Savage River State Forest
Annual Work Plan

Fiscal Year 2024

Prepared: _____ _____
(Forest Manager) Date

Reviewed: _____ _____
(Regional Forester) Date

Approved: _____ _____
(Environmental Specialist) Date

Savage River State Forest
FY-24
Annual Work Plan

Savage River State Forest
FY-23 Annual Work Plan

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I. State Forest Overview

Savage River State Forest is approximately 55,273 acres in size and is situated in the northeastern quadrant of Garrett County in Western Maryland. It is a second growth mixed hardwood forest dominated by mixed oak species, sugar and red maple, black cherry, hickory and ash. Owing to high rainfall and certain topographic features, Savage River State Forest contains many excellent quality growing sites stocked with superior quality trees. The forest contains approximately 2,800 acres of conifer plantations that were established in the 1940's following state acquisition. Red pine is the dominant tree species within these plantations but other conifers include white pine, Norway spruce, larch, and Scotch pine. These plantations were established as nurse crops to rehabilitate abandoned and depleted farm fields, with the long-term goal of conversion back to native hardwoods as appropriate.

Savage River State Forest has been intensively managed over the past nine decades. Forest harvest and grooming operations are undertaken to thin overstocked stands, to effectively deal with public safety concerns, to harvest mature or diseased/dying trees, to improve habitat for certain wildlife species, to assist and provide for certain research needs, to address aesthetic concerns and to increase the proportion of age/height diversity of forested stands.

II. Annual Work Plan Summary

The FY-2024 Annual Work Plan for Savage River State Forest was formulated in 2023. It contains projects to be undertaken in the areas of Special Projects, Maintenance and Operations, Recreation, Watershed Protection, Ecosystem Restoration / Protection, and Wildlife Management. In addition to the routine operations and management of the State Forest, the FY-24 Annual Work Plan for Savage River State Forest details eight land management projects that will be the focus of the State Forest management staff for FY-24. All projects and proposals within this Plan have been developed to meet one or more of the Land Management Guidelines and Objectives outlined in the Savage River State Forest Sustainable Management Plan including:

Forest Economy*: management activities intended 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.*

A. Special Management Projects Include:

1. Continued Development of the Certified, State Forest Sustainable Forest Management Plan - with special focus on addressing items identified as in need of improvement as a result of the 2019 FSC/SFI Certification Audits.

2. Forest Stand Delineation, Inventory and Monitoring – Completion of the project to re-inventory and redefine stands on the entire forest. This critical project will continue in FY-24. To date, 100% of the data collection in harvestable stands is completed. Areas of HCVF including wildlands, ecologically significant areas, old growth, old growth ecosystem management areas and areas that preclude timber harvest operations will be inventoried secondarily to the harvestable areas. The project will allow a thorough analysis of this complete data set from which further management plans will be derived. Inventory work will continue in the form of follow-up monitoring protocols associated with the initial inventory and certification requirements.

3. Non-Native Invasive Species (NNIS) Inventory and Control Work - The Sustainable Forest Management Plan calls for various responses to NNIS and the Forest Inventory Project has allowed for a broad view of the problem forest wide.

. **B. Land Management Projects Include:**

1. Continuation of the ecosystem restoration project involving control of invasive and exotic plants forest wide.

2. Continuation of the ecosystem restoration efforts involving control of invasive, exotic forest pests, particularly the Hemlock wooly adelgid.

3. 5 Silvicultural projects including:
5 Intermediate Harvests on 294 acres.

Forest harvest operations are undertaken to utilize mature and dead/dying/diseased trees; to thin overstocked stands; to improve and diversify wildlife habitat; to effectively correct public safety concerns and issues; to reduce the forests vulnerability to insect attack, disease or wildfire hazard; to facilitate certain approved research needs; to improve certain aesthetic aspects of an area; and to improve the proportions of age class and species diversity within stands and management blocks. This forest has been intensively managed since its inception, utilizing both even and uneven-aged techniques via selective removals and regeneration harvests. Early records indicate that as cut over land was acquired, foresters culled the forest, removing the poorly formed and damaged timber left behind in the wake of the cut and run practices employed by early timber speculators. By removing these undesirable trees, newly forming seedlings were released from competition and were thus cultured into the future growing stock of trees that is enjoyed today. The benefits of this work have been significant including improved wildlife habitat diversity, improved forest health and more abundant mast production, improved utilization of gypsy moth damaged trees, reduced forest fire hazard, and the considerable financial contribution of management to the state and local economies as well as to those employed in the forest products industry.

The FY-24 Annual Work Plan outlines 5 harvests on 294 acres, producing a harvest of approximately 1,200,000 board feet of sawtimber and accounting for an estimated $400,000 worth of raw wood products entering local markets. Much of the silvicultural work laid out in

this work plan is focused on initiating seedling development to better ensure regeneration successes in future harvests. Much of the value of the harvests in the work plan will be directed back into the forest providing the essential investment in pre-harvest cultural work that will safeguard the long term sustainable management of these important forest resources. The cultural operations and management projects outlined within the FY-24 Annual Work Plan are selected to provide significant contributions to the sustainability of forest resources found within the State Forest and the ecosystems associated with it.

III. General Location Map for FY-24 Land Management Project Proposals

Approximately 294 Acres

Map Key

1. Compartment 13 Stands 6 & 11	*47-Acre Hardwood Thinning*
2. Compartment 15 Stands 19, 31 & 50	*49-Acre Hardwood Thinning*
3. Compartment 17 Stands 35,72,100,101,107,108	*40.5-Acre Hardwood Thinning*
4. Compartment 39 Stands 10-14	*60-Acre Hardwood Thinning*
5. Compartment 37 Stands 3, 4 & 7	*97.5-Acre Hardwood Thinning*

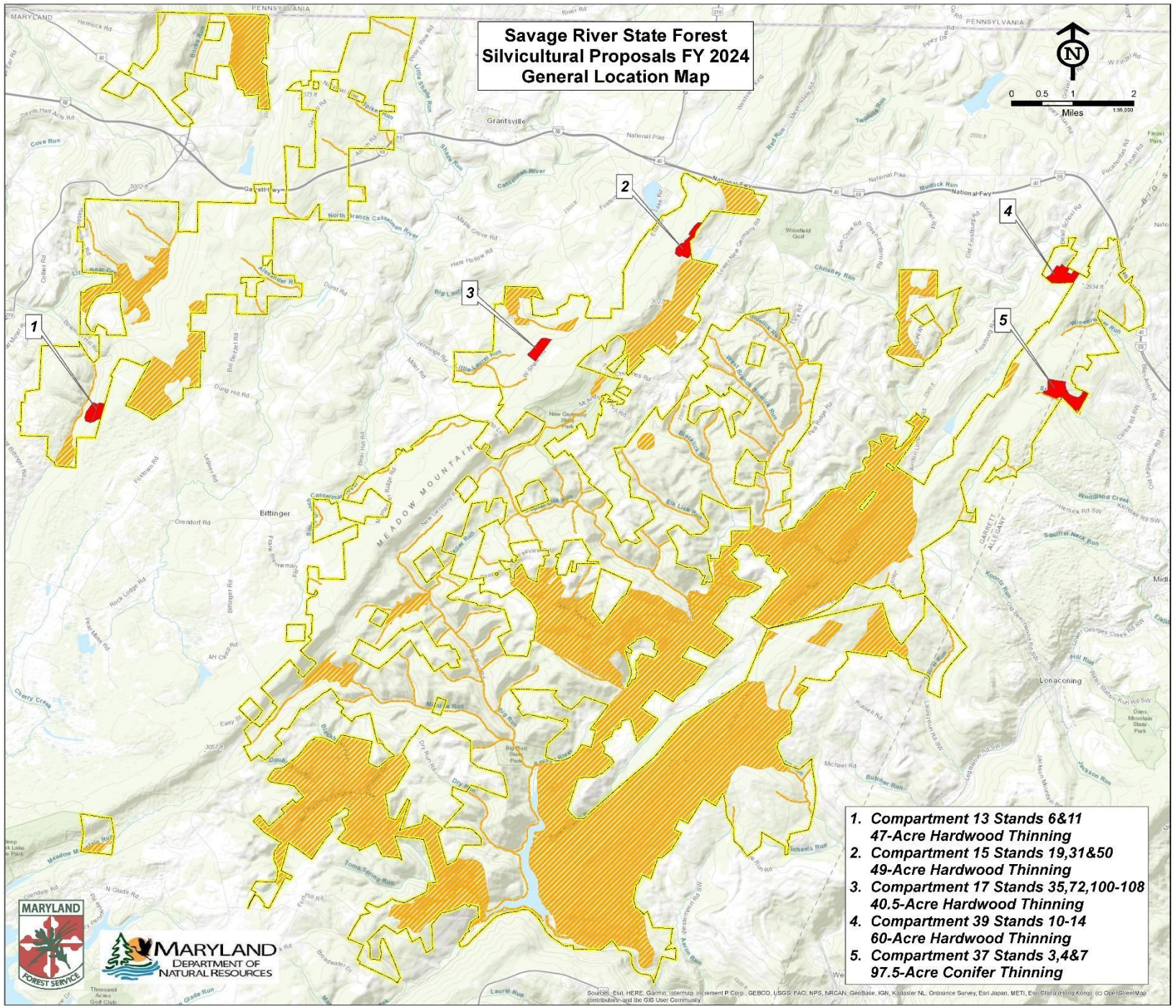


Figure 1. General location map of FY-24 silvicultural proposals

IV. Special Projects - Forest Resource Management and Planning

A. Continued Development of the Certified State Forest Sustainable Forest Management Plan.

Beginning in 2011, the Forest Service began revising the long term sustainable management plans for all three of the State Forests in the Western Region. The initial framework follows the sustainable management plan format established for the State of Maryland's Chesapeake Forest on the Eastern shore. The Department's goal is to have the updated sustainable forest management plans receive dual third party certification under both the Forest Stewardship Councils (FSC) and Sustainable Forestry Initiatives (SFI) standards and guidelines.

Throughout the course of the last seven years, broad resource assessments have been carried out identifying the various management units and features located on the forests including identification and mapping of High Conservation Value Forest Areas (HCVF), much of which was formerly identified as the State Forests "Special Management Zone". Within the HCVF are located a broad range of Ecologically Significant Areas (ESA). These areas typically contain rare, threatened or endangered species and their critical habitats. By spring of 2011 initial drafts of the Forest's Sustainable Management Plan were developed and shared with stakeholders for initial comment and review. The plans were submitted to both the FSC and SFI organizations in the spring of 2011, at which point audits have been completed on all three of the western state forests. Following the audits, draft plans and audit findings were presented to the State Forests Citizen Advisory Committees for review and comments. The Draft Sustainable Management Plans were made available for public comment fall of 2011. Revisions and updates to the Sustainable Management Plan were completed in April of 2019.

Each year the State Forests Management Program is audited for compliance to the standards set forth by the Certifying Organizations. Any shortcomings in the programs identified during the audits are identified in a Corrective Action Reports (CARs) and/or observations identified as being in need of improvement in order to be "certified" as sustainably managed forest lands under the internationally recognized FSC and SFI standards. These corrective actions vary from simple formal documentation of routine practices, to more complex policy and procedure development involving various stakeholders and partners. The program requires that all of these items be addressed before the next annual audit, with some needing more immediate attention. A minor corrective action request was issued by SFI in regard to leaking equipment on a harvest site and the apparent absence of safety equipment. A corrective action plan was formulated that would add the items to the BMP checklist and confirmation of compliance would be done during each site visit by Forest Service Staff or agents.

State Forest staff time and field operations are adjusted and redirected to assist in addressing any Corrective Action items in the course of the next year.

B. Forest Stand Delineation, Inventory and Monitoring

A critical part of developing long term sustainable management plans is the availability of up-to-date forest inventory data. Initial stand data collection has been completed on the harvestable areas of the forest using the SILVAH Inventory System developed by the US Forest Service which incorporates intense surveys of both the overstory and understory to assist in the formulation of appropriate silvicultural prescriptions in specific forest types. The demand for this important data set is increasingly evident as special projects evolving out of demands placed by

Forest Certification Standards utilize this data set for project planning including the Annual Work Plan and the Non-Native Invasive Species Inventory.

What had historically been carried out on a 10-year interval offering a snap shot in time view of the forest, has evolved into an annual sampling approach that gives a more frequent look at overall forest condition throughout the years. This approach will allow a much closer watch on developing forest conditions and allows for more rapid and timely responses. This approach is especially valuable in light of the numerous and frequent introductions of foreign insects, diseases, and invasive plants that can rapidly disrupt forest systems. The initial Stand Delineation and Inventory Project will be continued as a Forest Monitoring program as required under certification in order to allow for documented observations of changing conditions throughout the forest. Program focus will include: monitoring of developing regeneration sites allowing for the timely response to the investment in intensive silvicultural work such as herbicide control of invasive and interfering plants and prescribed fire; NNIS monitoring and control work; silvicultural results with respect to management objectives and outcomes and recreation/visitor impacts, etc.

V. Maintenance and Operations

Aside from the detailed cultural work planned for the State Forests, the following is a partial list of projects that are often on-going from year to year and are an integral part of State Forest operations: Routine maintenance projects include building repair and maintenance, vehicle maintenance, mowing at the office facility, snow removal, repair and replacement of fire rings and tables at the camp sites, brush hogging trails and repair of road surfaces.

A. Maintenance and Management of Roads and Trails

There are approximately 107 miles of trail and hardened road surface on the forest and approximately 1/3 of the mileage is maintained each year. Maintenance in these areas includes brush hogging, mowing, rehabilitation of road surfaces, removal of downed trees, trail corridor maintenance, and maintenance of trail drainage features. Herbicide usage has been integrated into the road maintenance regime in order to control growth in areas where mechanical control methods are not feasible (i.e. steep slopes, narrow paths, rocky areas). The use of herbicide along forest roadways can also reduce operational costs for the maintenance staff by controlling unwanted vegetation along these travel corridors for several years, when applied properly.

A trail maintenance specific grant (RT 23-16) has been awarded to the Maryland Forest Service through the Recreation Trail Program (RTP). These funds, administered by the Maryland Department of Transportation (MDOT) State Highways Administration (SHA), will be used to deploy a programmatic approach to non-motorized trail maintenance in the Western Region State Forests (Green Ridge, Savage River, Potomac Garrett).

The trail maintenance tasks will be accomplished by a 6-8 person AmeriCorps certified saw crew and/or a trail crew. We anticipate logging 1,280 - 1600 labor hours in each State Forest and a total of 4,480 labor hours within the Western Region over the term of this grant. No new trails will be constructed as part of this project. All of the work will be conducted on existing trails and on land owned and managed by the Maryland Department of Natural Resources.

B. Boundary Line Maintenance

Savage River State Forest currently has 336 miles of boundary line, including interior lines, exterior lines and road frontage. Boundary maintenance is critical to the management of all public lands. In order to keep up with this effort, State Forest staff maintain approximately 60 miles of line each year. In addition to routine marking and painting, considerable effort is spent on researching, relocating, or establishing missing and/or new line, as well as addressing boundary conflicts. As conflicts arise, every effort is made to resolve the issue in a timely and professional manner. Often, this work leads to the need for a licensed surveyor and legal recourse in order to resolve the issue. With the assistance of Land Planning and Acquisition staff, a minimum of five miles of previously unpainted and/or missing boundary line are to be reestablished until the entire forest boundary is demarcated.

C. Campground Operation and Maintenance

There are 81 primitive camp sites that are maintained on a regular schedule throughout the year. Major campsite maintenance coincides with major holidays, the end of winter and at the traditional end of the camping in late summer/early fall. The campsites are also frequented during the white-tailed deer firearms seasons in the fall and winter, during spring turkey season in early spring and during the opening weekend of trout season in late winter/early spring. Maintenance and operation of these primitive campsites includes: managing group site reservations; maintenance of information / bulletin boards; camper contacts to insure policies are understood; self-registration fee collections and deposits; weekly site inspection and cleaning; hazardous tree evaluation and removals; grass mowing (typically the week before the summer holidays and otherwise as needed); maintenance and replacement of picnic tables, lantern posts, and fire rings; and site impact monitoring.

D. Rifle Range Maintenance and Management

There is a 100-yard shooting range on the forest that is open to the public year round located at 3250 New Germany Road. Maintenance is ongoing and includes replacing backstops as well as the backstop stands, trash clean-up, mowing and weed eating around the facility, plowing the entrance road, restocking range permits, collecting range fees and posting range closures when necessary. Prior to and during the various hunting seasons, range use increases appreciably resulting in more frequent maintenance visits. Typically, at the conclusion of spring turkey season, the backstops and stands from the previous year are replaced, depending on the severity of damage.

The shooting range is open daily from 8 a.m. to dusk and offers hunters an ideal location to sight in weapons. The range features ten stations with distances ranging from 25 to 100 yards. Hunters can pay the $5.00 daily fee at the range using envelopes provided. The annual pass costing $25 and the family pass costing $50 are available at the Forest Headquarters Office. Rules and regulations are posted at the range, with the only restrictions being no fully automatic weapons and no clay pigeons.

VI. Recreation

A. **Recreation Opportunities** (See Figure 2 p. 12)

1. Hiking, Biking and Horseback Riding Trails

Savage River State Forest has over 70 miles of trails open to hikers, mountain bikers and horseback riders of any ability. Not all trails are open to all recreational pursuits and it is recommended that before engaging in any activities visit or contact the state forest headquarters to become aware of any trail restrictions. A backpacking permit must be obtained at the forest headquarters or at any of the self-registration areas. Trail guides featuring a topographic map and trail descriptions can be purchased at the forest headquarters.

2. Off Road Vehicles

Snowmobile and off-road vehicle operators can enjoy many miles of scenic trail along the Meadow Mountain Trail, East Shale Road, Margraff Plantation, Negro Mountain Trail and the newly constructed St. John's Rock ORV Trail. Unlike the aforementioned trails, the St. John's Rock ORV Trail is the first trail on Department lands ever designed specifically for ORV enthusiasts. Features include a multi-site primitive campground designed to support ORV riders, children's riding trails within the campground, technical spur loops and hare scramble style trail sections for all terrain vehicles and motorcycles, a full-size rock crawl area for jeeps and four-wheel drive vehicles and miles of forest access roads for all purpose riding opportunities. The total trail system is approximately 13 miles in length with varying challenges for riders of all skill levels. The trail officially opened to the public on July 23, 2017.

Be sure to display a current Department of Natural Resources ORV permit, available at the forest headquarters or online at www.dnr.maryland.gov.

3. Hunting

Hunting is permitted throughout the forest except where posted with safety zone signs. The 55,000 acres of Savage River State Forest includes two state park areas (New Germany and Big Run) where hunting is prohibited. The forest boundaries are marked with yellow paint on trees - a yellow bar as you enter the forest and a yellow dot as you exit the forest. Hunting on or crossing private land within or near the State Forest requires the written permission of the land owner. Parking is permitted along roadways as long as traffic is not blocked. Hunters must have a valid Maryland Hunting License and should refer to the current Hunting & Trapping guide for season dates and specific regulations.

Several access roads are opened every fall to accommodate hunters. These gated roads are opened prior to squirrel season in September and remain open through January 31. A copy of the road-opening schedule is available in the Forest Headquarters Office. Opened roads can be used by all hunters and allow for vehicular traffic. Due to the nature of these roads, the use of four-wheel drive is recommended. Handicapped hunter access roads are also available. More details about handicapped accessibility appear in this brochure and on the current road-opening schedule.

*Hunter Safety Classes, required for the purchase of a license, are taught periodically through the Department of Natural Resources. These classes are usually offered in the county at one of the local State Parks.

4. Trapping

Trapping is permitted both on land and in the water. A permit can be issued for trapping on Savage River State Forest at the Regional DNR Wildlife Office in Flintstone. Trappers are required to obtain a certificate of trapper education from the Department of Natural Resources. Trapper education courses are held statewide. Refer to the current Hunting & Trapping Guide for complete regulations. A valid hunting license is required when applying for a trapping permit.

5. Fishing

Anglers with a Freshwater Fishing License have the opportunity to catch multiple species of fish in the Savage River Reservoir including walleye, large-mouth bass, smallmouth bass, yellow perch, bluegill and several trout species. Anglers with a trout stamp can fish the Savage River for wild brook trout and stocked brown and rainbow trout. Tributaries of the Savage River, including Middle Fork, Poplar Lick and Blue Lick to name a few, provide a unique backcountry fishing experience for native brook trout that is unsurpassed in the region. The majority of the Savage River watershed is within the Zero Creel Limit Area for brook trout and can only be fished with artificial flies and lures. For regulations, creel limits and special management areas consult the Maryland Freshwater Sportfishing Guide or contact the Western Maryland Fisheries Office at (301) 334-8218.

6. Boating/Paddling

The Savage River Reservoir provides excellent boating and paddling opportunities. Three public boat launches offer convenient access at Dry Run Road, Big Run State Park and ¼ mile north of the dam breast on Savage River Road. Gasoline engines are prohibited on the reservoir. Recreational whitewater releases occur periodically throughout the year on Savage River below the dam that are sponsored and coordinated by the Upper Potomac River Commission, Savage River State Forest, Garrett College Adventuresports Institute and several commercial boating outfitters. The events are at no cost to the participants, but donations are accepted to cover the cost of shuttle services and on site restroom facilities.

7. Winter Recreation

Cross-country skiers and snowshoers of all abilities can enjoy a winter wonderland on the New Germany, Margraff Plantation, and Mount Aetna trails. The Asa Durst Trails are recommended for a backcountry snowshoe experience. Snowshoers must be careful to walk beside and not on cross-country tracks as it disrupts them.

8. Geocaching

Currently, 28 goecaches are located throughout Savage River State Forest for those interested in testing their navigational and tracking skills. All geocaches must reviewed and approved by the staff before being placed anywhere on the forest. Applications and general rules for geocache placement are available at the state forest headquarters.

9. Maps

Brochures and maps are available at the Savage River State Forest Headquarters Office located at 127 Headquarters Lane, Grantsville, Maryland 21536.

