

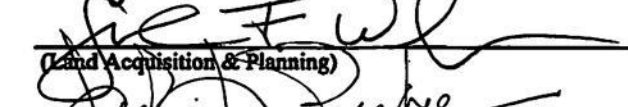
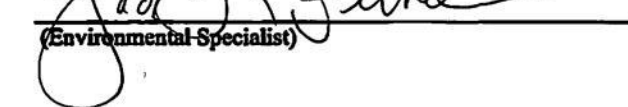


EASTERN REGION  
STATE FOREST LANDS  
ANNUAL WORK PLAN  
FISCAL YEAR 2018

|           |  |                        |
|-----------|--|------------------------|
| Prepared: | <br>_____<br>(Forest Manager)              | <u>5/15/17</u><br>Date |
| Reviewed: | <br>_____<br>(Regional Manager)            | <u>5/15/17</u><br>Date |
| Reviewed: | <br>_____<br>(Land Acquisition & Planning) | <u>5/16/17</u><br>Date |
| Approved: | <br>_____<br>(Environmental Specialist)    | <u>5.16.17</u><br>Date |

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DNR Interdisciplinary Team

Citizens Advisory Committee

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## A. FOREST OVERVIEW

### CHESAPEAKE FOREST AND POCOMOKE STATE FOREST

The Chesapeake Forest which is owned by the State of Maryland and managed by the Maryland Forest Service through the Department of Natural Resources originally consisted of 58,000 acres of forest land. These lands were part of a 1999 divestment by the Chesapeake Forest Products Corporation. At that time, a partnership between the State of Maryland, The Conservation Fund, and Hancock Timber Resources Group moved to purchase the forests. The original 1999 plan was prepared by a 10-person technical team assembled by The Sampson Group, Inc. Oversight and decision making for the technical team was provided by a Steering Committee composed of representatives from Maryland Department of Natural Resources, The Conservation Fund, the Chesapeake Bay Foundation, and the local forest industry.

The Chesapeake Forest currently consists of 68,817 acres divided into 186 Management Units distributed across six counties. Chesapeake Forest also includes the Seth Demonstration Forest in Talbot County, Wicomico Demonstration Forest in Wicomico County, and Fred W. Besley Demonstration Forest in Dorchester County. In spite of this scattered character, the forests include some of the last large segments of unbroken forest in a region that is largely agricultural in nature. Chesapeake Forest Lands include more than 6,000 acres of wetlands or swamps and comprise portions of 23 separate watersheds, many of which have been given a high priority for conservation action under the Maryland Clean Water Action Plan. They contain established populations of threatened and endangered species, including the Delmarva fox squirrel (*Sciurus niger cinereus*), bald eagle, and some 150 other species that have been identified as rare, threatened, or endangered in the region. Abundant populations of deer, turkey, and waterfowl create the basis for extensive hunting opportunities and other recreational activities on the land.

The 17,745-acre Pocomoke State Forest is almost entirely contained within Worcester County, except for 388 acres in Somerset County and 154 acres in Wicomico County. The Chesapeake Forest has 18,038 acres within Worcester County, and several tracts from both Chesapeake Forest and Pocomoke State Forest adjoin each other offering greater habitat and recreational management opportunities. In addition, since both forests contain similar forest types, many of the same management guidelines and principles are used. There are differences between the two forests, however. Pocomoke State Forest contains many older tracts of forestland still in their natural state, nearly 5,000 acres of cypress and hardwood forest that borders a state scenic river, and areas of state designated Wildlands.

For additional information about Chesapeake Forest and Pocomoke State Forest please visit their respective web pages located at: <http://www.dnr.state.md.us/forests/mdforests.asp>.

### HISTORIC FOREST CONDITIONS AND THE ROLE OF FIRE

The average pre-European-settlement fire frequency was on the order of 7-12 years for forests of the Eastern Shore of Maryland, with higher frequencies of 4-6 years in the southeastern Maryland counties of Wicomico, Worcester, Somerset, and Dorchester (Frost, 1998). These frequencies are high compared to most areas of the Northeast. Since it is unlikely that lightning was a significant contributor to these fires, Native American populations must have been. A conclusion is that fire in the Northeast was predominantly a phenomenon associated with human activity (Pyne, 1982).

The forest that covered the Eastern Shore in Indian times was primarily a hardwood one, though increasingly mixed with pine to the southward (Rountree & Davidson, 1997). The large patches of pine-dominated woods today are largely second growth, the result of extensive clearing in historic times. In aboriginal times, the woods of the Eastern Shore were likely to be oak-hickory, oak-gum, or oak-pine types, all of which still exist in second-growth form.

Captain John Smith said in the early seventeenth century, “A man may gallop a horse amongst these woods any waie, but where the creekes or Rivers shall hinder”. Father Andrew White wrote that the woods around St. Mary’s were so free of underbrush that a “coach and fower horses” could be driven through them (Rountree & Davidson, 1997). The open conditions could be partly attributed to the closed canopies of these mature forests, which shaded out undergrowth, but it is also likely that periodic fire helped to maintain the park-like conditions.

It is reasonable to assume that Eastern Shore tribes also used fire to periodically burn the marshes that were important sources of mollusks, fish, furbearers, waterfowl, edible tubers, and reeds for housing. Fire would have been useful for herding game, enhancing visibility or access, or retarding invasion of woody growth. More often than not, these fires would have spread into adjacent woodlands and, if of sufficient intensity, created the open seedbed conditions conducive to establishment of loblolly pine. Even today the pattern of loblolly pine “islands” and “stringers” in and adjacent to marshes of the lower Eastern Shore is common.

If, as Rountree and Davidson suggest, oaks were the most prevalent species in pre-settlement times, then the possible role of fire in maintaining these forest types must also be considered. Frost stated, “Light, understory fires may have been the norm for millions of hectares of eastern hardwood forest...” (Frost, 1998). Oak species range from slightly tolerant to intolerant of shade, indicating that disturbance is desirable to promote regeneration and growth. Furthermore, acorn germination and initial seedling establishment are most successful where light understory burns have scarified the seedbed and reduced competition (Burns & Honkala, 1990). The extensive presence of oaks on the Shore was an indicator that low-intensity understory fires were common, either intentionally set by Indians to create “open woods” or drive game, or the incidental result of land-clearing.

Natural stands of loblolly pine (*Pinus taeda*) became much more widespread around the turn of the 20th Century, particularly in the counties south of the Choptank River, largely due to the influence of economic factors. First was the abandonment of agricultural fields as farmers moved to more lucrative jobs in the towns and cities. Loblolly pine is an opportunistic species, which found the recently abandoned fields prime sites for reproduction by natural seeding. The second factor was the rise of large-scale commercial lumbering. Steam locomotives, often used to haul logs from the woods, were notorious for throwing sparks along the tracks and starting fires. Both the clearing of the forests by large-scale logging and the subsequent fires resulted in large areas of open, scarified land suitable for pine regeneration. By the middle of the twentieth century, loblolly pine had become the predominant forest cover type in the lower counties of the Eastern Shore.

## FOREST TYPES AND SIZE CLASSES

Young loblolly pine forests mostly established since the early 1980’s are what characterize a high proportion of the Chesapeake Forest. Mixed pine and hardwood forests still occupy some of the lands, and many riparian areas and flood plains contain stands of mixed hardwoods. In general, the mixed pine-hardwood and hardwood stands are older, mature forests.

Mature mixed pine-hardwood, bottomland hardwood, and bald-cypress forests comprise the majority of the Pocomoke State Forest. In general, the mixed pine-hardwood, hardwood, and bald cypress stands are older, mature forests, while loblolly pine stands are more evenly distributed across all age classes.

Table 1 provides a habitat diversity matrix of both Eastern Region State Forests that provides a current baseline from which future changes in age structure or forest type diversity can be assessed for potential habitat or biodiversity effects.

**Table 1. Forest Diversity Analysis**

Acres of forest type and forest structure by structural groups, with percent of total area in each forest type/structure group combination.

| Forest type                           | Structure stage   |                       |                        |                         |                       |                           |                | Total Area |
|---------------------------------------|-------------------|-----------------------|------------------------|-------------------------|-----------------------|---------------------------|----------------|------------|
|                                       | Open<br>0 - 5 yrs | Sapling<br>5 - 15 yrs | Growing<br>15 - 25 yrs | Maturing<br>25 - 35 yrs | Mature<br>35 - 50 yrs | Big Trees<br>50 - 75+ yrs | Uneven<br>Aged |            |
| Atlantic White Cedar                  | 4                 | 3                     | 0                      | 0                       | 0                     | 0                         | 0              | 7          |
| (Percent)                             | 0.00%             | 0.00%                 | 0.00%                  | 0.00%                   | 0.00%                 | 0.00%                     | 0.00%          | 0.01%      |
| Loblolly Pine                         | 1,185             | 9,557                 | 21,016                 | 12,644                  | 7,312                 | 1,617                     | 407            | 53,737     |
| (Percent)                             | 1.40%             | 11.28%                | 24.81%                 | 14.93%                  | 8.63%                 | 1.91%                     | 0.48%          | 63.44%     |
| Shortleaf Pine                        | 0                 | 0                     | 0                      | 0                       | 0                     | 255                       | 0              | 255        |
| (Percent)                             | 0.00%             | 0.00%                 | 0.00%                  | 0.00%                   | 0.00%                 | 0.00%                     | 0.00%          | 0.30%      |
| Mixed Pine/<br>Hardwood               | 721               | 886                   | 933                    | 717                     | 1,563                 | 7,568                     | 22             | 12,410     |
| (Percent)                             | 0.85%             | 1.05%                 | 1.10%                  | 0.85%                   | 1.85%                 | 8.94%                     | 0.03%          | 14.65%     |
| Mixed Hardwoods                       | 439               | 296                   | 237                    | 101                     | 200                   | 9,188                     | 12             | 10,471     |
| (Percent)                             | 0.52%             | 0.35%                 | 0.28%                  | 0.12%                   | 0.24%                 | 10.85%                    | 0.01%          | 12.36%     |
| Bottomland Hardwoods/<br>Bald Cypress | 0                 | 0                     | 0                      | 0                       | 20                    | 3,855                     | 0              | 3,875      |
| (Percent)                             | 0.00%             | 0.00%                 | 0.00%                  | 0.00%                   | 0.02%                 | 4.55%                     | 0.00%          | 4.57%      |
| Marsh/Field/<br>Power lines           | 3,946             | 0                     | 0                      | 0                       | 0                     | 0                         | 0              | 3,946      |
| (Percent)                             | 4.66%             | 0.00%                 | 0.00%                  | 0.00%                   | 0.00%                 | 0.00%                     | 0.00%          | 4.66%      |
| Total                                 | 6,295             | 10,741                | 22,186                 | 13,462                  | 9,095                 | 22,483                    | 441            | 85,533     |
| (Percent)                             | 7.43%             | 12.68%                | 26.19%                 | 15.89%                  | 10.74%                | 26.54%                    | 0.52%          | 100.00%    |

## UNIQUE COMMUNITY TYPES

**Xeric or inland sand dunes** are found primarily in the lower Eastern Shore counties. They are located on very well drained sand ridges formed by winds blowing off receding glaciers. These sand ridges support a variety of rare and threatened insect and plant species. The primary species in this community are shortleaf pine (*Pinus echinata*), Virginia pine (*Pinus virginiana*), and various oak species (*Quercus spp.*), with an understory comprised of lowbush blueberry (*Vaccinium pallidum*) and an assortment of ericaceous plants. Xeric sand dunes have been identified and mapped either as an Ecologically Significant Area (ESA) or as a Globally Rare (G3) Community.

**Pond pine (*Pinus serotina*) forests** are typically found in swamps and other poorly drained areas. Pond pine can be found along with pitch and loblolly pine, and it can hybridize with those species. During periods of drought, these forests can be subject to intense fires. Pond pine needs fire to open the serotinous cones and release the seeds to facilitate natural regeneration.

**Delmarva bays and associated life zones** are isolated depressional wetlands that serve the needs of wetland breeding animals and support several species of rare plants. Delmarva bays can vary in their ecological quality,

primarily due to past management practices. The hydrology of many bays was altered for agriculture or to attempt to increase forest production. Therefore, many of these bays may require restoration to get the bay back to a more natural state. Delmarva bays and the associated life zone have their own ESA designations identified and mapped.

### ***Riparian swamps***

**Atlantic white cedar** (*Chamaecyparis thyoides*) swamps are nontidal forests that border on rivers or headwaters of streams.

**Bald cypress** (*Taxodium distichum*) swamps and forests can be tidal or nontidal. These forests are known for their pronounced microtopography of hollows and hummocks.

**Vernal pools and seasonal wetlands** are temporary wetlands present in late winter and spring that support amphibian reproduction. These can be found throughout the eastern shore region.

## SOILS

The region features flat topography, near-sea level elevations, and poorly drained soils. Soils are naturally low in fertility, but soil erosion and sediment runoff for forestry activities is seldom a problem, given reasonable management care. Seasonally wet conditions affect the timing and type of forest management activities. For management activities on the Forest, the soils in the region were classified into 5 Soil Management Groups (SMG), based on soil characteristics. See Appendix A for a listing of soil types by soil management group and a listing by county of symbols used by soil survey reports.

### **The Five (5) Groups (SMG's) were defined as follows:**

- SMG 1 - wet soils with firm sub-soils that can physically support machines when wet.
- SMG 2 - wet soils with non-firm sub-soils that cannot support machines when wet.
- SMG 3 - soils that are less wet than either 1 or 2; highly productive forest sites.
- SMG 4 - very sandy, often dry soils that are generally not highly productive forest sites.
- SMG 5 - very wet, low-lying soils that are too wet for forestry operations.

To facilitate plan development and future management, digital soils data was utilized from the USDA Natural Resources Conservation Service for, Caroline, Dorchester, Somerset, Talbot, Wicomico, and Worcester Counties.

## B. ANNUAL WORK PLAN SUMMARY

### INTRODUCTION

This section summarizes the proposed activities that will occur on all public forest lands (86,563 acres) managed by the Maryland Forest Service within the Eastern Region during the 2018 fiscal year. These lands include the Chesapeake Forest, Pocomoke State Forest, Wicomico Demonstration Forest, Seth Demonstration Forest, and Fred W. Besley Demonstration Forest. The fiscal year runs from July 1, 2017 to June 30, 2018. The following proposed activities are the results of a multi-agency effort. The multi-agency approach has ensured that all aspects of these lands have been addressed within the development of this plan.

All projects and proposals within this Plan have been developed to meet one or more of the Land Management Guidelines and Objectives as seen in the Chesapeake Forest and Pocomoke State Forest Sustainable Forest Management Plans including:

- **Forest Economy** - management activities with a purpose to maintain an economically sustainable forest and contribute to the local economy through providing forest-related employment and products.
- **Forest Conservation** - management activities with a purpose to protect significant or unique natural communities and elements of biological diversity, including Ecologically Significant Areas, High Conservation Value Forests and old growth Forests. Old growth forest management serves to restore and/or enhance old growth forest structure and function.
- **Water Quality** - management activities designed to protect or improve ecological functions in protecting or enhancing water quality.
- **Wildlife Habitat** - management activities with a purpose to maintain and enhance the ecological needs of the diversity of wildlife species and habitat types.
- **Recreation and Cultural Heritage** - management activities with a purpose to maintain and enhance areas that serve as visual, public camping, designated trails, and other high public use areas.

### NETWORKING WITH DNR AND OTHER AGENCIES

#### MARYLAND DNR AGENCIES:

- Wildlife & Heritage – Identify and develop restoration projects, report and map potential Ecological Significant Areas (ESA) as found during fieldwork, release programs for game and non-game species. Mapping will be done with Global Positioning Systems (GPS). Participates on the Inter-Disciplinary Team (ID Team) and assists in the development of a forest monitoring program.
- Natural Resource Police – Enforcement of natural resource laws on the forest.
- Public Lands Policy & Planning – Provides assistance in the development of plans, facilitates meetings with various management groups, develops Geographic Information System (GIS) maps for public review, and conducts deed research and boundary recovery. Also participates on the ID Team.
- Maryland Conservation Corps (MCC) – Assists in painting boundary lines, installing gates and trash removal.
- State Forest & Park Service – Participates on the ID Team.
- Chesapeake & Coastal Watershed Service – Develops watershed improvement projects, assists in the development of a forest monitoring programs and participates on the ID Team.



#### OTHER AGENCIES:

- DNR Contract Manager – Assists the Forest Manager in the designs and implementation of management activities on the donated portion of the forest. Also participates on the ID Team.
- Third party forest certification via annual audits
  - Sustainable Forestry Initiative (SFI)
  - Forest Stewardship Council (FSC)
- The Chesapeake Bay Foundation – Identifies sites for future water quality improvement projects and assists in the implementation by providing volunteers for reforestation.
- National Wild Turkey Federation – Establishes and maintains handicap-hunting opportunities within the forest and provides funding for habitat protection and restoration.
- US Fish & Wildlife Service – Assists in prescribed burns for Delmarva Fox Squirrel (DFS) habitat. Also assists in maintaining open forest road conditions as fire breaks.
- Maryland Forest Association - Master Loggers Program provides training in Advanced Best Management Practices for Forest Product Operators (i.e. Foresters & Loggers) workshops on the forest.
- Network with Universities and Colleges
  - Maryland Environmental Lab, Horn Point – Conducts water quality monitoring on a first order stream not influenced by agriculture. These samples will serve as a local base line for other samples taken on other Delmarva streams.
  - Allegany College – Conduct annual field tour for forestry school student’s showcasing Sustainable Forest Management practices on the forest under dual third party certification.

### C. MAINTENANCE PROJECTS

Forest roads will undergo general maintenance to maintain access for forest management activities (i.e. logging, prescribed burning, and wildfire control). Interior roads within each complex will be brush hogged where possible by the MFS & the WHS. Many of the roads have grown shut and require special heavy equipment to remove the larger trees. Brushing of these roads will improve access for the public and help maintain firebreaks for communities at risk from wildfire. Recreational trails will be mowed and cleared to meet the requirements of the specific user group(s).

Forest boundary lines will be maintained using the DNR yellow band markings. Signs will be placed along the boundary lines designating the type of public access to the property. New acquisitions will be converted from their previous ownership markings to the DNR yellow band markings.

Illegal trash dumps will continue to be removed off the forest as they are discovered. The average amount of trash removed from the forest each year has been 36 tons. In our efforts to control and eradicate this issue, we will continue to coordinate with Natural Resources Police (NRP), local sheriff departments, the State Highway Administration, and County Roads departments.

### D. RECREATION PROJECTS

- Host the annual Chesapeake Forest lottery for vacant tracts designated for hunt club access only. Vacant tracts are those that existing clubs opted not to continue to lease or land that has recently become available due to acquisition or right-of-ways being opened.
- Continue to explore additional Resource Based Recreational (RBR) opportunities on the forest. This may include hunting, horseback riding; water trails, hiking trails, bird watching opportunities, geocaching, etc.

- Continue work on active Recreational Trails Grants
  - Chesapeake Forest – D03 – Little Blackwater Soft Launch
  - Chesapeake Forest – D26 – Lewis/Island Pond Soft Launch\\
  - Chesapeake Forest – W23 – Greenhill trail marking
  - Pocomoke State Forest – Furnace Town Loops
- Perform general maintenance on the existing trail system

Submit and execute Recreational Trails Grants. Appendix B contains copies of the following grant applications for Calendar Year 2016-17:

- Algonquin Cross County Trail Extension
- Mattaponi Pond Trails and Camping Project
- Pusey Branch Trail Extension and Enhancement Project
- Seth Demonstration Forest Trail Enhancement Project

## E. SPECIAL PROJECTS

- Maintain dual forest certification from the Forest Stewardship Council (FSC) and the Sustainable Forest Initiative (SFI). Summaries of the previous year’s audit findings can be found in Appendix C (FSC) and Appendix D (SFI).
- Conduct information and educational opportunities on the forest.
- Update and maintain forest information in a GIS database, which will result in a new updated forest wide field map.
- Continue the effort to inventory and protect historic sites (i.e. cemeteries, old home sites, Native American Indian sites) using GPS and GIS technology.
- Collect native genotype pond pine (*Pinus serotina*) and short-leaf pine (*Pinus echinata*) on the forest in an effort to aid future management objectives on the Pocomoke and Chesapeake Forests.
- Provide assistance to the State Tree Nursery with maintenance of Seed Orchards on the Pocomoke State Forest.

## F. WATERSHED IMPROVEMENT PROJECTS

Work continues on the Indiantown/Brookview Ponds watershed improvement project from the FY2013 AWP.

## G. SPECIAL WILDLIFE HABITAT PROJECTS

Planning and execution of the early successional habitat project on the Foster tract continues.

## H. ECOSYSTEM RESTORATION PROJECTS

Various ecosystem restoration projects continue to proceed, including the Brookview Ponds ESA restoration, management of the Furnace Tract lupine site, and the Foster Estate pond restoration. In general, site preparation of high priority ESA sites and prescribed burning was performed when and where possible.

## **I. MONITORING PROJECTS**

The Continuous Forest Inventory (CFI) for Chesapeake Forest and Pocomoke State Forest was started in the summer of (calendar year) 2014. The CFI concluded in the summer of 2016. A summary of the results is located in Appendix E.

## **J. REVIEW PROCESS**

### **INTERDISCIPLINARY TEAM COMMENTS**

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## Pocomoke/Chesapeake 2018 Forest Review

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Brett Coakley -DNR- <brett.coakley@maryland.gov>

Wed, Sep 14, 2016 at 11:25 AM

To: Mike Schofield -DNR- <mike.schofield@maryland.gov>

Cc: Alexander S Clark -DNR- <alexander.clark@maryland.gov>, Jack Perdue -DNR- <jack.perdue@maryland.gov>, Kip Powers -DNR- <kip.powers@maryland.gov>, Jay Kilian -DNR- <jay.kilian@maryland.gov>

Mike- Good to speak with you today. My main comment was going to be on P18-S-01 regarding the final harvest planned adjacent to Millville Creek. I am happy to hear there is a 300' no-cut buffer for the creek in the plan. If you are looking for spots to visit on Oct. 12, perhaps this is one we can go see anyway. Millville Creek flows into Nassawango, which is home to several rare fish species.

Other final harvest stands should not have any impacts on water quality or resources within if the BMP's listed in the plan are followed. Most work planned for 2018 are first and second thinnings. I know there is an effort to diversify the species within the buffers by thinning them as well. That's great. Diversity is good overall. To reduce sediment transport, Fisheries asks that there be minimal disturbance within the buffer zone, particularly with any equipment. Please refrain from cutting and removing trees embedded in the stream banks themselves regardless of species. Additionally, shade is good for streams. We feel that the trees actively providing shade should be left intact if possible.

Respectfully,

Brett

--

Brett Coakley  
Regional Manager  
Inland Fisheries, Eastern Region  
MD DNR  
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21 November 2016

Mike Schofield  
Forest Manager  
Maryland DNR Forest Service  
6572 Snow Hill Road  
Snow Hill, MD 21863

Dear Mike:

These are my written comments on the 'draft' Annual Work Plan for FY 2018 for the Eastern Region State Forest Lands, as a follow up to the meeting held earlier in the day at your office.

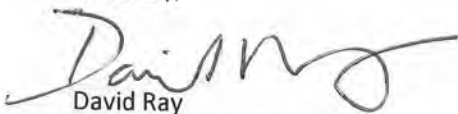
Once again I will commend you on the work being done to develop opportunities for public recreation across the holding. The steadily increasing number of trails and the access they provide to various user groups represents a big improvement on what was available up until the fairly recent past, and is something I will occasionally hear local residents comment about in a favorable way.

I will echo the comments made by a couple of other members of the Citizen Advisory Committee regarding consideration of increasing the age class diversity of the pine resource across the ownership. And specifically the idea of regenerating relatively younger pulpwood-sized stands. In addition to the valid economic and production oriented arguments that were made, there would also be a substantial benefit associated with providing early successional habitat that is generally in short supply, and which was identified in the most recent 5-yr plan for MD State Forests as an area of concern.

There were a number of categories of projects in the plan, items F-H, that did not list any activities, yet it seems you are engaged in work that would qualify, e.g. prescribed burning to improve wildlife habitat and as a primary tactic supporting ecosystem restoration. You might consider listing these types of activities as 'ongoing' in those areas to communicate those efforts. In this same subject area, I will second the suggestion made by one of the other Committee members to evaluate and further consider the potential for liberating specific areas of established Atlantic white-cedar from pine and hardwood competition in order to increase the amount of that 'in deficit' habitat type currently on the forest.

Finally, I was glad to learn that data collection for the cfi network has been completed and you will soon have some high quality inventory data to work with and base future management decisions on.

Sincerely,



David Ray  
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December 22, 2016

Mike Schofield, Forest Manager  
Chesapeake State Forest  
6572 Snow Hill Rd.  
Snow Hill, Md. 21863

Re: Comments on 2018 Eastern Region Annual Work Plan

Mike,

I would like to begin by commending you and your team on the excellent job you do managing the forest resources of the Chesapeake and Pocomoke Forests. I know the members of the CAC appreciate the dedication and hard work of you and your staff.

I have no specific comments on the 2018 annual work plan. I believe all the recommended projects will improve the overall quality of the forest when implemented. I wish you success in getting all proposed projects accomplished.

I do want to make some general comments on the overall management of the forest. As we discussed at the CAC meeting in November, I do believe there is an opportunity to affect the age distribution of the forest in a positive way. We are all aware of the origins of the Chesapeake Forest. These were the Maryland land holdings of the Chesapeake Corporation of Virginia. The forest stands and roads were established and maintained to ensure a reliable fiber supply for Chesapeake's chipping facility in Pocomoke. Most of the land was acquired in the seventies and eighties. Tracts were harvested and subsequently reforested in pine through the late nineties. Obviously, Chesapeake's goals were primarily directed at fiber production on a short pulpwood rotation. Their lands were extremely well managed with this objective in mind.

The State obviously has a much different and broader management objective. Even with differing objectives, the one thing that we all agree should be paramount is sustainability. Over the past ten years we have been averaging just over 110 acres of final harvests per year on the Chesapeake Forest. If we consider the entire pine acreage of the forest (53,737), we are currently managing on a 480 year rotation. I do not feel this is sustainable. Back in the seventies, eighties and early nineties, we had a terrible southern pine beetle problem on the lower shore. Overmature pine stands on the Pocomoke Forest were often the areas of origin for these beetle spots. Incredibly long rotations were a big part of the problem. Increasing the number and acreage of final (regeneration) harvests per year and performing them across all age classes might make sense in getting the forest to a more sustainable age distribution. Based on the makeup of our local forest industry, I am obviously in favor of maintaining the high percentage of pine on the forest but I am also aware that some areas might have been converted to pine that were better suited to other





species. We might be able to look at converting some of these areas back to hardwood, cypress or white cedar. I believe there would be support for this.

Regarding forest roads, I realize the annual work plan does address them and recognizes that some of the roads are beginning to grow closed. I believe this is a problem that needs to be a high priority for the state. Chesapeake Forest has an extensive road system that was put in at an extremely high cost to Chesapeake Corp. It would take millions of dollars to build a comparable system today. Since the state has been fortunate enough to inherit these roads, I believe you are obligated to maintain them. My evidence is only anecdotal, but it seems to me that many of the roads are getting narrower and narrower. While built around thirty feet wide, many are now not much more than fifteen feet wide and in some cases only ten. Gum trees up to four inches in diameter are closing them. I have no idea how many miles of roads exist on the forest and no idea of their overall condition but I do realize maintaining this many miles of roads is a large undertaking. These roads are just so necessary for forest management, fire control, recreational access, etc. that I feel I must put an emphasis on how important I feel their maintenance is. I hope they are receiving the attention they deserve.

Thanks for dedication to Marylands forest resources.

Anthony H. DiPaolo  
Area Forester, Glatfelter







January 27, 2017

Mr. Jack Perdue  
Forest Stewardship  
Forestry Service  
580 Taylor Ave., E-1  
Annapolis MD 21401

Dear Jack and Mike,

Thank you for the opportunity to comment on the FY 2018 Work Plan for the Chesapeake Forest Lands and Pocomoke State Forest. As you can see, many of our comments focus what we believe is a need for some clarifications and further explanation regarding portions of the plan rather than specific comments on the projects outlined in it. Most are also directed toward the silvicultural aspects of the plan. We hope these will be useful to you.

#### **General Comment**

We have realized that we have not done a good job of maintaining contact with your agency along with Mike and his staff. It was just this year that Mike and I have had meaningful conversations and that's our fault. For the future we want to make sure that we're on the same page regarding a main goal for the Chesapeake lands—"to maintain an economically sustainable forest and contribute to the local economy through providing forest-related employment and products". Toward that end, we would like to invite you, Mike and other members of your staff to our mills so that you can see, first hand, the type of wood we need for our operation and the products we make from it. We hope you can use that information as you design your silvicultural projects and make plans for future management and we'd like to remain closely involved in that process.

#### **Clear Statement of Objectives and how Each Silvicultural Treatment Helps Advance them**

Basically, the overall silvicultural goals for the Chesapeake Forest Lands seem to be embedded in the 2015 Sustainable Forest Management Plan. For example, the plan stipulates on page 55, "The loblolly pine plantations will be intensively managed to maintain an annual flow of forest products." The next paragraph notes, "In the general management areas, the loblolly pine forest will be managed on a 30-40 year rotation for a mixture of saw logs and pulpwood. In the early years of implementing this plan, it may be necessary to harvest some younger stands..." On page 50 the Plan notes: "With over 35,000 acres in these two age groups (16-25 and 26-40), it will require some 2,500 – 3,000 acres of thinning each year to catch these stands before they begin to experience stress from density."

These are reasonable objectives but links to how each silvicultural treatment in the Work Plan will help achieve them is unclear. Occasionally, the proposed practices in the Work Plan appear to be contradictory to the objectives in the Management Plan. For example, the Rhodesdale project (D-13), calls for a second thinning of an apparently 50 year old pine plantation. If it's a pine plantation as

described in the management plan, it would appear a final harvest would be more in line with the stated objectives for such stands than a second thinning. We recognize that there could be overriding conditions and objectives that would not support a “final harvest” prescription, but, if so, then some explanation of why this stand is being managed differently from the overall management plan would be useful.

### **Gaps Between “Plans” and “Accomplishments” are of a Concern**

First, the Work Plan calls for a total of 1,663 acres of first and second thinnings on the Chesapeake lands and the Pocomoke State Forest. That’s considerably less than the “2,500-3,000” acres of thinning each year identified as a need in the Management Plan for just the Chesapeake lands. Also, a final harvest of 215 acres out of well over 50,000 acres of loblolly pine type flies in the face of the stated goal of managing such stands for a 30-40 year rotation. At a 35 year old rotation, then one would expect about 1,428 acres of final harvest each year to maintain a regulated forest of pine plantations and naturally regenerated stands. Again, there might be overriding reasons why this cannot be achieved, but they should be explained within the context of the deviation from the Sustainable Management Plan.

Then there is the gap each year between what was planned for and what was actually accomplished. Consider the past ten years and just the “Final Harvests” for the Chesapeake land. A total of 1,917 acres of final harvest was planned, but only about 58% of that work was completed. We recall a conversation with Mike in which he explained that the amount of land that couldn’t be actually harvested because of various constraints (buffers, wet areas, etc.) accounted for some of the difference. If so, that should be noted and perhaps the “planned” areas scaled back accordingly, if only to prevent unwarranted criticisms (as we’re sure the perception we’ve created here). Finally, what happens to areas were work was planned but not completed for good reasons, i.e., weather conditions? Is this work carried over into the next year? If so, it should be noted and not “double counted” as new work for a subsequent year.

One very legitimate reason for a continued difference between “plans” and “accomplishments” might be found in the budget summary. Going back to FY 2005, we note the budget is almost identical to that proposed for 2018. The cost of salaries and contract management has remained the same, \$300,000. Over a 12 year period, that seems a bit disingenuous, but, if true, then it must mean there has been no increase in staff to complete a pretty large workload and despite the addition of approximately 10,000 more acres of land to be managed. Maybe it’s time to take a look at this. We and I’m sure others within the forestry community would happily work toward additional staffing if this is a roadblock to achieving the goals for these lands.

### **Growth and Yield Information**

Apparently, there is new forest inventory, growth and yield information. It would be helpful to provide a simplified summary of the new information along with an explanation of how it will be used in future management decisions. It might be worth considering using this information to calculate a defensible annual allowable cut, perhaps by age class, in lieu of using acres to describe “planned” vs “accomplished”. This might resolve the issue of counting acres where no or little harvest can be completed as part of the “planned” acreage. Also the findings of this inventory effort were largely unreadable, at least in the electronic version of the Work Plan.

## **Notification of Timber Harvests**

Although not part of the annual work plan per se, we do reiterate our previous concern that all potential bidders be notified of all upcoming timber sales. That allows everyone to see what is becoming potentially available and to respond accordingly. Now, the proposed sales are apparently known only by Parker Forestry and they then reoffer them to those whom they think might be interested or have the logging capability. We respect the need for certified loggers, but, if that is the case and we all know about it, then it becomes our challenge. Right now, who gets what timber is a bit of a black box, bound to raise suspicions and irritation.

## **Comments of FSC, SFI Reviewers**

It is unclear whether the FSC auditor's comment, "Rates and methods of timber harvest are not leading to achieving desired conditions" applies to all the state forests or just those in Western Maryland. If it applies to all, including those covered under this Work Plan, then this comment would amplify our earlier comments. Reading these comments did give us a better perspective on the level of detail and review associated with FSC or SFI certification.

Over the past year, our company has appreciated the opportunity to better understand the State's management of these valuable forest lands. Frankly, we should have been more involved sooner, something we plan to correct in the future. Public land management isn't easy—there simply are a lot of masters to please. But we've been impressed with the professionalism and willingness of the Maryland Forest Service staff to listen and work with us. Thank you for your efforts.

Sincerely,

Tom Johnson  
President

Cc: Mike Schofield



State Office

Patterson Park Audubon Center

Important Bird Areas Program

2901 East Baltimore Street

Baltimore, MD 21224

Tel: 410-558-2473

<http://md.audubon.org>

Jack Perdue  
Public Lands Management Supervisor  
Forest Service,  
Maryland Department of Natural Resources,  
580 Taylor Ave., E-1  
Annapolis MD 21401

February 1, 2017

**RE: Chesapeake/Pocomoke Forestry Work Plans**

Dear Mr. Perdue,

Thank you for the opportunity to comment on the Eastern Region State Forest Lands annual work plan for FY 2018. I am submitting these comments for Audubon Maryland-DC, the state office of the National Audubon Society, which has over 9,000 members in Maryland. Our mission is to conserve and restore natural ecosystems, focusing on birds, other wildlife, and their habitats for the benefit of humanity and the earth's biological diversity.

Audubon's conservation work in Maryland is focused primarily on a network of 43 Important Bird Areas (IBAs) representing the most essential habitat sites for birds in the state ( see <http://md.audubon.org/conservation/important-bird-areas-0> ) – Audubon has identified these IBAs using rigorous scientific criteria, and in collaboration with a Technical Review Committee made up of expert ornithologists, including two representatives from Maryland DNR's Wildlife and Heritage Service (see attached IBA fact sheet).

Our comments on the work plan focus on silviculture operations in the Pocomoke State Forest and specifically relate to the 147.8 acres of mature pine-hardwood stands that are slated for final harvest (stands P-18-S-01, P-18-S-02, P-18-S-04, and P-18-S-06). These stands are all located within the Pocomoke-Nassawango IBA, which consists of 180,878 acres of predominantly forested land, and is the largest and most intact forested landscape on the Delmarva peninsula. Accordingly, this IBA is the most important area on the Delmarva for Forest Interior-Dwelling Species of bird (FIDS). Of the 24 species of FIDS found on Maryland's coastal plain, 21 breed regularly at this IBA. The Pocomoke-Nassawango IBA hosts significant populations of the following at-risk bird species: Eastern Whip-poor-will, Red-headed Woodpecker, Brown-headed Nuthatch, Wood Thrush, Prairie Warbler, Prothonotary Warbler, Worm-eating Warbler, Swainson's Warbler, and Kentucky Warbler.

We are recommending that forest stands P-18-S-01, P-18-S-02, P-18-S-04, and P-18-S-06 are not harvested but are left in a mature or even an “over-mature” state so that they can succeed from predominantly loblolly pine to more of a hardwood-pine mix under a dynamic forest canopy, rather than under clearcut conditions. The rationale for this recommendation is based on the high conservation value of mature, intact forest and of forest with a greater native hardwood component. I will elaborate on this below.

An important factor that makes these four stands special is the relative age of their trees. All four stands are upland forest dominated by loblolly pine, with only a very small hardwood component (discerned from Google Earth imagery), and are approximately 90 years old. Traditional plantation pine monocultures lack bird diversity and also biodiversity in general, in large part because they are harvested at 40-60 years. When pines are left to mature beyond that age the trees achieve not only a larger size, but also a more diverse physical structure that offers birds more places to nest, roost and forage. Birds' habitat selection is based very much on the physical structure of vegetation, and several FIDS species, such as Pileated Woodpecker and Hairy Woodpecker, and other birds benefit from the availability of mature pines over younger pines.

Leaving the four stands unharvested would result in a more effective transition from pine to a hardwood-pine mix because saplings of oaks and hickories grow more effectively, and enjoy a competitive advantage over pine saplings, beneath a mature canopy than under clearcut conditions. The open conditions created by harvesting favor pine saplings which are faster growing than oaks and hickories when exposed to strong sunlight and less susceptible to deer-browse which prevails in open areas. Our concern with a clearcut harvest is that the mature loblolly pines would simply be replaced by young pines, rather than hardwoods. As you are aware it's nearly impossible to regrow 100-year old upland forests full of oaks and hickories. Even when these trees are left standing, the deer browse results in mostly pine and sweet gum woods. A number of cuts simply regrow as multiflora rose.

There is great wildlife conservation benefit to allowing these pine stands to convert to a hardwood-pine mix. The great majority of FIDS occur primarily in hardwood or mixed forest types. FIDS Species that would benefit from such a conversion of these four stands include those preferring upland hardwood forests: Red-shouldered Hawk, Eastern Whip-poor-will, Hairy Woodpecker, Pileated Woodpecker, Acadian Flycatcher, Wood Thrush, Red-eyed Vireo, Yellow-throated Vireo, Northern Parula, Black-and-White Warbler, American Redstart, Worm-eating Warbler, Ovenbird, Kentucky Warbler, Hooded Warbler, and Scarlet Tanager. These bird species have not benefitted from the historical conversion of hardwood forests on the lower Eastern Shore to pine monocultures.

We do very much appreciate the attempt to retain hardwood species in these four stands, but the current predominance of pine in them means that the proposed harvest of pines will leave these parcels as clearcuts with only a few standing hardwoods. The surrounding forest will be exposed to the impacts of edge effects, both abiotic (wind, temperature extremes) and biotic (increased predation and cowbird parasitism on bird nests).

