include adherence to state BMPs (Best Management Practices) regarding the protection of clean water and soil. [AR-Best-Management-Practices.pdf \(arkansas.gov\)](#) Laws governing taking of endangered or threatened species will also be adhered to. [U.S. Fish and Wildlife Service \(fws.gov\)](#) [Listed Species \(fws.gov\)](#)

# Forest Natural Resources Enhancement and Protection

This section relates to the natural resource elements found **throughout the entire property**. And is not repeated at the stand specific section.

## Special Site

Culturally significant or special sites are not *present* on the property according to Arkansas cultural heritage GIS data. The data can be found on Arkansas's Center for Geographic Information <https://argis.arkansas.gov/>.

## Adjacent Stand or Ownership Concerns

All boundaries are clearly marked with fence and Saline River running the entire East boundary.

## Recreation

This property is currently vacant unless hunting season is in and for fishing. Access takes place on existing forest roads and there are no plans to build additional network of roads.

## Access

The property has good access to the interior of the forest through established forest roads and secondary roads. The landowner intends to maintain many of these roads for forest management and recreational uses.

## Air, Water, and Soil Protection

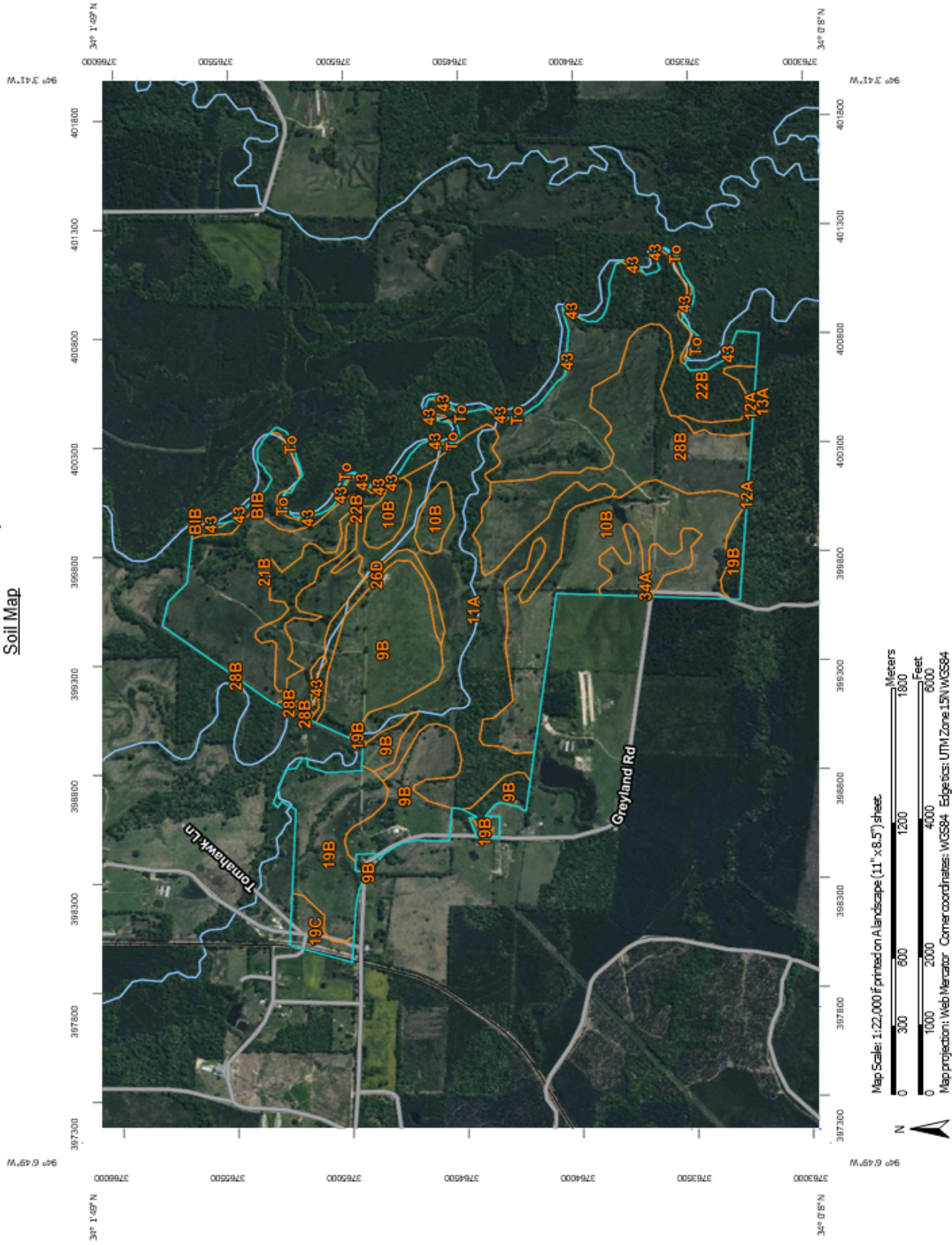
The landowners' goals for protection of air, water and soil resources include adherence to State Best Management Practices (BMPs) regarding the protection of soil. The soils on this parcel include Felker, Smithton, and Gurdon which is a very fine sandy loam. McCaskill, Smithton are fine sandy loam soil at a slight elevation change. Guyton, Sardis are silt loams which are occasionally flooded and the Ouachita silt loam is frequently flooded. The Sacul very fine sandy loam is at the higher elevation on the property.

