EASTERN REGION

STATE FOREST LANDS

ANNUAL WORK PLAN

FISCAL YEAR 2021

DRAFT

Prepared: _____ _____
(Forest Manager) Date

Reviewed: _____ _____
(Regional Manager) Date

Approved: _____ _____
(Environmental Specialist) Date

Prepared By:

Michael G. Schofield, MFS – Chesapeake Forest Manager

Alexander Clark, MFS – Assistant Forest Manager

Contributors:

Skip Jones, Parker Forestry Services Inc.

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 73,724 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 18,198-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 19,978 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://dnr.maryland.gov/forests/Pages/mdforests.aspx.

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	Sapling	Growing	Maturing	Mature	Big Trees	Uneven Aged	
	0 - 5 yrs	6 - 15 yrs	16 - 25 yrs	26 - 40 yrs	41 - 60 yrs	61+ yrs		
Loblolly Pine	331	3,186	14,719	29,067	8,871	1,452	259	**57,886**
(Percent)	0.36%	3.47%	16.01%	31.62%	9.65%	1.58%	0.28%	62.97%
Shortleaf Pine	2	10	0	0	0	265	17	**295**
(Percent)	0.00%	0.01%	0.00%	0.00%	0.00%	0.29%	0.02%	0.32%
Mixed Pine (Pond, Pitch, Virginia, etc.)	20	0	0	0	0	102	75	**197**
(Percent)	0.02%	0.00%	0.00%	0.00%	0.00%	0.11%	0.08%	0.21%
Atlantic White Cedar	8	2	1	0	0	0	0	**12**
(Percent)	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
Mixed Pine/Hardwood	41	1,324	1,958	1,099	1,955	8,179	14	**14,570**
(Percent)	0.04%	1.44%	2.13%	1.20%	2.13%	8.90%	0.02%	15.85%
Bottomland/Mixed Hardwoods	0	221	370	388	2,046	8,241	6	**11,273**
(Percent)	0.00%	0.24%	0.40%	0.42%	2.23%	8.97%	0.01%	12.26%
Bottomland Hardwoods/Bald Cypress	0	0	0	0	18	3,691	0	**3,708**
(Percent)	0.00%	0.00%	0.00%	0.00%	0.02%	4.02%	0.00%	4.03%
Cut/Marsh/Field/ Powerline/Road	3,980	0	0	0	0	0	0	**3,980**
(*Percent*)	4.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.33%
Total	**4,383**	**4,744**	**17,048**	**30,554**	**12,890**	**21,930**	**372**	**91,921**
(Percent)	***4.77%***	***5.16%***	***18.55%***	***33.24%***	***14.02%***	***23.86%***	***0.40%***	***100.00%***

UNIQUE COMMUNITY TYPES

INLAND SAND DUNE AND RIDGE WOODLANDS

This natural community occurs on dry, sandy dunes and ridges of the coastal plain. These landforms developed during the late Pleistocene when colder climate processes associated with Wisconsin glaciation influenced much of the region. At the time, prevailing northwest winds transported surficial sands across the Delmarva and deposited them on the east sides of the Nanticoke, Wicomico, and Pocomoke rivers and formed “dune fields” on uplands in the central part of the peninsula. Today, these landforms support woodland vegetation of pine and oak, as well as a variety of rare and threatened plant and animal species. Currently, there are two globally rare natural community types associated with inland sand dunes and ridges. One characterized by shortleaf pine (*Pinus*

echinata) and another dominated by a mixture of hardwoods such as white oak *(Quercus alba),* black oak *(Quercus velutina),* and southern red oak *(Quercus falcata)*. Both community types share many common associates such as Pitch pine *(Pinus rigida),* post oak *(Quercus stellata),* sand hickory *(Carya pallida),* and a variety of ericaceous shrubs. In general, the herbaceous layer is sparse and consists primarily of light-demanding species tolerant of dry, sandy conditions. Examples of these species include yellow false indigo *(Baptisia tinctoria)* and the State threatened sundial lupine *(Lupinus perennis)*. Frequent low-intensity fire is important in maintaining these natural communities and the distribution of species that depend upon them.

NON-RIVERINE SWAMPS

This natural community includes seasonally flooded "flatwoods" and depressions of the coastal plain. These habitats develop on flat, ancient estuarine terraces and shallow depressions with seasonally perched water tables. This results in standing water throughout the early part of the growing season followed by a period of drawdown. Hydroperiods are variable between swamps and largely dependent on rainfall and drought cycles. The forested canopy structure of flatwoods and depression swamps range from open to closed with composition ranging from hardwood dominated to a mixtures of hardwoods and pines. Swamps dominated by oak species such as willow oak *(Quercus phellos)*, pin oak *(Quercus palustris)*, swamp chestnut oak *(Quercus michauxii)*, and cherrybark oak *(Quercus pagoda)* are considered highly rare because most have been logged and subsequently invaded by successional hardwoods such as red maple *(Acer rubrum)*, sweetgum *(Liquidambar styraciflua)*, and black gum *(Nyssa sylvatica)*. Pond pine (*Pinus serotina*) and loblolly pine *(Pinus taeda)* are prominent components of many flatwoods on the lower Coastal Plain. Nonriverine Swamps have been greatly reduced in Maryland through ditching, draining, logging, and conversion to agriculture.

ATLANTIC WHITE CEDAR SWAMPS

Atlantic white cedar *(Chamaecyparis thyoides)* swamps occur discontinuously along the Nanticoke, Wicomico, and Pocomoke Rivers. They are best developed above regular tidal influence between tidal swamp forests and sandy uplands where groundwater discharge and the accumulation peat over time provide favorable growing conditions. A few examples have also been documented from seasonally saturated to flooded basin wetlands associated with ancient estuarine terraces in the Pocomoke River watershed. Atlantic white cedar *(Chamaecyparis thyoides)*, swamp tupelo *(Nyssa biflora)*, pond pine *(Pinus serotina)*, and sweetbay magnolia *(Magnolia virginiana)* often comprise the tree canopy. In the understory, shrubs and vines are common but variable, often including an abundance of common greenbrier *(Smilax rotundifolia)*. The herbaceous layer is often sparse and may include species of sedges, manna-grasses, and rushes. Slightly elevated hummocks of sphagnum mosses *(Sphagnum* spp.) frequently form large patches. The extent of Atlantic white cedar has been greatly reduced over the past 200 years by logging. Today, remaining stands exist as patches representing only a fraction of historical estimates. All natural community types classified as Atlantic white cedar swamps are considered globally and state rare.

DELMARVA BAYS

Delmarva Bays are seasonally flooded wetland depressions on Maryland's coastal plain. They developed from ancient interdunal depressions approximately 16,000 years ago when the climate of the Coastal Plain was very cold and windy and supported an extensive sand dune ecosystem. The majority of Delmarva Bays have been shaped by these wind and erosional processes into circular depressions up to one meter in depth with prominent sand rims. A perched water table and seasonal fluctuations in groundwater recharge and precipitation cause these wetlands to be irregularly flooded or seasonally inundated. During very dry seasons, surface water may be absent or limited

to the deepest point within the bay. Likewise, during very wet years when rainfall is abundant, bays may retain water throughout the entire growing season. Depth and duration of seasonal inundation are apparently the most important factors influencing plant communities and the degree to which woody species become established. Dry-season fires in adjacent uplands may spread into Bays and may be another factor limiting the invasion of woody species, although fire frequencies throughout the region have been much reduced in recent decades. The vegetation of Delmarva Bays is closely linked to its hydrologic regime. As water levels draw down or recede during the growing season, plant communities typically develop concentric rings from the outer edge towards the center or deepest point in the bay. Outer rings of a bay may include shrubs of buttonbush *(Cephalanthus occidentalis)*, fetterbush *(Leucothoe racemosa)*, swamp loosestrife *(Lysimachia terrestris)*, and sweet pepper-bush *(Clethra alnifolia)* or nearly monospecific stands of Walter's sedge *(Carex striata)*, maidencane *(Panicum hemitomon)*, and Virginia chain fern *(Woodwardia virginica)*. Interior portions of Bays may include species such as Eaton's panic-grass *(Dichanthelium spretum)*, warty panicgrass *(Panicum verrucosum)*, and Virginia meadow-beauty *(Rhexia virginica)*. Many of these species grade into the "draw down pocket" or lowest portion of a bay, which is the last to desiccate during the growing season. Common to this zone are slender fimbry *(Fimbristylis autumnalis)* and flood tolerant shrubs like buttonbush *(Cephalanthus occidentalis)*. Many plants and animals considered rare in Maryland are known to occur in Delmarva Bays. Delmarva bays and their associated life zones have their own ESA designations identified and mapped.

BALD CYPRESS SWAMPS

Bald cypress swamps are forested wetlands that contain bald cypress (*Taxodium distichum*) as a dominant species in the canopy. In addition to bald cypress, swamp tupelo (*Nyssa biflora*) and pumpkin ash *(Fraxinus profunda)* are also characteristic in the canopy. Bald cypress swamps occur in the tidal and upper non-tidal reaches of the Pocomoke River in Maryland. These habitats are mostly freshwater and are periodically flooded by lunar tides. Stands are found in low floodplains, forming a corridor between open tidal marsh and non-tidal habitats. Due to flooding, these stands typically contain hummocks and hollows where the hollows are frequently flooded and hummocks are occasionally flooded. Due to the "drier" nature of the hummocks, they often support a diversity of woody and herbaceous species.

VERNAL POOLS

Vernal pools are small (~0.1-2 ha), non-tidal palustrine forested wetlands. They exhibit a well-defined, discrete basin and lack a permanent, above-ground outlet. The basin overlies a clay hardpan or some other impermeable soil or rock layer that impedes drainage. As the water table rises in fall and winter, the basin fills forming a shallow pool. By spring, the pool typically reaches maximum depth (~0.5-2.5 m) following snowmelt and the onset of spring rains. By mid- to late summer, the pool usually dries up completely, although some surface water may persist in relatively deep basins, especially in years with above average precipitation. This periodic seasonal drying prevents fish populations from becoming established, an important biotic feature of vernal pools. Many species have evolved to use these temporary, fish-free wetlands. Some are obligate vernal pool species, so-called because they require a vernal pool to complete all or part of their life cycle. vernal pools occur throughout the state as scattered, isolated habitats. They are most numerous on the lower coastal plain, especially on the mid to upper eastern shore, and uncommon west of the fall line. They are typically situated in low areas or depressions in a forest, but they can also occur in floodplain forests as isolated floodwaters, among backwaters of old beaver impoundments, old sinkholes, or as perched spring- or seep-fed basins along mountain slope benches, or at the base of slopes. vernal pools may persist in cleared areas such as cropland, pastures, and clearcuts, but usually in a highly degraded ecological state. Because vernal pools occur throughout the state in a variety of forest types and

settings, the vegetation in and around these habitats varies considerably. However, many vernal pools exhibit similar vegetative structure. For example, pools tend to have a semi-open to closed forest canopy around them and the degree of canopy closure generally decreases with increasing pool size. The basin substrate consists of dense mats of submerged leaf litter and scattered, coarse woody debris. Herbaceous vegetation is usually absent to sparse in and around the basin, although small mossy patches frequently occur along the basin edge. A dense shrub layer may occur along the shoreline or in small patches within the basin, especially on the coastal plain, but many pools also lack a well-developed shrub layer.

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 (91,922 acres) managed by the Maryland Forest Service within the Eastern Region during the 2020 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, 2019 to June 30, 2020. 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.
- Land Acquisition & 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
- 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.
- Work with the Office of the Secretary and constituents to develop an improved hunt club system.
- Host the 4th Annual Ultra-Marathon "Algonquin 50K" race on Chesapeake Forest and Pocomoke State Forest.

- Host the Fat Tire Bike event with the Eastern Shore IMBA on Chesapeake Forest and Pocomoke State Forest.
- 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
    - Algonquin Cross County Trail Extension
    - Mattaponi Pond Trails and Camping Project
    - Pusey Branch Trail Extension and Enhancement Project
    - Seth Demonstration Forest Trail Enhancement Project
- Perform general maintenance on the existing trail system

E. SPECIAL PROJECTS

- Maintain dual forest certification. Summaries of the previous year's audit findings can be found in Appendix B.
- 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. Currently the project is in Phase IV, which deals with restoring the natural hydrology of the site through the use of ditch plugs.
- Initial hydrologic, terrain, and vegetation surveys on the Foster Estate pond restoration continues.

G. SPECIAL WILDLIFE HABITAT PROJECTS

- Initial site review and selection for possible quail management and habitat restoration.
- Planning and execution of the early successional habitat project on the Foster tract with prescribed burning and targeted herbicide applications continues.

H. ECOSYSTEM RESTORATION PROJECTS

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

XERIC HABITAT TREATMENT AND MONITORING PLAN (ABSTRACT)

SITE NAME:

Pocomoke State Forest – Furnace, Foster and Warren Tracts

CONTACT INFORMATION:

Project Contact: Jen Selfridge, Maryland Dept. of Natural Resources, Wildlife and Heritage Service, P.O. Box 68, 909 Wye Mills Road, Wye Mills, MD 21679. Office: 410-827-8612 x102 Email: jennifer.selfridge@maryland.gov

Pocomoke Forest Manager: Mike Schofield, Maryland Dept. of Natural Resources, Forest Service, 3461 Worcester Hwy, Snow Hill, MD 21863. Office: 410-632-3732 Email: mike.schofield@maryland.gov

EXPERIMENTAL DESIGN:

Number of plots or treatment units: Furnace (6), Foster (3), Warren (3)

Size of plots/units: The Furnace Tract comprises roughly 350 acres and the 6 treatment plots range from 43-85 acres each. The Foster Tract comprises 4800 acres and the main unit where the treatment plots will be located is 23.6 acres (the rest of the tract is heavily forested). This 23.6 acre area will be divided into 3 plots of different sizes. The Warren Tract is approximately 120 acres and the main unit we will work in is 30 acres. There will be 3 treatment plots within the 30 acre unit and each will be approximately 3 acres.

Please provide a brief explanation of the treatment plan for each plot/unit including a description of existing vegetation, the proposed work, timing, objectives, and rationale. Use the attached spreadsheet for estimated costs. Please include a site plan or sketch plan.

FURNACE: Most of the plots will be burned on a rotational basis and the cost of this work will be used for match. We are interested in the response of pollinators and vegetation on plots that are burned every 1-2 years versus every 3-4 years. Ideally we will burn 3 of the plots every year and 3 of the plots every 3rd year but this is heavily dependent on available fuel and on weather conditions. Of the 6 plots, 4 were burned in 2017, 1 was burned in 2018, and one has not yet been burned although a burn is scheduled for fall 2018.

In addition to burning we would like to take two of the plots and mechanically clear them in addition to burning. Finally, one plot (the one scheduled to burn in fall 2018) is a site for frosted elfins and cannot be burned in its entirety. This plot will be divided into 3 sub-plots, one of which will be burned in combination with herbicide treatments, while the other two will be managed by mechanical clearing and herbicides.

FOSTER: The 23.6 acre area was burned in 2018. We have not yet determined when or if it will be burned again during the course of this project. Of the burned area, a portion of it is targeted for herbicide treatments of gum and pine; the initial treatment was done in September 2018. A second portion will also be targeted for herbicide treatment as well as mowing where feasible (there are many stumps that need to be avoided). A third portion will serve as a control and will be treated only with prescribed fire.

WARREN: The 30 acre unit was burned in the spring of 2018. We will take 9 of the acres and divide them into three adjacent units. One will be burn only, one will be burn and mow, and the third will be burn and disc.

Maps of all three properties with sketches of the management units are attached.

MONITORING PLAN:

VEGETATION

Outline your vegetation monitoring protocol. If you are using the project protocol or something similar, please explain how you will locate your transects in relation to your treatment plots, number of transects, and the timing of your sampling. If you are using a different method, please briefly explain the differences.

We are using the line-point intercept sampling outlined as the preferred method for this study. We have no recent vegetation data for any of these plots. We did not collect any vegetation data this year but plan to start next year.

BEES

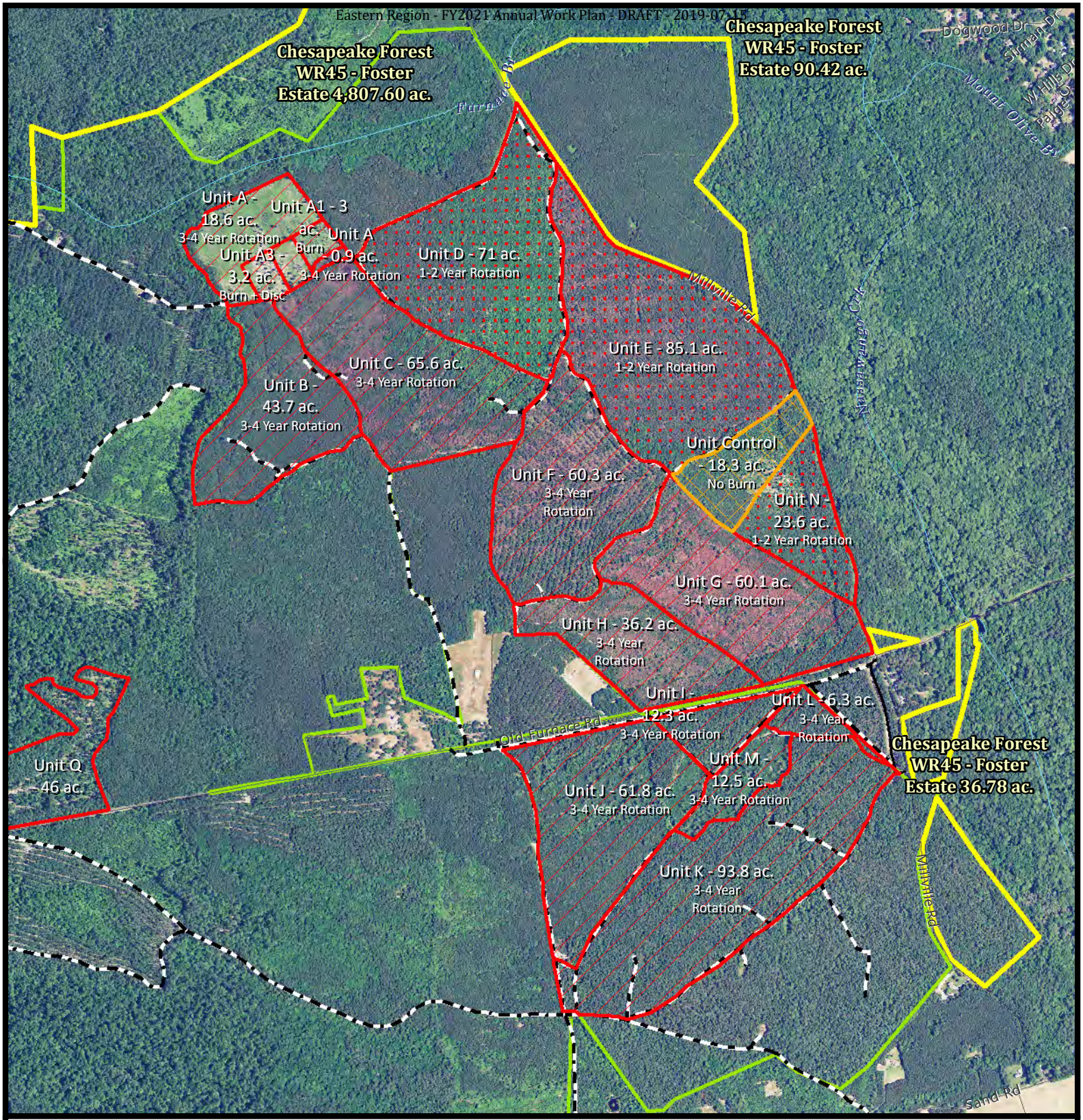
Do you intend to continue or begin bee surveys in future years?

We did conduct bee surveys at both the Foster and Furnace Tracts in 2018. We did not (and cannot) put out bee bowls at the Furnace Tract during the spring survey because of the potential to kill frosted elfin butterflies. However we will still hand collect. We can do bee surveys at the Warren Tract if there is someone able to identify them. Our understanding was that each state could only submit 3 transects per season. This is hard for us because we are also working at Green Ridge State Forest, and have to this point been submitting 2 samples from Pocomoke and 1 from Green Ridge, but that will need to be revisited.

BUTTERFLIES AND MOTHS

Do you have an interest in surveying for butterflies and moths in future years?

It would be relatively easy to add butterfly surveys if they could overlap the time spent netting for bees or be added onto that time. It would be incredibly expensive and time consuming to add moth surveys. It would be great to have the data but it would probably not be feasible to trap, pin and identify moths without hiring someone to do this at a private contractor rate. Additionally, all of our locations are fairly remote with no light sources nearby; we may be attracting moths to lights from fair distances and could not confidently tie their presence to any of our management techniques.