The new State Wildlife Action Plan specifically calls for less pine monoculture and more managing for biodiversity. Not only does it suggest not cutting diverse mature stands, but it also recommends conversion of loblolly to mixed woods with thick leaf litter and coarse woody debris. It also notes that timber harvests in forests matrices create fragmentation that can severely curtail breeding of target species due to the subsequent invasion of parasitic cowbirds and predators that prey on ground nesting species. Leaving mature stands only in riparian areas is not enough.

Our comments are also consistent with the Sustainable Forestry Act of 2009 which calls for cutting at a sustainable rate. It also mandates that adequate reference areas be retained, and the four parcels above would fit that criteria.

We understand that our recommendations mean forgoing the income generated by a harvest of large pine trees, but we urge you to consider the option of enhancing the long-term biodiversity of these parcels, in accordance with the 2015 Maryland State Wildlife Action Plan.

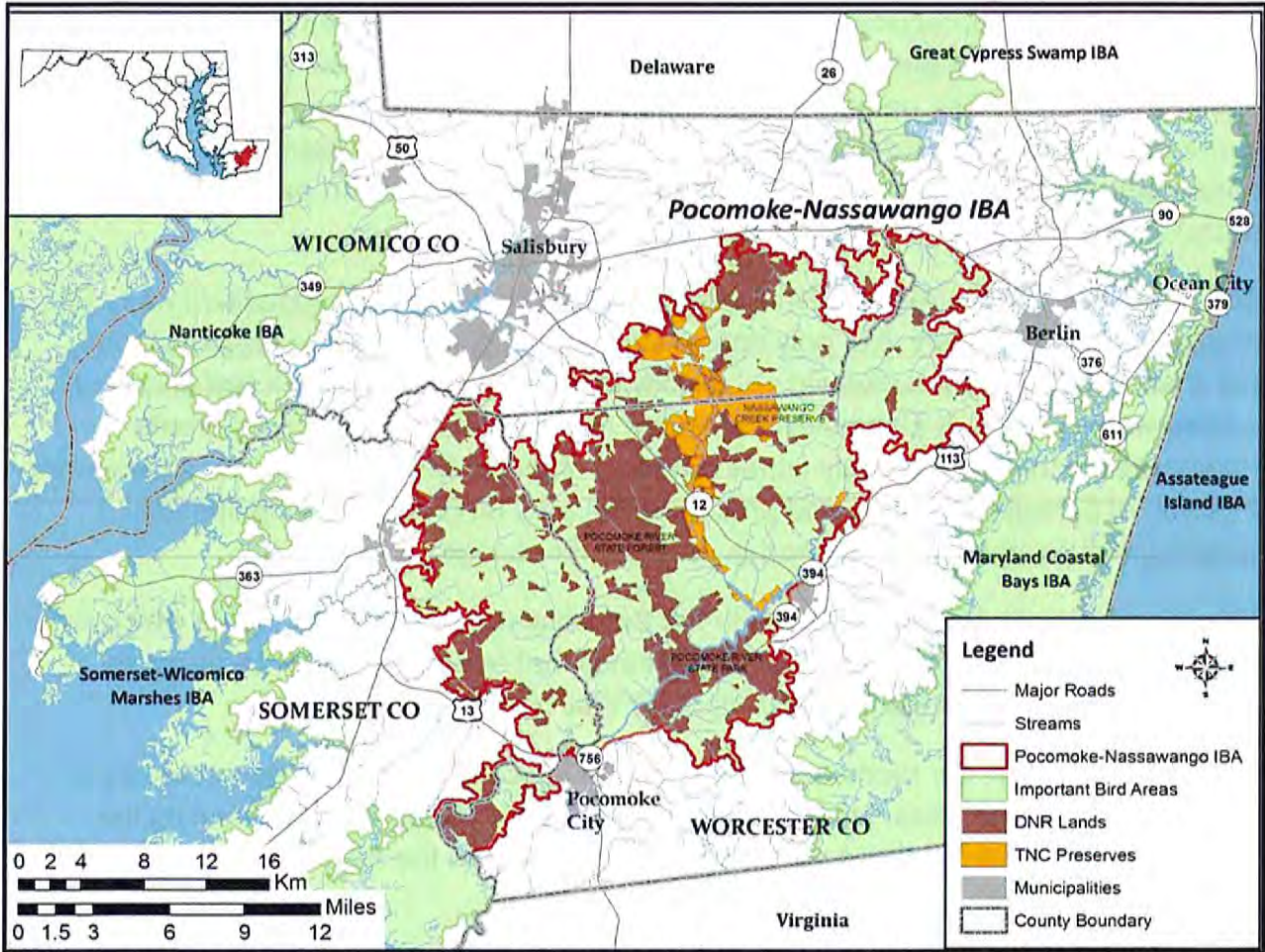
I would very much appreciate a response to our recommendations and would be happy to discuss them at your convenience. I can be reached by e-mail at [dcurson@audubon.org](mailto:dcurson@audubon.org) or by phone at 410-558-2473.

Sincerely,

A handwritten signature in cursive script that reads "David Curson".

David Curson, Ph.D.  
Director of Bird Conservation  
Audubon Maryland-DC  
[dcurson@audubon.org](mailto:dcurson@audubon.org)





**Figure 1.** Pocomoke-Nassawango Important Bird Area, in relation to other Important Bird Areas on Maryland's Lower Eastern Shore.



## Important Bird Areas Program Fact Sheet

August 2015

### **What is an IBA?**

Important Bird Areas (IBAs) are sites that support significant populations of birds considered vulnerable. Sites are identified based on rigorous scientific criteria that focus on three categories of vulnerable birds:

- 1) At-risk species of conservation priority.
- 2) Species assemblages of birds that specialize in a particular habitat type.
- 3) Birds that occur in exceptional concentrations.

IBAs can be small or large in extent, but usually are discrete sites that stand out from the surrounding landscape. IBAs may be National Wildlife Refuges, State Parks or other protected public lands, but they can also be private farms, forests and other private areas. Not all IBAs are open to the public – the intent of the IBA Program is conservation of birds and their habitats rather than highlighting places for bird watching.

### **Goals of the IBA Program**

The overall goal of the IBA Program is to ensure the continued viability of the habitats and their bird populations within IBAs. It is a strategic conservation-planning tool, and as such it is proactive rather than reactive. Program goals are achieved through three action steps:

*Identify* the most essential areas for birds

*Monitor* those sites for changes to birds and habitat

*Conserve* these areas for long-term protection of bird populations

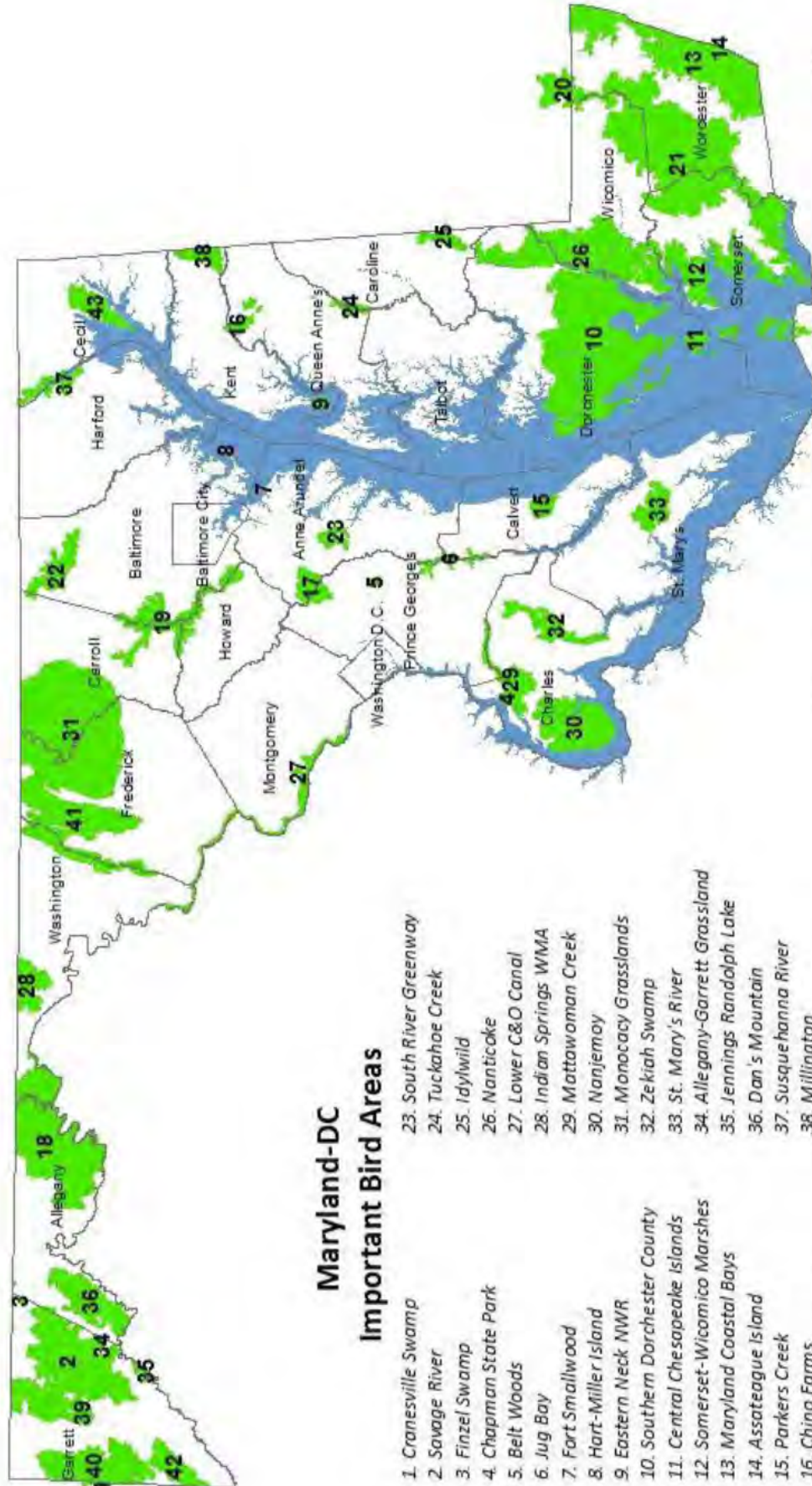
The IBA program seeks to achieve conservation goals through partnerships with conservation planners, private landowners and managers of public lands. A major component of the program is the participation of volunteers who act as citizen scientists and conservation stewards, studying species population trends, evaluating threats to birds, and restoring and enhancing bird habitats. Conservation at IBAs can take the form of developing and improving management plans, pursuing conservation easement or land purchase and seeking legislative support and protection. On-the-ground activities may include management of vegetation, invasive species control, designing structures to reduce human impacts, erecting nesting structures and managing agricultural crops for wildlife.

### **A Brief History of the IBA Program**

The IBA Program began in the 1980s as an initiative of BirdLife International, a global partnership of more than 100 organizations worldwide. First implemented in Europe, IBA programs now exist on every continent and over 10,000 IBAs have been identified worldwide. In the U.S. the National Audubon Society is Birdlife International's partner and has established IBA Programs state by state. Programs are now up and running in 46 states with over 2,100 IBAs identified across the country.

### **The IBA Program in Maryland and DC**

Important Bird Areas are identified by an IBA Technical Review Committee, which reviews all nominated sites against scientific criteria based on analysis of bird populations and their habitats. The Audubon Maryland-DC IBA Technical Review Committee includes: Kyle Rambo (Chair), Patuxent River Naval Air Station; Wayne Bell, Washington College; David Curson, Audubon Maryland-DC; Lynn Davidson, Md. Department of Natural Resources; David Smith, Maryland Ornithological Society; Glenn Therres, Md. Department of Natural Resources, Bill Hubick.



## Maryland-DC Important Bird Areas

- |                                |                                |
|--------------------------------|--------------------------------|
| 1. Cranesville Swamp           | 23. South River Greenway       |
| 2. Savage River                | 24. Tuckahoe Creek             |
| 3. Finzel Swamp                | 25. Idylwild                   |
| 4. Chapman State Park          | 26. Nanticoke                  |
| 5. Belt Woods                  | 27. Lower C&O Canal            |
| 6. Jug Bay                     | 28. Indian Springs WMA         |
| 7. Fort Smallwood              | 29. Mattawoman Creek           |
| 8. Hart-Miller Island          | 30. Nanjemoy                   |
| 9. Eastern Neck NWR            | 31. Monocacy Grasslands        |
| 10. Southern Dorchester County | 32. Zekiah Swamp               |
| 11. Central Chesapeake Islands | 33. St. Mary's River           |
| 12. Somerset-Wicomico Marshes  | 34. Allegany-Garrett Grassland |
| 13. Maryland Coastal Bays      | 35. Jennings Randolph Lake     |
| 14. Assateague Island          | 36. Dan's Mountain             |
| 15. Parkers Creek              | 37. Susquehanna River          |
| 16. China Farms                | 38. Millington                 |
| 17. Patuxent Research Refuge   | 39. The Glades                 |
| 18. Green Ridge                | 40. Youghiogheny Valley        |
| 19. Patapsco Valley            | 41. Maryland Blue Ridge        |
| 20. Great Cypress Swamp        | 42. Pleasant Valley            |
| 21. Pocomoke-Nassawango        | 43. Elk Neck                   |
| 22. Prettybay                  |                                |

For more information contact Dr David Curson, Director of Bird Conservation at 410-558-2473 or [dcurson@audubon.org](mailto:dcurson@audubon.org)  
Visit our website at <http://md.audubon.org>

## K. SILVICULTURAL PROJECTS

### SILVICULTURAL ACTIVITY OVERVIEW

Tables 2 and 3 summarize the proposed silvicultural activities for the 2018 annual work plan on approximately 1,701 acres (2.5%) of the Chesapeake Forest and 176 acres (1.0%) of Pocomoke State Forest, for a total of 1,877 acres (2.2%) on both forests.

**Table 2. 2017 Chesapeake Forest Silvicultural Activity Overview. (CF-17-S-1 – CF-17-S-18)**

| Activity        | Acres         |
|-----------------|---------------|
| Final Harvest   | 66.7          |
| First Thinning  | 1529.8        |
| Second Thinning | 104.9         |
| Aerial Spray*   | 11.8          |
| <b>Total</b>    | <b>1713.2</b> |

*\*the aerial spray area is also a part of a first thinning*

**Table 3. 2017 Pocomoke State Forest Silvicultural Activity Overview. (P-17-S-1 – P-17-S-6)**

| Activity       | Acres        |
|----------------|--------------|
| Final Harvest  | 147.8        |
| First Thinning | 28.3         |
| <b>Total</b>   | <b>176.1</b> |

A 10-year silvicultural activity summary for both forests is located in Appendix F.

### DEFINITIONS OF SILVICULTURAL ACTIVITIES

- **Reforestation** – Reforestation reestablishes forest cover either naturally or artificially (hand planting), and may be accompanied by some kind of site preparation during the same fiscal year. The nature of the site preparation will be determined by field examination. It is occasionally followed, in the same fiscal year, with grass control in the form of chemicals (hand-applied by ground crews). Site conditions will dictate application rates, etc., in each case.
- **Site Preparation/Regeneration** – While natural regeneration is the preferred method of reforesting harvested areas, alternative plans should be in place in case natural regeneration is unsuccessful. Alternatives include prescribed burning, herbicide, light mechanical disturbance, or a combination thereof followed by planting of native pines and/or hardwoods as the management zone dictates.
- **Pre-Commercial Thinning** – Pre-commercial thinning is the removal of trees to reduce overcrowded conditions within a stand. This type of thinning concentrates growth on more desirable trees while improving the health of the stand. This treatment is usually done on stands 6 to 10 years of age. The number of trees retained will depend on growth, tree species present, and site productivity. This activity is conducted with hand held power tools and not heavy equipment, thereby reducing adverse impact to the soil.

- **First Commercial Thinning** – Usually performed on plantations 20-25 years old. The objective is to facilitate forest health and promote development of larger trees over a shorter period of time. This is accomplished in plantations by removing every 5th row of trees and selectively thinning (poor form & unhealthy trees) between rows. In naturally regenerated stands, thinning corridors will be established every 50 feet and the stand will be selectively thinned along both sides of the corridor. Approximately 30-40% of the total stand volume will be removed in this process. Stocking levels are determined using a loblolly pine stocking chart based on the basal area, DBH, and trees per acre of the stand (USDA Forest Service, 1986). Crown ratio and site index are other factors that are used to decide whether to thin or not.
- **Second Commercial Thinning** – Usually performed on stands 35-40 years old. The objective is to lengthen the rotation age of the stand and produce larger, healthier trees. In some cases, this technique is used to improve habitat for the Delmarva Fox Squirrel (DFS) and Forest Interior Dwelling Species (FIDS). Approximately 25-30% of the total stand volume will be removed in this process.
- **Selection Harvest** – This includes the removal of single trees and groups of trees within a given stand. This method will be used to distribute age classes and to adjust species composition within a given stand (i.e. riparian buffers, ESA, DFS & FID areas).
- **Shelterwood Harvest** – The shelterwood method involves the gradual removal of the entire stand in a series of partial cuttings that extend over a fraction of the rotation (Smith, 1986). The number of trees retained during the first stage of the harvest depends on the average tree size (diameter at breast height) on the site. As with seed tree regeneration, the shelterwood method works best when overstory trees are more than 30 years old and in their prime period of seed production potential (Schulz, 1997).
- **Seed Tree Harvest** – This type of harvest is designed to regenerate pine on the site by leaving 12 to 14 healthy dominant trees per acre as a seed source. The seed trees are typically left on the site for another rotation, but can be removed once sufficient pine regeneration is achieved. The seed tree method regenerates loblolly pine effectively and inexpensively in the Coastal Plain, where seed crops are consistently heavy (Schulz, 1997).
- **Variable Retention Harvest** – This harvest type focuses on the removal of approximately 80 percent of a given stand in one cutting, while retaining approximately 20 percent as wildlife corridors/islands, visual buffers, and/or legacy trees. The preferred method of regeneration is by natural seeding from adjacent stands, or from trees cut in the clearing operation. Coarse woody debris (slash/tree tops) is left evenly across the site to decompose. A Variable Retention Harvest (VRH) is prescribed to help regulate the forest growth over the entire forest, ensuring a healthy and vigorous forest condition. Harvesting of young loblolly pine stands is done to help balance the age class distribution across the forest. Currently, about 20% of the two forests is 19 years of age or younger. VRH are also used to regenerate mixed natural stands within ESA's, DFS & Core FIDS areas. If adequate natural regeneration is not obtained within 3 years of the harvest, hand planting of the site is typically required (not required for certain restoration projects, such as bay restoration).
- **Aerial Release Spraying** – An aerial spray of herbicide is used to reduce undesirable hardwood species (i.e. sweet gum & red maple) within the stand. In many cases, a reduced rate (well below the manufacturer's recommendation) is used. A reduced rate has been used on the CF successfully to kill the undesirable species while maintaining the desirable ones (yellow poplar & oaks). All forms of aerial spraying are based on precision GPS mapping and accompanied by on-board flight GPS controls. GPS-generated maps show each pass of the aircraft and are provided by the contractor to demonstrate precision application. Aerial applications are not allowed in specially designated wetland areas or within 150 feet of riparian areas on the forest.

- **Prescribed Fire** – Prescribed fires are set deliberately by MFS personnel, under proper weather conditions, to achieve a specific management objective. Prescribed fires are used for enhancing wildlife habitat, encouraging fire-dependent plant species, reducing fuel loads that feed wildfires, and prepare sites for planting.
- **Riparian Buffer Zone Establishment** – Riparian buffer zones are vegetated areas adjacent to or influenced by a perennial or intermittent bodies of water. These buffers are established and managed to protect aquatic, wetland, shoreline, and/or terrestrial environments and ultimately the Chesapeake Bay. Boundaries of riparian buffer zones will be marked, surveyed (GPS) and mapped (GIS). Selective harvesting and/or thinnings may occur in these areas to encourage a mixed hardwood-pine composition.

## SILVICULTURAL PRESCRIPTIONS & STAND DATA

### CAROLINE COUNTY

[CF-18-S-01]

**Proposal Name:** C04 – Merriken – Stand 4

**Harvest Area:** 11.8 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1995

**Habitats and Species of Management Concern:** ESA Zone1 and Stream Buffer

**Water Resources:** Faulkner Branch

**Soil Resources:** FaA, GAE, IaA, and Za

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** First thinning

### DORCHESTER COUNTY

[CF-18-S-02]

**Proposal Name:** D13 – Rhodesdale – Stands 4 & 7

**Harvest Area:** 88.0 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1966, first thinned in 1993-94, sprayed and controlled for grass in 1996, and fertilized in 1997

**Habitats and Species of Management Concern:** Stream Buffer and DFS Core

**Water Resources:** Ditches that drain into Marshyhope Creek

**Soil Resources:** HVA, KgB, PmA, and RsB

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** Second thinning, retain all hard mast species

[CF-18-S-03]

**Proposal Name:** D13 – Rhodesdale – Stands 10, 16 & 28

**Harvest Area:** 103.9 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1995-

96**Habitats and Species of Management Concern:** ESA Zone 1, ESA Zone 3 Pulpwood, Stream Buffer, and DFS Core

**Water Resources:** Marshyhope Creek

**Soil Resources:** FmA, FmB, HnA, HVA, IgA, KgB, RsA, and Za

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** First thinning, retain all hard mast species

### SOMERSET COUNTY

[CF-18-S-04]

**Proposal Name:** S10 – Seed Tick Farm – Stands 1 & 2

**Harvest Area:** 137.7 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1993-95

**Habitats and Species of Management Concern:** Stream Buffer

**Water Resources:** Pollitts Branch

**Soil Resources:** CRA, FgA, HuA, HVA, KgB, KsB, MuA, and Rwb

**Historic Conditions:** No known historic features  
**Silvicultural Prescription:** First thinning

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[CF-18-S-05]

**Proposal Name:** S11 – Peters McAllen – Stands 7, 10, 17, 23 & 24  
**Harvest Area:** 46.8 acres  
**Forest Community Types and Development:** Overstocked loblolly pine plantations established in 1995-97; Overstocked pine plantation established in 1981, first thinned in 1998, sprayed in 1999, and fertilized in 2000  
**Habitats and Species of Management Concern:** ESA Zone 1 and Stream Buffer  
**Water Resources:** Loretta Branch  
**Soil Resources:** CRA, FgA, FhA, LO, MdA, OKA, OtA, QeB, and QuA  
**Historic Conditions:** No known historic features  
**Silvicultural Prescription:** First and second thinning

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[CF-18-S-06]

**Proposal Name:** S14 – West Post Office – Stand 2  
**Harvest Area:** 24.8 acres  
**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1996 and pre-commercially thinned in 2004  
**Habitats and Species of Management Concern:** General management  
**Water Resources:** None  
**Soil Resources:** FhA, HgB, HmA, HvA, MuA, and RsB  
**Historic Conditions:** No known historic features  
**Silvicultural Prescription:** First thinning

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[CF-18-S-07]

**Proposal Name:** S18 – Bowland – Stands 6 & 7  
**Harvest Area:** 26.8 acres  
**Forest Community Types and Development:** Overstocked loblolly pine naturally regenerated in 1991, pre-commercially thinned in 2001; overstocked loblolly pine plantation established in 1995  
**Habitats and Species of Management Concern:** General management  
**Water Resources:** None  
**Soil Resources:** FhA, HvA, and MuA  
**Historic Conditions:** No known historic features  
**Silvicultural Prescription:** First thinning

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[CF-18-S-08]

**Proposal Name:** S20 – Ewing-Barnes – Stands 1 & 2  
**Harvest Area:** 100.3 acres  
**Forest Community Types and Development:** Overstocked loblolly pine naturally regenerated in 1993, pre-commercially thinned in 2001; overstocked loblolly pine plantation established in 1998  
**Habitats and Species of Management Concern:** ESA Zone 1 & General management  
**Water Resources:** None  
**Soil Resources:** MdA and QuA  
**Historic Conditions:** No known historic features  
**Silvicultural Prescription:** First thinning

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[CF-18-S-09]

**Proposal Name:** S22 – Reid – Stands 1 & 3



**Harvest Area:** 51.8 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1982 and first thinned in 2001; overstocked loblolly pine plantation established in 1994

**Habitats and Species of Management Concern:** General management

**Water Resources:** None

**Soil Resources:** OoA, OtA, and QtA

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** First and second thinning

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[CF-18-S-10]

**Proposal Name:** S49 – Handy – Stands 6 & 7

**Harvest Area:** 111.0 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1992

**Habitats and Species of Management Concern:** General management

**Water Resources:** None

**Soil Resources:** OtA, OvA, and QuA

**Historic Conditions:** MHT Grid C462\_R272

**Silvicultural Prescription:** First thinning

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## WICOMICO COUNTY

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[CF-18-S-11]

**Proposal Name:** W22 – Greenhill – Stands 1, 8, 9 & 13

**Harvest Area:** 133.1 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1999 and released in 2000; overstocked loblolly pine naturally regenerated in 1993 and pre-commercially thinned in 2000; overstocked loblolly pine plantation established in 1994

**Habitats and Species of Management Concern:** General management

**Water Resources:** None

**Soil Resources:** OtA and OKA

**Historic Conditions:** MHT Grid C457\_R226

**Silvicultural Prescription:** First thinning, retain all hard mast species

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[CF-18-S-12]

**Proposal Name:** W23 – Greenhill – Stands 13, 47 & 51

**Harvest Area:** 132.4 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1994, 1998-99, released in 2000

**Habitats and Species of Management Concern:** ESA Zone 3 Pulpwood, DFS Future Core, DFS Future Translocation, and Stream Buffer

**Water Resources:** Unnamed stream that flows into the Nanticoke River

**Soil Resources:** FaA, MtA, OKA, and OtA

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** First thinning, retain all hard mast species

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[CF-18-S-13]

**Proposal Name:** W46 – Campbell – Stands 8, 33, 52, 55, 58, 73 & 79

**Harvest Area:** 209.0 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantations established in 1985, 1987, 1991, 1992, 1994, and 1995.

**Habitats and Species of Management Concern:** ESA Zone 1, ESA Zone 3 Pulpwood, Stream Buffer, and DFS Future Translocation

**Water Resources:** Campbell Ditch

**Soil Resources:** BhA, HbA, HbB, HvA, KgB, MuA, and RsB

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** First thinning, retain all hard mast species

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[CF-18-S-14]

**Proposal Name:** W47 – Adkins – Stand 1

**Harvest Area:** 63.1 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1995

**Habitats and Species of Management Concern:** General management

**Water Resources:** None

**Soil Resources:** BhA, HvA, KgB, MuA, and RsB

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** First thinning

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## WORCESTER COUNTY

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[CF-18-S-15]

**Proposal Name:** WR10 – Cordery – Stands 21, 23 & 24

**Harvest Area:** 110.9 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1993; overstocked loblolly pine plantation established in 1999, sprayed and controlled for grass in 2000

**Habitats and Species of Management Concern:** ESA Zone 1 and ESA Zone 3 Pulpwood

**Water Resources:** None

**Soil Resources:** AsA, BhA, CeB, FaA, HuA, KsA, and MuA

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** First thinning

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[CF-18-S-16]

**Proposal Name:** WR25 – Creek – Stand 11

**Harvest Area:** 66.7 acres

**Forest Community Types and Development:** Mature loblolly pine plantation established in 1965, first thinned in 1994, controlled for grass and sprayed in 1995, and fertilized in 1996

**Habitats and Species of Management Concern:** General management

**Water Resources:** None

**Soil Resources:** FaA, HbA, HuA, MpA, MtA, MuA, OtA, and WdA

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** Final Harvest, retain hard mast species, natural regeneration will be supplemented with planting if suitable regeneration is not achieved

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[CF-18-S-17]

**Proposal Name:** WR25 – Creek – Stand 13

**Harvest Area:** 14.3 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1974, first thinned in 1994, controlled for grass and sprayed in 1995, and fertilized in 1996

**Habitats and Species of Management Concern:** General management

**Water Resources:** None

**Soil Resources:** HbB, MpA, and OtA

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** First thinning, retain all hard mast species

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[CF-18-S-18]

**Proposal Name:** WR32 – Pepperfield – Stands 2 and 9

**Harvest Area:** 73.2 acres

**Forest Community Types and Development:** Overstocked loblolly pine naturally regenerated in 1996 and pre-commercially thinned in 2001; overstocked loblolly pine plantation established in 1994

**Habitats and Species of Management Concern:** Stream Buffer

**Water Resources:** Bachelor's Branch

**Soil Resources:** AsA, CeB, FaA, HmA, MuA, RoB, SaB, WdA, and WdB

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** First thinning

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[CF-18-S-19]

**Proposal Name:** WR36 – Matthews Farm – Stands 6 and 7

**Harvest Area:** 196.0 acres

**Forest Community Types and Development:** Overstocked loblolly pine naturally regenerated in 1995; overstocked loblolly pine plantation established in 1995 and pre-commercially thinned in 2005

**Habitats and Species of Management Concern:** ESA Zone 1, ESA Zone 3 Pulpwood, Stream Buffer, and DFS Core

**Water Resources:** Little Mill Run

**Soil Resources:** CeB, EvB, FaA, FmA, FmB, GaA, GaB, HbB, HmA, HmB, KeA Ma, MpA, MuA, OtA, RoA, SaA, SaB, WdA, and Za

**Historic Conditions:** MHT Grid C503\_R272

**Silvicultural Prescription:** First thinning, retain all hard mast species

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## POCOMOKE STATE FOREST

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[P-18-S-01]

**Proposal Name:** P01 – Old Furnace I – Tract 1 – Stand 3

**Harvest Area:** 38.1 acres

**Forest Community Types and Development:** Mature pine-hardwood stand naturally regenerated in 1922

**Habitats and Species of Management Concern:** Stream Buffer

**Water Resources:** Millville Creek

**Soil Resources:** AsA, BhA, HuA, KeA, and MuA

**Historic Conditions:** None

**Silvicultural Prescription:** Final harvest, retain hard mast species and shortleaf or pond pine, no harvesting within 300 feet of Millville Creek, natural regeneration will be supplemented with planting if suitable regeneration is not achieved

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[P-18-S-02]

**Proposal Name:** P02 – Nazareth Church – Tract 3 – Stand 12

**Harvest Area:** 26.2 acres

**Forest Community Types and Development:** Mature pine-hardwood stand naturally regenerated in 1925

**Habitats and Species of Management Concern:** ESA Zone 1, G3 Community, WSSC, Core FIDS

**Water Resources:** None

**Soil Resources:** AsA, BhA, EvD, KsA, MuA, RuA, and RuB

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** Final harvest, retain hard mast species and shortleaf or pond pine, natural regeneration will be supplemented with planting if suitable regeneration is not achieved

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[P-18-S-03]

**Proposal Name:** P02 – Nazareth Church – Tract 5 – Stand 8

**Harvest Area:** 19.8 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1994

**Habitats and Species of Management Concern:** General management

**Water Resources:** None

**Soil Resources:** AsA, BhA, CeA, HuA, KsA, KsB, and MuA

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** First thinning, retain all hard mast species

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[P-18-S-04]

**Proposal Name:** P02 – Nazareth Church – Tract 5 – Stand 18

**Harvest Area:** 32.6 acres

**Forest Community Types and Development:** Mature pine-hardwood stand naturally regenerated in 1924

**Habitats and Species of Management Concern:** ESA Zone 1, G3 Community, Core FIDS, and Stream Buffer

**Water Resources:** None

**Soil Resources:** AsA, BhA, KsB, MuA, RuA, and RuB

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** Final harvest, retain hard mast species and shortleaf or pond pine, natural regeneration will be supplemented with planting if suitable regeneration is not achieved retain all hard mast species, natural regeneration will be supplemented with planting if suitable regeneration is not achieved

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[P-18-S-05]

**Proposal Name:** P02 – Nazareth Church – Tract 5 – Stand 11

**Harvest Area:** 8.5 acres

**Forest Community Types and Development:** Overstocked loblolly pine plantation established in 1994

**Habitats and Species of Management Concern:** General management

**Water Resources:** None

**Soil Resources:** HuA, KsA, MuA, and RoB

**Historic Conditions:** No known historic features

**Silvicultural Prescription:** First thinning, retain all hard mast species

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[P-18-S-06]

**Proposal Name:** P04 – Dividing Creek – Tract 12 – Stands 4 & 6

**Harvest Area:** 50.9 acres

**Forest Community Types and Development:** Mature pine-hardwood stand naturally regenerated in 1931; mature, overstocked loblolly pine plantation established and sprayed in 1963

**Habitats and Species of Management Concern:** ESA Zone 1, ESA Zone 3 Sawtimber, and Core FIDS

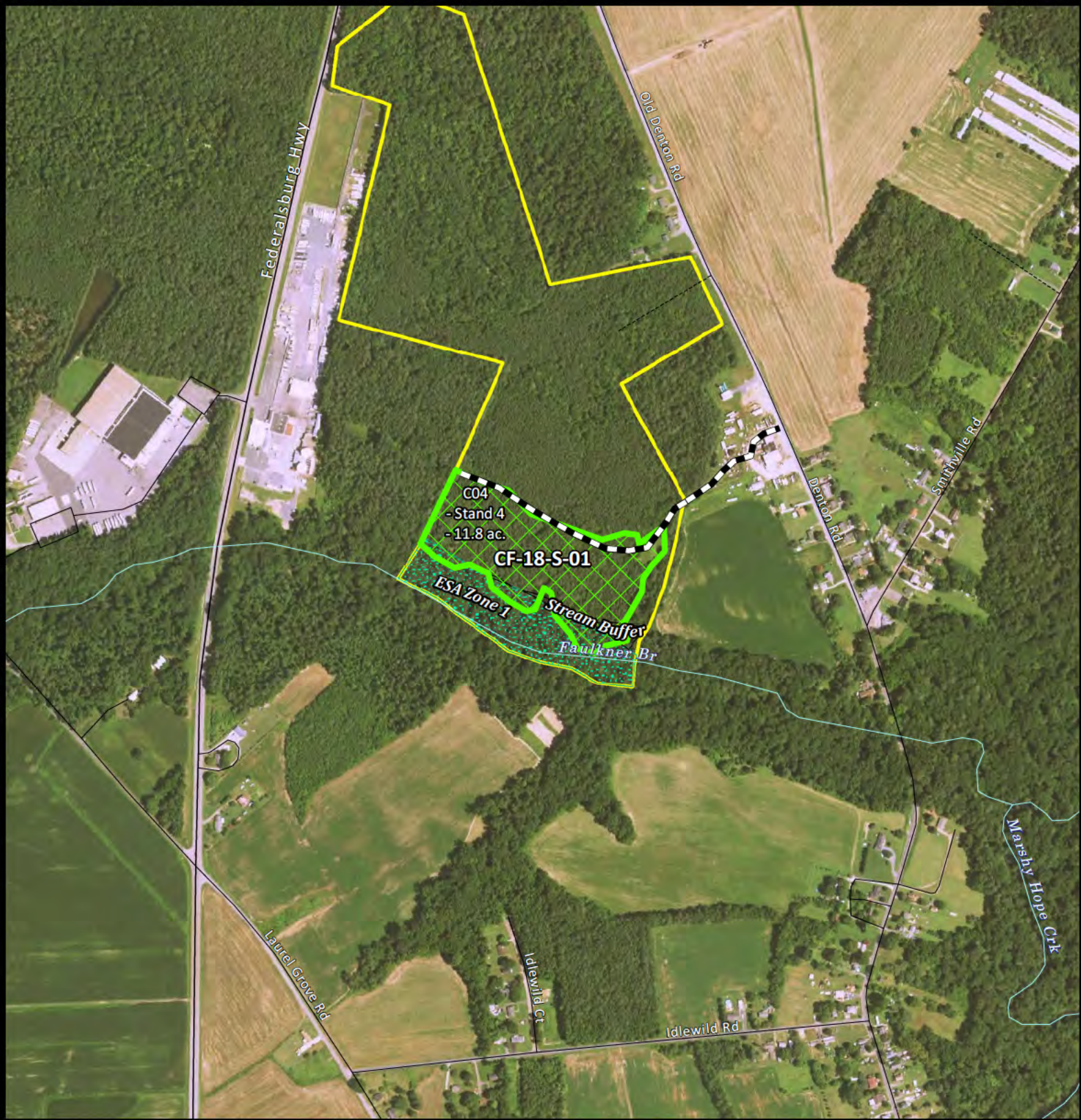
**Water Resources:** None

**Soil Resources:** AsA, HmA, HuA, KsA, KsB, RuA, and RuB

**Historic Conditions:** MHT Grid C490\_R253

**Silvicultural Prescription:** Final harvest, retain hard mast species and shortleaf or pond pine, natural regeneration will be supplemented with planting if suitable regeneration is not achieved