While there are not any plans for a timber harvest in the near future, the landowner agrees to follow the State Best Management Practices (BMPs) within all areas to protect water quality and aquatic wildlife habitat.

A soils map of the property using NRCS (Natural Resource Conservation Service) soil data has been compiled for this property and is included below (p. 9). Additional maps outlining soil components detailing location of soil types and measured acreages are included in the landowner resources section (p. 21).



# Saline Bluff Sevier County Soil Map



## Map Unit Legend

| Map Unit Symbol                       | Map Unit Name                       | Acres in AOI | Percent of AOI |
|---------------------------------------|-------------------------------------|--------------|----------------|
| BIB                                   | Blevins loam, 1 to 3 percent slopes | 0.1          | 0.0%           |
| To                                    | Toine loam                          | 4.4          | 0.5%           |
| <b>Subtotals for Soil Survey Area</b> |                                     | <b>4.5</b>   | <b>0.5%</b>    |
| <b>Totals for Area of Interest</b>    |                                     | <b>884.4</b> | <b>100.0%</b>  |

| Map Unit Symbol                       | Map Unit Name                                                   | Acres in AOI | Percent of AOI |
|---------------------------------------|-----------------------------------------------------------------|--------------|----------------|
| 9B                                    | Felker very fine sandy loam, 1 to 3 percent slopes              | 118.1        | 13.4%          |
| 10B                                   | Gurdon very fine sandy loam, 1 to 3 percent slopes              | 126.2        | 14.3%          |
| 11A                                   | Guyton silt loam, 0 to 1 percent slopes, occasionally flooded   | 170.2        | 19.2%          |
| 12A                                   | Guyton silt loam, 0 to 1 percent slopes, frequently flooded     | 8.2          | 0.9%           |
| 13A                                   | Guyton silt loam, 0 to 1 percent slopes, ponded                 | 0.0          | 0.0%           |
| 19B                                   | McCaskill fine sandy loam, 0 to 2 percent slopes                | 63.5         | 7.2%           |
| 19C                                   | McCaskill fine sandy loam, 3 to 8 percent slopes                | 10.7         | 1.2%           |
| 21B                                   | Ouachita silt loam, 0 to 3 percent slopes, occasionally flooded | 104.7        | 11.8%          |
| 22B                                   | Ouachita silt loam, 0 to 3 percent slopes, frequently flooded   | 139.9        | 15.8%          |
| 26D                                   | Sacul very fine sandy loam, 8 to 15 percent slopes              | 11.9         | 1.4%           |
| 28B                                   | Sardis silt loam, 0 to 3 percent slopes, occasionally flooded   | 100.4        | 11.4%          |
| 34A                                   | Smithton fine sandy loam, 0 to 1 percent slopes                 | 17.3         | 2.0%           |
| 43                                    | Water                                                           | 8.7          | 1.0%           |
| <b>Subtotals for Soil Survey Area</b> |                                                                 | <b>879.9</b> | <b>99.5%</b>   |
| <b>Totals for Area of Interest</b>    |                                                                 | <b>884.4</b> | <b>100.0%</b>  |