Legend

- Chesapeake Forest
- Pocomoke State Forest

1,320 0 1,320 2,640 Feet

This map is for planning purposes only.
This map is not a boundary survey

Furnace, Nazareth Church, Warren tracts
Proposed Burn Units

Scale: 1:15,840
Date: 9/27/2018

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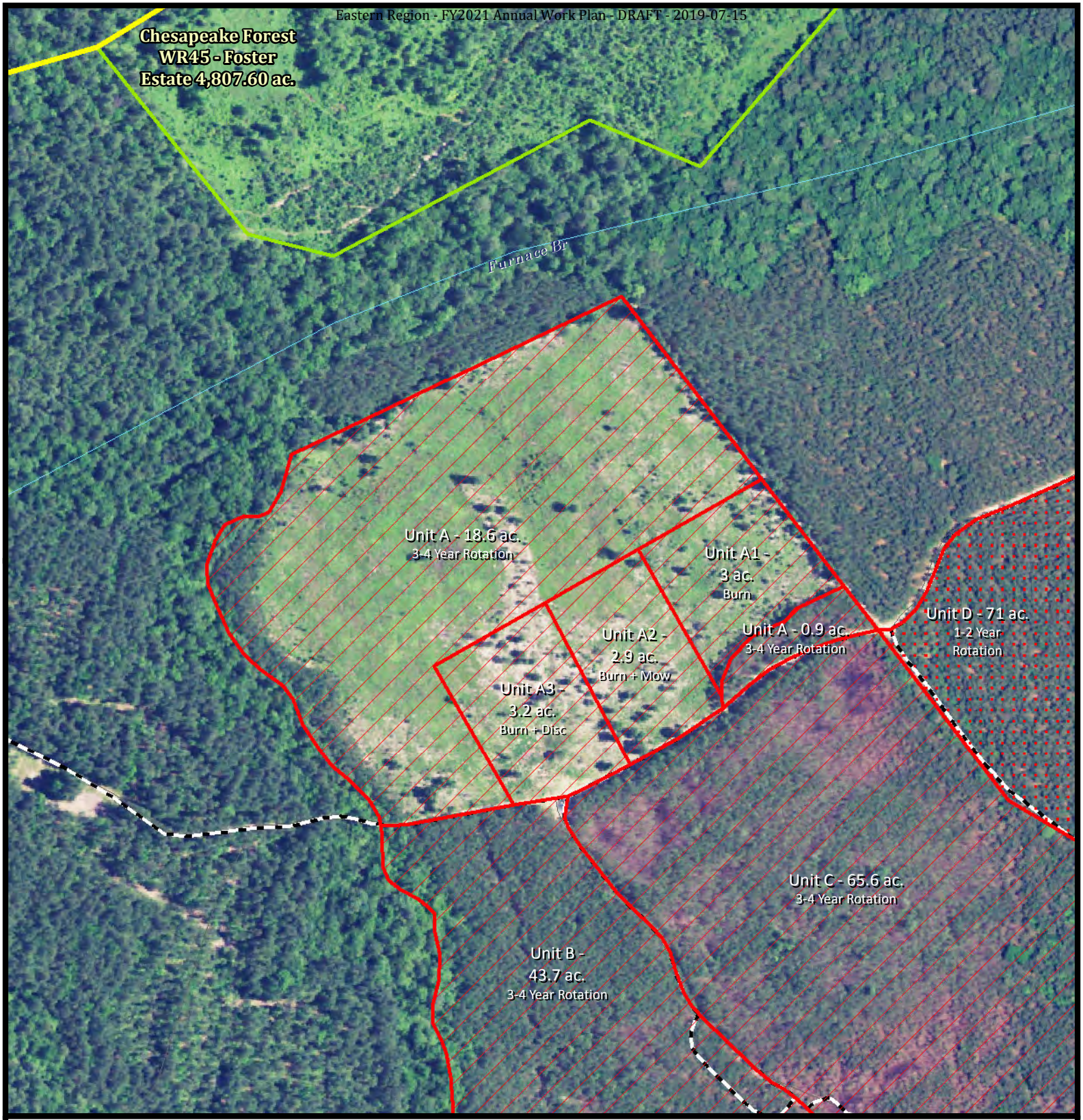
MARYLAND DEPARTMENT OF NATURAL RESOURCES



Legend

- Chesapeake Forest
- Pocomoke State Forest

330 0 330 660 Feet

This map is for planning purposes only.
This map is not a boundary survey

Warren tract
Proposed Burn Units

Scale: 1:3,960
Date: 9/27/2018

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MARYLAND DEPARTMENT OF NATURAL RESOURCES

Legend

Chesapeake Forest

Pocomoke State Forest

330 0 330 660 Feet

This map is for planning purposes only.
This map is not a boundary survey

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Foster Estate
Proposed Burn Units

Scale: 1:3,960
Date: 9/27/2018

MARYLAND DEPARTMENT OF NATURAL RESOURCES

I. MONITORING PROJECTS

- Maryland Wood Duck Initiative – D03 – Little Blackwater – Cliff Brown
- Lupine and Frosted Elfin – Furnace Tract – WHS – Jennifer Selfridge
- Bat Study – Bats and Prescribed Burning – WHS – Dana Limpert
- Delmarva Fox Squirrel – Hunt Club Monitoring Project – USF&WS – Cherry Keller
- Trail Monitoring – Recreation Trail Grant trail counters
- Maryland Biological Stream Survey – Stream Sampling on Pocomoke State Forest – DNR Resource Assessment Service – Matt Ashton

J. REVIEW PROCESS

INTERDISCIPLINARY TEAM COMMENTS

CITIZEN'S ADVISORY COMMITTEE COMMENTS

PUBLIC COMMENTS

K. SILVICULTURAL PROJECTS

SILVICULTURAL ACTIVITY OVERVIEW

Tables 2 and 3 summarize the proposed silvicultural activities for the 2021 annual work plan on approximately 1,904.2 acres (2.6%) of the Chesapeake Forest and 273.6 acres (1.5%) of Pocomoke State Forest, for a total of 2,177.7 acres (2.1%) on both forests.

Table 2. 2021 Chesapeake Forest Silvicultural Activity Overview. (CF-21-S-1 – CF-21-S-30)

Activity	Acres
Pre-Commercial Thinning	38.1
First thinning	1521.3
Second thinning	62.5
Final Harvest	282.3
Total	**1904.2**

Table 3. 2021 Pocomoke State Forest Silvicultural Activity Overview. (P-21-S-1 – P-21-S-3)

Activity	Acres
First Thinning	73.4
Final Harvest	200.3
Total	**273.7**

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

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 to10 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 & FIDS 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 manufactures 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 shows 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-21-S-01

Proposal Name: C01 – Merrikan & Gordy – Stands 4, 5 & 9
Harvest Area: 127.2 acres
Forest Community Types and Development: Stand 4 is an overstocked loblolly pine stand naturally regenerated in 1996, and pre-commercially thinned in 2005. Stand 5 is an overstocked loblolly pine plantation established in 1998. Stand 9 is an overstocked loblolly pine plantation established in 1999.
Habitats and Species of Management Concern: ESA Zone 1, ESA Zone 3 Pulpwood, General Management
Water Resources: Smithville Ditch, Tommy Wright Ditch, Marshyhope Creek watershed
Soil Resources: FaA, FgA, HbA, HbB, HbC, WdA, and Za
Historic Conditions: MHT Grid – C465_R152
Sivilcultural Prescription: First thinning, retain significant hard mast species

DORCHESTER COUNTY

[CF-21-S-02]

Proposal Name: D11 – Harper – Stands 1 & 4
Harvest Area: 43.4 acres

Forest Community Types and Development: Stand 1 is an overstocked loblolly pine stand naturally regenerated in 1997 and Stand 4 is an overstocked loblolly pine stand planted in 1998; both pre-commercially thinned in 2010.
Habitats and Species of Management Concern: DFS Core and Stream Buffer
Water Resources: Marshyhope Creek watershed
Soil Resources: EwC, GaA, GaB, and HvA
Historic Conditions: MHT Grid – C455_R178 and C455_R179
Sivilcultural Prescription: First thinning, retain significant hard mast species

[CF-21-S-03]

Proposal Name: D12 – Marshyhope – Stand 42
Harvest Area: 55.7 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1998, pre-commercially thinned in 2008.
Habitats and Species of Management Concern: ESA Zone 1 Sand Ridge and ESA Zone 3 Sawtimber
Water Resources: Marshyhope Creek watershed
Soil Resources: EwC, GaA, GaB, KgB, RsA, and RsB
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning, retain significant hard mast species

[CF-21-S-04]

Proposal Name: D16 – Demby – Stand 1
Harvest Area: 42.5 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1997.
Habitats and Species of Management Concern: DFS Core
Water Resources: Marshyhope Creek watershed
Soil Resources: FmA, FmB, GaA, GaB, HvA, and KgB
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning, retain significant hard mast species

SOMERSET COUNTY

[CF-21-S-05]

Proposal Name: S21 – E. Mace Smith – Stands 1 & 53
Harvest Area: 20.2 acres
Forest Community Types and Development: Overstocked loblolly pine naturally regenerated in 1998, sprayed in 2000.
Habitats and Species of Management Concern: DFS Core
Water Resources: Manokin River and Monie Bay watersheds
Soil Resources: OKA, OtA and QuA
Historic Conditions: MHT Grid – C464_R248
Sivilcultural Prescription: First thinning, retain significant hard mast species

[CF-21-S-06]

Proposal Name: S24– Oriole – Stand 10
Harvest Area: 90.0 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1992.
Habitats and Species of Management Concern: General Management
Water Resources: Geanquakin Creek, Manokin Creek watershed

Soil Resources: OtA and Qua
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning

[CF-21-S-07]

Proposal Name: S28 – Lynnwood Duncan – Stand 2
Harvest Area: 101.2 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established and sprayed in 2000
Habitats and Species of Management Concern: DFS Core
Water Resources: Lower Pocomoke River watershed
Soil Resources: FgA, and OKA
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning

[CF-21-S-08]

Proposal Name: S49 – Handy – Stands 11
Harvest Area: 17.7 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1999 and sprayed in 2001.
Habitats and Species of Management Concern: General Management
Water Resources: Pocomoke Sound watershed
Soil Resources: GlA, LO, OKA, and OvA
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning

[CF-21-S-09]

Proposal Name: S50 – Hopewell – Stand 3
Harvest Area: 60.3 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1999 and sprayed in 2001.
Habitats and Species of Management Concern: General Management
Water Resources: Pocomoke Sound watershed
Soil Resources: LO, OKA, OoA, OtA, and OvA
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning

[CF-21-S-10]

Proposal Name: S52 – Paul's Corner – Stand 3
Harvest Area: 39.7 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1999 and sprayed in 2001.
Habitats and Species of Management Concern: General Management
Water Resources: Pocomoke Sound watershed
Soil Resources: FgA, OtA, and QuA
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning

WICOMICO COUNTY

[CF-21-S-11]

Proposal Name: W04 – Hodgson #2 – Stand 1
Harvest Area: 66.5 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1998.
Habitats and Species of Management Concern: Stream Buffer and DFS Future
Water Resources: Bratton Creek, Dividing Creek watershed
Soil Resources: CRA, HgB, HmA, HvA, and MuA
Historic Conditions: House site identified by CF staff
Sivilcultural Prescription: First thinning, retain significant hard mast species

[CF-21-S-12]

Proposal Name: W10 – Athol – Stands 1, 11 & 23
Harvest Area: 92.6 acres
Forest Community Types and Development: Overstocked loblolly pine plantations established in 1994, 1995, and 1998.
Habitats and Species of Management Concern: Stream Buffer, Core FIDS, and General Management
Water Resources: Little Creek, Nanticoke River watershed
Soil Resources: CoA, FaA, FgA, HbB, HnA, IeB, KgB, OtA, RkB, WdA, and Zk
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning, retain significant hard mast species

[CF-21-S-13]

Proposal Name: W10 – Athol – Stands 12
Harvest Area: 9.6 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1977 and first thinned in 1999.
Habitats and Species of Management Concern: Core FIDS and General Management
Water Resources: Nanticoke River watershed
Soil Resources: FaA and FgA
Historic Conditions: No known historic features
Sivilcultural Prescription: Second thinning, retain significant hard mast species

[CF-21-S-14]

Proposal Name: W12 – Agnes-Bennett – Stands 4 & 5
Harvest Area: 88.0 acres
Forest Community Types and Development: Loblolly pine plantations established in 1975 and 1977
Habitats and Species of Management Concern: Stream Buffer and General Management
Water Resources: Rewastico Creek, Nanticoke River watershed
Soil Resources: AsA, CoA, FaA, FgA, HnA, IeB, KgB, MtA, OtA, and WdA
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning

[CF-21-S-15]

Proposal Name: W15 – Freeney #2 – Stand 2
Harvest Area: 15.2 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1998
Habitats and Species of Management Concern: Core FIDS and General Management
Water Resources: Nanticoke River watershed
Soil Resources: FgA, OtA, and WdA

Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning, retain significant hard mast species

[CF-21-S-16]

Proposal Name: W15 – Freeney #2 – Stand 1
Harvest Area: 52.9 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1983 and first thinned in 2002.
Habitats and Species of Management Concern: Core FIDS and General Management
Water Resources: Nanticoke River watershed
Soil Resources: CoA, FgA, OtA, and WdA
Historic Conditions: No known historic features
Sivilcultural Prescription: Second thinning, retain significant hard mast species

[CF-21-S-17]

Proposal Name: W21 – Louis Horner – Stand 15
Harvest Area: 74.9 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1998
Habitats and Species of Management Concern: ESA Zone 3 Sawtimber and DFS Future Core
Water Resources: Williams Gut, Nanticoke River watershed
Soil Resources: AsA, BhA, FaA, HnA, KgB, and OtA
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning, retain significant hard mast species

[CF-21-S-18]

Proposal Name: W23 – Greenhill – Stand 57
Harvest Area: 62.7 acres
Forest Community Types and Development: Overstocked loblolly pine plantations established in 1986 and first thinned in 2002
Habitats and Species of Management Concern: FIDS and General Management
Water Resources: Nanticoke River watershed
Soil Resources: CoA and OtA
Historic Conditions: No known historic features
Sivilcultural Prescription: Second thinning, retain significant hard mast species

[CF-21-S-19]

Proposal Name: W32 –Hartman – Stands 1 & 3
Harvest Area: 81.2 acres
Forest Community Types and Development: Stand 1 is an overstocked loblolly pine plantation established in 1999, and stand 3 is an overstocked loblolly pine stand naturally regenerated in 1980.
Habitats and Species of Management Concern: Stream Buffer and DFS Core
Water Resources: Wicomico Creek watershed
Soil Resources: CoA, FaA, FgA, IeA, IeB, KgB, OtA, RwB, and WdA
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning, retain significant hard mast species

[CF-21-S-20]

Proposal Name: W35 – Messick – Stand 9
Harvest Area: 38.1 acres

Forest Community Types and Development: Overstocked loblolly pine plantations established in 2014 and 2015.
Habitats and Species of Management Concern: ESA Zone 1, FIDS, and General Management
Water Resources: Wicomico River Head watershed
Soil Resources: LfA, LgA, PrA, and PrB
Historic Conditions: No known historic features
Sivilcultural Prescription: Pre-commercial thinning, prioritize removal of sweetgum and red maple

[CF-21-S-21]

Proposal Name: W42 – Hearn – Stand 1
Harvest Area: 81.4 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1998 and sprayed in 2000.
Habitats and Species of Management Concern: Stream Buffer and General Management
Water Resources: Upper Pocomoke River watershed
Soil Resources: AsA, BhA, FaA, KgB, MuA, and RsA
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning

[CF-21-S-22]

Proposal Name: W46 – Campbell – Stand 2
Harvest Area: 65.7 acres
Forest Community Types and Development: Overstocked loblolly pine plantations established in 1996.
Habitats and Species of Management Concern: DFS Future Translocation
Water Resources: Upper Pocomoke River watershed
Soil Resources: BhA, HvA, and KgB
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning, retain significant hard mast species

[CF-21-S-23]

Proposal Name: W46 – Campbell – Stands 46, 71, 102 & 103
Harvest Area: 70.0 acres
Forest Community Types and Development: Overstocked loblolly pine plantations established in 1986, 1991, 1994, and 1996.
Habitats and Species of Management Concern: Stream Buffer, DFS Future Translocation, and DFS Future Core
Water Resources: Upper Pocomoke River watershed
Soil Resources: BhA, HvA, KgB, MuA, and RsB
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning, retain significant hard mast species

[CF-21-S-24]

Proposal Name: W46 – Campbell – Stand 130
Harvest Area: 72.6 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 2000.
Habitats and Species of Management Concern: Stream Buffer and DFS Future Core
Water Resources: Savannah Branch, Upper Pocomoke River watershed
Soil Resources: BhA, EwB, HvA KgB, LO, MuA, and RsB
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning, retain significant hard mast species

[CF-21-S-25]

Proposal Name: W48 – Peterson Farm – Stands 2, 3 & 4
Harvest Area: 205.8 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1991 and first thinned in 2010, and overstocked loblolly pine plantation established in 1998.
Habitats and Species of Management Concern: ESA Zone 1, ESA Zone 3 Pulpwood, Stream Buffer, and General Management
Water Resources: Horsebridge Creek, Nassawango Creek watershed
Soil Resources: AsA, CoA, FgA, HvA, KfA, KgB, LfA, LO, MuA, PrA, PrB, RsA, RsB, and WdA
Historic Conditions: MHT Grid – C497_R225, house site identified by CF staff
Sivilcultural Prescription: Final harvest to accommodate FAA maximum tree height requirements and for Salisbury Airport runway expansion

[CF-21-S-26]

Proposal Name: W54 – Carey – Stand 3
Harvest Area: 37.1 acres
Forest Community Types and Development: Overstocked loblolly pine plantation established in 1996.
Habitats and Species of Management Concern: Stream Buffer and General Management
Water Resources: Dividing Creek watershed
Soil Resources: FmB, LgA, and WdA
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning

WORCESTER COUNTY

[CF-21-S-27]

Proposal Name: WR17 – Livingston – Stand 4
Harvest Area: 27.7 acres
Forest Community Types and Development: Mature loblolly pine naturally regenerated in 1970, first thinned in 1995, sprayed in 1997, and fertilized in 1998.
Habitats and Species of Management Concern: General Management
Water Resources: Dividing Creek watershed
Soil Resources: AsA, BhA, KsB, and WdA
Historic Conditions: No known historic features
Sivilcultural Prescription: Final harvest

[CF-21-S-28]

Proposal Name: WR19 – Priscilla Pusey – Stands 8 & 9
Harvest Area: 48.8 acres
Forest Community Types and Development: Stand 8 is loblolly pine naturally regenerated in 1988, sprayed in 1990, and first thinned in 2008. Stand 9 is a loblolly pine plantation established in 1982 and first thinned in 2006.
Habitats and Species of Management Concern: ESA Zone 1 Sand Ridge and ESA Zone 3 Pulpwood
Water Resources: Dividing Creek watershed
Soil Resources: AsA, BhA, CeB, EvB, EvD, HuA, KsA, KsB, LO, MuA, RuB, and UzB
Historic Conditions: MHT Grid – C487_R239 and C487_R240
Sivilcultural Prescription: Final harvest, retain any pond pine or shortleaf pine if found.

[CF-21-S-29]

Proposal Name: WR41 – Mill – Stands 1 & 2
Harvest Area: 33.7 acres
Forest Community Types and Development: Stand 1 is an overstocked loblolly pine plantation established in 1992. Stand 2 is an overstocked loblolly pine plantation established in 1999.
Habitats and Species of Management Concern: Core FIDS and General Management
Water Resources: Lower Pocomoke River watershed
Soil Resources: FaA, HbA, MpA, MtA, and OtA
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning, retain significant hard mast species

[CF-21-S-30]

Proposal Name: WR45 – Foster Estate – Stands 70 & 107
Harvest Area: 80.3 acres
Forest Community Types and Development: Stand 70 is an overstocked loblolly pine plantation established in 1989. Stand 107 is an overstocked loblolly pine plantation established in 1983.
Habitats and Species of Management Concern: ESA Zone 1 Sand Ridge and DFS Future Core
Water Resources: Nassawango Creek and Dividing Creek watersheds
Soil Resources: AsA, BhA, EvB, EvD, KsB, MuA, and RuB
Historic Conditions: MHT Grid – C492_R238
Sivilcultural Prescription: First thinning, retain significant shortleaf pine, pond pine, and hard mast species

POCOMOKE STATE FOREST

[P-21-S-01]

Proposal Name: P02 – Nazareth Church – Tract 7 – Stands 11 & 16
Harvest Area: 43.8 acres
Forest Community Types and Development: Mature pine/hardwood naturally regenerated in 1918 and 1926.
Habitats and Species of Management Concern: DFS Future Core
Water Resources: Dividing Creek watershed
Soil Resources: AsA, BhA, Ma, MuA, and RuB
Historic Conditions: No known historic features
Sivilcultural Prescription: Final harvest, retain significant hard mast species, pond pine, and shortleaf pine

[P-21-S-02]

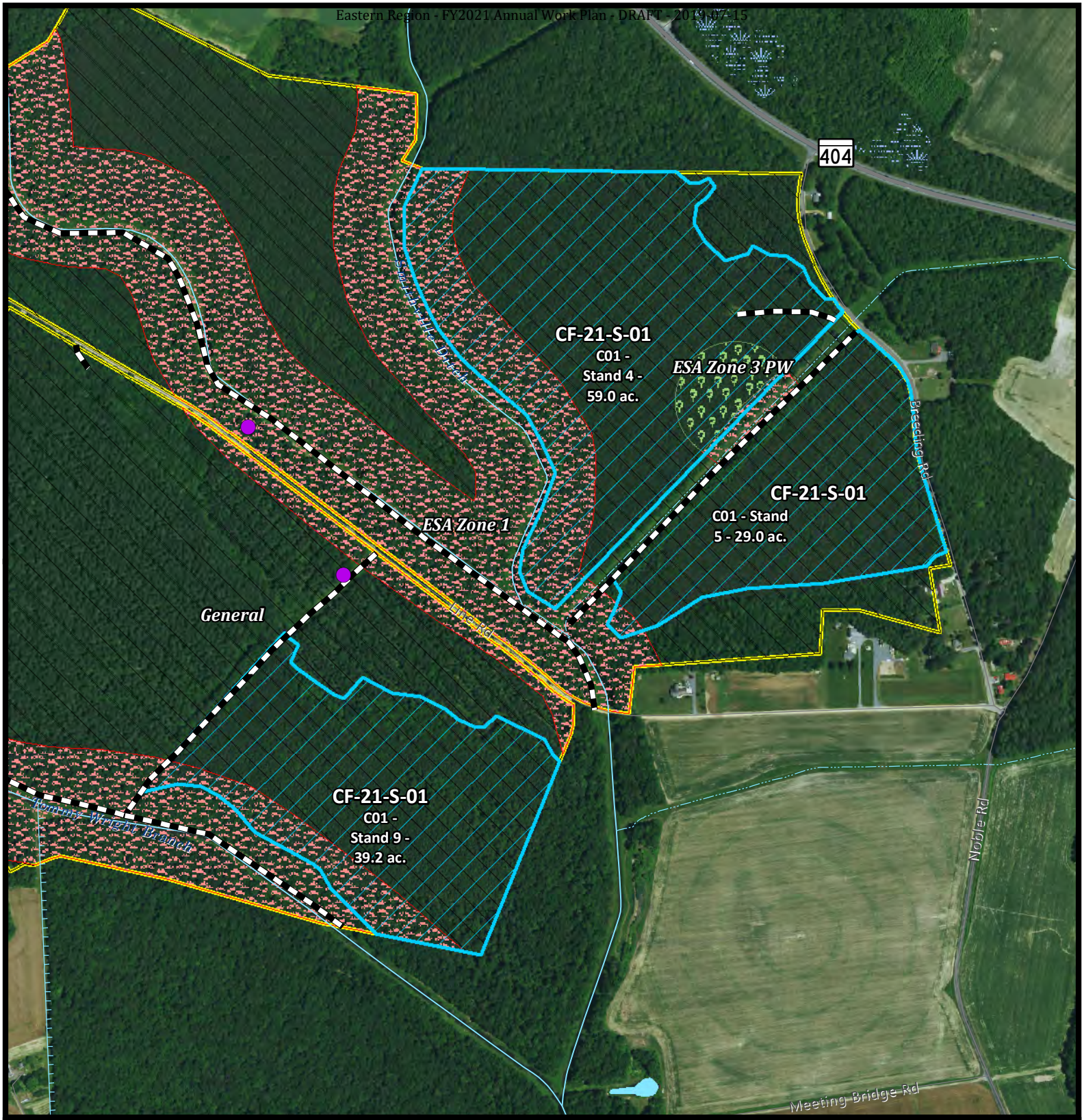
Proposal Name: P02 – Nazareth Church – Tract 10 – Stands 18 & 22
Harvest Area: 29.6 acres
Forest Community Types and Development: Mature pine/hardwood naturally regenerated in 1905 and 1924.
Habitats and Species of Management Concern: ESA Zone 1 and DFS Future Core
Water Resources: Dividing Creek watershed
Soil Resources: AsA, CeB, KsA, KsB, Ma, MuA, and RuB
Historic Conditions: No known historic features
Sivilcultural Prescription: Final harvest, retain significant hard mast species, pond pine, and shortleaf pine

[P-21-S-03]

Proposal Name: P02 – Warren – Tract 25 – Stands 2 & 5
Harvest Area: 200.2 acres
Forest Community Types and Development: Stand 2 is an overstocked loblolly pine plantation established in 1986. Stand 5 is an overstocked loblolly pine plantation established in 1996. A portion of stand 5 was burned in 2017.

