

FOREST STEWARDSHIP PLAN

for

Maryland Department of Natural Resources
Benny Gray Tract
Satellite Tract of Doncaster Demonstration Forest

LOCATION

Between Tayloes Neck Tract and Irene Glenwood Place

MD Grid

Tax Map 70, Grid 2, Parcel 258 225.0 acres

IN

CHARLES COUNTY

ON

213.6 acres woodland
11.4 acres marsh
225.0 acres total

PREPARED BY:

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INTRODUCTION/OVERVIEW

The Benny Gray property was acquired by the Maryland Department of Natural Resources in 2011. The parcel is located adjacent to the Tayloe Neck Tract and bordered to the south by Irene Glenwood Place. Both the Tayloe Neck and Benny Gray tracts are satellite tracts of the Doncaster Demonstration Forest. The land was previously owned by the Nature Conservancy. This property will be managed by the Maryland Forest Service as a satellite tract of Doncaster Demonstration Forest. The forest on the property is comprised of 225.0 acres of mixed hardwood forest. Access to the tract is currently through the Tayloe Neck Tract at the end of Bluff Point Road. This tract has a woods road that runs northeast to southwest through the property.

The terrain is flat with heavy clay soils typical of Western Charles County. The southeastern portion of the property gently slopes as you approach Little Creek. Approximately one third of this tract is located within the Chesapeake Bay Critical Area.

The Wildlife Division in cooperation with the Maryland Forest Service has established a public hunting program on the property. Hunting reservations are coordinated by the Wildlife Division at the Myrtle Grove office in Pisgah.

There are currently no invasive species present on the property, however Japanese silt grass has been found on the neighboring Tayloe Neck Tract. If Japanese silt grass is found to be present on the Benny Gray Tract control and eradication with herbicide treatments is recommended. Invasive plants impact the environment by growing and spreading rapidly over large areas, displacing native plants, including some rare plants. Invasive plant control is recommended on this property to avoid monocultures of a single plant species thus reducing the natural biological diversity of the area.

STAND DESCRIPTION AND RECOMMENDED PRACTICES

STAND NUMBER: 1

AREA ACRES: 134.5

DOMINANT OVERSTORY SPECIES: southern red oak, sweetgum, blackgum

DOMINANT UNDERSTORY SPECIES: American holly, sweetgum

TIMBER SIZE: sawtimber

AGE: even

STOCKING: fully stocked

DESIRABLE TREES: 75%

UNDESIRABLE TREES: 25%

SITE GROWTH POTENTIAL: good

SITE INDEX: Southern Red oak 80

SOIL: Annemessex silt loam (AsA), Elkton silt loam (EkA),
Grosstown-Marr-Hoghole Complex (GmD), Woodstown sandy loam (WdA)

RECOMMENDATIONS/PRACTICES:

This stand is comprised of sawtimber size southern red oak, sweetgum and blackgum. The tree density (stocking) is adequate in relation to maintaining optimum growing space per tree.

The tree species distribution in this stand is as follows:

Southern red oak	21%
Sweetgum/Blackgum	33%
Red maple	16%
White oak	15%
Yellow poplar	4%
Willow oak	6%
Loblolly pine	3%
Virginia pine	2%
Total	100%

The current size class distribution in this stand is 55% saw timber (11.0 inches or greater in dbh [dbh = diameter at breast height - e.g. the tree diameter measured at 4.5 feet, approximately breast height]); 34% pole size (5.0 - 10.9 inches dbh); and 11% small tree (sapling to 4.9 inches dbh).

An increment boring was taken from a 15.8 inch DBH (Diameter at breast height, 4.5 feet above ground) southern red oak. It revealed that the tree is fifty seven years old and has grown two inches in diameter in the last thirteen years.

The prescription for this stand is to let it develop naturally over the next fifteen years.

This stand contains Little Creek and an unnamed blue line stream. A “blue line” stream is a stream that is significant enough to be mapped on a 7.5 minute topographic map. This legal designation will require the following in order to protect the water quality during a timber harvest:

- (1) the delineation of a protective stream buffer (minimum width 50-feet, expanded 4-feet for each 1% of slope) for the stream;
- (2) within the delineated stream buffer, only selective harvesting is permitted;
- (3) before any harvesting is initiated within the stream buffer, a Custom Buffer Plan must be prepared by a Licensed Professional Forester to ensure the harvest is conducted according to all legal requirements.