## **Roads**

The goals of the landowners are to maintain forest roads in a way that protects against erosion and maintains water and soil quality, as well as access to the forest interior. All Arkansas BMP's will be followed regarding maintenance of existing forest roads and creation of new roads if needed. New forest roads are not planned for this property because access to the forest interior is already adequate. The existing forest roads will be maintained in a way to prevent sedimentation and erosion into water ways. The landowners will maintain culvert openings and regularly check that they are not blocked. Any areas of deep rutting or erosion that occur from strong rains or other disturbance will be corrected by appropriate BMP's such as water bars, turn outs, and properly sized culverts. All forest road regulations listed in the AR BMP manual will be followed in the event of new road creation and ongoing maintenance and culvert size:

[AR-Best-Management-Practices.pdf \(arkansas.gov\)](#)

## **Streams, Rivers, Ponds, Lakeshore**

The landowner's goals for protection of water resources include adherence to State Best Management Practices (BMPs) regarding the protection of water resources. This property drains into the Saline River watershed. There are several ephemeral streams and non-ephemeral streams on the property. Shepherd and Lee Creek run through the center of the property with deep pools and is excellent habitat for bass and bream. The riparian areas are bordered by mixed pine and hardwoods which is an important ecological resource and helps to control the temperatures of the streams, improving the aquatic habitats. These riparian areas will not be harvested and will be maintained to provide thermal protection for this aquatic habitat. Additionally, the landowner intends to maintain all vegetation bordering streams to prevent erosion and soil runoff, thereby reducing turbidity and sedimentation to these water bodies.

The primary above ground water featured on this property are ponds, perennial and intermittent streams of varying widths. A topographical map detailing known aboveground water resources is found below, p. 12).

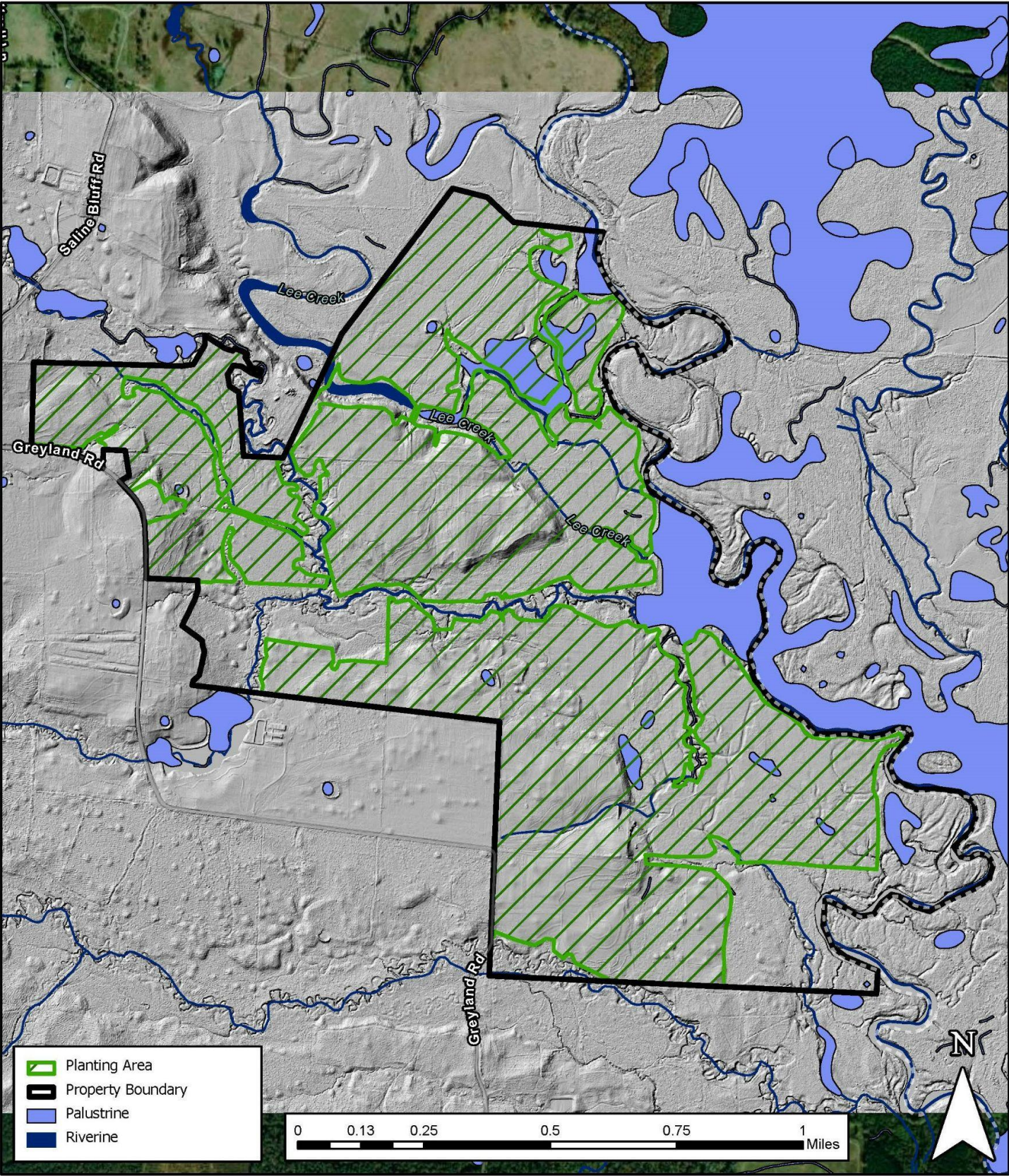
While there are no state identified wetlands identified in the forested areas of this property, three small, forested wetland areas were identified in the field inventory in areas where streams spread through planar topography.