Habitats and Species of Management Concern: ESA Zone 1, Stream Buffer, and DFS Future Core
Water Resources: Dividing Creek and Nassawango Creek watershed
Soil Resources: AsA, BhA, CeB, EvA, EvB, EvD, GaB, GaC, HmA, HuA, KsA, sB, MuA, RoB, RuA, RuB, and Za
Historic Conditions: No known historic features
Sivilcultural Prescription: First thinning

SILVICULTURAL SITE MAPS



CF-21-S-01

Scale: 1:7,920
Date: 06/2019

Legend

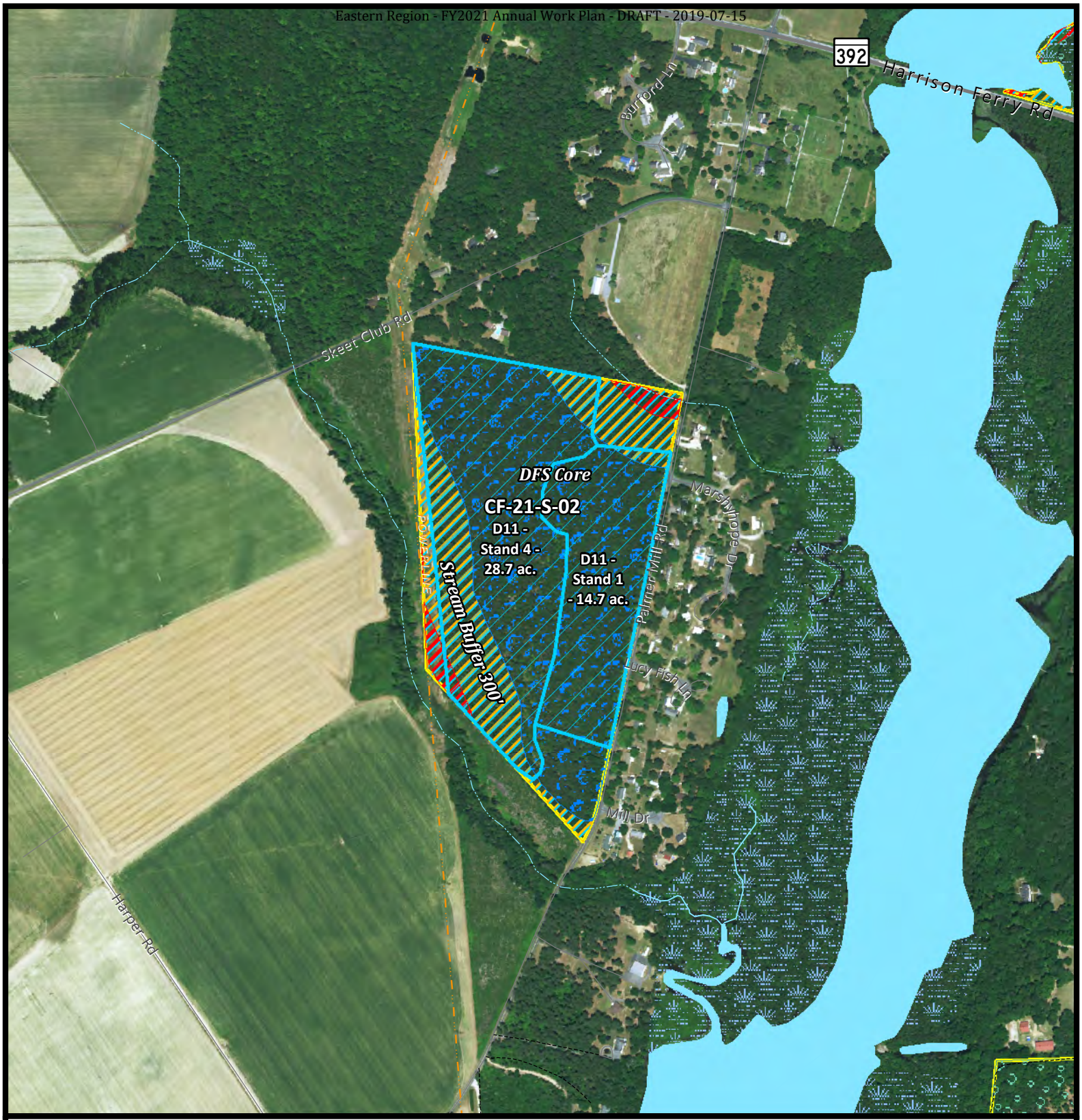
- Home Sites
- CF AWP Activity
- 2021 First Thinning
- **CF Management**
- ESA Zone 1
- ESA Zone 3 PW
- General

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-02

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 First Thinning

CF Management
- DFS Core
- ESA Zone 3 ST

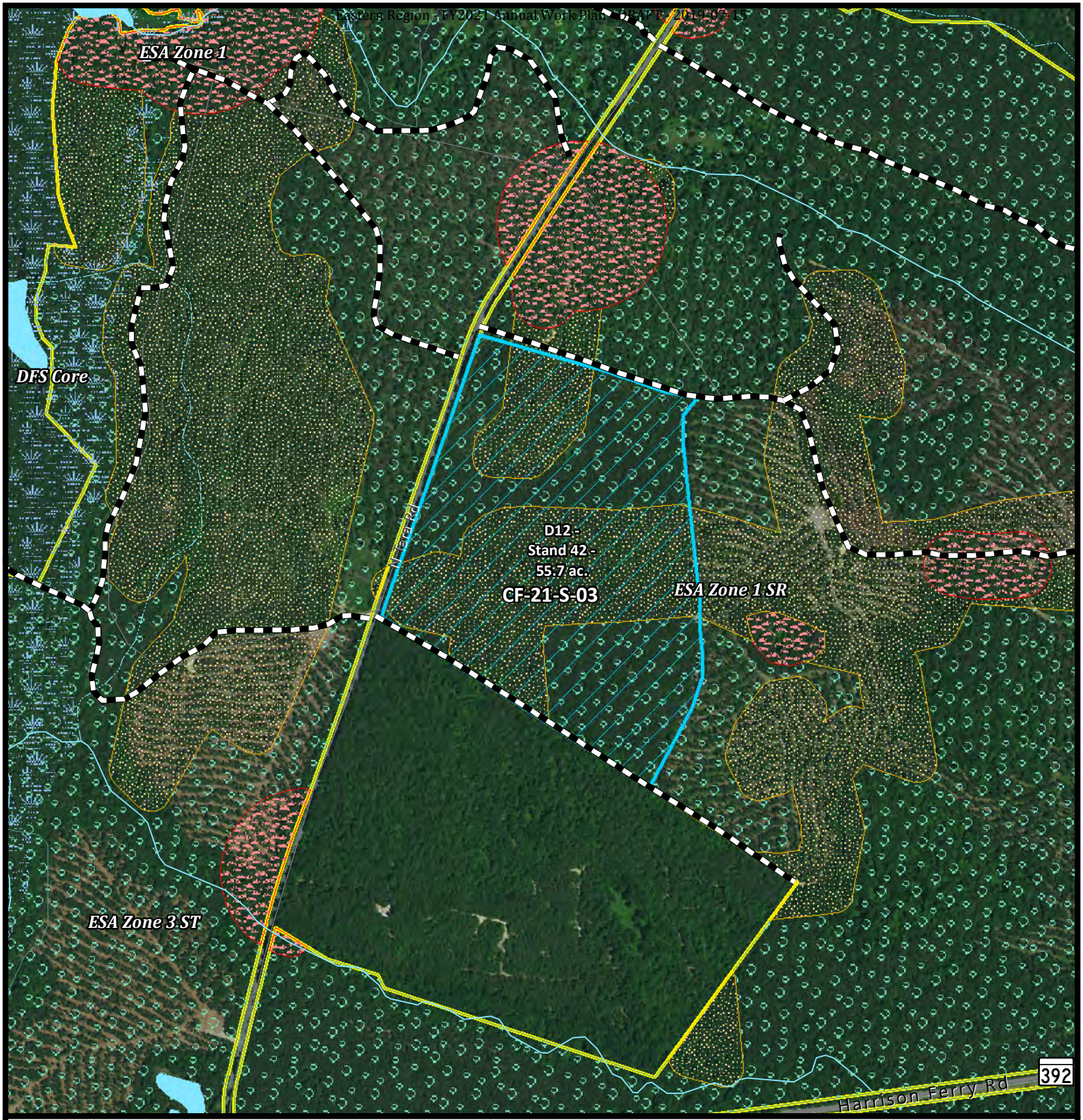
- Stream Buffer 50'
- Stream Buffer 300'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-03

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 First Thinning

CF Management
- DFS Core
- ESA Zone 1
- ESA Zone 1 SR
- ESA Zone 3 ST

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

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MARYLAND DEPARTMENT OF NATURAL RESOURCES

CF-21-S-04

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity

2021 First Thinning

CF Management

DFS Core

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

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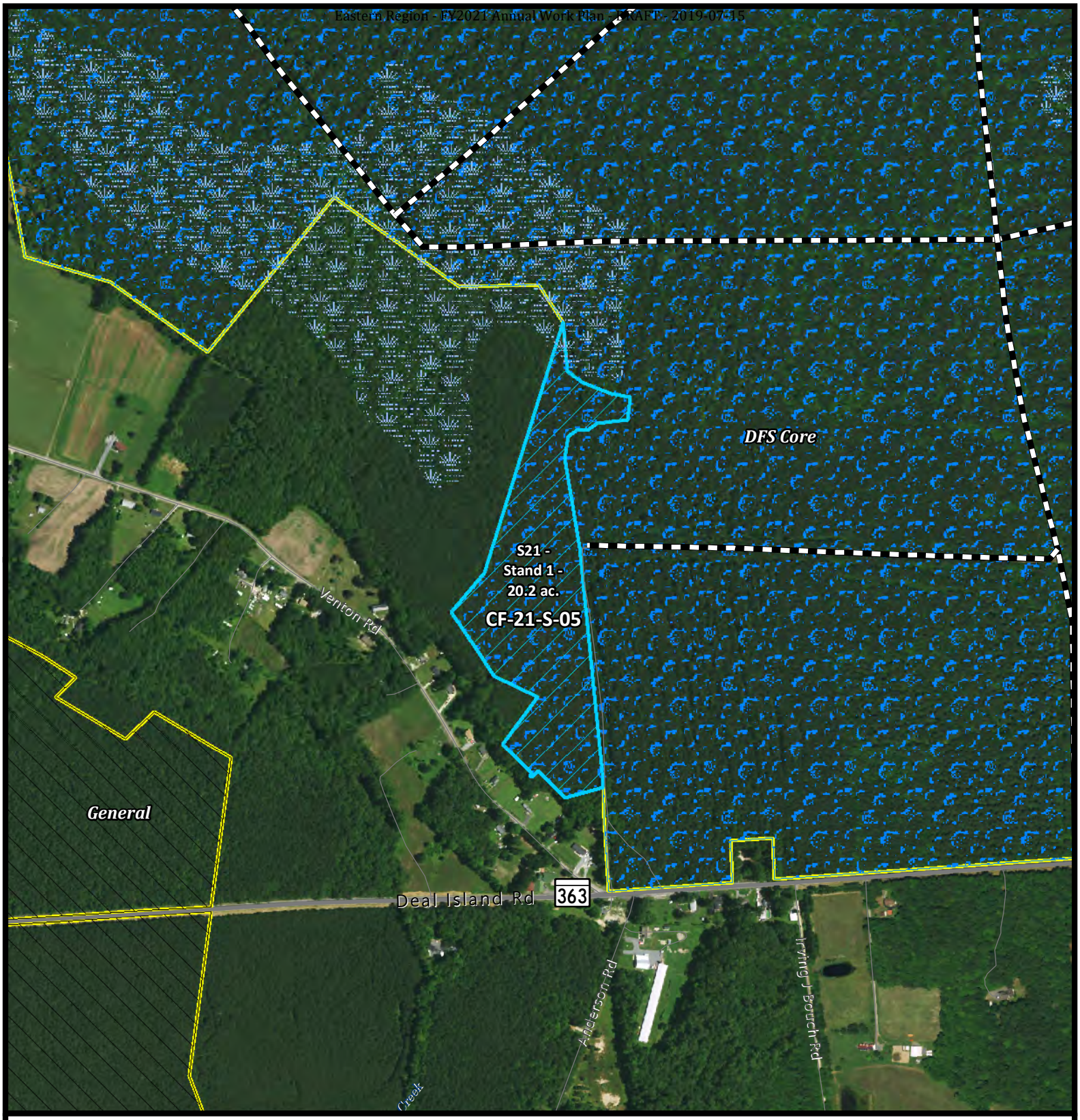
MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-05

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
2021 First Thinning

CF Management
General
DFS Core

660 0 660 1,320
Feet

This map is for planning purposes only.
This map is not a boundary survey

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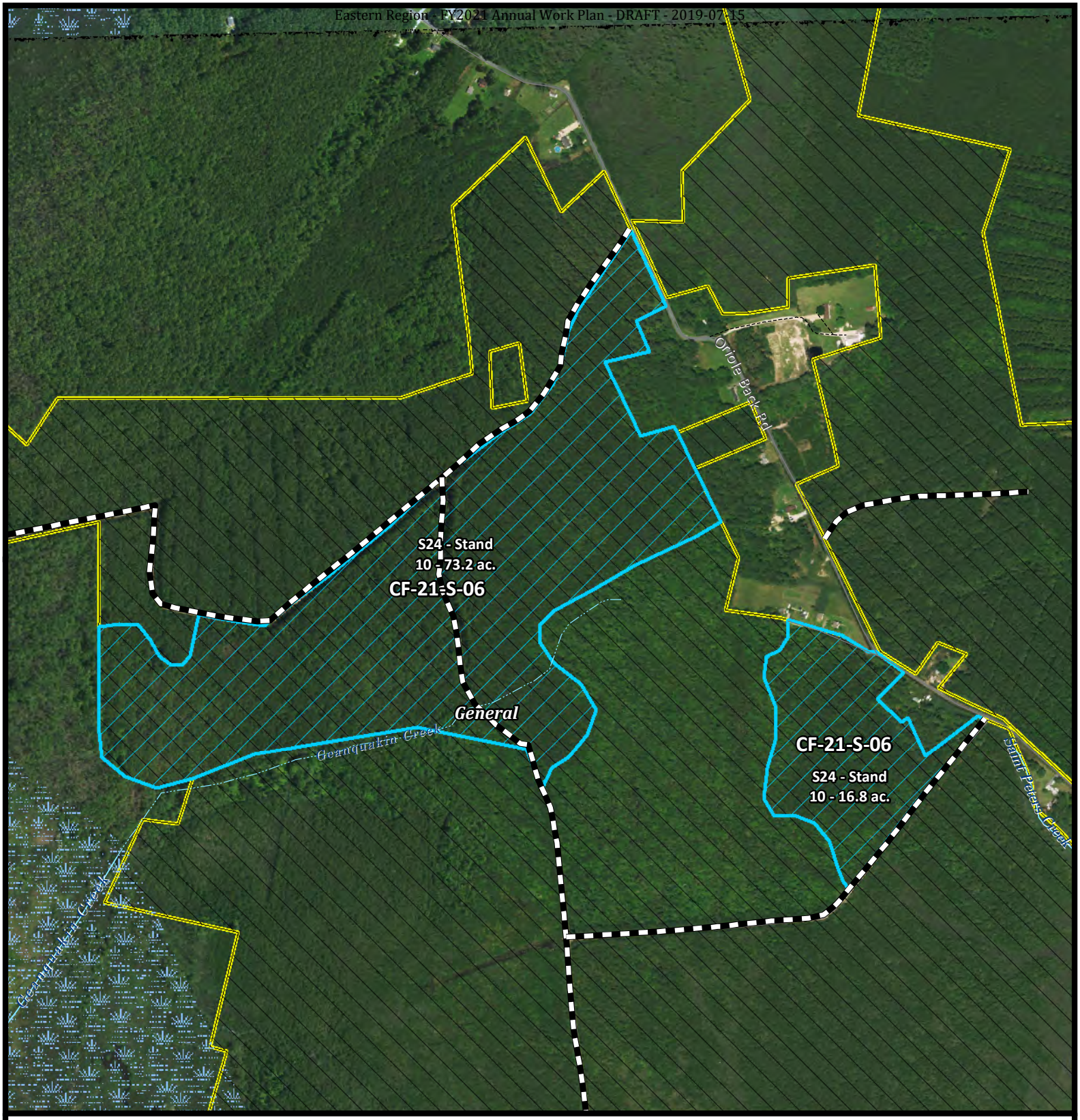
MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-06

