Rob Farrell
State Forester

COMMONWEALTH of VIRGINIA

Department of Forestry

900 Natural Resources Drive, Suite 800 • Charlottesville, Virginia 22903
(434) 977-6555 • Fax: (434) 296-2369 • www.dof.virginia.gov

3/20/21

Tract Number: RCB19045

Mckethan Park

Dear VMI:

Please find within your *Virginia State-Owned Lands Management Plan* for your agency's property located in Rockbridge County. It was my pleasure to prepare this plan for you knowing that you have a true interest in the good stewardship and active management of the natural resources.

In this plan, there are two basic components. The first is a management plan based upon your agency objectives for managing the property. All of the recommendations within this plan are for consideration, but I believe that they will help you achieve both long- and short-term goals for the property. This plan should be reviewed and updated every 10 years.

I trust that you will find this plan to be informative and useful as you actively manage your agency's natural resources. If you have any questions or comments please feel free to contact me at any time.

Sincerely,

Walker Wolff
57 Forestry Center Ln,
Crimora, VA 24431
(434) 996-1542
Walker.wolff@dof.virginia.gov

Virginia State-Owned Lands Management Plan

About This Plan

This State-Owned Lands Management Plan was developed to help guide you in the active management of the natural resources on the property. The plan is based upon the objectives you identified as being important to the agency. All of the management recommendations are for consideration. The stand data table figures in this plan are for planning purposes ONLY and not intended for making economic decisions where more detailed information would be required.

Primary Goals That Were Identified For Managing The Property

1. Planting trees for screen cover from neighbors
2. Maintain Forest Health
3. Better Utilize Park Resources for School Activities

Introduction

This multiple-use forest management plan covers the examination of approximately 208 acres of forestland in Rockbridge County, Virginia. The management recommendations, given on the following pages, were developed for each specific parcel on the property. Boundaries and acres are only estimates derived from aerial photographs. The tract map is attached, allowing you to see the map as you read through the plan.

Tract Location

Located on Old Buena Vista Rd in Lexington, Virginia

Property Overview

Mckethan Park is a ~208 acre property owned by Virginia Military Institute. The park is often used by students for various extracurricular activities. The park includes a baseball field, a shooting range, 2 pavillions, grass fields, and several areas of forest cover.

STAND 1

Descriptions and Recommendations: **Leave forest to grow naturally, reevaluate and consider thinning in 3-5 years**

Acres: 18

Forest Type: Mixed Hardwood

Species Present: White oak, Eastern Redcedar, Hickory, Red Maple, Red Oak, Redbud, Black Walnut

Age: Unknown

Stand History: Unknown

Size: Average tree diameter is ~14 inches which is considered sawtimber sized lumber.

Tree Quality: Overall trees in this stand are of very good quality and appear to be in very good health.

Stocking/Density: This stand has a basal area of 120 ft^2/acre which is considered fully stocked.

Growth Rate & Vigor: Trees in this stand appear to have good growth rate and vigor although that may become limited in the near future due to canopy closure.

Site Quality & Soils: Overall the site quality in stand 1 is good. Trees appear to be healthy and have good growth rate/vigor. There is one soil type present in this stand. It is the Needmore Opequon complex. Detailed information about this soil can be found below:

- *Slope:* 3 to 15 percent
- *Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock
- *Drainage class:* Well drained
- *Runoff class:* Medium
- *Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.57 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Available water capacity:* Low (about 4.4 inches)

Aspect & Topography: Stand 1 has flatter areas on the northern end and the southern end has west facing slopes of 15-35% down towards I-81

Water Resources: No water resources were observed in this stand

Invasive Species: Autumn Olive is present in small patches throughout the stand understory. This could potentially decrease the overall health of this stand in the future as it will prevent native vegetation and trees from growing.

Wildlife Habitat: This stand has excellent wildlife habitat, minus the fact that the interstate is adjacent to it. There are ample sources of acorns and nuts due to the large presence of white oak, red oak, and hickory as well as vegetation growing closer to ground level to provide additional browse and cover.