## **Effects of Natural Disasters**

There have not been any natural disasters on this site. However, maintaining adequate forest cover on riparian areas will help to minimize potential effects of future disturbance



Water Resources Map with Topography





# Fish, Wildlife, and Biodiversity

## Fish & Wildlife

### Wildlife Resources

Numerous wildlife resources exist on this property and include deer bedding areas, mast producing trees such as red oak, wildlife cavity trees, and the presence of streams. Mixed hardwood forests support many species of birds and wildlife and provide important habitat. Certain silvicultural practices may encourage the development of high-quality wildlife habitat within forests by creating more vertical structural diversity, creation of multiple tree age classes, and improving species diversity and composition. While no silvicultural activity is planned for the duration of this management plan, these options may be considered in the future. Additionally, protecting valuable wildlife resources such as winter cover and riparian areas from disturbance is important to maintaining viable habitat and will be practiced throughout the property.

### Aquatic Habitat

Large oaks and hickories along streams prevent soil erosion and maintain the microclimate of the streams. The shade of the trees keeps stream temperatures cool in summer, which favors fish and other aquatic organisms. Riparian buffers should always be maintained around permanent and intermittent streams. Further, intermittent streams, and vernal pools should be protected as important amphibian breeding grounds. Appropriate planning and establishment of water resource crossings will ensure proper protection of the water resources and the ecosystems that depend on them.

### Mast production

Mast producing trees such as oak species and hickories are important as a winter food source, especially for wildlife. This property has a high quantity of red oak and hickories found on shallow soils and in higher ridges along the riparian areas. This is an important wildlife species and should be retained and encouraged to regenerate.

### Cavity Trees

Many species of animals require standing dead trees (snags), partially dead trees with large cavities, or downed logs as part of their habitat. All cavity trees and snags should be retained to create nesting habitat for birds and small mammals unless creating additional safety concerns.

### Species List

Many species of birds, amphibians, mammals, and insects may be found in mixed hardwood forests. Evidence of turkey, white-tailed deer, woodpeckers were all found and noted during the forest inventory. While this list is not inclusive of all species, some typical species that may be found on this property include:

Squirrel  
Turtle  
Bobcat  
Grey and Red Fox

Turkey  
White-Tailed Deer  
Many Forest birds

## **State and Federal threatened or endangered species - plants or animals**

No state and federal threatened or endangered species were identified on this property. However, if found in the future, laws governing endangered or threatened species will be adhered to. Additionally, laws governing harvest restrictions and reporting, and protection of significant wildlife habitat will be followed. Presence of state or federal threatened and endangered species were checked against the AR natural resource data base maintained by the ANHC. No identified species were found within the property boundary: [U.S. Fish and Wildlife Service \(fws.gov\) Arkansas](https://www.fws.gov/arkansas) | [Natural Resources Conservation Service \(usda.gov\)](https://www.usda.gov/natural-resources)

## **Management of Forest Resources**

### **Status of Pests and Invasive Species**

Invasive species include species that are not native to an area and can proliferate and aggressively alter or displace native biological communities. Both invasive plants and insects/diseases were evaluated for this plan. At this time no invasive species or pests were observed and will be monitored semiannually.

