

SUSTAINABLE FORESTRY

FOREST STEWARDSHIP PLAN

For:

Stoney Demonstration Forest

Maryland Department of Natural Resources Forest Service

Property is located on the north side of Nova Scotia Road
between Tower Road and the Cullum Road in Creswell, MD.

Maryland Grid: 614,000 x 1,011,000

Sub Watershed: Bush River – 2130701

In

Harford County

On

317.87 Forest Acres

Prepared By:

Michael J. Huneke, Project Manager

Wayne Merkel, Regional Forester

Frank Lopez, Project Forester

Tom Frederick, Project Forester

Shawn Day, Forest Ranger

Harford County Forest Conservancy District Board

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Maryland
Department of
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Objectives:

To use scientific forest management techniques to demonstrate the integration of the multiple uses of the forest land of Stoney Demonstration Forest, to include the production of commercial forest products, the enhancement of wildlife habitat, the protection of soil and water resources, and the maintenance as a forest recreation site in Harford County, Maryland. The Forest shall continue to serve as an educational resource where a variety of silvicultural practices, forest best management practices, and wildlife habitat management practices can be implemented and studied by school groups, landowners and other interested individuals. Stoney Demonstration Forest shall be managed to provide these values in a sustainable fashion for the benefit and enjoyment of the Citizens of Maryland and for future generations.

Overview:

Stoney Demonstration Forest consists of 317.87 acres of hardwood forest located in the Creswell area of Harford County. The property was acquired by the State of Maryland on November 25, 1981. The property is the remnant of the once-extensive timberlands (2000 acres) owned by Mr. Sydney Pevery. The property was managed by the DNR Forest Service from acquisition until 1996 when management was transferred to the DNR Park Service. In August of 2005, the property was transferred back to the DNR Forest Service for management. In general, the forest was established approximately 90 years ago when agricultural land was abandoned and allowed to revert back to a forested condition. The woodland has a history of being managed for commercial timber production, with numerous timber sales occurring in the 1980's. Hunting is allowed on the forest under the direction of the DNR Wildlife and Heritage Service. A 2-mile loop road was established and designed to demonstrate proper road construction techniques and best management practices.

Stoney Demonstration Forest is bounded on the east by privately owned woodland and farm land, on the north by a wooded housing development, on the west by James Run and privately owned woodland, and on the south by Nova Scotia Road, where a small gated parking lot exists.

The topography of the forest consists of gently rolling terrain, typical of the Piedmont Plateau in Central Harford County. The land is broken into three drainages with a northeast to southwest orientation, all flowing into James Run. The highest elevation on the Forest is 325 feet above sea-level, found along the northeastern property boundary. Many spring seeps and forested wetlands occur throughout the property and abrupt steep slopes in excess of 45% can be found adjacent to James Run.

An inventory of the forest condition was completed during the Summer of 2006, and data from that inventory was utilized to compile this Forest Stewardship Plan. More than 100 data points were inventoried where factors including stand density, species composition, wildlife habitat value, timber value, and site index were surveyed. This data can be found in the Bel Air Office of the DNR Forest Service. The DNR Wildlife and Heritage Service

has indicated that there are no known rare, threatened or endangered species of plant or animal located on this property. Stoney Forest is suitable Forest Interior Dwelling Bird habitat.

Soils Description:

Six soil series exist on Stoney Demonstration Forest, including the Aldino, Delanco, Kelly, Legore, Neshaminy, Watchung series and Alluvial Land. The attached Soils Map delineates the occurrence of each soil type. A brief description of each soil series follows:

Aldino Series:

Aldino soils are moderately well-drained, located on level uplands of the Piedmont Plateau. These soils are moderately deep having formed over a fragipan. These sites are suited to crops, pasture and woodland. Unprotected soils possess a hazard for erosion. Native vegetation consists of mixed upland hardwoods, mainly oaks.

Soils Present:

(AdB) - Aldino silt loam, 3-8% slopes

(AsB) – Aldino very stony silt loam, 0-8% slopes

Alluvial Land (Av):

This soil type consists of soil material washed from uplands and recently deposited on flood plains. Generally, the soil materials consist of sand and sandy loams. This soil is typically poorly drained, and flooding occurs usually more than once a year. This soil is seldom cultivated. It is well suited for woodland and wildlife habitat.

Delanco Series:

The Delanco Series consists of deep, moderately well-drained, nearly level to gently sloping soils. These soils are located on terraces bordering streams in the Piedmont Region of Harford County. Delanco soils are often wet in the spring and they are slow to warm up. Native vegetation consists of water tolerant hardwoods. These sites are well-suited to most farm uses, wildlife habitat and forest land.

Soils Present:

(DcB) - Delanco silt loam, 3-8% slopes

Kelly Series:

Kelly soils are deep and somewhat poorly drained, on sloping sites in the Piedmont Plateau. These soils possess a heavy clay subsoil. Native vegetation consists of mixed oaks and other hardwoods. Kelly soils are difficult to work because plowing turns up the heavy sticky subsoil, and the water table is near the surface. Many areas are very stony.

(KfD) - Kelly very stony silt loam, 3 to 25% slopes

Legore Series:

Legore soils are deep and well-drained, located on the Piedmont Plateau in Harford County. Native vegetation consists of mixed oaks and other hardwoods. These soils are limited in areas of slope and erosion.