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity

2021 First Thinning

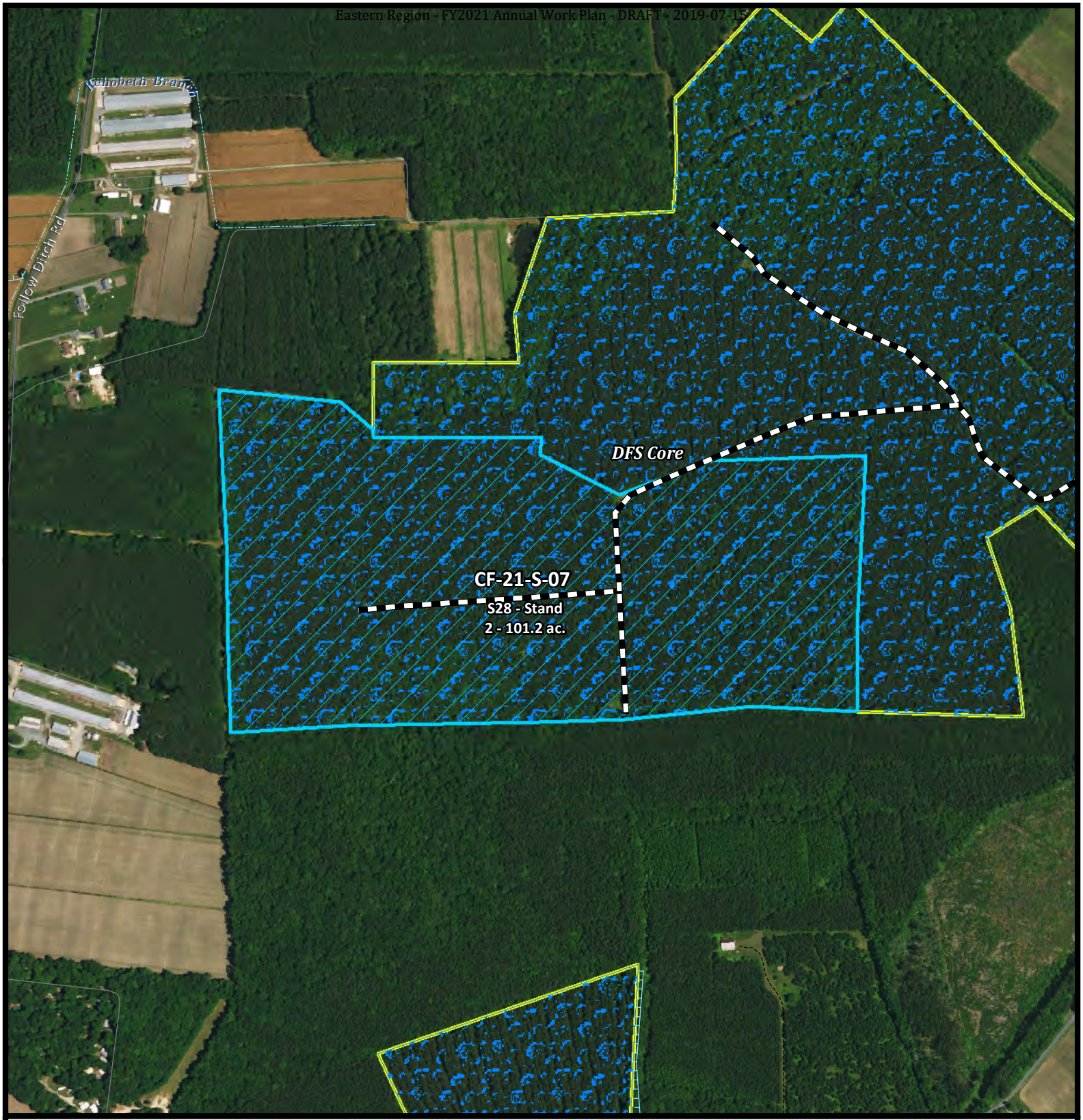
CF Management General

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-07

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity

2021 First Thinning

CF Management

DFS Core

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

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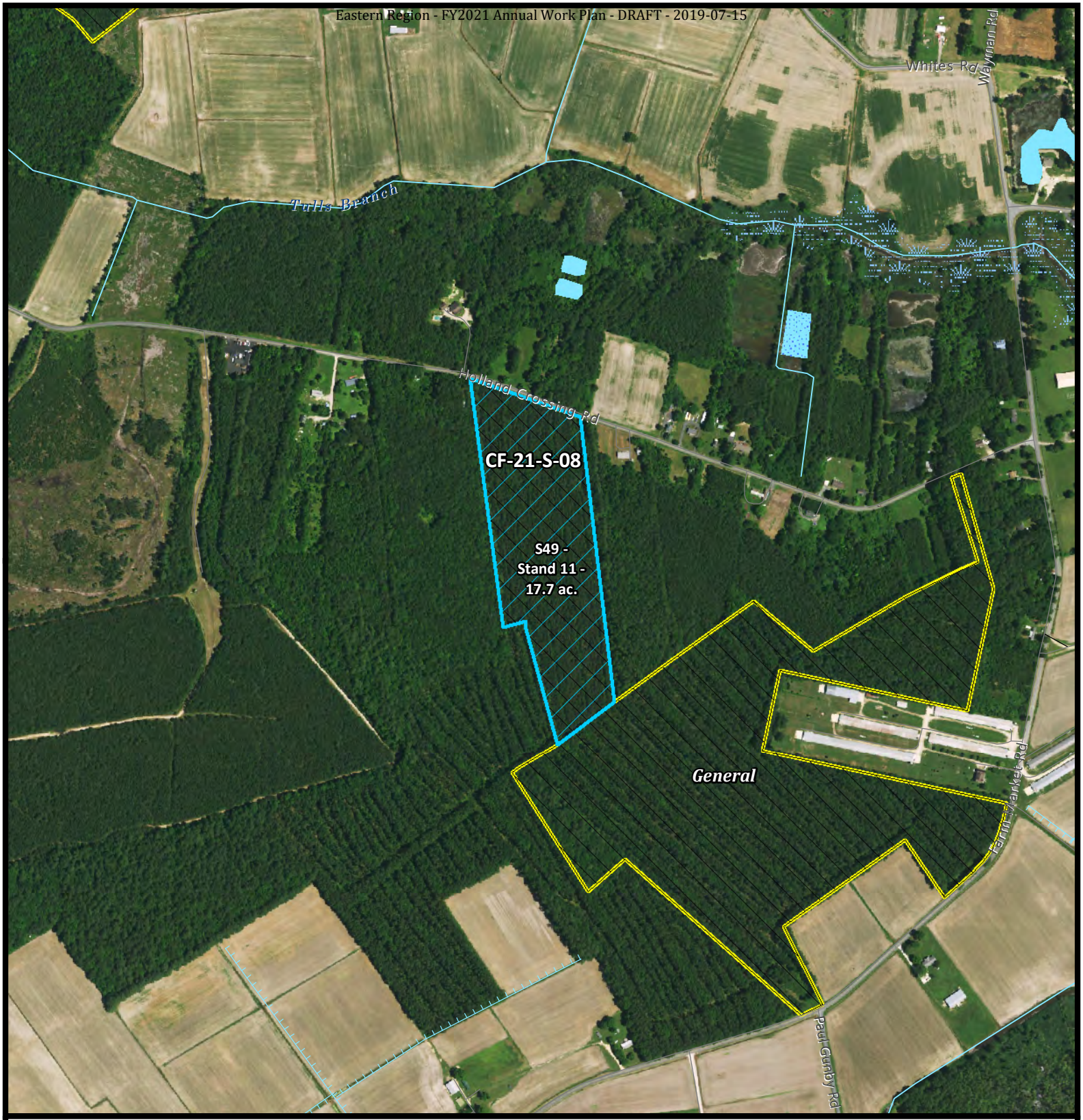
MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-08

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
2021 First Thinning

CF Management
General

660 0 660 1,320
Feet

This map is for planning purposes only.
This map is not a boundary survey

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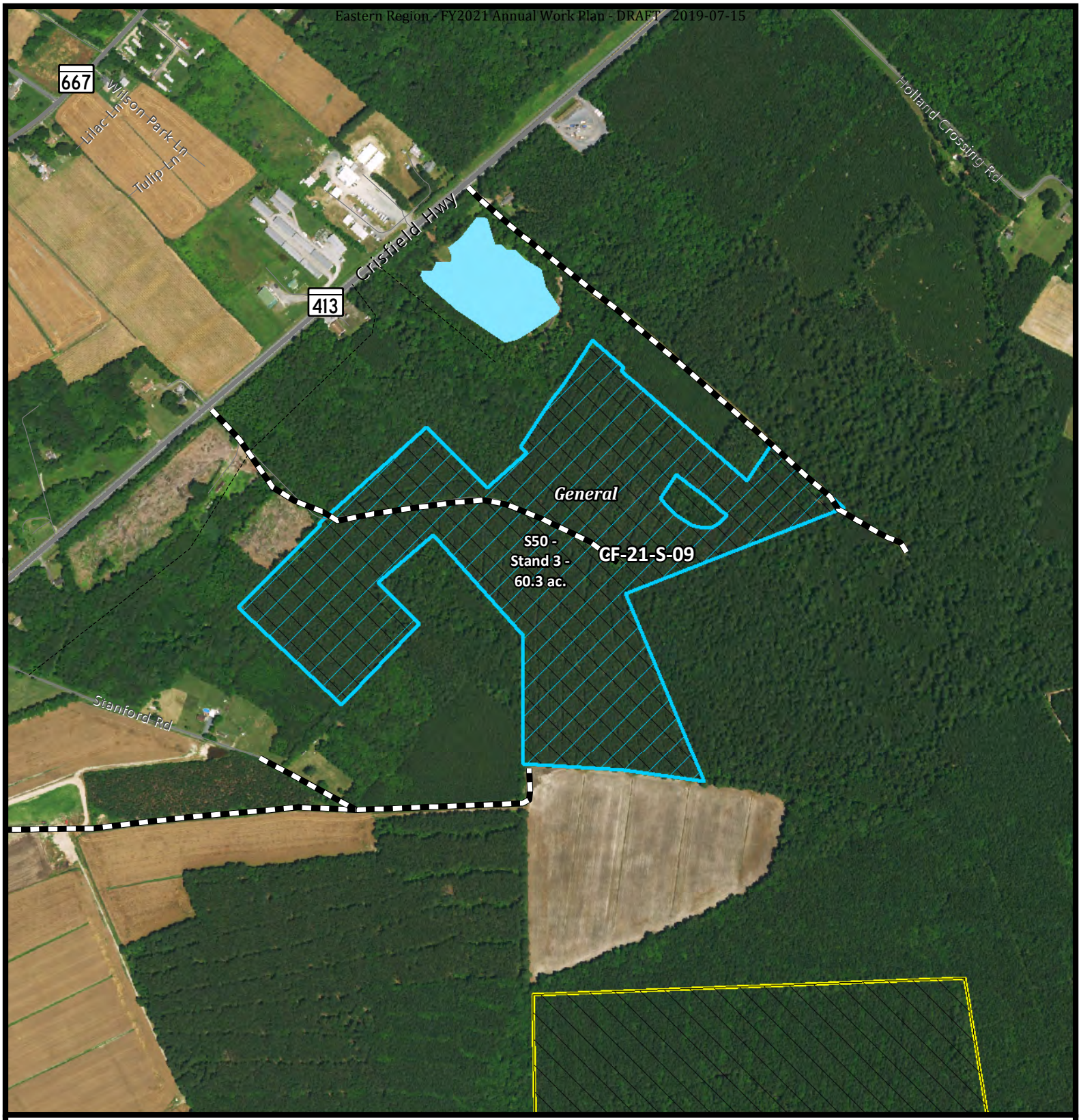
MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-09

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity

2021 First Thinning

CF Management General

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

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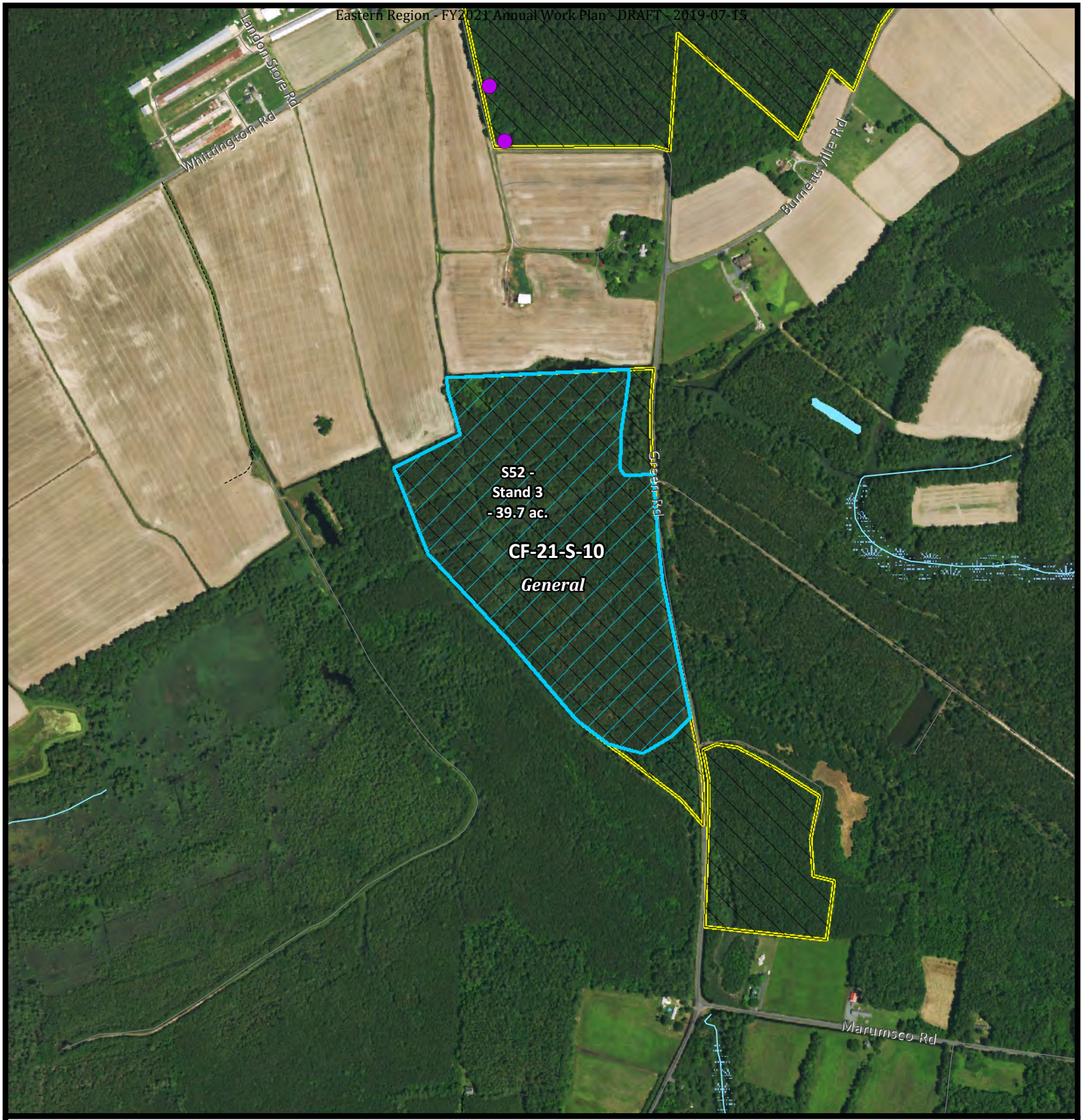
MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-10

Scale: 1:7,920
Date: 06/2019

Legend

Home Sites

CF Management General

CF AWP Activity

2021 First Thinning

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

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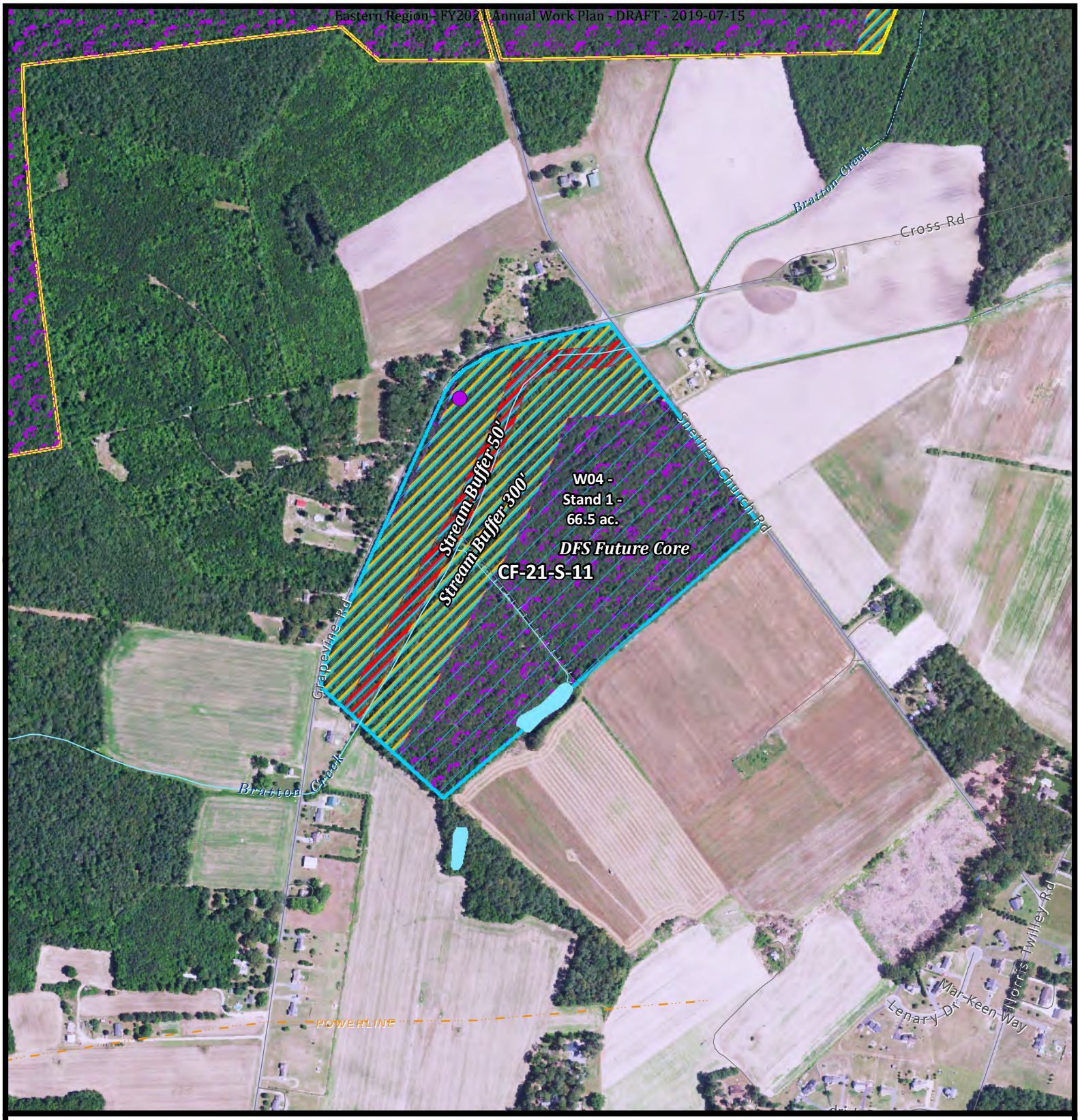
MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-11

Scale: 1:7,920
Date: 06/2019

Legend

Home Sites

CF AWP Activity

2021 First Thinning

CF Management

DFS Future Core

Stream Buffer 50'

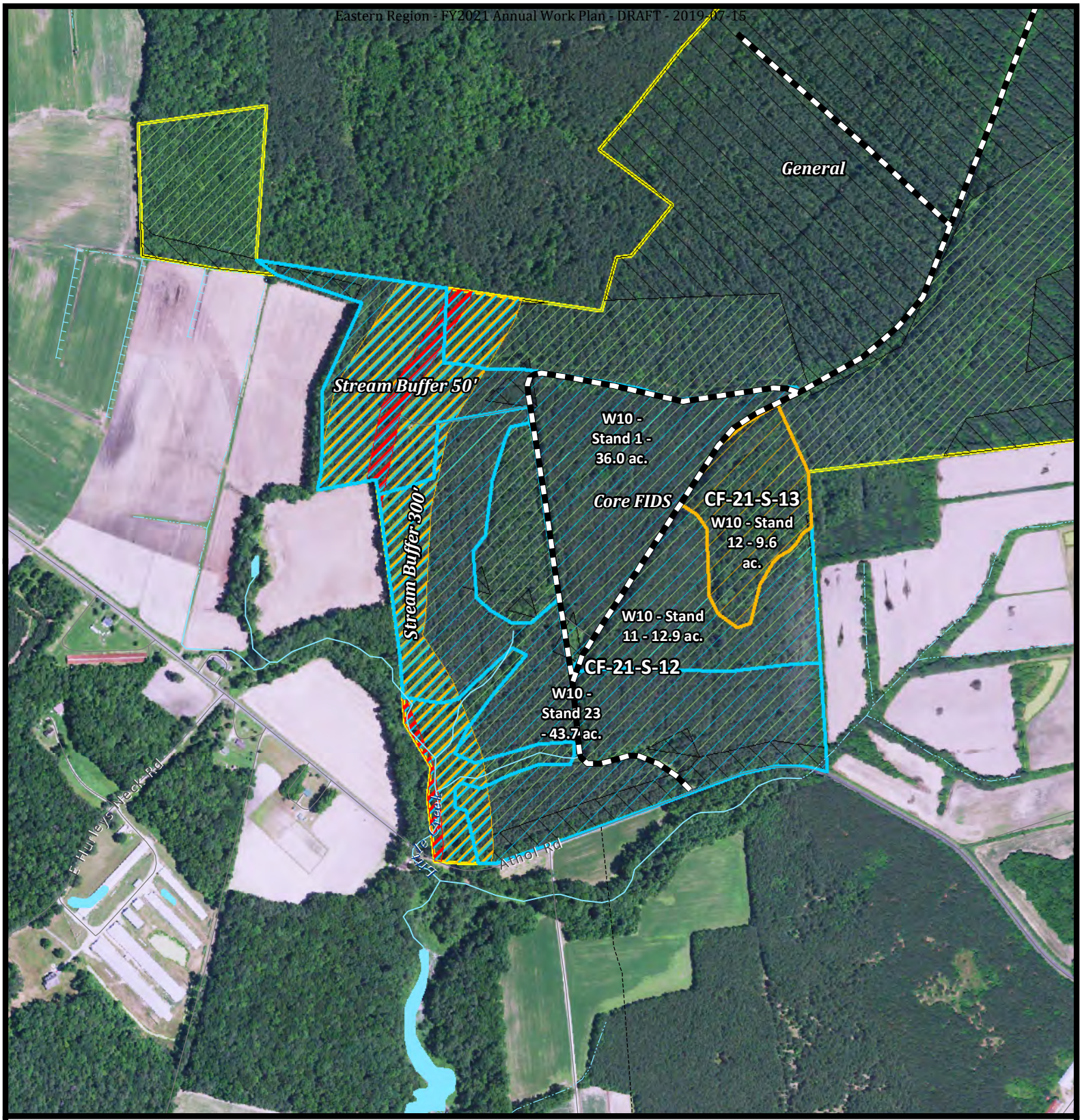
Stream Buffer 300'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-12

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 First Thinning
- 2021 Second Thinning

CF Management
- Core FIDS
- General

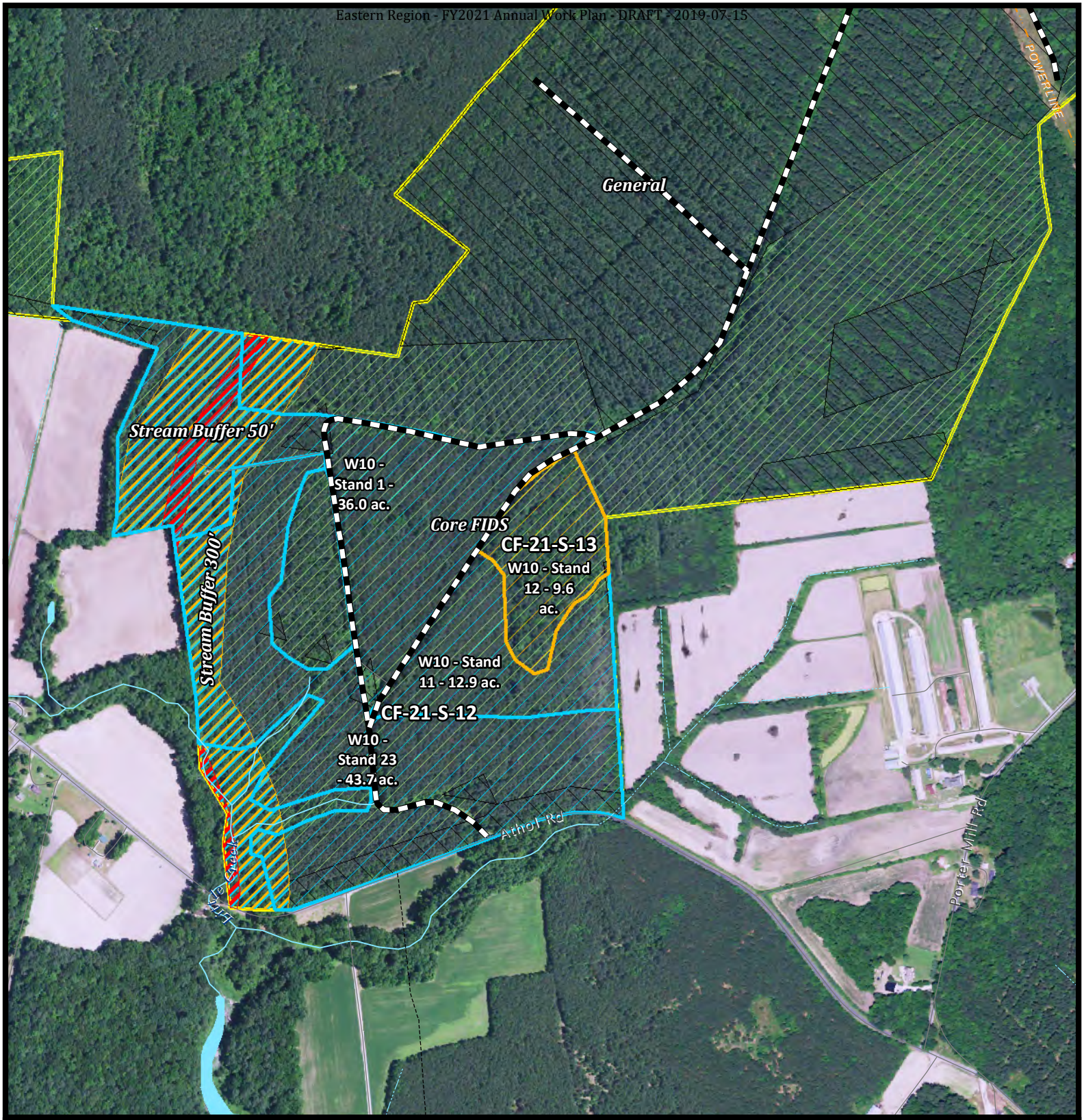
- Stream Buffer 50'
- Stream Buffer 300'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-13