Recreation/Aesthetics: The stand is relatively easy to walk through, although there are currently no trails. The main road of Mckethan Park runs alongside the Eastern side of stand 1 providing easy access. There is also a pavilion near the South end of stand 1.

Cultural Resources: None observed

T&E Species Present: Running a report on threatened and endangered species that are present in the area came up with several species that are federally and state endangered. The list is as follows:

Federal & State Endangered – James spinymussel

Federal & State Threatened – Northern long eared bat, yellow lance State Endangered – Little brown bat, Tri color bat, Rubble coil, Shaggy Coil

State Threatened – peregrine falcon, Loggerhead Shrike, Appalachian gizzard skipper, Green Floater, migrant loggerhead shrike

Federal Protected & State Threatened – Atlantic pigtoe

Before doing any management activities you should ensure that these species will not be threatened by the activity.

Fire Risk: This stand is at moderate fire risk currently. Being next to the I-81 could result in a fire being started from the roadside.

Unique Natural Features: None observed

Recommendations: Considering that this stand is located adjacent to I-81 I believe it would be in your best interest to maintain a fully stocked forest for a screen from seeing and hearing the interstate. There is currently very good quality timber in this stand. Most of the trees are tall and straight and are high quality timber species such as white oak and red oak.

After 3-5 years of additional growth I would reevaluate the stand and consider having a logger come in to do some light thinning. You will likely have to combine harvesting in stands 1 & 2 to be able to entice a logger to come do the work for you. If a thinning is done I would advise that it be thinned down to ~100 ft^2 of basal area. A forester can come mark timber for you if/when this harvest occurs to ensure that trees are selected in a way that will leave some of the best ones standing so as not to eliminate all the good genetic seed sources from the stand.

My only other recommendation for stand 1 would be to consider treating the autumn olive growing in the understory, although currently it does not present a significant issue to the forests health it could damage forest productivity in the future.

STAND 2

Descriptions and Recommendations: **Let stand continue to grow naturally. Revaluate and consider thinning in 3-5 years.**

(Also consider leaving this stand to grow naturally indefinitely due to its proximity to the Chessie Nature Trail.)

Acres: 36.3

Forest Type: Mixed Hardwood

Species Present: Sycamore, Black Walnut, Eastern Redcedar, Red Maple, Yellow-Poplar

Age: Unknown

Stand History: Unknown

Size: Average diameter of trees in this stand was ~14" which would be considered sawtimber sized

Tree Quality: Tree quality in this stand is fair. The stand is slightly overstocked which has resulted in canopy closure

Stocking/Density: The average basal area was ~140 ft^2/acre. This is considered overstocked.

Growth Rate & Vigor: Trees in this stand appear to have good growth rate and vigor although that may become limited in the near future due to canopy closure.

Site Quality & Soils: The site quality in this stand is good. Trees appear to be healthy and have good growth rate/vigor. There are two soil types present in this stand Gladehill fine sandy loam and Frederick Caneyville complex. Detailed information on both soil types can be found below:

Gladehill fine sandy loam

- *Slope:* 0 to 3 percent
- *Depth to restrictive feature:* More than 80 inches
- *Drainage class:* Well drained
- *Runoff class:* Very low
- *Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* Occasional, None
- *Frequency of ponding:* None
- *Available water capacity:* Moderate (about 8.6 inches)

Frederick Caneyville complex

- *Slope:* 15 to 35 percent

- *Depth to restrictive feature:* 20 to 40 inches to lithic bedrock
- *Drainage class:* Well drained
- *Runoff class:* High
- *Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.20 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Available water capacity:* Low (about 3.5 inches)

Aspect & Topography: Stand 2 is mostly flat laying adjacent to the Maury River. There are a few slopes that face

Water Resources: Dry Branch Creek runs through the stand south towards the Maury River

Invasive Species: Autumn olive was present in patches throughout the stand. This could affect stand quality in the future if it continues to spread.