Soils Present:

- (LfC) – Legore very stony silt loam, 0-15% slopes
- (LfD) – Legore very stony silt loam, 15-25% slopes
- (LfE) – Legore very stony silt loam, 25-45% slopes
- (LgC3) - Legore silty clay loam, 8-15% slopes, severely eroded

Neshaminy Series:

Neshaminy soils are deep and well-drained, located on nearly level to steep sites on the Piedmont Plateau. These soils are easy to work and well suited to most farm uses except where excessive stoniness or slope provides limitations. Native vegetation consists of mixed upland hardwoods, mainly oaks.

Soils Present:

- (NeB2) - Neshaminy silt loam, 3 to 8 percent slopes, moderately eroded
- (NsC) - Neshaminy and Montalto very stony silt loams, 0-15% slopes
- (NsD) - Neshaminy and Montalto very stony silt loams, 15-25% slopes
- (NsE) - Neshaminy and Montalto very stony silt loams, 25-45% slopes

Watchung Series:

Watchung soils are deep, poorly drained, nearly level soils located on flats in the Piedmont Plateau region of Harford County. Often these soils are found adjacent to minor drainageways. These soils are seldom cultivated or grazed because of the poor drainage. They are primarily suited to forest wetlands. Native vegetation consists of bottomland hardwoods.

Soils Present:

- (WaB) – Watchung silt loam, 3-8% slopes
- (WcB) - Watchung very stony silt loam, 0-8% slopes

Compartment 1

Compartment 1 consists of 51.7 acres located on the southern end of Stoney Forest, bound by Nova Scotia Road and private property to the east and west. Compartment 1 is divided into four Units (1-A, 1-B, 1-C and 1-D). The purpose of this compartment is to compare a control area where no forest management activities have ever been employed versus an area where considerable forest management has occurred. Unit 1A serves as the unit where no forest management has taken place, while Units 1-B,C and D serve as the actively managed area. Descriptions and management recommendations for these Management Units follow.

Management Unit 1-A:

Acres: 18.4

Dominant Overstory Species: Yellow-Poplar, American Beech, White Oak, Northern Red Oak

Dominant Understory Species: American Beech, Blackgum, Maple-Leaf Viburnum, Arrowwood Viburnum, Witch Hazel, Multiflora Rose

Developmental Stage: 23% Mature Sawtimber, 60% Immature Sawtimber, 17% Poletimber

Age: Uneven-Aged

Site Growth Potential: Good

Stocking: 100% High

Basal Area: 147 sqft/ac

Trees/Acre: 120

Soil Type: DcB, NsC, NsD

Percent Desirable Trees: 87%

Management Unit 1-A consists primarily of mature and immature sawtimber-sized hardwood trees, including yellow-poplar, American beech, white ash and mixed oaks. The understory consists of a mixture of hardwood seedlings, multiflora rose, arrowwood and maple-leaf viburnum, American beech and blackgum. There exists on average 8 den trees per acre, 16 standing dead snags per acre, and 36 down logs per acre. Since the Department of Natural Resources acquired Stoney Forest, there has been no silvicultural practices applied to this Management Unit, and this area has served as a “control” area for comparison with other Management Units where a variety of silvicultural practices have and will be applied. It is recommended to maintain this practice and continue to retain Management Unit 1-A in its current condition throughout the duration of this plan, to provide a visual image of a forested condition where no silvicultural practices have occurred.

Management Unit 1-B, C, D:

Acres: 1-B 9.8 1-C 9.9 1-D 13.7

Dominant Overstory Species: Yellow-Poplar, American Beech, White Oak, Northern Red Oak, Black Oak

Dominant Understory Species: Multiflora Rose, Maple-Leaf Viburnum, Arrowwood Viburnum, Spicebush, American Hornbeam, American Beech, Red Maple

Developmental Stage: 44% Mature Sawtimber, 48% Immature Sawtimber, 5% Poletimber, 3% Small Tree

Age: 2 Aged, 70years old and 20 years old **Site Growth Potential:** Good

Stocking: 96% High **Basal Area:** 125 sqft/ac **Trees/Acre:** 192

Soil Type: AsB, DcB, NsC,

Percent Desirable Trees: 92%

Management Units 1-B, C and D consists primarily of mixed hardwoods including yellow-poplar, American beech, mixed oaks and occasional white ash, hickory and blackgum. The understory consists of multiflora rose, arrowwood and maple-leaf viburnum, spicebush, and a variety of small trees including flowering dogwood, blackgum, American beech, red maple, and American hornbeam. In 1986, a basal area thinning was conducted in this unit and much of the unacceptable growing stock was removed at that time. The harvest resulted in the formation of a new age class that is evident throughout the stand and is approximately 20 years old. Growth in this unit is rapid, and currently the stand has a high level of stocking. During the data collection phase of this Forest Stewardship Plan, it was discovered that some of the dominant trees in this unit were declining and had rotting cores. For this reason, it is recommended to start the process of regenerating this forest stand.

It is recommended to apply a Deferment Harvest sometimes called a Deferred Rotation Harvest method to regenerate this forest stand over time. Starting in 2018, it is recommended to perform one Deferment Harvest on unit 1-B on 9.8 acres. It is recommended to repeat this practice in unit 1-C in 2028 harvesting an additional 9.9 acres, followed by the third and final Deferment Harvest in Unit 1-D in 2038. At this point the entire Unit will be completely regenerated. It is recommended to retain a 200' no-cut buffer zone along Nova Scotia Road and a 100' no-cut buffer zone adjacent to the property lines.