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 First Thinning
- 2021 Second Thinning

CF Management
- Core FIDS
- General

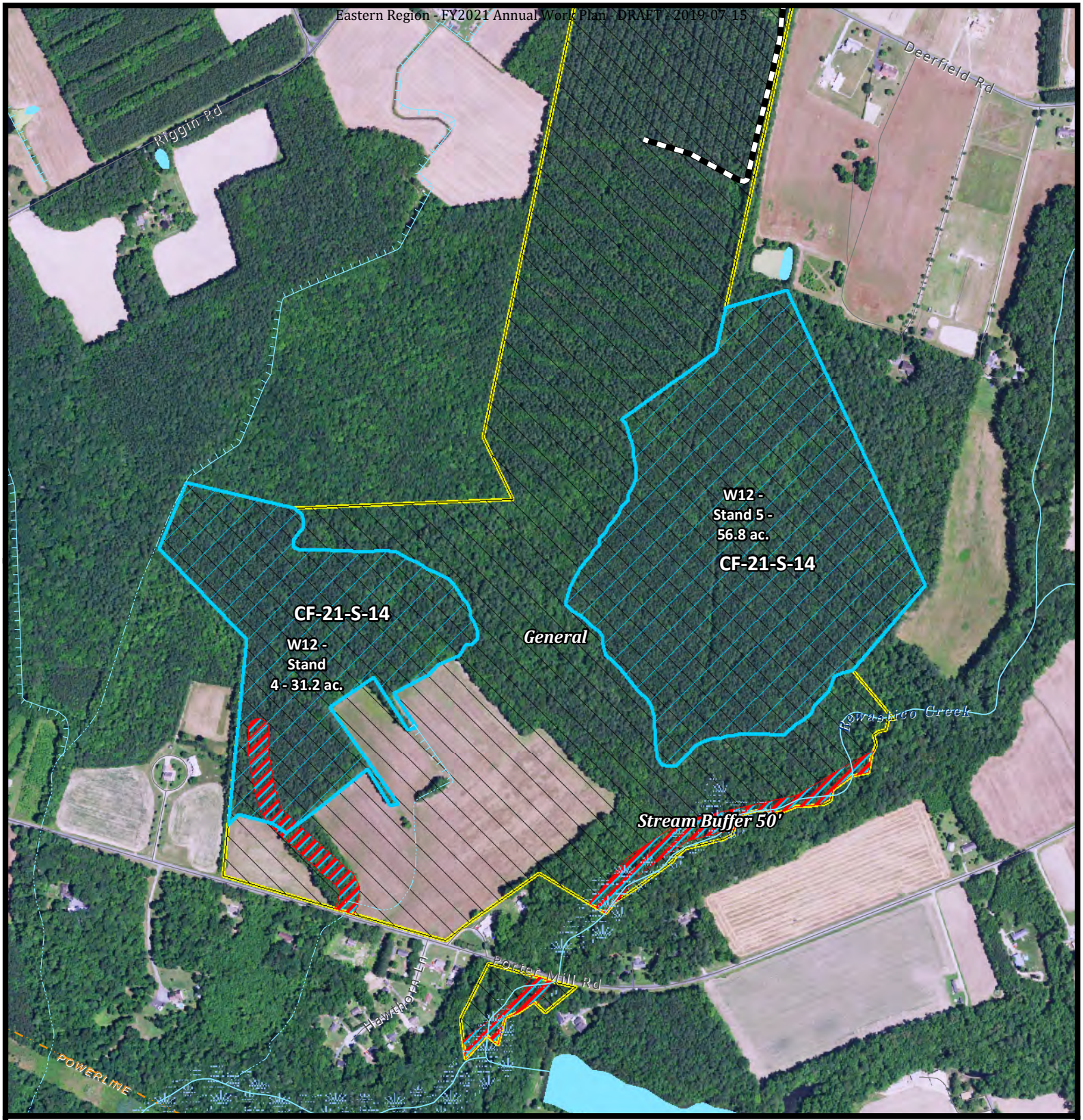
- Stream Buffer 50'
- Stream Buffer 300'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-14

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 First Thinning

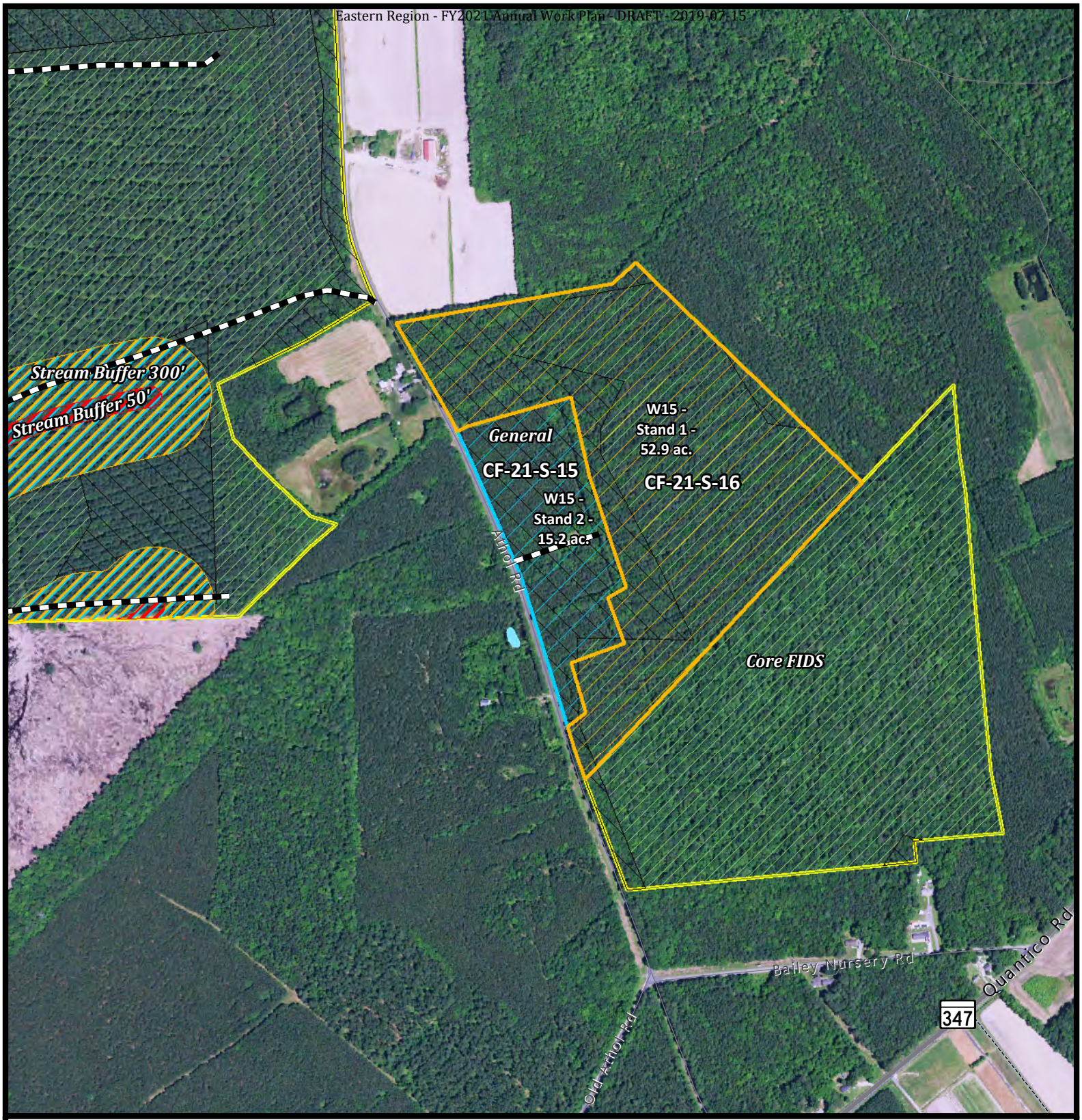
CF Management
- General
- Stream Buffer 50'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-15

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 First Thinning
- 2021 Second Thinning

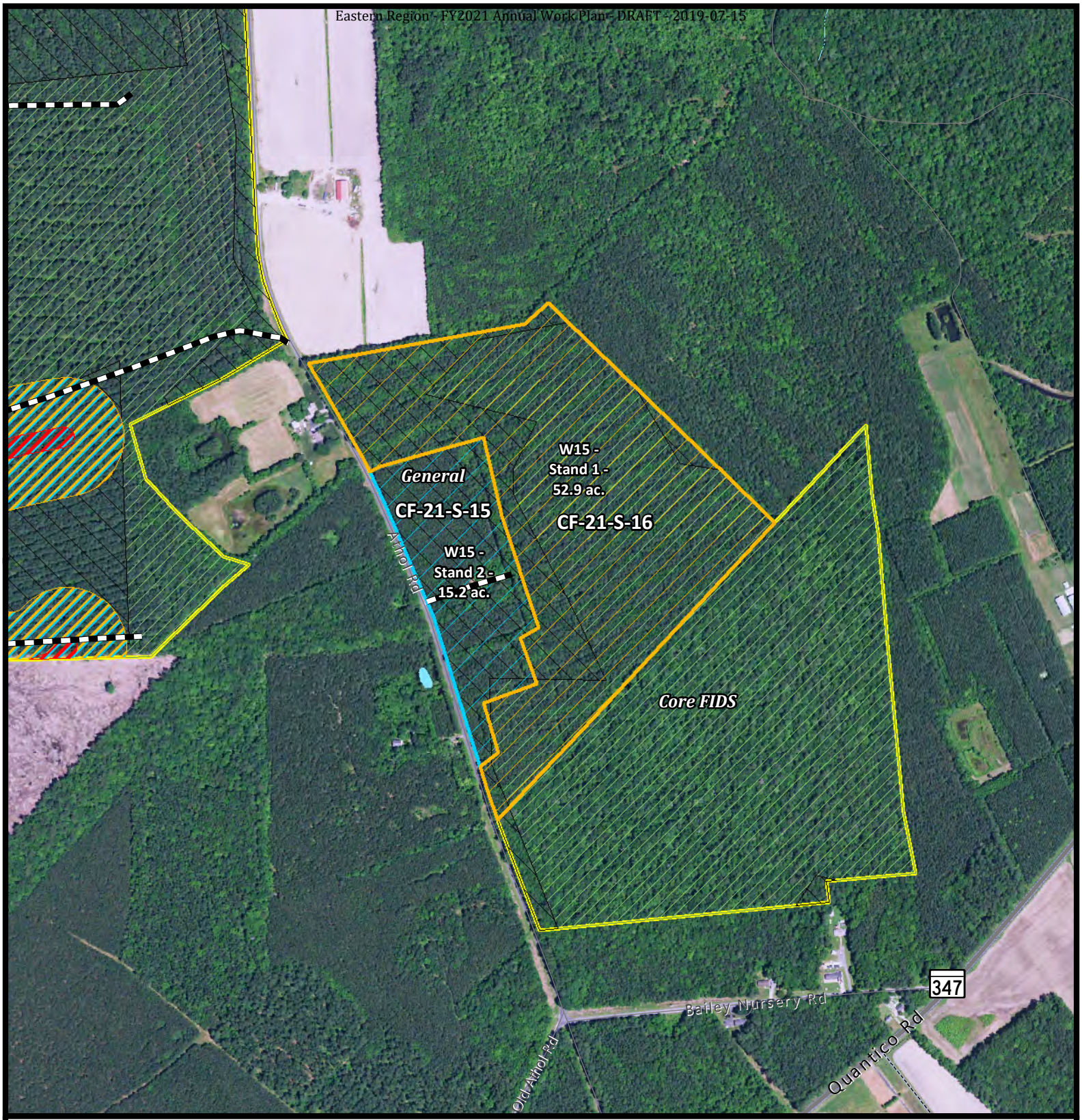
CF Management
- Core FIDS
- General
- Stream Buffer 50'
- Stream Buffer 300'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-16

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 First Thinning
- 2021 Second Thinning

CF Management
- Core FIDS
- General

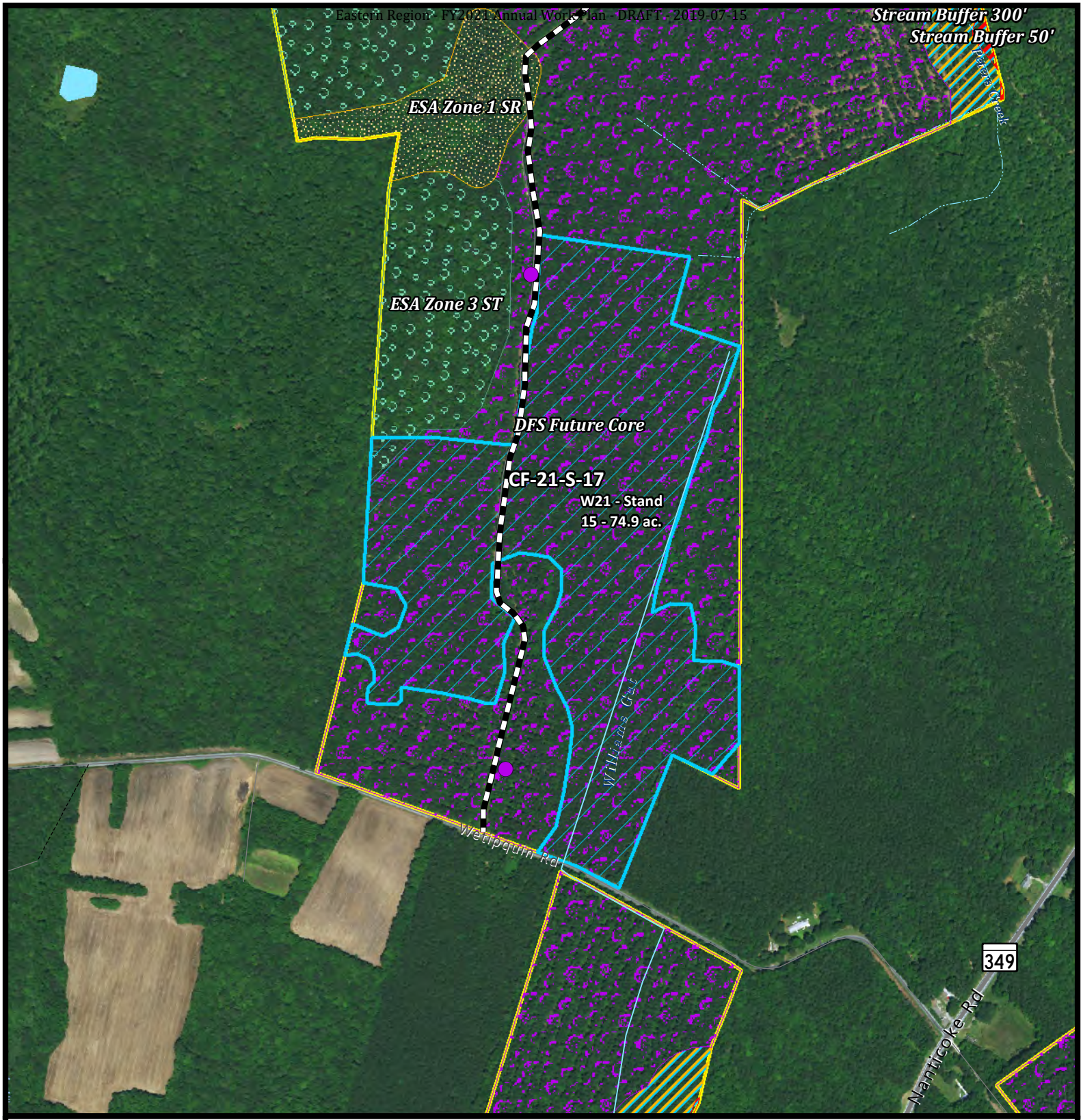
- Stream Buffer 50'
- Stream Buffer 300'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-17

Scale: 1:7,920
Date: 06/2019

Legend

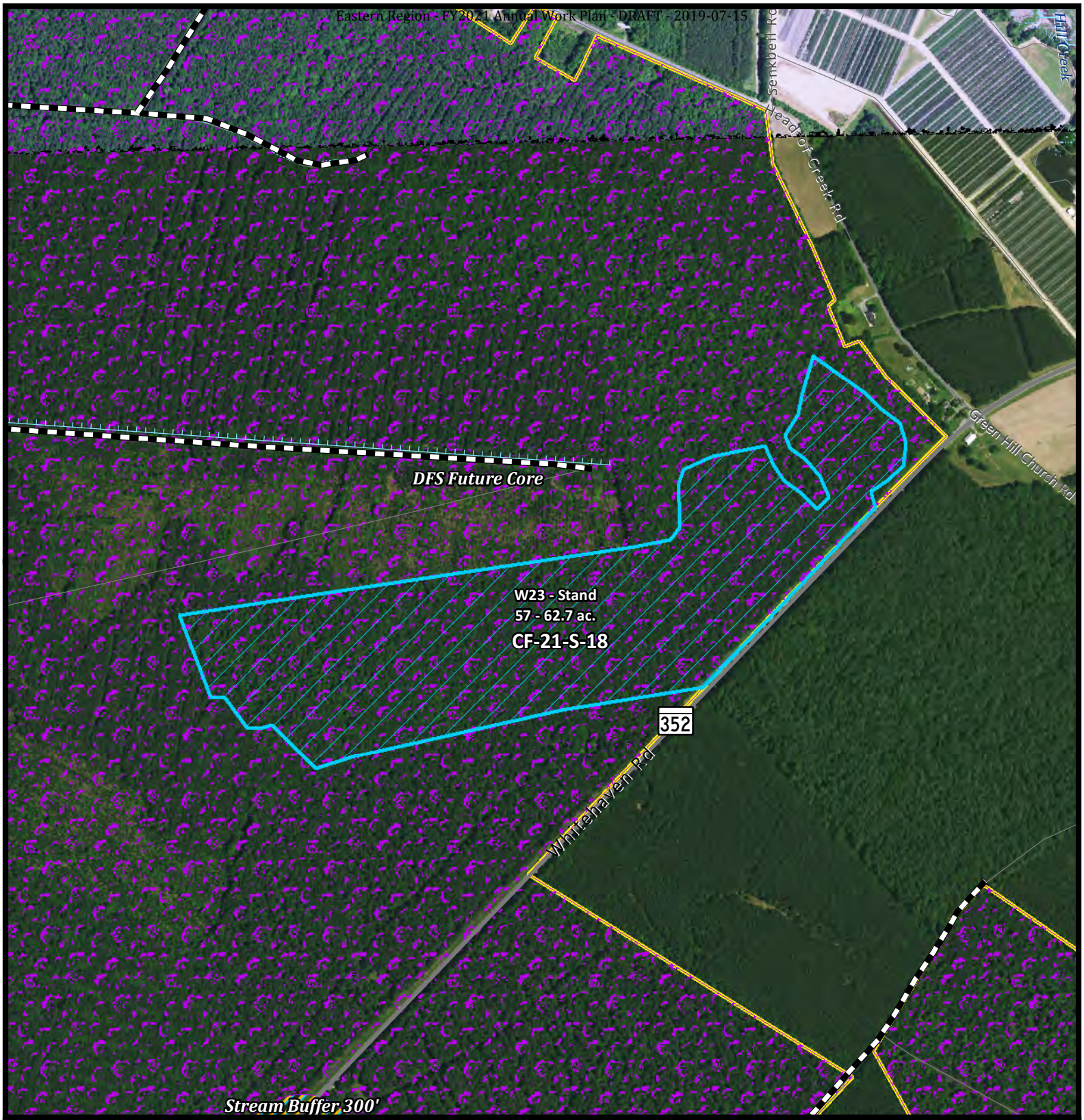
- Home Sites
- CF AWP Activity
  - 2021 First Thinning
- **CF Management**
  - DFS Future Core
  - ESA Zone 1 SR
  - ESA Zone 3 ST
  - Stream Buffer 50'
  - Stream Buffer 300'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-18

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
2021 First Thinning

CF Management
DFS Future Core

Stream Buffer 300'