This stand also contains several areas that have been delineated as non-tidal wetlands by the U.S. Fish and Wildlife Service on the Nanjemoy USFWS NWI (National Wetland Inventory) Map. The wetland is classified as PFO1C (Palustrine, Forested, Broad-leaved, Deciduous, Seasonally Flooded), PSS1C (Palustrine, Shrub/Scrub, Deciduous, Seasonally Flooded), PFO1A (Palustrine, Forested, Broad-leaved, Deciduous, Temporarily Flooded), E2EM1P (Estuarine, Intertidal, Emergent, Persistent, Irregular). Any future harvesting in this area should follow the same BMP's as recommended to minimize impact on the wetlands.

Best management practices are conservation measures that:

- * Control soil loss
- * Reduce water quality degradation
- * Maintain an area as a nontidal wetland after harvesting
- * Minimize any adverse impact to the chemical, physical or biological characteristics of non-tidal wetlands.

The Elkton loam soil series (EkA) present in this stand is classified as a hydric soil, a possible indicator of additional non-tidal wetland areas. A hydric soil is a soil that, in it's undrained condition, is saturated, flooded, or ponded long enough during the growing season to favor the growth and regeneration of hydrophytic vegetation.

Timber harvesting in the wetland areas and areas with hydric soils present must include the implementation of Best Management Practices (BMPs) in order to minimize impact on the hydrology of these soils.

BMPs are easily implemented conservation measures that control soil loss and minimize potentially adverse impacts during harvesting to protect water quality.

Best Management Practices are conservation measures that:

- * Control soil loss
- * Reduce water quality degradation
- * Maintain an area as a nontidal wetland after harvesting
- * Minimize any adverse impact to the chemical, physical or biological characteristics of nontidal wetlands.

The entire stand should be re-examined in 15 years (2029) to update the management recommendations.

STAND DESCRIPTION AND RECOMMENDED PRACTICES

STAND NUMBER: 2

AREA ACRES: 68.4

DOMINANT OVERSTORY SPECIES: loblolly pine, Virginia pine, southern red oak

DOMINANT UNDERSTORY SPECIES: American holly, highbush blueberry,
greenbriar

TIMBER SIZE: pole

AGE: uneven

STOCKING: overstocked

DESIRABLE TREES: 67%

UNDESIRABLE TREES: 33%

SITE GROWTH POTENTIAL: excellent

SITE INDEX: Loblolly pine 82

SOIL: Lenni and Quindocqua soils (LQA)

RECOMMENDATIONS/PRACTICES:

This stand is comprised of pole timber size loblolly pine, Virginia pine, and southern red oak. The tree density (stocking) is high in relation to maintaining optimum growing space per tree. As trees in the stand continue to grow larger, growing space per tree will continue to decrease. This creates an "overstocked" condition where the stand will become less vigorous due to excessive competition for limited resources such as soil nutrients, water, and sunlight. In this overstocked condition a stand is vulnerable to insect and disease infestation as well as decline from drought.

The understory in this stand is extremely thick with greenbriar, highbush blueberry and American holly.

The tree species distribution in this stand is as follows:

Southern red oak	17%
White oak	8%
Sweetgum/Blackgum	16%
Willow oak	4%
Loblolly pine	24%
Red maple	13%
Virginia pine	18%
Total	100%

The current size class distribution in this stand is 27% saw timber (11.0 inches or greater in dbh [dbh = diameter at breast height - e.g. the tree diameter measured at 4.5 feet, approximately breast height]); 48% pole size (5.0 - 10.9 inches dbh); and 25% small tree (sapling to 4.9 inches dbh).

An increment boring was taken from a 12.0 inch DBH (Diameter at breast height, 4.5 feet above ground) loblolly pine. It revealed that the tree is eighteen years old and has grown two inches in diameter in the last four years.

The prescription for this stand is to let it develop naturally over the next fifteen years. The stocking will be reduced through natural competition of the trees for water, sunlight and nutrients. There is very poor access to this property making timber harvest operations difficult at the current time. If access is ever improved this stand should be re-examined in ten years for the feasibility of a commercial thinning.

The Lenni and Quindocqua soils (LQA) soil series present in this stand is classified as a hydric soil, a possible indicator of additional non-tidal wetland areas. A hydric soil is a soil that, in it's undrained condition, is saturated, flooded, or ponded long enough during the growing season to favor the growth and regeneration of hydrophytic vegetation.