It is recommended to retain twenty (20) square feet of basal area per acre of quality dominant or co-dominant trees following the Deferment Harvest. This equates to approximately fifteen (15) quality dominant or co-dominant trees per acre. All other trees 2" and greater will be cut, unless otherwise specified. Non-commercial timber stand improvement (TSI) and tending of the regeneration will be essential to maintain a

healthy forest condition and a developing stand of acceptable growing stock. These “deferred trees” will then remain in the stand for another full rotation, in our case 80 years, when the stand would be scheduled for harvesting again, making it a two aged stand.

This method is very useful in stands with shade intolerant or shade intermediate species, in that it opens the canopy enough to let appropriate amounts of sunlight in for these species to regenerate. In effect the growth return is very comparable to a clear-cut harvest as far as regeneration is concerned, but it also has several other advantages as well. For example, it is much more aesthetically pleasing than an ordinary clear-cut. The trees remaining make the stand look less “destructured” than a clear-cut. It doesn’t hide the harvest, but afterwards it still looks like a forest and doesn’t have the appearance of a huge opening made in the forest. Also, from a distance it makes the harvest less visible and allows it to blend in to the surrounding better. In addition to aesthetics it also adds structural diversity to the stand, which can be very advantageous to wildlife. Retention trees also supply seed to the site after harvest, which should be of good quality since dominant and co-dominant trees were retained.

The Deferment Harvest sometimes called Deferred Rotation Harvest as applied to Stoney Forest is an adaptation of the original idea created in Europe. The original idea was to retain 40-50 sq. feet of basal area of dominant and co-dominant trees in a stand. Then at half the rotation age the remaining trees were to be harvested. This method would result in mature merchantable timber of some quantity being available for harvest on a continual basis at half the normal rotation age of the site. The Deferment Harvest has been adapted in several states since that time to make it more adaptable to fit the needs of Appalachian or Central Hardwood stands. This “newer” adapted version is what is being applied to Stoney Forest.

This harvest practice will be performed by a Maryland Licensed Forest Products Operator in accordance with local sediment control guidelines, and care shall be taken to protect all streams and waterways. At least 60 square feet of basal area per acre of acceptable growing stock will be retained in stream buffer management zones in accordance with the “Soil Erosion and Sediment Control Guidelines for Forest Harvest Operations in Maryland”, Department of Natural Resources Public Lands Forest Service publication, dated September 1993. The harvests shall not be performed during Forest Interior Dwelling Bird nesting seasons. This stand will be monitored for insect and disease problems throughout the duration of this plan.

Compartment 2

Compartment 2 consists of 65.3 acres of forest land located on the western side of Stoney Forest, bordering James Run and private land holdings. Compartment 2 is divided into three Units (2-A, 2-B, & 2-C)). The purpose of this compartment is to demonstrate commercial intermediate silvicultural practices which are employed in a forest stand at a time between the establishment of the unit and the ultimate regeneration of the unit. This compartment will demonstrate a commercial timber stand improvement (TSI) practice performed for pulpwood, a Crop Tree Release (CTR) to enhance wildlife habitat and timber quality, and a standard basal area thinning for sawtimber and other quality forest products. Descriptions and management recommendations for these Management Units follow.

Management Unit 2-A:

Acres: 6.7

Dominant Overstory Species: Yellow-Poplar, American Beech, White Oak, Northern Red Oak, Hickory and Black Oak

Dominant Understory Species: Multiflora Rose, Maple-Leaf Viburnum, Arrowwood Viburnum, Spicebush, American Hornbeam, American Beech

Developmental Stage: 29% Mature Sawtimber, 63% Immature Sawtimber, 6% Poletimber, 1% Small Tree

Age: 70 years old

Site Growth Potential: Good

Stocking: 89% High

Basal Area: 119 sqft/ac

Trees/Acre: 159

Soil Type: Av, NsC, NsE

Percent Desirable Trees: 85%

Management Unit 2-A consists primarily of mixed hardwoods including yellow-poplar, American beech, mixed oaks and occasional white ash, hickory, red maple and blackgum. The understory consists primarily of spicebush, maple-leaf and arrowwood viburnum, witch hazel, multiflora rose, American Beech and American hornbeam. There was an average of 3 den trees per acre, 15 snags per acre and 23 down logs per acre. At 89%, the stocking of this unit is high.

To reduce the stocking of this unit to a more suitable level, and to demonstrate a type of intermediate thinning, it is recommended to perform a commercial timber stand improvement practice (TSI) for pulpwood in this unit during the winter of 2008. For this practice, all unacceptable growing stock will be removed, including trees of poor form,

species or condition. Since this unit is dominated by yellow-poplar, it is recommended to retain at least 90 square feet of basal area of acceptable growing stock following this thinning. This harvest practice will be performed by a Maryland Licensed Forest Products Operator, in accordance with local sediment control guidelines, and care shall be taken to protect all streams and waterways in accordance with the "Soil Erosion and Sediment Control Guidelines for Forest Harvest Operations in Maryland", Department of Natural Resources Public Lands Forest Service publication, dated September 1993. A 100' no-cut buffer zone shall be retained along the property boundary lines in this unit. The harvests shall not be performed during Forest Interior Dwelling Bird nesting seasons. This stand will be monitored for insect and disease problems throughout the duration of this plan.