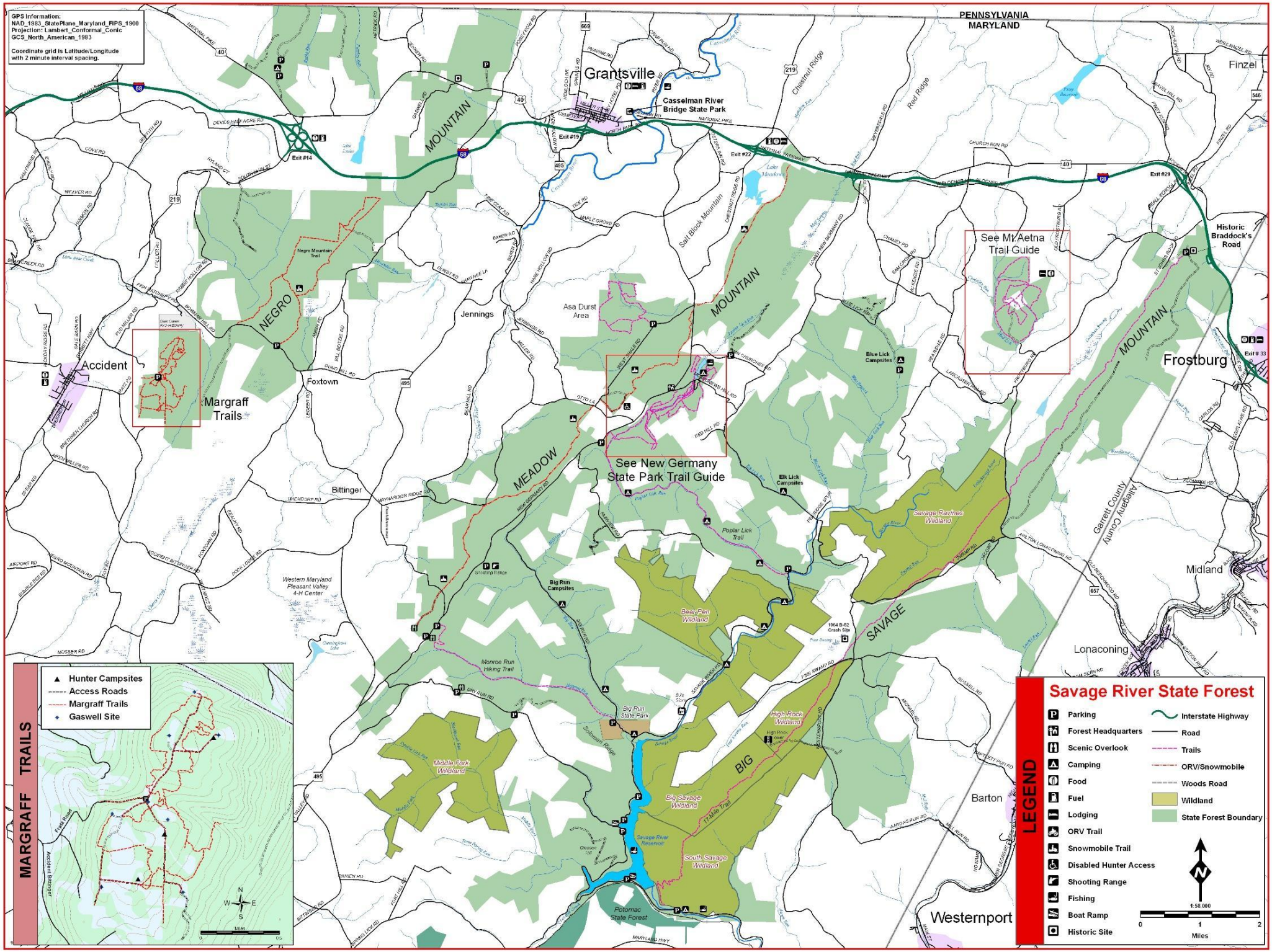


Figure 2. Recreational Opportunities on Savage River State Forest

B. Recreation Proposals

1. St. John's Rock Trail Expansion

Project Description: The Saint John's Rock (SJR) ORV Trail network is located near Finzel, MD, within the boundaries of Savage River State Forest (SRSF). The overall goal of the project is to enhance the quality and expand the variability of motorized recreational opportunities on public land and to provide desired trail user experiences on the trail so they will not look for those experiences off designated trail areas. To satisfy the stated goals, this project concept proposal includes three components: 1) Explore options to modify existing timber harvest infrastructure to expand motorized recreational opportunities within the SJR ORV Trail network, 2) Evaluate the current quality and delivered user experience of the existing SJR ORV Trails to identify opportunities for improvement using professional trail builders and utilizing the latest trail building techniques, 3) Develop 5 to 6 miles of natural surface singletrack for motorcycles and electric bicycles, which will enhance and diversify the current recreational opportunities that exist within the SJR ORV Trail network.

Project review is requested to generate comment letters suitable for demonstration of compliance with NEPA. For areas where trail development polygons are presented, project reviewers will have an opportunity to field review the proposed trail alignment before final.

This proposed project would be funded through the Maryland ORV Excise Tax fund.

Purpose: The purpose of this proposed project is to increase available recreation time or "seat time" available to the motorized trail user group. The SJR ORV Trail network currently offers a total of 12.5 miles of motorized trail that includes a campground, a full-size vehicle rock crawl area, and a kids loop. All the existing trails are bi-directional, which extends the mileage available as users can back track on trails in the opposite direction. The width of the existing trails is the limiting factor that determines what types of OHV equipment can access certain sections of trail. Motorcycles and 4-wheelers have access to all available miles of trail, side by sides have access to approximately 11 miles of trail, and full-size off-road vehicles can access approximately 7 miles of trail.

The following sections will expand on each component of the proposed project.

Component 1: Explore options to modify existing timber harvest infrastructure to expand motorized recreational opportunities within the SJR ORV Trail Network.

In 2021, a haul road was built, and a timber harvest was conducted within SRSF. The haul road originates from the Red Dog Rd. full size ORV trail, bi-sects the Sassafras Scramble Trail, crosses the Big Savage Hiking Trail, and terminates at a log landing situated on top of Big Savage Mountain. The timber harvest area (compartment 37, stands 23 & 24) is 115 acres in size and includes a network of primary and secondary skid roads that extend perpendicular from the haul road. The timber harvest footprint is approximately 1.25 miles in length. This timber harvest was reviewed in the FY-18 SRSF AWP with no comments from the ID-Team. The stands have since been harvested.

This project proposal component recommends that the existing timber harvest infrastructure be evaluated for ORV trail development. The haul road would support all ORV equipment types, the primary skid roads should also be explored to assess the feasibility of supporting all ORV equipment types, while the secondary skid roads should be evaluated to support trail expansion that would support side by sides or narrower ORV equipment. Field reconnaissance of the area indicates that the proposed actions are feasible – photos are included as attachments. A planning and design process would need to be initiated to generate detailed construction plans that would be used to transform these existing timber harvest corridors into quality trail resources. The end trail product should focus on providing users with the desired experience while also being environmentally sustainable. The identified area could potentially support the addition of another 4+ miles, including the haul road, of motorized trail to the SJR ORV Trail network. It should be noted that the developed haul road may be used for future timber harvests, which could interrupt trail use while harvest activities are taking place.

Please see the attachments below, under the label **Component #1** for maps and photos.

Component 2: Evaluate the current quality and delivered user experience of the existing SJR ORV Trails to identify opportunities for improvement using professional trail builders and utilizing the latest trail building techniques.

The most recent trail addition to the SJR ORV Trail network was built (2022) by professional trail builders from the International Mountain Bike Association. This .65-mile trail connects the SJR Campground to the White Oak Loop trails. The trail was built with a small excavator utilizing a machine operator and a one-person hand crew. The result is a natural surface trail that aligns with the landscape and includes built in water management features (grade reversals), provides a quality and safe user experience, has natural flow, and is environmentally sustainable.

It appears that the existing SJR loops and scrambles were built with a skid steer utilizing a blade. The results can be best described as roughed in trail corridors that are below grade with a lot of exposed loose rock (see photos attached). Although the trails do provide a challenging "technical" experience, that experience is consistent throughout all of the originally built trails without differentiation across trail difficulty ratings.

We propose that the White Oak Loop, the Red Oak Loop, and all of the Scrambles be evaluated for potential enhancements utilizing the proper equipment under the management of professional trail builders. The total mileage associated with this project component is approximately 4.5 miles. The end goal would be to provide users with an appropriate trail experience based on advertised trail difficulty, create flow and motion by reworking existing trail features, and improve the sustainability of the existing trails through the installation of water management elements. This proposed work under this component would be focused within the existing trail corridor. No new trail is proposed.

Please see the attachments below, under the label **Component #2** for maps and photos.

Component 3: Develop 5 to 6 miles of natural surface singletrack for motorcycles and electric bicycles, which will enhance and diversify the current recreational opportunities that exist within the SJR motorized trail network.

We have identified two polygons as areas for potential singletrack trail development for motorcycles and electric bikes within the SJR ORV Trail network. By adding true singletrack we are further diversifying the types of trails available while expanding potential user experiences.

One of the proposed polygon areas is located adjacent to the existing Red Oak Loop with a large portion of the polygon overlapping with a past timber harvest (Compartment 38, Stand 13). The timber harvest proposal was included in the FY-18 SRSF AWP with no comments from the ID-Team. The timber has since been harvested.

The second proposed polygon is located adjacent to the existing Scramble trails. This polygon would support trails that could be aligned along contour and designed to connect each existing section of Scramble trails. Although the existing Scramble trails were slated to be designed as singletrack, they are wider and support the use of both 4- wheelers and motorcycles.

The proposed trails to be designed in these polygons would be true singletrack with a width of 24 to 36 inches, the trail layout would employ a "rolling contour concept", to passively manage drainage and erosion, to limit environmental impacts, and reduce maintenance intervals. The design will include characteristics such as: "the half rule" to manage drainage, maximum trail grades supported by local soils, and incorporation of frequent grade reversals. Trails will be constructed by contracted trail construction professionals using mechanized equipment.

Please see the attachments below, under the label **Component #3** for maps.

General Site Conditions: All of the proposed project components can be accessed via existing timber harvest infrastructure or by existing SJR ORV Trail network features. Trail user dispersal was considered when selecting the proposed trail development areas. To avoid sensitive ecosystem impacts, the Ecologically Significant Area GIS layer that includes the secondary boundaries (added buffer) was used to identify proposed trail development areas. The intent of this project is to avoid impacting water resources, habitats and species of management concern, as well as rare threatened and endangered species. As with any project, an opportunity to engage in a field review will be accommodated.

Attachments: (project location map is required)

See below for maps and photos. GIS files are available upon request.

Component #1 Maps and Photos:

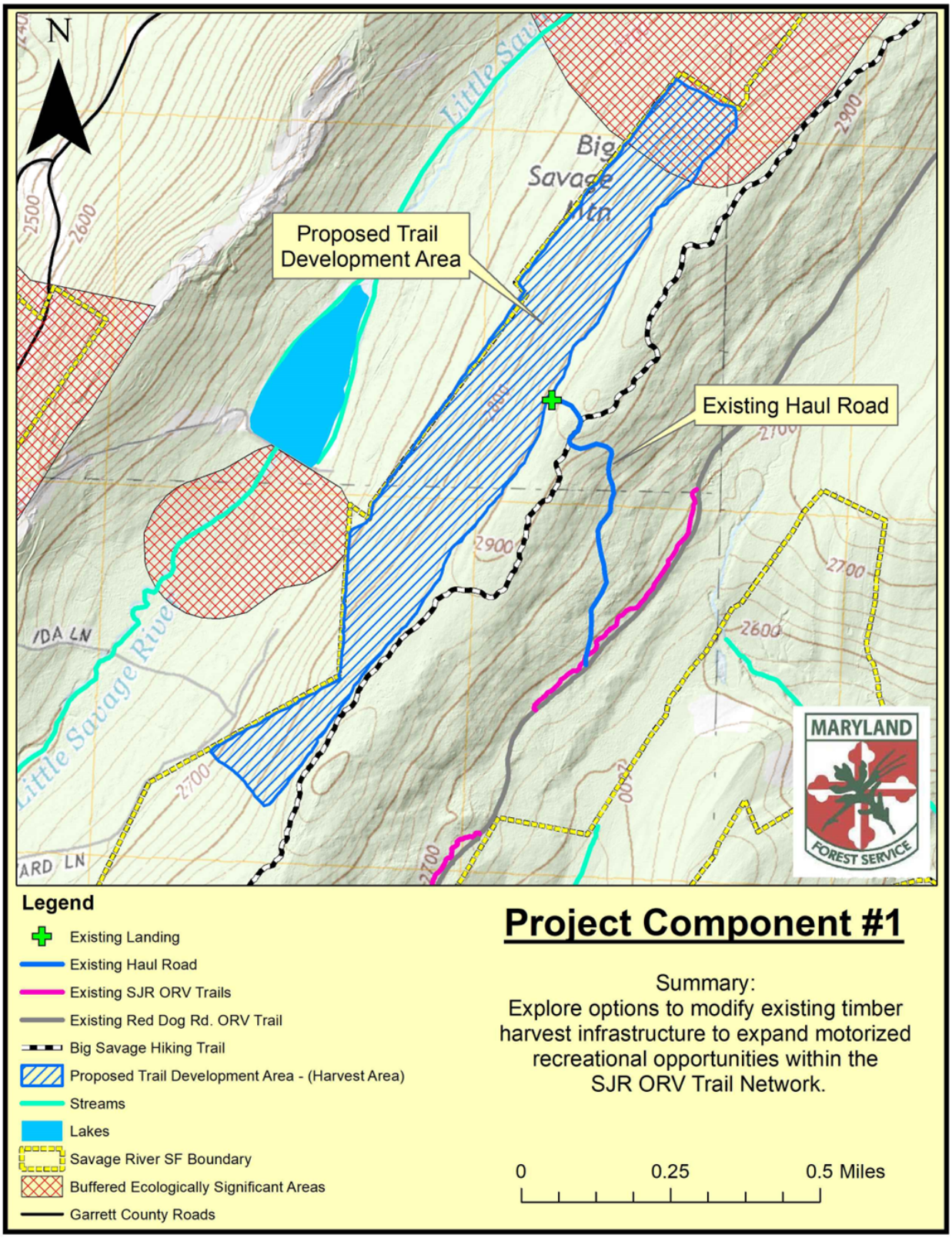


Photo: existing haul road

Photo: existing primary skid road

Photo: existing secondary skid road

Component #2 Maps and Photos:

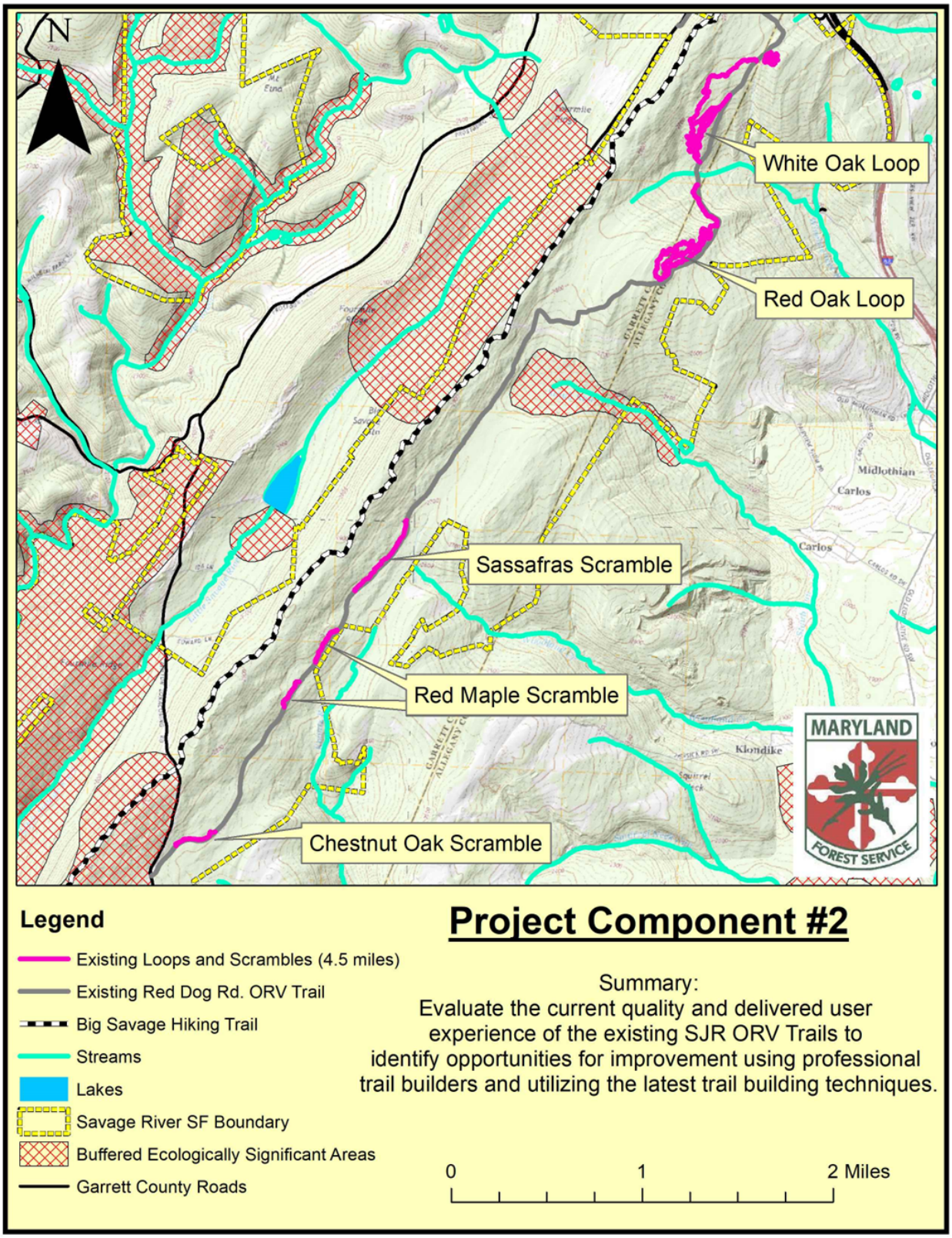


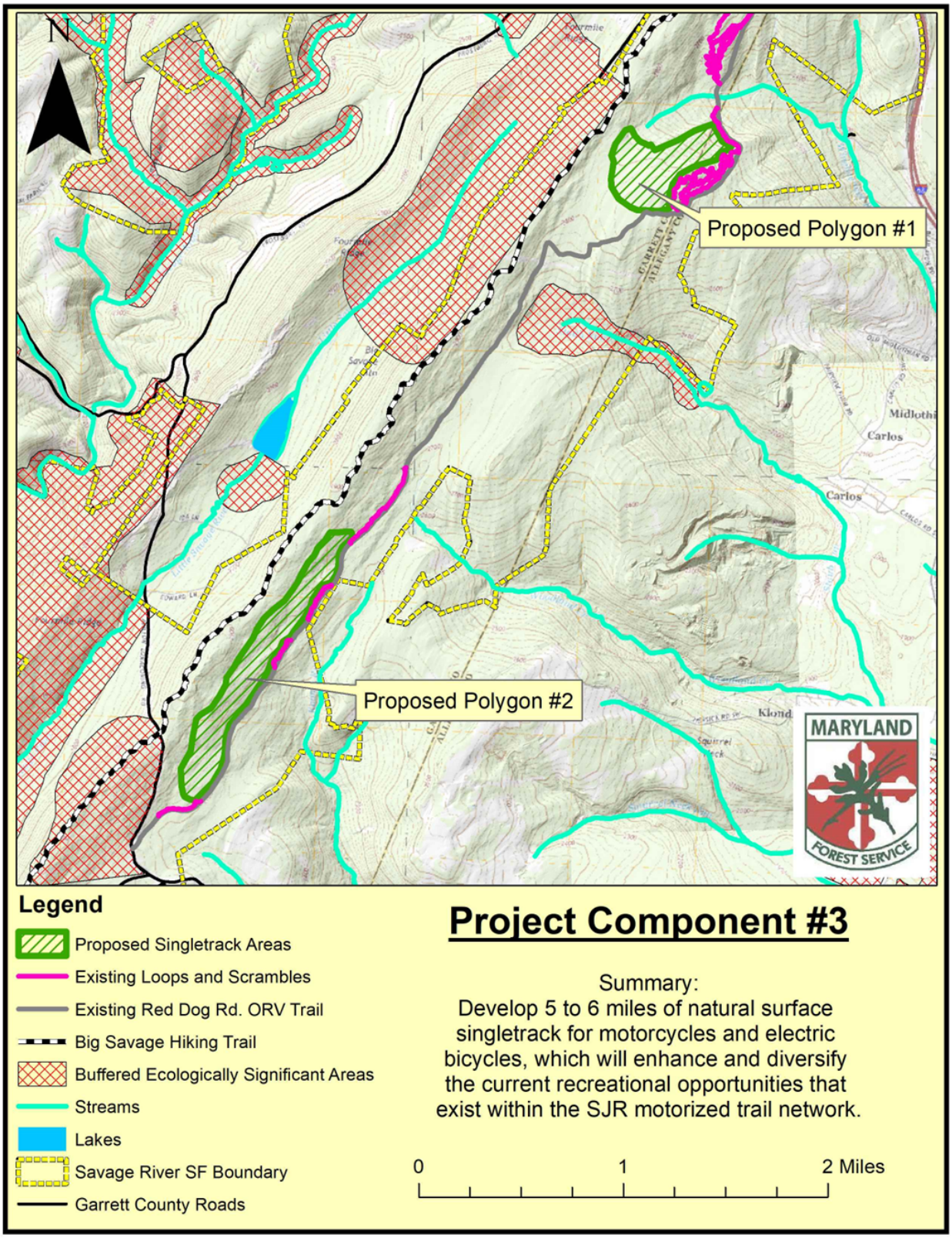
Photo: original SJR trail example

Photo: original SJR trail example

Photo: new SJR trail example

Photo: new SJR trail example

Component #3 Map:



2. Margraff Plantation Trail Expansion

Project Description: The intent of this project is to revitalize approximately 5.5 miles of existing trail and develop another 5 miles of new natural surface shared use singletrack trail in the Margraff Plantation area within Savage River State Forest. Trail wayfinding and trailhead signage improvements will also be an element of this project. Trailhead infrastructure, including parking expansion, will be evaluated for future upgrades as a separate project. Project review is requested to generate comment letters suitable for demonstration of compliance with NEPA.

This project is being funded through Program Open Space FY-23 ($400,000).

The existing trails will be evaluated for drainage improvement, short reroutes to address fall line segments, and possible trail realignment to improve user experience, sustainability, and to reduce required maintenance intervals. Existing trail and vegetation corridor width specifications will be determined based on site specific characteristics and established goals.

The proposed new trails will be built to current trail sustainability standards with a tread width specification of approximately 24-48 inches. The desired Recreation Setting Characteristics will be natural backcountry with some enhanced middle country features to broaden the user experience and trail difficulty. The trail layout will employ a “rolling contour concept” to passively manage drainage and erosion, to limit the environmental impact, and reduce required maintenance intervals. This follows recommendations offered by natural surface trail references from the US Forest Service, Student Conservation Association, and International Mountain Bicycling Association and includes characteristics such as: “the half rule" to manage drainage, maximum trail grades supported by local soils, and incorporation of frequent grade reversals.

Trails will be constructed by contracted trail construction professionals using mechanized equipment. Construction will be Permitted under the General Permit for construction of natural surface recreation trails provided to DNR by MDE in 2019 and renewed in 2022 for three additional years.

Purpose: The purpose of this project is to further develop and enhance the trail user experience on public land in Savage River State Forest. The Margraff Plantation trail network is conveniently located near the small town of Accident, MD, and easily accessed from State Route 219. The property offers residents and area visitors an alternative to the busier State Parks near the Deep Creek Lake resort area. The existing trails were established approximately 20 years ago and have seen a fluctuation in use over time due to issues associated with lack of maintenance and better alternatives. There have also been several timber harvests that have altered the experience quality and associated use of the trail network. Recently, through an MOU with the SRSF Manager, Garrett Trails (a local non-profit trail organization) and a local Boy Scout Troop have maintained the trails, which has reinvigorated interest in this area as a recreation destination. Furthermore, the COVID-19 Pandemic has resulted in an exponential increase in outdoor recreation resulting in the need for additional trail resources. The outdoor economy has experienced a growth period with trail users helping to stimulate local economies through purchases during travel. This trail revitalization and development project could help stimulate the local economy and result in positive economic impacts to the small town of Accident and the surrounding area.

These types of recreation infrastructure investments have resulted in measurable economic benefits such as: generating revenue, lowering healthcare costs, increasing tourism, enhancing property values, and attracting new businesses.

Developing additional trail-based recreation resources in Maryland's State Forest have been recommended and supported by commissions and management plans. Examples include: The Glendenning Commission, The Maryland Outdoor Recreation Economic Commission, and Maryland's Land Preservation and Recreation Plan.