**Legend**

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-  2018 T2

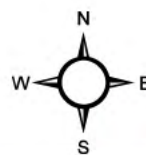
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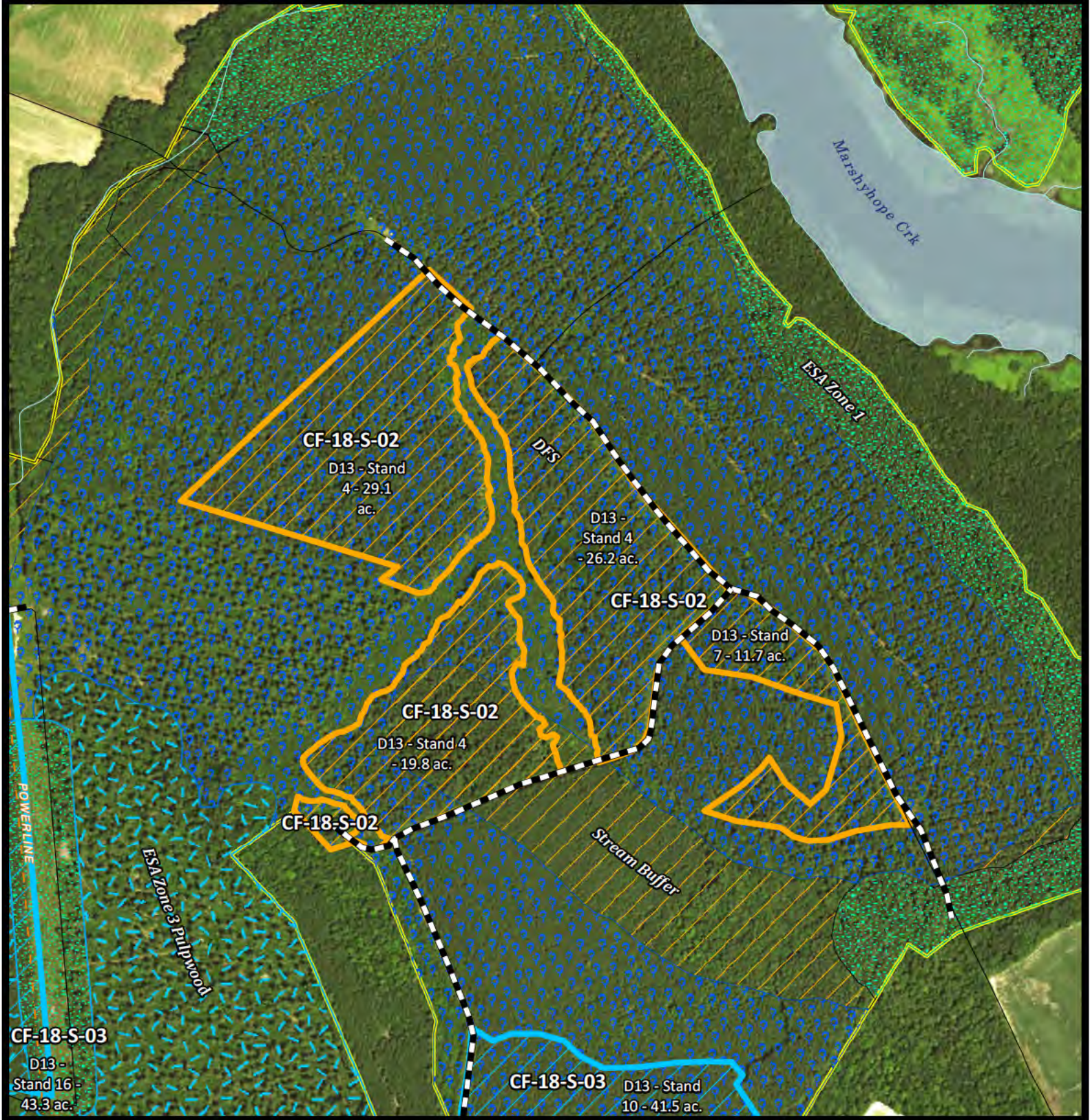
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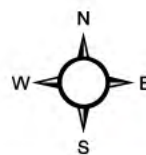
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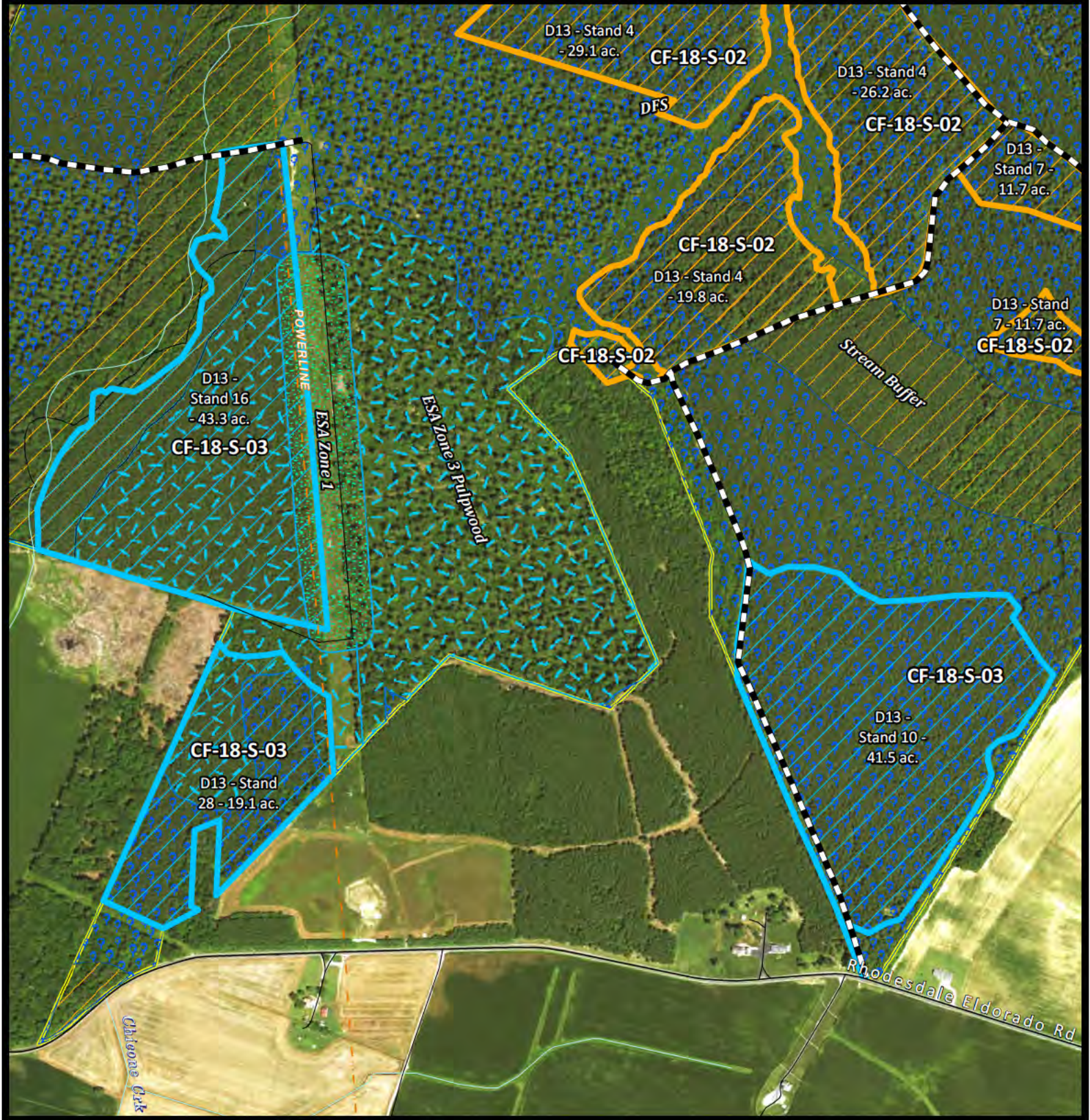
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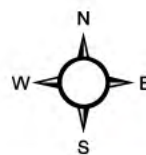
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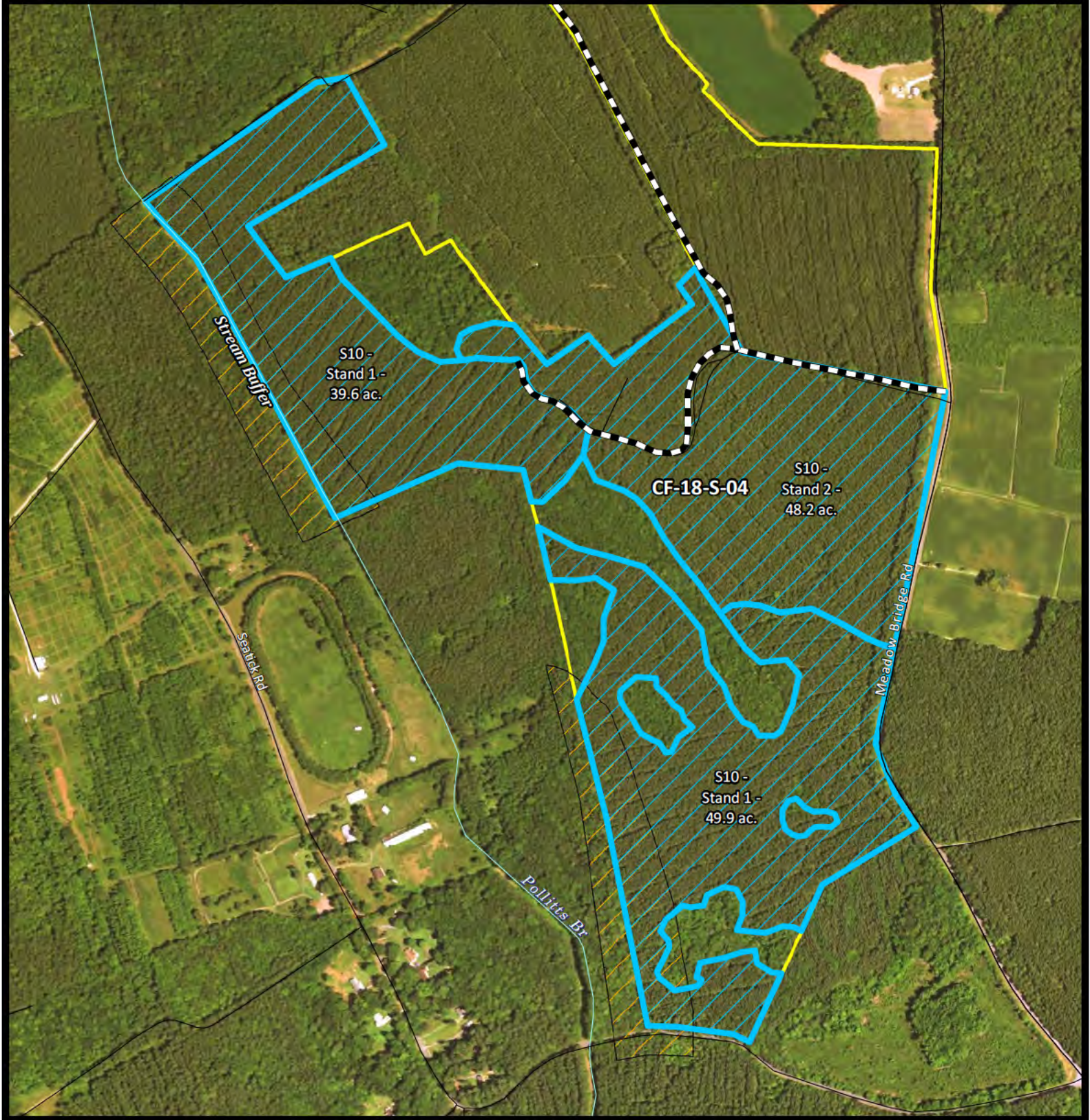
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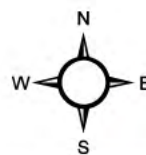
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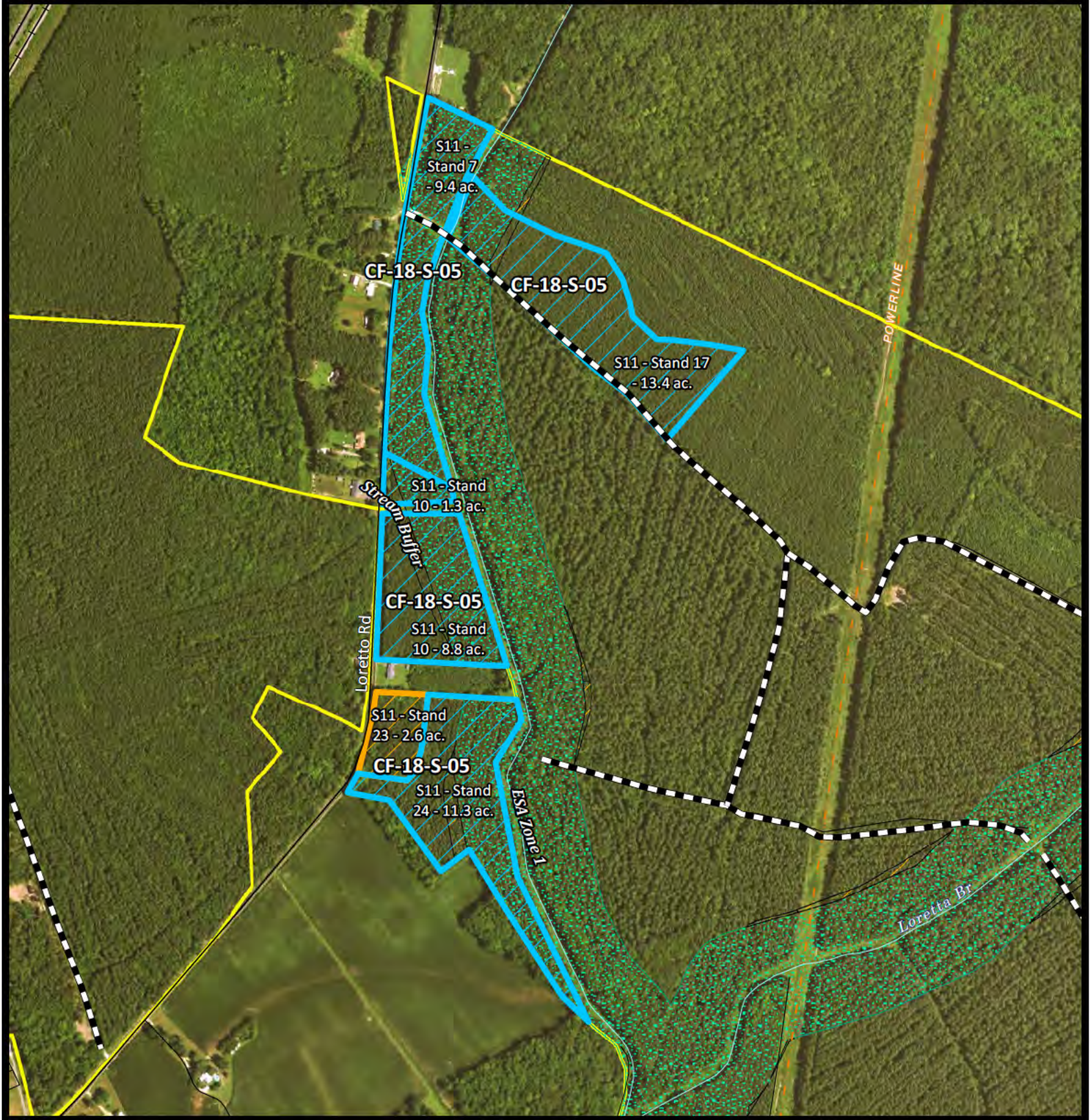
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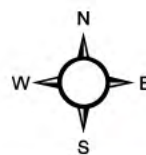
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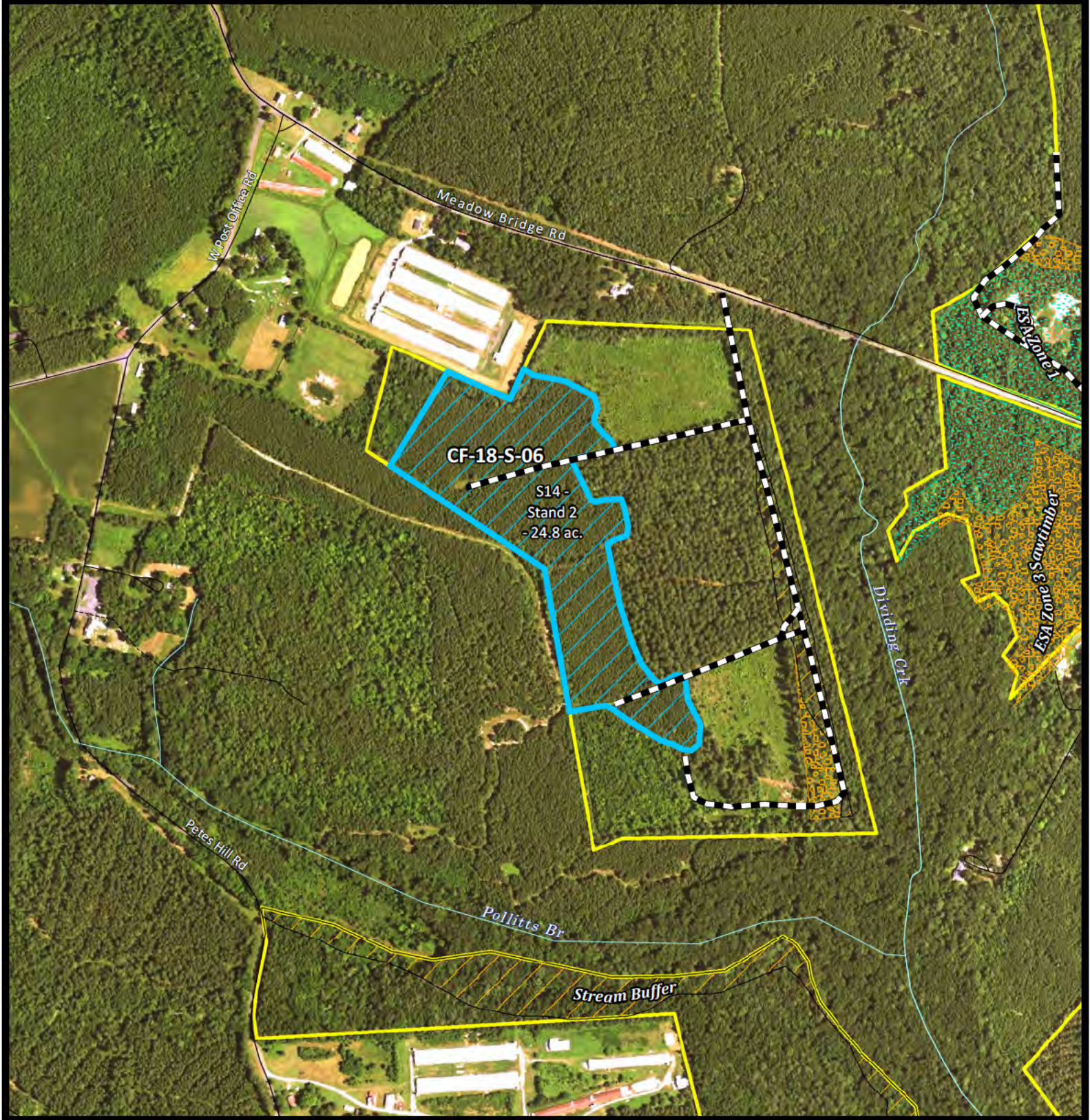
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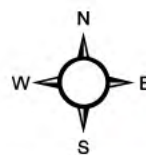
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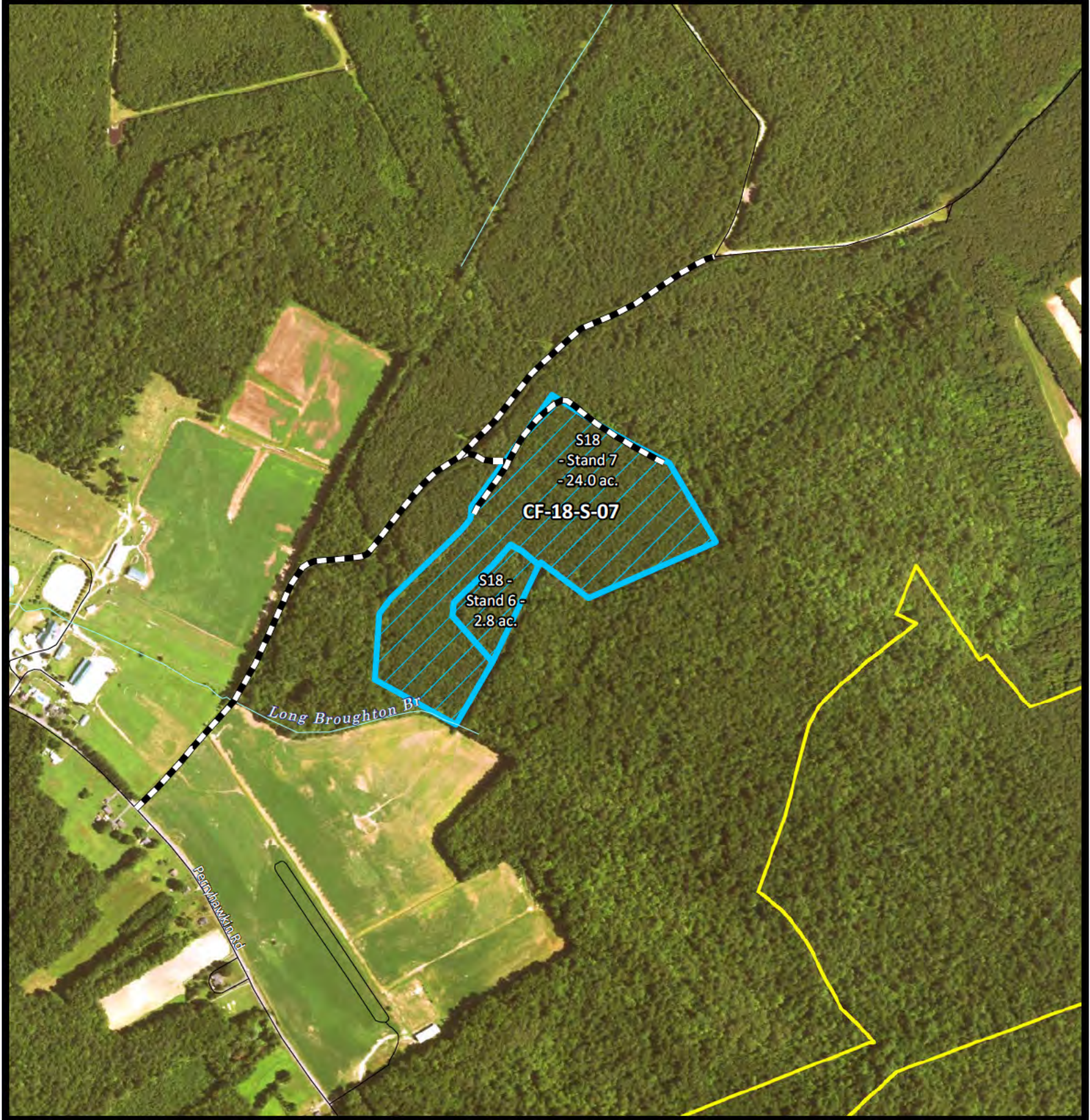
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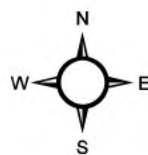
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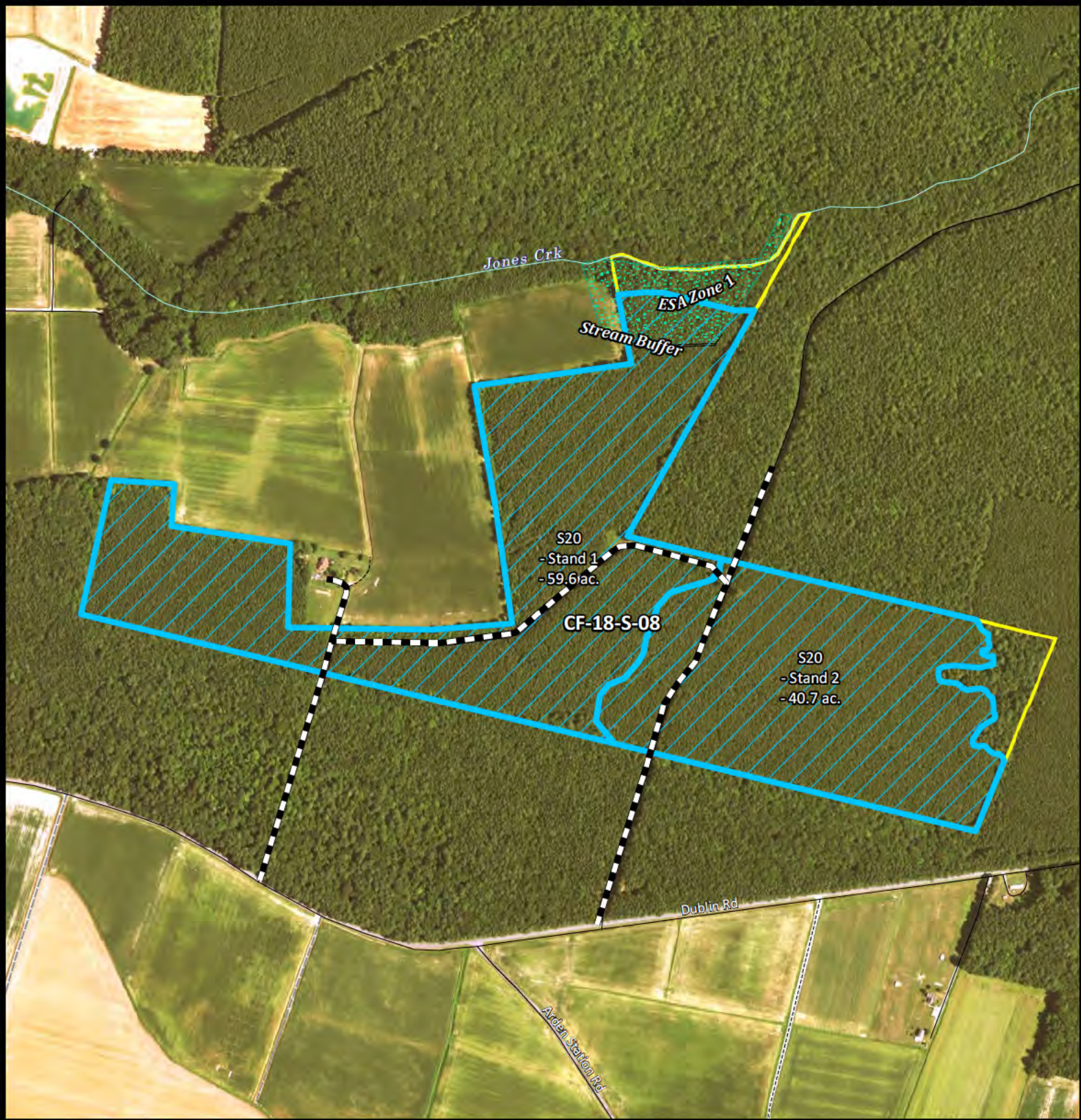
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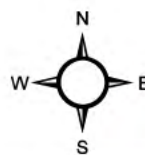
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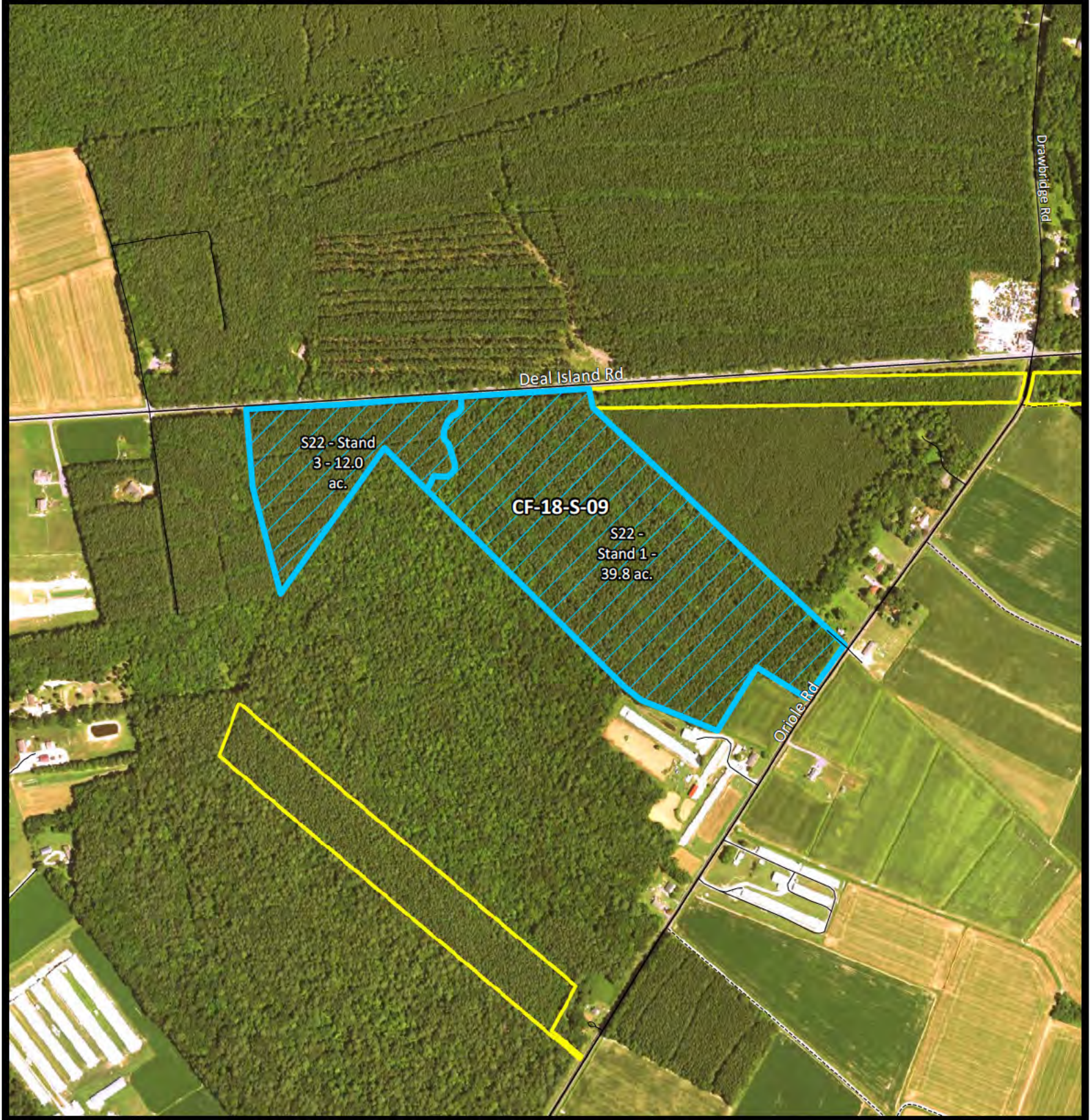
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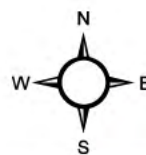
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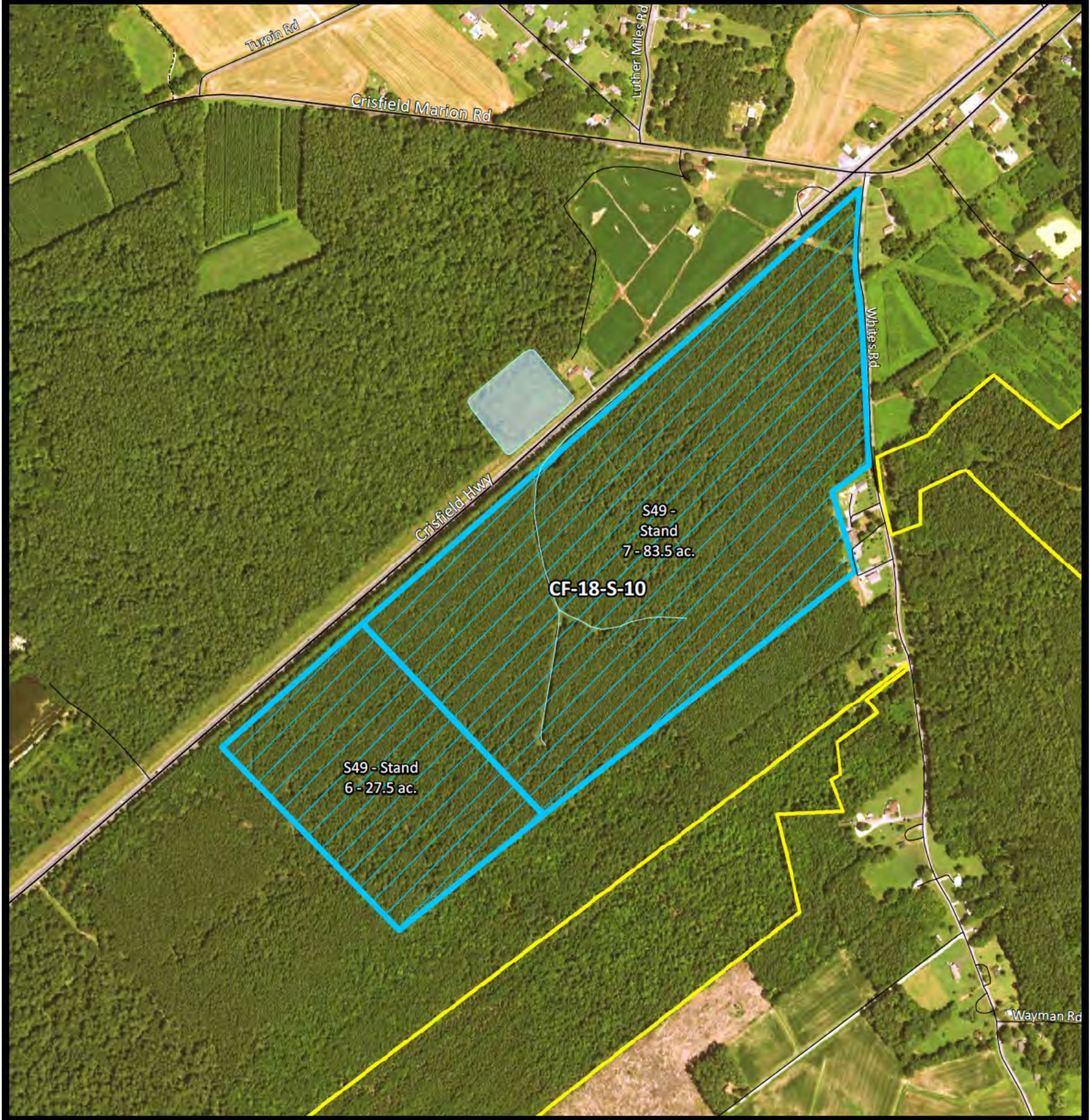
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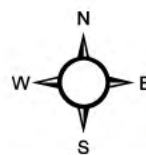
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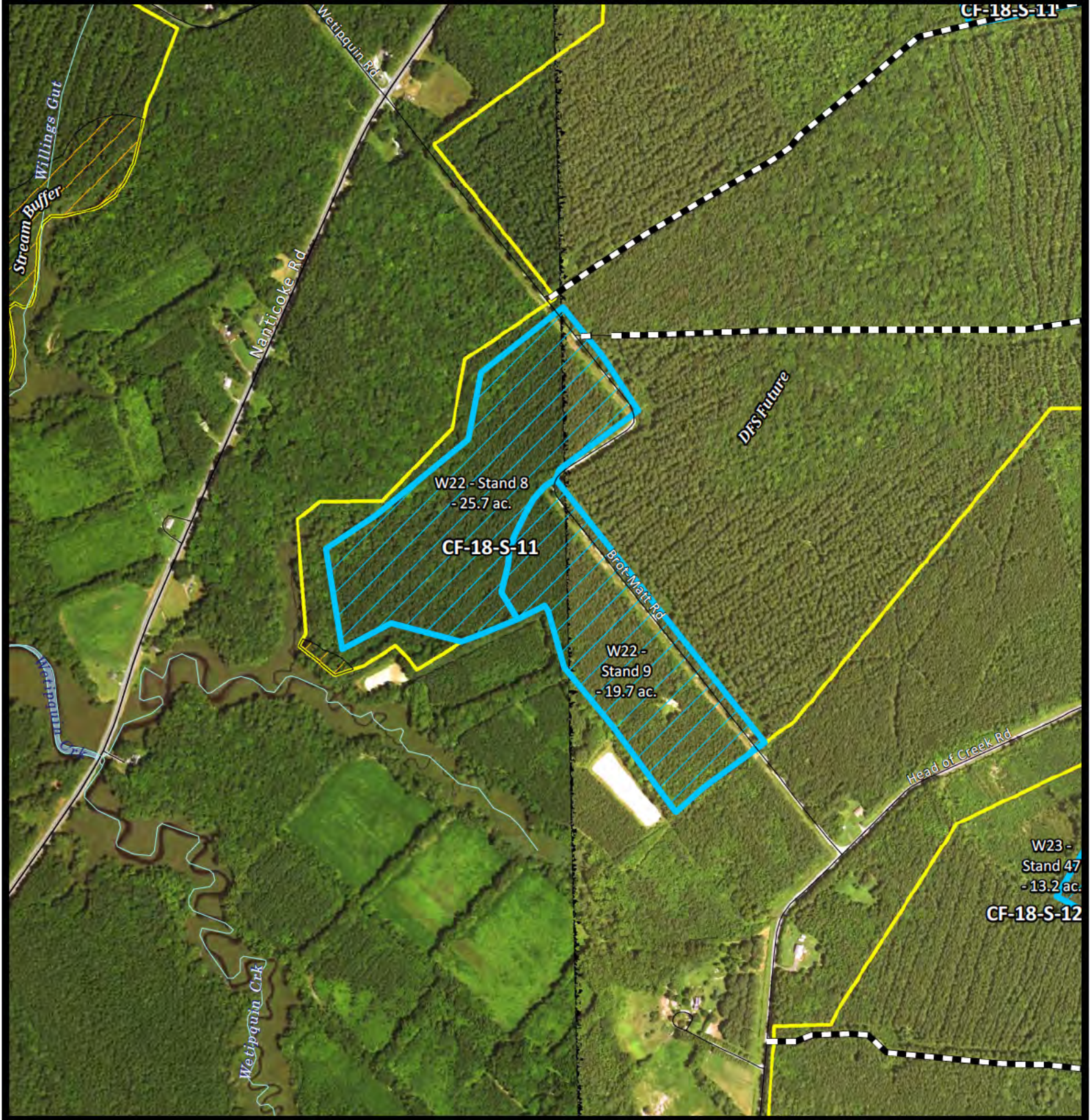
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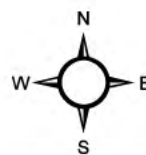
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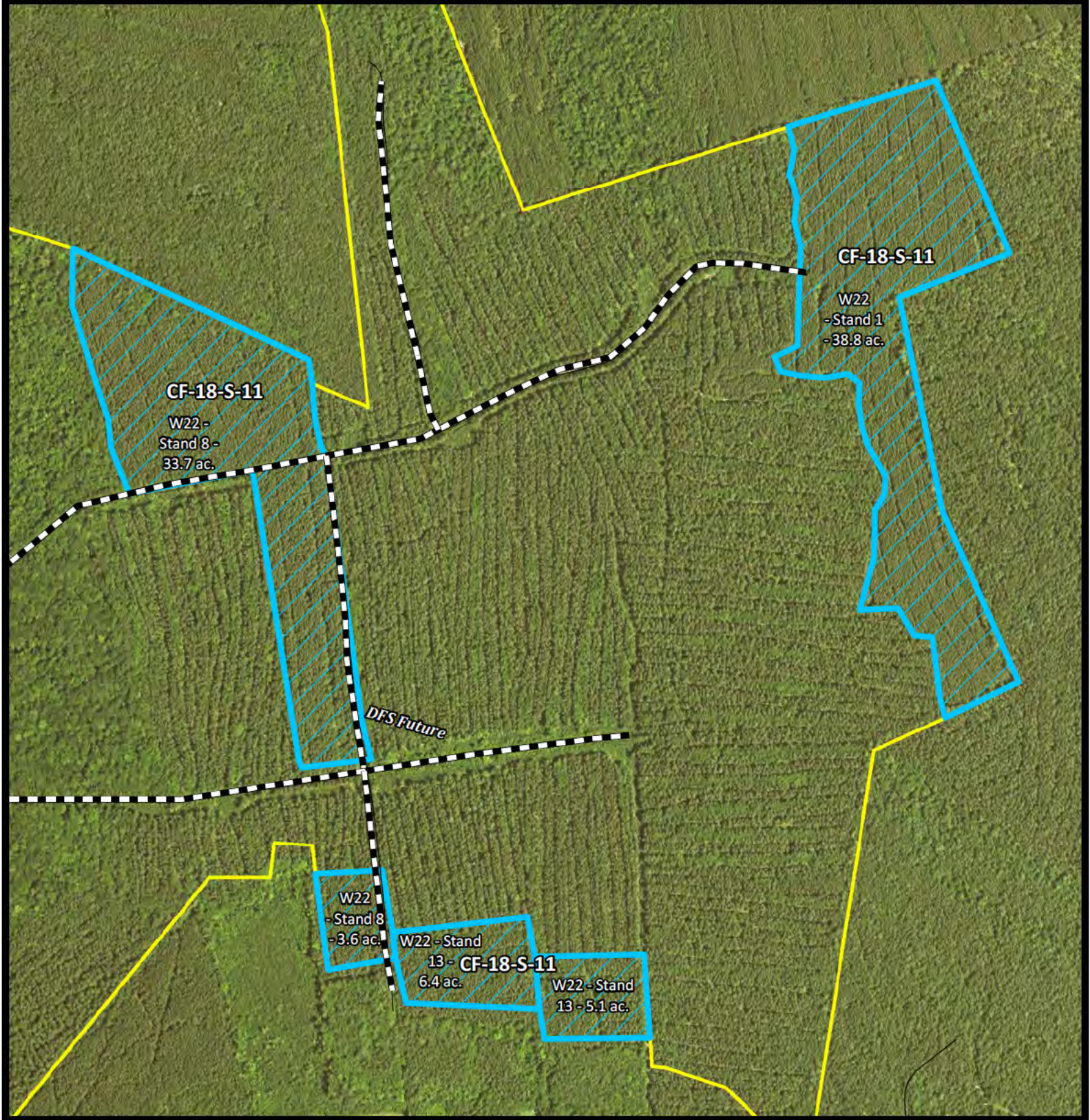
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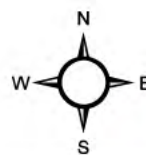
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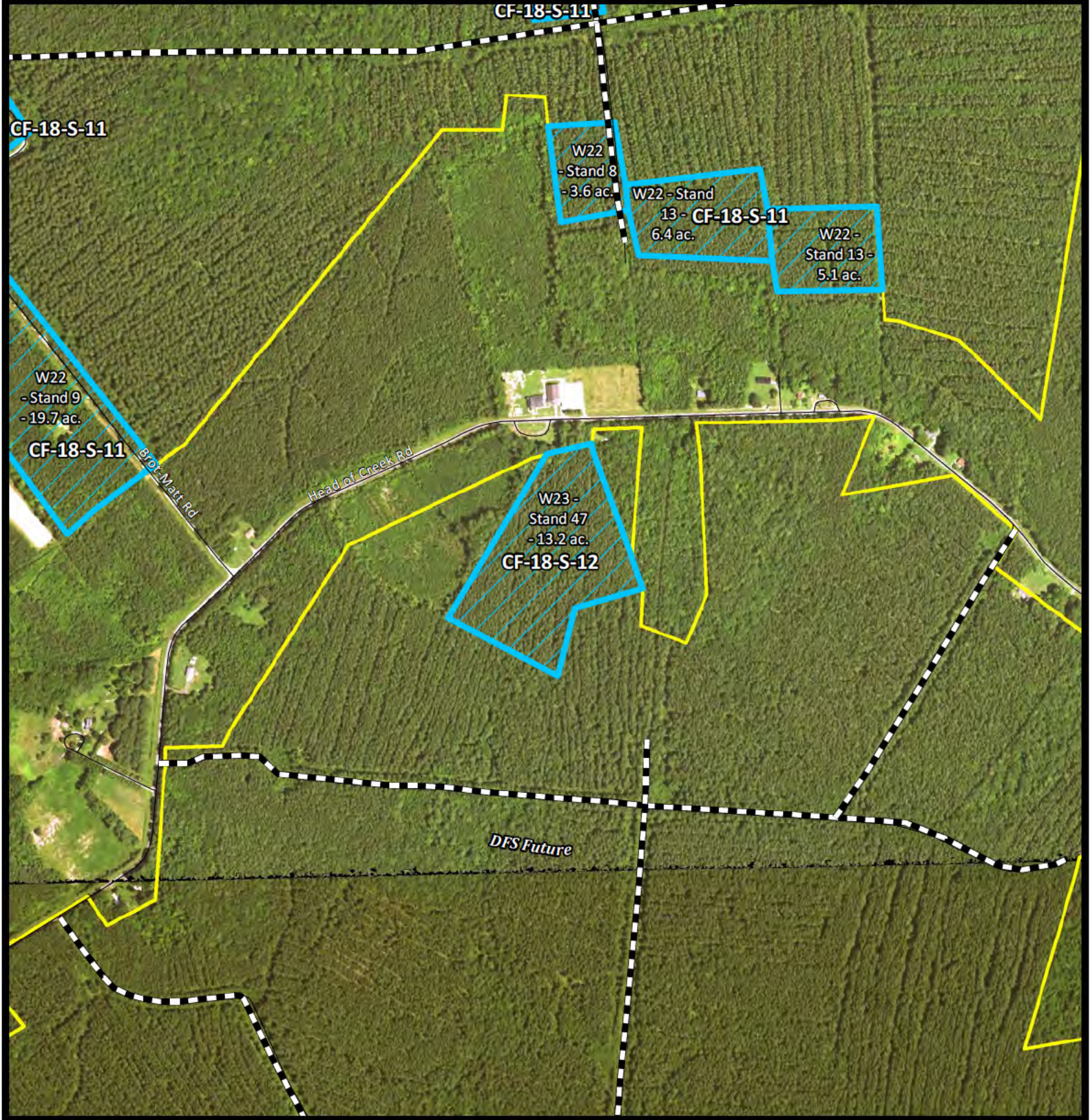
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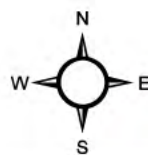
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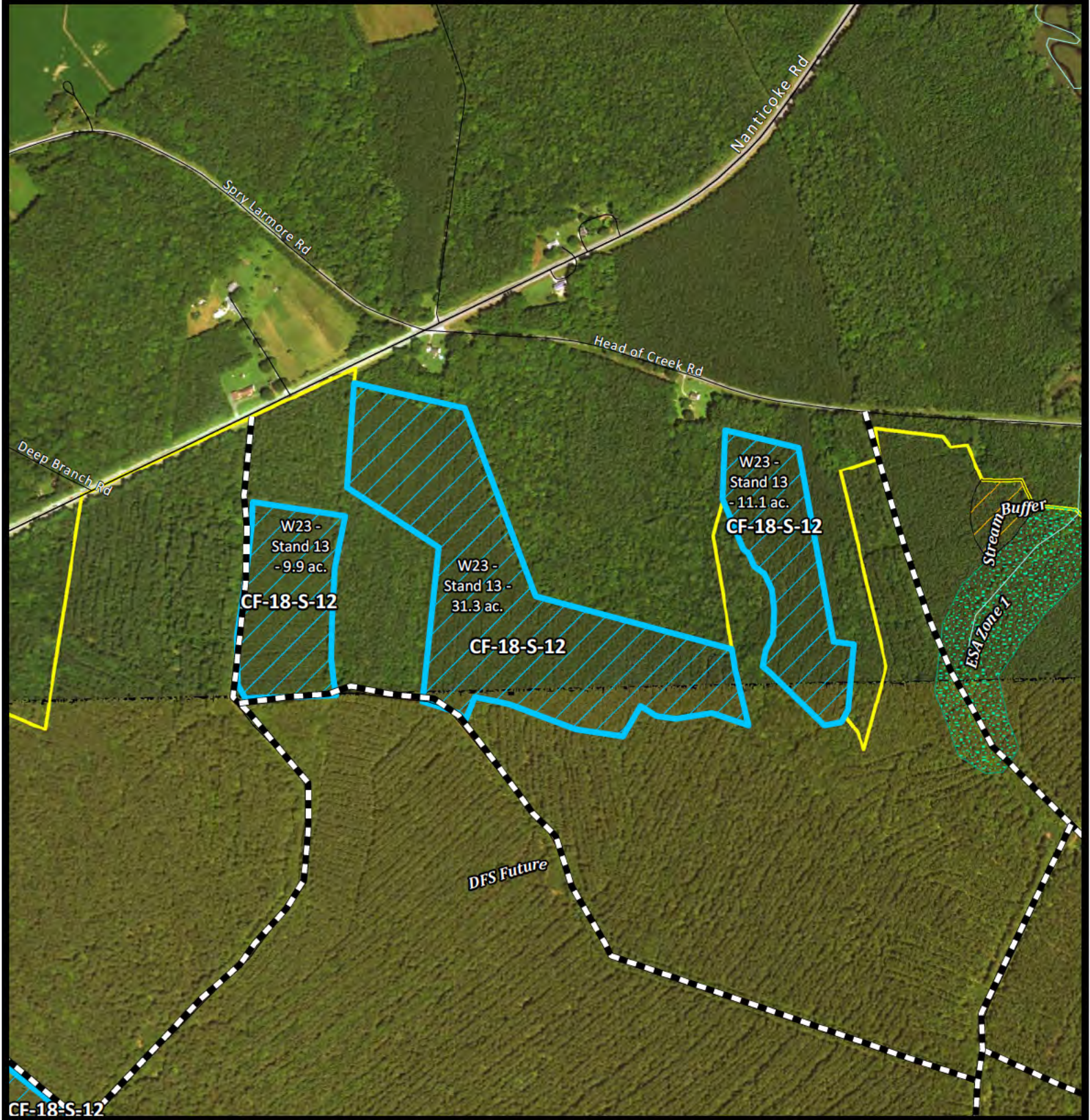
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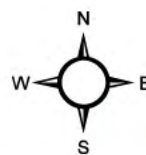
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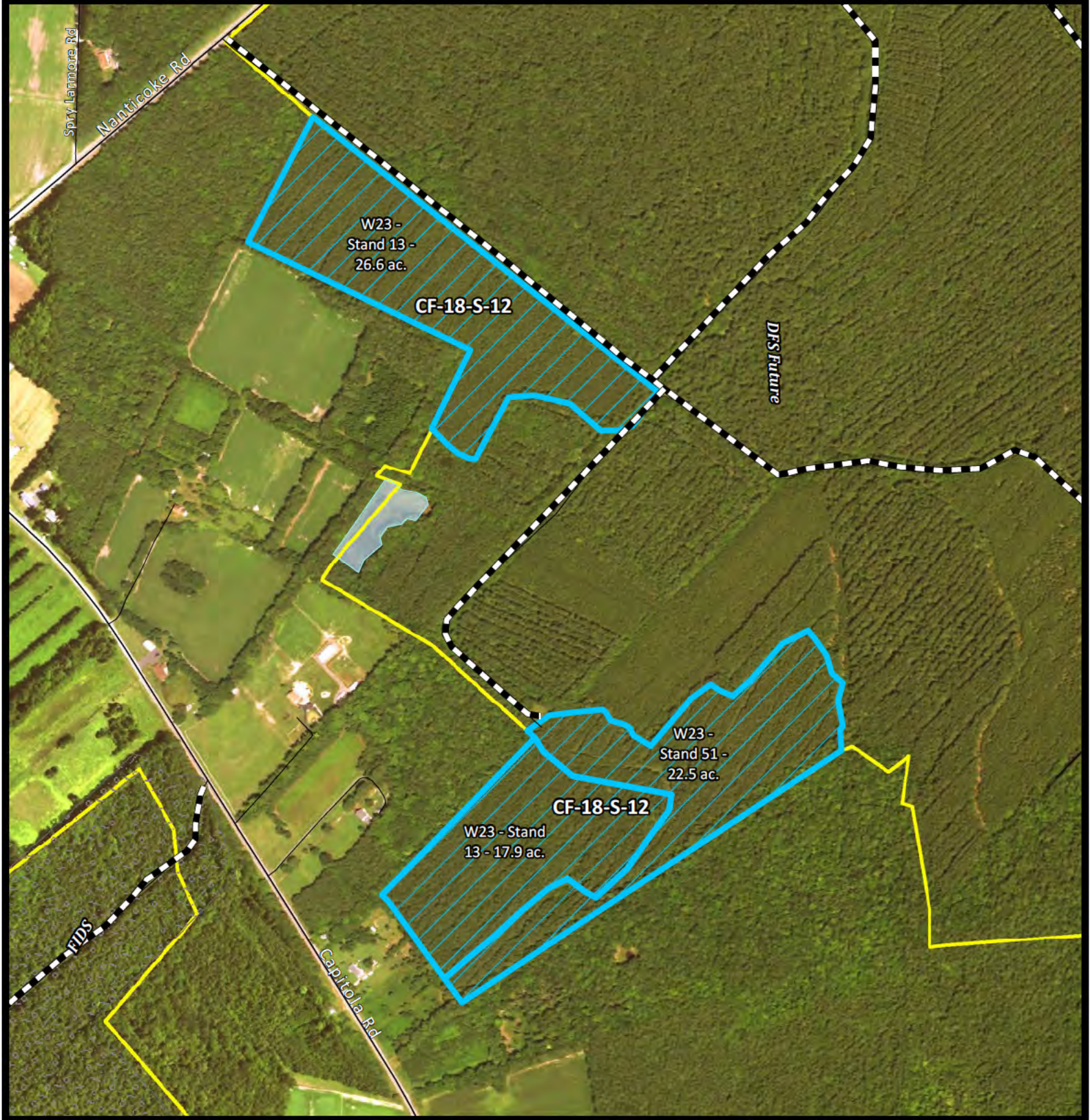
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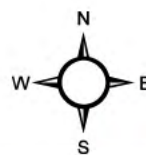
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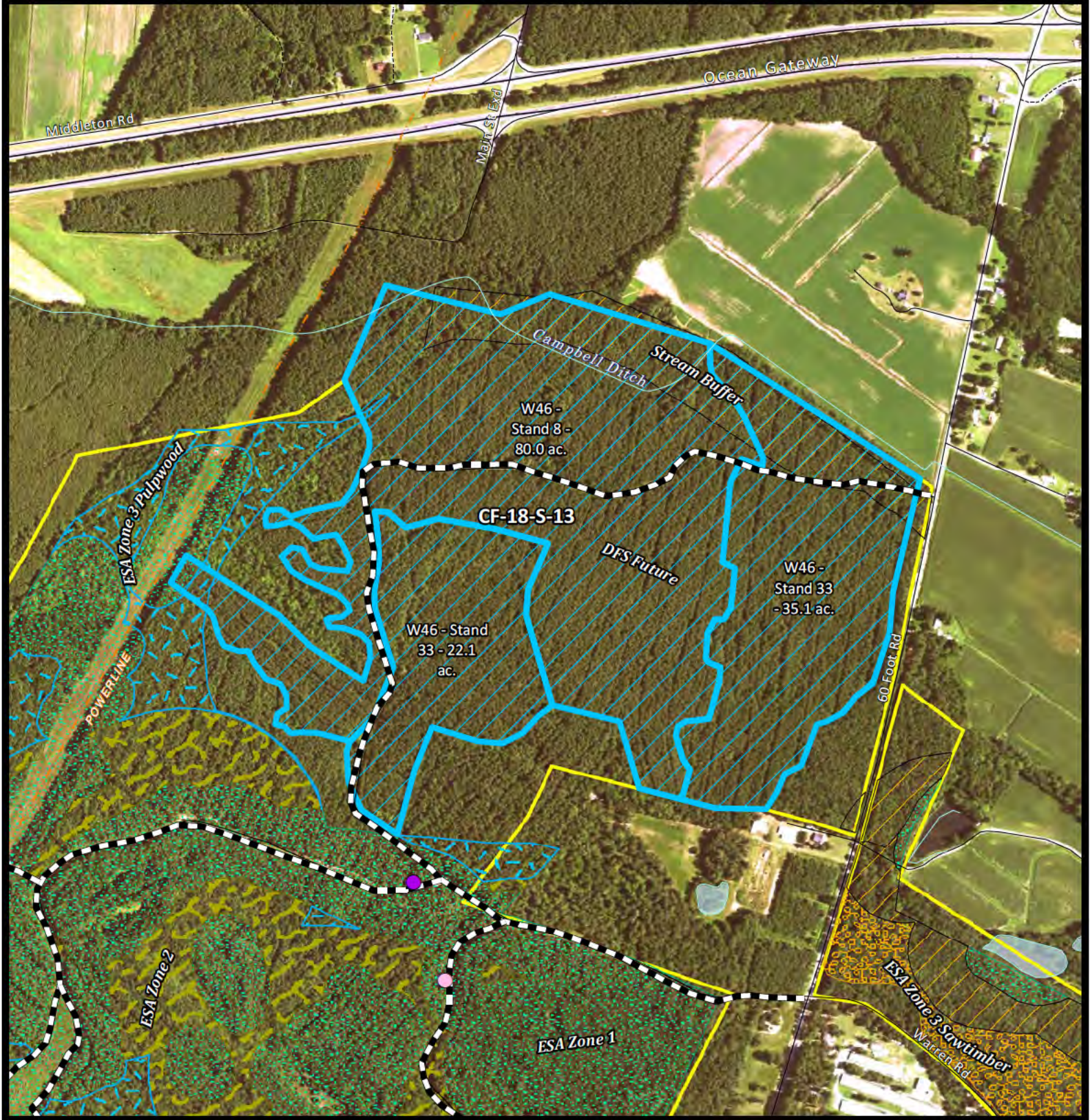
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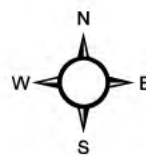
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**CF-18-S-13**