660 0 660 1,320
Feet

This map is for planning purposes only.
This map is not a boundary survey

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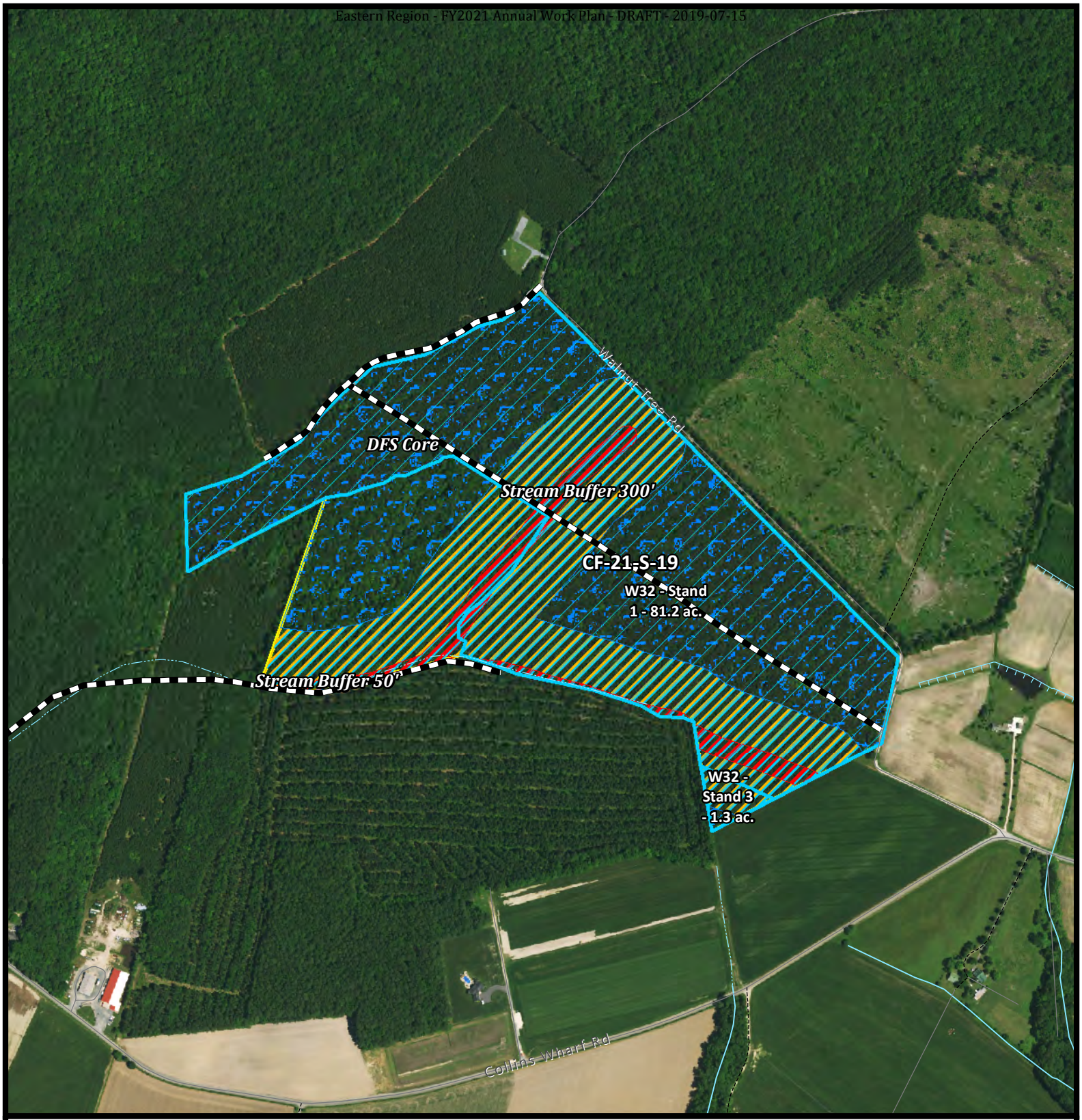
MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-19

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 First Thinning

CF Management
- DFS Core

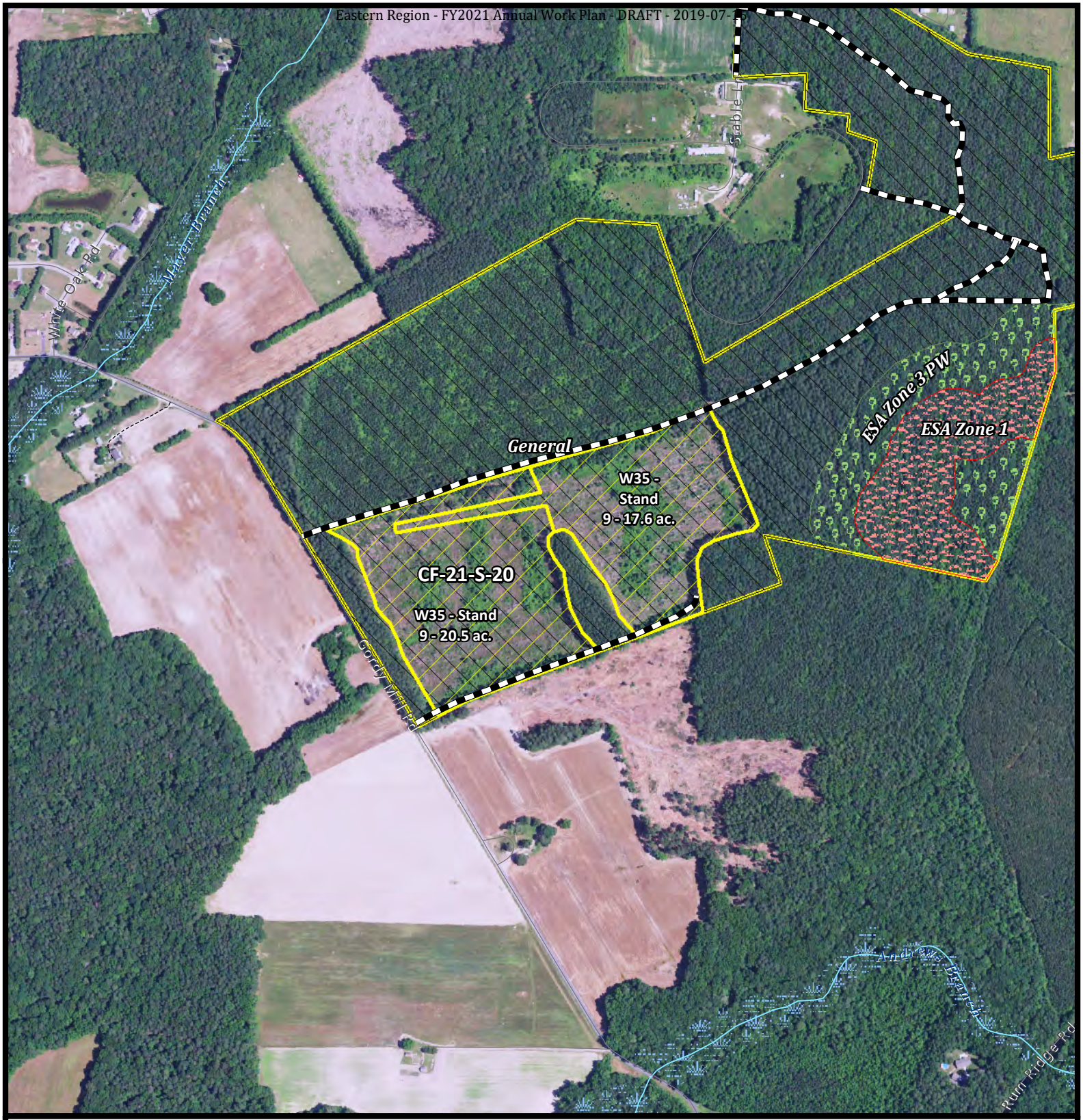
- Stream Buffer 50'
- Stream Buffer 300'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-20

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 Pre-Commercial Thinning

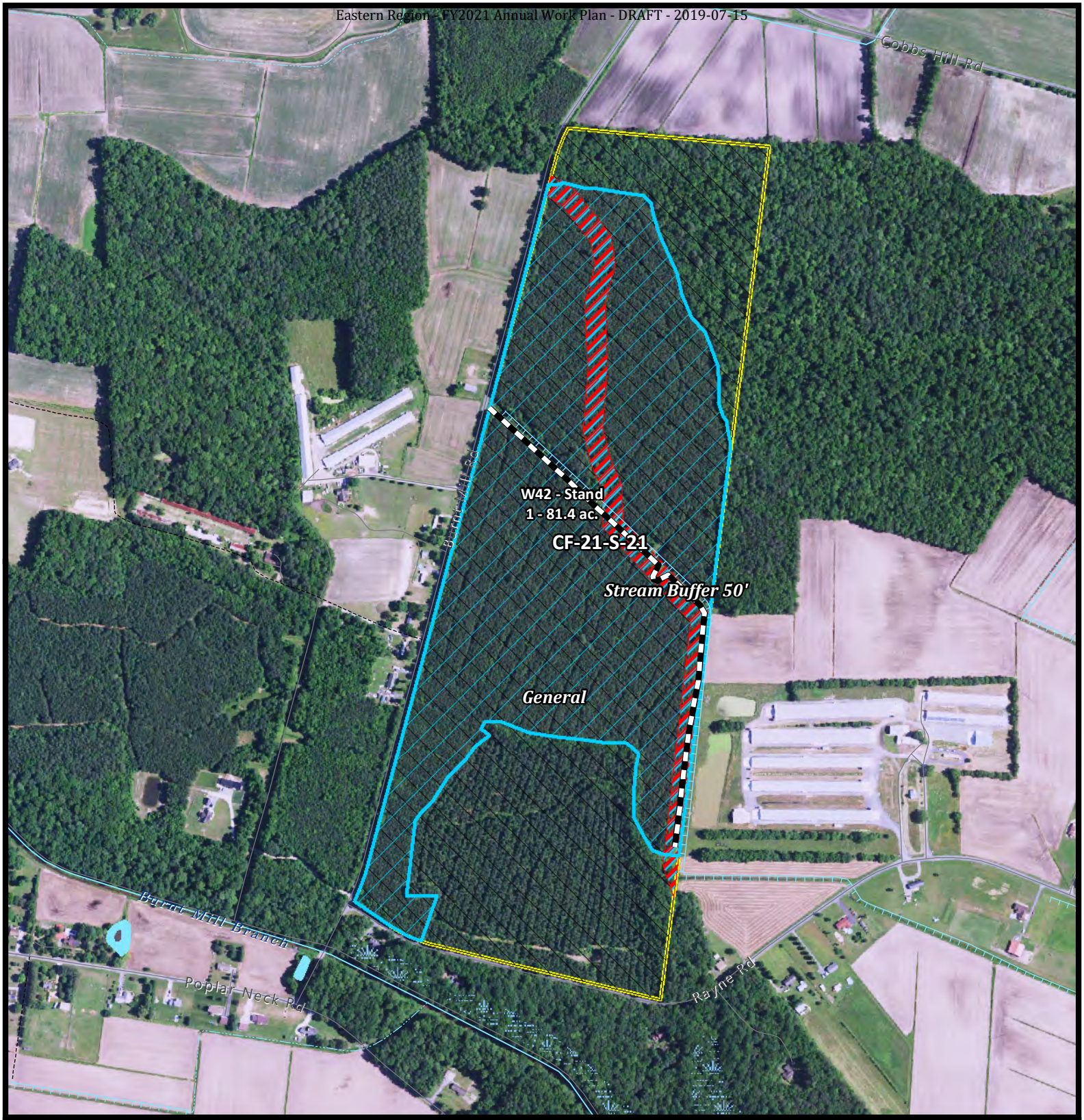
CF Management
- ESA Zone 3 PW
- ESA Zone 1
- General

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-21

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 First Thinning

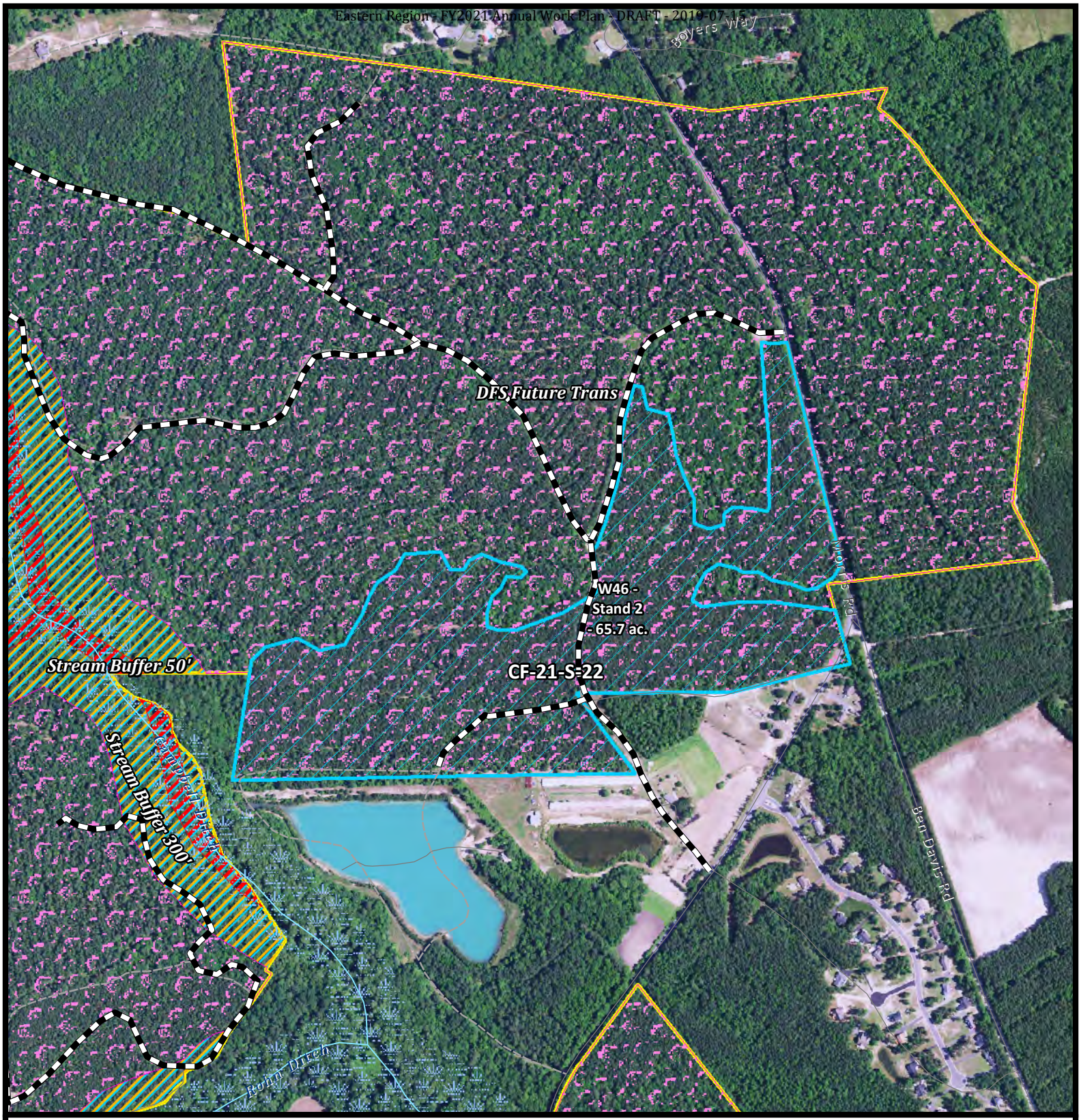
CF Management
- Stream Buffer 50'
- General

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-22

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 First Thinning

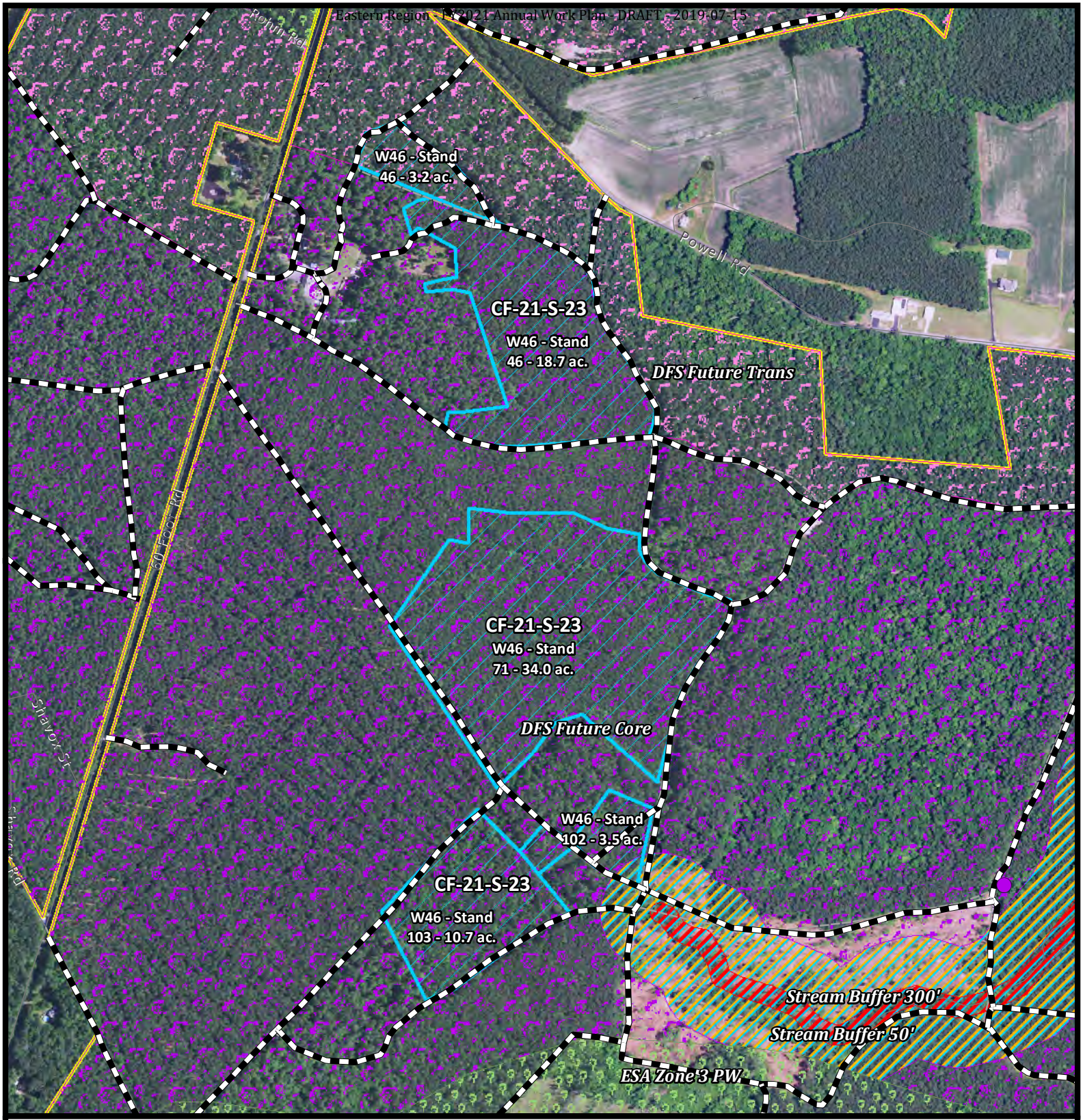
CF Management
- DFS Future Core
- DFS Future Translocation
- Stream Buffer 50'
- Stream Buffer 300'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-23

Scale: 1:7,920
Date: 06/2019

Legend

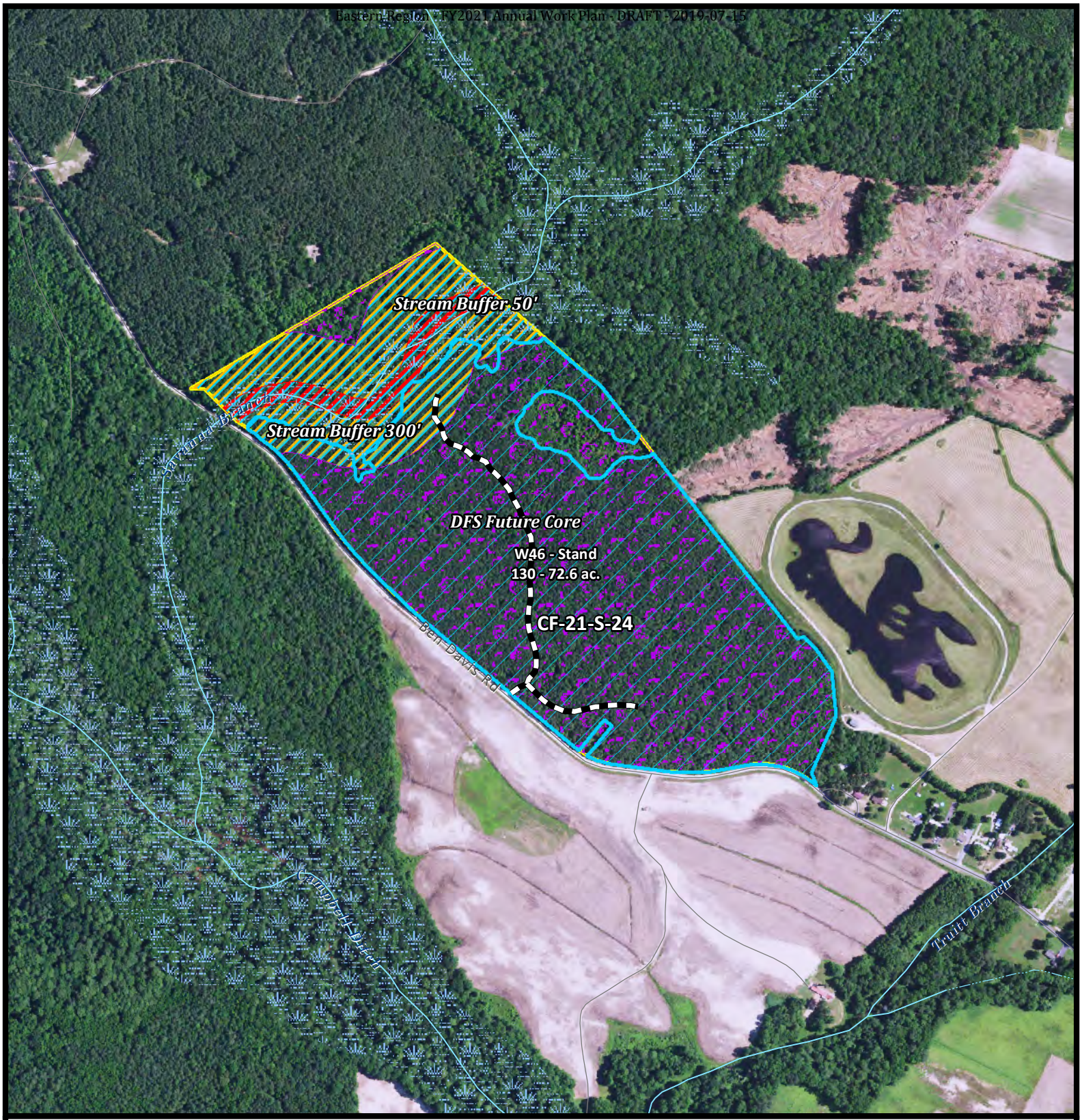
- Home Sites
- CF AWP Activity
  - 2021 First Thinning
- CF Management
  - DFS Future Core
  - DFS Future Translocation
- ESA Zone 3 PW
- Stream Buffer 50'
- Stream Buffer 300'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-24