General Site Conditions: The property is a managed forest and hosts several natural gas storage wells. Besides trail-based recreation opportunities, the property also provides opportunities for hunters, wildlife viewers, and campers. There is a small trailhead parking area near the entrance of the property as well as a network of gravel roads that service the gas storage wells.

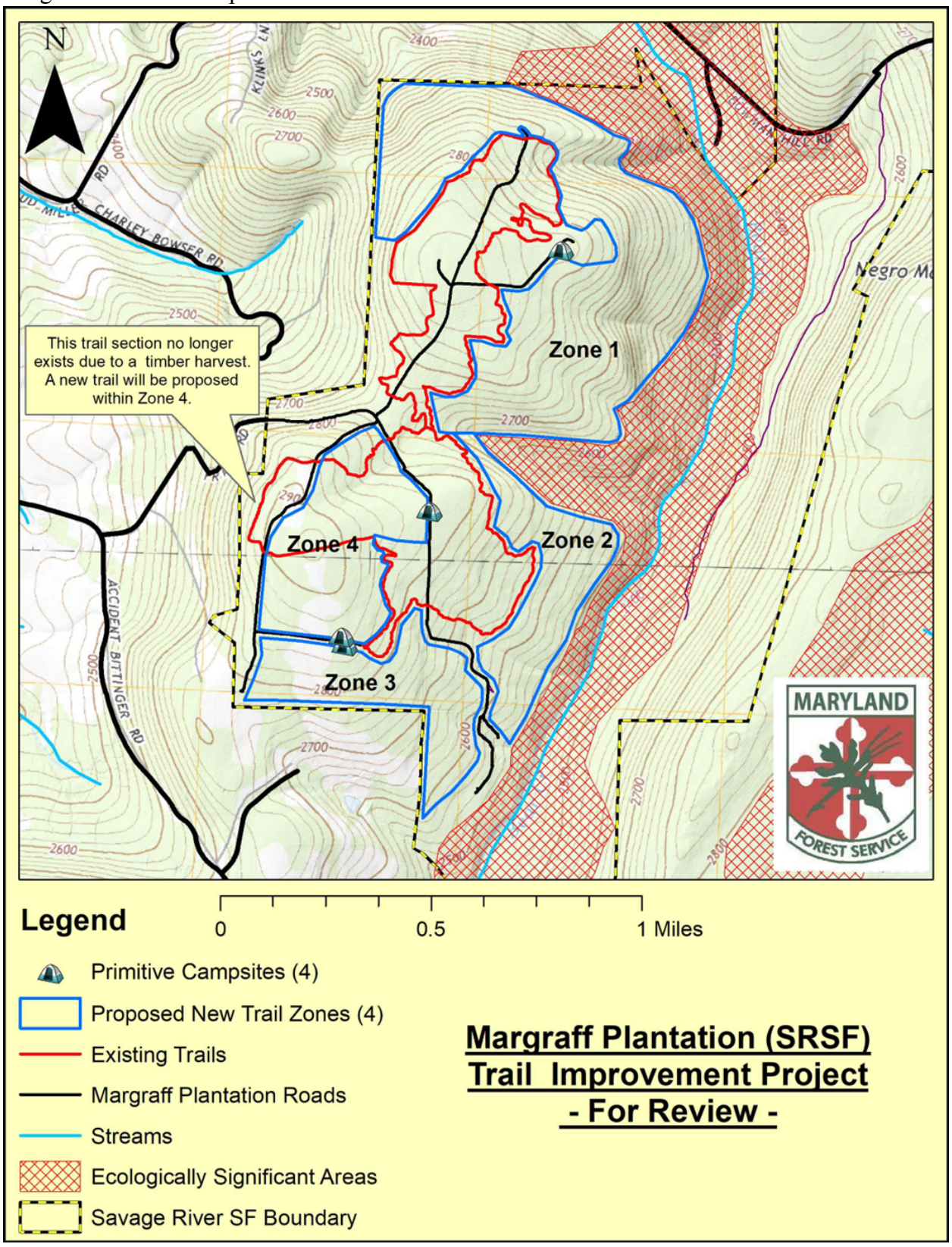
An examination of the public resources data shows a large Ecologically Significant Area surrounding Bear Creek. Any proposed new trail or modifications to existing trail will remain outside of these delineated areas. For this project review, a set of polygons (4) have been drawn to highlight areas that we believe could support new trails. Once these proposed "zones" have been reviewed through the ID Team review process, adjustments will be made to these zones based on the review comments. Then a proposed trail alignment will be generated within the approved zones for further discussion in the field.

A map has been inserted below to support the review process. A polygon (zones) shapefile will also be provided.

Attachments:

Project map includes proposed zones for review and potential trail development.

Margraff Plantation Map



3. Meadow Mountain Trail Improvements / Funding

Project Description:

The intent of this project proposal is to complete the following:

- Complete critical drainage maintenance at multiple points along the length of the Meadow Mountain Trail (MMT), between Chestnut Ridge Road and the Maryland Forest Service property line shared with the University of Maryland approximately one mile north of the Route 495 trail head.
- Resurface the MMT with packed limestone between the Frank Brenneman Road overlook section and the Maryland Forest Service property line shared with the University of Maryland approximately one mile north of the Route 495 trail head (currently no aggregate caps this section).
- Resurface specific lengths of the MMT with packed limestone.
- Expand existing trail head parking areas and develop new ones to enhance handicap accessibility and accommodate an increase in trail use.
- Build permanent pads at trailheads for portable bathroom rentals.
- Design and install co-branded signage at trailheads, along the trail, and points along New Germany Road and Route 495.
- Build hiker and cyclist friendly pass throughs at all of state forest gates along the trail.
- Build a wheelchair accessible ramp at the Frank Brenneman Road overlook platform.
- Design and install interpretive panels along the trail showcasing cultural and environmental elements about the area that the trail travels through.

The existing trail tread will be evaluated for potential drainage improvements and vegetation growth that would impact new aggregate installation. New aggregate installation would take place within the existing trail tread borders. Expansion of existing trail head parking and development of new parking would increase capacity for day use and could take advantage of former logging landing pads in several locations. Pads for portable bathrooms would be designed to accommodate all users. Signs with location identifiers would be installed along the entire length of the trail identifying it as a partnership between the Maryland Department of Natural Resources (MD DNR), Garrett County Board of Commissioners and Garrett Trails Non-Profit, while also recognizing the trail as part of the Potomac National Heritage Trail and the Eastern Continental Divide Loop (ECDL). Signage would also be installed along county and state roads to the east and west of the MMT, directing users to various trail heads. Pass throughs at state forest gates would be designed to prevent unauthorize access of motorized vehicles, while allowing the unimpeded travel of hikers and cyclists of all abilities. A wheelchair ramp at the Frank Brenneman Road overlook would allow users of all abilities to access the platform. Interpretive panels would maintain branding and design elements found in earlier installations during Phase 3 of the MMT trail construction and reflect the environmental and cultural heritage of our area.

The proposed improvements would be made in accordance with current US Forest Service trail sustainability standards and DNR, MDE and County erosion and sediment control standards that would reduce environmental impacts and maintenance intervals. Trail improvements would be made by contracted trail construction professionals using mechanized equipment, contracted by the County, and

supervised by the County, DNR and Garrett Trails. Work would be performed in accordance with all DNR, MDE, and County grading regulations.

Purpose:

The purpose of this project is to develop and enhance trail user experiences on the Meadow Mountain Trail (MMT), as described on page 13 of the SRSF FY 2022 AWP. The MD DNR owned section of the MMT extends from 39.68577 N and 79.09406 W along the eastern continental divide for approximately 12.5 miles to 39.57210 N and 79.21281 W. At that point the trail continues across University of Maryland property for approximately 1 mile to Route 495, 39.56335 N and 79.22236 W. It functions as a timber haul road for ongoing silviculture activities identified in the annual Savage River State Forest work plan and is unique to Garrett County as it also hosts multiple user groups including hikers, bikers, handicap hunters and snowmobilers.

The trail is part of the Eastern Continental Divide Loop (ECDL), a 150-mile trail connecting Garrett County to the Great Allegheny Passage (GAP), funded in part by grants and other funding secured by Garrett Trails and the Garrett County Board of Commissioners. There have been three previous phases of construction that have greatly enhanced the user experience. Funding totaling $975,000 has been secured through a 2022 federal omnibus appropriations bill. Depending on the required use parameters of the funds, we recommend that a portion be set aside for ongoing maintenance related to the MMT. The MMT passes near and is connected by spur trails to New Germany and Big Run State Parks. It also connects the town of Grantsville to the state parks and Bittinger.

Currently most sections of the trail are surfaced with crush and run limestone gravel. The proposed final surfacing, using compacted crusher fines, will greatly increase the accessibility of the trail for all types of bike tires, hiker footwear and adaptive trail equipment. The trail signage in place could be improved by communicating allowed and restricted use, adding distance markers along the trail, and identifying trail development partners. Parking area improvements would increase trailhead capacity, reduce erosion, and increase accessibility for adaptive trail users. At specific trailheads, porta john bathrooms that are handicap accessible would enhance the user experience and reduce impacts in those areas. Forest service gates along the trail do not currently allow for unimpeded pedestrian travel around them. The proposed changes at gate locations would include excavation and resurfacing work next to the gates to allow that travel while still prohibiting motorized access. The overlook platform at 39.569 N and 79.208 W does not accommodate wheelchair users, and adding a ramp, lowering the handrail, and removing vegetation in front of the platform would serve a traditionally underserved community. Interpretive panels would inform the trail user about the unique mountain heritage of the area, fostering a deeper appreciation for the forest resources that sustain our communities.

General Site Conditions:

The MMT is in a managed state forest that offers opportunities for hunting, fishing, camping, wildlife viewing and commercial timber harvests. Several state parks, rivers, streams, and the Savage River

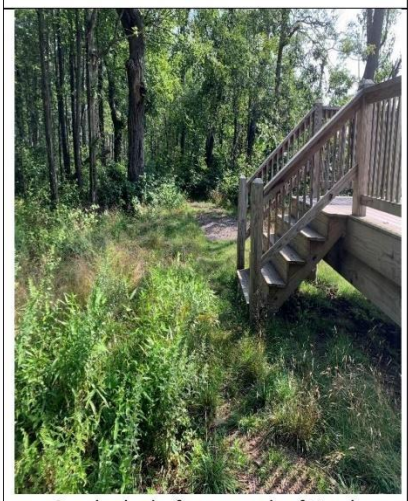
Reservoir are nearby and utilized extensively for outdoor recreation. The trail also connects to the University of Maryland 4-H Environmental Education & Camping Center property in Bittinger, MD.

Attachments: Example site photos, MMT Site Map

Example drainage remediation site

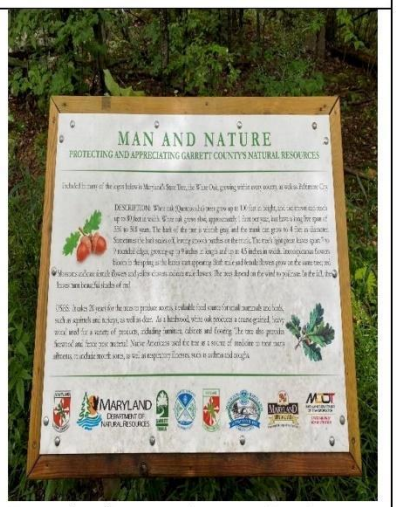
Example of a potential parking area development site, Frank Brenneman Road

Spur trail to Route 495 from the overlook trail



Overlook platform, south of Frank Brenneman Road

Example of current trail signage



Example of current interpretive signs

4. Savage River State Forest Shooting Range

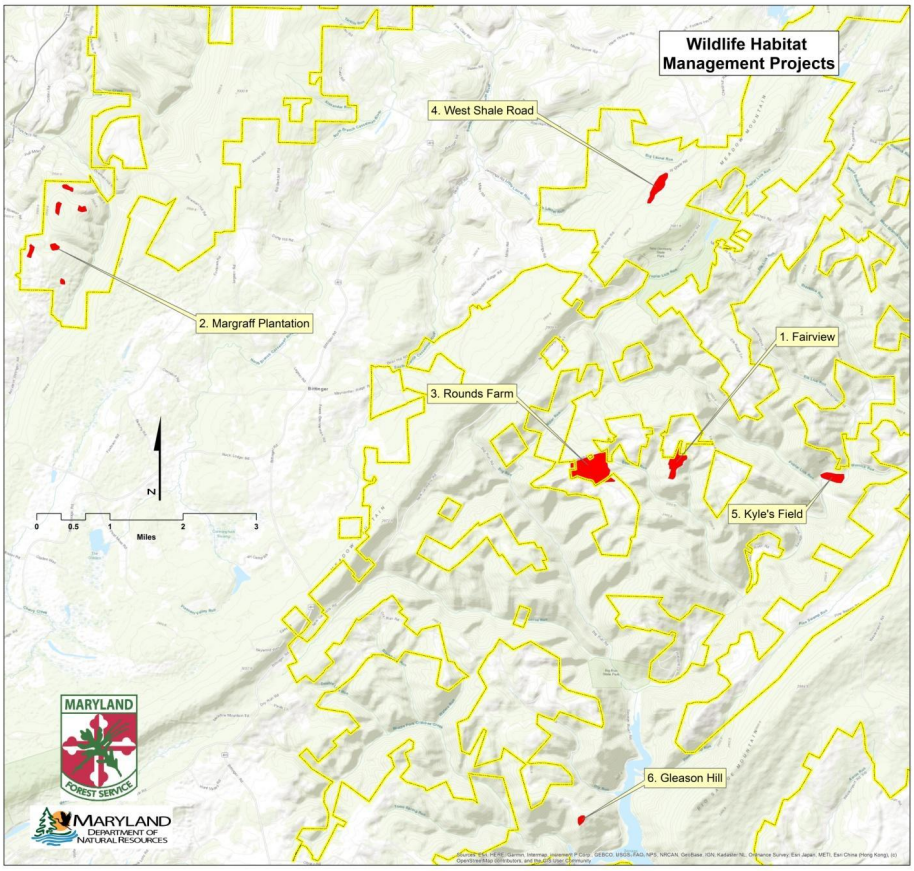
Critical Maintenance funding has been allocated to renovate the shooting range in FY23 This project is in the early planning stages with DNR Engineering and Construction, but it is hoped that work can begin on the renovation of the shooting range pavilion, improving the drainage around the site, and repairing or replacing the parking area.

VII. Wildlife Habitat Management Projects

A. General Wildlife Habitat Maintenance

Approximately 38.5 acres of wildlife specific projects have been implemented throughout the state forest. These projects are located in the Margraff tract of Compartment 14 east of Accident, MD, the Nature Conservancy acquisition of Fairview Road, the "Rounds Farm" located off Pea Patch Road, West Shale Road, "Kyle's Field" off Savage River Road and Gleason Hill. General practices include liming and fertilizing as well as planting of cover and grain crops, where appropriate. Plantings include millet, peas, corn, turnips (*Brassica spp*.), warm season grasses, native wildflowers and clover (See Wildlife Habitat Management Projects map and summary, p. 14).

As part of the Mentored Hunt Program, a stocked pheasant hunt will take place on the Horse Farm property, West Shale Wildlife Area and Margraff Plantation in late November. This is a do-it-yourself hunting opportunity for junior license holders, apprentice license holders and lapsed hunters. A random lottery drawing will take place and all successful applicants will receive a packet of information with maps and other helpful information. More information is also available on the Maryland DNR Wildlife and Heritage Service web page: http://dnr.maryland.gov/wildlife/Pages/ hunt_trap/Mentored-Hunt-Program.aspx.



VIII. Ecosystem Restoration / Protection Projects

A. Non-Native Invasive Species (NNIS) Control

Across the State, a biological invasion of non-native and invasive plants is spreading into fields, forests, wetlands and waterways. Referred to in a variety of ways including exotic, non-native, alien or non-indigenous, invasive plants impact native plant and animal communities by displacing native vegetation and disrupting habitats as they become established and spread over time. Early Detection and Rapid Response (EDRR) to control the spread of problematic species is important for the conservation of native flora and fauna. Control efforts often require considerable resources including labor, time and money.

As in many cases, the introduction of these widespread and invasive plants cannot be prevented. It is important to evaluate and plan control efforts in order that such efforts contribute meaningfully to the success of forest conservation plans. EDRR efforts targeting NNIS discovered during the forest wide inventory have been successful in identifying and controlling a number of NNIS populations. Species-specific management plans have been developed for two notable species including Japanese knotweed and Yellow Archangel (See Appendix 2 and 3).

The State Forest staff has treated and/or is monitoring several plant colonies or sites including: five tree-of-heaven sites, ten Japanese knotweed sites, two mile-a-minute weed sites and one yellow archangel site (See corresponding map for locations).

1. Japanese knotweed (*Fallopia japonica*). Several areas of Savage River State Forest have become infested with the invasive plant Japanese knotweed (*Fallopia japonica*). Seven treatment areas have been delineated and six of them will be treated and monitored to determine the most effective course of action for suppressing and ultimately eradicating the plant from these areas of the forest. Knotweed growth below the Savage River Reservoir has reached a critical level and will not be treated at this time due to the overwhelming investment that would be required to reach any reasonable level of control. As more effective treatment methods become available for large areas, this area will be reevaluated in regard to implementing a control plan.

The initial treatments occurred in the first week of June, 2011. Treatments in all areas of the forest involve a two-step process that includes both mechanical and chemical means of control. First, the knotweed is cut and allowed to grow back for 8 weeks, reaching only 2 to 4 feet in height. Second, the new growth is treated with a 2% solution of glyphosate as the active ingredient. Treatment of these areas has been repeated on a yearly basis and will continue until the plant has been eradicated from the target areas.

2. Yellow archangel (*Lamiastrum galeobdolon).* Dry Run, a tributary of the Savage River and Savage River Reservoir has been infested with the aggressively growing, non-native invasive perennial, yellow archangel (*Lamiastrum galeobdolon).* The infestation of the area most likely originated from a private residence which was abandoned and the once maintained yard area was neglected, allowing the plant to escape to the adjacent property. After establishing a colony at the head of the watershed, the plant quickly enveloped the drainage from the private residence to the high water mark of the Savage River Reservoir, encompassing nearly 15 acres of forest land.

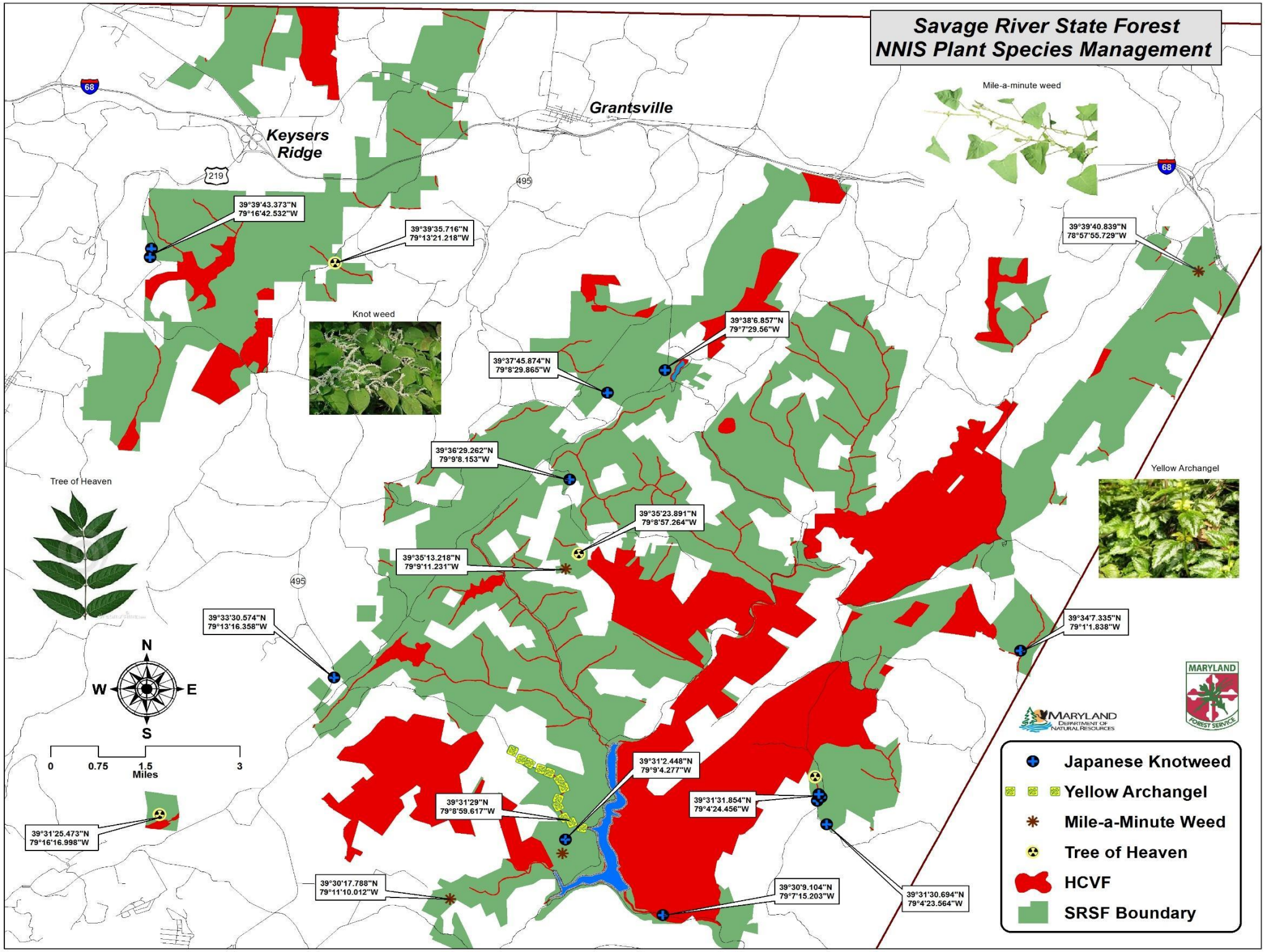
The plant grows quickly and out-competes native vegetation for resources. Yellow archangel spreads in several ways; by seed, by stem fragments, and by rooting at the nodes of the

stem. This makes the plant very difficult to control and requires multiple applications of herbicide and diligent monitoring to limit the spread of the plant in natural forest environments. There is no projected end date for the herbicide treatments due to the persistent nature of this plant and efforts will be made annually until the spread of the plant is contained or the plant is eradicated. Recent late season snowfalls and above average rainfall have limited any attempts to control the species. Successful eradication of this plant is anticipated given the relatively confined area of infestation. Site monitoring will continue after the eradication of the plant for at least 5 years.

3. Mile-a-Minute Weed (*Persicaria perfoliata*) A small patch of mile-a-minute weed (*Persicaria perfoliata*), another aggressive non-native invasive, was discovered in Compartment 29A. The area was treated in FY 19 with a 2% glyphosate solution, but a field survey revealed that the initial treatment was unsuccessful. Herbicide treatment of triclopyr was applied for two consecutive years and monitoring of the site will continue into FY 20 and beyond until the plant has been eradicated. A previously discovered patch of mile-a-minute weed in Compartment 38 near the St. Johns Rock ORV Trail that was seemingly removed during the excavation for the trail campground reemerged and has been treated. Monitoring of the area will continue and the site will be treated as necessary in order to eradicate this plant from the site.