Management Unit 2-B:

Acres: 5.0

Dominant Overstory Species: Yellow-Poplar, White Oak, Hickory, American Beech, Northern Red Oak, Red Maple,

Dominant Understory Species: American Beech, Flowering Dogwood, Blackgum, Red Maple, Spicebush, Multiflora Rose, Maple Leaf and Arrowwood Viburnum

Developmental Stage: 7% Mature Sawtimber, 79% Immature Sawtimber, 5% Poletimber, 9% Small Tree

Age: 60 years old

Site Growth Potential: Good

Stocking: 106% High

Basal Area: 142 sqft/ac

Trees/Acre: 185

Soil Type: Av, NsC

Percent Desirable Trees: 85%

Management Unit 2-B consists primarily of mixed hardwoods including yellow-poplar, white oak, American beech, hickory, northern red oak and white ash. The understory consists primarily of spicebush, maple-leaf and arrowwood viburnum, and small trees including American Beech and American hornbeam and flowering dogwood. There was an average of 0 den trees per acre, 10 snags per acre and 35 down logs per acre. In 1984, a commercial TSI practice for firewood was performed in portions of this stand. Despite this tending, the stocking of this unit remains high at 106%.

To reduce the stocking of this unit to a more suitable level, and to demonstrate a second type of intermediate thinning, it is recommended to perform a crop tree release practice (CTR) in this unit during the winter of 2008. For this practice, approximately 10-20 individual trees per acre of exceptional quality which offer a particular desired value for wildlife, timber, or aesthetics shall be retained and identified as crop trees.

These trees will be marked with paint with a “C” at eye level. Undesirable non-crop trees located adjacent to crop trees shall be removed, or girdled and left standing as dead snags for wildlife habitat. Snags will only be created in areas where they will not pose a threat to public safety. This practice will result in the release of the crop trees from intertree competition thereby creating a better growing environment for the crop trees. The crop trees will respond with an enhanced rate of growth and greater mast production. By reducing the stocking of this unit to a more acceptable level, overall forest health will be enhanced. Areas in this unit which do not contain any suitable crop trees will be left in the current condition. This crop tree release could be performed in conjunction with other commercial operations in this compartment and implemented by the same Forest Products Operator.

This harvest practice will be performed by a Maryland Licensed Forest Products Operator in accordance with local sediment control guidelines, and care shall be taken to protect all streams and waterways in accordance with the “Soil Erosion and Sediment Control Guidelines for Forest Harvest Operations in Maryland”, Department of Natural Resources Public Lands Forest Service publication, dated September 1993. The harvests shall not be performed during Forest Interior Dwelling Bird nesting seasons. This stand will be monitored for insect and disease problems throughout the duration of this plan.

Management Unit 2-C:

Acres: 53.6

Dominant Overstory Species: Yellow-Poplar, American Beech, White Oak, Northern Red Oak, Hickory and Black Oak

Dominant Understory Species: Multiflora Rose, Maple-Leaf Viburnum, Arrowwood Viburnum, Spicebush, American Hornbeam, American Beech

Developmental Stage: 29% Mature Sawtimber, 63% Immature Sawtimber, 6% Poletimber, 1% Small Tree

Age: 70 years old

Site Growth Potential: Good

Stocking: 89% Fully Stocked

Basal Area: 119 sqft/ac

Trees/Acre: 159

Soil Type: Av, NsC, NsE

Percent Desirable Trees: 85%

Management Unit 2-C consists primarily of mixed hardwoods including yellow-poplar, American beech, mixed oaks and occasional white ash, hickory, red maple and blackgum. The understory consists primarily of spicebush, maple-leaf and arrowwood viburnum, witch hazel, multiflora rose, American Beech and American hornbeam. There

was an average of 3 den trees per acre, 15 snags per acre and 23 down logs per acre. At 89%, the stocking of this unit is high.

To reduce the stocking of this unit to a more suitable level, to increase forest health and to demonstrate a third type of intermediate thinning, it is recommended to perform a commercial basal area thinning in this unit during the winter of 2008. For this practice, commercial immature and mature sawtimber shall be removed ensuring that 80 square feet of basal area per acre of acceptable growing stock remains on the stump evenly distributed throughout the unit after the harvest. All merchantable unacceptable growing stock shall be removed during this practice to demonstrate the proper techniques for performing a basal area thinning. This thinning type is the most common timber harvest technique performed in Piedmont Region of Central Maryland, however it is often performed improperly resulting in a diameter-limit cut or techniques referred to as "high-grading". This practice will demonstrate a technique for producing a high level of financial return while enhancing the forest health in the process. Care should be taken to preserve wildlife den trees during this harvest.

This harvest practice will be performed by a Maryland Licensed Forest Products Operator in accordance with local sediment control guidelines, and care shall be taken to protect all streams and waterways in accordance with the "Soil Erosion and Sediment Control Guidelines for Forest Harvest Operations in Maryland", Department of Natural Resources Public Lands Forest Service publication, dated September 1993. The harvests shall not be performed during Forest Interior Dwelling Bird nesting seasons. A 200' no-cut buffer zone shall be established along James Run and a 100' no-cut buffer zone shall be maintained along the property boundaries to the west. No harvesting equipment should enter into the steeply sloped areas adjacent to James Run. This stand will be monitored for insect and disease problems throughout the duration of this plan.

Compartment 3

Compartment 3 consists of 126.5 acres located on the northern and central portion of Stoney Forest, bound by private property to the north. Compartment 3 is divided into 14 Units (3-A – 3-N). The purpose of this compartment is to demonstrate and compare various silvicultural systems used to regenerate a forest stand and show the regeneration at various stages of development. The compartment will demonstrate various stand replacement practices including group selection, clear cuts, shelterwood harvests and seed tree harvests performed at 10 year intervals over time. Descriptions and management recommendations for these Management Units follow.