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 First Thinning

CF Management
- DFS Future Core

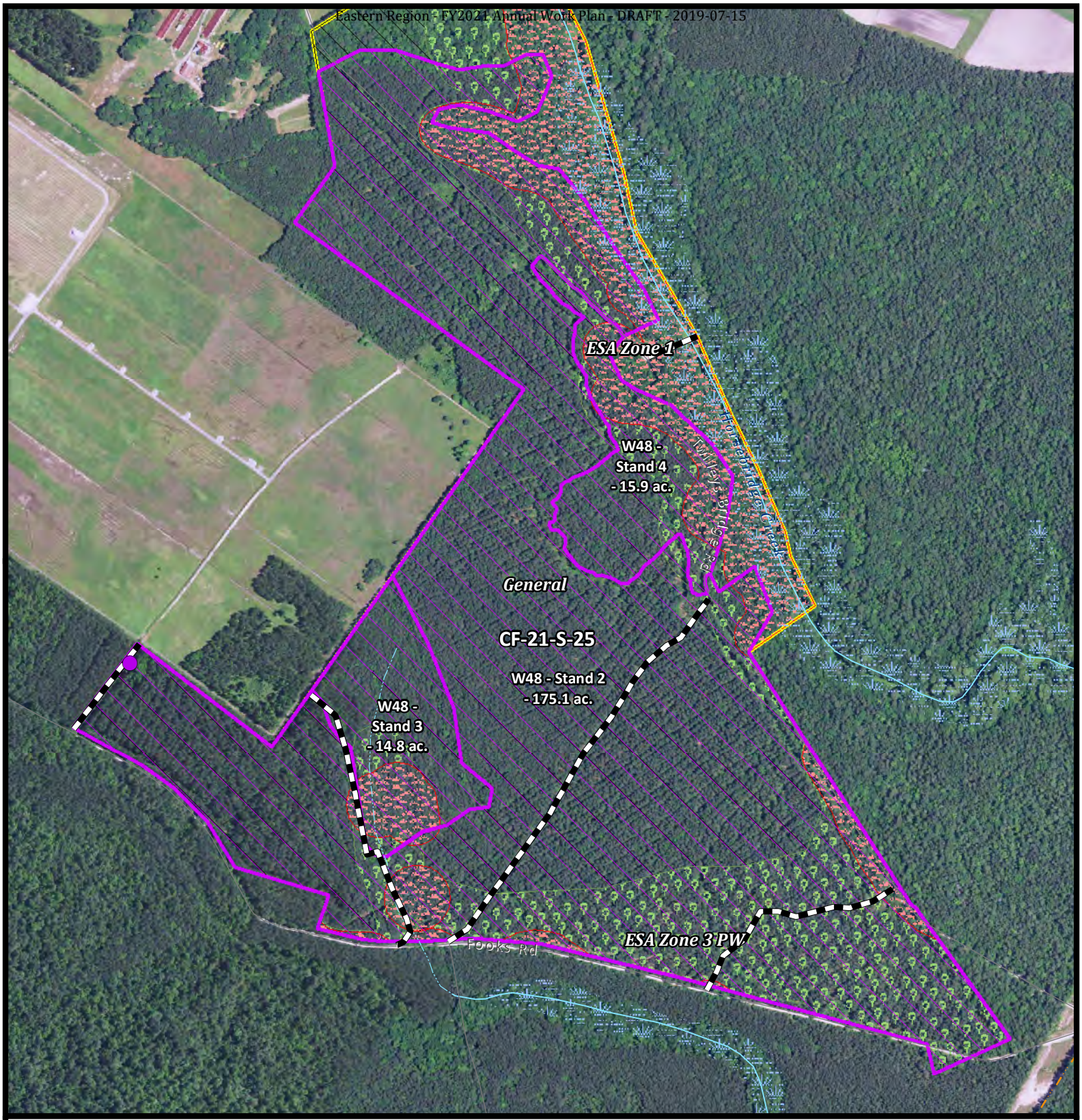
- Stream Buffer 50'
- Stream Buffer 300'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-25

Scale: 1:7,920
Date: 06/2019

Legend

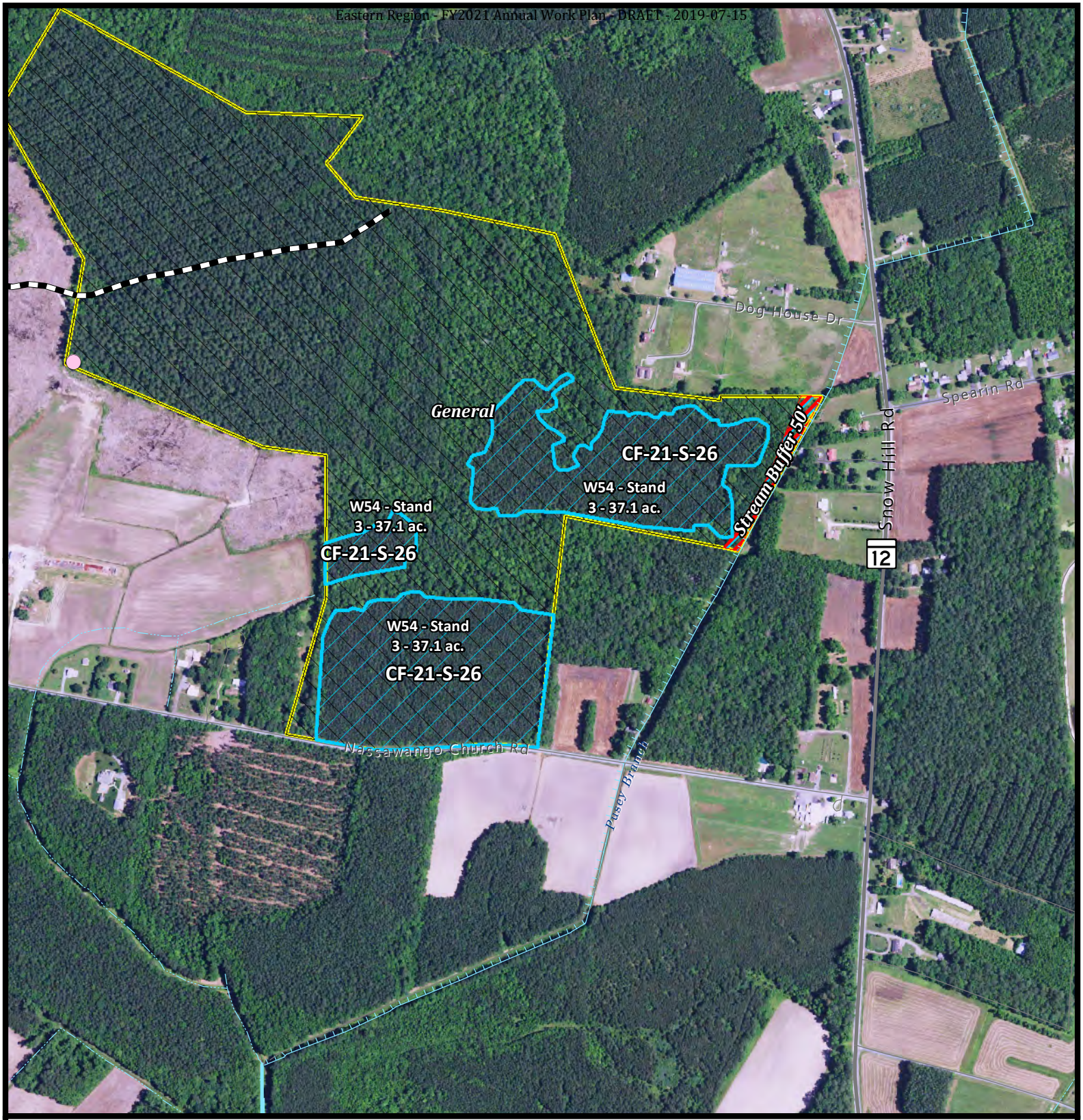
- Home Sites
- CF AWP Activity
- 2021 Final Harvest
- **CF Management**
- ESA Zone 1
- ESA Zone 3 PW
- General

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-26

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
2021 First Thinning

CF Management
General
Stream Buffer 50'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

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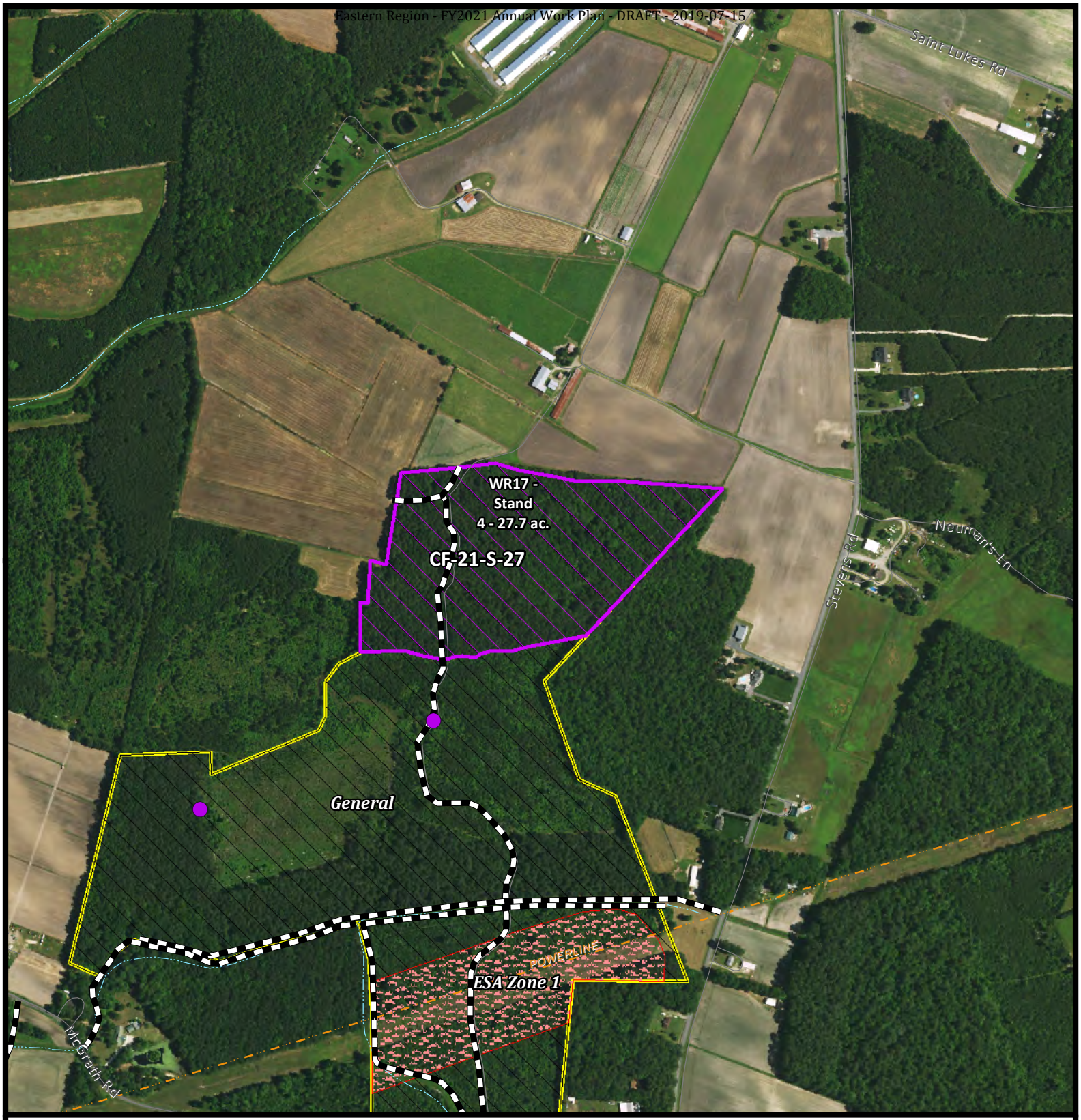
MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-27

Scale: 1:7,920
Date: 06/2019

Legend

- Home Sites
- CF AWP Activity
- 2021 Final Harvest
- **CF Management**
- General
- ESA Zone 1

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

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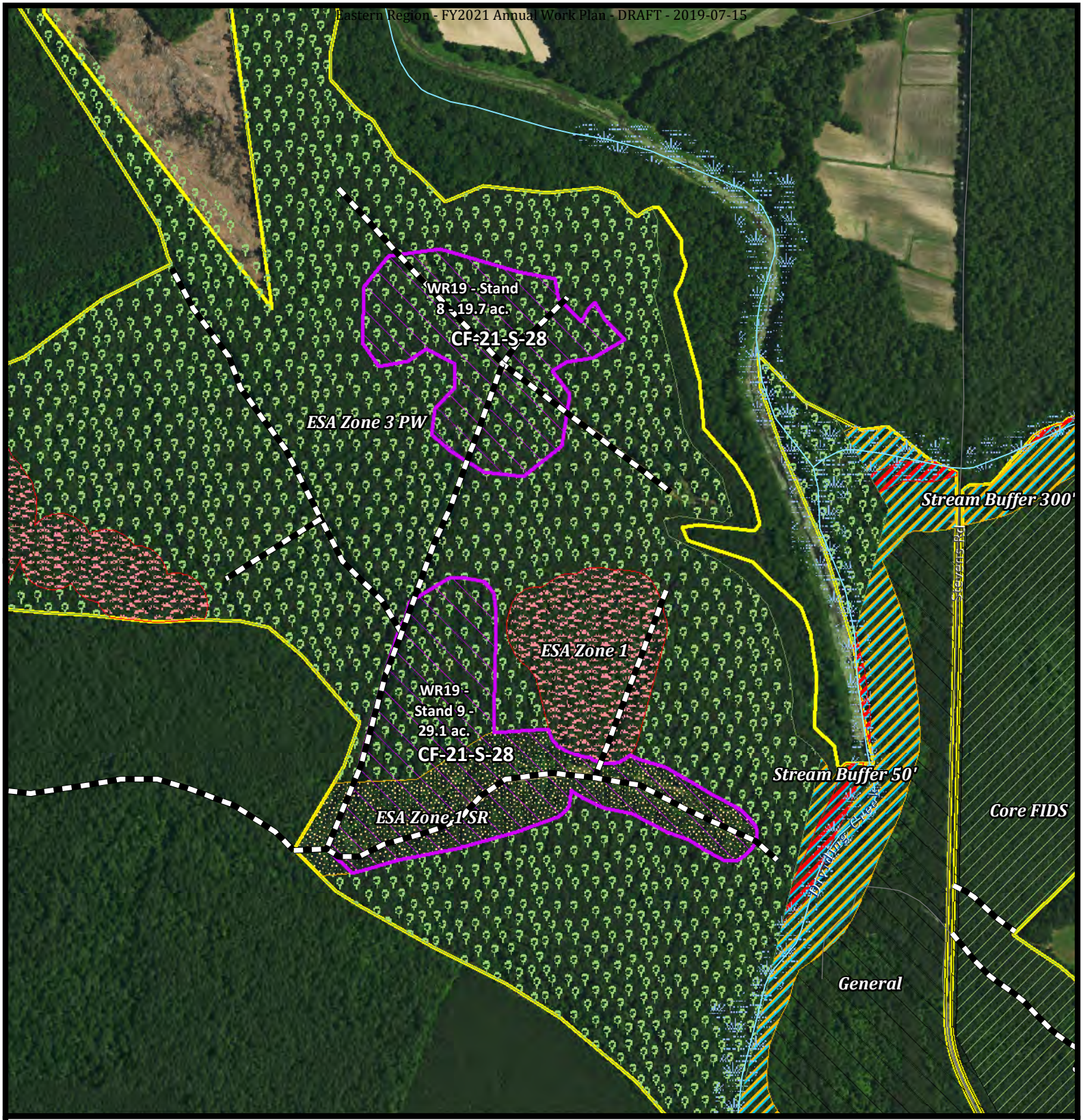
MARYLAND DEPARTMENT OF NATURAL RESOURCES



Legend

CF AWP Activity
- 2021 Final Harvest

CF Management
- Core FIDS
- ESA Zone 1
- ESA Zone 1 SR
- ESA Zone 3 PW
- General
- Stream Buffer 50'
- Stream Buffer 300'