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**Legend**

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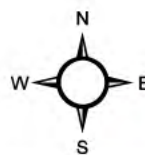
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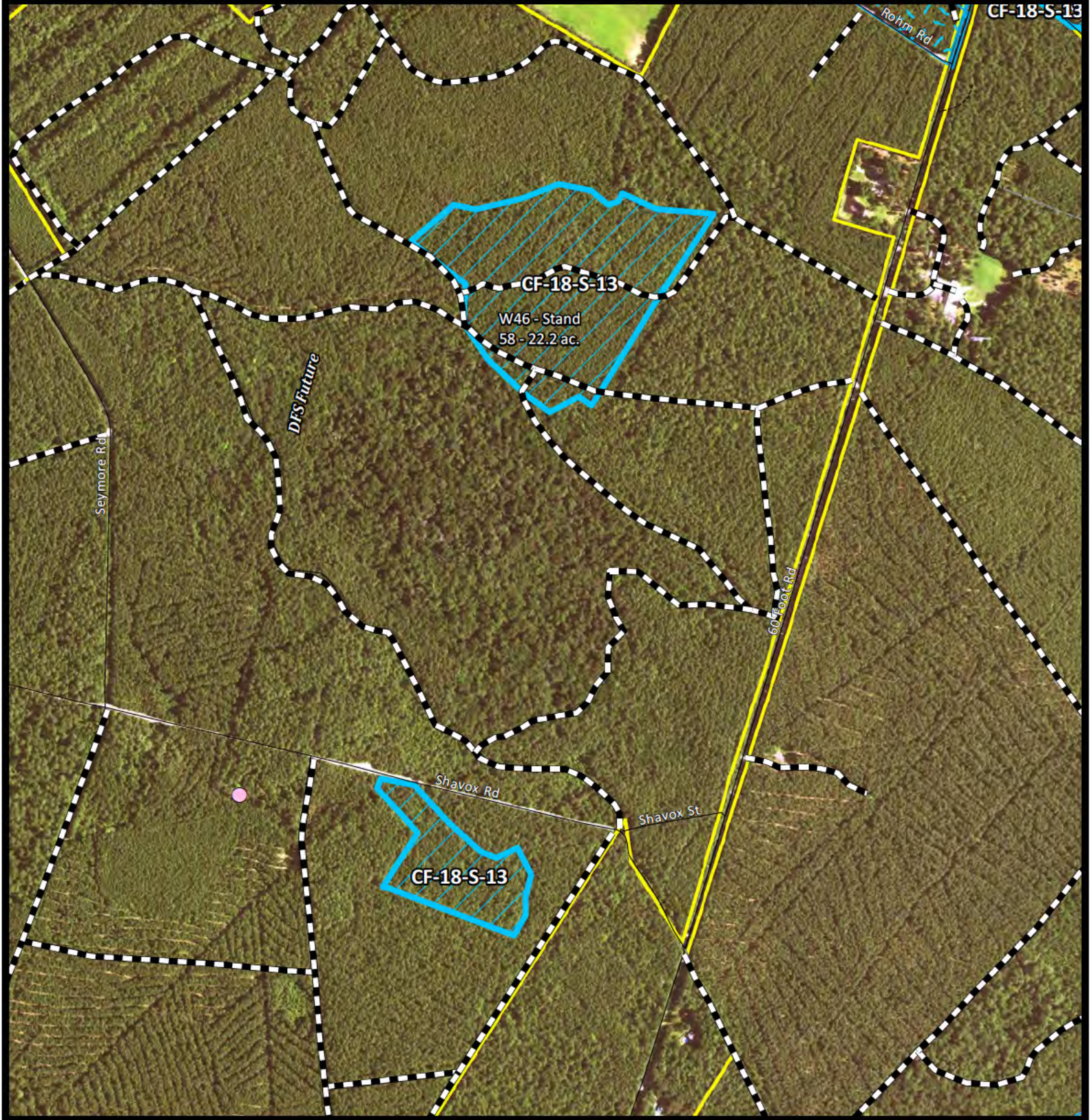
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Legend

CF AWP Activity

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-  2018 T2

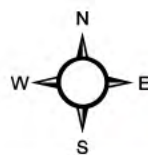
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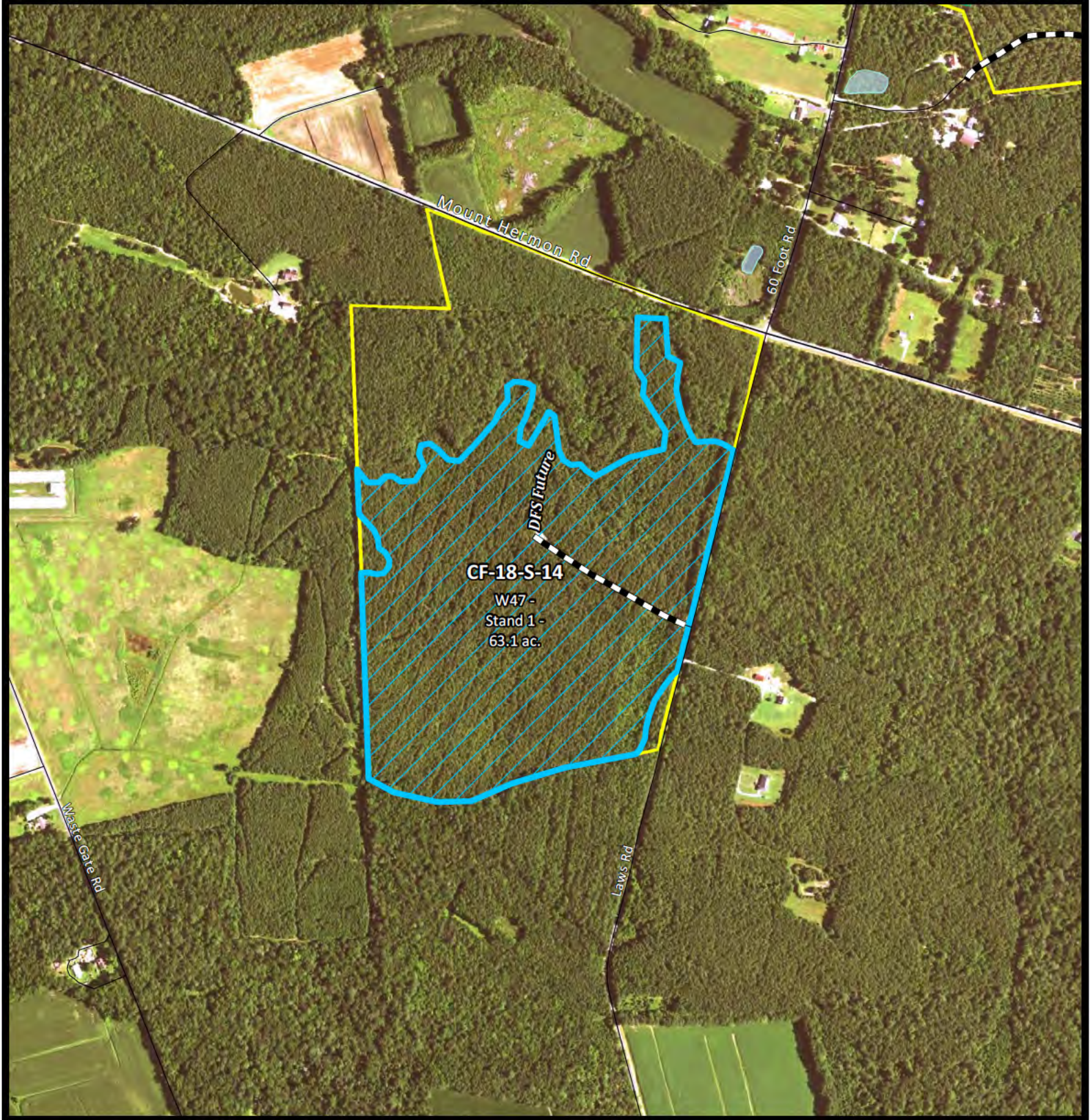
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This map is not a boundary survey





**Legend**

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-  2018 T1 2018 S
-  2018 T2

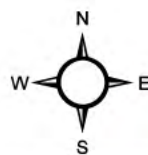
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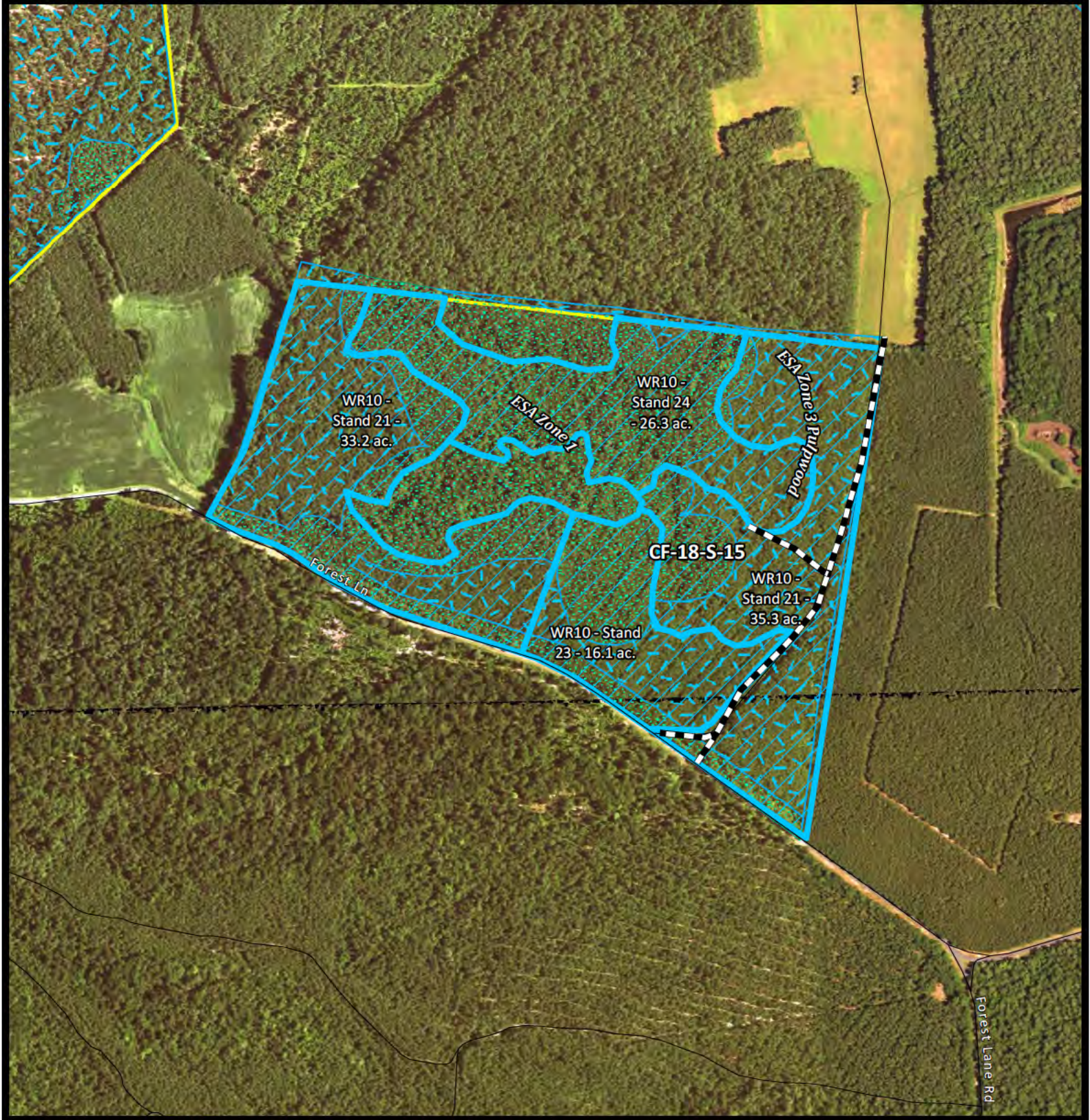
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**Legend**

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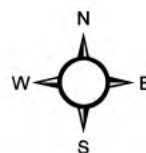
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-  2018 T1 2018 S
-  2018 T2

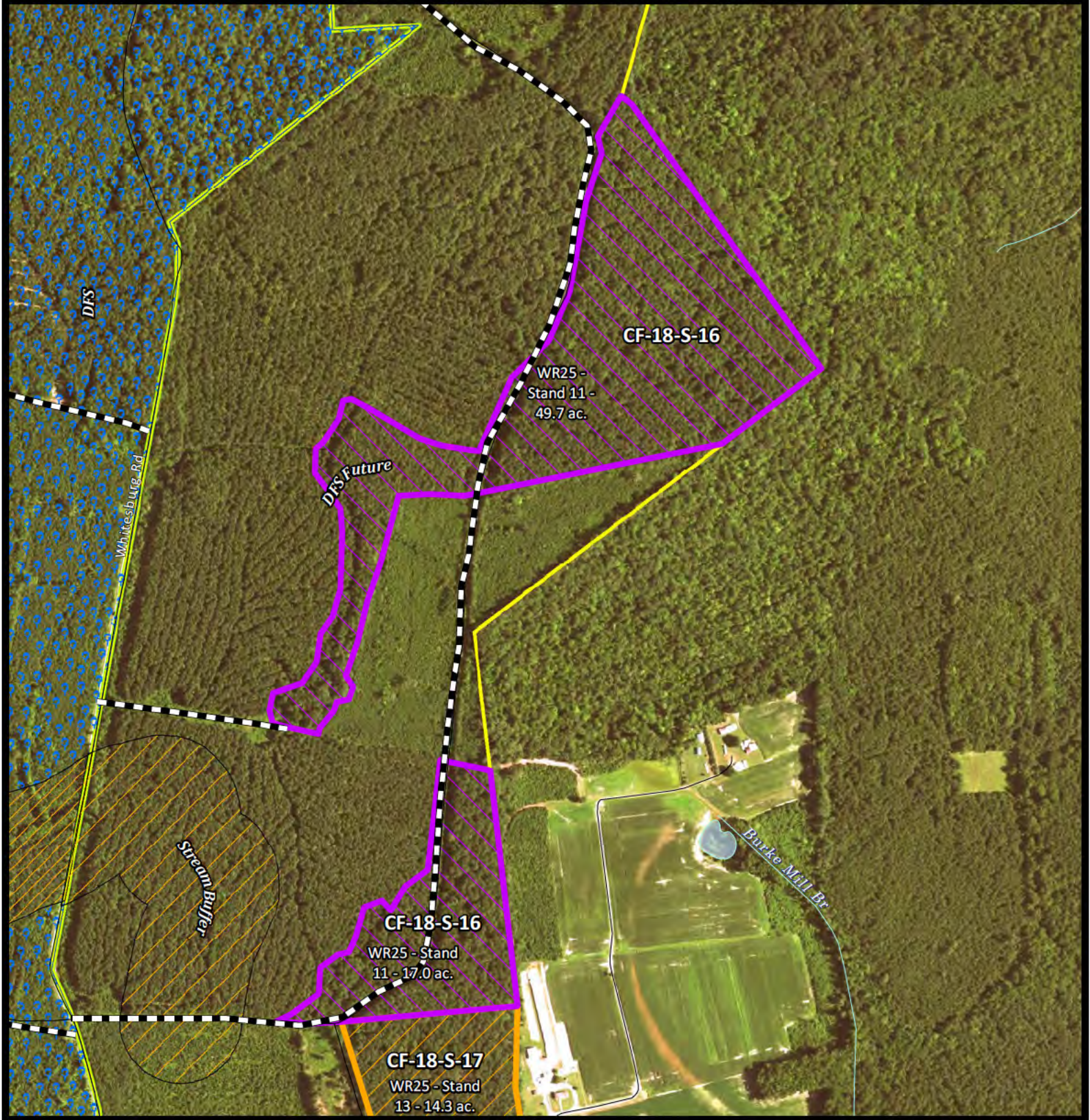
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Date: 07/2016



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**Legend**

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-  2018 T1 2018 S
-  2018 T2

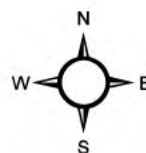
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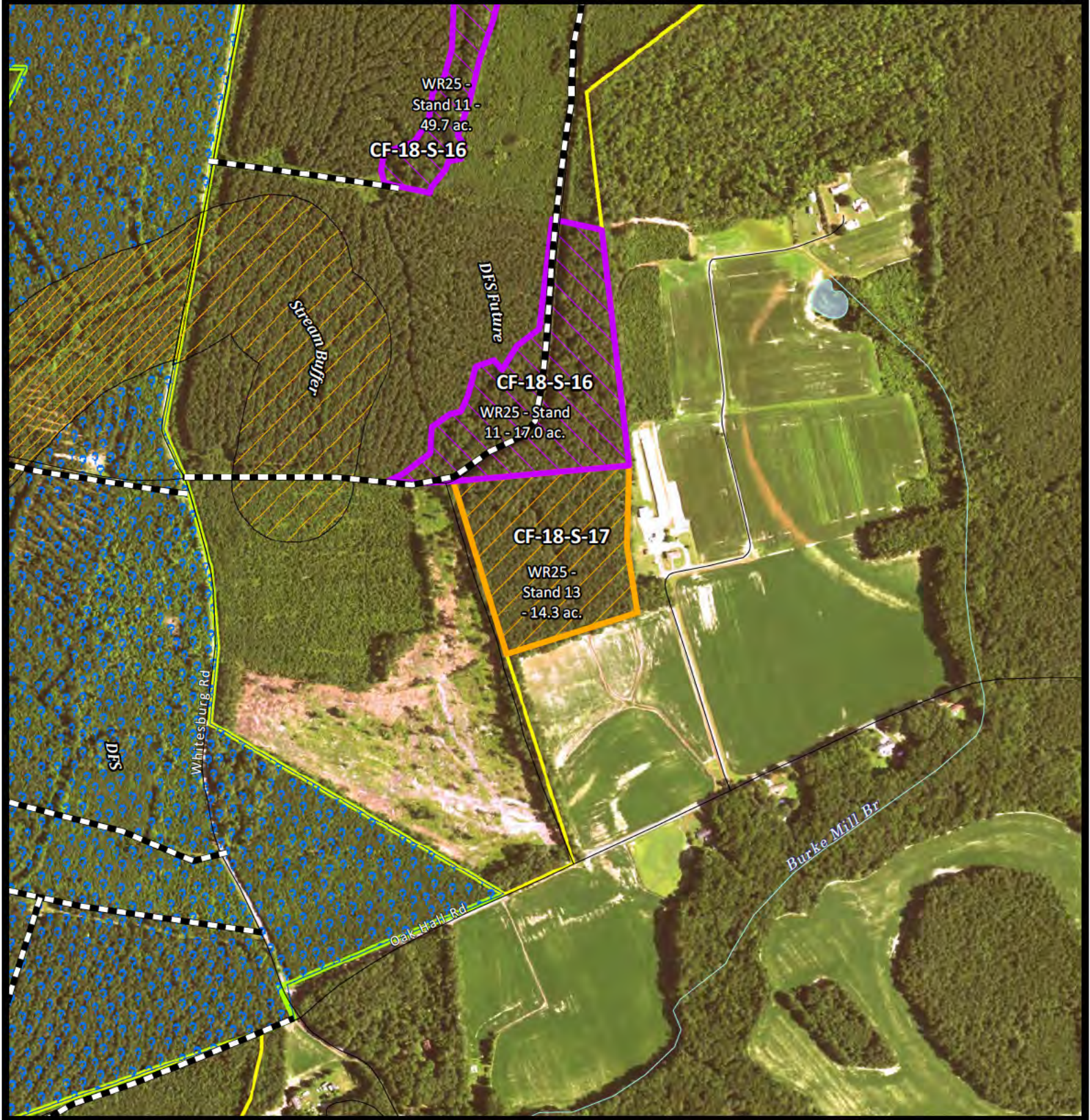
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Date: 07/2016



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**Legend**

**CF AWP Activity**

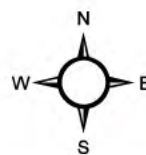
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-  2018 T1 2018 S
-  2018 T2

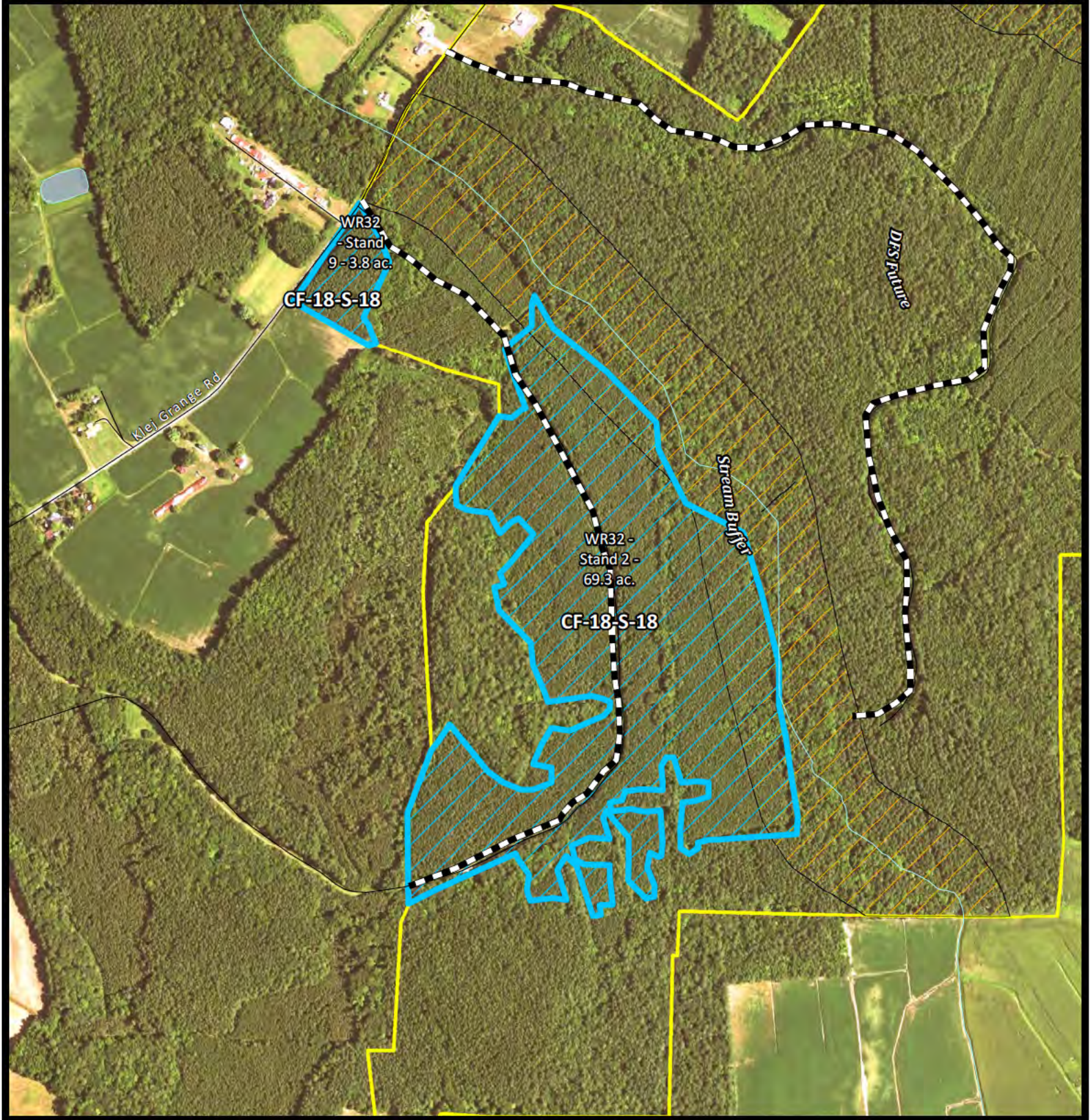
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Date: 07/2016