The most effective way to manage invasive pests is to eradicate populations while they are still small. Based on the known invasive species in the state, monitoring annually for the presence of the following invasive plant species is recommended. Complete information on identification for these species can be found at the AR Invasives website: [Arkansas Invasive Pests | Invasive animals, plants and diseases in Arkansas \(uada.edu\)](https://www.uada.edu/arkansas-invasive-pests/)

### **Forest Pests**

Many forest pests can be present on a property and often do not cause serious harm to the overall forest health in the long term. However, some invasive forest pests and diseases can cause serious damage.

Management recommendations include retaining unaffected or resistant trees while controlling the ability of infected trees to root sprout if disturbed.

Based on the species composition and risk factors for this property it is recommended to monitor annually for the presence of the following invasive insect pests, which are currently not present on the property: [Emerald Ash Borer: An Invasive Pest of Ash Tress in Arkansas - FSA7066 \(uada.edu\)](https://www.uada.edu/emerald-ash-borer/)

### **Prescribed Fire/Burns**

No prescribed fires or burns are recommended for this property at this time.

## **Stand Level Information**

### **Sampling Methodology**

The established forested acres were sampled using 12-1/50 acre fixed-radius plots across the total forested areas. Plots were randomly allocated across the forested area and were established prior to field inventory using ESRI ArcGIS. Only trees measuring 5" DBH or greater and at least 15" tall were selected for sampling with the 16.7' plot radius. Plots were navigated to using a handheld, high-powered GPS.

**Acres: 253**

### **Major Tree Species and Size Class**

Forest type and major tree species: These naturally regenerated, hardwood forests represent an uneven-aged stand structure along riparian areas. The mixed composition consists of southern red oak-20%, american sycamore-14%, hickory species-14%, white oak-13%, hackberry-10%, red maple-10%, sweetgum-7%, water oak-3%, overcup oak-3%, green ash-3%, blackgum-3%.

**Size Class:** Hardwood pulpwood (5'-13.9" DBH) comprised 66% of the inventory whereas hardwood sawtimber (14"-23") comprised the remaining 33% of the inventory.

### **Stocking**

Current Timber Stocking:

Trees per acre: 125

Mean stand diameter: 8.9"

Total basal area: 45 sqft/acre

Current Carbon Stocking: 97.23 tons CO<sub>2</sub>e/acre

### **Forest Stand Health**

No major forest health issues were found.

### **Timber Stand Quality**

The forested acreage was naturally regenerated and allowed to naturally persist along the riparian buffers and other forested areas. No immediate forest health concerns are present and will continue to maintain its current basal area.

### **Site Quality**

This stand has a productivity class of 5.

### **Stand History**

The prior owner has done little to no timber harvesting or forest management on the forested acreage and has maintained the open acreage for cattle production. The forest has been allowed to naturally progress to its current condition.

**Forest Wildlife Considerations**

Generally, these fenced forested systems along the riparian corridors will remain unharvested and continue to provide cover, forage and browse for game and nongame species. The riparian corridors will continue to provide clean water for aquatic species and will further reduce sedimentation/erosion of topsoil.

**Recommendations**

This stand will be managed to support/enhance carbon sequestration and no timber harvest will occur in this stand at this time. Forest health and sustainability of bottomland hardwood forests/riparian areas will be monitored semi-annually, especially during periods of prolonged drought. Uneven-aged silviculture techniques with no predetermined rotation length are typically used to manage these systems but the landowner does not intend on any harvest in the foreseeable future. However, if forest health concerns are identified, single-tree selection can be employed with specialized harvesting equipment to maintain integrity of these systems.