Wildlife Habitat: Wildlife habitat is fair in this stand. There is a small amount of vegetation on forest floor for browse. The overstory species however do not provide the best sources of food for wildlife.

Recreation/Aesthetics: The Chessie Nature Trail runs along the southern side of stand 2. There is also a road going through Mckethan park that ends up on the West side of stand 2. Overall this stand has good access for recreational activities

Cultural Resources: None observed

T&E Species Present: See stand 1

Fire Risk: There is low to moderate fire risk in this stand. It is in a lower elevation area of the park which means it likely stays wet throughout the year. However there is significant brush and leaf litter in the understory that could be a fire hazard in a drought.

Unique Natural Features: None observed

Recommendations: My recommendations for this stand are similar to stand 1. I would add that because this stand has Dry Branch Creek running through it as well as the Chessie Nature Trail along the southern end that you may consider just leaving this stand to naturally grow indefinitely. You may face pressure from the public who walk on the Chessie Nature Trail if you do have a logging operation taking place here at some point. It would be wise to get ahead of this by perhaps including some educational information regarding the

harvest and its impacts on the overall health of the forest. If it gets to the point of a harvest, contact a DOF forester and we can discuss creating some kind of educational sign for hikers on the trail. This could help limit potential negative feedback.

STAND 3

Descriptions and Recommendations: **Plant trees along the Northern and Western borders of the stand**

Acres:	49.9
Forest Type:	Open field
Species Present:	Minimal tree species present
Site Quality & Soils:	There is one main soil type in this stand, Frederick Caneyville complex. Detailed information on this soil type can be found in the soil information for stand 2
Aspect & Topography:	The western side of stand 3 has an eastern facing slope that is gradual.
Water Resources:	None
Invasive Species:	There are large patches of autumn olive in a few spots in stand 3
Wildlife Habitat:	Wildlife habitat in this stand is poor. Most of the stand is open field with grass.
Recreation/Aesthetics:	Stand has good road access throughout and ample green space for recreational activities
Cultural Resources:	None observed
T&E Species Present:	See stand 1
Fire Risk:	Very low fire risk in this stand
Unique Features:	There are 2 standing structures in stand 3. There are also some experiments being run by professors at the university. It is advised to check in with the university staff before doing anything in this stand so as not to interfere with research being done.
Recommendations:	See attached planting plan for information on recommended planting spacing and tree species. You stated initially that you would like to plant hardwood species. If screening from neighbors is your top priority for the tree planting I would recommend going with a pine species such as Eastern white pine, shortleaf pine, or pitch loblolly pine instead of hardwood species. Hardwood species will take many more years to grow and create an effective screen and will also lose leaves for a portion of the year further diminishing the screen effectiveness. Something to consider.

STAND 4

Descriptions and Recommendations: **Herbicide treatment of invasive autumn olive.**

Acres:	8.1
Forest Type:	Shrubs
Species Present:	Autumn Olive
Age:	Unknown
Stand History:	Unknown
Site Quality & Soils:	The main soil type in this stand is Frederick Caneyville complex
Aspect & Topography:	This stand has a gradual west to northwest slope
Water Resources:	None
Invasive Species:	Tons of Autumn Olive. You may consider treating this area so that it does not spread further around the park.
Wildlife Habitat:	Average wildlife habitat. While it is an invasive species autumn olive produces good berries for wildlife
Recreation/Aesthetics:	Low recreational and aesthetic value due to large presence of invasive species
Cultural Resources:	None
T&E Species Present:	See stand 1
Fire Risk:	Mild fire risk. The high density of shrubs combined with a potential drought could cause a fire hazard.
Unique Features:	There is one small standing structure in stand 4
Recommendations:	Work with a contractor to treat invasive Autumn Olive. Contact Ed Stoots at VDOF about potential State Lands Funds to help pay for this treatment. Revaluate treatment effectives after 2-3 years and potentially treat a 2nd time depending on autumn olive presence.

