



Matthews Property
15-Year Forest Management Plan

for

Landowner Information:
Noland Matthews

Property Information:
Location: 16320 Trenton Road, Upperco, Maryland
5th District

Map: 0025 Grid: 0006 Parcel: 0129

MD Watershed: Loch Raven Reservoir (02130805)

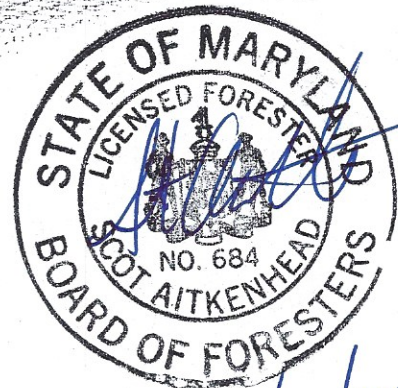
In

Baltimore County, Maryland

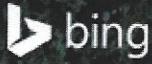
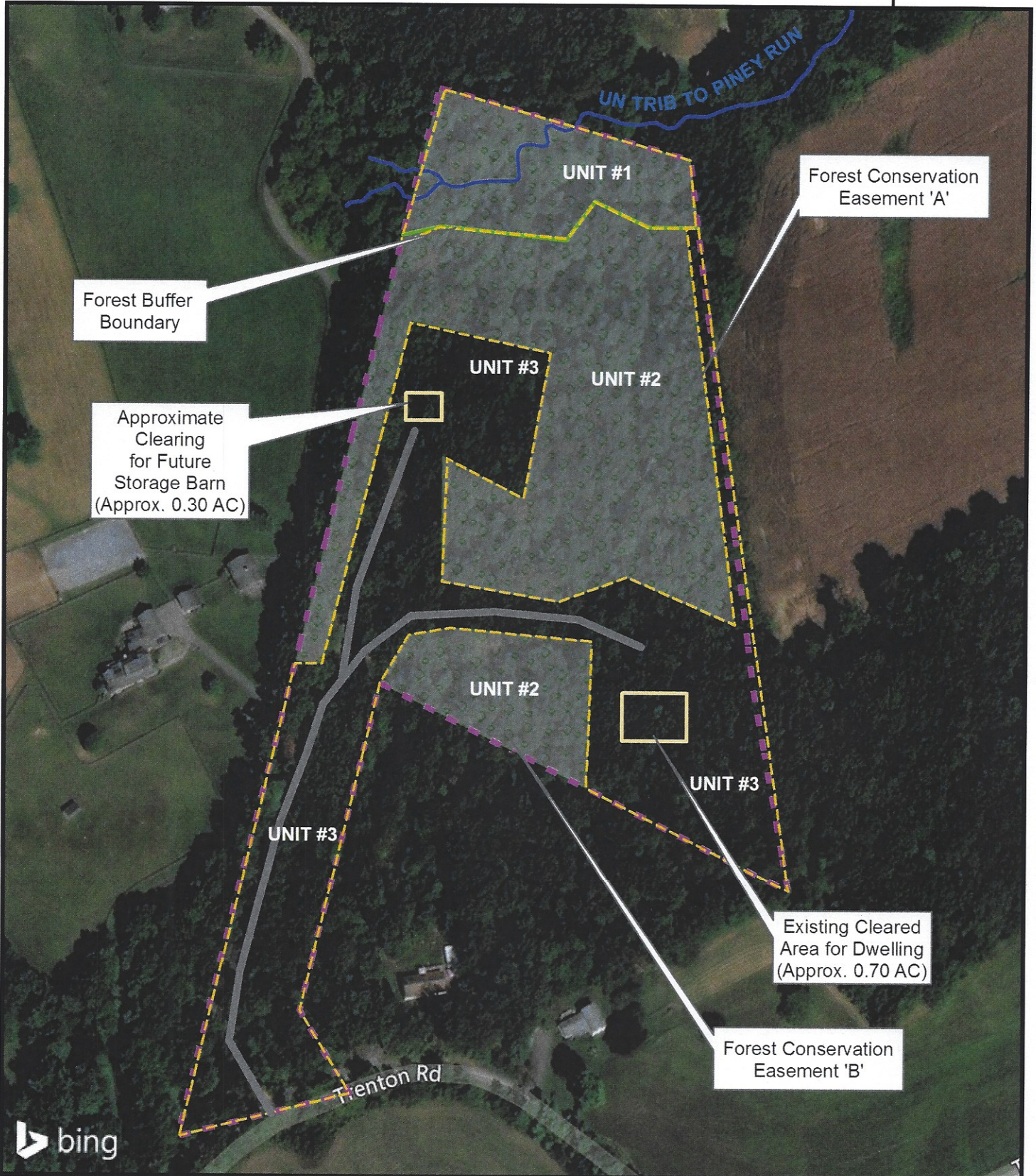
On