4. Tree-of-Heaven (*Ailanthus altissima*) Individual stems of the exotic invasive tree-of-heaven have been identified in several areas of the forest. Control measures including both mechanical and chemical have been implemented to remove this species from the limited areas in which it is present. These plant colonies are now part of our long term monitoring program, with follow-up treatments planned as necessary in the interest of preventing these species from establishing themselves in the otherwise natural forest communities in which they were found.

Savage River State Forest
NNIS Plant Species Management



IX. Monitoring and Research Projects

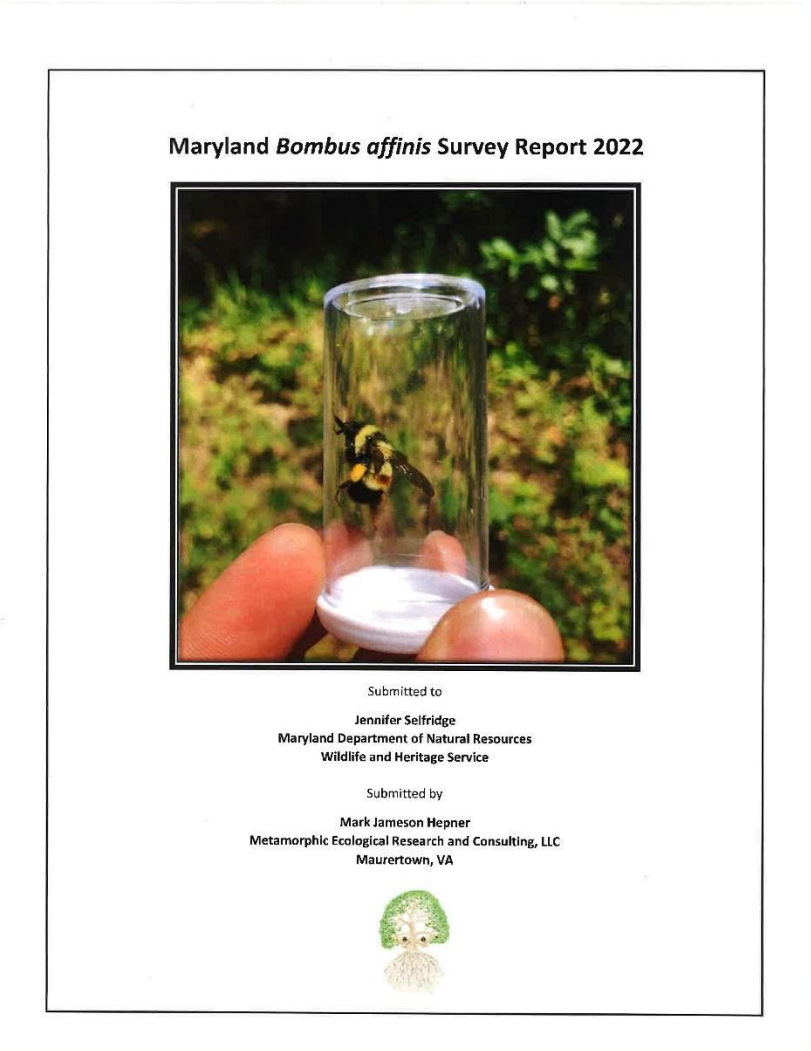
A. Monitoring

1. *Silvicultural Activities*

All silvicultural operations taking place on Savage River State Forest will be monitored on a weekly basis and more frequently when adverse weather conditions arise to ensure that all Best Management Practices are being followed. Regeneration harvests will be monitored five and ten years after harvest. Non-native invasive species will be monitored yearly and herbicide treatment regimens will be implemented as necessary to eradicate these species from the forest ecosystem. Management documents outlining specific treatments and monitoring schedules have been drafted for the individual species.

B. Research Projects *(Full write-ups of each project are available at the State Forest Office)*

1. Rusty-patched Bumblebee (Bombus affinis) surveys



Maryland *Bombus affinis* Survey Report 2022

Submitted to

Jennifer Selfridge
Maryland Department of Natural Resources
Wildlife and Heritage Service

Submitted by

Mark Jameson Hepner
Metamorphic Ecological Research and Consulting, LLC
Maurertown, VA

Introduction

The rusty patched bumble bee (*Bombus affinis*) (RPBB), an endangered species, was once a common species throughout the northeast including Maryland but last seen in the State in 2002. In the spring of 2022, the Maryland Department of Natural Resources requested a RPBB survey within the State. Metamorphic Ecological Research and Consulting, LLC ecologist Mark Hepner, a U.S. Fish and Wildlife Service (USFWS) RPBB recovery permit holder and regional species expert, identified areas of the State with the highest likelihood of finding RPBB and are listed in Table 1. The areas are located in Garrett County in the western mountains of Maryland and surrounding the North Branch Potomac River and Savage River drainages and tributaries.

Survey Locations

Surveys were composed of visually inspecting areas with the highest likelihood of RPBB, to find RPBB was the goal of this effort. The Savage River State Forest (SRSF), Potomac State Forest (PSF), Big Run State Park (BRSP), and Wolf Den State Park (WDSP) were areas identified via aerial imagery and topographic mapping as the highest likelihood of RPBB, Table 1 and Table 2. The Maryland *Bombus affinis* Survey Map indicates where surveys were completed and also provided as a KMZ file send via email, Attachment 1. Representative photographs of habitat surveyed are provided in Attachment 4.

Table 1. Maryland State Forests and Maryland State Parks where rusty patched bumble bee surveys took place in 2022.

Potomac State Forest	**Savage River State Forest**	**Big Run State Park**	**Wolf Den Run State Park**
Lost Land Run Road	Savage River Road	Big Run Road	Huckleberry Rocks Area
Wallman Road	Big Run Road		Potomac River Area
Laurel Run Road	Dry Run Road		North Hill Area
North Branch Potomac River	Spring Lick Road		
	Westernport Road		
	Savage Ravines		

Table 2. Locations where rusty patched bumble bee surveys took place in 2022. Numbers correspond to locations on Maryland *Bombus affinis* Survey Map in Attachment 1.

Number	Location	Latitude	Longitude
1	SRSF Westernport Road	39.61150	-79.10666
2	SRSF Savage River Road Poweline	39.58334	-79.09108
3	SRSF Spring Lick Road	39.49649	-79.18463
4	SRSF Poplar Lick Field	39.58657	-79.09163
5	SRSF Maryland Highway 135	39.46225	-79.19260
6	SRSF Little Savage River Powerline	39.59500	-79.04000
7	SRSF Blue Lick Road	39.64976	-79.06506
8	SRSF Blue Lick Run Road	39.64381	-79.06237
9	SRSF Fairview Road Powerline	39.59809	-79.15115
10	SRSF New Germany Road Pollinator Planting	39.55091	-79.22527
11	PSF Laurel Run Road	39.34804	-79.28660
12	PSF Wallman Road	39.30864	-79.28614
13	PSF Lost Land Run Road Wetlands	39.38117	-79.27457
14	PSF Lost Land Run Road North Branch Potomac River	39.36462	-79.23190
15	WDSP Huckleberry Rocks	39.38564	-79.25299
16	WDSP Potomac River	39.37271	-79.21045

Bumble Bees Encountered

There were 10 bumble bee (*Bombus*) species seen during the 2022 surveys, Table 3. Photographs of each bumble bee species and caste encountered during the survey are provided in Attachment 3. The RPBB and yellow banded bumble bee (*B. terricola*) (YBBB) were found during the 2022 survey, Table 4 and Attachment 2. The RPBB was found at two locations within the PSF, Attachment 5. These records represent the first RPBB found in Maryland in 20 years. The YBBB was found at three locations within the SRSF, including two locations within the same area. These records are the first YBBB to be found in Maryland in 10 years.

Table 3. Bumble bee species that were encountered during the 2022 rusty patched bumble bee survey.

Common Name	Scientific Name
Brown-belted bumble bee	*Bombus griseocollis*
Two-spotted bumble bee	*Bombus bimaculatus*
Half-black bumble bee/Sanderson's bumble bee	*Bombus vagans/Bombus sandersoni*
Sanderson's bumble bee/Half-black bumble bee	*Bombus sandersoni/Bombus vagans*
Rusty patched bumble bee	*Bombus affinis*
Yellow banded bumble bee	*Bombus terricola*
Fernald cuckoo bumble bee	*Bombus flavidus*
Eastern common bumble bee	*Bombus impatiens*
Confusing bumble bee	*Bombus perplexus*
Northern golden bumble bee	*Bombus fervidus*

Table 4. Rusty patched bumble bee and yellow banded bumble bee location and floral resource data. Numbers correspond to locations on Maryland *Bombus affinis* / *Bombus terricola* Map in Attachment 2.

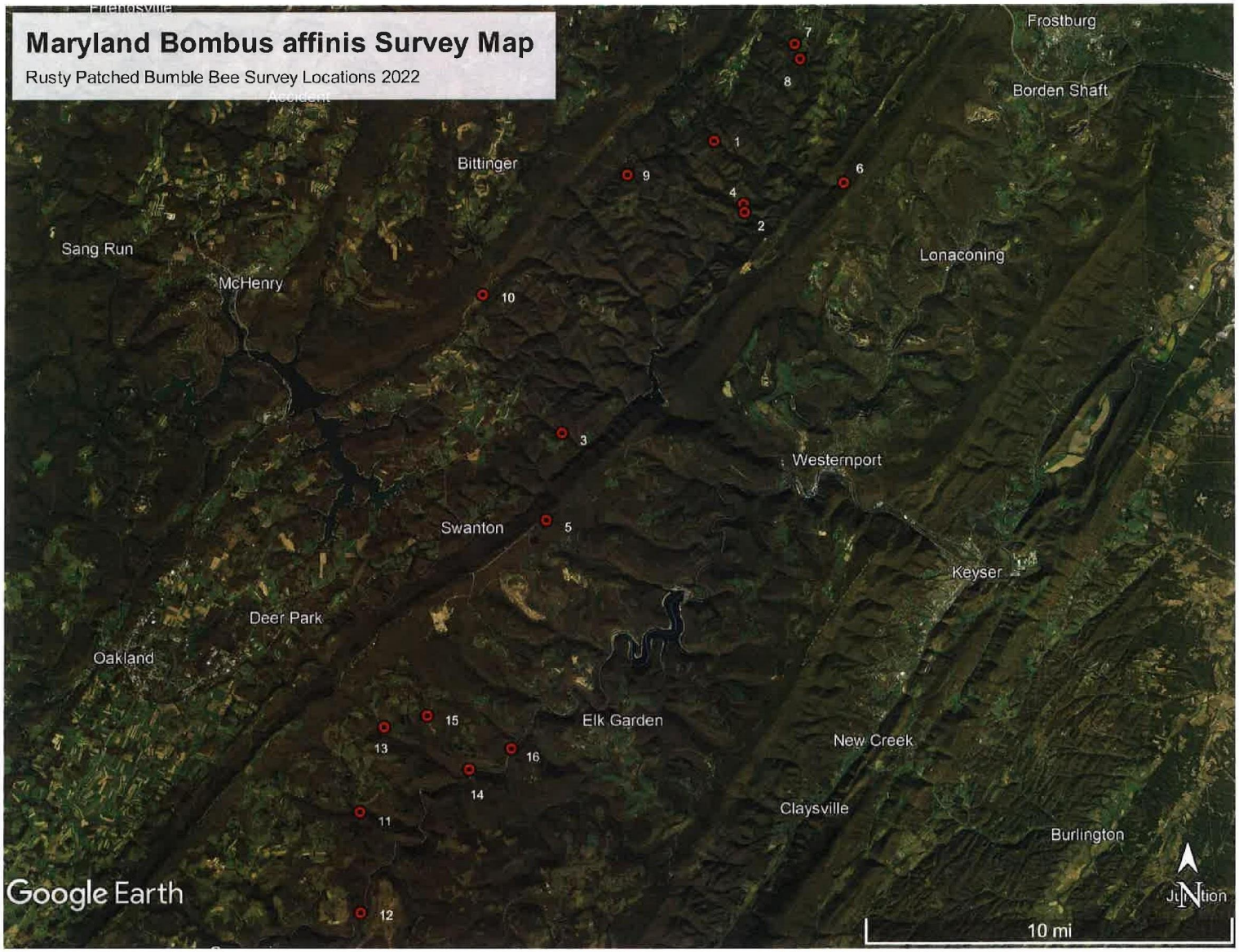
Number	Common Name	Scientific Name	Caste	Floral Resource	Latitude	Longitude
1	Rusty patched bumble bee	*Bombus affinis*	Worker	Black Cohosh (*Actium racemosa*)	39.32845	-79.27554
2	Rusty patched bumble bee	*Bombus affinis*	Worker	Hollow Joe-pye weed (*Eutrochium fistulosum*)	39.31255	-79.28397
3	Yellow banded bumble bee	*Bombus terricola*	Worker	Wild Hydrangea (*Hydrangea arborescens*)	39.61125	-79.10582
4	Yellow banded bumble bee	*Bombus terricola*	Worker	Wild Hydrangea (*Hydrangea arborescens*)	39.61150	-79.10666
5	Yellow banded bumble bee	*Bombus terricola*	Male	Sunflower species (*Helianthus* sp.)	39.46225	-79.19260

Future Surveys

The finding of RPBB in Maryland within the PSF is encouraging for the species continued existence in the Appalachian region and represents the northern extent of the species currently known range. The fact that they were using two different floral resources is a good indication that the Maryland population is still a generalist. Future surveys should include a more intense survey of floral bloom availability throughout the season (March-September) in areas of the PSF and along the North Branch Potomac River (NFPR). Areas that should be investigated during May-July include forested slopes with blueberry/huckleberry (*Vaccinium* sp.), mountain laurel (*Kalmia latifolia*), Rhododendron (*Rhododendron maximum*), and wild hydrangea (*Hydrangea arborescens*). Riparian areas including mid-channel islands along the NFPR and seepy slopes along forest roads should be investigated in July-September. Upland forest and early successional areas should be investigated March-September to determine bloom availability throughout the season. The RPBB likely uses areas differently throughout the season and therefore should be checked for bloom availability as the season progresses. The SRSF has the potential to have RPBB due to the close proximity to known populations and similar bloom and landscape features to areas where they have been found. Maryland is on the northern edge of RPBB known range in the Appalachian region, so there is opportunity for understanding why they occur in areas and do not in other areas. The WDSP has the potential to have RPBB given its proximity to the PSF and similar bloom and landscape features. The WDSP and BRSP have the opportunity for floral resource restoration through plantings and management practices (change in mowing regime).

Summary

The 2022 survey of Maryland for RPBB was successful at locating two RPBB, both workers located on the PSF. The survey also located three YBB on the SRSF. A total of 10 bumble bee species were identified during the survey. The topography, aspects, and bloom along the NBPR and associated drainages and uplands are areas where further investigation for RPBB should be focused. These areas likely provide nesting and over-wintering habitat in addition to foraging habitat discovered in 2022. The SRSF seems to be on the northern edge of the Appalachian range of RPBB and therefore warrants future surveys to determine if the RPBB is present and if not, why is this location not have RPBB. The success of locating RPBB in Maryland in 2022 is encouraging for the species continued existence in the Appalachian region and indicates that Maryland will play an important role in the recovery of RPBB.


Maryland Bombus affinis Survey Map
Rusty Patched Bumble Bee Survey Locations 2022
Frostburg
Borden Shaft
Bittinger
Sang Run
McHenry
Lonaconing
Westernport
Swanton
Keyser
Deer Park
Oakland
Elk Garden
New Creek
Claysville
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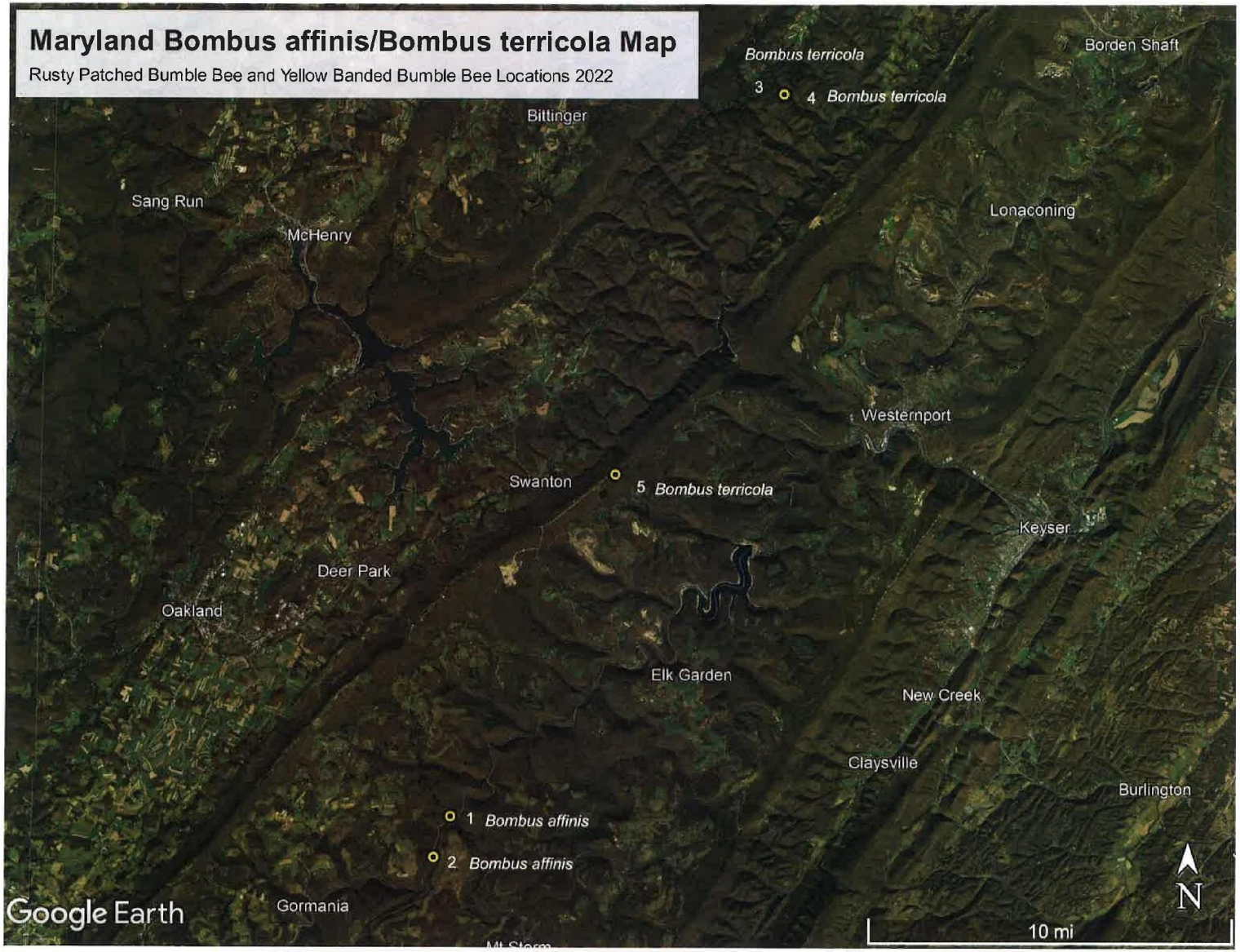
Maryland Bombus affinis/Bombus terricola Map
Rusty Patched Bumble Bee and Yellow Banded Bumble Bee Locations 2022
Bombus terricola
Borden Shaft
3
4 Bombus terricola
Bittinger
Sang Run
McHenry
Lonaconing
Westernport
Swanton
5 Bombus terricola
Keyser
Deer Park
Oakland
Elk Garden
New Creek
Claysville
Burlington
1 Bombus affinis
2 Bombus affinis
Google Earth
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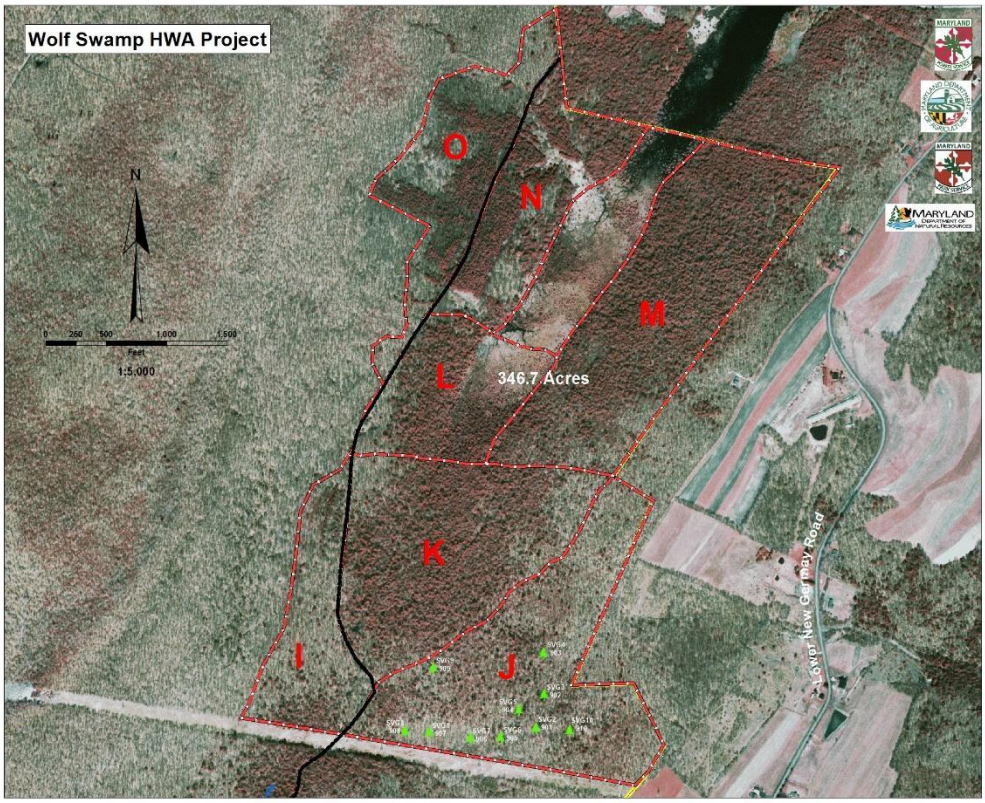
10 mi

2. Eastern Hemlock: Target-tree Release to Improve the Sustainability of Eastern Hemlock (Tsuga canadensis) in the Southern Appalachian Mountains. US Forest Service Southern Research Station and North Carolina State University.

This ongoing project will develop and validate a silvicultural tool that improves the health and sustainability of eastern hemlock, an ecologically keystone species in the southern Appalachians threatened by HWA. Individual or small clusters of "target" trees (i.e., suppressed or intermediate eastern hemlocks with moderate to good crown health) will be released by removing or girdling other stems competing for sunlight directly above and adjacent to the target trees. Increased sunlight is expected to improve hemlock crown health via improved carbon balance, enhanced foliage production, and reduced HWA settlement rates relative to unreleased trees. Treatments will be replicated at a number of southern Appalachian sites and will evaluate release by girdling versus felling and variations on the size of the resulting canopy gap. Operationally, the tool is expected to prolong hemlock health and survival and increase the efficacy of existing HWA management tools (e.g. biological and chemical control) when integrated with them (Jetton, Robert M., Mayfield, Albert E., Keyser, Tara, and Rhea, James 2017). The project will involve fifteen treatment sites; 10 located in the northern end of Wolf Swamp in Compartment 16 and five located along an unnamed tributary of Elk Lick Run in Compartment 26. Post treatment data collection was completed on all sites in March 2018 and again in July 2018 involving hemlock health at one year, adelgid density, vegetation measurements and data analysis. Follow up data collection and analysis is scheduled for Fall 2022 and will continue through the Fall of 2023.