STAND 5

Descriptions and Recommendations: **Plant trees along the North, Northeastern, and Southwestern edges of the stand for screening from neighbors/I-81**

Acres: 90.8

Forest Type: Open field/Shrubs

Species Present: Autumn olive

Age: Unknown

Stand History: Unknown

Site Quality & Soils: There are two main soil types in stand 5 Frederick Caneyville complex and Needmore Opequan complex. Descriptions can be found below:

Frederick Caneyville Complex

See stand 1

Needmore Opequan Complex

- *Slope:* 3 to 15 percent
- *Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock
- *Drainage class:* Well drained
- *Runoff class:* Medium
- *Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.57 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Available water capacity:* Low (about 4.4 inches)

Aspect & Topography: Stand 5 has rolling hills that have aspects facing in all cardinal directions.

Water Resources: None

Invasive Species: Autumn Olive is largely present in patches throughout this stand. You may consider removing it to prevent further spread.

Wildlife Habitat: Average. The autumn olive provides berries that wildlife will eat. Other than that there is not much wildlife value in this stand.

Recreation/Aesthetics: Very high recreational and aesthetic value. This stand includes two pavilions, a baseball field, and a shooting range. It also has good road access throughout.

Cultural Resources:	None observed
T&E Species Present:	See stand 1
Fire Risk:	Low fire risk due to grass fields
Unique Natural Features:	None Observed
Recommendations:	See attached planting plan for information on recommended planting spacing and tree species. You stated initially that you would like to plant hardwood species. If screening from neighbors is your top priority for the tree planting I would recommend going with a pine species such as Eastern white pine, shortleaf pine, or pitch loblolly pine instead of hardwood species. Hardwood species will take many more years to grow and create an effective screen and will also lose leaves for a portion of the year further diminishing the screen effectiveness. Something to consider.

Cultural and Historic Resources

Cultural resources refer to landscapes, structures, archeological artifacts and vegetation that represent a culture or society of historic value. Federal and state laws protect some archeological, cultural and historic sites from disturbances, destruction or removal. It is critical to understand where such sites may be located prior to ground-disturbing forest management activities.

Historic and cultural resources are a vital link to past land-use practices in Virginia. While no sites were identified during my visits, old records for the area may exist. The Department of Historic Resources offers programs which survey, catalog and encourage the preservation of historic resources. This Department maintains records of historic sites and these records are available to the general public. More information can be found at www.dhr.virginia.gov or by calling their office at (804) 367-2323.

THREATENED OR ENDANGERED SPECIES

A list of endangered species located in the general area can be found in the stand 1 description. Information in this plan concerning the presence of Threatened and Endangered (T&E) species has been determined through observation and/or review of T&E species maps. This information does not substitute for a through exam completed by trained T&E specialists.

FOREST HEALTH AND PROTECTION

A healthy forest is a forest that possesses the ability to sustain the unique species composition and processes that exist within it. Active management of the forest helps to maintain and improve its productive capacity, taking into account all the factors that influence the resource elements addressed in the State-Owned Lands Management Plan. Silviculture harvest practices and the use of prescribed fire as a tool can reduce risk from wildfire, pests and invasive species, and ensure long-term forest health and vigor. Forest health protection issues are often directly related to the active management of insects and diseases, invasive plants and wildfire. Annual inspections for signs of insects, diseases or invasive plant infestations should be completed by the landowner.

No disease or insect problems were identified on the property. Continued monitoring is the best preventative measure to ensuring forest health. If any unusual problems are found, please contact the Virginia Department of Forestry.