Management Unit 3-A:

Acres: 6.9

Dominant Overstory Species: Red Maple, Sweetgum, Yellow-Poplar, White Ash

Dominant Understory Species: Multiflora Rose, Maple-Leaf Viburnum, Arrowwood Viburnum, Spicebush, Sweetgum, Red Maple

Developmental Stage: 2% Immature Sawtimber, 33% Poletimber, 64% Small Tree

Age: 23 years old even-aged

Site Growth Potential: Good

Stocking: 99% High

Basal Area: 84 sqft/ac

Trees/Acre: 1116

Soil Type: KfD, WcB

Percent Desirable Trees: 86%

Management Unit 3-A is a 23 year-old regenerating poletimber-sized forest stand established after a demonstration clearcut was performed by the DNR Forest Service in 1984. Currently, this unit is regenerating nicely with a variety of hardwood tree species. On average, there are 0 den trees and 0 snags per acre and 12 down logs per acre. This stand provides educational value by demonstrating how quickly a forest can regenerate after a stand replacement harvest. There has been no tending or TSI performed in this unit since the harvest. It is therefore recommended to perform a non-commercial timber stand improvement (TSI) practice on this unit to reduce the stocking to a more acceptable level to promote forest health, timber quality and wildlife habitat. During this non-commercial TSI, at least 800 trees per acre of acceptable growing stock should be retained, or approximately 60 square feet of basal area per acre. This could be performed by basal pruning, girdling or slash and squirt techniques with an approved herbicide. It is recommended to perform this TSI practice in the winter of 2008 and the unit should be reevaluated in 2018 to determine if the non-commercial TSI should be repeated. By reducing the density of this unit, the desirable trees will be freed from intertree

competition creating a residual forest of desirable trees growing in a healthier condition. This TSI shall not be performed during Forest Interior Dwelling Bird nesting seasons, and it will be performed under the direction of a Maryland Licensed Pesticide Applicator. This stand will be monitored for insect and disease problems throughout the duration of this plan.

Management Unit 3-B:

Acres: 13.1

Dominant Overstory Species: Yellow-Poplar, American beech, Hickory, Northern Red Oak, Black Oak, White Ash

Dominant Understory Species: Spicebush, Arrowwood Viburnum, Maple-Leaf Viburnum, American Beech, American Hornbeam

Developmental Stage: 33% Mature Sawtimber, 53% Immature Sawtimber, 2% Poletimber, 6% Small Tree

Age: Two-aged, 70years old and 21 years old **Site Growth Potential:** Good

Stocking: 99% High **Basal Area:** 133 sqft/ac **Trees/Acre:** 174

Soil Type: KfD, NsC

Percent Desirable Trees: 78%

Management Unit 3-B is a two aged hardwood stand that was thinned in 1986. The unit consists primarily of yellow-poplar with occasional mixed oaks and hickory in the overstory. The understory consists primarily of spicebush with viburnums and small trees established after the 1986 thinning. In this unit, there was an average of 11 den trees per acre, 3 snags per acre and 17 down logs per acre.

This management unit will serve as a site for demonstrating the group selection silvicultural practice. For this practice, small openings will be made in the forest to encourage the regeneration of shade tolerant and shade intolerant trees, and to demonstrate a technique for regenerating a forest in small increments over time. The diameter of the openings will be 200' or roughly 2x the height of the existing trees. This will produce an opening roughly $\frac{3}{4}$ acres in size. It is recommended to perform four group selection cuttings in this unit in the winter of 2008, repeating this practice with four additional $\frac{3}{4}$ acre cuttings in 2018, 2028 and 2038. These group selection cuttings should be performed in conjunction with the clearcuts, shelterwood and seed tree harvests recommended to be incorporated into adjacent units.

This harvest practice will be performed by a Maryland Licensed Forest Products Operator in accordance with local sediment control guidelines, and care shall be taken to protect all streams and waterways in accordance with the "Soil Erosion and Sediment

Control Guidelines for Forest Harvest Operations in Maryland”, Department of Natural Resources Public Lands Forest Service publication, dated September 1993. The harvests shall not be performed during Forest Interior Dwelling Bird nesting seasons. Non-commercial TSI may be required periodically within the groups to maintain a high percentage of acceptable growing stock. This stand will be monitored for insect and disease problems throughout the duration of this plan.

Management Unit 3-C, D, E, F:

Acres: 3-C 4.5 3-D 5.5 3-E 3.3 3-F 18.0

Dominant Overstory Species: Yellow-Poplar, American beech, Sweetgum, Red Maple, Hickory, Northern Red Oak, Black Oak, White Ash

Dominant Understory Species: Spicebush, Arrowwood Viburnum, Maple-Leaf Viburnum, American Beech, American Hornbeam, Blackgum

Developmental Stage: 7% Mature Sawtimber, 70% Immature Sawtimber, 19% Poletimber, 3% Small Tree

Age: Even-Aged, 70years old **Site Growth Potential:** Good

Stocking: 74% Fully Stocked **Basal Area:** 88 sqft/ac **Trees/Acre:** 206

Soil Type: NsC, NsD, WaB

Percent Desirable Trees: 84%

Management Unit 3-C, D, E and F are even-aged hardwood stands that will be used to demonstrate the clearcut method of forest stand harvest and regeneration. The unit consists primarily of yellow-poplar, American beech, red maple and occasional mixed oaks and hickory in the overstory. The understory consists primarily of spicebush with viburnums and multiflora rose. In these units, there was an average of 2 den trees per acre, 6 snags per acre and 45 down logs per acre. A basal area thinning was completed in Unit 3-F in 1988.