3. Passive acoustic monitoring of bird migration in the Appalachians

Benjamin Van Doren, Ph.D.
Cornell Lab of Ornithology
vandoren@cornell.edu / 914-364-1027

PURPOSE OF RESEARCH

- Collect passive audio recordings at open-sky sites in the Appalachians.
- Use recently-developed machine listening tools to the extract and identify the flight calls of migrating birds in audio recordings.
- Quantify the passage of migratory birds over study sites and relate this information to weather conditions and geography.
- Incorporate concurrent audio data collected from other sites in the region to track species' movements through the Appalachians.

BACKGROUND

Accurate, efficient, and non-invasive methods for monitoring animals are essential for biology and conservation. Small, highly mobile organisms present distinct challenges in these regards, especially migratory songbirds. Many species travel thousands of miles each year under the cover of darkness, and these nocturnal movements frequently stymie both traditional and modern monitoring methods. Given recent population declines among migratory birds and accelerating environmental change, there is an urgent need for non-invasive tools and robust applied methods to monitor nocturnal avian migrations at individual resolution, under a range of conditions, and in areas that are presently inaccessible (e.g. boreal wilderness) or inhospitable (e.g. deserts or ocean).

Acoustic monitoring can address these gaps. Migratory birds utter species-specific vocalizations, or "flight calls," during nocturnal migratory flights. By recording and identifying flight calls, scientists can monitor bird movements across large areas using widely available audio recorders. Acoustic monitoring of flight calls can provide insight into long-distance migrations and reveal poorly known and overlooked local movements that are difficult to detect by traditional means. However, the need for expert human knowledge to detect and identify calls is a major hurdle methods development and a barrier to widespread use. Automating the detection and identification of flight calls would greatly increase data throughout and allow for continent-wide networks to monitor nocturnal bird migration. In turn, improved acoustic tools for monitoring bird migration would provide an important resource for applied conservation and policy initiatives.

The last several years have seen rapid progress in the development of methods for automated acoustic monitoring. BirdVox (https://wp.nyu.edu/birdvox/), BirdNET (https://birdnet.cornell.edu/), and Merlin Sound ID (https://merlin.allaboutbirds.org/sound-id/) are prime examples of recent methods developed in partnership with the Cornell Lab of Ornithology for acoustic monitoring of bird sounds. Using these automated acoustic approaches greatly increases data throughput over traditional, manual approaches while achieving reliable

estimates of migration intensity and phenology. However, fully realizing their potential will require deploying networks of acoustic sensors across large spatial extents, something that has not yet been attempted. The proposed work seeks to demonstrate the feasibility of this approach for monitoring bird migration through the Appalachians.

METHODS

Data Collection

Hardware

We propose to install acoustic recording units developed by the Cornell Lab of Ornithology during fall 2022. These units consist of an Old Bird 21c microphone (Old Bird, Inc.) connected to a customized Swift Passive Acoustic Recording Unit (Cornell Lab of Ornithology). The devices are powered by a 12V 18Ah sealed lead acid battery and charged by a small solar panel (appx. 1 x 1 ft). The Swift recording unit will record continuous audio to an onboard SD card. The Swift unit and battery are contained in a weatherproof Pelican 1200 case. The 21c microphone can be mounted on a pole or tower, secured to a roof, or set directly on the ground.

Location

We propose to install a microphone at High Rock Tower. We will discuss attachment with Sean Nolan. The microphone would likely be lashed to the tower with straps, and a control box and solar panel placed at the base or secured separately.

Timeline

We plan to deploy microphones between September 5–10, 2022. Deployment should take approximately one hour. We will visit microphones for maintenance between September 30–October 5, and again between November 1–5. These visits should take less than one hour. We will retrieve microphones between November 28–December 2. We hope for the study to continue in subsequent seasons and years.

Personnel

Benjamin Van Doren and Claire Nemes will install microphones and make subsequent visits.

Impacts

This study will have minimal impact on natural areas; the only disturbance will be to an approximately 1x1 ft area of ground in order to place the microphone, Pelican case, and solar panel. No biological material will be removed, and we do not anticipate any impacts to rare species or communities.

Analysis

We will use a convolutional neural network built on Merlin Sound ID (Cornell Lab of Ornithology) to extract and classify nocturnal flight calls present in the audio recordings. To improve performance, we will augment the model with a random sample of background noise from each recording site. We will summarize species counts nightly and use linear mixed models to understand how weather conditions (e.g. wind, temperature, and precipitation) drive bird migration along the Appalachians. We will also use acoustic data from other Appalachian sites to understand how migration timing and species composition vary through the region.

Anticipated Products

Collected data will form the basis for one or more scientific publications, as well as a publicly released neural network model for flight call classification.

4. Late Successional Forest Management Project. The Nature Conservancy.

The MD/DC Chapter of The Nature Conservancy is collaborating with Maryland Forest Service and the Maryland Wildlife and Heritage Service to implement a "Late-successional Forest Management Project" in western Maryland. The long-term goal of this project is to demonstrate the potential of using Structural Complexity Enhancement (SCE) methods to accelerate the development of late-successional characteristics in western MD forests. Young- to-mid successional forests lack the structural complexity present in diverse, late-successional forests. However, "maintain and enhance species and structural diversity" is one of the climate adaptation strategies which would enhance climate resilience at landscape-scale. TNC will partner with Northern Institute of Applied Climate Science (NIACS), to use their Forest Adaptation Resources as a guide in developing this project.
TNC, in consultation with DNR resource professionals, have identified two treatment sites, plus a reference site (a designated old-growth area) at Savage River State Forest (SRSF) to implement this project. The two treatment sites are located in between a wildland and an Ecologically Significant Area (ESA). There are "confirmed old growth sites" within the OGEMA, that are limited in size and connectivity. Hence, applying this type of silvicultural treatments with primary objectives of fostering old-growth conditions, would enhance old growth ecosystem functionality, which is a recommended action in the Sustainable Forest Management Plan for SRSF.

SCE is the use of a combination of silvicultural techniques to promote structural complexity in forest ecosystems including creating multi-layered canopies, increasing the number of snags and coarse woody debris, and increasing the number of large living trees. This complexity in vegetation structure and age-class distribution has a direct effect on the biological diversity in a forested system. At landscape scale, late-successional forests are a necessary element of landscape diversity, which enhances climate resilience. Recent studies have suggested that forests managed with SCE treatments have the potential to increase carbon storage and provide additional climate change mitigation benefits.The proposed project is part of a larger initiative to demonstrate different SCE treatments toforesters and landowners. In consultation with DNR resource professionals, TNC will develop communication materials such as pamphlets,

infographics, videos and presentations to disseminate the learning outcomes of the project. In addition, field tours and workshops will be organized for foresters and landowners to promote understanding of SCE techniques as an option in forestmanagement. Landowner adaptation of SCE will have a positive effect on the natural resources of Maryland by improving late-successional wildlife habitat and landscape diversity. Enhanced climate resilience of the landscape and improved ecosystem services will have numerous benefits to the natural environment and the citizens of the state.

5. Statewide Wood Turtle Population Assessment and Management.

Project Description: Maryland is participating in a regional Comprehensive State Wildlife Grant Project (11 states involved) from 2021-2023 to begin implementation of the 2018 northeast wood turtle conservation plan.

There are three main tasks to be achieved:

1. Conduct standardized visual encounter surveys in streams and along stream banks and use mark-recapture techniques to estimate population (this is a continuation of work done by DNR ecologist Ed Thompson until his retirement in 2018). DNA will be collected from a sample of turtles in priority populations and turtles will be pit-tagged; both methods to aid in law enforcement efforts related to confiscations from illegal collecting activities, and to refine regional genetic unit assignments. eDNA will be sampled from streams at 30 sites statewide.
2. Identify nesting habitat and, if needed and permission can be obtained from individual land unit managers, conduct management to enhance nesting opportunities. This would mostly involve invasive vegetation management but could include installing predator excluders and/or nesting substrate manipulation.
3. Work with willing land unit managers to establish BMP's for field mowing (wood turtles spend summers in hayfields and pastures) and roadway management to reduce roadkill.

General Site Conditions: Surveys will be conducted in a variety of small to large streams and rivers. Wood turtles prefer streams with hard sand or gravel bottoms (not clay or muck), moderate current, and clear water, and mostly use pools (not riffles). Management will occur primarily along stream banks and adjacent upland areas.

Project Considerations: Standardized population surveys require three surveys per season (spring and/or fall) for a maximum of six surveys. Each survey is of a 1 km stream reach, attempting to complete the 1 km survey in 1 hour of active searching. Turtles are measured, marked and released back at point-of-capture immediately. eDNA will be collected at the beginning of each survey at the 30 sites chosen statewide, three water samples per survey. DNR is partnering with the Susquehannock Wildlife Society (SWS) and Mid-Atlantic Center for Herpetology and Conservation (MACHAC). Staff from SWS (primarily Scott McDaniel and Brian Durkin) and from MACHAC (Lori Erb) will be conducting most of the Central Region surveys while DNR-NHP staff will be focused on the Western Region surveys. SWS and

MACHAC will have DNR-issued Scientific Collecting Permits. Individual DNR land unit staff will be offered the opportunity to participate in surveys and report wood turtle sightings.
In addition to the projects outlined above, we continue to collaborate with other agencies within DNR and the Maryland Department of Agriculture on various ongoing monitoring and research based projects:

Maryland Department of Environment – Biological stream surveys
Maryland Department of Agriculture - Forest pest trapping
Maryland Department of Agriculture – Eastern Hemlock treatment
Bureau of Mines, Abandoned Mine Land – Water treatment (docers)
Wildlife and Heritage Service – Black bear bait station survey
Wildlife and Heritage Service – Hard mast survey

X. Silvicultural Proposals

COMPARTMENT 13 – Stand 6 STAND A FY-24

Description / Resource Impact Assessment

Location: This proposal is located approximately 1.5 miles south of Bowman Hill Road in Compartment 13 in stand 6. The harvest area is approximately 1.5 miles down the state forest access road known as "Bowman Hill South" along the east side of the road. The access road entrance is approximately 1.5 miles northwest of the intersection of Bowman Hill Road with Foxtown Road.

Forest Community Type and Condition: This 25.5-acre site contains a large sawtimber mixed oak stand that is approximately 112 years old with an average merchantable diameter of 21.8 inches. The overstory consists of northern red oak (43%), yellow-poplar (38%), red maple (6%), sugar maple (6%) and black cherry (5%). The stocking in this stand is at 73% relative density with a basal area of 166 ft^2/acre and 155 trees per acre. The stand is currently overstocked with unacceptable growing stock (UGS) accounting for approximately 60% of the basal area. A significant portion of the undesirable growing stock is yellow-poplar showing signs of butt defect and large diameter red oak trees with low merchantable height and large spreading crowns. Desirable regeneration is currently present in the understory but suppressed by the tight canopy of the overstory and resulting lack of sunlight reaching the forest floor. A sizable cohort of yellow-poplar saplings was also found dispersed throughout the stand.

Interfering Elements: Interfering understory plant competition was found to be minimal within the stand as a result of past understory treatments. The understory received a low-volume understory herbicide application for fern treatment in 2014 and was followed up with a hack-n-squirt treatment of all undesirable saplings / poles in 2018. Tall woody interference occupies approximately 20% of the stand consisting primarily of sweet birch and American beech. Low woody interference was found to occupy approximately 3% of the site, consisting primarily of witch-hazel. Rhizomatous fern interference was noted to be a minimal issue while only affecting 20% of the site due to the tight canopy conditions. All the understory conditions are favorable to facilitate the growth of the oak regeneration present, but the tight canopy has the stand sitting stagnant.

In addition to interfering vegetation, the presence of white-tailed deer can have a negative influence on the regeneration success of the stand. Overbrowsing can facilitate failure of desirable seedling establishment and in extreme cases shift in species composition dominated by undesirable tree species. Field evaluations of the site estimated deer browse impact to be moderate. Monitoring of deer browse impacts will coincide with regeneration inventories to determine if additional measures need to be implemented to reduce deer herbivory and increase the likelihood of regeneration establishment on the site.

Historic Conditions: State Forest records indicate that the proposal area has not been harvested since state acquisition. The stand received understory treatments in 2014 and 2018 to address

fern and undesirable pole / sapling issues. The adjacent stand to the east was thinned in 1999 and the adjacent stand to the south was regenerated in 2003. No evidence of fire was observed during the inventory.

Rare, Threatened and Endangered Species: No rare, threatened or endangered species have been identified on the site that would be impacted by the silvicultural prescription.

Habitats and Species of Management Concern: The management proposal does not contain or border any areas that have been designated as High Conservation Value Forest. A small intermittent tributary to Bear Creek was observed along the southern end of the proposal area and plans are to establish a buffer along this stream and exclude from the harvest proposal.

Water Resources: This stand drains west into Bear Creek within the Youghiogheny River Watershed. The proposed silvicultural treatments will be outside of all HCVF and stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forest Sustainable Forest Management Plan.

Soil Resources: The predominant soil types of this site are Dekalb and Gilpin Very Stony Loams, 15-25% Slopes (DgD) and Meckesville Very Stony Silt Loam, 8-25% Slopes (MdD). The soils are composed mainly of sandstone with some shale and siltstone found throughout. These soils are moderately deep and well drained with moderate equipment limitations on the lower slopes associated with a high water table. The site has good productivity for woodland management, with a site index of 75-85 for upland oaks and 85-95 for yellow-poplar. The productivity of the site will be protected by minimizing the haul roads and skid trails per the Department's Best Management Practices and rutting guidelines.

Recreation Resources: No developed recreational resources are located within the stand. The access road serves primarily as hunter access and hunting opportunities may be limited should the harvest be active during the big game hunting seasons.

Management and Silvicultural Recommendations:

The proposed silvicultural treatment for this site is a commercial thinning given that competitive regeneration is present but suppressed and the overstory contains a significant component of undesirable growing stock (UGS). A crown thinning will be implemented, removing approximately 90 ft^2 of basal area per acre and reducing the residual basal area to 70-80 ft^2. Thinning a large diameter stand such as this is difficult as large crowns require additional trees to be removed to avoid residual damage. Removals will be concentrated on undesirable growing stock in the large sawtimber size class, notably all yellow-poplar exhibiting butt defect and large diameter northern red oak. Estimated yield for the thinning is approximately 7,000 board feet per acre. Residual trees will benefit from the improved spacing post-harvest with increased vigor, growth rates and overall stand health. Retention will favor small and medium sawtimber trees of superior form and health to facilitate seedling establishment of the future stand. The understory is already in a favorable condition to facilitate regeneration establishment. Post-harvest monitoring will be conducted to determine if the present regeneration has responded to the thinning and if additional regeneration has established on the site. The long-term goal for

the site is to have a desirable cohort of regeneration occupying the site when a final removal harvest is conducted to release the regeneration as the new stand of trees.

COMPARTMENT 13 – Stand 11 **STAND B** **FY-24**

Description / Resource Impact Assessment

Location: This proposal is located approximately 1.5 miles south of Bowman Hill Road in Compartment 13 in stand 11. The harvest area is approximately 1.5 miles down the state forest access road known as "Bowman Hill South" along the east side of the road. The access road entrance is approximately 1.5 miles northwest of the intersection of Bowman Hill Road with Foxtown Road.

Forest Community Type and Condition: This 21.5-acre site contains a medium sawtimber mixed oak stand that is approximately 81 years old with an average merchantable diameter of 13.7 inches. The overstory consists of northern red oak (49%), red maple (21%), sweet birch (17%), yellow-poplar (4%) and black cherry (3%). The stocking in this stand is at 97% relative density with a basal area of 144 ft^2/acre and 713 trees per acre. The stand is currently overstocked with unacceptable growing stock (UGS) accounting for over 50% of the basal area. Desirable regeneration is currently lacking due to a thick mid-canopy layer of undesirable tall-woody interference and the tight canopy of the overstory. A significant cohort of desirable yellow-poplar and oak saplings was also found present in the understory.

Interfering Elements: Interfering understory plant competition is sufficient to cause complications in desirable regeneration efforts with the majority of the site containing some form of significant interference. This interference coupled with the tight canopy of the mature overstory trees is significantly hindering regeneration establishment on the site. Tall woody interference occupies approximately 100% of the stand consisting primarily of sweet birch and witch hazel. Low woody interference was found to occupy approximately 42% of the site, consisting primarily of witch-hazel. Rhizomatous fern interference was noted to be a minimal issue while only affecting 8% of the site due to the tight canopy conditions.

In addition to interfering vegetation, the presence of white-tailed deer can have a negative influence on the regeneration success of the stand. Overbrowsing can facilitate failure of desirable seedling establishment and in extreme cases shift in species composition dominated by undesirable tree species. Field evaluations of the site estimated deer browse impact to be moderate. Monitoring of deer browse impacts will coincide with regeneration inventories to determine if additional measures need to be implemented to reduce deer herbivory and increase the likelihood of regeneration establishment on the site.

Historic Conditions: State Forest records indicate that the proposal area was thinned in 1999. The adjacent stand to the south was thinned at the same time, but this section appears to have been cut much harder than the current proposal area. The adjacent stand to the southwest was

regenerated in 2003 and the adjacent stand to the north was marked and sold in 2022 and is awaiting harvest.

Rare, Threatened and Endangered Species: No rare, threatened or endangered species have been identified on the site that would be impacted by the silvicultural prescription.

Habitats and Species of Management Concern: The management proposal does not contain or border any areas that have been designated as High Conservation Value Forest.

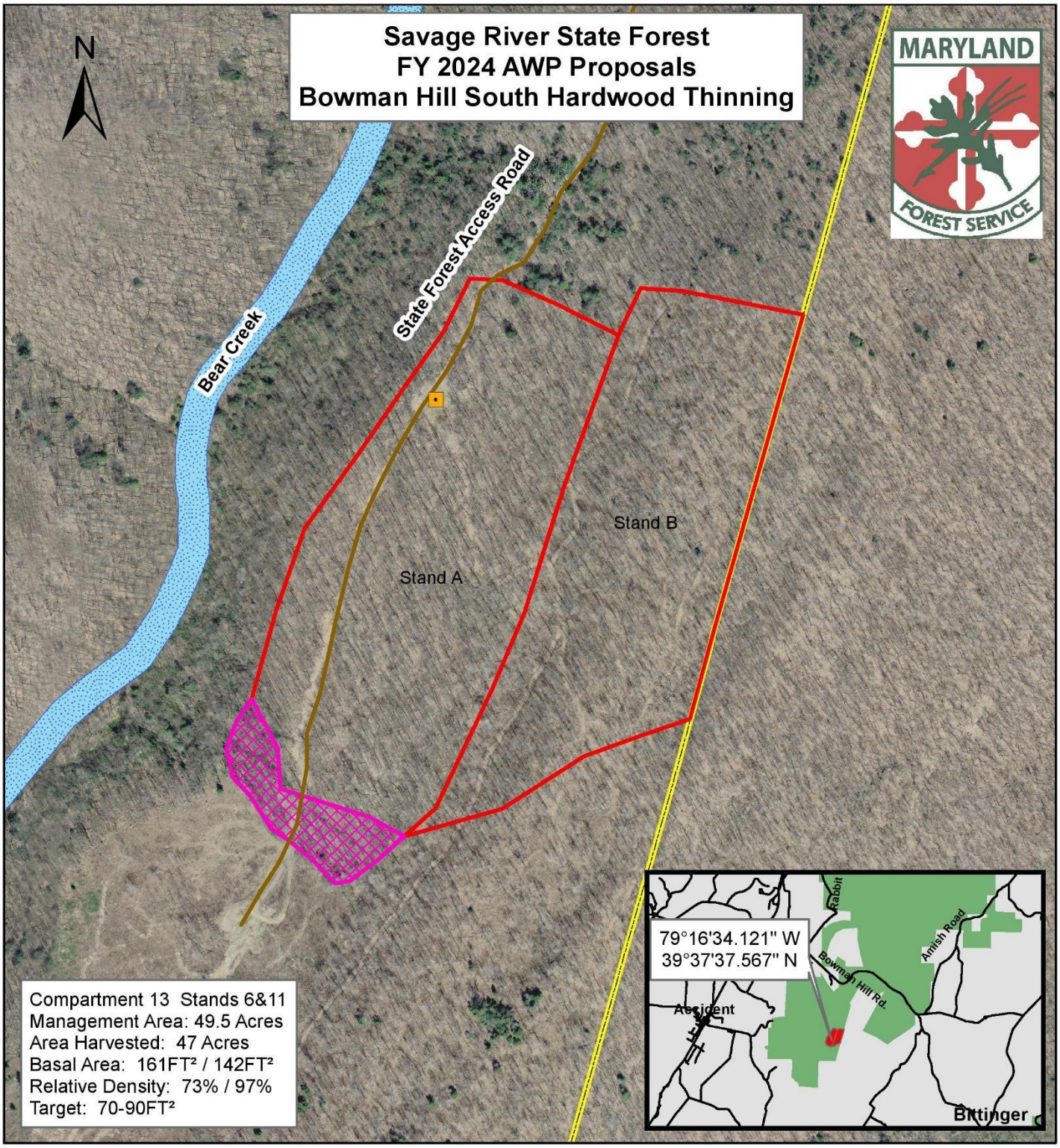
Water Resources: This stand drains west into Bear Creek within the Youghiogheny River Watershed. The proposed silvicultural treatments will be outside of all HCVF and stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forest Sustainable Forest Management Plan.