FIRE

Prescribed fire, also known as “controlled burn,” refers to the controlled application of fire by a team of fire experts under specified weather conditions that help restore health to fire-adapted environments to obtain specific management objectives. Prescribed burning is a critical management tool that enhances and benefits forests, grasslands and wildlife habitats. Prescribed fire is an effective tool in site preparing harvested areas for replanting tree seedlings as well as reducing excessive amounts of hazardous fuel build up and catastrophic damage of wildfire on our lands and surrounding communities.

Prescribed fire is one of the most effective tools we have in preventing the outbreak and spread of wildfires.

Protection of your property from wildfire is essential. Wildfire rapidly destroys valuable timber, wildlife and property. From February 15 through April 30, open air fires are not permitted within 300 feet of woodland, brushland or field containing dry grass or other flammable material between midnight and 4:00 p.m.

CARBON CYCLE

All forest plants and soils "store" carbon, so active forest management influences the natural cycles of that storage in both living and dead plant material. The removal of carbon from the atmosphere is the process called carbon sequestration. Carbon sequestration is the process by which atmospheric carbon dioxide is consumed by trees, grasses and other plants through photosynthesis and stored as carbon in biomass (trunks, branches, foliage and roots) and soils. Sustainable forestry practices can increase the ability of forests to sequester atmospheric carbon while enhancing other ecosystem services, such as improved soil and water quality. Planting new trees and improving forest health through thinning and prescribed burning are some of the ways to increase forest carbon in the long run. Harvesting and regenerating forests can also result in net carbon sequestration in wood products and new forest growth.

WETLANDS

Wetlands include areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances, do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas. Wetlands are also highly diverse and productive ecosystems with emphasis on supporting timber production, water quality protection, wildlife habitat and more. It is important for you to be aware of and understand the laws and regulations related to forestry practices before engaging in wetland management activities on your land.

BIOLOGICAL DIVERSITY

Biodiversity is the variety of life (including diversity of species, genetic diversity and diversity of ecosystems) and the processes that support it. Landowners can contribute to the conservation of biodiversity by providing diverse habitats. It is important to select management options that offer the greatest opportunities for promoting wildlife habitats and conserving biodiversity while fulfilling other land management objectives. Some of these options include, but are not limited to, the conservation of wildlife habitats and biodiversity by:

1. Managing stand-level habitat features.
2. Promoting aquatic and riparian areas.
3. Managing landscape features.
4. Conserving rare species and communities.

5. Protecting special features and sites.

AGROFORESTRY/SILVOPASTURE

Agroforestry intentionally combines agriculture and forestry to create integrated and sustainable land-use systems. Agroforestry takes advantage of the interactive benefits from combining trees and shrubs with crops and/or livestock. In the United States, agroforestry is commonly divided into five main practices: Windbreaks, Alley Cropping, Silvopasture, Riparian Forest Buffers and Forest Farming.

Silvopasture combines trees with forage and livestock production. The trees are managed for high-value saw logs while providing shade and shelter for livestock and forage, reducing stress and sometimes increasing forage production. Silvopasture is increasingly popular in the southeastern region of the United States as a way to supplement timber income on small pine plantations and some hardwood stands. However, there can be problems with combining the two management schemes if it is not done correctly or actively managed. This management system requires active rotational grazing to avoid damage to the standing trees and allowing the forage to recover.

HIGH CONSERVATION VALUE FORESTS

These are forests of outstanding and critical importance due to their environmental, social, biodiversity, or landscape values. High Conservation Value Forests are considered critically important because they contain a unique combination of values. These can be social, cultural, biodiversity and environmental values.

Social or cultural values are aspects of a forest that are critical to the surrounding community's identity. They can range from significant historical features, such as sacred sites or burial grounds, to the forest's role within the community – for example, whether local residents have traditionally depended on the forest for berries, firewood or other products.

Biodiversity values are critical to preserving local flora and fauna. Such values could include rare ecosystems or habitats, or unusual communities of plant or animal species. Keep in mind that these ecosystems and species need not be on state or Federal Threatened or Endangered Species lists – they may just be considered rare regionally or locally.