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**Legend**

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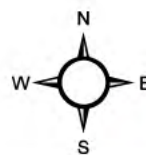
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-  2018 T2

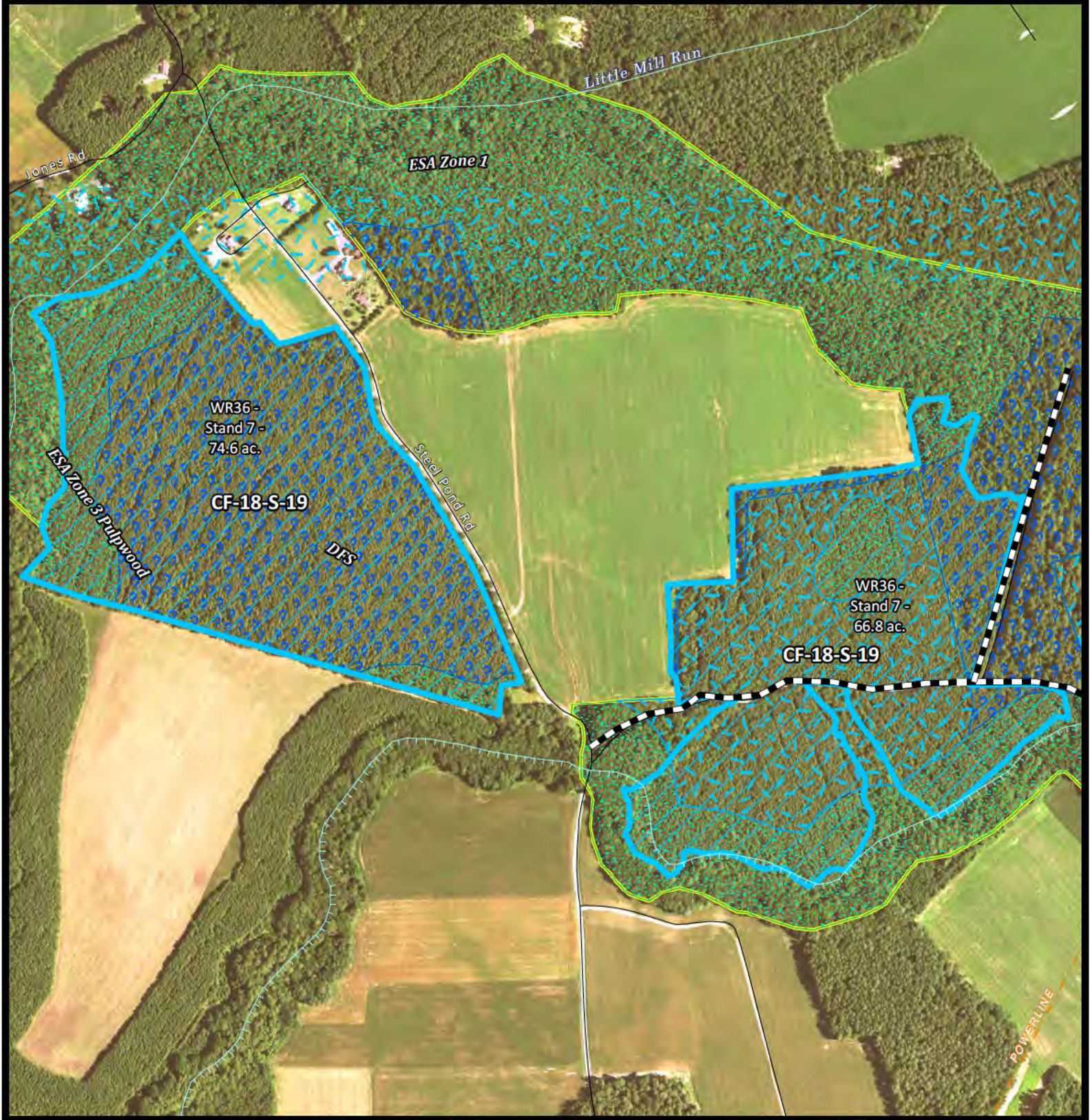
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Scale: 1:7,920  
Date: 07/2016






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**Legend**

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-  2018 T1 2018 S
-  2018 T2

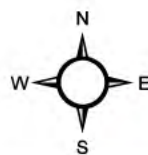
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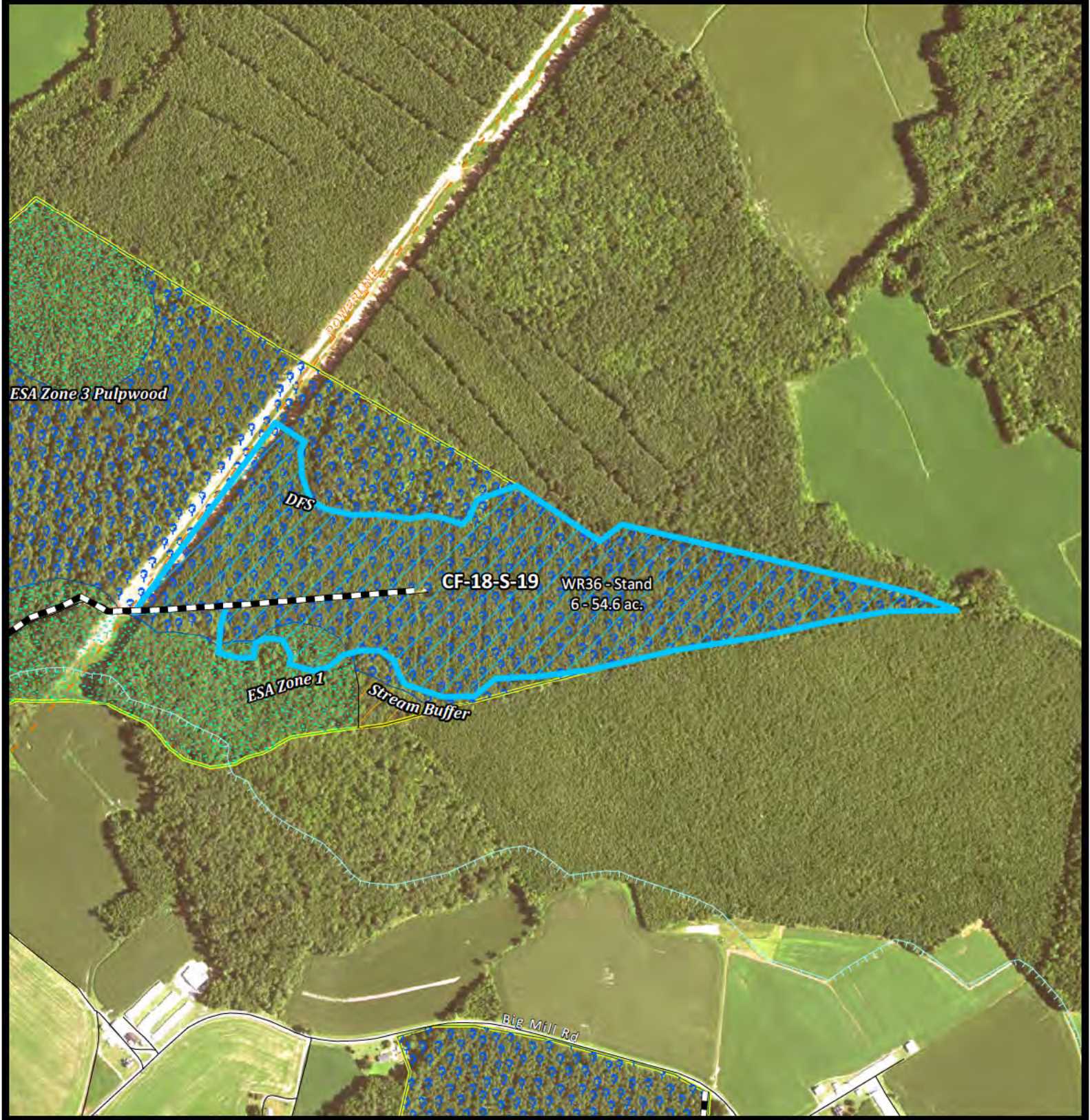
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Date: 07/2016



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**Legend**

**CF AWP Activity**

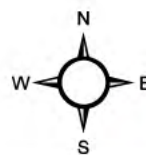
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-  2018 T1
-  2018 T1 2018 S
-  2018 T2

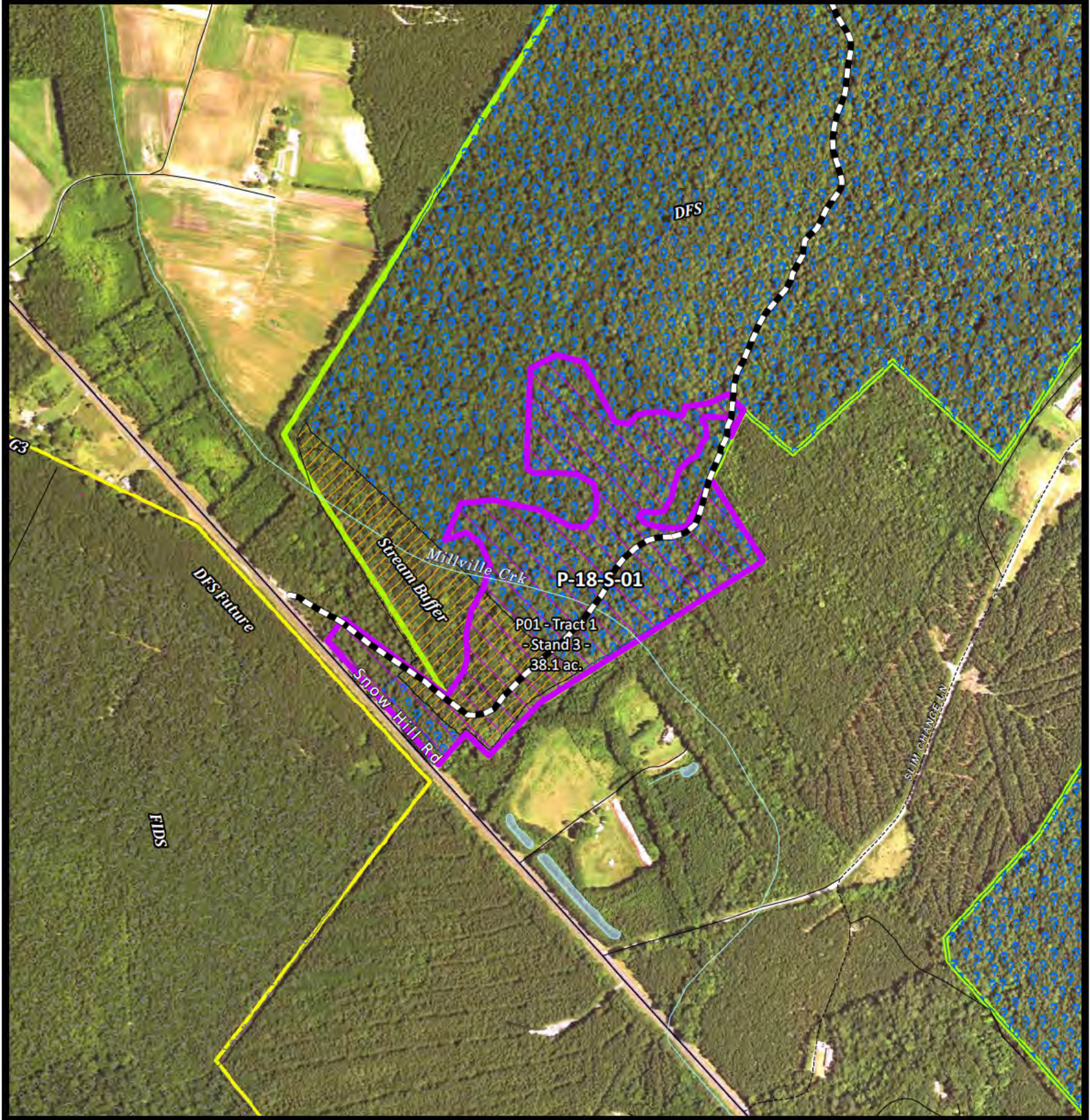
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Scale: 1:7,920  
Date: 07/2016



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**Legend**

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-  2018 T1
-  2018 FH
-  2018 VR

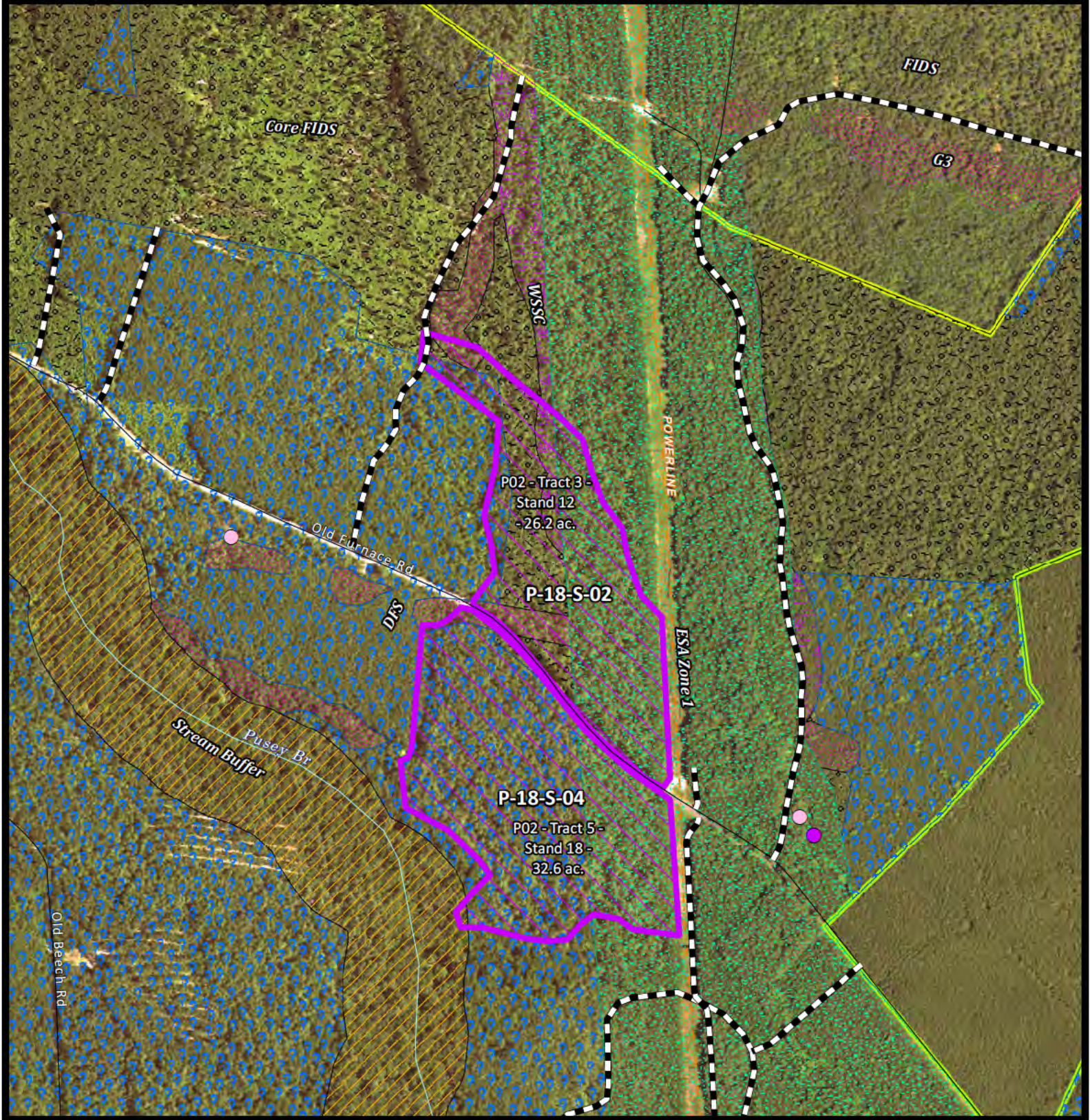
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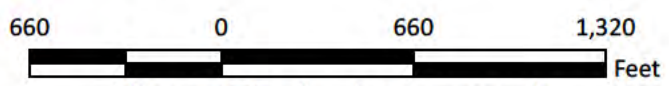
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-  2018 T1
-  2018 FH
-  2018 VR

**P-18-S-02**

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Date: 07/2016



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**Legend**

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-  2018 T1
-  2018 FH
-  2018 VR

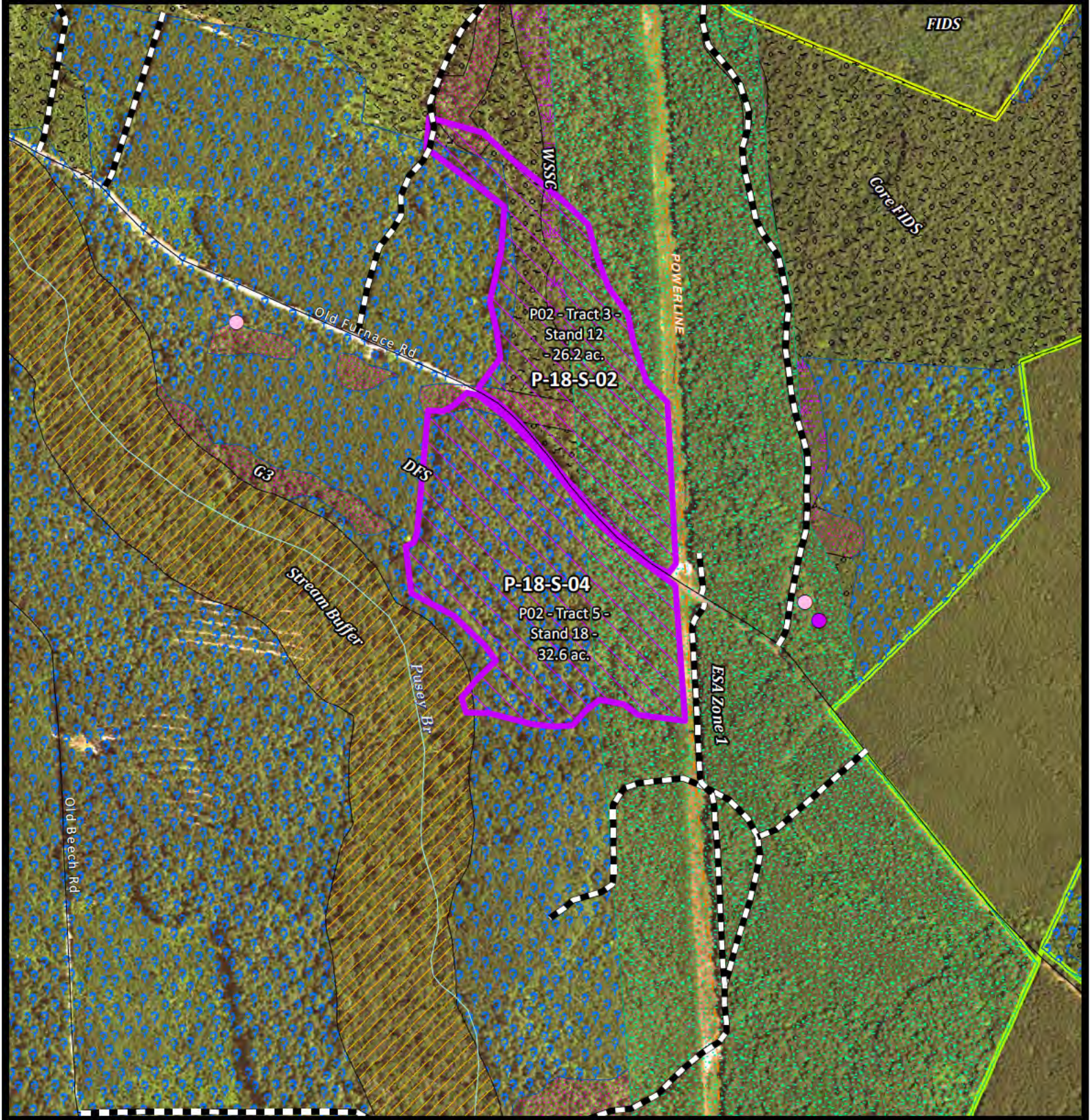
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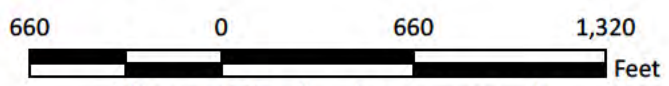
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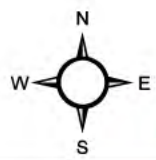
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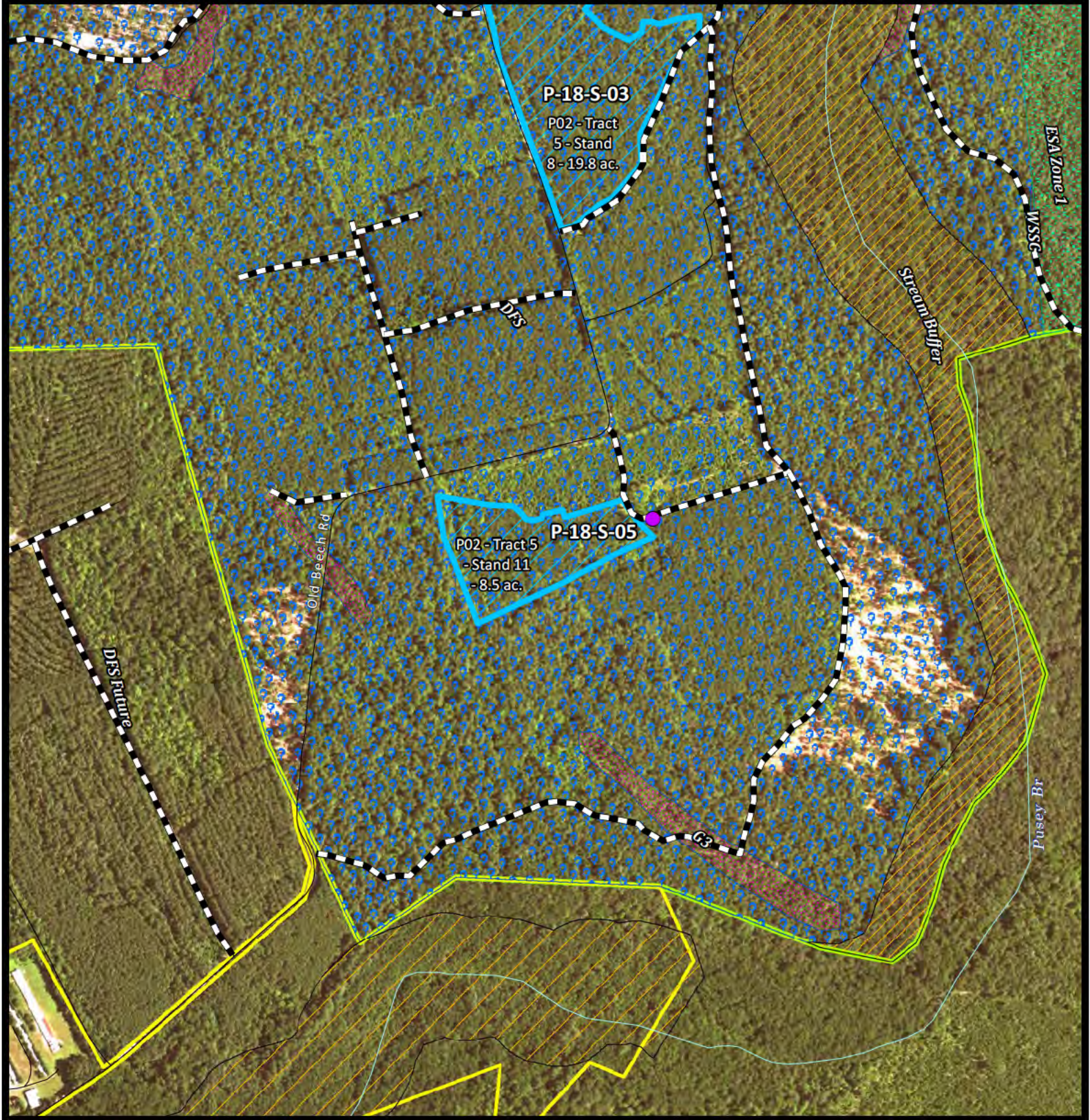
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Scale: 1:7,920  
Date: 07/2016



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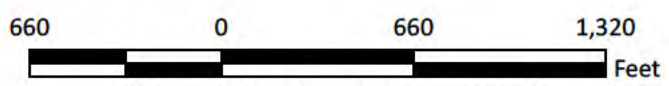
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**PSF AWP Activity**

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-  2018 FH
-  2018 VR

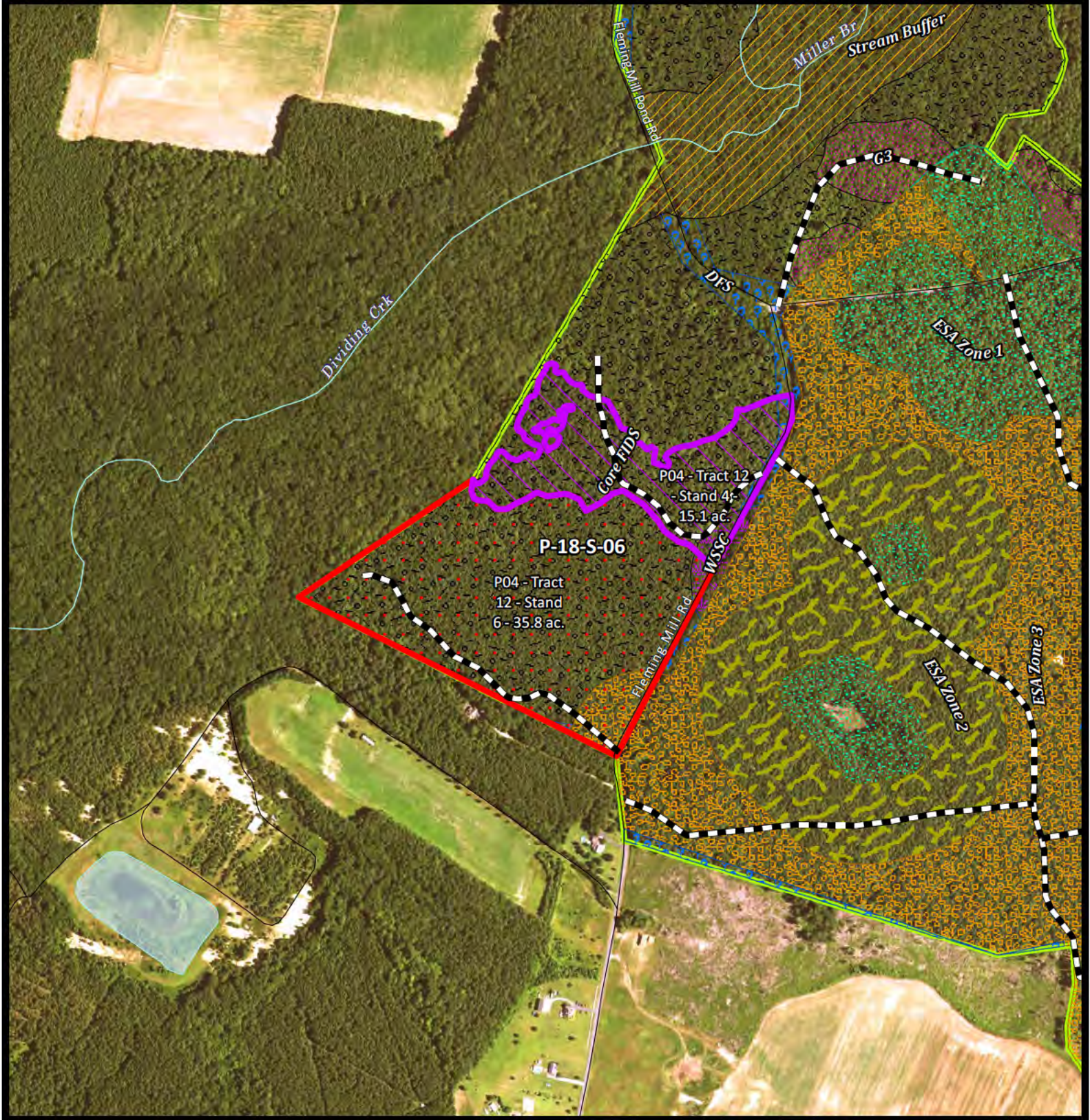
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Scale: 1:7,920  
Date: 07/2016



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This map is not a boundary survey





**Legend**

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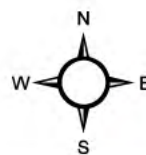
-  2018 T1
-  2018 FH
-  2018 VR

**P-18-S-06**

Scale: 1:7,920  
Date: 07/2016



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This map is not a boundary survey



## L. BUDGET

| <i>Cost of Management (*Costs will vary from year to year)</i> |                    |
|--|--------------------|
| State CF Salaries & Contract Management                        | \$ 300,000         |
| Land Operation   | \$ 400,000         |
| Inventory & Monitoring Program                                 | \$ 70,000          |
| Sustainable Forest Certification                               | \$ 15,000          |
| Watershed Improvement & Other Restoration Projects             | \$ 80,000          |
| County Payment (15% of revenues)                               | \$ 160,000         |
| Fixed Cost (ditch drainage payments to counties)               | \$ 8,000           |
| Total  | <b>\$1,033,000</b> |

| <i>Operating Revenues &amp; State Funding</i> |                    |
|---|--------------------|
| Forest Product Sale Revenues                  | \$ 650,000         |
| Hunt Club Revenues                            | \$ 400,000         |
| State Funding                                 | \$ 100,000         |
| Total   | <b>\$1,150,000</b> |

## APPENDIX A - SOIL SERIES MANAGEMENT GROUPS, ABBREVIATIONS, AND SYMBOLS

| Soil Series                           | SMG | Caroline      | Dorchester | Somerset | Wicomico      | Worcester     |
|---------------------------------------|-----|---------------|------------|----------|---------------|---------------|
| Acquango sand                         | 4   |               |            |          |               | AcB, AcC      |
| Annessex-Manokin complex              | 1   |               |            | AoA, AoB |               |               |
| Askecksy loamy sand                   | 1   | AsA           |            |          | AsA           | As            |
| Askecksy-Urban land complex           | 1   |               |            |          | AtA           |               |
| Beaches                               | -   |               | Be         | Be       | Be            | Be            |
| Berryland mucky loamy sand            | 2   |               |            |          | BhA           | BhA           |
| Bestpitch and Transquaking            | 5   |               | BT         |          |               |               |
| Boxiron and Broadkill soils           | 1   |               |            | BX       |               | BX            |
| Broadkill mucky silt loam             | 1   |               |            |          |               | Br            |
| Brockatonorton sand                   | 3   |               |            |          |               | BkA, BkB      |
| Cedartown loamy sand                  | 4   | CdA, CdB      |            |          | CdA           |               |
| Cedartown-Rosedale complex            | 4   |               |            |          |               | CeA, CeB      |
| Chicone mucky silt loam               | 5   |               | Ch         |          |               | Ch            |
| Corsica and Fallsington soils         | 2   |               |            | CRA      |               |               |
| Corsica mucky loam                    | 1   | CoA           |            |          | CoA           |               |
| Corsica mucky loam, Carolina Bay      | 1   | CrA           |            |          |               |               |
| Downer loamy sand                     | 3   |               | DnC        |          |               |               |
| Downer sandy loam                     | 3   |               | DoA, DoB   | DoA, DoB |               |               |
| Elkton loam                           | 1   |               | EkA        |          |               |               |
| Elkton mucky silt loam                | 1   |               | EoA        |          |               |               |
| Elkton sandy loam                     | 1   |               |            |          |               | EkA           |
| Elkton silt loam                      | 1   | EmA           | EmA        | EmA      |               | EmA           |
| Endoquepts and Sulfaquepts            | 5   |               |            | EQB      | EQB           |               |
| Evesboro loamy sand                   | 4   |               |            |          |               | EvA, EvB, EvC |
| Evesboro sand                         | 4   | EwA, EwB      | EwC, EwE   |          | EwA, EwB, EwC |               |
| Evesboro-Galestown complex            | 4   |               |            | EzB      |               |               |
| Fallsington loam                      | 2   | FgA           |            | FgA      | FgA           |               |
| Fallsington sandy loam                | 2   | FaA           | FaA        | FaA      | FaA           | FaA           |
| Fallsinston-Glassboro complex         | 2   |               |            | FhA      |               |               |
| Fort Mott loamy sand                  | 3   |               | FmA, FmB   |          | FmA, FmB      | FmA, FmB      |
| Fort Mott, Evesboro, and Downer soils | 3   |               | FNE        |          |               |               |
| Fort Mott-Urban land complex          | 3   |               |            |          | FuA, FuB      |               |
| Galestown loamy sand                  | 4   | GaA, GaB      | GaA, GaB   | GaB      | GaA, GaB      | GaA, GaB, GaC |
| Galestown and Rosedale soils          | 4   | GAE           |            |          |               |               |
| Glassboro loam                        | 2   |               |            | GIA      |               |               |
| Hambrook loam                         | 3   | HcA           | HcA, HcB   | HcA      |               |               |
| Hambrook sandy loam                   | 3   | HbA, HbB, HbC |            | HbB      | HbA, HbB      | HbA, HbB      |
| Hambrook-Sassafras complex            | 3   |               |            |          |               |               |
| Hammonton loamy sand                  | 3   |               |            | HmA      |               | HmA, HmB      |
| Hammonton sandy loam                  | 3   | HnA           | HnA        | HnA      | HnA           |               |
| Hammonton-Fallsington-Corsica complex | 2   | HoB           |            |          |               |               |
| Hammonton-Glassboro complex           | 3   |               |            | HgB      |               |               |
| Honga peat                            | 5   |               | Ho         | Ho       | Ho            |               |
| Hurlock loamy sand                    | 2   |               |            | HuA      |               | HuA           |
| Hurlock sandy loam                    | 2   | HvA           | HvA        | HvA      | HvA           |               |
| Ingleside loamy sand                  | 3   | IeA, IeB, IeC |            |          | IeA, IeB      |               |
| Ingleside sandy loam                  | 3   | IgA, IgB, IgC | IgA, IgB   | IgA, IgB |               |               |
| Ingleside-Runclint complex            | 3   |               |            | IkC      |               |               |
| Kentuck silt loam                     | 5   |               |            |          |               | KeA           |
| Keyport fine sandy loam               | 3   |               |            |          | KfA, KfB      |               |
| Keyport silt loam                     | 3   |               | KpA        | KpA      |               |               |
| Klej loamy sand                       | 2   |               |            |          |               | KsA, KsB      |
| Klej-Galloway complex                 | 2   | KgB           | KgB        | KgB      | KgB           |               |
| Lenni loam                            | 2   | LgA           |            |          | LgA           |               |
| Lenni sandy loam                      | 2   | LhA           |            |          | LfA           |               |
| Longmarsh and Indiantown soils        | 5   | LO            |            | LO       | LO            | LO            |
| Manahawkin muck                       | 5   | Ma            |            | Ma       | Ma            | Ma            |
| Manokin silt loam                     | 3   |               |            | MdA, MdB |               |               |
| Matapeake fine sandy loam             | 3   |               |            |          |               | MeA, MeB      |

| Soil Series                         | SMG | Caroline      | Dorchester | Somerset                     | Wicomico      | Worcester     |
|-------------------------------------|-----|---------------|------------|------------------------------|---------------|---------------|
| Matapeake silt loam                 | 3   |               |            |                              |               | MkA, MkB      |
| Mattapex fine sandy loam            | 3   |               | MpA        |                              | MpA           | MpA, MpB      |
| Mattapex silt loam                  | 3   | MtA, MtB      | MtA, MtB   |                              | MtA, MtB      | MtA, MtB      |
| Miscellaneous water                 | -   | M-W           |            | M-W                          | M-W           |               |
| Mullica-Berryland complex           | 2   |               |            | MuA                          | MuA           | MuA           |
| Nanticoke and Mannigton soils       | 5   | NM            | NM         | NM                           | NM            | NM            |
| Nassawango fine sandy loam          | 3   |               |            |                              | NnA, NnB      | NnA, NnB      |
| Nassawango silt loam                | 3   | NsA, NsB      | NsA, NsB   |                              | NsA, NsB      | NsA, NsB      |
| Othello and Kentuck soils           | 1   |               | OkA        | OKA                          | OKA           |               |
| Othello silt loam                   | 1   |               | OtA        | OtA                          | OtA           | OtA           |
| Othello silt loam, loamy substratum | 1   |               |            | OoA                          |               |               |
| Othello-Fallsington complex         | 2   |               |            | OvA                          |               |               |
| Pepperbox-Rockawalkin complex       | 3   |               |            |                              | PrA, PrB      |               |
| Pone mucky loam                     | 2   |               | PmA        |                              |               |               |
| Pone mucky sandy loam               | 2   |               | PnA        |                              |               |               |
| Puckum mucky peat                   | 5   | Pk            | Pk         | Pk                           | Pk            | Pk            |
| Purnell peat                        | 5   |               |            |                              |               | Pu            |
| Queponco loam                       | 3   |               |            | QbB                          |               |               |
| Queponco silt loam                  | 3   |               |            | QeA, QeB                     |               |               |
| Quindocqua silt loam                | 1   |               |            | QuA                          |               |               |
| Rockawalkin loamy sand              | 3   | RkA           |            |                              | RkA, RkB      |               |
| Rockawalkin-Urban land complex      | 3   |               |            |                              | RnA, RnB      |               |
| Rosedale loamy sand                 | 4   | RoA, RoB      |            |                              | RoA           | RoA, RoB      |
| Runclint loamy sand                 | 4   |               |            |                              | RuA, RuB      | RuA, RuB      |
| Runclint sand                       | 4   |               | RsA, RsB   | RsB                          | RsA, RsB      |               |
| Runclint-Cedartown complex          | 4   |               |            | RwB, RwC                     | RwA, RwB      |               |
| Runclint-Evesboro complex           | 4   |               |            | RxB                          |               |               |
| Runclint-Urban land complex         | 4   |               |            |                              | RzA, RzB      |               |
| Sassafras loam                      | 3   |               | SnA        |                              |               |               |
| Sassafras sandy loam                | 3   | SaA, SaB      |            |                              |               | SaA, SaB, SaC |
| Sunken mucky silt loam              | 5   |               | SuA        | SuA                          | SuA           | SuA           |
| Tangier mucky peat                  | 5   |               |            | Ta                           |               |               |
| Transquaking and Mispillion soils   | 5   | TP            |            | TP                           | TP            | TP            |
| Udorthents                          | 4   | UbB, UfF, UoB | UzB        | UbB, UfB, UfF, UgB, UoB, UwB | UbB, UfB, UoB | UzB           |
| Unicorn-Sassafras complex           | 3   |               |            |                              |               |               |
| Urban Land                          | -   | Up            |            |                              | Up            | UpB           |
| Urban Land-Acquango complex         | -   |               |            |                              |               | UcB           |
| Urban Land-Askecksy complex         | -   |               |            |                              |               | UmA           |
| Urban Land-Brockatonorton complex   | -   |               |            |                              |               | UnA           |
| Urban Land-Evesboro complex         | -   |               |            |                              | UrB           |               |
| Urban Land-Fort Mott complex        | -   |               |            |                              | UsB           |               |
| Urban Land-Rockawalkin complex      | -   |               |            |                              | UtB           |               |
| Urban Land-Runcline complex         | -   |               |            |                              | UuB           |               |
| Urban Land-Udorthents complex       | -   |               |            |                              | UwB           | UwB           |
| Water                               | -   | W             | W          | W                            | W             | W             |
| Woodstown loam                      | 3   | WoA, WoB      | WoA        | WoA                          |               |               |
| Woodstown sandy loam                | 3   | WdA, WdB      | WdA, WdB   | WdA, WdB                     | WdA           | WdA, WdB      |
| Woodstown-Glassboro complex         | 3   |               |            | WpA                          |               |               |
| Zekiah sandy loam                   | 5   | Za            | Za         |                              |               | Za            |
| Zekiah silt loam                    | 5   |               |            |                              | Zk            | Zk            |

## CHESAPEAKE FOREST/POCOMOKE STATE FOREST: SOIL MANAGEMENT GROUPS

This is a forest management grouping designed specifically for the Chesapeake Forest and Pocomoke State Forest Sustainable Forest Management Plans, based on the soil series descriptions contained in the six county surveys.