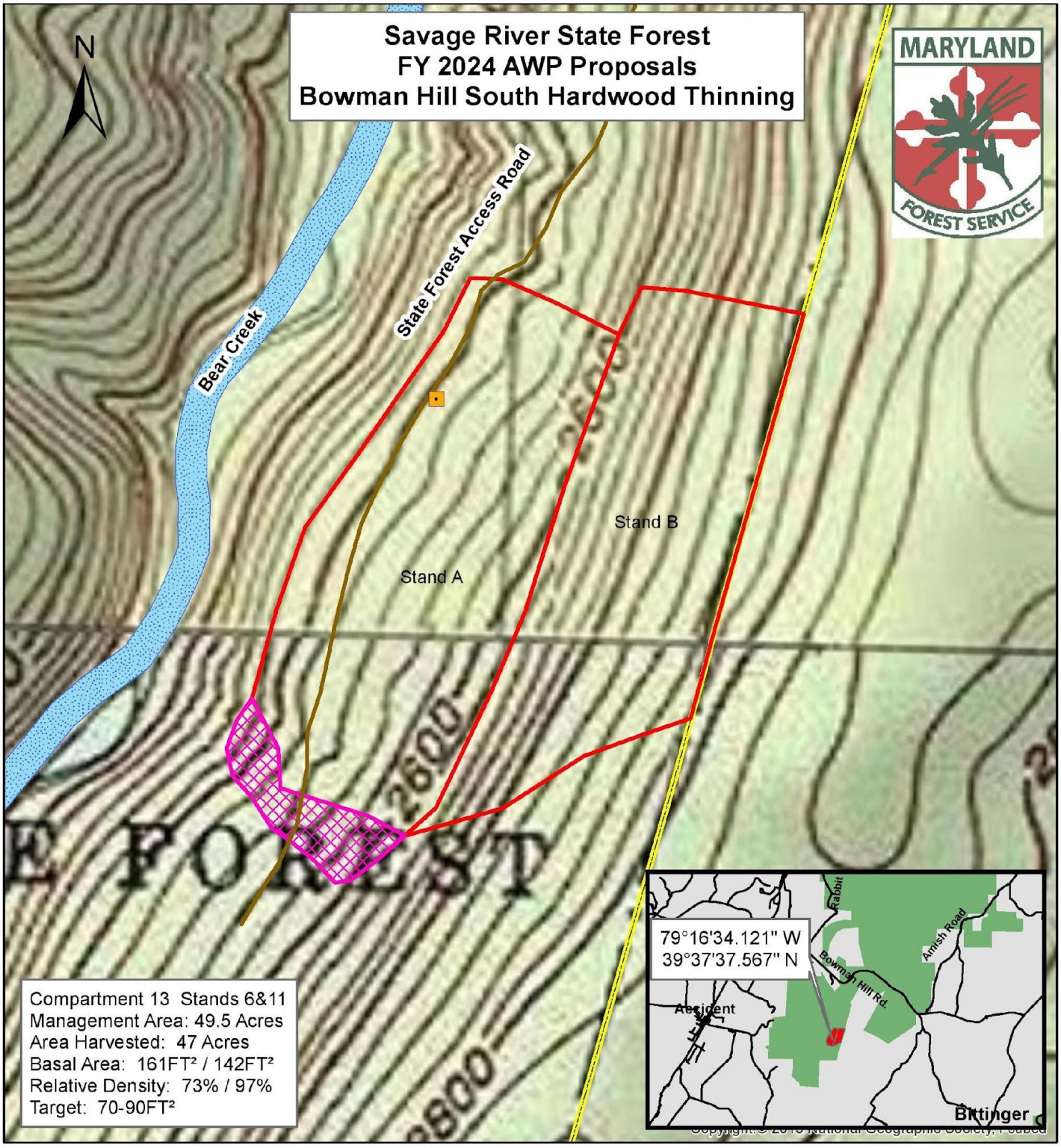
Soil Resources: The predominant soil type of the site is Very Stony Land (VsF). The soils are composed mainly of sandstone with some shale and siltstone found throughout. These soils are relatively shallow with exposed rocks and boulders in areas and well drained with moderate equipment limitations primarily associated with exposed areas of surface rock. The site has good productivity for woodland management, with a site index of 65-75 for upland oaks. The productivity of the site will be protected by minimizing the haul roads and skid trails per the Department's Best Management Practices and rutting guidelines.

Recreation Resources: No developed recreational resources are located within the stand. The access road serves primarily as hunter access and hunting opportunities may be limited should the harvest be active during the big game hunting seasons.

Management and Silvicultural Recommendations:

The proposed silvicultural treatment for this site is a commercial thinning given that competitive regeneration is present but suppressed and the overstory contains a significant component of undesirable growing stock (UGS). A crown thinning will be implemented, removing approximately 70 ft^2 of basal area per acre and reducing the residual basal area to 70-80 ft^2. Removals will be concentrated on undesirable growing stock in the medium sawtimber size class coupled with mature individual trees that will afford large canopy gaps and facilitate regeneration establishment in the understory. Estimated yield for the thinning is approximately 3,000 board feet per acre. Residual trees will benefit from the improved spacing post-harvest with increased vigor, growth rates and overall stand health. Retention will favor small and medium sawtimber trees of superior form and health to facilitate seedling establishment of the future stand. The process of the timber harvest should break the mid-story canopy of undesirable tall-woody interference and afford additional sunlight to the understory and established regeneration which is currently suppressed. Post-harvest monitoring will be conducted to determine if the present regeneration has responded to the thinning and if additional regeneration has established on the site. The long-term goal for the site is to have a desirable cohort of regeneration occupying the site when a final removal harvest is conducted to release the regeneration as the new stand of trees.


Savage River State Forest
FY 2024 AWP Proposals
Bowman Hill South Hardwood Thinning
N
MARYLAND
FOREST SERVICE
State Forest Access Road
Bear Creek
Stand A
Stand B
Compartment 13 Stands 6&11
Management Area: 49.5 Acres
Area Harvested: 47 Acres
Basal Area: 161FT² / 142FT²
Relative Density: 73% / 97%
Target: 70-90FT²
79°16'34.121" W
39°37'37.567" N
Rabbit
Amish Road
Bowman Hill Rd.
Accident
Bittinger
Landing
Access Road
Buffer
Harvest Area
Savage River SF Boundary
Old Growth Ecosystem Area
Ecologically Significant Areas
Old Growth
SRSF Wildlands
streams and 50' buffers
Wetlands of State Concern
1 inch = 417 feet
1:5,000
0 125 250 500 750 1,000
Feet
MARYLAND
DEPARTMENT OF
NATURAL RESOURCES



Landing
Access Road
Buffer
Harvest Area
Savage River SF Boundary

Old Growth Ecosystem Area
Ecologically Significant Areas
Old Growth
SRSF Wildlands
streams and 50' buffers
Wetlands of State Concern

1 inch = 417 feet

1:5,000

0 125 250 500 750 1,000 Feet

MARYLAND DEPARTMENT OF NATURAL RESOURCES

COMPARTMENT 15 – Stands 19, 31 & 50 **FY-24**

Description / Resource Impact Assessment

Location: This proposal is situated adjacent to the East Shale Road ORV Trail with haul road entrance approximately 1.8 miles north of the intersection with New Germany Road and approximately 1.0 mile south from the terminus of Ellis Drive. Haul road construction will be part of the contract and involve approximately 0.5 miles of road construction and improvements over an existing but unimproved roadbed.

Forest Community Type and Condition: This 51.5-acre site contains a medium sawtimber mixed oak stand that is approximately 81 years old with an average merchantable diameter of 15.4 inches. The overstory consists of northern red oak (63%), red maple (19%), black cherry (9%), and chestnut oak (4%). The stocking in this stand is at 88% relative density with a basal area of 162 ft²/acre and 283 trees per acre. The stand is currently overstocked with unacceptable growing stock (UGS) accounting for approximately 40% of the basal area. Desirable regeneration is currently lacking due to a heavy sapling / pole canopy layer of undesirable stems and the tight canopy of the overstory trees. A sizeable sapling component of maple and oak poles is also present in the understory.

Interfering Elements: Interfering understory plant competition is sufficient to cause complications in desirable regeneration efforts with the majority of the site containing some form of significant interference. This interference coupled with the tight canopy of the mature overstory trees is significantly hindering regeneration establishment on the site. Tall woody interference occupies approximately 74% of the stand consisting primarily of sweet birch and striped maple. Low woody interference is minimal occupies approximately 13% of the site, consisting primarily of witch-hazel. Rhizomatous fern interference was noted to occupy approximately 50% of the site.

In addition to interfering vegetation, the presence of white-tailed deer can have a negative influence on the regeneration success of the stand. Overbrowsing can facilitate failure of desirable seedling establishment and in extreme cases shift in species composition dominated by undesirable tree species. Field evaluations of the site estimated deer browse impact to be moderate. Monitoring of deer browse impacts will coincide with regeneration inventories to determine if additional measures need to be implemented to reduce deer herbivory and increase the likelihood of regeneration establishment on the site.

Historic Conditions: State Forest records indicate that the proposal area has not been harvested since state acquisition. The adjacent stand to the north was thinned in 2015 while the stands to the west along East Shale Road were thinned in 2015 and most recently in 2022. No evidence of fire was observed during the stand inventory.

Rare, Threatened and Endangered Species: No rare, threatened or endangered species have been identified on the site that would be impacted by the silvicultural prescription.

Habitats and Species of Management Concern: The management proposal contains no established HCVF areas. A small ephemeral stream along the southern end of the harvest area

was noted during the inventory and will be excluded from the harvest. The proposal area is relatively close to the Wolf Swamp ESA, but no harvesting is to occur within this designated area of high conservation value forest.

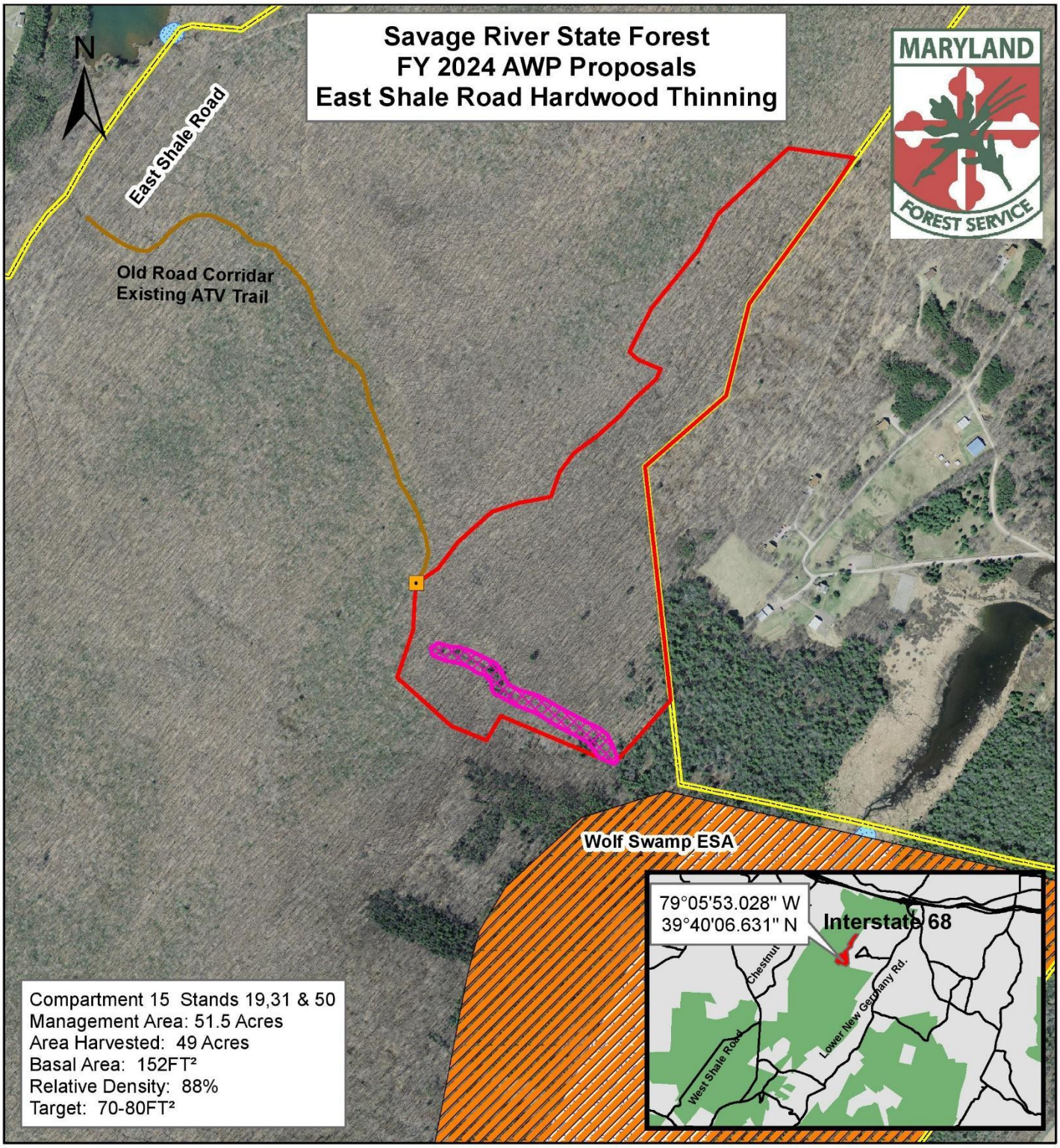
Water Resources: This stand drains east into Wolf Swamp flowing into Red Run, a tributary of Big Piney Creek and the Cassellman River within the Youghiogheny River Watershed. The proposed silvicultural treatments will be outside of all HCVF and stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forests Sustainable Forest Management Plan.

Soil Resources: The predominant soil types of this site are Dekalb and Leetonia Very Stony Sandy Loams, 15-25% slopes (DlD) and the Dekalb Channery Loams (DbD2 / DbC2). The soils are composed mainly of sandstone. These soils are moderately deep and well drained with slight equipment limitations elevating to moderate with slope and primarily associated with a high water table. The site has good productivity for woodland management, with a site index of 65-75 for upland oaks. The productivity of the site will be protected by minimizing the haul roads and skid trails per the Department's Best Management Practices and rutting guidelines.

Recreation Resources: No developed recreational resources are located within the stand. The East Shale Road ORV Trail / Northernmost segment of the Meadow Mountain Trail will serve as the haul road for the harvest.

Management and Silvicultural Recommendations:

The proposed silvicultural treatment for this site is a commercial thinning given that competitive regeneration is lacking and the stand is overstocked. A crown thinning will be implemented, removing approximately 70 ft² of basal area per acre and reducing the residual basal area to 70-80 ft². Removals will be concentrated on undesirable growing stock in the medium sawtimber size class coupled with mature individual trees that will afford large canopy gaps and facilitate regeneration establishment in the understory. Estimated yield for the thinning is approximately 4,000 board feet per acre. Residual trees will benefit from the improved spacing post-harvest with increased vigor, growth rates and overall stand health. Retention will favor small and medium sawtimber trees of superior form and health to facilitate seedling establishment of the future stand. The process of the timber harvest should break the mid-story canopy of undesirable tall-woody interference and afford additional sunlight to the understory and established regeneration which is currently suppressed. Post-harvest monitoring will be conducted to determine if the present regeneration has responded to the thinning and if additional regeneration has established on the site. The long-term goal for the site is to have a desirable cohort of regeneration occupying the site when a final removal harvest is conducted to release the regeneration as the new stand of trees.



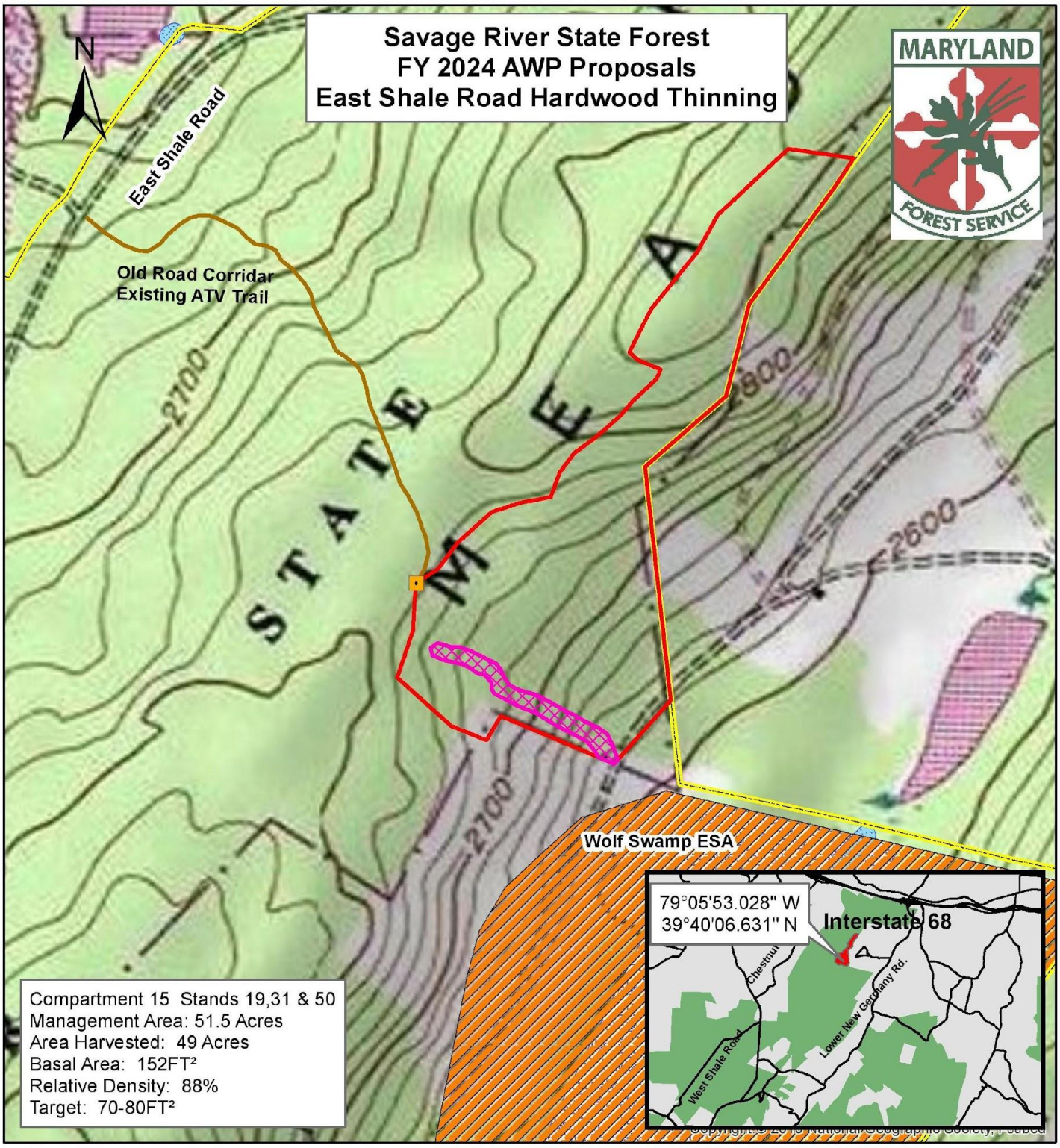
- Landing
- Haul Road (To Be Built)
- Buffer
- Harvest Area
- Savage River SF Boundary
- Old Growth Ecosystem Area
- Ecologically Significant Areas
- Old Growth
- SRSF Wildlands
- streams and 50' buffers
- Wetlands of State Concern

1 inch = 667 feet

1:8,000

0 200 400 800 1,200 1,600 Feet

MARYLAND DEPARTMENT OF NATURAL RESOURCES


Savage River State Forest
FY 2024 AWP Proposals
East Shale Road Hardwood Thinning
MARYLAND
FOREST SERVICE
N
East Shale Road
Old Road Corridar
Existing ATV Trail
2700
2800
2600
STATE
Wolf Swamp ESA
79°05'53.028" W
39°40'06.631" N
Interstate 68
Chestnut
Lower New Germany Rd.
West Shale Road
Compartment 15 Stands 19,31 & 50
Management Area: 51.5 Acres
Area Harvested: 49 Acres
Basal Area: 152FT²
Relative Density: 88%
Target: 70-80FT²
Landing
Haul Road (To Be Built)
Buffer
Harvest Area
Savage River SF Boundary
Old Growth Ecosystem Area
Ecologically Significant Areas
Old Growth
SRSF Wildlands
streams and 50' buffers
Wetlands of State Concern
1 inch = 667 feet
1:8,000
0 200 400 800 1,200 1,600
Feet
MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

COMPARTMENT 17 – Stands 35,72,100,101,107,108 **FY-24**

Description / Resource Impact Assessment

Location: This harvest proposal is accessible off West Shale Road in the area of the state forest commonly referred to as the Asa Durst Homestead located approximately 1.5 miles west of the intersection of New Germany Road and West Shale Road.

Forest Community Type and Condition: This 40.5-acre site contains a medium sawtimber mixed oak stand that is approximately 84 years old with an average merchantable diameter of 15.4 inches. The overstory consists of northern red oak (41%), red maple (34%), sweet birch (9%), black cherry (6%) and cucumber magnolia (5%). The stocking in this stand is at 70% relative density with a basal area of 117 ft^2/acre and 295 trees per acre. The stand is currently overstocked with unacceptable growing stock (UGS) accounting for over 50% of the basal area. Desirable regeneration is currently present but suppressed by a thick mid-story layer of undesirable tall-woody interference. A significant portion of the current regeneration is established oak seedlings greater than three feet in height.

Interfering Elements: Interfering understory plant competition is sufficient to cause complications in desirable regeneration efforts with the majority of the site containing some form of significant interference. This interference coupled with the tight canopy of the mature overstory trees is significantly hindering regeneration establishment on the site. Tall woody interference occupies approximately 92% of the stand consisting primarily of sweet birch and striped maple. Low woody interference is minimal occupies approximately 17% of the site, consisting primarily of witch-hazel. Rhizomatous fern interference was noted to be a minimal issue while only affecting 19% of the site.

In addition to interfering vegetation, the presence of white-tailed deer can have a negative influence on the regeneration success of the stand. Overbrowsing can facilitate failure of desirable seedling establishment and in extreme cases shift in species composition dominated by undesirable tree species. Field evaluations of the site estimated deer browse impact to be moderate. Monitoring of deer browse impacts will coincide with regeneration inventories to determine if additional measures need to be implemented to reduce deer herbivory and increase the likelihood of regeneration establishment on the site.

Historic Conditions: State Forest records indicate that the proposal area contains two small patch harvests from the late 1980's and a roadside harvest along the extent of West Shale Road in 2003. The current state of the stand is "patchy" with a combination of previous harvests at various stages of stocking and overstory composition. The goal with the proposed harvest is to provide a uniform (manageable) stand while releasing the desirable regeneration that established following the previous harvests.

Rare, Threatened and Endangered Species: No rare, threatened or endangered species have been identified on the site that would be impacted by the silvicultural prescription.

Habitats and Species of Management Concern: The management proposal contains does not contain or border any areas that have been designated as High Conservation Value Forest.

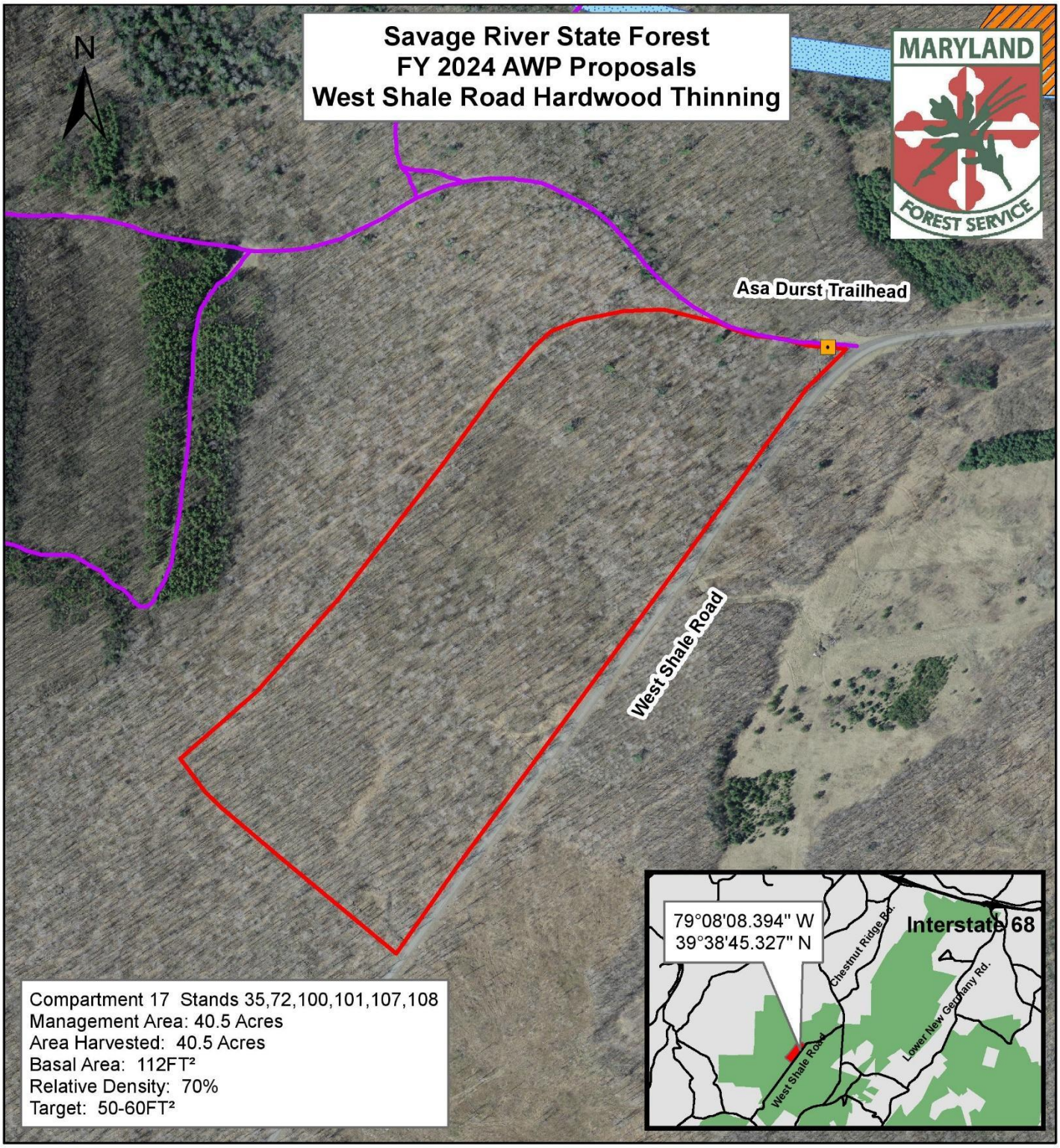
Water Resources: This stand drains north into Big Laurel Run, a tributary to the Cassellman River within the Youghiogheny River Watershed. The proposed silvicultural treatments will be outside of all HCVF stream buffers and designated wetland areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forests Sustainable Forest Management Plan.