Timber harvesting in the wetland areas and areas with hydric soils present must include the implementation of Best Management Practices (BMPs) in order to minimize impact on the hydrology of these soils.

BMPs are easily implemented conservation measures that control soil loss and minimize potentially adverse impacts during harvesting to protect water quality.

Best Management Practices are conservation measures that:

- * Control soil loss
- * Reduce water quality degradation
- * Maintain an area as a nontidal wetland after harvesting
- * Minimize any adverse impact to the chemical, physical or biological characteristics of nontidal wetlands.

Additional information describing how to implement BMPs is attached at the end of this

The entire stand should be re-examined in 15 years (2029) to update the management recommendations.

STAND DESCRIPTION AND RECOMMENDED PRACTICES

STAND NUMBER: 3

AREA ACRES: 10.7

DOMINANT OVERSTORY SPECIES: Virginia pine

DOMINANT UNDERSTORY SPECIES: American holly, highbush blueberry,
sweetgum

TIMBER SIZE: small tree

AGE: even (20 years old)

STOCKING: overstocked

DESIRABLE TREES: 65%

UNDESIRABLE TREES: 35%

SITE GROWTH POTENTIAL: excellent

SITE INDEX: Virginia pine 85

SOIL: Woodstown sandy loam (WdB)

RECOMMENDATIONS/PRACTICES:

This stand is comprised of small tree size Virginia pine. The tree density (stocking) is high in relation to maintaining optimum growing space per tree. As trees in the stand continue to grow larger, growing space per tree will continue to decrease. This creates an "overstocked" condition where the stand will become less vigorous due to excessive competition for limited resources such as soil nutrients, water, and sunlight. In this overstocked condition a stand is vulnerable to insect and disease infestation as well as decline from drought.

The tree species distribution in this stand is as follows:

Virginia pine	78%
Sweetgum	18%
Loblolly pine	4%
Total	100%

The current size class distribution in this stand is 3% saw timber (11.0 inches or greater in dbh [dbh = diameter at breast height - e.g. the tree diameter measured at 4.5 feet, approximately breast height]); 36% pole size (5.0 - 10.9 inches dbh); and 61% small tree (sapling to 4.9 inches dbh).

An increment boring was taken from a 6.5 inch DBH (Diameter at breast height, 4.5 feet above ground) Virginia pine. It revealed that the tree is twenty years old and has grown two inches in diameter in the last eleven years.

Virginia pine is a shallow rooted species tree which cannot be thinned. Virginia pine has a lifespan of approximately fifty years. Given these two factors and that the Virginia pine is already twenty years old, the prescription for this stand is to let it develop naturally over the next fifteen years. The high stocking will be reduced through natural competition of the trees for water, sunlight and nutrients.

The entire stand should be re-examined in 15 years (2029) to update the management recommendations.

NATURAL RESOURCE PROTECTION

GYPSY MOTH

The Gypsy Moth has been a major problem in the Northeastern U.S. since 1869. Over the years it has become a primary defoliator of hardwood trees in Maryland. Infestation and mortality has also occurred on other areas of Doncaster Demonstration Forest, and a salvage harvest took place.

Several factors determine the likelihood of a woodlot being infested by the Gypsy Moth. The type of trees present is one factor. Oak are among the most preferred species, also favorable are Sweetgum, Blackgum, Dogwood, Hickory, Maple and Pine. Least preferred species include American Holly, American Sycamore, Ash, Black Locust and Yellow Poplar.

The condition of the woodlot is also important. Areas with considerable percentage of cull, damaged and deformed trees are highly susceptible. These conditions provide structural refuges which provide hiding places for larvae, pupae and eggs.

If a stand is attacked by Gypsy Moth, its vulnerability will determine the amount of mortality. Trees in stress conditions, (over crowded, over-mature, overtopped, damaged), are highly vulnerable.

Good forest management can reduce the susceptibility of the woodlot to attacks by Gypsy Moth. Thinning can be used to reduce the amount of structural refuges and the percentage of desirable food species present in the woodlot. Maintaining a healthy, vigorous forest is the best prevention in controlling susceptibility and reducing damage.