CF-21-S-28

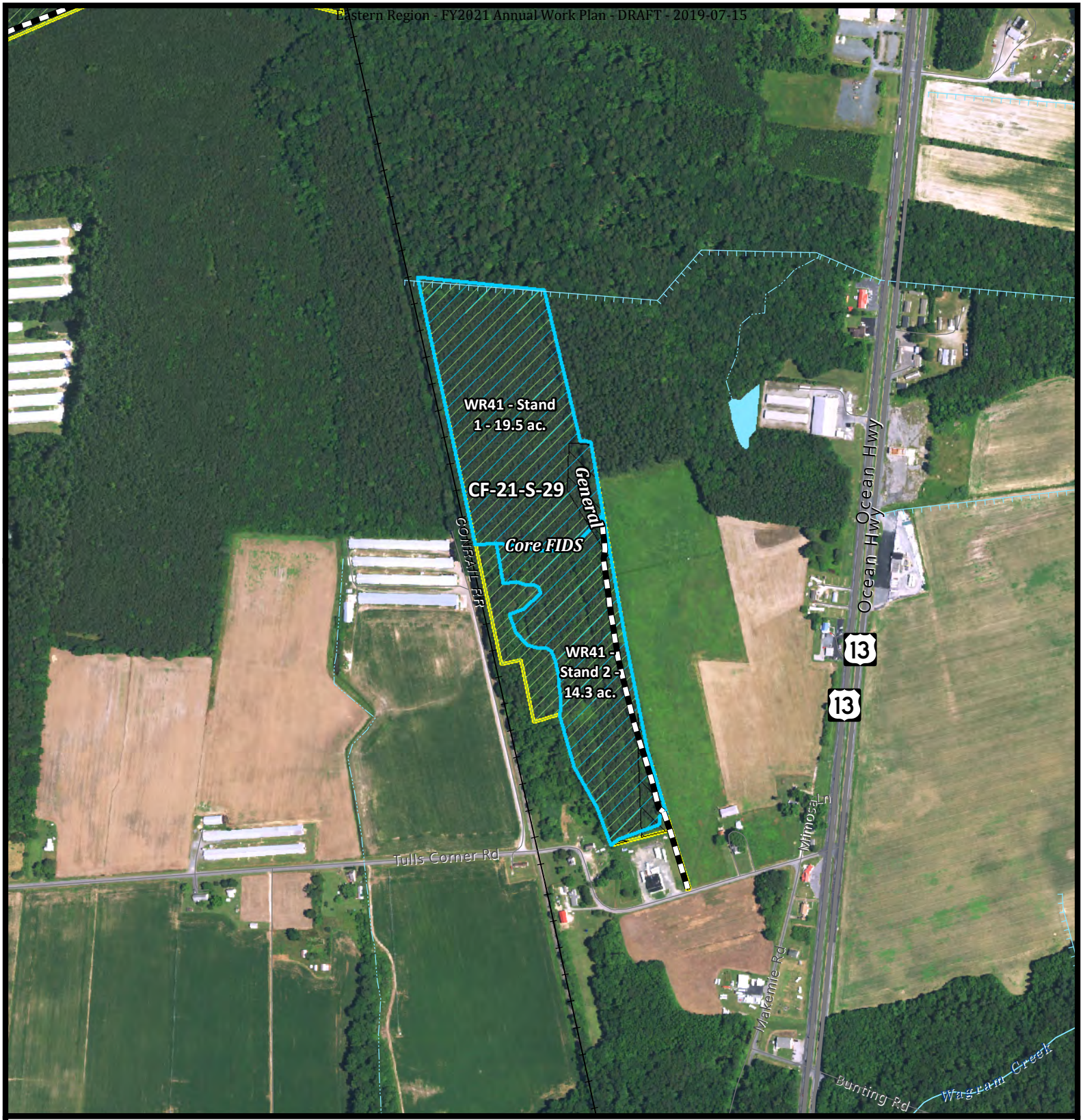
Scale: 1:7,920
Date: 06/2019

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-29

Scale: 1:7,920
Date: 06/2019

Legend

CF AWP Activity
- 2021 First Thinning

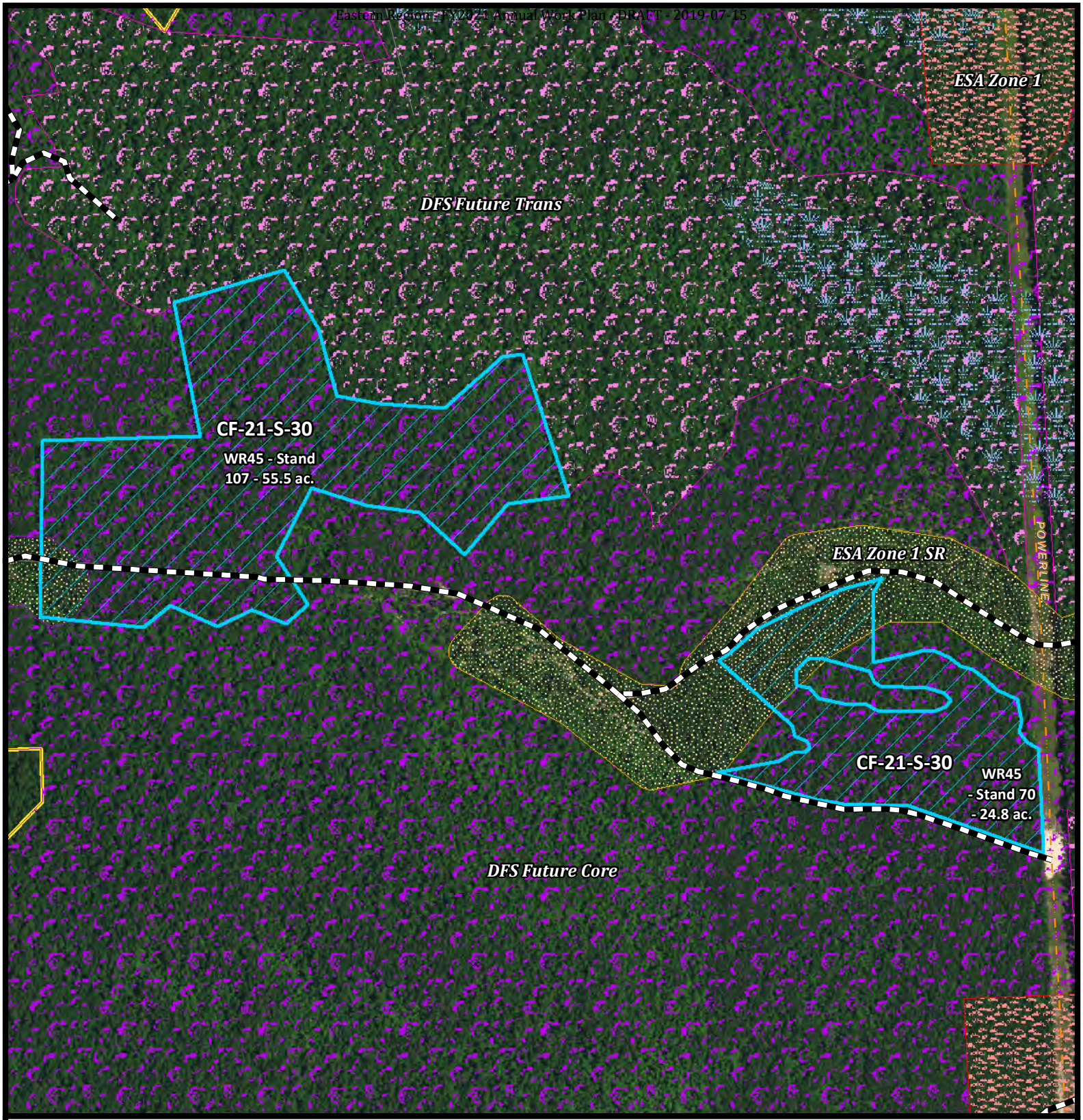
CF Management
- General
- Core FIDS

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



CF-21-S-30

Legend

CF AWP Activity
- 2021 First Thinning

CF Management
- DFS Future Core
- DFS Future Translocation

- ESA Zone 1
- ESA Zone 1 SR

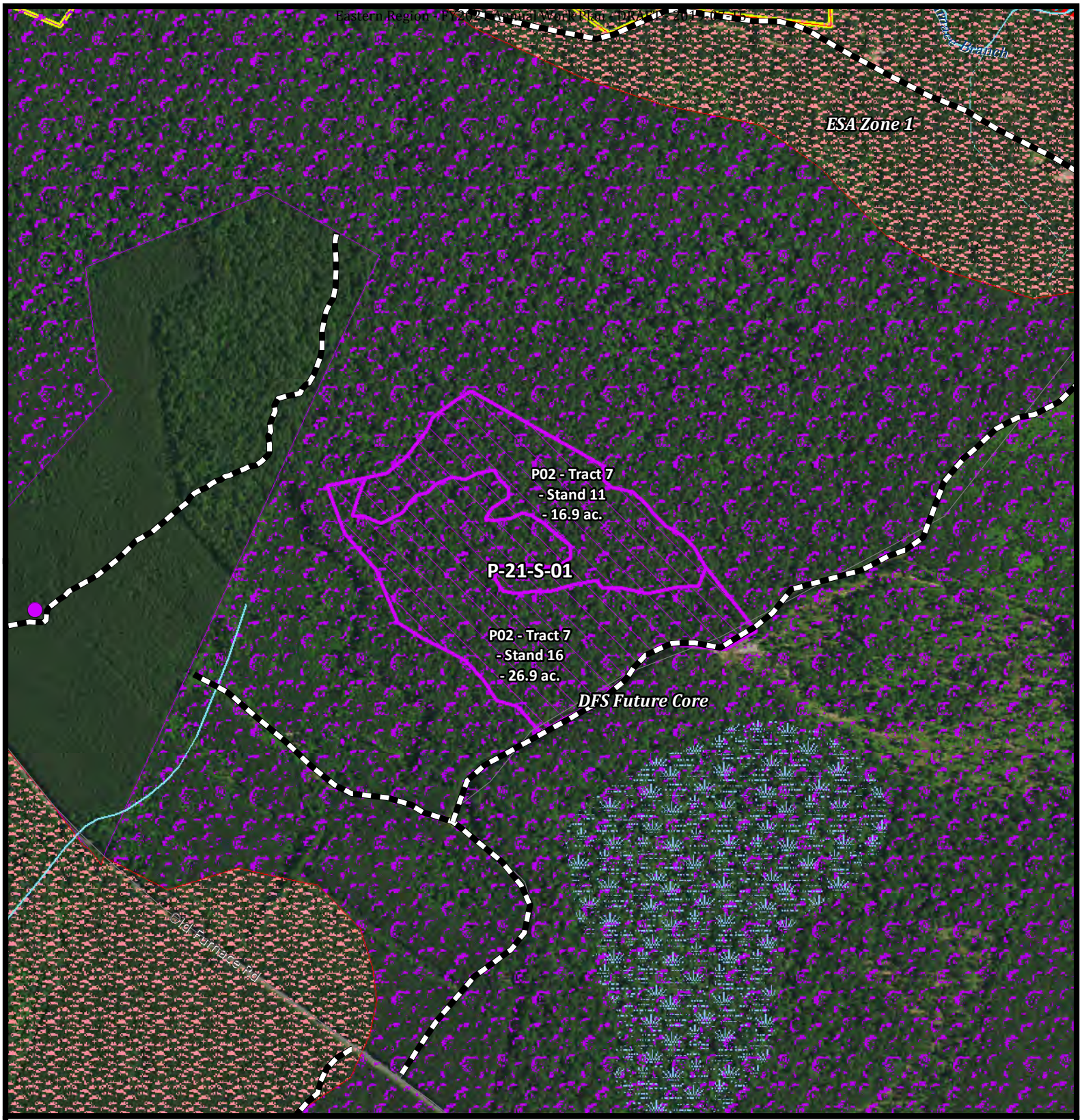
Scale: 1:7,920
Date: 06/2019

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



P-21-S-01

Scale: 1:7,920
Date: 06/2019

Legend

PSF AWP Activity
- 2021 Final Harvest

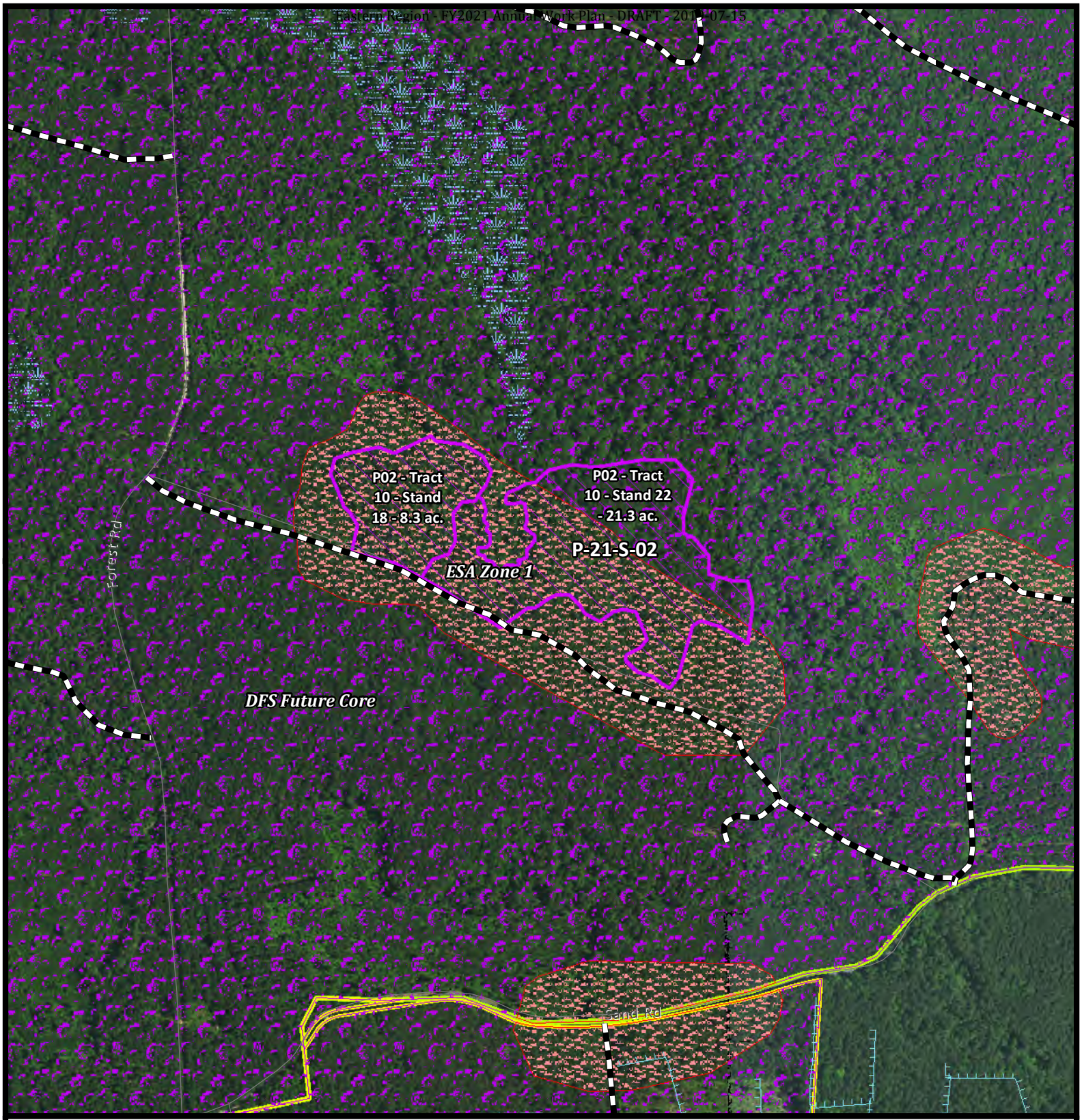
PSF Management
- DFS Future Core
- ESA Zone 1
- Stream Buffer 50'
- Stream Buffer 300'

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

N W E S

MARYLAND DEPARTMENT OF NATURAL RESOURCES



P-21-S-02

Scale: 1:7,920
Date: 06/2019

Legend

PSF AWP Activity
2021 Final Harvest

PSF Management
DFS Future Core

ESA Zone 1

660 0 660 1,320
Feet

This map is for planning purposes only.
This map is not a boundary survey

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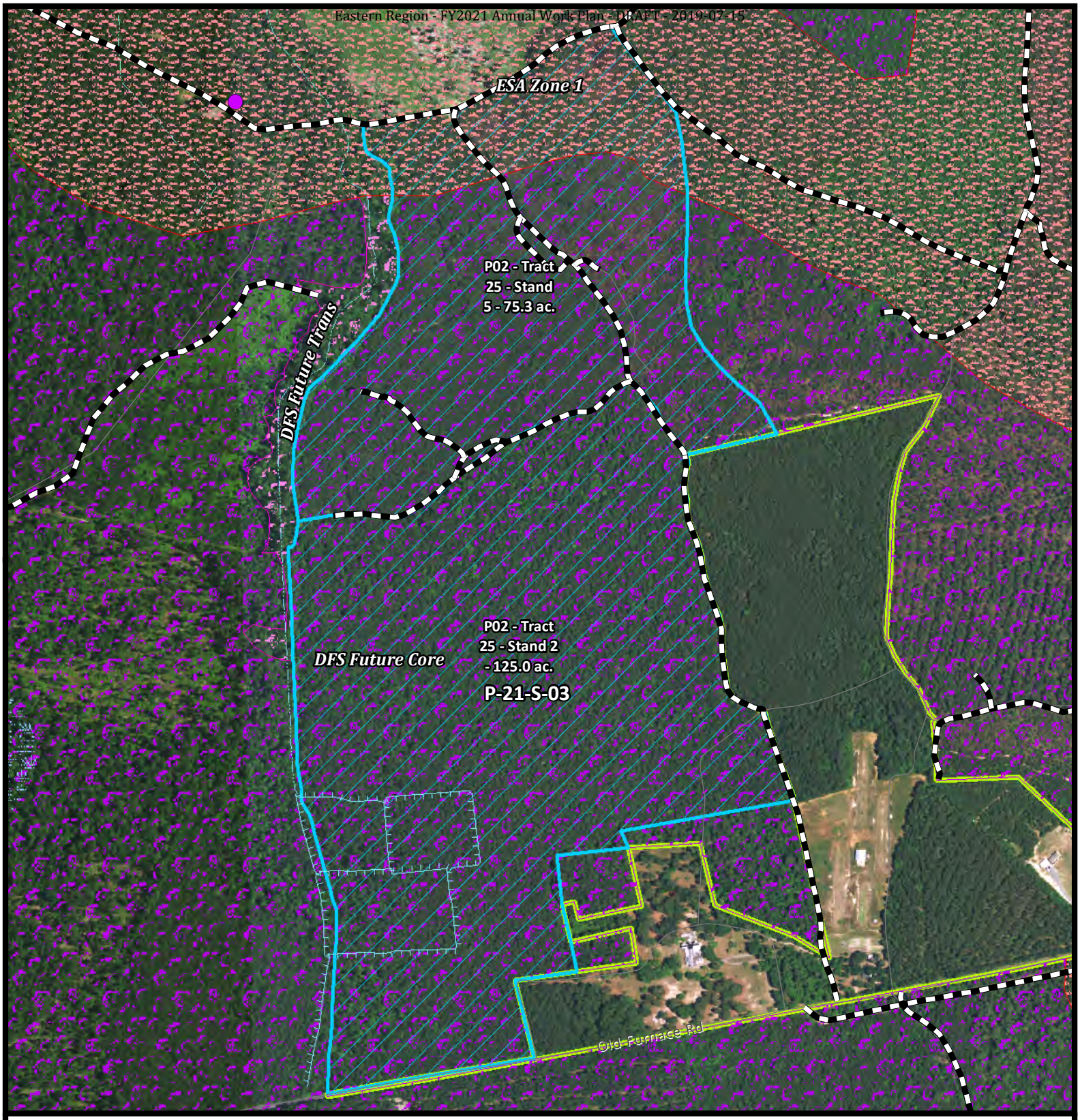
MARYLAND DEPARTMENT OF NATURAL RESOURCES



P-21-S-03

Scale: 1:7,920
Date: 06/2019

Legend

PSF AWP Activity
- 2021 First Thinning

PSF Management
- DFS Future Core
- DFS Future Translocation
- ESA Zone 1

660 0 660 1,320 Feet

This map is for planning purposes only.
This map is not a boundary survey

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MARYLAND DEPARTMENT OF NATURAL RESOURCES

L. BUDGET

Introduction

This section of the plan is designed to cover the annual funding sources and costs associated with the operational management of the Chesapeake Forest and the Pocomoke State Forest (CF/PSF).

The numbers expressed in this section are approximates typically found from one year to the next. Variations do occur based on management prescriptions, economic conditions, weather, certification audit year, and public use of the forest.

Funding Sources

1. General Fund – Monies generated from Maryland State taxes. These funds are appropriated by the General Assembly through the annual state budgeting process.
2. Timber Revenue – Monies generated from the sale of forest products such as sawtimber, poles, pilings and pulpwood.
3. Hunting Leases – Monies generated by the Chesapeake Forest Hunting Lease Program.
4. Agricultural Leases – Monies generated from leasing agricultural fields on the forest to local farmers.
5. Grants – Monies generated from outside agencies/groups through a competitive grant request process.

Operational Costs

1. State Employee Salaries – There are four classified (full time) state employees assigned to the CF/PSF: Forest Manager, GIS Forester, Forest Technician, and an Administrative Assistant.
2. Contractual Employee Salaries – There are typically four contractual employees working 10 to 12 months per year on the forest.
3. Land Management – This includes the cost of contract management services and payments to loggers for harvesting and delivering forest products to processing mills.
4. Land Operations – This includes costs for road maintenance, non-commercial harvesting, tree planting, herbicide application, monitoring, equipment purchase & maintenance, etc.
5. County Payments – All counties except for Worcester are paid at a rate of 15% of the total revenue in lieu of property taxes. In Worcester County, 25% of the revenue generated off the forest is paid to the county since the total acreage of Park and Forestry properties exceeds 10% of the total County land base.
6. Public Drainage Association (PDA) Fees – This is a fee collected for large public drainage ditches that are present on the forest. Monies are used by the PDA to maintain the ditches.
7. Forest Certification – Monies used to maintain state forest lands certification through annual third party audits. Every fifth year is a full recertification audit, which costs $40,000. Subsequent surveillance audits cost $20,000.

Chesapeake Forest/Pocomoke State Forest Budget

Funding Sources		
1. General	$	439,956
2. Timber Revenue	$	1,100,000
3. Hunting Leases	$	576,778
4. Agricultural Leases	$	33,202
5. Recreation Trail Grant(s)	$	30,000
Total	**$**	**2,179,936**

Operational Costs		
1. State Employee Salaries	$	285,049
2. Contractual Employee Salaries	$	83,062
3. Land Management	$	981,034
4. Land Operations	$	438,242
5. County Payments	$	171,770
6. Public Drainage Association Fees	$	9,647
7. Forest Certification	$	19,605
Total	**$**	**1,988,409**

Net Revenue	**$**	**191,527**

APPENDIX A – SOIL SERIES MANAGEMENT GROUPS, ABBREVIATIONS, AND SYMBOLS

Soil Series	SMG	Caroline	Dorchester	Somerset	Wicomico	Worcester
Acquango sand	4					AcB, AcC
Annemessex-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
Endoaquepts 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			GlA		
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:
- Annemessex-Manokin complex
- Askecksy loamy sand
- Corsica mucky loam
- Corsica mucky loam, Carolina Bay
- Crosiadore silt loam
- Elkton loam
- Elkton mucky silt loam
- Elkton sandy loam
- Elkton silt loam
- Othello and Kentuck soils
- Othello silt loam
- Othello silt loam, loamy substratum
- Quindocqua 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
- Corsica and Fallsington soils
- Fallsington loam and sandy loam
- Fallsington-Glassboro complex
- Glassboro loam
- Hurlock loamy sand and sandy loam
- Klej loamy sand
- Klej-Galloway complex
- Klej-Hammonton complex
- Lenni loam and sandy loam
- Mullica-Berryland complex
- Othello-Fallsington complex
- Pone mucky loam and mucky sandy loam

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

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

APPENDIX B – AUDIT SUMMARIES – 2018

Full reports and summaries of the 2019 and all past Forest Certification Audits can be found here:
http://dnr.maryland.gov/forests/Pages/forestcert.aspx

APPENDIX C – SILVILCULTURAL ACTIVITY SUMMARIES

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 (AWPs) 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 AWPs 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	2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		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	244	35	294	47	152		239	256	180	94	81	84	96	67	52	12		74	54	76	***1,391***	***746***
Various Select Harvests &/or other treatments	52								139	121	22	31							48		***261***	***152***
First Thinning	1,831	385	1,847	986	1,602	387	924	956	970	729	117	505	451	573	2,036	756	1,262	766	1,049	757	***12,088***	***6,800***
Second Thinning	257	30	257	151	113	65	86	299	106	88	55	38	350	74	331	49	710	38	39	90	***2,303***	***922***
Site Preparation	167		106																		***273***	-
Tree Planting	167				42			11		14				199		40		54			***209***	***317***
Regeneration Release	199																			64	***199***	***64***
Grass Control					42						25										***67***	-
Mid Rotation Release	24		160	48																	***184***	***48***
Fertilization			71																		***71***	-
Natural Regeneration		87						62		181				84		36					-	***449***
Pre Commercial Thinning	573	298	573	197	139		81	94	10		186	125	49	49	76	81			57		***1,744***	***843***
Prescribed Fire	47	553	202		76			29		31		48		63		427	72	84		131	***397***	***1,366***
Boundary Maintenance		2,108		12,608		10,945		6,162		3,644		3,392				3,400		1,276		6,478	-	***50,013***
Restoration Projects	26	362					130	130	143	143	328	41		20		168					***627***	***864***
Watershed Imp. Projects	20	50	351	351																	***371***	***401***
Harvests within HCVF areas*	1,384	447	1,782	883	1,651	454	1,235	599	566	321	391	380	335	509	961	659	921	565	431	308	***9,656***	***5,124***
Harvest Totals†	**2,410**	**812**	**2,398**	**1,185**	**1,867**	**451**	**1,379**	**1,641**	**1,537**	**1,175**	**603**	**700**	**898**	**734**	**2,418**	**985**	**1,972**	**877**	**1,189**	**923**	***16,671***	***9,483***

* 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 (AWPs) 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 AWPs 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).

Pocomoke State Forest Silvicultural Activity Summary By Annual Work Plan

Workplan Activity	2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		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	115	62	51		105	71	112	24	33	11	149	27	31	23		25	26	95	16	34	***640***	***372***
Various Select Harvests &/or other treatments			64		15	17	19		42		38	47	85		226						***490***	***64***
First Thinning	57		100				305		120	114	623	248	586	212	75	370	94	216	60	55	***2,019***	***1,214***
Second Thinning										26	120								25		***145***	***26***
Site Preparation																					-	-
Tree Planting								15						23		4					-	***42***
Regeneration Release																					-	-
Grass Control																					-	-
Mid Rotation Release																					-	-
Fertilization																					-	-
Natural Regeneration		77		44		62		43		46		12		74		20					-	***378***
Pre Commercial Thinning	21	20	20		21		59	59			18	18	45	45			45				***229***	***142***
Prescribed Fire								35		22										379	-	***436***
Boundary Maintenance		2,606				280						100		634		185		270		458	-	***4,533***
Restoration Projects											12										***12***	-
Watershed Imp. Projects																					-	-
Harvests within HCVF areas*					53	42	176	23	86	51	181	96	114	177	27	74	271	123	32	17	***939***	***602***
Harvest Totals†	**172**	**62**	**216**	**-**	**121**	**88**	**436**	**24**	**196**	**150**	**942**	**322**	**702**	**235**	**300**	**395**	**120**	**310**	**101**	**89**	***3,305***	***1,675***

* 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.

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