Soil Resources: The predominant soil types of the site are Dekalb and Gilpin Very Stony Loams, 0-15% slopes (DgC) along with Cookport and Ernest Very Stony Silt Loams, 0-8% Slopes (CuB). The soils are composed mainly of sandstone with some shale and siltstone found throughout. These soils are moderately deep and moderately well drained with slight equipment limitations becoming moderate with slope and primarily reflecting a relatively high water table. The site has good productivity for woodland management, with a site index of 65-75 for upland oaks. The productivity of the site will be protected by minimizing the haul roads and skid trails per the Department's Best Management Practices and rutting guidelines.

Recreation Resources: No developed recreational resources are located within the stand. The trailhead for the Asa Durst Hiking Trails will serve as the landing for the harvest and the proposal borders the initial section of the hiking trail for a short section. Impacts to the trail system will be minimal but the parking area will be occupied by logging equipment while the sale is active.

Management and Silvicultural Recommendations:

The proposed silvicultural treatment for this site is a commercial thinning given that competitive regeneration is present but suppressed and the overstory contains a significant component of undesirable growing stock (UGS). A crown thinning will be implemented, removing approximately 60 ft^2 of basal area per acre and reducing the residual basal area to 50-60 ft^2. Removals will be concentrated on undesirable growing stock in the medium sawtimber size class coupled with mature individual trees that will afford large canopy gaps and facilitate regeneration establishment in the understory. Estimated yield for the thinning is approximately 2,500 board feet per acre. Residual trees will benefit from the improved spacing post-harvest with increased vigor, growth rates and overall stand health. Retention will favor small and medium sawtimber trees of superior form and health to facilitate seedling establishment of the future stand. The process of the timber harvest should break the mid-story canopy of undesirable tall-woody interference and afford additional sunlight to the understory and established regeneration which is currently suppressed. A harvest retaining 50-60 ft^2 of retention is a bit aggressive, but the current stocking of the stand is relatively low as a result of the previous harvests. The 50-60 ft^2 retained should still result in a shade-intermediate post-harvest structure and allow the current oak seedlings to advance to the sapling phase. Post-harvest monitoring will be conducted to determine if the present regeneration has responded to the thinning and if additional regeneration has established on the site. The long-term goal for the site is to have a desirable cohort of regeneration occupying the site when a final removal harvest is conducted to release the regeneration as the new stand of trees.



Landing
Asa Durst Trails
Harvest Area
Savage River SF Boundary

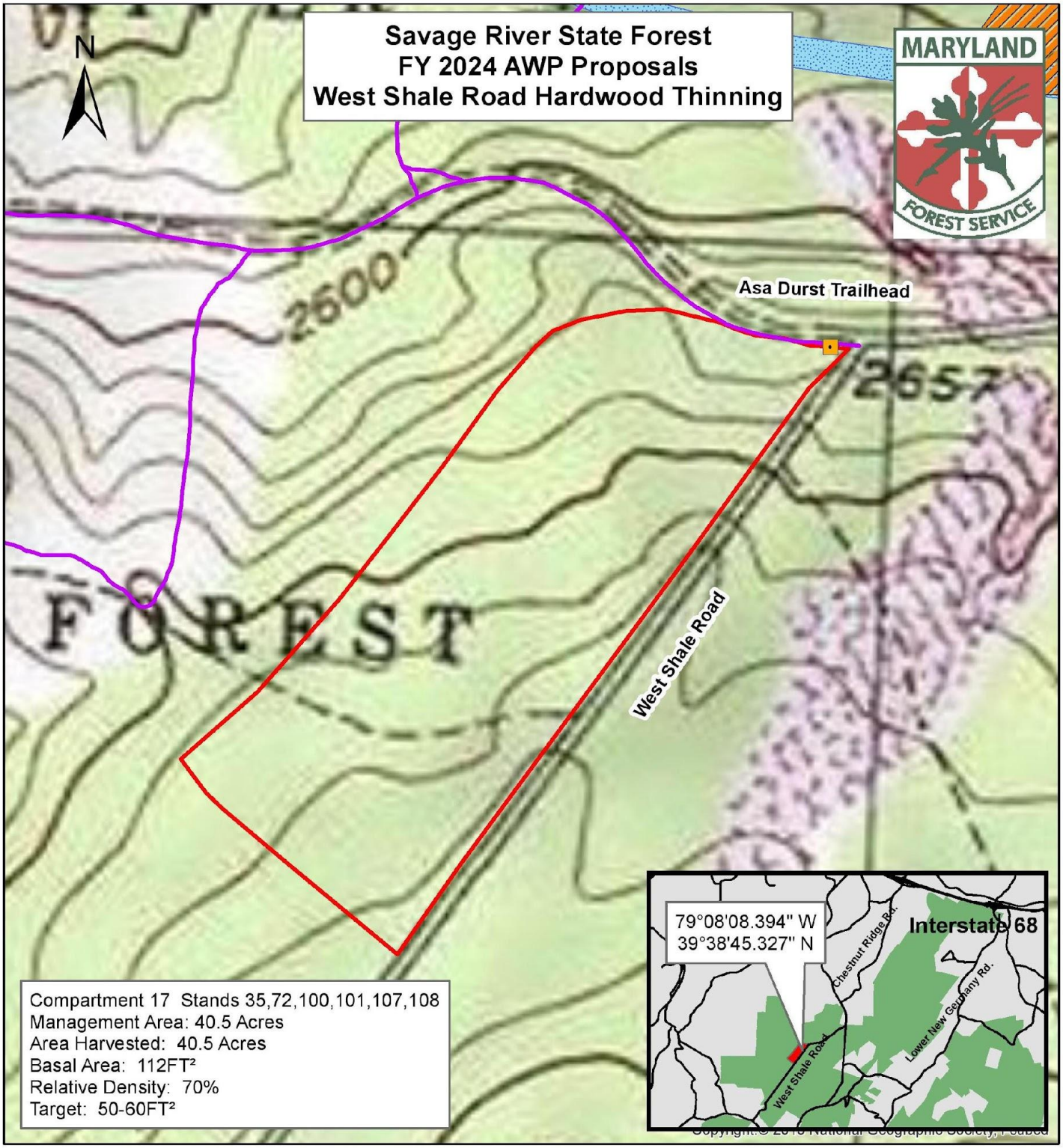
Old Growth Ecosystem Area
Ecologically Significant Areas
Old Growth
SRSF Wildlands
streams and 50' buffers
Wetlands of State Concern

1 inch = 417 feet

1:5,000

0 125 250 500 750 1,000 Feet

MARYLAND DEPARTMENT OF NATURAL RESOURCES



Landing
Asa Durst Trails
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Old Growth Ecosystem Area
Ecologically Significant Areas
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streams and 50' buffers
Wetlands of State Concern

1 inch = 417 feet

1:5,000

0 125 250 500 750 1,000 Feet

MARYLAND DEPARTMENT OF NATURAL RESOURCES

COMPARTMENT 37 – Stands 3, 4 & 7 **FY-24**

Description / Resource Impact Assessment

Location: Location: This harvest proposal is accessible off the St. Johns Rock ORV Trail via an existing forest access located approximately 4 miles north of the trail intersection with Avilton-Lonaconing Road.

Forest Community Type and Condition: This 100-acre site contains a large sawtimber mixed oak stand that is approximately 94 years old with an average merchantable diameter of 17.5 inches. The overstory consists of northern red oak (47%), red maple (25%), black cherry (5%) and sugar maple (3%). The stocking in this stand is at 74% relative density with a basal area of 137 ft²/acre and 215 trees per acre. The stand is currently overstocked with unacceptable growing stock (UGS) accounting for approximately 40% of the basal area. Desirable oak regeneration is currently present in the understory, with a significant portion of that regeneration being established oak seedlings greater than three feet in height.

Interfering Elements: Interfering understory plant competition is sufficient to cause complications in desirable regeneration efforts with the majority of the site containing some form of significant interference. This interference coupled with the tight canopy of the mature overstory trees is significantly hindering regeneration establishment on the site. Tall woody interference occupies approximately 60% of the stand consisting primarily of striped maple, sweet birch and witch-hazel. Low woody interference occupies approximately 44% of the site, consisting primarily of striped maple and witch-hazel. Rhizomatous ferns and grass occupy only a minimal area of the stand (4%) due to the low levels of sunlight reaching the forest floor. Non-native invasive species were not observed within the stand.

In addition to interfering vegetation, the presence of white-tailed deer can have a negative influence on the regeneration success of the stand. Overbrowsing can facilitate failure of desirable seedling establishment and in extreme cases shift in species composition dominated by undesirable tree species. Field evaluations of the site estimated deer browse impact to be moderate. Monitoring of deer browse impacts will coincide with regeneration inventories to determine if additional measures need to be implemented to reduce deer herbivory and increase the likelihood of regeneration establishment on the site.

Historic Conditions: State Forest records indicate that the proposal area has not been harvested since state acquisition. The small adjacent stands to the east and west were regenerated in 2007. A larger stand north of the powerline was thinned in 1996. No evidence of fire was observed during the stand inventory.

Rare, Threatened and Endangered Species: No rare, threatened or endangered species have been identified on the site that would be impacted by the silvicultural prescription.

Habitats and Species of Management Concern: The management proposal borders the streamside management zone established along Staub Run. No harvest activities are to occur in this designated stream buffer and all BMP's will be enforced to protect the site quality and prevent sediment and erosion impacts.

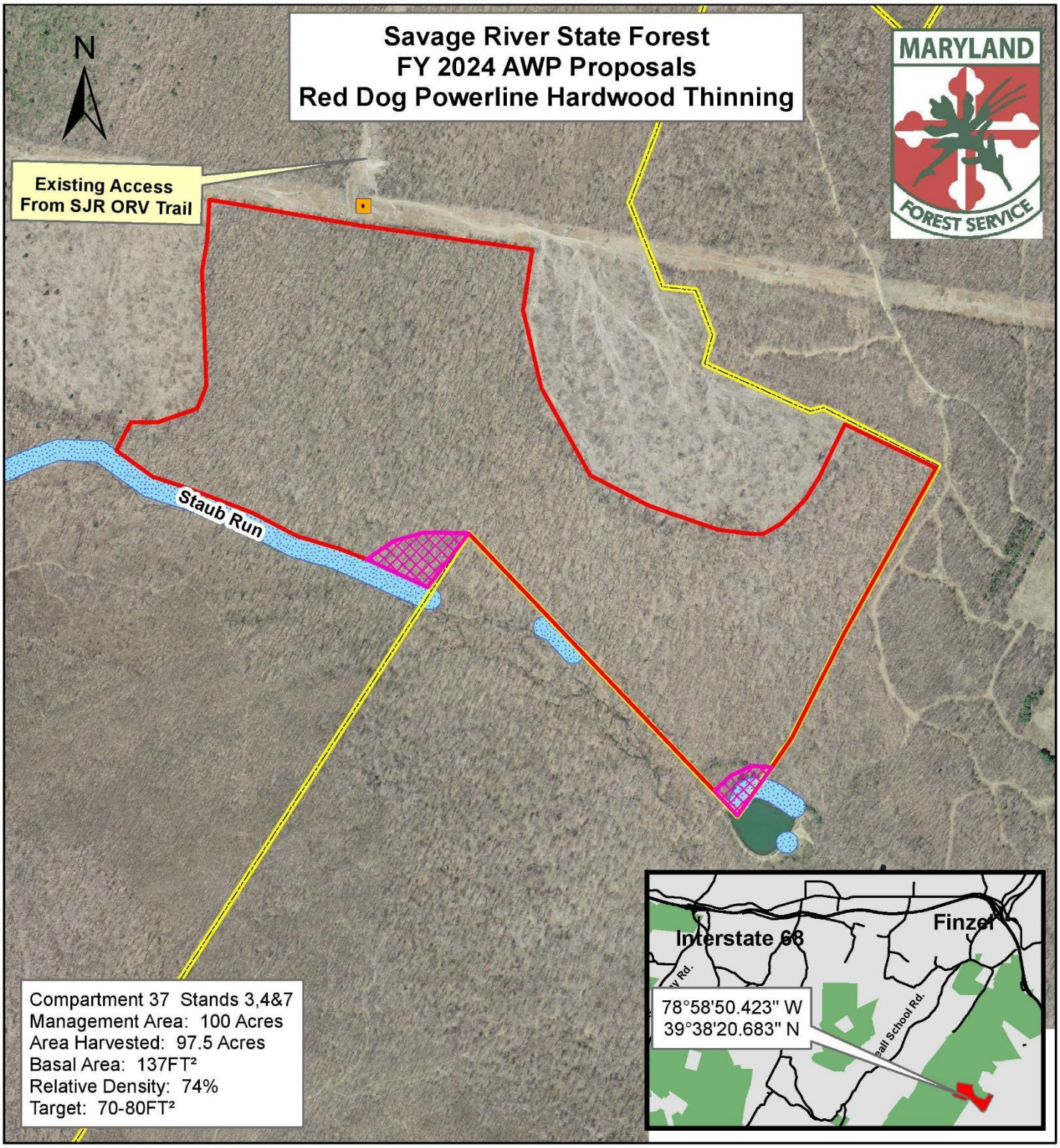
Water Resources: This stand drains southeast into Staub Run within the George's Creek Watershed. The proposed silvicultural treatments will be outside of all HCVF and stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forest Sustainable Forest Management Plan.

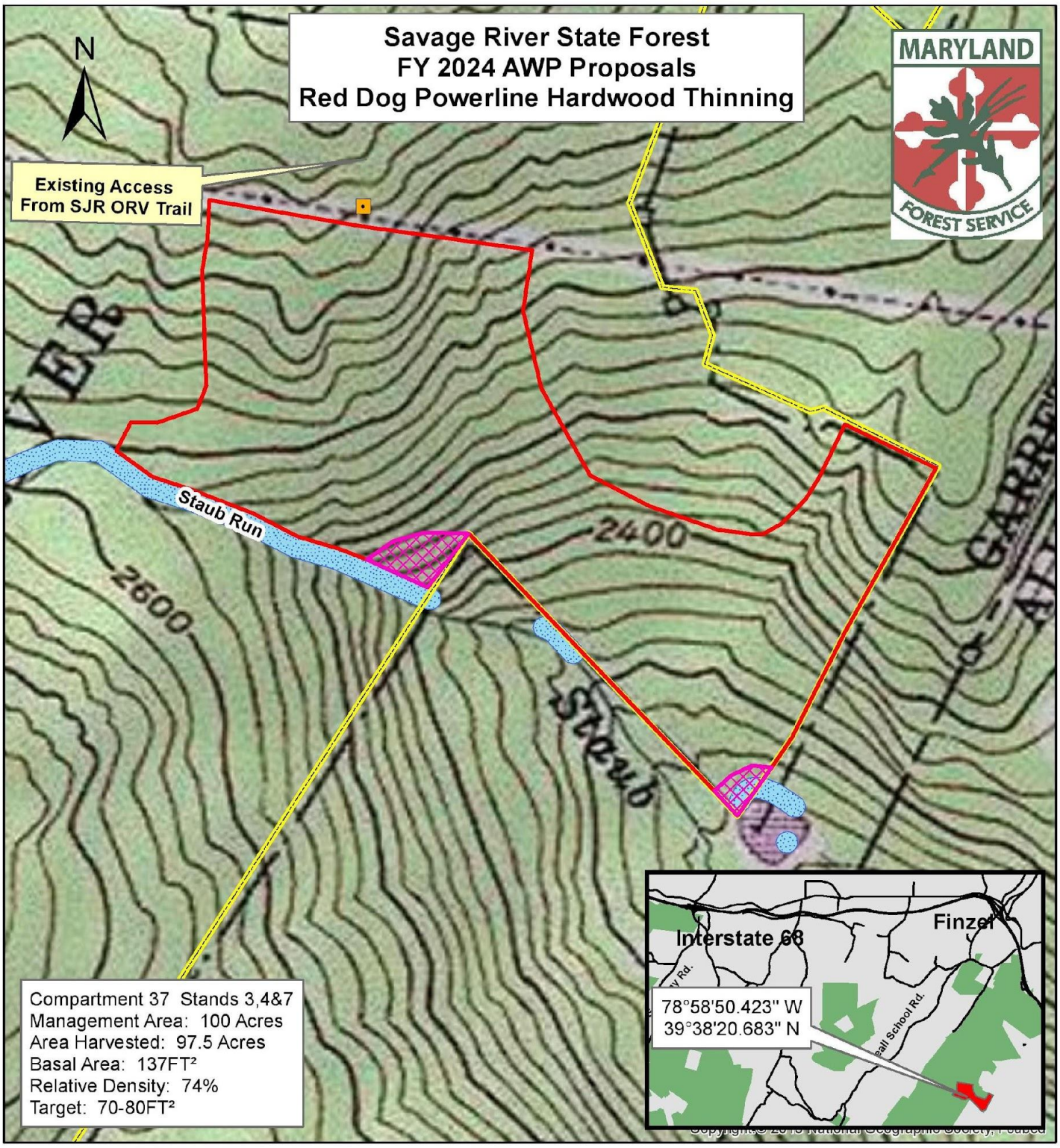
Soil Resources: The predominant soil types of this site are Cookport and Ernest Very Stony Silt Loams, 0-8% Slopes (CuB), Dekalb and Gilpin Very Stony Loams, 15-25% Slopes (DgD) and areas of Very Stony Land (VsD and VsF) scattered throughout. The soils are composed mainly of sandstone with some shale and siltstone found throughout. These soils range from moderately deep to somewhat shallow and include areas of exposed surface rock and boulders. Equipment restrictions are slight to moderate on steeper slopes and areas of exposed surface rock. The site has good productivity for woodland management, with a site index of 65-75 for upland oaks. The productivity of the site will be protected by minimizing the haul roads and skid trails per the Department's Best Management Practices and rutting guidelines.

Recreation Resources: The St. John's Rock ORV Trail access road will serve as the haul road for the harvest. The proposal area does not directly contain any of the ATV trails, but the main access road will be impacted by logging equipment while the harvest is active.

Management and Silvicultural Recommendations:

The proposed silvicultural treatment for this site is a commercial thinning given that competitive regeneration is present but suppressed, and the stand is overstocked. A crown thinning will be implemented, removing approximately 60 ft^2 of basal area per acre and reducing the residual basal area to 70-80 ft^2. Removals will be concentrated on undesirable growing stock in the medium sawtimber size class coupled with mature individual trees that will afford large canopy gaps and facilitate regeneration establishment in the understory. Estimated yield for the thinning is approximately 3,000-3,5000 board feet per acre. Residual trees will benefit from the improved spacing post-harvest with increased vigor, growth rates and overall stand health. Retention will favor small and medium sawtimber trees of superior form and health to facilitate seedling establishment of the future stand. Post-harvest monitoring will be conducted to determine if the present regeneration has responded to the thinning and if additional regeneration has established on the site. The long-term goal for the site is to have a desirable cohort of regeneration occupying the site when a final removal harvest is conducted to release the regeneration as the new stand of trees.


Savage River State Forest
FY 2024 AWP Proposals
Red Dog Powerline Hardwood Thinning
N
MARYLAND
FOREST SERVICE
Existing Access
From SJR ORV Trail
Staub Run
Compartment 37 Stands 3,4&7
Management Area: 100 Acres
Area Harvested: 97.5 Acres
Basal Area: 137FT²
Relative Density: 74%
Target: 70-80FT²
Interstate 68
Finzel
78°58'50.423" W
39°38'20.683" N
Landing
Buffers
Harvest Area
Savage River SF Boundary
Old Growth Ecosystem Area
Ecologically Significant Areas
Old Growth
SRSF Wildlands
streams and 50' buffers
Wetlands of State Concern
1 inch = 625 feet
1:7,500
0 200 400 800 1,200 1,600
Feet
MARYLAND
DEPARTMENT OF
NATURAL RESOURCES


Savage River State Forest
FY 2024 AWP Proposals
Red Dog Powerline Hardwood Thinning
N
MARYLAND
FOREST SERVICE
Existing Access
From SJR ORV Trail
Staub Run
2400
2600
Staub
Compartment 37 Stands 3,4&7
Management Area: 100 Acres
Area Harvested: 97.5 Acres
Basal Area: 137FT²
Relative Density: 74%
Target: 70-80FT²
Interstate 68
Finzel
78°58'50.423" W
39°38'20.683" N
Landing
Buffers
Harvest Area
Savage River SF Boundary
Old Growth Ecosystem Area
Ecologically Significant Areas
Old Growth
SRSF Wildlands
streams and 50' buffers
Wetlands of State Concern
1 inch = 625 feet
1:7,500
0 200 400 800 1,200 1,600
Feet
MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Description / Resource Impact Assessment

Location: This proposal is located along the east side of St. John's Rock Road approximately 1 mile southeast of the intersection of St. John's Rock Road with Beall School Road and Old Frostburg Road. The harvest area is adjacent to St. John's Rock Road and immediately across from the entrance to the St. John's Rock ORV Trail.

Forest Community Type and Condition: This 64.5-acre site contains a medium sawtimber mixed oak stand that is approximately 90 years old with an average merchantable diameter of 15.8 inches. The overstory consists of red maple (34%), northern red oak (24%), white oak (13%), black cherry (7%) and eastern hemlock (5%). The stocking in this stand is at 85% relative density with a basal area of 135 ft²/acre and 292 trees per acre. The stand is currently overstocked with unacceptable growing stock (UGS) accounting for over 50% of the basal area. Desirable oak regeneration is currently present in the understory, with a significant portion of that regeneration being established oak seedlings greater than three feet in height. A sizeable sapling component of predominantly maple poles is also present in the understory.

Interfering Elements: Interfering understory plant competition is sufficient to cause complications in desirable regeneration efforts with the majority of the site containing some form of significant interference. This interference coupled with the tight canopy of the mature overstory trees is significantly hindering regeneration establishment on the site. Tall woody interference occupies approximately 93% of the stand consisting primarily of striped maple and witch-hazel. Low woody interference occupies approximately 70% of the site, consisting primarily of sweet birch and witch-hazel. Rhizomatous ferns occupy approximately 50% of the site with the concentration being in the previous thinning area from 1996.