SOUTHERN PINE BARK BEETLE

Southern Pine Bark Beetle attacks live trees by boring through the bark where eggs are laid. Trees attacked by Pine Bark Beetle are girdled as the beetle constructs its egg galleries in the phloem layer of the bark.

General pine bark beetles attack trees that are dying or in a state of decline due to a variety of stress factors such as drought, mechanical injury, soil compaction in the root zone, smog, and root rot. Damage from the beetle can be identified by the red needles from the dying crown, reddish brown particles of boring dust at the base of the tree, pitch tubes in boring holes, and S-shaped galleries on the underside of the bark.

Prompt salvage of the infested trees is the cheapest and often most practical method of control. If the infested trees remain in the stand and even greater number of trees may be destroyed by the next generation of beetles. Salvage helps to reduce loss until natural factors supplemented by forestry treatments such as thinning, improve the health and vigor of the stand.

FIRE

The Benny Gary Tract has several well established roads and trails that are accessible through the Tayloe Neck Tract for fire suppression equipment. In the event of a wildfire it should be noted that the property is not accessible from Irene Glenwood Place at this time. The road is passable, however there are large spikes in the road covered by high water most of the year that will flatten tires.

FOREST INTERIOR DWELLING BIRDS TIMBER HARVEST GUIDELINES FOR FIDS HABITAT

The forested areas on this tract contain Forest Interior Dwelling Bird habitat. Populations of many Forest Interior Dwelling Birds (FIDS) are declining in Maryland and throughout the eastern U.S.. The conservation of this habitat is strongly encouraged by the MD. Department of Natural Resources. The following guidelines give highest priority and the greatest protection to the following habitats: riparian forests (including floodplain or bottomland forest), mature or over mature forest in coves and ravines, and overmature forests on upland areas not associated with coves or ravines.

1. Timber harvesting should not result in the creation of any new permanent forest openings. (eg. as a result of logging roads, landing areas, wildlife food plots, etc).
2. No timber harvesting should occur within the buffer of any perennial tidal or non-tidal stream as indicated on USGS 7.5 minute topographic maps.
3. Encourage the use of single tree selection with the retention of 70% or greater canopy closure in the following areas:
 - a. Mature to overmature upland hardwood and mixed hardwood-pine forest.
 - b. Within 150 feet of intermittent streams if high quality FIDS habitat is present.
 - c. Forested coves and ravines containing high quality FIDS habitat.
4. Avoid timber harvesting between April 1-July 31, the breeding season for FIDS.
5. Encourage the retention of at least 8 snags per acre (each 8 inches in diameter or greater) in timber harvest areas. The largest snags possible should be selected for retention. Groups of snags should be favored over individual snags.
6. Encourage the retention of dead and downed woody debris on the forest floor. Slash should be left laying and not placed in windrows or piles. Park like conditions should be avoided.

7. Logging roads and trails:
 - a. Woods roads should be kept to the minimum that will allow access for fire suppression and future management activities.
 - b. Maintain forest canopy closure over the roads (eg. no daylighting)
 - c. Road widths should be less than 15 feet.
 - d. Avoid maintaining grassy roadbeds and berms.
 - e. If "7d" is unavoidable maintain at least 10 inches of grass height throughout the FIDS breeding season.
 - f. Where possible allow logging roads to succeed to native vegetation.

CHESAPEAKE BAY CRITICAL AREA

The Chesapeake Bay Critical Area includes all land and waters within 1000 feet of the mean high water line of tidal waters, wetlands and tributary streams. The Charles County Forest Conservancy District Board must review and recommend approval of all commercial timber harvesting greater than one acre within the Critical Area.

FOREST BUFFER MANAGEMENT

All within 100 feet landward from mean high water line of tidal waters, tributary streams and tidal wetlands within the Critical Area represents the 100 foot buffer zone. With the presence of steep slopes (greater than 15%) the buffer shall be expanded 4 feet for every percent of slope greater than 15 percent. Approximately 2/3 thirds of this property fall within the Chesapeake Bay Critical Area.

Forest buffers provide several important functions to watersheds. Listed below are several benefits of forest buffers:

1. The developed forest floor traps sediment, nutrients, and potentially harmful or toxic substances in runoff from entering the Bay and other water courses.
2. Minimizes the adverse effects of human activities on wetlands, shorelines, stream banks, tidal waters and aquatic resources.
3. Maintains an area of transitional habitat between aquatic and upland communities.
4. Maintain the natural environment of streams and protect riparian wildlife habitat.