### Management Group 1 – Poorly and very poorly drained medium textured soils with heavy subsoils.

|        |                                  |                                     |
|--------|----------------------------------|-------------------------------------|
| Soils: | Annessex-Manokin complex         | Elkton sandy loam                   |
|        | Askecksy loamy sand              | Elkton silt loam                    |
|        | Corsica mucky loam               | Othello and Kentuck soils           |
|        | Corsica mucky loam, Carolina Bay | Othello silt loam                   |
|        | Crosiadore silt loam             | Othello silt loam, loamy substratum |
|        | Elkton loam                      | Quindocqua silt loam                |
|        | Elkton mucky silt loam           |                                     |

Description: These are poor and very poorly drained, medium textured soils that have a fine-textured subsoil. They are generally found in broad upland flats, depressions, and swales. Slopes are 0 to 2%. Ponding may occur after heavy rains, and high water table may limit access from December through May. These soils may have seasonal limitations for wetness, but the firm subsoils may allow mechanical operations, particularly with low-impact equipment, that allows them to be managed with intensive forestry methods.

### Management Group 2 – Poorly and very poorly drained loam and sandy loam soils with sandy and medium textured subsoils.

|        |                                   |                                      |
|--------|-----------------------------------|--------------------------------------|
| Soils: | Berryland mucky loamy sand        | Klej-Galloway complex                |
|        | Corsica and Fallsington soils     | Klej-Hammonton complex               |
|        | Fallsington loam and sandy loam   | Lenni loam and sandy loam            |
|        | Fallsington-Glassboro complex     | Mullica-Berryland complex            |
|        | Glassboro loam                    | Othello-Fallsington complex          |
|        | Hurlock loamy sand and sandy loam | Pone mucky loam and mucky sandy loam |
|        | Klej loamy sand                   |                                      |

Description: Medium and sandy-textured, poorly and very poorly drained soils on upland flats. Small areas in depressions will pond in very wet periods. Many of these soils lack firm subsoils, and when saturated may be very subject to soil rutting by equipment. This leads to shorter-season access, which may limit their use. With appropriate seasonal scheduling, these soils are suited for intensive forest management.

### Management Group 3 – Well drained and moderately well drained sandy and loamy soils that formed in sandy materials and have sandy loam to silty or sandy clay subsoils.

|        |                                       |  |
|--------|---------------------------------------|--|
| Soils: | Downer loamy sand and sandy loam      | Matapeake fine sandy loam and silt loam  |
|        | Fort Mott loamy sand                  | Mattapex fine sandy loam and silt loam   |
|        | Hambrook loam and sandy loam          | Nassawango fine sandy loam and silt loam |
|        | Hambrook-Sassafras complex            | Pepperbox-Rockawalkin complex            |
|        | Hammonton loamy sand and sandy loam   | Queponco loam and silt loam              |
|        | Hammonton-Glassboro complex           | Rockawalkin loamy sand                   |
|        | Ingleside loamy sand and sandy loam   | Sassafras sandy loam                     |
|        | Ingleside-Runclint complex            | Woodstown sandy loam                     |
|        | Keyport fine sandy loam and silt loam | Woodstown-Glassboro complex              |
|        | Manokin silt loam                     |  |

Description: Well drained soils that are generally better-suited to pine than to hardwoods. These may occur on slopes of 0 to 10 percent. On the steeper slopes erosion potential needs to be addressed. Rutting and soil damage by machine operations



are minor problems and most sites will have good access and operability most of the year. These are the best suited soils for intensive forest management.

**Management Group 4 – Deep, sandy soils that are well to excessively well drained.**

|        |                              |                              |
|--------|------------------------------|------------------------------|
| Soils: | Cedartown loamy sand         | Rosedale loamy sand          |
|        | Evesboro loamy sand and sand | Runclint loamy sand and sand |
|        | Evesboro-Galestown complex   | Runclint-Cedartown complex   |
|        | Galestown loamy sand         | Runclint-Evesboro complex    |
|        | Galestown and Rosedale soils | Udorthents                   |

Description: These sandy soils have few operating limitations due to soil wetness, and can provide sites for mechanical activities during wet seasons. Productivity is low, and some sites may be occupied by Virginia or shortleaf pine. Some may occur in a landscape pattern of sand ridges interspersed with low wet soils or Delmarva Bays, and provide an important habitat type, particularly for herpivores and invertebrates. Some may have slopes of up to 10-15%, which may limit management. Udorthents are soils that have been mechanically altered and may occur mainly as borrow pits, landfills, or other re-worked areas. Intensive forest management is probably limited on many of these soils.

**Management Group 5 – Low-elevation, poorly and very poorly drained soils that formed in organic materials. They may lie in flood plains, freshwater wetlands, or areas that can be affected by tidal flooding.**

|        |                                |                                   |
|--------|--------------------------------|-----------------------------------|
| Soils: | Chicone mucky silt loam        | Nanticoke and Mannington soils    |
|        | Honga peat                     | Nanticoke silt loam               |
|        | Johnston loam                  | Puckum mucky peat                 |
|        | Kentuck mucky silt loam        | Sunken mucky silt loam            |
|        | Kentuck silt loam              | Tangier mucky peat                |
|        | Longmarsh and Indiantown soils | Transquaking and Mispillion soils |
|        | Manahawkin muck                | Zekiah sandy loam and silt loam   |

Description: These poorly drained soils occupy flood plains and both fresh and brackish marshes. Some lie at elevations where flooding by salt water during high tides or storms is a possibility and trees may be affected by salt spray. The sites are marginal in terms of timber or pulpwood productivity, and access is often very restricted. Many of these areas will be riparian forests and other water-related areas that should be managed primarily for water quality and wildlife purposes.

**Other types without Management Groups – Other map units that are too small, are comprised of minor soil types, or are not suitable for forest management.**

|        |                     |            |
|--------|---------------------|------------|
| Soils: | Beaches             | Urban Land |
|        | Miscellaneous water | Water      |



# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION



Maryland State Highway Administration / Office of Environmental Design  
ATTN: Terry Maxwell  
707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637

**Application Submission Deadline: July 1, 2016**

Please email [tmaxwell@sha.state.md.us](mailto:tmaxwell@sha.state.md.us) with any questions about this application.

**Project Title:**

Algonquin Trail Extension

**Trail Uses**

*Check all that apply*

- Diverse    Motorized Recreational    Non-motorized Recreational    Transportation Trail

**Project Types**

**Construction**

- Construction of new trail or facilities    Maintenance of trail or facilities (with ground disturbance)

**Non-Construction**

- Purchase or lease of equipment    Maintenance of trail or facilities (without ground disturbance)  
 Acquisition of easements    Interpretive/educational programs/facilities

**Project Cost:**

|                     |                |                    |
|---------------------|----------------|--------------------|
| <b>\$24,000</b>     | <b>\$4,800</b> | <b>\$28,800</b>    |
| RTP Funding Request | Matching Funds | Total Project Cost |

**Project Sponsor (Applicant)**

|                        |  |
|------------------------|--|
| Project Sponsor Entity | Department of Natural Resources          |
| Project Manager        | Michael Schofield                        |
| Title                  | Forest Manager                           |
| Organization           | Forest Service                           |
| Address 1              | 6572 Snow Hill Road, Snow Hill, MD 21863 |
| Address 2              |  |
| Telephone              | (410)632-3732                            |
| Cell Phone             | (410)713-5091                            |
| Fax                    | (410)6323730                             |
| E-mail                 | Mike.schofield@maryland.gov              |

**1. Project Location**

This project is located in the Chesapeake Forest in Worcester County Maryland (see attached map).

# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

Maryland State Highway Administration / Office of Environmental Design  
ATTN: Terry Maxwell  
707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637



**Application Submission Deadline: July 1, 2016**

## 2. Project Abstract

This project will.....

Enhance the existing Algonquin Cross County Trail (RT13-31) by creating a 1 mile single track loop trail and extending the round trip distance of the Algonquin trail to 26.2 (marathon length).

Benefits the trail user by.....

Providing a shorter option for recreationalists to try, while creating a marathon length trail for community adventure races.

Preliminary on site scouting and a GIS exercise was performed by the Forest Service to determine project feasibility. This project is designed to create a shorter loop option for those not wanting to adventure deep within the forest. This additional length loop trail will also extend the popular Algonquin Cross County Trail to the marathon length of 26.2 miles connecting to Milburn Landing State Park. The new length will attract long distance runners and extreme back country hikers and runners to the area.

Trail monitoring activities with digital trail counters, Facebook and blog sites has indicated a significant increase in the use of the Algonquin Cross County Trail for back country runners and hikers. By extending this popular trail it is sure to increase the amount of tourism to the lower Shore, particularly by the extreme running community. This project is located just 10 miles south from the City of Salisbury (est. pop. 31,243) and just 7 miles from Snow Hill (est. pop. 2,111). ***This trail is located within the Chesapeake Bay Gateway & Water Trail Network.***

## 3. Project Summary

| Task No. & Name               | Task Description  |
|-------------------------------|---|
| 1. Clear brush & debris       | Remove brush & debris from proposed loop trail                                  |
| 2. Install trail side markers | Install new fiberglass trail markers w/QR codes                                 |
| 3. Install trail head sign    | Install new trailhead sign that includes a map to the surrounding trail systems |

## 4. Project Property Owner

This project is located on State of Maryland property, which is managed by the Department of natural Resources, Maryland Forest Service (Project Sponsor).

## 5. Project length

New construction of single track trail is 1.0 mile long X 2' wide. The surface of the trail is dirt.

## 6. Prior Projects

**RT07-41** Tom Tyler Demonstration Forest & Nature Trail, \$3,500 reimbursed for trail enhancement supplies & materials. Project completed.

**RT08-26** WDF & CF Trail Enhancement Project, \$28,000 reimbursed for labor used to maintain and enhance existing horseback trails. Project completed.

**RT09-25** CF 2009 Green Hill Trail Enhancement Project, \$26,052 reimbursed for labor used to maintain and enhance existing multi-use trails. Project completed.

**RT07-46** Foster Trail Enhancement Project, \$12,000 reimbursed for labor used to enhancement trail system. Project completed.

**RT10-31** Milburn Landing, Dividing Creek & Whitesburg Trail

# FY 2017 RECREATIONAL TRAILS PROGRAM

## FUNDING APPLICATION

Maryland State Highway Administration / Office of Environmental Design  
ATTN: Terry Maxwell  
707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637



**Application Submission Deadline: July 1, 2016**

*Enhancement Project, \$30,000 reimbursed for labor used to enhance existing trail system. Project completed.*

**RT11-32** UTV Trail Enhancement Project, \$20,000 reimbursed for the purchase of a utility vehicle and attachments used for trail maintenance and construction. Project completed.

**RT11-34** Marshyhope Trail Enhancement Project, \$30,000 reimbursed for labor and supplies used to enhance existing trail system. Project completed.

**RT12-28** Equestrian Trail Enhancement Project, \$32,000 reimbursed for labor and supplies used to enhance existing trail system. Project completed.

**RT12-31** PSF Mountain Bike Trail Enhancement, \$30,000 reimbursed for labor and supplies used to enhance existing bike trail system. Project is complete.

**RT13-31** Algonquin Cross County Trail Establishment, \$25,000 reimbursed for labor and supplies to enhance existing trail and to create new connecting sections of trail. This project is complete.

**RT13-51** Wicomico Demonstration Forest Trail Enhancement, \$23,000 reimbursed for labor and supplies to enhance existing trail system. This project is complete.

**RT13-54** Mattoponi Soft Launch, \$17,000 awarded for labor and supplies used to establish a new water access point along the Pocomoke River. This project is complete.

**RT14-32** Boom Arm Mower, \$30,000 reimbursed for a replacement mowing attachment to our trail maintenance tractor. Project complete.

**RT14-41** Milburn Landing Trail Enhancement, \$30,000 reimbursed for labor and supplies used to enhance the existing trail system. This project is complete.

**RT14-49** Trail Maps, \$10,000 awarded for the design and printing of a large waterproof trail map highlighting the forest trail systems. Maps are being printed by the print company and will be delivered April 2016. This grant will be closed by June 31, 2016.

**RT14-51** Chandler Trail Enhancement, \$30,000 reimbursed for labor and supplies used to enhance the existing trail system. This project is complete.

**RT15-33** Little Blackwater Soft Launch, \$30,000 awarded for labor and supplies to create a new water trail soft launch. A permit from MDE was recently issued and construction will begin July 2016.

**RT15-45** Island Pond Soft launch, \$30,000 awarded for labor and supplies to enhance an existing soft launch. This grant was amended and approved recently. Construction will begin August 2016.

**RT15-51** PSF Handicap Hunting Trail, \$30,000 awarded for labor and supplies for the enhancement of motorized trail systems for disabled hunters. This project is complete and the close out packet will be submitted for reimbursement June 2016.

**RT15-52** CF Handicap Hunting Trail, \$30,000 awarded for labor and supplies for the enhancement of motorized trail systems for disabled hunters. This project is 70% complete. It is anticipated that this project will be completed by May 2016 and reimbursement request will be submitted in June 2016.

# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

Maryland State Highway Administration / Office of Environmental Design  
ATTN: Terry Maxwell  
707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637



**Application Submission Deadline: July 1, 2016**

## 7. Project Work Plan

| Task Number & Name             | Start Date | Duration  | Responsible Party | Justification                 |
|--------------------------------|------------|-----------|-------------------|-------------------------------|
| 1. NEPA Approval               | 11/2016    | 7 months  | Ken Jolly         | Approval                      |
| 2. PCA Codes Assigned          | 5/2017     | 1 month   | Shenika Dyson     | Tracking grant expenditures   |
| 3. Hire Contractual Staff      | 5/2017     | 4 months  | Mike Schofield    | Hiring process                |
| 4. Purchase Materials/Supplies | 6/2017     | 2 months  | Mike Schofield    | Procurement process           |
| 5. Implement Trail Work        | 9/2017     | 12 months | Mike Schofield    | Work through contract period  |
| 6. Grant Close Out             | 9/2018     | 1 month   | Shenika Dyson     | Documentation submitted to HQ |

## 8. Project Budget

| Task No. & Name                                | Requested Funds<br>80% | Sponsor Match<br>20% | Total Task Cost<br>100% |
|--|------------------------|----------------------|-------------------------|
| 1. Seasonal Labor 1477 hrs @ \$15/hour         | \$22,150               | \$4,430              | \$26,580                |
| 2. (40) Trail Side Markers @ \$16 each         | \$640                  | \$128                | \$768                   |
| 3. (3) Trail Head Sign @ \$168 each            | \$504                  | \$101                | \$605                   |
| 4. (100) Stickers for Trail markers @ .90 each | \$90                   | \$18                 | \$108                   |
| 5. (6) Aluminum Signs 18"X18" @ \$36 each      | \$216                  | \$43                 | \$259                   |
| 6. Wood Posts & Hardware                       | \$400                  | \$80                 | \$480                   |
| <b>Total Cost</b>                              | <b>\$24,000</b>        | <b>\$4,800</b>       | <b>\$36,000</b>         |

## 9. Matching Funds (20%)

| Task         | Source            | Type (Cash or In-kind) | Description Including Hours and Rate | Amount         |
|--------------|-------------------|------------------------|--------------------------------------|----------------|
| Supervision  | MD Forest Service | In kind                | 25hrs. @ \$30/hr.                    | \$750          |
| Labor        | MD Forest Service | In kind                | 135hrs. @ \$30/hr.                   | \$4,050        |
| <b>Total</b> |                   |                        |                                      | <b>\$4,800</b> |

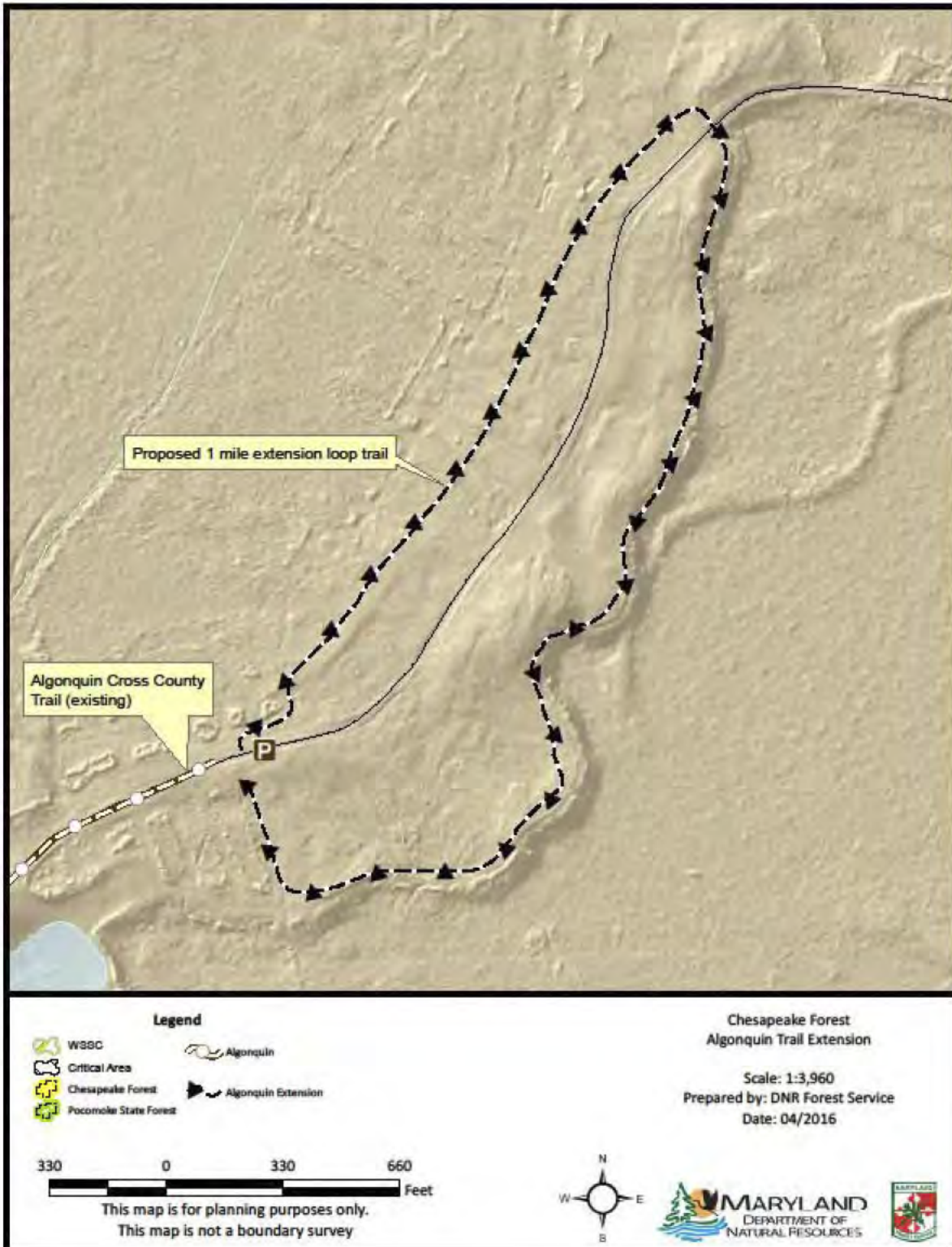
# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

Maryland State Highway Administration / Office of Environmental Design  
 ATTN: Terry Maxwell  
 707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637



**Application Submission Deadline: July 1, 2016**

## 10. Location Map



# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

Maryland State Highway Administration / Office of Environmental Design  
ATTN: Terry Maxwell  
707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637



**Application Submission Deadline: July 1, 2016**

## 11. Submission

It is preferred that applications be submitted electronically to [tmaxwell@sha.state.md.us](mailto:tmaxwell@sha.state.md.us) by **2 p.m. on July 1, 2016**. Because our email server rejects most attachments larger than 6 MB, please use an FTP site or file sharing service, to transmit the application and any large attachments. Confirmation will be sent when the application is received. Please contact us at the email above with any questions about submissions or to discuss potential projects. The Recreational Trail Advisory Committee will meet to review projects in August. Awards will be announced in the October.

### Options for Submission include:

#### Internet/E-mail (preferred)

- Complete the form on your computer and save the file on your computer.
- Email the file as an attachment to: Terry Maxwell, [tmaxwell@sha.state.md.us](mailto:tmaxwell@sha.state.md.us)
- Use an FTP site or file sharing service to transmit the application and any large attachments.

#### U.S. Mail

- Mail a completed application to:

Terry Maxwell  
Maryland Scenic Byways / Recreational Trails Program  
Maryland State Highway Administration  
707 N. Calvert Street, MS C-303  
Baltimore, MD 21202



# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION



Maryland State Highway Administration / Office of Environmental Design  
 ATTN: Terry Maxwell  
 707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637

**Application Submission Deadline: July 1, 2016**

Please email [tmaxwell@sha.state.md.us](mailto:tmaxwell@sha.state.md.us) with any questions about this application.

**Project Title:**

Mattaponi Pond Trails & Camping Project

**Trail Uses**

*Check all that apply*

- Diverse    Motorized Recreational    Non-motorized Recreational    Transportation Trail

**Project Types**

**Construction**

- Construction of new trail or facilities    Maintenance of trail or facilities (with ground disturbance)

**Non-Construction**

- Purchase or lease of equipment    Maintenance of trail or facilities (without ground disturbance)  
 Acquisition of easements    Interpretive/educational programs/facilities

**Project Cost:**

|                     |                |                    |
|---------------------|----------------|--------------------|
| <b>\$30,000</b>     | <b>\$6,000</b> | <b>\$36,000</b>    |
| RTP Funding Request | Matching Funds | Total Project Cost |

**Project Sponsor (Applicant)**

|                        |  |
|------------------------|--|
| Project Sponsor Entity | Department of Natural Resources          |
| Project Manager        | Michael Schofield                        |
| Title                  | Forest Manager                           |
| Organization           | Forest Service                           |
| Address 1              | 6572 Snow Hill Road, Snow Hill, MD 21863 |
| Address 2              |  |
| Telephone              | (410)632-3732                            |
| Cell Phone             | (410)713-5091                            |
| Fax                    | (410)6323730                             |
| E-mail                 | Mike.schofield@maryland.gov              |

**1. Project Location**

This project is located in the Pocomoke State Forest in Worcester County Maryland (see attached map).

# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION



Maryland State Highway Administration / Office of Environmental Design  
ATTN: Terry Maxwell  
707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637

**Application Submission Deadline: July 1, 2016**

## 2. Project Abstract

This project will.....

Create four new primitive camping sites with over 2 miles of new trails connecting into the Pocomoke State Forest trail network

Benefits the trail user by.....

Providing camping facilities adjacent to the forest hiking, biking, equestrian and water trails. This project is located only 400 yards from the Mattaponi Soft Launch (RT13-54) along the *Wild & Scenic Pocomoke River* corridor.

Preliminary on site scouting, mapping and a GIS exercise was performed by the Forest Service to determine project feasibility. The Maryland Fisheries Service tested the ponds and discovered a robust and diverse fish population. The Maryland Park Service has agreed to coordinate reservations for the camp sites. This project is designed to create a new opportunity on the Pocomoke State Forest for recreationalists. The four new campsites will be the first campsites ever established on the State Forest. These campsites are immediately adjacent to the ponds and multiuse trails that can take users to the interior of the forest. This project is directly related to the Mattaponi Soft Launch (RT13-54) and the Pocomoke Forest Mountain Bike Trail (RT12-31). In addition to the campsites, 2 miles of new single track trail will be constructed using existing old overgrown roads. These trails will be cleared only 2' wide and maintain a natural dirt surface. The new section of trail will connect campers and other visitors to over 20 miles of forest trails. A portion of this project is within the Critical Area (See map).

By creating this new opportunity, it will promote recreationalists to stay overnight in the area, thereby promoting tourism to the lower Shore, particularly by the extreme running community, mountain biking, equestrian and paddling groups. This project is located just 7 miles from the City of Pocomoke (est. pop. 4,168) and just 7 miles from Snow Hill (est. pop. 2,111). ***This trail is located within the Chesapeake Bay Gateway & Water Trail Network.***

## 3. Project Summary

| Task No. & Name               | Task Description  |
|-------------------------------|---|
| 1. Clear brush & debris       | Remove brush & debris from proposed 2 mile trail                                |
| 2. Install trail side markers | Install fiberglass trailside markers w/QR code                                  |
| 3. Install trail head sign    | Install new trailhead sign that includes a map to the surrounding trail systems |
| 4. Establish camping sites    | Install picnic table, fire ring and camp site marker at each site               |
| 5. Install benches            | Place benches along pond edge   |

## 4. Project Property Owner

This project is located on State of Maryland property, which is managed by the Department of natural Resources, Maryland Forest Service (Project Sponsor).

## 5. Project length

New construction single track trail is 2.0 mile long X 2' wide. There will also be three 15'X15' camp sites created and 1 30'X20' group camp site created. The surface of the trail and camp sites is dirt.

## 6. Prior Projects

***RT07-41 Tom Tyler Demonstration Forest & Nature Trail, \$3,500 reimbursed for trail enhancement supplies & materials. Project completed.***  
***RT08-26 WDF & CF Trail Enhancement Project, \$28,000 reimbursed for labor used to maintain and enhance existing horseback trails. Project***

# FY 2017 RECREATIONAL TRAILS PROGRAM

## FUNDING APPLICATION

Maryland State Highway Administration / Office of Environmental Design  
ATTN: Terry Maxwell  
707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637



**Application Submission Deadline: July 1, 2016**

*completed.*

**RT09-25** CF 2009 Green Hill Trail Enhancement Project, \$26,052 reimbursed for labor used to maintain and enhance existing multi-use trails. Project completed.

**RT07-46** Foster Trail Enhancement Project, \$12,000 reimbursed for labor used to enhancement trail system. Project completed.

**RT10-31** Milburn Landing, Dividing Creek & Whitesburg Trail Enhancement Project, \$30,000 reimbursed for labor used to enhance existing trail system. Project completed.

**RT11-32** UTV Trail Enhancement Project, \$20,000 reimbursed for the purchase of a utility vehicle and attachments used for trail maintenance and construction. Project completed.

**RT11-34** Marshyhope Trail Enhancement Project, \$30,000 reimbursed for labor and supplies used to enhance existing trail system. Project completed.

**RT12-28** Equestrian Trail Enhancement Project, \$32,000 reimbursed for labor and supplies used to enhance existing trail system. Project completed.

**RT12-31** PSF Mountain Bike Trail Enhancement, \$30,000 reimbursed for labor and supplies used to enhance existing bike trail system. Project is complete.

**RT13-31** Algonquin Cross County Trail Establishment, \$25,000 reimbursed for labor and supplies to enhance existing trail and to create new connecting sections of trail. This project is complete.

**RT13-51** Wicomico Demonstration Forest Trail Enhancement, \$23,000 reimbursed for labor and supplies to enhance existing trail system. This project is complete.

**RT13-54** Mattaponi Soft Launch, \$17,000 awarded for labor and supplies used to establish a new water access point along the Pocomoke River. This project is complete.

**RT14-32** Boom Arm Mower, \$30,000 reimbursed for a replacement mowing attachment to our trail maintenance tractor. Project complete.

**RT14-41** Milburn Landing Trail Enhancement, \$30,000 reimbursed for labor and supplies used to enhance the existing trail system. This project is complete.

**RT14-49** Trail Maps, \$10,000 awarded for the design and printing of a large waterproof trail map highlighting the forest trail systems. Maps are being printed by the print company and will be delivered April 2016. This grant will be closed by June 31, 2016.

**RT14-51** Chandler Trail Enhancement, \$30,000 reimbursed for labor and supplies used to enhance the existing trail system. This project is complete.

**RT15-33** Little Blackwater Soft Launch, \$30,000 awarded for labor and supplies to create a new water trail soft launch. A permit from MDE was recently issued and construction will begin July 2016.

**RT15-45** Island Pond Soft launch, \$30,000 awarded for labor and supplies to enhance an existing soft launch. This grant was amended and approved recently. Construction will begin August 2016.

**RT15-51** PSF Handicap Hunting Trail, \$30,000 awarded for labor and supplies for the enhancement of motorized trail systems for disabled

# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION



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**Application Submission Deadline: July 1, 2016**

hunters. This project is complete and the close out packet will be submitted for reimbursement June 2016.

**RT15-52** CF Handicap Hunting Trail, \$30,000 awarded for labor and supplies for the enhancement of motorized trail systems for disabled hunters. This project is 70% complete. It is anticipated that this project will be completed by May 2016 and reimbursement request will be submitted in June 2016.

## 7. Project Work Plan

| Task Number & Name             | Start Date | Duration  | Responsible Party | Justification                 |
|--------------------------------|------------|-----------|-------------------|-------------------------------|
| 1. NEPA Approval               | 11/2016    | 7 months  | Ken Jolly         | Approval                      |
| 2. PCA Codes Assigned          | 5/2017     | 1 month   | Shenika Dyson     | Tracking grant expenditures   |
| 3. Hire Contractual Staff      | 5/2017     | 4 months  | Mike Schofield    | Hiring process                |
| 4. Purchase Materials/Supplies | 6/2017     | 2 months  | Mike Schofield    | Procurement process           |
| 5. Implement Trail Work        | 9/2017     | 12 months | Mike Schofield    | Work through contract period  |
| 6. Grant Close Out             | 9/2018     | 1 month   | Shenika Dyson     | Documentation submitted to HQ |

## 8. Project Budget

| Task No. & Name                              | Requested Funds 80% | Sponsor Match 20% | Total Task Cost 100% |
|--|---------------------|-------------------|----------------------|
| 1. Seasonal Labor 1739 hrs @ \$15/hour       | \$24,862            | \$4,972           | \$29,834             |
| 2. (40) Trail Side Markers @ \$16 each       | \$640               | \$128             | \$768                |
| 3. (1) Trail Head Sign @ \$168 each          | \$168               | \$34              | \$202                |
| 4. (100) Trail Marker Stickers @ \$0.90 each | \$90                | \$18              | \$108                |
| 5. (6) Aluminum Signs 18"X18" @ \$36 each    | \$216               | \$43              | \$259                |
| 6. Wood Posts & Hardware                     | \$400               | \$80              | \$480                |
| 7. (4) 6' Benches @ \$239 each               | \$956               | \$191             | \$1,147              |
| 8. (4) Picnic Tables @ \$420 each            | \$1,680             | \$336             | \$2,016              |
| 9. (4) Camp fire rings @ \$247 each          | \$988               | \$198             | \$1,186              |
| <b>Total Cost</b>                            | <b>\$30,000</b>     | <b>\$6,000</b>    | <b>\$36,000</b>      |

## 9. Matching Funds (20%)

| Task         | Source            | Type (Cash or In-kind) | Description Including Hours and Rate | Amount         |
|--------------|-------------------|------------------------|--------------------------------------|----------------|
| Supervision  | MD Forest Service | In kind                | 25hrs. @ \$30/hr.                    | \$750          |
| Labor        | MD Forest Service | In kind                | 175hrs. @ \$30/hr.                   | \$5,250        |
| <b>Total</b> |                   |                        |                                      | <b>\$6,000</b> |

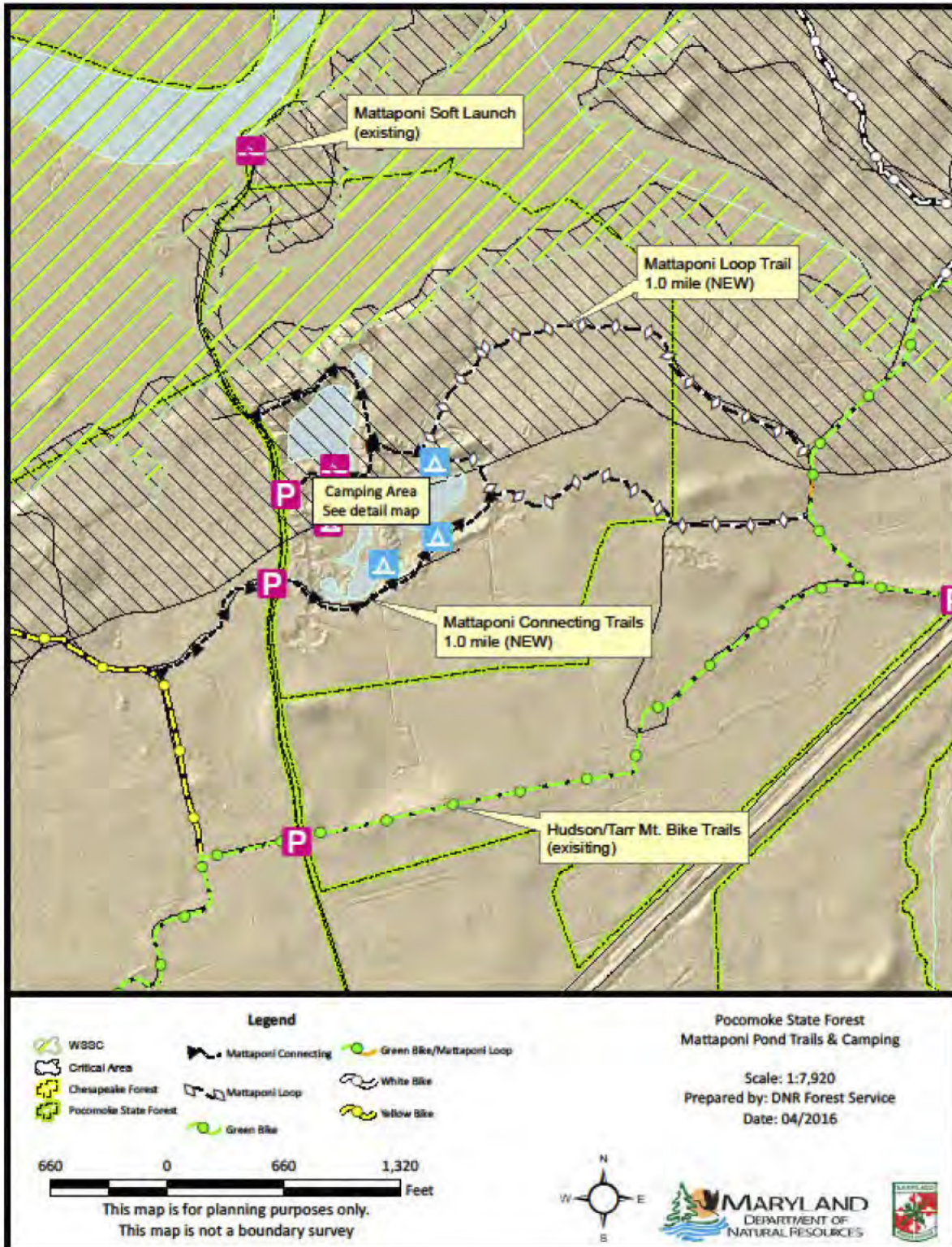
# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

Maryland State Highway Administration / Office of Environmental Design  
 ATTN: Terry Maxwell  
 707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637



**Application Submission Deadline: July 1, 2016**

## 10. Location Map

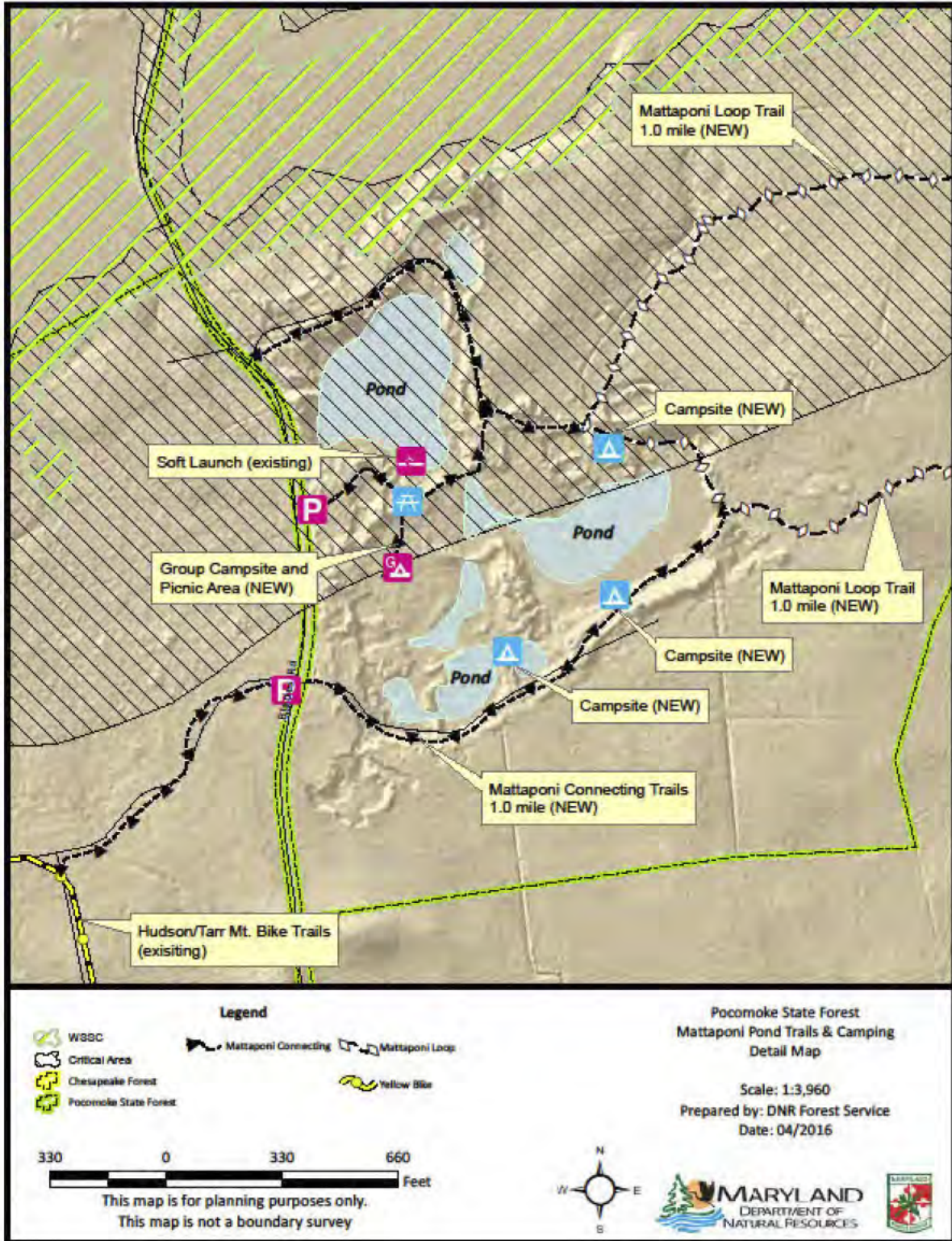


# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

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# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

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**Application Submission Deadline: July 1, 2016**

## 11. Submission

It is preferred that applications be submitted electronically to [tmaxwell@sha.state.md.us](mailto:tmaxwell@sha.state.md.us) by **2 p.m. on July 1, 2016**. Because our email server rejects most attachments larger than 6 MB, please use an FTP site or file sharing service, to transmit the application and any large attachments. Confirmation will be sent when the application is received. Please contact us at the email above with any questions about submissions or to discuss potential projects. The Recreational Trail Advisory Committee will meet to review projects in August. Awards will be announced in the October.