Environmental values can benefit the whole community. Some examples are forests whose presence helps protect local watersheds or prevent erosion in vulnerable areas.

When forestry professionals and other experts evaluate a forest as a potential HCVF, they look at the entire landscape – not just a single stand of trees – and consider all of these values.

Places that combine and contain these features are rare, so it's especially important to protect them. *(American Forest Foundation)*

INTEGRATED PEST MANAGEMENT

A pest control strategy may use a variety of complementary strategies including mechanical devices, physical devices, genetic, biological or cultural management and chemical management. *(U.S. EPA)*

Integrated Pest Management (IPM) combines several appropriate pest control tactics into a single plan to reduce pests and their damage to an acceptable level. Using many different tactics to control a pest problem causes the least disruption to the living organisms and non-living surroundings at the treatment site. Relying only on pesticides for pest control can cause pests to develop resistance to pesticides, can cause outbreaks of other pests, and can harm surfaces and non-target organisms. With some types of pests, using only pesticides achieves very poor control.

To solve pest problems, first:

- Identify the pest or pests and determine whether control is warranted for each,
- Determine pest control goals,
- Know what control tactics are available,
- Evaluate the benefits and risks of each tactic or combination of tactics,
- Choose the most effective strategy that causes the least harm to people and the environment,
- Use each tactic in the strategy correctly, and
- Observe local, state and Federal regulations that apply to the situation.

The best strategy for each situation depends on the pest and the control needed.

(Michael J. Weaver, Patricia A. Hipkins, Virginia Tech Pesticides Program, 2013)

10-YEAR RECOMMENDED SCHEDULE OF MANAGEMENT ACTIVITIES

Year	Parcel	Activity	*Possible Cost Share	Future Stand Conditions		
				Year	Stocking	Species
2021	3, 4, & 5	Consider treating invasive species	State Lands Funds			
2022	3 & 5	Tree planting along property edges			500 TPA	Various Hardwoods, Possibly Pine
2023	1 & 2	Revaluate these stands for possible thinning operation				
2024	3, 4, & 5	Reevaluate if Invasive species need to be treated	State Lands Funds			
2025	-					
2026	-					
2027	3, 4, & 5	Check on planted trees to determine future risks to power lines				
2028						
2029	All	Contact DOF to have plan updated				

This schedule may need to be adjusted depending on financial needs, timber markets, timing of actual harvest and availability of contractors.