## Family Forest High Conservation Value Forest Worksheet

| HCV Type | Description                                                        | Finding       |                 |                          |
|----------|--------------------------------------------------------------------|---------------|-----------------|--------------------------|
|          |                                                                    | Yes (present) | Maybe (present) | Not (absent/ not likely) |
| 1        | Concentrations of rare, threatened, or endangered species          |               |                 | X                        |
|          |                                                                    |               |                 |                          |
| 2        | Large, landscape level forests or significant forest types         |               |                 | X                        |
|          |                                                                    |               |                 |                          |
| 3        | Rare, threatened, or endangered ecosystems                         |               |                 | X                        |
|          |                                                                    |               |                 |                          |
| 4        | Areas that provide basic services of nature in critical situations |               |                 | X                        |
|          |                                                                    |               |                 |                          |
| 5        | Basic needs of local communities                                   |               |                 | X                        |
|          |                                                                    |               |                 |                          |
| 6        | Areas critical to cultural identity                                |               |                 | X                        |
|          |                                                                    |               |                 |                          |

# **Monitoring Plan**

## **General Forest Health/Productivity**

The landowner will monitor the property semi-annually for unusual die-back or major forest health issues. Additionally, the landowner will work with the forester to identify any evidence of southern pine beetle, ips engraver beetle, black turpentine beetle, ambrosia beetle and emerald ash borer. Fusiform rust will also be monitored in young loblolly pine plantations. If any threatening forest health concerns are identified, management strategies can be adjusted to minimize resource impacts. If any rare, threatened, or endangered species are found in annual monitoring by the landowner, proper protection for these species will be implemented. Any forest health issues noted by the landowner in the annual walk through will be discussed with the forester responsible for this forest management unit. If any major issues are found, the forester will discuss appropriate management options with the landowner.

Seedling survival for loblolly and hardwood plantations will be assessed and measured in year 1 and 2 immediately following afforestation efforts. These assessments will be conducted via 1/100th acre plots and percent survival will be determined. Forester will then present options to the landowner about next steps, if needed. In addition to seedling survival assessments, carbon stocking measurements as required by the Gold Standard methodology will be assessed quinquennially to survey timber inventory, timber volume increases and any changes in forest structure.

## **Property Boundary**

Property boundaries are clearly marked and no property line disputes are present at the time. The boundary will be monitored every 3 years to ensure that the boundary markings are clearly visible.

## **Rare, Threatened, and Endangered Species**

No rare, threatened, or endangered species are currently found on the property

## **High Conservation Value Forests**

No high conservation value forests were found on this property.

## **Timber Harvests**

No timber harvests are planned for this property for the duration of this planning period.

## **Inventory**

A new forest inventory will be conducted at the start of each new planning period, at a minimum of every 5 years. Each forest inventory will collect information required on this plan and include species composition and age class, stocking information and metrics, timber stand condition, forest health issues, wildlife considerations, and any relevant data needed to inform forest management decisions.

## **Roads and Trails**

The landowner will monitor established forest roads annually to ensure that culverts are intact and functioning at the capacity needed to avoid run-off and sedimentation. Any issues with roads noted during the monitoring period will be discussed with a forester or road builder to identify options for correcting the issue.

## **Invasive Species**

Invasive species populations will be monitored annually by the landowner. The landowner is encouraged to mechanically remove populations stated in this management plan based on the capacity of labor and funds available to them. Future sources of funding to aid in this process may be sought in the future. If populations are eradicated, the landowner will continue to monitor on an annual basis for new populations.

## **Chemical Usage**

No chemicals are scheduled to be used on the property for the purposes of forest management.



## Landowner Resources:

Emerald Ash Borer (*agrillus planipennis*) [Emerald Ash Borer: An Invasive Pest of Ash Tress in Arkansas - FSA7066 \(uada.edu\)](#)

Arkansas Department of Environmental Quality [Division of Environmental Quality \(DEQ\) \(state.ar.us\)](#)

[Glossary of Forestry Terms - The Word Forest Organization](#)

Guide Invasive Plant Species [Arkansas Invasive Pests | Invasive animals, plants and diseases in Arkansas \(uada.edu\)](#)

[Managing Pine Trees in Arkansas - Arkansas Pine Tree management \(uada.edu\)](#)

[Managing Hardwood stands in Arkansas | Establishing and maintaining hardwood trees \(uada.edu\)](#)

## Soil Components Map