### Options for Submission include:

#### Internet/E-mail (preferred)

- Complete the form on your computer and save the file on your computer.
- Email the file as an attachment to: Terry Maxwell, [tmaxwell@sha.state.md.us](mailto:tmaxwell@sha.state.md.us)
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#### U.S. Mail

- Mail a completed application to:

Terry Maxwell  
Maryland Scenic Byways / Recreational Trails Program  
Maryland State Highway Administration  
707 N. Calvert Street, MS C-303  
Baltimore, MD 21202

# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION



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707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637

**Application Submission Deadline: July 1, 2016**

Please email [tmaxwell@sha.state.md.us](mailto:tmaxwell@sha.state.md.us) with any questions about this application.

**Project Title:**

Pusey Branch Trail Extension & Enhancement Project

**Trail Uses**

- Diverse  Motorized Recreational  Non-motorized Recreational  Transportation Trail

**Project Types**

**Construction**

- Construction of new trail or facilities  Maintenance of trail or facilities (with ground disturbance)

**Non-Construction**

- Purchase or lease of equipment  Maintenance of trail or facilities (without ground disturbance)  
 Acquisition of easements  Interpretive/educational programs/facilities

**Project Cost:**

|                     |                |                    |
|---------------------|----------------|--------------------|
| <b>\$22,000</b>     | <b>\$4,400</b> | <b>\$26,400</b>    |
| RTP Funding Request | Matching Funds | Total Project Cost |

**Project Sponsor (Applicant)**

|                        |  |
|------------------------|--|
| Project Sponsor Entity | Department of Natural Resources          |
| Project Manager        | Michael Schofield                        |
| Title                  | Forest Manager                           |
| Organization           | Forest Service                           |
| Address 1              | 6572 Snow Hill Road, Snow Hill, MD 21863 |
| Address 2              |  |
| Telephone              | (410)632-3732                            |
| Cell Phone             | (410)713-5091                            |
| Fax                    | (410)6323730                             |
| E-mail                 | Mike.schofield@maryland.gov              |

**1. Project Location**

This project is located in the Pocomoke State Forest in Worcester County Maryland (see attached map).



# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION



Maryland State Highway Administration / Office of Environmental Design  
ATTN: Terry Maxwell  
707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637

**Application Submission Deadline: July 1, 2016**

## 2. Project Abstract

This project will.....

Enhance the existing Pusey Branch Trail by updating the signs, replacing trail markers and clearing encroaching brush. It will also create additional trail use opportunities by connecting it to the popular Algonquin Cross County Trail (RT13-31) with 2.1 miles of new single track trail.

Benefits the trail user by.....

Providing a navigable trail system with updated trail markings including QR codes, trail head map sign and additional options beyond the 0.6 mile Pusey Branch Loop Trail to access the larger trail network.

Preliminary on site scouting and a GIS mapping exercise was performed by the Forest Service to determine project feasibility. This project is designed to sustain the popular 0.6 mile Pusey Branch Loop Trail by updating the trail head sign, trail side markers, graveling and grading the parking area and clearing brush from the trail. It will also provide an additional 2.1 mile access trail to the popular 12.5 mile Algonquin Cross County Trail system, which is the longest trail on the Eastern Shore.

Trail monitoring activities with digital trail counters, Facebook and blog sites has indicated a significant increase in the use of Chesapeake & Pocomoke State Forest trails. This has increased the amount of tourism to the lower Shore, particularly by the equestrian community. This project is located just 14 miles south from the City of Salisbury (est. pop. 31,243) and just 9 miles from Snow Hill (est. pop. 2,111). This project is within the **Chesapeake Bay Gateway & Water Trails Network**.

## 3. Project Summary

| Task No. & Name               | Task Description   |
|-------------------------------|--|
| 1. Clear brush & debris       | Remove brush & debris from existing Pusey Branch Loop Trail                        |
| 2. Build new single track     | Create new single track trail connecting Pusey Branch Trail to the Algonquin Trail |
| 3. Install trail side markers | Remove old wooden trail markers and replace with fiberglass ones w/QR code         |
| 4. Install trail head sign    | Install new trailhead sign that includes a map to the surrounding trail systems    |
| 5. Improving Parking Area     | Filling holes with gravel and regarding the entire parking area                    |

## 4. Project Property Owner

This project is located on State of Maryland property, which is managed by the Department of natural Resources, Maryland Forest Service (Project Sponsor).

## 5. Project length

New construction single track trail is 2.1 miles long X 2' wide. The existing Pusey Branch Loop trail is 0.6 miles long X 2' - 4' wide. The surface of the trail is dirt.

## 6. Prior Projects

**RT07-41** Tom Tyler Demonstration Forest & Nature Trail, \$3,500 reimbursed for trail enhancement supplies & materials. Project completed.  
**RT08-26** WDF & CF Trail Enhancement Project, \$28,000 reimbursed for labor used to maintain and enhance existing horseback trails. Project completed.  
**RT09-25** CF 2009 Green Hill Trail Enhancement Project, \$26,052 reimbursed for labor used to maintain and enhance existing multi-use

# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

Maryland State Highway Administration / Office of Environmental Design  
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**Application Submission Deadline: July 1, 2016**

*trails. Project completed.*

**RT07-46** Foster Trail Enhancement Project, \$12,000 reimbursed for labor used to enhancement trail system. Project completed.

**RT10-31** Milburn Landing, Dividing Creek & Whitesburg Trail Enhancement Project, \$30,000 reimbursed for labor used to enhance existing trail system. Project completed.

**RT11-32** UTV Trail Enhancement Project, \$20,000 reimbursed for the purchase of a utility vehicle and attachments used for trail maintenance and construction. Project completed.

**RT11-34** Marshyhope Trail Enhancement Project, \$30,000 reimbursed for labor and supplies used to enhance existing trail system. Project completed.

**RT12-28** Equestrian Trail Enhancement Project, \$32,000 reimbursed for labor and supplies used to enhance existing trail system. Project completed.

**RT12-31** PSF Mountain Bike Trail Enhancement, \$30,000 reimbursed for labor and supplies used to enhance existing bike trail system. Project is complete.

**RT13-31** Algonquin Cross County Trail Establishment, \$25,000 reimbursed for labor and supplies to enhance existing trail and to create new connecting sections of trail. This project is complete.

**RT13-51** Wicomico Demonstration Forest Trail Enhancement, \$23,000 reimbursed for labor and supplies to enhance existing trail system. This project is complete.

**RT13-54** Mattoponi Soft Launch, \$17,000 awarded for labor and supplies used to establish a new water access point along the Pocomoke River. This project is complete.

**RT14-32** Boom Arm Mower, \$30,000 reimbursed for a replacement mowing attachment to our trail maintenance tractor. Project complete.

**RT14-41** Milburn Landing Trail Enhancement, \$30,000 reimbursed for labor and supplies used to enhance the existing trail system. This project is complete.

**RT14-49** Trail Maps, \$10,000 awarded for the design and printing of a large waterproof trail map highlighting the forest trail systems. Maps are being printed by the print company and will be delivered April 2016. This grant will be closed by June 31, 2016.

**RT14-51** Chandler Trail Enhancement, \$30,000 reimbursed for labor and supplies used to enhance the existing trail system. This project is complete.

**RT15-33** Little Blackwater Soft Launch, \$30,000 awarded for labor and supplies to create a new water trail soft launch. A permit from MDE was recently issued and construction will begin July 2016.

**RT15-45** Island Pond Soft launch, \$30,000 awarded for labor and supplies to enhance an existing soft launch. This grant was amended and approved recently. Construction will begin August 2016.

**RT15-51** PSF Handicap Hunting Trail, \$30,000 awarded for labor and supplies for the enhancement of motorized trail systems for disabled hunters. This project is complete and the close out packet will be submitted for reimbursement June 2016.

**RT15-52** CF Handicap Hunting Trail, \$30,000 awarded for labor and

# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

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**Application Submission Deadline: July 1, 2016**

*supplies for the enhancement of motorized trail systems for disabled hunters. This project is 70% complete. It is anticipated that this project will be completed by May 2016 and reimbursement request will be submitted in June 2016.*

## 7. Project Work Plan

| Task Number & Name             | Start Date | Duration  | Responsible Party | Justification                 |
|--------------------------------|------------|-----------|-------------------|-------------------------------|
| 1. NEPA Approval               | 11/2016    | 7 months  | Ken Jolly         | Approval                      |
| 2. PCA Codes Assigned          | 5/2017     | 1 month   | Shenika Dyson     | Tracking grant expenditures   |
| 3. Hire Contractual Staff      | 5/2017     | 4 months  | Mike Schofield    | Hiring process                |
| 4. Purchase Materials/Supplies | 6/2017     | 2 months  | Mike Schofield    | Procurement process           |
| 5. Implement Trail Work        | 9/2017     | 12 months | Mike Schofield    | Work through contract period  |
| 6. Grant Close Out             | 9/2018     | 1 month   | Shenika Dyson     | Documentation submitted to HQ |

## 8. Project Budget

| Task No. & Name                                | Requested Funds 80% | Sponsor Match 20% | Total Task Cost 100% |
|--|---------------------|-------------------|----------------------|
| 1. Seasonal Labor 1284 hrs @ \$15/hour         | \$19,268            | \$3,854           | \$23,122             |
| 2. (16) Trail Side Markers @ \$16 each         | \$240               | \$48              | \$288                |
| 3. (2) Trail Head Sign @ \$168 each            | \$336               | \$67              | \$403                |
| 4. (40) Stickers for trail markers @ 0.40 each | \$36                | \$7               | \$43                 |
| 5. (20) Aluminum Signs 18"X18" @ \$36 each     | \$720               | \$144             | \$864                |
| 6. (4) 10 ton loads of gravel @ \$250/10 tons  | \$1000              | \$200             | \$1,200              |
| 7. Wood posts & hardware                       | \$400               | \$80              | \$480                |
| <b>Total Cost</b>                              | <b>\$22,000</b>     | <b>\$4,400</b>    | <b>\$26,400</b>      |

## 9. Matching Funds (20%)

| Task         | Source            | Type (Cash or In-kind) | Description Including Hours and Rate | Amount         |
|--------------|-------------------|------------------------|--------------------------------------|----------------|
| Supervision  | MD Forest Service | In kind                | 27hrs. @ \$30/hr.                    | \$810          |
| Labor        | MD Forest Service | In kind                | 120hrs. @ \$30/hr.                   | \$3,600        |
| <b>Total</b> |                   |                        |                                      | <b>\$4,410</b> |

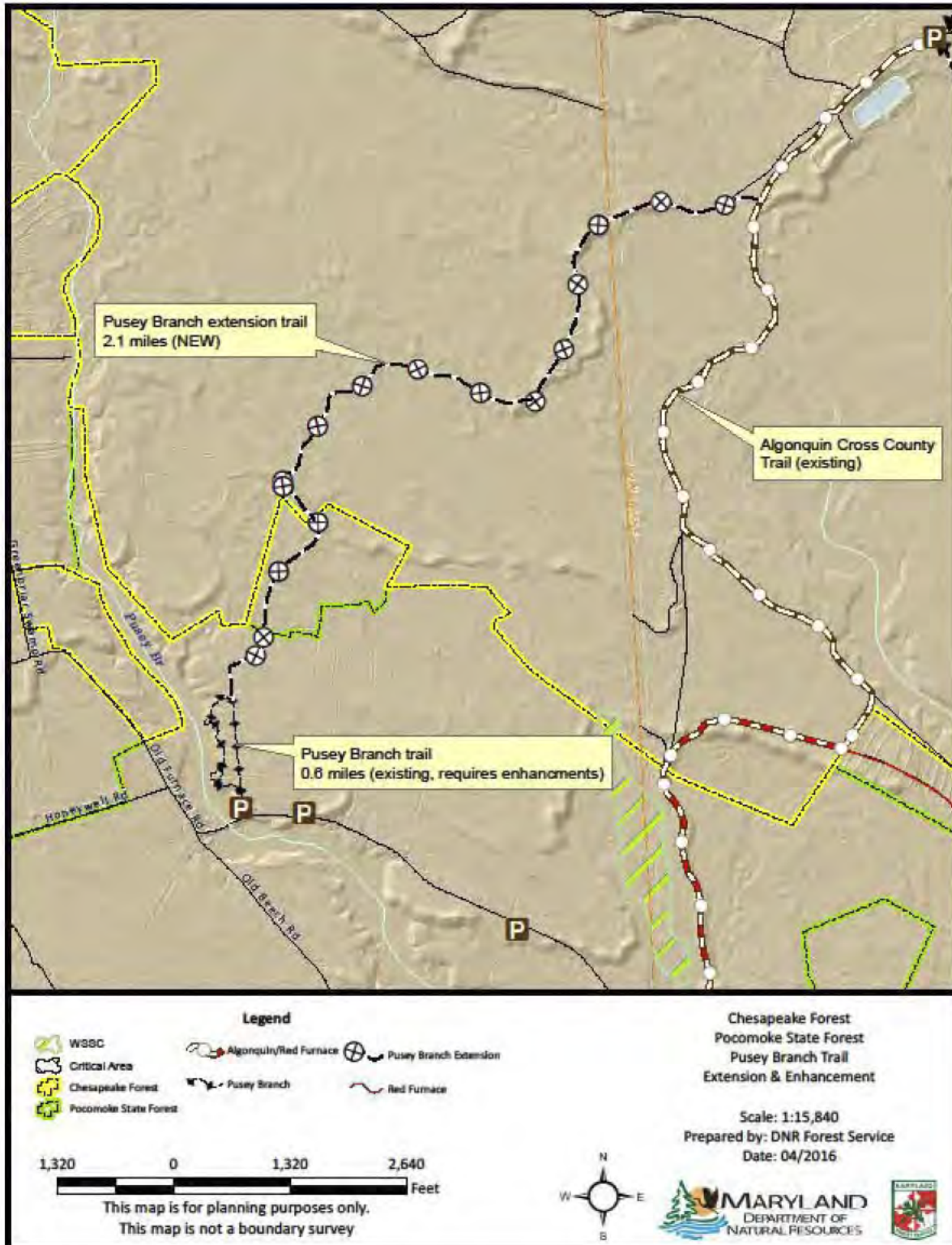
# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

Maryland State Highway Administration / Office of Environmental Design  
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 707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637



**Application Submission Deadline: July 1, 2016**

## 10. Location Map



# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

Maryland State Highway Administration / Office of Environmental Design  
ATTN: Terry Maxwell  
707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637



**Application Submission Deadline: July 1, 2016**

## 11. Submission

It is preferred that applications be submitted electronically to [tmaxwell@sha.state.md.us](mailto:tmaxwell@sha.state.md.us) by **2 p.m. on July 1, 2016**. Because our email server rejects most attachments larger than 6 MB, please use an FTP site or file sharing service, to transmit the application and any large attachments. Confirmation will be sent when the application is received. Please contact us at the email above with any questions about submissions or to discuss potential projects. The Recreational Trail Advisory Committee will meet to review projects in August. Awards will be announced in the October.

### Options for Submission include:

#### Internet/E-mail (preferred)

- Complete the form on your computer and save the file on your computer.
- Email the file as an attachment to: Terry Maxwell, [tmaxwell@sha.state.md.us](mailto:tmaxwell@sha.state.md.us)
- Use an FTP site or file sharing service to transmit the application and any large attachments.

#### U.S. Mail

- Mail a completed application to:

Terry Maxwell  
Maryland Scenic Byways / Recreational Trails Program  
Maryland State Highway Administration  
707 N. Calvert Street, MS C-303  
Baltimore, MD 21202

# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION



Maryland State Highway Administration / Office of Environmental Design  
ATTN: Terry Maxwell  
707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637

**Application Submission Deadline: July 1, 2016**

Please email [tmaxwell@sha.state.md.us](mailto:tmaxwell@sha.state.md.us) with any questions about this application.

**Project Title:**

Seth Demonstration Forest Trail Enhancement Project

**Trail Uses**

- Diverse  Motorized Recreational  Non-motorized Recreational  Transportation Trail

**Project Types**

**Construction**

- Construction of new trail or facilities  Maintenance of trail or facilities (with ground disturbance)

**Non-Construction**

- Purchase or lease of equipment  Maintenance of trail or facilities (without ground disturbance)  
 Acquisition of easements  Interpretive/educational programs/facilities

**Project Cost:**

|                     |                |                    |
|---------------------|----------------|--------------------|
| <b>\$18,000</b>     | <b>\$3,600</b> | <b>\$21,600</b>    |
| RTP Funding Request | Matching Funds | Total Project Cost |

**Project Sponsor (Applicant)**

|                        |  |
|------------------------|--|
| Project Sponsor Entity | Department of Natural Resources          |
| Project Manager        | Michael Schofield                        |
| Title                  | Forest Manager                           |
| Organization           | Forest Service                           |
| Address 1              | 6572 Snow Hill Road, Snow Hill, MD 21863 |
| Address 2              |  |
| Telephone              | (410)632-3732                            |
| Cell Phone             | (410)713-5091                            |
| Fax                    | (410)6323730                             |
| E-mail                 | Mike.schofield@maryland.gov              |

**1. Project Location**

This project is located in the Seth Demonstration Forest in Talbot County Maryland (see attached map).

# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION



Maryland State Highway Administration / Office of Environmental Design  
ATTN: Terry Maxwell  
707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637

**Application Submission Deadline: July 1, 2016**

## 2. Project Abstract

This project will.....

Enhance the existing Seth Demonstration Forest Trail by updating the trail head signs, installing trail side markers with QRL codes and clearing encroaching brush.

Benefits the trail user by.....

Providing a navigable trail system with updated trail markings, benches and a new trail head map sign.

This project is designed to sustain the highly used 2 mile Seth Demonstration Forest Trail network located adjacent to a 450 home residential development in Talbot County. This antiquated trail system will be improved with a new trail head map sign, trail side markers (including QR codes), park benches and clearing brush and debris from the trail.

This trail system is used and enjoyed extensively by the residence surrounding this unique old growth forest. ***This trail system is located near the Chesapeake Country Scenic Byway.*** This project is located on the only Forest Service managed properties on the upper Shore just 2 miles outside the City of Easton (est. pop. 16,598).

## 3. Project Summary

| Task No. & Name               | Task Description  |
|-------------------------------|---|
| 1. Clear brush & debris       | Remove brush & debris from existing Pusey Branch Loop Trail                     |
| 2. Install trail side markers | Remove old wooden trail markers and replace with fiberglass ones w/QR code      |
| 3. Install trail head sign    | Install new trailhead sign that includes a map to the surrounding trail systems |
| 4. Install trail side benches | Install two trail side benches along the trail network                          |
|                               |   |

## 4. Project Property Owner

This project is located on State of Maryland property, which is managed by the Department of natural Resources, Maryland Forest Service (Project Sponsor).

## 5. Project length

2.0 miles of existing trail X 5' wide. The surface of the trail is dirt.

## 6. Prior Projects

**RT07-41** Tom Tyler Demonstration Forest & Nature Trail, \$3,500 reimbursed for trail enhancement supplies & materials. Project completed.

**RT08-26** WDF & CF Trail Enhancement Project, \$28,000 reimbursed for labor used to maintain and enhance existing horseback trails. Project completed.

**RT09-25** CF 2009 Green Hill Trail Enhancement Project, \$26,052 reimbursed for labor used to maintain and enhance existing multi-use trails. Project completed.

**RT07-46** Foster Trail Enhancement Project, \$12,000 reimbursed for labor used to enhancement trail system. Project completed.

**RT10-31** Milburn Landing, Dividing Creek & Whitesburg Trail Enhancement Project, \$30,000 reimbursed for labor used to enhance existing trail system. Project completed.

**RT11-32** UTV Trail Enhancement Project, \$20,000 reimbursed for the

# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

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707 N. Calvert Street Baltimore, Maryland 21202 Phone: 410-545-8637



**Application Submission Deadline: July 1, 2016**

*purchase of a utility vehicle and attachments used for trail maintenance and construction. Project completed.*

**RT11-34** Marshyhope Trail Enhancement Project, \$30,000 reimbursed for labor and supplies used to enhance existing trail system. Project completed.

**RT12-28** Equestrian Trail Enhancement Project, \$32,000 reimbursed for labor and supplies used to enhance existing trail system. Project completed.

**RT12-31** PSF Mountain Bike Trail Enhancement, \$30,000 reimbursed for labor and supplies used to enhance existing bike trail system. Project is complete.

**RT13-31** Algonquin Cross County Trail Establishment, \$25,000 reimbursed for labor and supplies to enhance existing trail and to create new connecting sections of trail. This project is complete.

**RT13-51** Wicomico Demonstration Forest Trail Enhancement, \$23,000 reimbursed for labor and supplies to enhance existing trail system. This project is complete.

**RT13-54** Mattoponi Soft Launch, \$17,000 awarded for labor and supplies used to establish a new water access point along the Pocomoke River. This project is complete.

**RT14-32** Boom Arm Mower, \$30,000 reimbursed for a replacement mowing attachment to our trail maintenance tractor. Project complete.

**RT14-41** Milburn Landing Trail Enhancement, \$30,000 reimbursed for labor and supplies used to enhance the existing trail system. This project is complete.

**RT14-49** Trail Maps, \$10,000 awarded for the design and printing of a large waterproof trail map highlighting the forest trail systems. Maps are being printed by the print company and will be delivered April 2016. This grant will be closed by June 31, 2016.

**RT14-51** Chandler Trail Enhancement, \$30,000 reimbursed for labor and supplies used to enhance the existing trail system. This project is complete.

**RT15-33** Little Blackwater Soft Launch, \$30,000 awarded for labor and supplies to create a new water trail soft launch. A permit from MDE was recently issued and construction will begin July 2016.

**RT15-45** Island Pond Soft launch, \$30,000 awarded for labor and supplies to enhance an existing soft launch. This grant was amended and approved recently. Construction will begin August 2016.

**RT15-51** PSF Handicap Hunting Trail, \$30,000 awarded for labor and supplies for the enhancement of motorized trail systems for disabled hunters. This project is complete and the close out packet will be submitted for reimbursement June 2016.

**RT15-52** CF Handicap Hunting Trail, \$30,000 awarded for labor and supplies for the enhancement of motorized trail systems for disabled hunters. This project is 70% complete. It is anticipated that this project will be completed by May 2016 and reimbursement request will be submitted in June 2016.



# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION



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## 7. Project Work Plan

| Task Number & Name             | Start Date | Duration  | Responsible Party | Justification                 |
|--------------------------------|------------|-----------|-------------------|-------------------------------|
| 1. NEPA Approval               | 11/2016    | 7 months  | Ken Jolly         | Approval                      |
| 2. PCA Codes Assigned          | 5/2017     | 1 month   | Shenika Dyson     | Tracking grant expenditures   |
| 3. Hire Contractual Staff      | 5/2017     | 4 months  | Mike Schofield    | Hiring process                |
| 4. Purchase Materials/Supplies | 6/2017     | 2 months  | Mike Schofield    | Procurement process           |
| 5. Implement Trail Work        | 9/2017     | 12 months | Mike Schofield    | Work through contract period  |
| 6. Grant Close Out             | 9/2018     | 1 month   | Shenika Dyson     | Documentation submitted to HQ |

## 8. Project Budget

| Task No. & Name                                | Requested Funds 80% | Sponsor Match 20% | Total Task Cost 100% |
|--|---------------------|-------------------|----------------------|
| 1. Seasonal Labor 1089 Hrs @ \$15/hour         | \$16,332            | \$3,266           | \$19,598             |
| 2. (25) Trail Side Markers @ \$16 each         | \$400               | \$80              | \$480                |
| 3. (2) Trail Head Sign @ \$168 each            | \$336               | \$67              | \$403                |
| 4. (60) Stickers for Trail markers @ 0.90 each | \$54                | \$11              | \$65                 |
| 5. Wood Posts & Hardware                       | \$400               | \$80              | \$480                |
| 6. Install (2) park benches @ \$239 each       | \$478               | \$96              | \$574                |
| <b>Total Cost</b>                              | <b>\$18,000</b>     | <b>\$3,600</b>    | <b>\$21,600</b>      |

## 9. Matching Funds (20%)

| Task         | Source            | Type (Cash or In-kind) | Description Including Hours and Rate | Amount         |
|--------------|-------------------|------------------------|--------------------------------------|----------------|
| Supervision  | MD Forest Service | In kind                | 20hrs. @ \$30/hr.                    | \$600          |
| Labor        | MD Forest Service | In kind                | 100hrs. @ \$30/hr.                   | \$3,000        |
| <b>Total</b> |                   |                        |                                      | <b>\$3,600</b> |

# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

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**Application Submission Deadline: July 1, 2016**

## 10. Location Map



# FY 2017 RECREATIONAL TRAILS PROGRAM FUNDING APPLICATION

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**Application Submission Deadline: July 1, 2016**

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It is preferred that applications be submitted electronically to [tmaxwell@sha.state.md.us](mailto:tmaxwell@sha.state.md.us) by 2 p.m. on **July 1, 2016**. Because our email server rejects most attachments larger than 6 MB, please use an FTP site or file sharing service, to transmit the application and any large attachments. Confirmation will be sent when the application is received. Please contact us at the email above with any questions about submissions or to discuss potential projects. The Recreational Trail Advisory Committee will meet to review projects in August. Awards will be announced in the October.

### Options for Submission include:

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- Complete the form on your computer and save the file on your computer.
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Maryland State Highway Administration  
707 N. Calvert Street, MS C-303  
Baltimore, MD 21202

## Forest Stewardship Council

### 2016 Audit: Overview of Audit Findings

**Finding Number: 2015.1**

**FSC-US indicator 5.6.c. – Closed**

**Non-Conformity (or Background/ Justification in the case of Observations):**

Rates and methods of timber harvest are not leading to achieving desired conditions, or improving or maintaining health and quality across the FMU. Overstocked stands and stands that have been depleted or rendered to be below productive potential due to natural events, past management, or lack of management, are not being returned to desired stocking levels and composition at the earliest practicable time as justified in management objectives.

**SCS review**

In addition to the report shown for Savage River SF, FME demonstrated quarterly silvicultural reports for other state forests of the western region (e.g., Green Ridge SF). During discussions with FME staff, the issue of keeping up with harvests involves several variables, including mechanisms for tracking progress, issues related to operability and accessibility to stands scheduled for entry, recent salvage harvests, and, in some cases, timber markets. FME determined that tracking timber harvest scheduling progress would be a possible solution to monitoring these and other variables. FME also determined that a root cause was a lack of removing inoperable areas from the current productive acreage, which was continually resulting in the failure to meet area control objectives (i.e., annual allowable harvest). Reclassification has helped to reduce the amount of overstocked, inoperable stands within the harvestable area. Including reserves and protected areas, this now puts approximately two thirds of the state forest area in the western region out of production. However, FME may be able to put some of these inoperable areas back into productive if different harvesting methods or equipment become available in the region over time.

**Finding Number: 2015.2**

**FSC-US Indicator 6.2.b. – Closed**

**Non-Conformity (or Background/ Justification in the case of Observations):**

When RTE species are present or assumed to be present, modifications in management are made in order to maintain, restore or enhance the extent, quality and viability of the species and their habitats. Conservation zones and/or protected areas are established for RTE species, including those S3 species that are considered rare, where they are necessary to maintain or improve the short and long-term viability of the species. Conservation measures are based on relevant science, guidelines and/or consultation with relevant, independent experts as necessary to achieve the conservation goal of the Indicator.

On the Eastern Shore, there are several Delmarva Bay restoration projects that will require consistent prescribed fire applications for the first three years after initial restoration activities followed by periodic natural or prescribed fire at certain intervals. FME currently has been hindered by weather and lack of human resources to keep up with these activities. Specialists involved in this project have determined that restoration objectives for this community of RTE plants cannot be met without fire. There is a similar situation with prescribed fire at Shale Barrens in the Western Region.

#### **SCS review**

FME has conducted nine burns since the last audit on the Maryland Shore and has developed a system to prioritize areas for each burn season. For the 2016 season so far, approximately 40% of the areas scheduled for prescribed burns have been completed. In the western region, the shale barrens have not receive any prescribed burns, but have received other treatments such as chemical control of invading trees. Forestry staff are still in discussion with Heritage staff about using timber harvests located near priority areas to prepare sites for prescribed burns. However, see OBS 2016.4.

#### **Finding Number: 2015.3**

#### **FSC-US Indicator 6.5.d. – Closed**

#### **Non-Conformity (or Background/ Justification in the case of Observations):**

The transportation system, including design and placement of permanent and temporary haul roads, skid trails, recreational trails, water crossings and landings, is designed, constructed, maintained, and/or reconstructed to reduce short and long-term environmental impacts, habitat fragmentation, soil and water disturbance and cumulative adverse effects, while allowing for customary uses and use rights. This includes:

- access to all roads and trails (temporary and permanent), including recreational trails, and off-road travel, is controlled, as possible, to minimize ecological impacts;
- road density is minimized;
- erosion is minimized;
- sediment discharge to streams is minimized;
- there is free upstream and downstream passage for aquatic organisms;
- impacts of transportation systems on wildlife habitat and migration corridors are minimized;
- area converted to roads, landings and skid trails is minimized;
- habitat fragmentation is minimized; and
- unneeded roads are closed and rehabilitated.

FME has fallen behind in its road construction and maintenance upgrades or closures due to several factors outside of its control in the Western Region. There are several crossings and other drainage features in need of upgrades (or closures) in order to prevent negative impacts to soil and water.

#### **SCS review**

A summary of completed and future projects was provided in the document provided by the FME. Through interviews with FME staff and field observation, SCS confirmed that significant progress has been made in prioritizing maintenance and in streamlining the review process to better control costs on road projects.

**Finding Number: 2015.4**

**FSC-US Indicator 6.6.c.**

**Non-Conformity (or Background/ Justification in the case of Observations):**

Chemicals and application methods are selected to minimize risk to non-target species and sites. When considering the choice between aerial and ground application, the forest owner or manager evaluates the comparative risk to non-target species and sites, the comparative risk of worker exposure, and the overall amount and type of chemicals required.

Aerial spraying is done with a helicopter equipped with sensitive GPS equipment, which coupled with the machine's high maneuverability, helps to reduce the risk to non-target species and sites and virtually eliminates the risk of the pilot's exposure to chemicals.

On Wango Pines, during an aerial herbicide treatment the helicopter operator sprayed non-target species of concern (horse sugar and sheep laurel) that were clearly designated on maps and in GIS with buffers. The buffer was discussed with the forester in charge prior to the application, but apparently the pilot forgot about this sensitive site (note that others sensitive areas were avoided).

FME's contractor, Parker Forestry, has suggested some corrective actions to implement during the next application to eliminate this risk in the future (i.e., an onsite briefing just prior to spraying). Initial communication with the applicator on these corrective actions took place well prior to the FSC audit.

**SCS review**

Post-herbicide treatment maps were shown for recent aerial sprays. In all cases, protected individual trees and protected areas were not sprayed according to GPS data provided by the operator. FME also provided copies of hazard maps that its forestry contractor on the Maryland Shore reviews with aerial herbicide applicators prior to treatment, as well as records of these pre-application meetings.

**Finding Number: 2015.5**

**FSC-US Indicator 7.2.a.**

**Non-Conformity (or Background/ Justification in the case of Observations):**

The management plan is kept up to date. It is reviewed on an ongoing basis and is updated whenever necessary to incorporate the results of monitoring or new scientific and technical information, as well as to respond to changing environmental, social and economic circumstances.

FME has made some changes to its management plans in response to OBS 2014.10 that have been incorporated into some SFMPs, but not all.

**SCS review**

SCS verified that the content as cited by FME is included in all State Forests' FMPs.

**Finding Number: 2016.1**

**FSC-US Indicator 6.3.a.1, 6.3.d and 6.3.e**

**Non-Conformity (or Background/ Justification in the case of Observations):**

According to the FMP and interviews with FME staff, native conifer species were likely more prevalent on the landscape than they are currently. FME is considering expanding the use of native and non-native conifers on certain sites as a wildlife management component, to restore native species (both conifer and broadleaf), and possibly to adapt to climate change and invasive pests/ pathogens.

There was one site where native conifer restoration with white pine was written into the site plan as an option, but FME staff were debating on whether or not to continue with that management trajectory given deer browse pressure. Certain activities observed, specifically retention of hemlock, white pine, pitch pine and Virginia pine, within thinning and regeneration harvest units likely contribute to maintaining and/or increasing native conifer cover.

However, at the landscape level, FME has not assessed the desired future condition of the native and non-native conifer component, including selection of species that will meet social, economic, and ecological objectives depending on site conditions.

**Finding Number: 2016.2**

**FSC-US Indicator 6.5.d and 6.5.g.**

**Non-Conformity (or Background/ Justification in the case of Observations):**

Trail funding and/or restrictions on its use may not allow for the timely maintenance and closure needs of existing authorized and unauthorized trails. The audit team observed instances where trail maintenance for existing trails did not occur due to lack of funds or difficulty in obtaining them. There is also some concern from stakeholders on the density of trails, particularly its effect on hunting success. Furthermore, the density of unauthorized trails may result in a loss of productive and protected forest area. Fewer restrictions on use of trail funds may result on greater opportunities for forestry, heritage and recreational staff to collaborate on the protection of sensitive resources at reduced cost while offering user groups a positive recreational experience.

**Finding Number: 2016.3**

**FSC-US Indicator 6.9.a**

**Non-Conformity (or Background/ Justification in the case of Observations):**

During interviews with FME staff, there was discussion on possibly expanding the use of Norway spruce and Red pine to mitigate the loss of native conifers, and to continue to serve as habitat for RTE species. Any expanded use beyond the currently planted area would have to be justified and based on scientific data.

Siberian crabapple is no longer produced in the state nursery, but has been used in the past on early successional habitat projects. State seed mixes for use on log landings and other sensitive areas include non-native clovers and grasses. Current recommendations from heritage staff are to avoid use of Siberian crabapple and the seed mix.

**Finding Number: 2016.4**

**FSC-US Indicator 7.1.b, 7.1.c and 7.1.e.**

**Non-Conformity (or Background/ Justification in the case of Observations):**

The management plan describes the history of land use and past management, current forest types and associated development, size class and/or successional stages, and natural disturbance regimes that affect the FMU (see Indicator 6.1.a). However, the historical presence of conifers in the management plan could be expanded to include the knowledge presented by local forestry staff during the audit, which could help set the stage for conifer objectives on the landscape.

ESA plans may not be being completed on time according to draft annual work plans reviewed. According to these drafts, ESA plans for FY2017 were to be completed over the winter of 2016. A failure to complete these plans may result in limited opportunities to avoid negative impacts to these areas, especially where active management may benefit the species or communities found in them. ESA management plans set the stage for the implementation of maintenance and recovery objectives for RTE species and/or sensitive ecosystems, as well as detail monitoring strategies that are compatible with these objectives.



## Sustainable Forestry Initiative

### 2016 Audit: Overview of Audit Findings

Maryland’s SFI Program demonstrated conformance against the SFI 2015-2019 Standard. There were no non-conformances, and three “Opportunities for Improvement”. The program has continued to exceed the standard in several areas. As such, the program has earned continuing certification.

#### 2015 Non-Conformances Resolved

Two non-conformances which were identified in the 2015 audit have been resolved.

Indicator 2.3.6 requires “Road construction and skidding layout to *minimize* impacts to soil *productivity*. The program has demonstrated the ability to identify and prioritize the most critical road segments for temporary repair and for major reconstruction. Reconstruction projects reviewed were completed to high standards and should be expected to sustain use at expected levels. (2015 Minor Non-conformance: Administrative challenges continue to delay the implementation of necessary road repairs and upgrades.)