STAND DATA SUMMARY

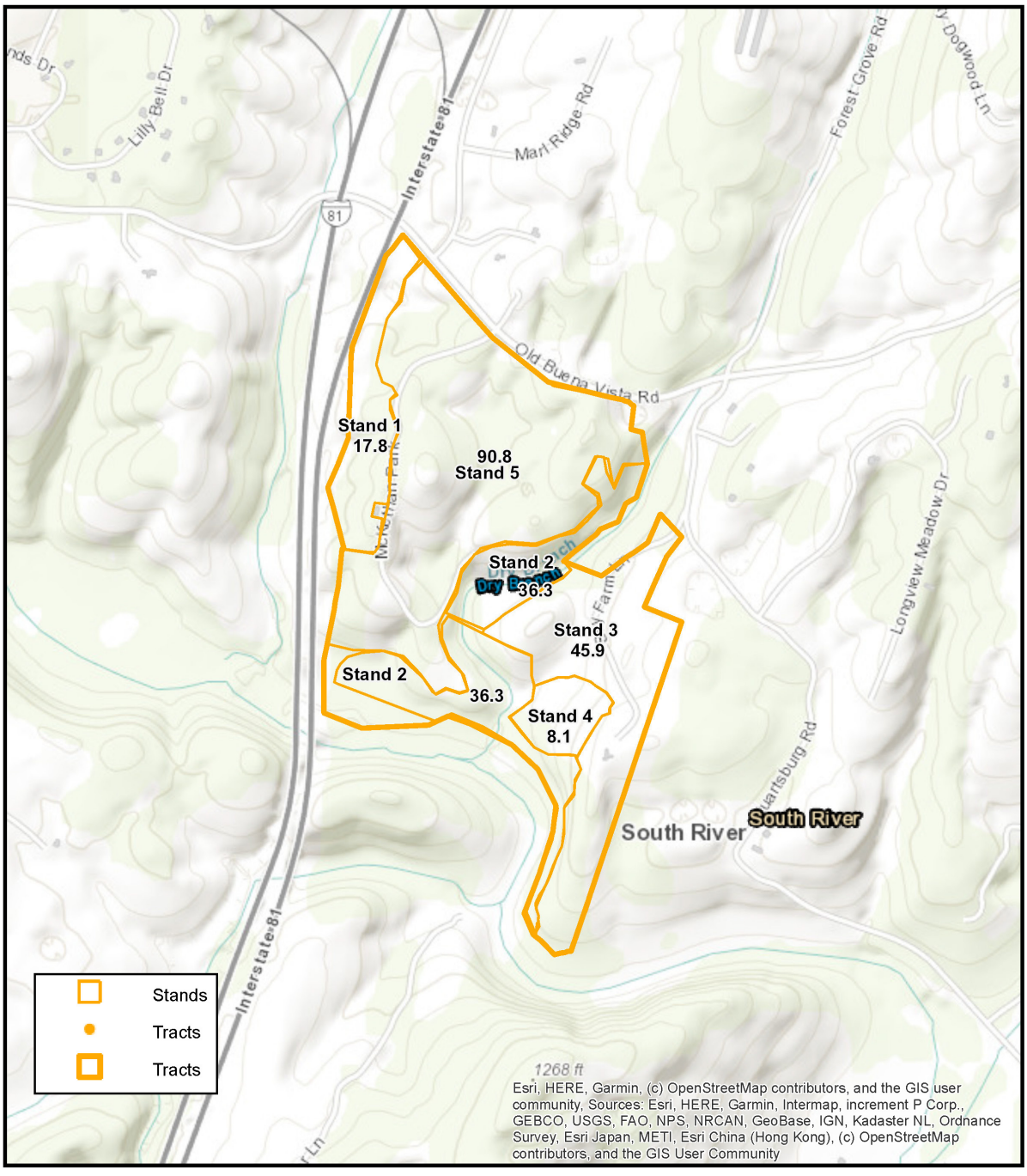
Stand	Forest Type	Acres	Year Estab.	Age	Site Index	Avg. DBH	Stocking/ Density	Stand Quality	Annual Growth	Other Important Stand Attributes (nat. regen., invasive plants, etc.)
1	Mixed Hardwood	17.8	-		>80 YP	14”	120 ft^2/acre	Very Good	Very Good	Autumn olive present in patches
2	Mixed Hardwood	36.3	-		>80 YP	14”	140 ft^2/acre	Good	Good	Autumn olive present in patches
3	Open Field	45.9	-		-	-	-	-	-	
4	Shrubs	8.1	-		-	-	-	-	-	
5	Open Field/Shrubs	90.8	-		-	-	-	-	-	

Parcel: Identifying letter or number for each parcel
Forest Type: **Pine** – by primary species
Pine/Hardwood – by primary species or major species group
Upland Hardwood – by pure species or major species group
Bottomland Hardwood – by pure species or major species group

Site Index: For dominant species present, indicate base age
Stocking/Density: Basal area or trees per acre
Other Important Stand Attributes: Is natural regeneration present?
Are there invasive plant species present?
(species and level of presence – heavy, moderate, low)