In addition to interfering vegetation, the presence of white-tailed deer can have a negative influence on the regeneration success of the stand. Overbrowsing can facilitate failure of desirable seedling establishment and in extreme cases shift in species composition dominated by undesirable tree species. Field evaluations of the site estimated deer browse impact to be moderate. Monitoring of deer browse impacts will coincide with regeneration inventories to determine if additional measures need to be implemented to reduce deer herbivory and increase the likelihood of regeneration establishment on the site.

Historic Conditions: State Forest records indicate that the proposal area was partially thinned in 1996 while the large stand to the north was thinned in 2007. No evidence of fire was observed during the stand inventory.

Rare, Threatened and Endangered Species: No rare, threatened or endangered species have been identified on the site that would be impacted by the silvicultural prescription.

Habitats and Species of Management Concern: The management proposal contains the streamside management zone established along an unnamed tributary of Savage River. No harvest activities are to occur in this designated stream buffer and all BMP's will be enforced to protect the site quality and prevent sediment and erosion impacts. An existing crossing will be

evaluated for use and if a new stream crossing is needed the proper permits will be requested from MDE.

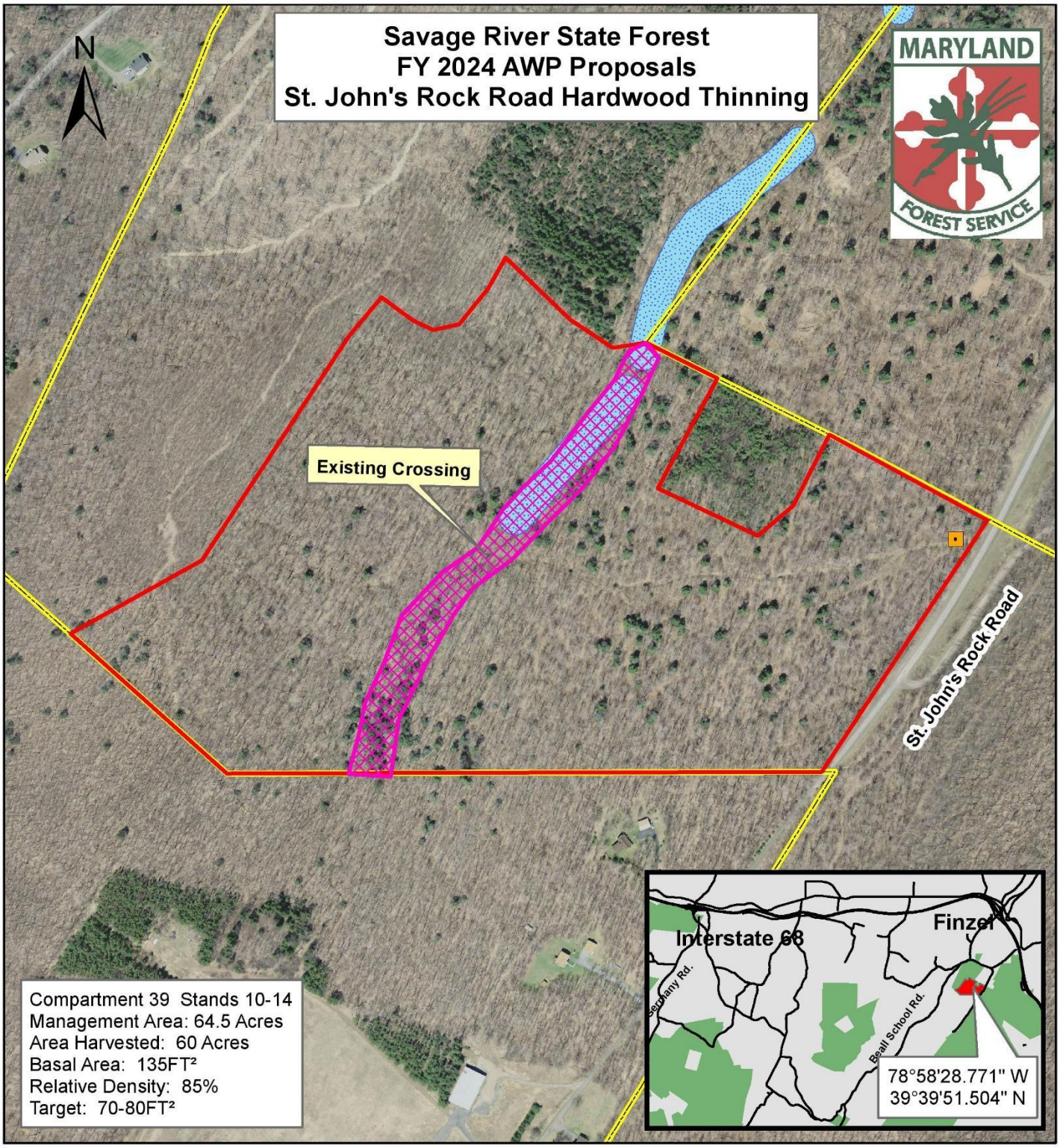
Water Resources: This stand drains north into Savage River within the Savage River Watershed. The proposed silvicultural treatments will be outside of all HCVF and stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forest Sustainable Forest Management Plan.

Soil Resources: The predominant soil types of this site are Dekalb-Gilpin-Lehew Very Stony Loams, 15-25% Slopes (DcD) and Albrights Very Stony Silt Loam, 0-15% Slopes (AgC). These soils are composed mainly of sandstone with siltstone and spots of shale found throughout. These soils are moderately deep and range from well drained on upper slopes to somewhat poorly drained on the lower slopes. Equipment restrictions range from slight on upper slopes to moderate on lower slopes due to an elevated water table. The site has good productivity for woodland management, with a site index of 65-75 for upland oaks. The productivity of the site will be protected by minimizing the haul roads and skid trails per the Department's Best Management Practices and rutting guidelines.

Recreation Resources: No developed recreational resources are located within the stand. The access road for the stand is primarily utilized for hunting access. Hunting opportunities may be disrupted for the duration of the harvest and access to the site may be limited depending on the timing of the harvest.

Management and Silvicultural Recommendations:

The proposed silvicultural treatment for this site is a commercial thinning given that competitive regeneration is present but suppressed, and the stand is overstocked. A crown thinning will be implemented, removing approximately 60 ft² of basal area per acre and reducing the residual basal area to 70-80 ft². Removals will be concentrated on undesirable growing stock in the medium sawtimber size class coupled with mature individual trees that will afford large canopy gaps and facilitate regeneration establishment in the understory. Estimated yield for the thinning is approximately 3,000 board feet per acre. Residual trees will benefit from the improved spacing post-harvest with increased vigor, growth rates and overall stand health. Retention will favor small and medium sawtimber trees of superior form and health to facilitate seedling establishment of the future stand. The process of the timber harvest should break the mid-story canopy of undesirable tall-woody interference and afford additional sunlight to the understory and established regeneration which is currently suppressed. Post-harvest monitoring will be conducted to determine if the present regeneration has responded to the thinning and if additional regeneration has established on the site. The long-term goal for the site is to have a desirable cohort of regeneration occupying the site when a final removal harvest is conducted to release the regeneration as the new stand of trees.



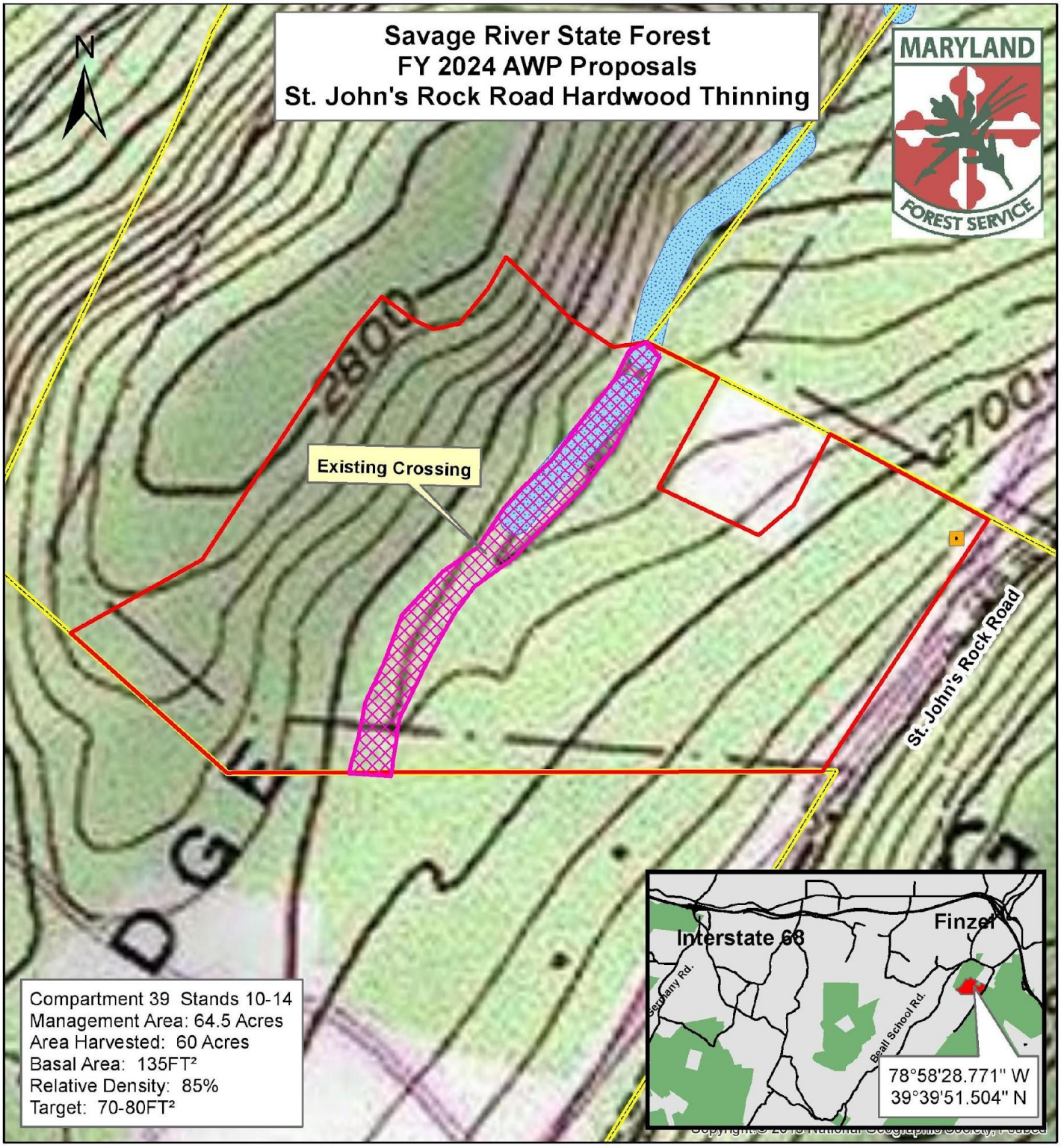
- Landing
- Buffer
- Harvest Area
- Savage River SF Boundary
- Old Growth Ecosystem Area
- Ecologically Significant Areas
- Old Growth
- SRSF Wildlands
- streams and 50' buffers
- Wetlands of State Concern

1 inch = 417 feet

1:5,000

0 125 250 500 750 1,000 Feet

MARYLAND DEPARTMENT OF NATURAL RESOURCES


Savage River State Forest
FY 2024 AWP Proposals
St. John's Rock Road Hardwood Thinning
MARYLAND
FOREST SERVICE
N
Existing Crossing
St. John's Rock Road
2800
2700
Compartment 39 Stands 10-14
Management Area: 64.5 Acres
Area Harvested: 60 Acres
Basal Area: 135FT²
Relative Density: 85%
Target: 70-80FT²
Interstate 68
Finzel
Sebrany Rd.
Beall School Rd.
78°58'28.771" W
39°39'51.504" N
Landing
Buffer
Harvest Area
Savage River SF Boundary
Old Growth Ecosystem Area
Ecologically Significant Areas
Old Growth
SRSF Wildlands
streams and 50' buffers
Wetlands of State Concern
1 inch = 417 feet
1:5,000
0 125 250 500 750 1,000
Feet
MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Operational Management and Budget Summary

A. Introduction
B. Funding Sources
C. Operational Cost

Submitted Budget Request

The submitted annual budget for Savage River State Forest totals $582,120.00. Of that amount, $433,117 goes to fund classified salaries and benefits for four employees; $42,488.00 funds two contractual employees and $106,515 for forest operations. Savage River has generated revenue that greatly exceeded its cost of operation for many years. The majority of revenue is obtained from the sale of forest products. Successful marketing in selling a mix of species and grades of wood products that the market most demands has contributed to substantial revenue generation over the years.

Operational Management

A. Introduction

This section of the plan is designed to cover the annual cost and revenues associated with the operational management of Savage River State Forest State Forest (SRSF). It is the Department's intent that all revenues generated from SRSF will be used to pay for the management and operation of the Forest. The numbers expressed in this section are only estimates and averages of annual expenses and revenues. These numbers will fluctuate each year based on management prescriptions, economic conditions and public use of the forest.

The following information is a breakdown of Revenues and Operational costs associated with SRSF. These figures are only estimates that are based on projected revenues and operational expenses. Yearly changes in timber markets and weather conditions can severely affect revenues. Operational expenses will vary from year to year and the numbers below are based on the budget request submitted for FY-2024.

B. SRSF Funding Sources: Estimated - *$582,120*

State Forests in Maryland are funded from several sources. The first source is the revenue generated by the forests. These funds are deposited in the Department of Natural Resources Forest or Park Reserve Fund and must be appropriated by the General Assembly through the annual budgeting process before being spent. The state forest budget is prepared approximately one year before the beginning of the fiscal year in which it will be spent. The budget then goes through the legislative approval/review process along with all other state operating budgets. Once adopted, the budget goes into effect July 1st, the first day of the fiscal year. Revenue generated by the state forest is designated special fund revenue. There may be special funds provided from the Department of Natural Resources Forest or Park Reserve Fund

that are not generated by this particular forest or there may be a lesser amount of special funds shown in the budget than was generated on this specific forest.

Another source of funding for the state forest is Recreational Trail Grants. These grants are competitive and are generally limited to $80,000 per year per grant. The source of this funding is the Federal Department of Transportation administered through the Maryland Department of Transportation, State Highway Administration. These funds are designated as reimbursable funds. Savage River State Forest has requested Recreational Trail Grant funds in the amount of $30,000.00 for personnel to maintain the newly developed 13-mile long St. John's Rock ORV Trail.

C. Operational Cost: Estimated Annual Expenses - *$567,313*

Operational expenses are those costs paid directly out of the Savage River State Forest operational budget. The Forest Manager prepares a proposed operational budget for the forest based on instructions provided approximately one year in advance of the fiscal year. The FY-2023 budget proposal was prepared in August of 2021.

▪ *Classified Salaries, Wages and Benefits: $433,117*

This cost is associated with Special Funds which are state tax revenues provided annually. These funds are used to pay the salaries of the Maryland classified employees responsible for the management, operation and maintenance of the State Forest along with our Western Region Trails Planner.

▪ *Contractual Staffing: $56,857*

This cost is associated with contractual staffing associated with operations of the state forest. Contractual personnel are responsible for conducting work outlined in the annual work plan, managing the daily activities on the forest, including boundary line work, maintenance of trails, forest roads, maintaining primitive campsites, a public shooting range, overlooks, wildlife habitat areas, and implementing all maintenance, recreational, silviculture and ecosystem restoration projects.

▪ *Land Operation Costs: $77,339*

This includes expenses for office and field equipment, vehicles, gates, gravel, signs, boundary paint, roadwork contracts and construction, trash removal from illegal dumping, boundary line work & surveying, tree planting, site preparation, control of invasive species, non-commercial thinning and other forest management practices. These costs vary greatly from year to year based on the activities identified in the Annual Work Plan.

D. Summary

This is the general breakdown on Revenues and Operational Costs associated with the Savage River State Forest. As described, these figures will vary from year to year. A more detailed picture on revenues and operational cost will be reviewed quarterly as the actual picture develops within implementation of Annual Work Plan and as operating budgets are approved

XII. Appendices
Appendix 1: Yellow Archangel Management Plan

Savage River State Forest Non-Native Invasive Plant Management:
Yellow Archangel (*Lamiastrum galeobdolon)*

Compartments 54 and 55; Dry Run Road

Description:

Dry Run, a tributary of the Savage River and Savage River Reservoir has been infested with the aggressively growing, non-native invasive perennial yellow archangel (*Lamiastrum galeobdolon).* The infestation of the area most likely originated from a private residence which was abandoned and the once maintained yard area was neglected, allowing the plant to escape to the adjacent property. After establishing a colony at the head of the watershed, the plant quickly enveloped the drainage from the private residence to the high water mark of the Savage River Reservoir, encompassing nearly 15 acres of forest land (See Invasive Species Management Map, p.20).

The plant grows quickly and out-competes native vegetation for resources. Yellow archangel spreads in several ways; by seed, by stem fragments, and by rooting at the nodes of the stem. This makes the plant very difficult to control and requires multiple applications of herbicide and diligent monitoring to limit the spread of the plant in natural forest environments. There is no projected end date for the herbicide treatments due to the persistent nature of this plant and efforts will be made annually, weather permitting, until the spread of the plant is contained or the plant is eradicated. Site monitoring will continue after the eradication of the plant for at least 5 years.

Treatment:

Ideal herbicide application time for this species occurs in March when the plant is beginning to grow and native plants are dormant. Weather conditions, particularly snow, have precluded the application of treatment in recent years. Approximately one acre of the drainage was treated from the bridge at the intersection of Savage River Road and Dry Run Road north for nearly 600’ in length and 75’ in width using a glyphosate based herbicide. All herbicide applications are conducted by registered employees working under the license of a certified applicator (Permit No. 30914-77618; Categories 2 and 6). The next treatment is scheduled for late March to early April of 2019 depending on weather conditions.

Treatment Schedule	
Monitoring	Chemical
April – September (Annually)	Early March to April (Annually)

Appendix 2: Japanese Knotweed Management Plan

Savage River State Forest Invasive Plant Management:
Japanese Knotweed (Fallopia japonica)

Description:

Several areas of Savage River State Forest have become infested with the invasive plant Japanese knotweed (*Fallopia japonica*). The number of treatment areas that have been delineated (See Invasive Species Management Map, p.19) continues to grow and those of manageable size will be treated and monitored to determine the most effective course of action for suppressing and ultimately eradicating the plant from these areas of the forest. Knotweed growth near the Savage River Reservoir has reached a critical level and will not be treated at this time due to the overwhelming investment that would be required to reach any reasonable level of control. As more effective treatment methods become available for large areas, this area will be reevaluated in regard to implementing a control plan.

Japanese knotweed is a fast-growing, herbaceous, rhizomatous perennial that forms dense patches and shades out all nearly all native species. The plant originated in East Asia and was imported as an ornamental in the late 1800's. Also called Mexican bamboo, fleece flower, hu zhang, the plant can grow to heights of greater than 10 feet and can inhabit almost any terrestrial environment whether shaded or in full sunlight. It is difficult to control due to the massive number of seeds that are produced and the rhizomatous adaptation of the plant. Multiple applications of mechanical and chemical control as well as diligent monitoring will be necessary to control the spread of the plant in natural forest environments. There is no projected end date for the herbicide treatments due to the persistent nature of this plant and efforts will be made annually until the spread of the plant is contained or eradicated from the identified areas.

Treatment:

The initial treatments occurred in the first week of June, 2011 at campsite 171 on Rabbit Hollow Road and on Fairview Road approximately one mile from the intersection with New Germany Road. Both locations have small populations of knotweed. Treatments in all areas of the forest involve a two-step process that includes both mechanical and chemical means of control.

First, the knotweed is cut and allowed to grow back for 8 weeks, reaching only 2 to 4 feet in height. Second, the new growth is treated with a 2% solution of glyphosate as the active ingredient. Treatment of these two areas has been repeated on a yearly basis and other areas of infestation that are considered manageable are added to the treatment regime as they are discovered.

Several new areas have been added to the management plan including three patches adjacent to Route 495, just north of the intersection with New Germany Road, two patches located on Westernport and Aaron's Run Road, just south of the High Rock Tower, one small patch adjacent to the Handicapped Hunter Road on West Shale Road and a large occurrence along New Germany Road located approximately one mile north of the state forest headquarters. Product application is/was conducted by registered employees working under the license of a certified applicator permit (Permit No. 30914-77618; Categories 2 and 6). The next scheduled mechanical treatment will occur June 2022 followed by the herbicide treatment in July 2022.

Treatment Schedule		
Monitoring	Mechanical	Chemical
March – June 2018	June 1, 2018	July 27, 2018
March – June 2019	June 1, 2019	July 27, 2019
March – June 2020	June 1, 2020*	July 27, 2020*
March – June 2021	June 1, 2021*	July 27, 2021*
March – June 2022	June 1, 2022*	July 27, 2022*
March – June 2023	June 1, 2023	As needed

* Treatment schedules may be altered/eliminated depending on the efficacy of the previous treatment applications.

Fiscal Year	*Planned Harvest*	*Bd. Ft. Vol. Harvested*	*Gross value*
2013	**488,000 BD FT**	**863,049**	**$161,910.00**
2014	**1,020,000 BD FT**	**521,526**	**$72,689.77**
2015	**1,020,000 BD FT**	**1,286,994**	**$275,126.44**
2016	**1,000,000 BD FT**	**941,285**	**$225,796.59**
2017	**1,200,000 BD FT**	**853,347**	**$248,487.50**
2018	**1,200,000 BD FT**	**1,152,074**	**$205,100.00**
2019	**1,200,000 BD FT**	**1,406,680**	**$401,481.00**
2020	**1,200,000 BD FT**	**1,161,591**	**$304,172.62**
2021	**1,200,000 BD FT**	**784,520**	**$289,280.00**
2022	**1,200,000 BD FT**	**1,354,237**	**$526,109.00**

Appendix 3: 10-Year Timber Harvest Summary Table

Appendix 4: 2022 SFI / FSC Audit Summary

Maryland Department of Natural Resources Forest Service

2022 Audit Summary

Date of Field Evaluation: 19-21 April 2022
Locations: Chesapeake Forest Lands / Pocomoke State Forest
Third Surveillance Audit
Tucker Watts, SFI Lead Auditor
Beth Jacqmain, FSC Lead Auditor

Sustainable Forestry Initiative

2022 Minor Corrective Action Request

SFI FM Std, Section 14.1.1: MINOR CAR
The summary audit report will be posted on the *SFI Inc.* website (www.sfiprogram.org) for public review.

Non-Conformity Evidence
The 2021 Surveillance Audit Report is not present on the SFI website, no confirmation that is has been submitted to SFI, Inc. was witnessed by the auditor. During the audit the 2021 Surveillance Audit Report was submitted to SFI, Inc. and posted to their website. Witnessed email and verified on SFI, Inc. website.

CAR has been closed.

Forest Stewardship Council

2022 Observation; no Corrective Action is required

Indicator 7.3.a Workers are qualified to properly implement the management plan; all forest workers are provided with sufficient guidance and supervision to adequately implement their respective components of the plan.

Observation Justification and/or Explanation
DNR could improve knowledge of and familiarity with FSC ESRA policies that have been adopted by MD DNR as part of implementing the new FSC pesticides policy.

Appendix 5: Interdisciplinary Team Review and Comments

Appendix 6: Citizens Advisory Committee Review and Comments

Appendix 7: Public Comments