NATURAL HERITAGE

The term "Natural Heritage" is used to describe the plants, animals and natural ecosystems which make up the landscape of Maryland. Thus, Natural Heritage Stewardship is concerned with the preservation of the plants, animals and ecosystems of the state for the many benefits they provide, especially those determined to be threatened, endangered, or in need of conservation. The DNR-Natural heritage Division maintains a database of the locations where sensitive species are known to exist. A search of this database revealed there are no threatened, or endangered species located on this property.

INVASIVE PLANT CONTROL

Invasive plants have not been documented on this tract. However, Japanese silt grass is present on the adjacent tract. This tract should be monitored and if any are found they should be controlled with herbicides. Invasive plants share some important growth characteristics that allow them to grow out of control. Listed below are several of these traits:

1. spreading aggressively by runners or rhizomes
2. producing large numbers of seeds that survive to germinate
3. dispersing seeds away from the parent plant through various means such as wind, water, wildlife and people.

Invasive plants impact the environment by growing and spreading rapidly over a large area displacing native plants, including some that maybe rare species. Invasive plant control is not needed at this time on the property.

BOUNDARY LINE MAINTENANCE

The boundary lines on this property have been painted to DNR standards in 2011-2012. The boundary lines should be cut out and maintained annually to create visual breaks in the landscape for identification and easier access

MANAGEMENT PRACTICE SCHEDULE

Completion Date	Practice	Stand	Acres
February 2024	Re-examine for Commercial Thinning	2	68.4
Continuous	Monitor for Invasive Species	1-3	225.0
Continuous	Maintain Property Boundaries	1-3	225.0
Continuous	Maintain Roads and Trails	1-3	225.0
Continuous	Monitor for Insect And Disease Problems	1-3	225.0
February 2029	Re-examine to Update Management Recommendations	1-3	225.0

NON-TIDAL WETLANDS/ BEST MANAGEMENT PRACTICES

Non-tidal wetlands (wetlands not adjacent to tidal waters) are found all across the state. These wetlands include marshes, bogs, and swamps, and may include other areas that are only flooded or saturated for fairly short periods of time. Non-tidal wetlands are delineated on the ground by the presence of wetland hydrology, wetland soils, and wetland vegetation. Many of these wetlands are forested.

These wetland areas often provide important benefits such as water quality improvement, flood control, natural products for human use, forest products and aesthetic and recreational opportunities. They also provide habitat for a wide variety of plants and animals, many of which depend on wetlands for all or part of their life cycle.

Activities in non-tidal wetlands, such as excavation, filling, draining, or other activities which may change the water level will require a permit issued by the Maryland DNR - Water Resources Administration. Forestry practices do not require a non-tidal wetlands permit from the Department of Natural Resources if the land use remains as forestry. Forestry activities are planting, cultivating, thinning, harvesting or any other activity undertaken to use the forest resources or to improve their quality or productivity. Activities that change non-tidal wetlands to another land use, including but not limited to agriculture or development, are not forestry activities.

The non-tidal wetland regulations require that Best Management Practices (BMPs) to protect non-tidal wetlands be incorporated into the sediment and erosion control plan required for forest harvest operations. The sediment and erosion control plan must be prepared by a registered professional forester. These Best Management Practices or "BMPs", which describe how certain operations should be carried out, must be used to prevent or minimize any adverse impacts on water quality or the functional characteristics of the wetland.

Best Management Practices are conservation measures that:

- * Control soil loss and sediment deposition in non-tidal wetlands
- * Minimize water quality degradation caused by sediment
- * Minimize adverse impacts to circulation patterns or flow of surface water or ground water
- * Minimize any adverse impact to the chemical, physical or biological characteristics of non-tidal wetlands
- * Prevent non-tidal wetlands from being changed to upland or any other area that no longer meets the non-tidal wetland definition

Examples of BMPs include:

- * Designing stream crossings to have the shortest distance feasible
- * Locating roads and log decks on upland areas to minimize adverse wetland impacts
- * Harvesting with specialized equipment such as high flotation equipment when non-tidal wetland soils and hydrology have the potential to be adversely affected
- * Using mats or similar temporary structures to reduce compaction or rutting
- * Conduct forest harvest operations during dry seasons
- * Follow natural contours of the land, whenever feasible