It is recommended to clearcut management unit 3-C in the winter of 2008. Management Unit 3-D should be clearcut in 2018, management unit 3-E should be clearcut in 2028 and 3-F should be clearcut in 2038. It is recommended to leave a 100' no-cut buffer zone adjacent to the property lines. Forest buffers consisting of at least 60 square feet of basal area per acre of acceptable growing stock will also be retained around any riparian areas in accordance with the “Soil Erosion and Sediment Control Guidelines for Forest Harvest Operations in Maryland”, Department of Natural Resources Public Lands Forest Service publication, dated September 1993. The harvests will be completed by a Maryland Licensed Forest Products Operator and the harvests shall not be performed during Forest Interior Dwelling Bird nesting seasons. The forest stands will be

reestablished by natural regeneration methods, and the regeneration will be monitored and maintained with TSI as needed over time. These units will demonstrate the proper use of clearcutting as a management tool and they will show various stages of natural regeneration over time. These stands will be monitored for insect and disease problems throughout the duration of this plan.

Management Unit 3-G, H, I, J:

Acres: 3-G 4.2 3-H 6.1 3-I 6.4 3-J 28.1

Dominant Overstory Species: Yellow-Poplar, American Beech, White Oak, Northern Red Oak, Hickory and Black Oak

Dominant Understory Species: Multiflora Rose, Maple-Leaf Viburnum, Arrowwood Viburnum, Spicebush, American Hornbeam, American Beech

Developmental Stage: 29% Mature Sawtimber, 63% Immature Sawtimber, 6% Poletimber, 1% Small Tree

Age: 70 years old

Site Growth Potential: Good

Stocking: 89% Fully Stocked

Basal Area: 119 sqft/ac

Trees/Acre: 159

Soil Type: Av, KfD, LfC, LfE, NsC, NsD

Percent Desirable Trees: 85%

Management Unit 3-G, H, I, and J are even-aged hardwood stands that will be used to demonstrate the seed tree method of forest stand harvest and regeneration. The unit consists primarily of yellow-poplar, American beech, mixed oaks and hickory in the overstory. The understory consists primarily of spicebush with viburnums and multiflora rose. In these units, there was an average of 3 den trees per acre, 15 snags per acre and 23 down logs per acre.

It is recommended to perform a seed tree harvest in management unit 3-G in the winter of 2008. During this practice, approximately 10-15 immature sawtimber-sized seed trees per acre should be left and evenly distributed throughout the cutting unit. These seed trees (northern red oak, white oak and yellow-poplar) should be of exceptional quality, capable of producing seed to regenerate the forest stand. Management Unit 3-H should follow with a seed tree harvest in 2018, management unit 3-I should be harvested with a seed tree method in 2028 and 3-J should be completed with the seed tree harvest in 2038. For demonstration purposes, the seed trees should be left standing and not harvested after adequate regeneration is established. It is recommended to leave a 100' no-cut buffer zone adjacent to the property lines and a 200' no-cut buffer zone along James Run. Forest buffers consisting of at least 60 square feet of basal area per acre of acceptable growing stock will also be retained around any other

riparian areas in accordance with the “Soil Erosion and Sediment Control Guidelines for Forest Harvest Operations in Maryland”, Department of Natural Resources Public Lands Forest Service publication, dated September 1993. The harvests will be completed by a Maryland Licensed Forest Products Operator and the harvests shall not be performed during Forest Interior Dwelling Bird nesting seasons. The forest stands will be reestablished by natural regeneration methods, and the regeneration will be monitored and maintained with TSI as needed over time. These units will demonstrate the proper use of the seed tree method as a management tool and they will show various stages of natural regeneration over time. These stands will be monitored for insect and disease problems throughout the duration of this plan.

Management Unit 3-K, L, M, N:

Acres: 3-K 7.4 3-L 6.8 3-M 5.0 3-N 11.3

Dominant Overstory Species: Yellow-Poplar, American Beech, White Oak, Northern Red Oak, White Ash

Dominant Understory Species: Multiflora Rose, Maple-Leaf Viburnum, Arrowwood Viburnum, Spicebush, American Hornbeam, American Beech

Developmental Stage: 25% Mature Sawtimber, 60% Immature Sawtimber, 11% Poletimber, 2% Small Tree

Age: 70 years old **Site Growth Potential:** Good

Stocking: 111% High **Basal Area:** 143 sqft/ac **Trees/Acre:** 224

Soil Type: AdB, LfC, NsC

Percent Desirable Trees: 96%

Management Unit 3-K, L, M and N are even-aged hardwood stands that will be used to demonstrate the shelterwood method of forest stand harvest and regeneration. The unit consists primarily of yellow-poplar, American beech, mixed oaks and hickory in the overstory. The understory consists primarily of spicebush with viburnums and multiflora rose. In these units, there was an average of 8 den trees per acre, 10 snags per acre and 82 down logs per acre. A basal area thinning was conducted in these units in 1991.