Indicator 2.4.2 requires “Management to promote healthy and productive forest conditions to *minimize* susceptibility to damaging agents.” Field observations allowed the audit team to conclude that the increased pace of forest management practices are developing and maintaining healthy forests in most areas. (2015 Minor Non-conformance: Management on the Savage River State Forest does not fully meet the requirement to promote healthy and productive forest conditions to minimize susceptibility to damaging agents.) At SRSF many stands are stressed and/or overstocked; regeneration problems are apparent, with silvicultural analyses and silvicultural prescriptions developed through SILVAH-Oak indicating the need for treatments.

Indicator 8.1.1 requires that “Program Participants will provide a written policy acknowledging a commitment to recognize and respect the rights of Indigenous Peoples.” The 2015 Transitional Minor Non-conformance against SFI Indicator 8.1.1 was closed before December 31, 2015; the program continues to be in conformance. Each management plan now contains a written policy acknowledging a commitment to recognize and respect the rights of Indigenous Peoples.

No new non-conformances were identified in the 2016 audit.

#### 2016 Opportunities for Improvement

Three opportunities for improvement (OFIs) were identified in the 2016 audit:

1. There is an Opportunity for Improvement by completing site level plans for ESAs in the western forests.

SFI Indicator 1.1.1 requires “Forest management planning at a level appropriate to the size and scale of the operation, including: ... (i) a review of non-timber issues.”

2. There is an Opportunity for Improvement by including in forest management plans more information (known by forest managers) about the role of conifers in the natural history, historic composition, and ecology of higher-elevation portions of the western forests.

SFI Indicator 1.1.1 requires “Forest management planning at a level appropriate to the size and scale of the operation, including: ... (i) a review of non-timber issues.”

3. There is an Opportunity for Improvement in the trail program, where funding for trails maintenance may not be adequate for the need.

SFI Indicator 5.4.1 requires participants to “Provide recreational opportunities for the public, where consistent with forest management objectives.”

### **Exceptional Practices**

There were seven areas where the finding was “Exceeds the Requirements”:

1. The MD DNR program exceeds the requirements for promoting conservation of native biological diversity.

SFI Indicator 4.1.1 requires a “Program to incorporate the conservation of native biological diversity, including species, wildlife habitats and ecological community types at stand and landscape levels.”

2. The MD DNR program exceeds the requirements for retaining stand-level wildlife habitat elements.

SFI Indicator 4.1.2 requires the “Development of criteria and implementation of practices, as guided by regionally based best scientific information, to retain stand-level wildlife habitat elements such as snags, stumps, mast trees, down woody debris, den trees and nest trees.”

3. The MD DNR program exceeds the requirements for the protection of threatened and endangered species.

SFI Indicator 4.2.1 requires a “Program to protect threatened and endangered species.”

4. The MD DNR program exceeds the requirements for providing an exceptional range of high-quality recreational opportunities State Forests.

SFI Indicator 5.4.1 requires participants to “Provide recreational opportunities for the public, where consistent with forest management objectives.”

5. The MD DNR’s use of information and expert advice or stakeholder consultation in the identification special sites for protection exceeds the requirements for this indicator.

SFI Indicator 6.1.1 requires the “Use of information such as existing natural heritage data, expert advice or stakeholder consultation in identifying or selecting special sites for protection.”

6. The Maryland Forest Service has an exceptional program for outreach, education and involvement related to sustainable forest management.

SFI Indicator 12.2.1 requires “Periodic educational opportunities promoting sustainable forestry, such as

- a. field tours, seminars, websites, webinars or workshops;

- b. educational trips;
  - c. self-guided forest management trails;
  - d. publication of articles, educational pamphlets or newsletters; or
  - e. support for state, provincial, and local forestry organizations and soil and water conservation districts.
7. The Maryland Forest Service has implemented an exceptional program for contact with local stakeholders over forest management issues.

SFI Indicator 13.1.2 requires “Appropriate contact with local stakeholders over forest management issues through state, provincial, federal or independent collaboration.”



# **SilviaTerra, LLC**

## **Maryland DNR: Chesapeake and Pocomoke State Forests**

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**30 September 2016**



# **SilviaTerra**

# Maryland DNR: Chesapeake and Pocomoke State Forests

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## Section 1 - Executive Summary

In 2014, the Maryland Department of Natural Resources - Forest Service (MD DNR FS) engaged with SilviaTerra to develop an updated inventory for the Chesapeake and Pocomoke State Forests. Using SilviaTerra's Plot Reduce remote sensing inventory process, SilviaTerra worked with MD DNR FS to identify locations to install plots, to be used to supplement continuous forest inventory (CFI) plots in both forests. Plot data collection was conducted by MD DNR FS staff in 2014, 2015, and completed in 2016. SilviaTerra has combined the CFI and supplemental plot data to generate stand-level inventories for all forested stands of interest in the Chesapeake and Pocomoke state forests. In addition to inventory data, SilviaTerra also developed custom Yields Tables for forest growth in each forest type, and individual-stem taper equations that can be used for volume calculations.

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## Section 2 - Project Parameters

The Chesapeake and Pocomoke States Forests are located in eastern Maryland, covering approximately 83,883 forested acres. The area of interest included multiple cover types:

- **L - Loblolly Pine** **54,294 acres**
- **MP - Mixed Pine species** **162 acres**  
(loblolly, shortleaf, pond, pitch)
- **PH - Pine/Hardwood** **8,820 acres**  
(50-75% loblolly pine)
- **SLP - Shortleaf Pine** **292 acres**
- AWC - Atlantic White Cedar 12 acres
- BH - Bottomland Hardwood 2,800 acres
- BH-CY - Bottomland Hardwood/Bald Cypress mix 3,632 acres
- CY - Bald Cypress 76 acres
- HP - Hardwood/Pine (>50% hardwood) 4,681 acres
- MH - Mixed Hardwood 7,868 acres
- S - Swamp 641 acres
- C - Cutover 602 acres

For those cover types listed in bold - L, MP, PH, and SLP - individual stand summaries were generated. For others, cover-type-level inventory estimates were developed and are included in the final inventory.

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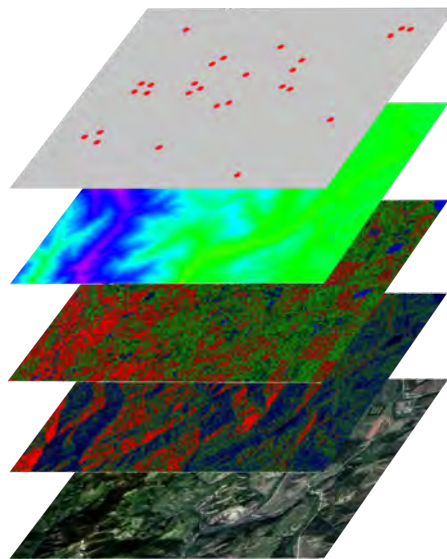
### Section 3 - SilviaTerra Plot Reduce Inventory Process

The SilviaTerra inventory process is similar to a double sample. First, SilviaTerra identifies plot locations to collect ground plot measurements - like a traditional cruise, but far fewer plots. For the MD DNR inventory, SilviaTerra was provided with the locations of CFI plots that were intended to be remeasured. SilviaTerra identified unique ground cover conditions not represented by the CFI plots and provided the MD DNR with additional plot locations to measure those areas.

All plot measurements were then paired up with individual pixels from multiple different types of remotely-sensed images (spectral imagery, radar, and digital elevation models). This allows SilviaTerra to calculate relationships between the remotely-sensed data and the actual sizes and species of trees on the ground. SilviaTerra uses these relationships to calculate plot-level information for all of the unmeasured areas and then aggregates the data into a stand-level inventory.

For the MD DNR project, **SilviaTerra** used a total of **1133 plots**. These included:

- 208 1/5th acre fixed radius plots, CFI plots installed in the Pocomoke State Forest
- 200 1/10th acre fixed radius plots, CFI plots installed in the Chesapeake State Forest
- 500 1/10th acre fixed radius plots, supplemental plots located throughout both Forests
- 225 plots in unstocked areas (plots with zero trees), manually added by SilviaTerra biometricians



*Examples of the types of remotely sensed data SilviaTerra uses.  
The top layer represents the sample plot locations.*

Estimates of heights were made through a multi-step process. For each species, we obtained a set of trees with measured heights from US Forest Inventory and Analysis plots that are both geographically near and similar in structure and species composition. The heights and diameters measured on those stems were used to fit and compare models of multiple common forms. The best fitting model was then used to generate estimates from all trees in the final inventory list created by our Plot Reduce process. Species-specific merchantable height models were also built using the measured plot data, as were models estimating tree grade for each stem.

Volume estimates were then made at the stem-level from estimated heights and diameters, using localized forms of taper equations developed by the US Forest Service (Appendix A).

Species-specific merchandizing specs were provided by MD DNR FS and used for volume calculations. Different merchandizing specs were used for young (< 40 years of age) and mature (40 + years of age) stands.

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## **Section 4 - Model Quality**

Models of stem count, basal area, diameter distribution, and species importance were combined to build final treelists for each pixel in each stand. The overall performance of the models was assessed at the stand level for each stand with at least 10 plots in it. For each stand, the plot data was held out, the models re-fit with the remaining plots, and then predictions compared to the plot data for that stand. This provides an estimate of the expected performance of models in stands for which no plot data were available.

Diagnostic graphics are shown below. In the figures, horizontal lines represent 95% confidence intervals around the measurement of interest. Each horizontal line represents the variability observed, based on the composition of each particular stand. Diagonal lines represents perfect correlation between predictions and measurements. For predictions that fall within the 95% confidence interval, the horizontal line will cross the diagonal line. When predictions fall outside the 95% CI the lines do not cross. The horizontal lines represent the mean and variation in the plot data, and the associated value on the y-axis is the mean from SilviaTerra's predictive process.



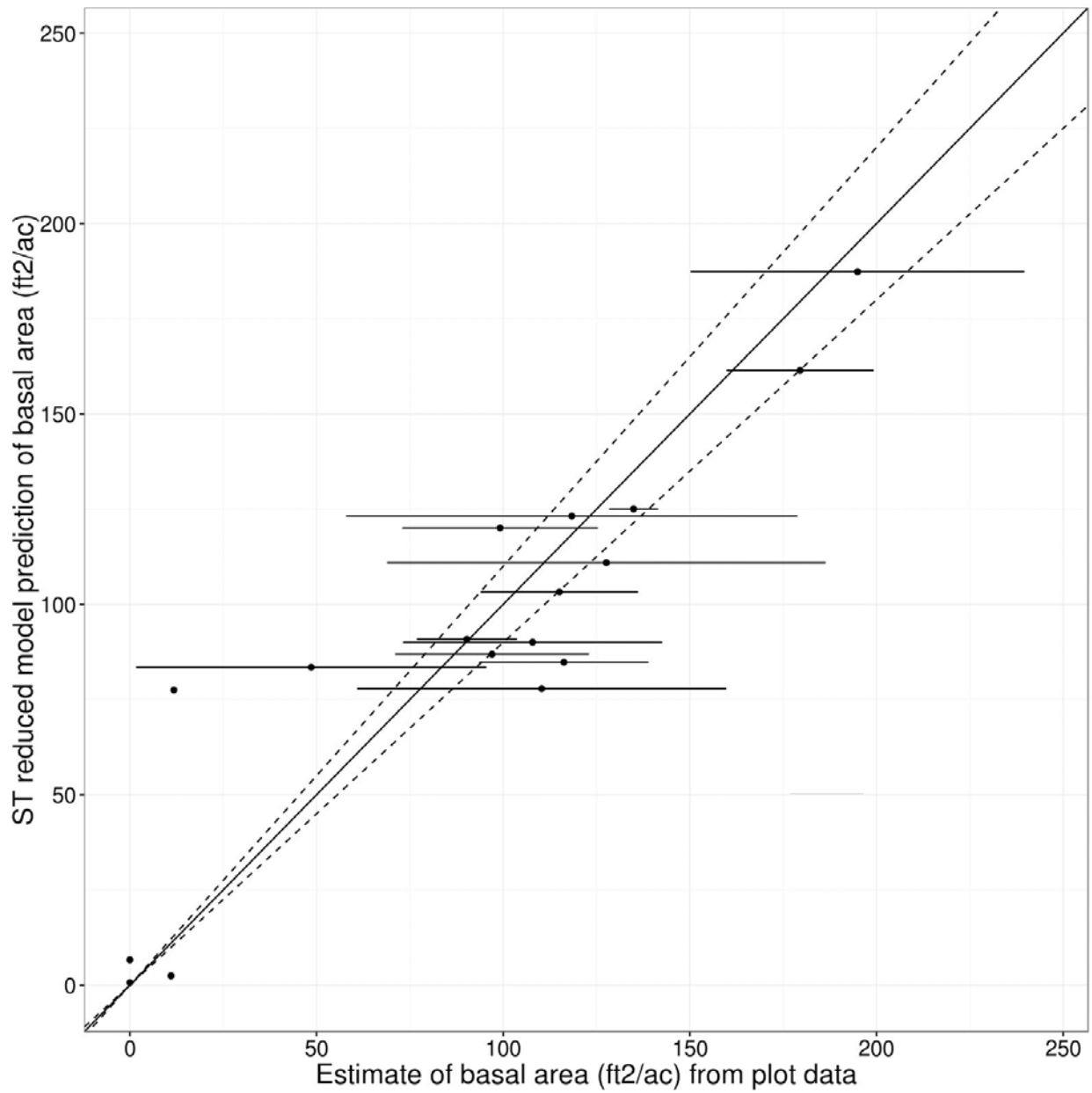


Figure 1. Basal area model performance.

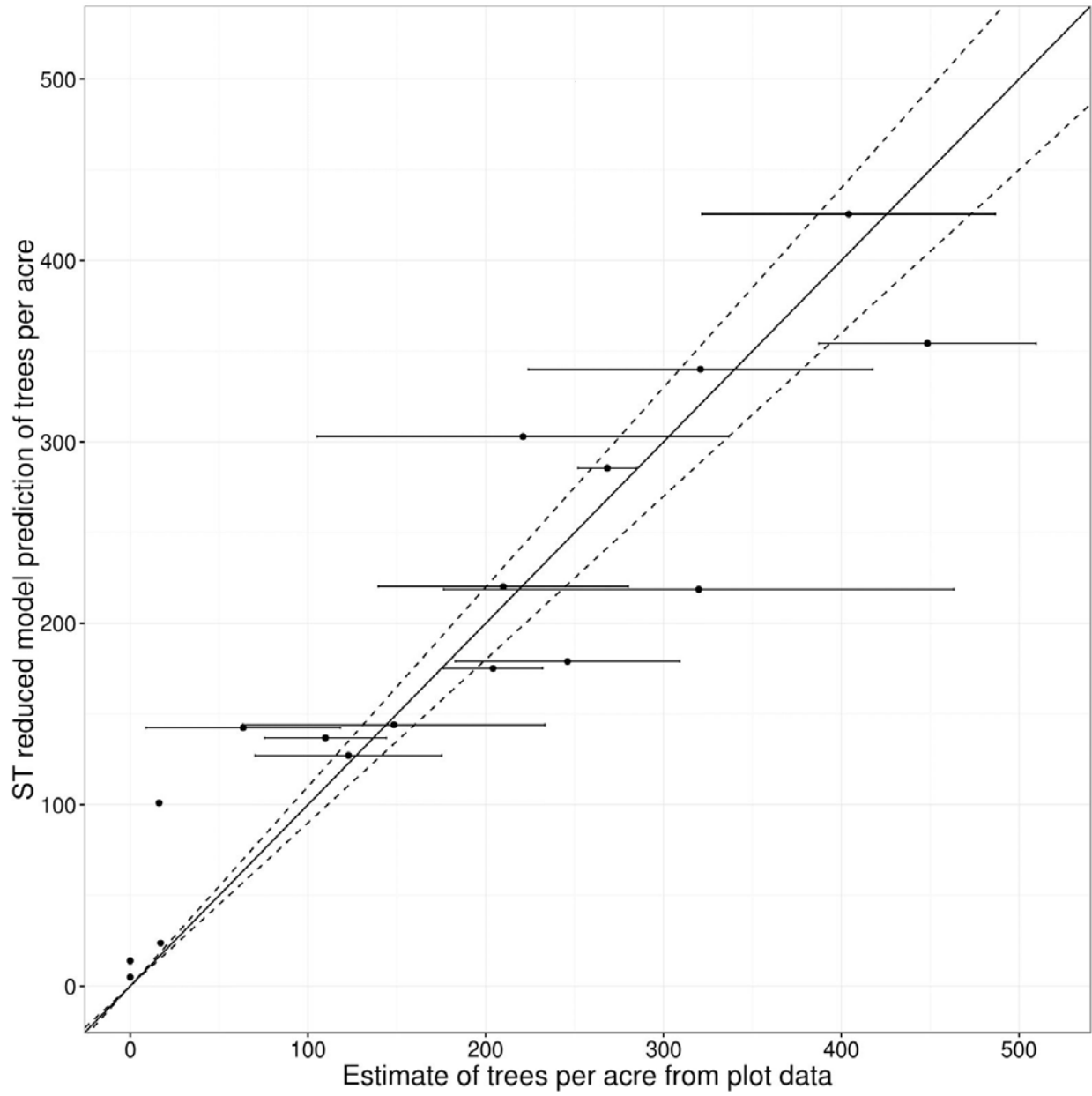


Figure 2. Trees per acre model performance.

Predictions of species mixtures were assessed using the relative importance value of species calculated from the plot data from each stand, compared to the predicted importance values for species within that stand. Importance value for this purpose was calculated as:

$$\text{Species Importance} = \frac{\frac{\text{TPA of species}}{\text{Total TPA}} + \frac{\text{Basal area of species}}{\text{Total Basal Area}}}{2}$$

Overall, performance was quite high, with both major and minor species components predicted well at the stand level. In some stands, estimates of loblolly pine were higher than expected from the plot data. The bars on the left represent species measurements from plot data; the bars on the right represent species importance predicted for that stand.

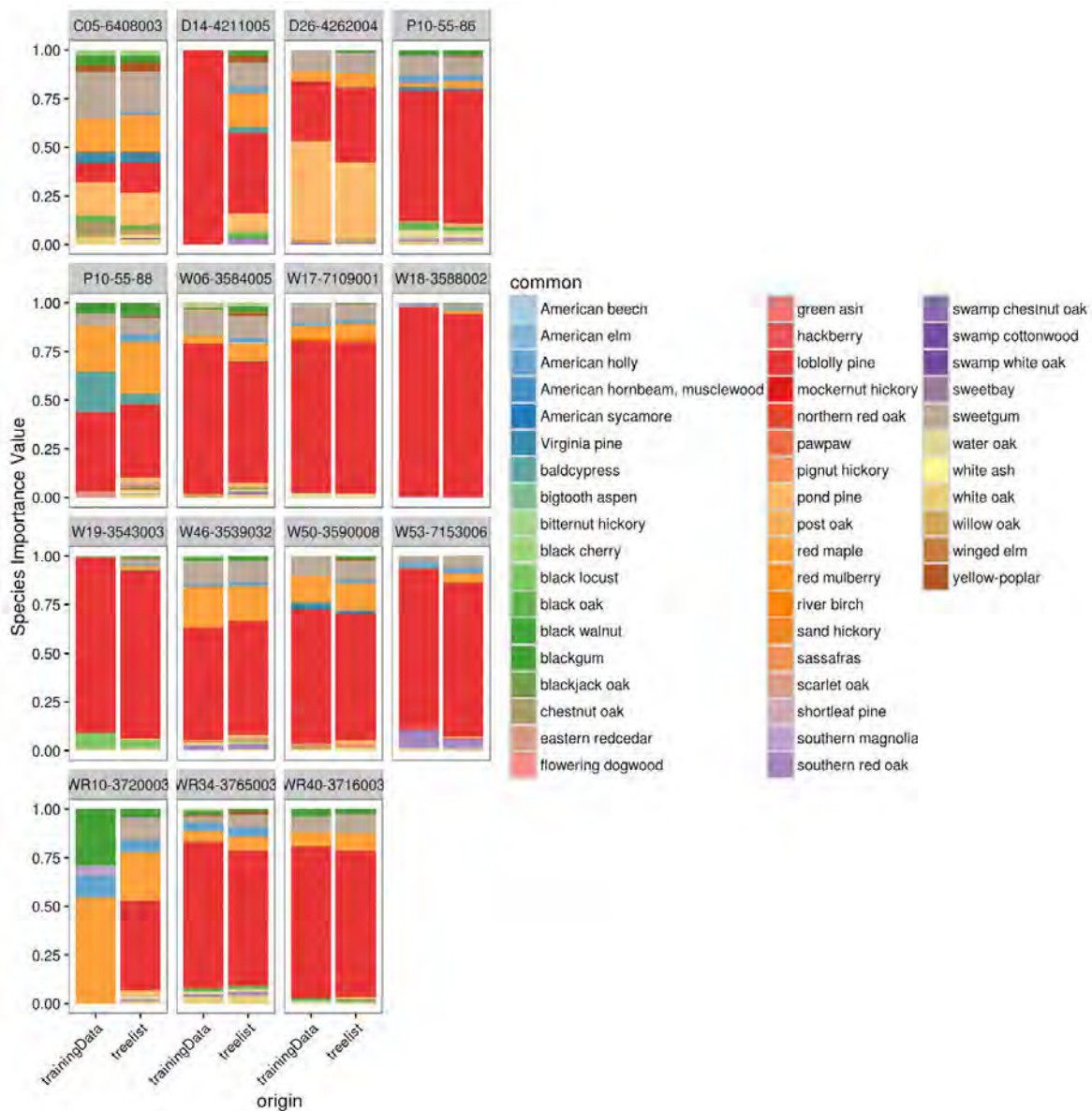


Figure 3. Observed and predicted species importance from training data.

## **Section 5 - Growth and Yield Estimation**

In order to build yields tables, we grew individual stand treelists using the Northeastern Variant of the USFS Forest Vegetation Simulator (FVS), and aggregated and compiled the results to build yields tables for each cover class.

### **Stand selection**

To identify the individual stands to grow, SilviaTerra treelist files for each stand were summarized to get stand level stocking levels. These stand summaries were then grouped by Forest Type, Site Class, Management History, and Age Class. Average stocking levels were calculated for each grouping. Individual stands stocked within 10 - 20% of the average level were selected for each grouping, with additional stands added in some classes where there relatively few 'average' stands. A total of 186 unique stands were used in the growth simulations.

### **Management Scenarios**

There were four management scenarios simulated:

- 1) No management
- 2) T0 - Precommercial thinning
- 3) T1 - First thinning
- 4) T2 - Second thinning.

For cover classes L and PH, two management scenarios were included in the yields tables, scenarios 3, and 4. For all other cover classes, scenario 1 (no management) was used, and the yields tables reflect stand growth over time with no harvesting.

Scenario 2, the T0 treatment, was to be a precommercial thinning used to reduce the stocking in young pine stands that are overstocked. T0 thinnings were scheduled at age 10 and were designed to reduce the stocking to a residual level of 400 to 500 trees per acre. Hardwood species and non loblolly pine species were targeted for removal. Trees were to be removed until the target residual stocking level was reached. In simulation, none of the L or PH stands younger than 10 years had enough TPA greater than the target residual level when grown to 10 years of age. No T0 yields tables were built because of this.

The T1 treatment represents a 5th row thinning occurring at age 25. Because FVS doesn't have a thinning treatment specific for a 5th row thinning, we simulated this by implementing a prescription thinning that removed 20% of the trees in the stand. This prescription thinning was then followed by a thin from below that reduced the basal area to 60ft<sup>2</sup> - 80ft<sup>2</sup> per acre.

The T2 treatment represents a second thinning implemented at age 35. This was simulated with a thin from below that reduced the stand basal area to 80ft<sup>2</sup> - 90ft<sup>2</sup> per acre.

## **Merchandizing specs**

SilviaTerra was provided two sets of merch specs to use based on the stands age. Stands younger than 40 years were assigned one set (young) and stands 40 years and older used another (mature). To facilitate the same approach in FVS, we used the VOLUME and BFVOLUME keywords to set custom product specs for pulpwood and sawtimber, respectively. Custom species groups were developed to define hardwood and pine groups and assigned custom specs for each species group. For stands that were 40 and older, only the mature set of merch specs was used. In stands younger than 40, the young merch specs were applied, with the mature specs going into effect as soon as the stand reached 40 years of age.

## **Simulation and summary**

Keyword files were built for each stand and treatment, and passed into FVS. For each stand and treatment scenario, 25 repetitions were run. To build the final yields tables, all of the FVS output was combined and summarized by age and cover type. Averages were used where there were overlaps from multiple treelist files (i.e., from multiple stands) for an age class and cover type. Finally, for some cover classes, further smoothing was applied to build one final yield table showing consistent stand development. For cover classes where stand development trajectories did not overlap smoothly, the cover class tables were split into multiple tables covering separate age ranges.

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## Section 6 - Conclusions

The data products accompanying this report include all specified deliverables for this inventory project.

- Trees per acre, diameter distribution by species, and volume by product for each stand or strata.

The stand tables are provided as 9 separate .csv files - one for each of 8 strata that were summarized at the strata label, and one file (allStands.csv) containing all of the stands for the 4 strata for which stand-level tables were developed.

- Stem-profile equations for each tree species in each forest

Appendix A includes a description of the stem-profile equation forms used. We are providing a .csv of coefficients for use in those equations, as well as an .xlsx workbook that can be used as a basis for stem-level calculations.

- Yields Tables formatted for use with Remsoft

A total of 36 unique Yields Tables are provided. These include represented combinations of site index and management activity for each cover class. Some cover class/site index/management combinations resulted in more than one yields tables, where the existing stand demographics did not result in a single cohesive representation of stand development over time.

## **Appendix A. Estimating Stem Volume using Clark's Taper Coefficients**

**Using the taper coefficients published in USFS Research Paper SE-282 by Alexander Clark et. al for estimating tree volume**

### **Overview**

The equations and taper coefficients published in Research Paper SE-282 are based on taper measurements from a sample of 13,469 trees from fully-stocked natural stands across the southern United States, and can be used to obtain region-specific estimates of cubic foot volume to a desired merchantability specification (e.g. 4-inch top diameter).

While volume estimates obtained using log rules such as Scribner and Doyle may be more familiar to many foresters, using stem taper to estimate volume yields estimates that are tuned to specific elements of the tree form, species, and the structure of the stand in which it is growing.

SilviaTerra used US Forest Inventory and Analysis plot data to refit the taper equations for each species measured in the Chesapeake and Pocomoke State Forests. We used the measured plot data to identify trees from US Forest Inventory and Analysis plots that are both geographically near and similar in structure and species composition. The FIA data were then used to fit localized forms of the Clark et al. taper equations.

Given a species and measurements of diameter at breast height (DBH) and total tree height, you can estimate the taper of the stem and subsequently the cubic foot volume of wood between any two heights along the stem.

The Excel spreadsheet titled 'clark-volume-coefficients.xlsx' has been pre-populated with the localized values for each species.

### **Using the spreadsheet**

On the 'Volume Calculator' tab, pick a species (or species group) from the dropdown menu, then enter any DBH, total height, minimum merchantable diameter, and stump height.

- The coefficients (highlighted in brown) are selected for the specified species.
- Diameter inside bark, diameter at Girard's form class height, and height to the specified minimum merchantable diameter are calculated using the coefficients and the equations published in the original document
- The volume between the stump height and the estimated height to the specified minimum diameter is calculated using a different equation from the original document.

You will find the estimated cubic foot volume highlighted in green.

## Reference

1. Clark, Alexander, Ray Albert Souter, and Bryce E. Schlaegel. "Stem profile equations for southern tree species." *Research paper SE-282* (1991).





The following summary compares the work scheduled in each annual work plan against the amount of work implemented/completed in the field. Annual Work Plans (AWP's) are developed 18 months in advance of any work being implemented in the field to allow time for an internal departmental and public review process. Activities listed in the AWP's are many times not accomplished due to several unforeseen factors. Rainfall has the greatest effect on limiting the implementation of forestry work on Delmarva each year with wet soil conditions frequently restricting access to approved harvest sites with heavy logging equipment. Another factor that affects commercial forestry practices is the limited number of trained logging crews available to carry out thinning operations. Other types of planned practices, such as site preparation, tree planting, herbicide applications, and fertilization are occasionally not implemented due to changes in the field since the plan was written. An example would be a harvested area that regenerated itself naturally (won't require planting) and experienced little or no competition with undesirable species (won't require herbicide application).

## Chesapeake Forest Silvicultural Activity Summary By Annual Work Plan

| Workplan Activity                             | 2007         |              | 2008         |             | 2009         |              | 2010         |             | 2011         |              | 2012         |              | 2013       |             | 2014       |             | 2015         |             | 2016         |             | 10 Year Total |               |              |       |
|---|--------------|--------------|--------------|-------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|------------|-------------|------------|-------------|--------------|-------------|--------------|-------------|---------------|---------------|--------------|-------|
|   | Plan Acres   | Acres Comp.  | Plan Acres   | Acres Comp. | Plan Acres   | Acres Comp.  | Plan Acres   | Acres Comp. | Plan Acres   | Acres Comp.  | Plan Acres   | Acres Comp.  | Plan Acres | Acres Comp. | Plan Acres | Acres Comp. | Plan Acres   | Acres Comp. | Plan Acres   | Acres Comp. | Plan Acres    | Acres Comp.   |              |       |
| Final Harvests                                | 579          | 449          | 244          | 35          | 294          | 47           | 152          |             | 239          | 256          | 180          | 94           | 81         | 84          | 96         | 67          | 52           | 12          |              |             | 74            |               | 1,917        | 1,119 |
| Various Select Harvests &/or other treatments | 135          |              | 52           |             |              |              |              |             |              |              | 139          | 121          | 22         | 31          |            |             |              |             |              |             |               |               | 349          | 152   |
| First Thinning                                | 1,655        | 431          | 1,831        | 385         | 1,847        | 986          | 1,602        | 387         | 924          | 956          | 970          | 729          | 117        | 505         | 451        | 573         | 2,036        | 756         | 1,262        | 766         |               | 12,685        | 6,474        |       |
| Second Thinning                               | 579          | 298          | 257          | 30          | 257          | 151          | 113          | 65          | 86           | 299          | 106          | 88           | 55         | 38          | 350        | 74          | 331          | 49          | 710          |             |               | 2,843         | 1,092        |       |
| Site Preparation                              | 135          | 68           | 167          |             | 106          |              |              |             |              |              |              |              |            |             |            |             |              |             |              |             |               | 408           | 68           |       |
| Tree Planting                                 | 135          | 68           | 167          |             |              |              | 42           |             |              | 11           |              | 14           |            |             | 199        |             |              | 40          |              |             |               | 344           | 332          |       |
| Regeneration Release                          | 191          | 68           | 199          |             |              |              |              |             |              |              |              |              |            |             |            |             |              |             |              |             |               | 390           | 68           |       |
| Grass Control                                 |              |              |              |             |              |              | 42           |             |              |              |              |              | 25         |             |            |             |              |             |              |             |               | 67            | -            |       |
| Mild Rotation Release                         | 29           |              | 24           |             | 160          | 48           |              |             |              |              |              |              |            |             |            |             |              |             |              |             |               | 213           | 48           |       |
| Fertilization                                 |              |              |              |             | 71           |              |              |             |              |              |              |              |            |             |            |             |              |             |              |             |               | 71            | -            |       |
| Natural Regeneration                          |              |              |              | 87          |              |              |              |             |              | 62           |              | 181          |            |             | 84         |             |              |             |              |             |               | -             | 414          |       |
| Pre Commercial Thinning                       | 388          | 178          | 573          | 298         | 573          | 197          | 139          |             | 81           | 94           | 10           |              | 186        | 125         | 49         | 49          | 76           | 81          |              |             |               | 2,075         | 1,021        |       |
| Prescribed Fire                               | 268          | 440          | 47           | 553         | 202          |              | 76           |             |              | 29           |              | 31           |            | 48          |            | 63          |              | 427         | 72           |             |               | 665           | 1,591        |       |
| Boundary Maintenance                          |              | 4,552        |              | 2,108       |              | 12,608       |              | 10,945      |              | 6,162        |              | 3,644        |            |             |            |             |              | 3,400       |              |             |               | -             | 43,419       |       |
| Restoration Projects                          | 334          |              | 26           | 362         |              |              |              |             | 130          | 130          | 143          | 143          | 328        | 41          | 20         |             |              | 168         |              |             |               | 961           | 864          |       |
| Watershed Imp. Projects                       | 50           |              | 20           | 50          | 351          |              |              |             |              |              |              |              |            |             |            |             |              |             |              |             |               | 421           | 401          |       |
| Harvests within HCVF areas                    | 2,815        | 695          | 1,384        | 447         | 1,782        | 883          | 1,651        | 454         | 1,235        | 599          | 566          | 321          | 391        | 380         | 335        | 509         | 961          | 659         |              |             |               | 11,120        | 4,946        |       |
| <b>Harvest Totals<sup>†</sup></b>             | <b>3,282</b> | <b>1,178</b> | <b>2,410</b> | <b>812</b>  | <b>2,398</b> | <b>1,185</b> | <b>1,867</b> | <b>451</b>  | <b>1,379</b> | <b>1,641</b> | <b>1,537</b> | <b>1,175</b> | <b>603</b> | <b>700</b>  | <b>898</b> | <b>734</b>  | <b>2,418</b> | <b>985</b>  | <b>1,972</b> | <b>840</b>  |               | <b>18,764</b> | <b>9,701</b> |       |

\* High Conservation Value Forests (HCVF) were initially identified and designated in 2007 on the Chesapeake Forest. The current designation includes Ecologically Significant Areas (ESA) Zone 1 & 2, Core Forest Interior Dwelling Bird (FIDS) Habitat, Core Delmarva Fox Squirrel (DFS) Habitat, and Riparian Forested Buffers. Management activities within the HCVF have been designed to maintain or enhance the attributes that define such forests. Activities thus far have included the conversion of loblolly pine plantations to natural mixed forest conditions for DFS habitat or the removal of woody plant material from xeric dune and Carolina bay communities (ESA Zone 1 & 2).

† Harvest totals are derived from Final Harvests, Various Select Harvests and/or Other Treatments, First and Second Thinnings, and Restoration Projects.

The following summary compares the work scheduled in each annual work plan against the amount of work implemented/completed in the field. Annual Work Plans (AWP's) are developed 18 months in advance of any work being implemented in the field to allow time for an internal departmental and public review process. Activities listed in the AWP's are many times not accomplished due to several unforeseen factors. Rainfall has the greatest effect on limiting the implementation of forestry work on Delmarva each year with wet soil conditions frequently restricting access to approved harvest sites with heavy logging equipment. Another factor that affects commercial forestry practices is the limited number of trained logging crews available to carry out thinning operations. Other types of planned practices, such as site preparation, tree preparation, herbicide applications, and fertilization are occasionally not implemented due to changes in the field since the plan was written. An example would be a harvested area that regenerated itself naturally (won't require planting) and experienced little or no competition with undesirable species (won't require herbicide application).

## Pocomoke State Forest Silvicultural Activity Summary By Annual Work Plan

| Workplan Activity                             | 2007       |             | 2008       |             | 2009       |             | 2010       |             | 2011       |             | 2012       |             | 2013       |             | 2014       |             | 2015       |             | 2016       |             | 10 Year Total |              |
|---|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|---------------|--------------|
|   | Plan Acres | Acres Comp. | Plan Acres | Acres Comp. | Plan Acres | Acres Comp. | Plan Acres | Acres Comp. | Plan Acres | Acres Comp. | Plan Acres | Acres Comp. | Plan Acres | Acres Comp. | Plan Acres | Acres Comp. | Plan Acres | Acres Comp. | Plan Acres | Acres Comp. | Plan Acres    | Acres Comp.  |
| Final Harvests                                | 90         | 68          | 115        | 62          | 51         |             | 105        | 71          | 112        | 24          | 33         | 11          | 149        | 27          | 31         | 23          | 25         | 26          | 95         | 713         | 406           |              |
| Various Select Harvests &/or other treatments |            |             |            |             | 64         |             | 15         | 17          | 19         |             | 42         |             | 38         | 47          | 85         |             | 226        |             |            |             | 490           | 64           |
| First Thinning                                | 127        |             | 57         |             | 100        |             |            |             | 305        |             | 120        | 114         | 623        | 248         | 586        | 212         | 75         | 370         | 94         | 216         | 2,087         | 1,159        |
| Second Thinning                               |            |             |            |             |            |             |            |             |            |             | 26         |             | 120        |             |            |             |            |             |            |             | 120           | 26           |
| Site Preparation                              |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |               |              |
| Tree Planting                                 |            |             |            |             |            | 48          |            |             |            | 15          |            |             |            |             |            | 23          | 4          |             |            |             |               | 90           |
| Regeneration Release                          |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |               |              |
| Grass Control                                 |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |               |              |
| Mild Rotation Release                         |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |               |              |
| Fertilization                                 |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |               |              |
| Natural Regeneration                          |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |               |              |
| Pre Commercial Thinning                       | 36         |             | 21         |             | 20         |             | 21         |             | 59         | 59          |            |             | 18         | 18          | 45         | 45          |            |             | 45         |             | 264           | 210          |
| Prescribed Fire                               |            |             |            |             |            |             |            |             |            | 35          |            | 22          |            |             |            |             |            |             |            |             |               | 57           |
| Boundary Maintenance                          |            |             |            |             |            |             |            | 280         |            |             |            |             |            | 100         |            | 634         | 18         |             |            |             |               | 3,638        |
| Restoration Projects                          |            |             |            |             |            |             |            |             |            |             |            |             | 12         |             |            |             |            |             |            |             | 12            |              |
| Watershed Imp. Projects                       |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |            |             |               |              |
| Work within HCVF areas                        |            |             |            |             |            |             | 53         | 42          | 176        | 23          | 86         | 51          | 181        | 96          | 114        | 177         | 27         | 74          |            |             | 636           | 462          |
| <b>Harvest Total<sup>†</sup></b>              | <b>217</b> | <b>68</b>   | <b>172</b> | <b>62</b>   | <b>216</b> | <b>-</b>    | <b>121</b> | <b>88</b>   | <b>436</b> | <b>24</b>   | <b>196</b> | <b>150</b>  | <b>942</b> | <b>322</b>  | <b>702</b> | <b>235</b>  | <b>300</b> | <b>395</b>  | <b>120</b> | <b>310</b>  | <b>3,421</b>  | <b>1,654</b> |

\* High Conservation Value Forests (HCVF) were initially identified and designated in 2009 on the Pocomoke State Forest. The current designation includes Ecologically Significant Areas (ESA) Zone 1 & 2, Core Forest Interior Dwelling Bird (FIDS) Habitat, Core Delmarva Fox Squirrel (DFS) Habitat, and Riparian Forested Buffers. Management activities within the HCVF have been designed to maintain or enhance the attributes that define such forests. Activities thus far have included the conversion of loblolly pine plantations to natural mixed forest conditions for DFS habitat or the removal of woody plant material from xeric dune and Carolina bay communities (ESA Zone 1 & 2).

† Harvest totals are derived from Final Harvests, Various Select Harvests & Other Treatments, First and Second Thinnings, and Restoration Projects.

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