Mckethan Park
VMI

Walker Wolff
(540)363-7002
walker.wolff@dof.virginia.gov
4/8/2021



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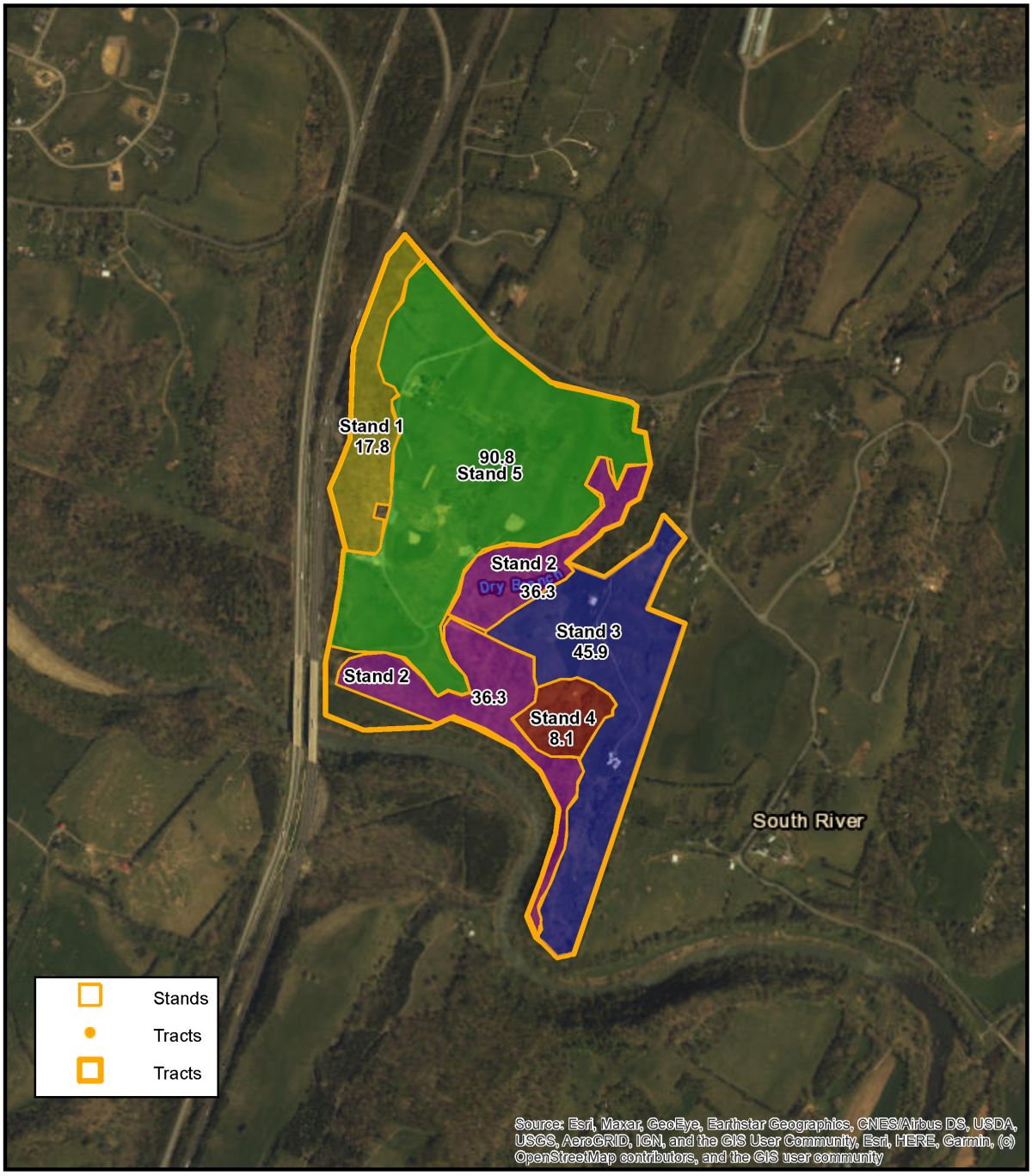
Feet
0 470 940 1,880

Mckethan Park
VMI

Walker Wolff
(540)363-7002
walker.wolff@dof.virginia.gov
4/8/2021



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