It is recommended to perform a shelterwood tree harvest in management unit 3-K in the winter of 2008. During this practice, approximately 50 square feet of basal area per acre consisting of immature sawtimber-sized seed trees should be left and evenly distributed throughout the cutting unit. This reserved overstory will serve as shelter and as a seed source for the regenerating forest stand. The reserved overstory trees (northern red oak, white oak and yellow-poplar) should be of exceptional quality, capable of

producing seed to regenerate the forest stand and to provide shelter for the regeneration. Management Unit 3-L should follow with a shelterwood harvest in 2018, management unit 3-M should be harvested with a shelterwood harvest in 2028 and 3-N should be completed with the shelterwood harvest in 2038. For demonstration purposes, the reserved overstory trees should be left standing and not harvested after adequate regeneration is established. It is recommended to leave a 100' no-cut buffer zone adjacent to the property lines. Forest buffers consisting of at least 60 square feet of basal area per acre of acceptable growing stock will also be retained around any riparian areas in accordance with the "Soil Erosion and Sediment Control Guidelines for Forest Harvest Operations in Maryland", Department of Natural Resources Public Lands Forest Service publication, dated September 1993. The harvests will be completed by a Maryland Licensed Forest Products Operator and the harvests shall not be performed during Forest Interior Dwelling Bird nesting seasons. The forest stands will be reestablished by natural regeneration methods, and the regeneration will be monitored and maintained with TSI as needed over time. These units will demonstrate the proper use of the shelterwood method as a management tool and they will show various stages of natural regeneration over time. These stands will be monitored for insect and disease problems throughout the duration of this plan.

Compartment 4

Compartment 4 consists of 74.3 acres located on the eastern and central portion of Stoney Forest, bound by private property to the east. Compartment 4 is divided into 2 units (4-A and 4-B). The purpose of this compartment is to demonstrate and compare various best management practices (BMP's) and timber harvesting techniques designed to minimize the impact of forestry operations to streams and wetlands. This compartment will maintain forest wetlands for watershed protection, wildlife habitat, and as an educational resource. In this compartment various stream crossing techniques, including a ford, culvert and bridge will be demonstrated. Management Unit 4-A will demonstrate proper timber harvest techniques in stream buffer zones with the use of a buffer management plan. Descriptions and management recommendations for these Management Units follow.

Management Unit 4-A:

Acres: 5.4

Dominant Overstory Species: Yellow-Poplar, American beech, Sweetgum, Red Maple, Hickory, Northern Red Oak, Black Oak, White Ash

Dominant Understory Species: Spicebush, Arrowwood Viburnum, Maple-Leaf Viburnum, American Beech, American Hornbeam, Blackgum

Developmental Stage: 7% Mature Sawtimber, 70% Immature Sawtimber, 19% Poletimber, 3% Small Tree

Age: Even-Aged, 70years old **Site Growth Potential:** Good

Stocking: 74% Fully Stocked **Basal Area:** 88 sqft/ac **Trees/Acre:** 206

Soil Type: AsB, Av, NsC, NsD

Percent Desirable Trees: 84%

Management Unit 4-A is a 70-year old even-aged hardwood forest stand that will be used to demonstrate proper techniques for harvesting timber adjacent to a stream while maintaining compliance with local sediment control regulations. This unit consists primarily of yellow-poplar, American beech, white ash, hickory and mixed oaks. The understory contains spicebush, arrowwood viburnum and maple-leaf viburnum, multiflora rose and American beech. There was an average of 2 den trees per acre, 6 snags per acre and 45 down logs per acre contributing to the wildlife habitat of this unit. Most of this unit is within close proximity of a stream.

It is recommended to perform a basal area thinning and commercial timber stand improvement in the winter of 2008 to remove all unacceptable growing stock and

overstocked sawtimber adjacent to the stream such that after the harvest, the stand shall retain 60 square feet of basal area per acre of evenly spaced acceptable growing stock hardwood trees. To perform this harvest, it will be required to complete a buffer management plan which will need to be approved by the Maryland Department of Environment (MDE) prior to implementing the harvest. All timber cut within 50' of a stream or wetland shall be removed by cable, and all logging slash that inadvertently falls onto the stream must be pulled back to prevent waterway blockage, and equipment will not be allowed within 50' of any water body. This harvest will be performed in accordance with the "Soil Erosion and Sediment Control Guidelines for Forest Harvest Operations in Maryland", Department of Natural Resources Public Lands Forest Service publication, dated September 1993. The harvests will be completed by a Maryland Licensed Forest Products Operator and the harvests shall not be performed during Forest Interior Dwelling Bird nesting seasons. This unit will be monitored for insect and disease problems throughout the duration of this plan.

Best management practices including a ford crossing, bridge and water bars are demonstrated on the forest roads bordering this unit. These best management practices shall be maintained to prevent soil erosion and to serve as educational resources on this forest.

Management Unit 4-B:

Acres: 68.8

Dominant Overstory Species: Yellow-Poplar, American beech, Sweetgum, Red Maple, Hickory, Northern Red Oak, Black Oak, White Ash

Dominant Understory Species: Spicebush, Arrowwood Viburnum, Maple-Leaf Viburnum, American Beech, American Hornbeam, Blackgum

Developmental Stage: 7% Mature Sawtimber, 70% Immature Sawtimber, 19% Poletimber, 3% Small Tree

Age: Even-Aged, 70years old **Site Growth Potential:** Good

Stocking: 74% Fully Stocked **Basal Area:** 88 sqft/ac **Trees/Acre:** 206

Soil Type: AsB, NsC, WaB

Percent Desirable Trees: 84%

Management Unit 4-B is a 70-year old even-aged hardwood forest stand that will be used to demonstrate watershed protection by preserving forest wetlands and riparian forests. Additional Best Management Practices will also be demonstrated in this unit. This unit consists primarily of yellow-poplar, American beech, white ash, hickory and mixed oaks. The understory contains spicebush, arrowwood viburnum and maple-leaf

viburnum, multiflora rose and American beech. There was an average of 2 den trees per acre, 6 snags per acre and 45 down logs per acre contributing to the wildlife habitat of this unit.

It is recommended to maintain this unit in its current forested condition throughout the duration of this plan to protect and preserve the forest wetlands and riparian forests for watershed protection, wildlife habitat and for education. The forest wetlands provide a unique and accessible nature study area within a close proximity of the forest roads. Several pipe culverts are located on the forest roads in this unit and should be maintained in a functional condition for watershed protection and as an educational resource.

Additional Recommendations

Property Boundary Lines:

The Stoney Forest property boundary lines will be maintained and remarked every five years, or as needed to ensure that the boundaries of Stoney Forest are clearly visible from neighboring properties. The boundary line markings shall conform with the DNR standards for property line marking.

Management of Exotic Invasives:

It is recommended to control invasive exotic plants and animals where possible throughout Stoney Forest. Multiflora rose, Japanese stilt grass, mile-a-minute weed and garlic mustard are examples of invasive exotic plants found on Stoney Forest along the road corridors, in the understory and in forest openings. Measures should be taken including the use of herbicide and mechanical means to control these plants. Invasive exotics should be controlled along the road corridors and after timber harvests in areas of regenerating forest. As a demonstration forest, efforts should be made to maintain Stoney Forest as free of invasive exotic plants as possible.

In addition to invasive exotic plants, the hemlock woolly adelgid, gypsy moth, and other common invasive exotic insects exist on the property. It is recommended to monitor for insect problems and manage the forest by using integrated pest management (IPM) techniques to prevent insect related problems.

Forest Road Management:

The 2 mile network of improved forest roads on Stoney Forest will be maintained for recreational and emergency access and to prevent soil erosion. All culverts, bridges, fords, water bars and other BMPs will be periodically inspected and maintained in a functional condition. The shoulders of all maintained roads will be mowed annually in the fall to prevent encroachment of trees and shrubs and to maintain access. Deadfall trees will also be removed as soon as possible to maintain access. Following each timber harvest, the roads will be dressed and returned to a suitable condition. The application of additional stone and grading should be performed as needed to maintain a suitable road surface.

Hunting and Wildlife Management:

Public hunting on Stoney Forest is permitted during the legal hunting seasons with bow, muzzleloader, and shotgun. A free permit is required and is available from the DNR Wildlife and Heritage Service's Gwynbrook Managed Hunt Permit office. Hunting is available for furbearers, forest game, upland game and deer, in accordance with the current hunting laws and regulations of Maryland. It is recommended to continue to maintain the public hunting opportunities on Stoney Forest. Care should be provided to coordinate non-hunting recreational opportunities during non-hunting season if possible.

MANAGEMENT PRACTICE SCHEDULE

<u>Completion Date</u>	<u>Practice</u>	<u>Management Unit</u>	<u>Acres</u>
9/2007 -9/2022	Maintain forest roads and trails and BMPs	Forest Wide	317.87
9/2007 -9/2022	Maintain forest as public hunting facility	Forest Wide	317.87
9/2007 -9/2022	Maintain property boundary lines as needed	Forest Wide	317.87
9/2007 -9/2022	Monitor for insects and disease problems, monitor and control spread of invasive exotic plants	Forest Wide	317.87
9/2007 -9/2022	Perform no forest management in this unit – retain as a control	1-A	18.4
9/2007 -9/2022	Maintain in current condition for watershed protection and as nature study area	4-B	68.8
1/2008	Complete commercial TSI for pulpwood	2-A	6.7
1/2008	Complete Crop Tree Release	2-B	5.0
1/2008	Complete Basal Area Thinning	2-C	53.6
1/2008	Perform 1 st Group Selection	3-B	13.1
1/2008	Complete Clearcut	3-C	4.5
1/2008	Complete Seed Tree Harvest	3-G	4.2
1/2008	Complete Shelterwood Harvest	3-K	7.4
1/2008	Complete TSI/Basal Area Thinning in Buffer Management Zone	4-A	5.4
10/2008	Complete non-commercial TSI	3-A	6.9
1/2018	Perform Deferment Harvest	1-B	9.8

<u>Completion Date</u>	<u>Practice</u>	<u>Management Unit</u>	<u>Acres</u>
1/2018	Perform 2 nd Group Selection	3-B	13.1
1/2018	Complete Clearcut	3-D	5.5
1/2018	Complete Seed Tree Harvest	3-H	6.1
1/2018	Complete Shelterwood Harvest	3-L	6.8
1/2028	Perform Deferment Harvest	1-C	9.9
1/2028	Perform 3 rd Group Selection	3-B	13.1
1/2028	Complete Clearcut	3-E	3.3
1/2028	Complete Seed Tree Harvest	3-I	6.4
1/2028	Complete Shelterwood Harvest	3-M	5.0
1/2038	Perform Deferment Harvest	1-D	13.7
1/2038	Perform 4 th Group Selection	3-B	13.1
1/2038	Complete Clearcut	3-F	18.0
1/2038	Complete Seed Tree Harvest	3-J	28.1
1/2038	Complete Shelterwood Harvest	3-N	11.3
9/2022	Reevaluate Woodland, prepare new Forest Stewardship Plan	Forest Wide	317.87