Acreage: Total 13.6
Acreage Woodland: 12.6

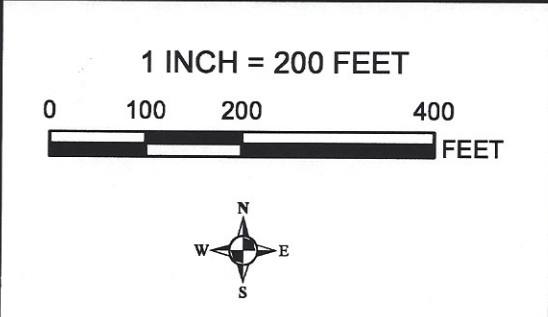
Prepared by:
Scot Aitkenhead
MD Licensed Forester #684
September 22, 2020



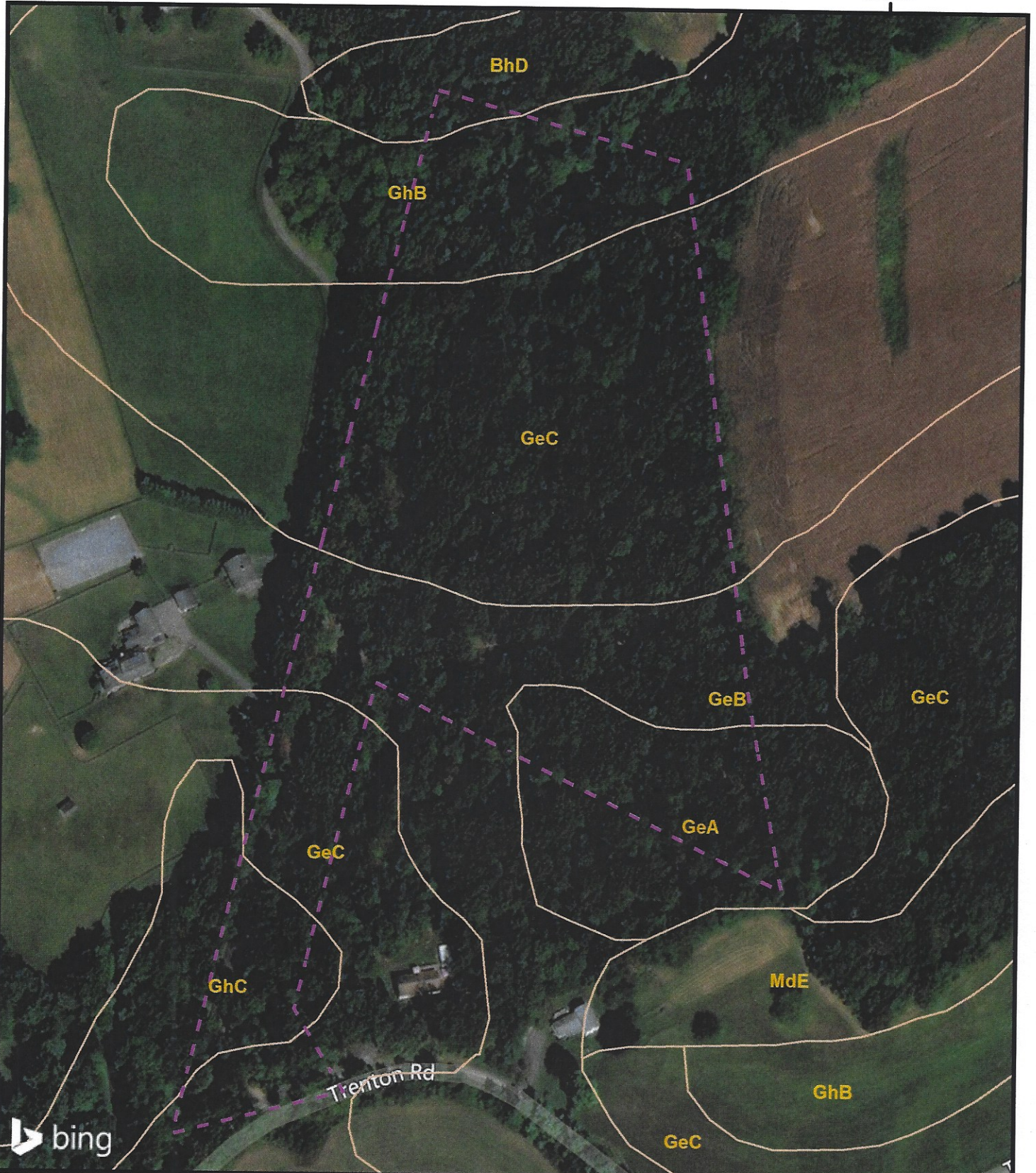
9/22/2020



| LEGEND | |
|--------|------------------------------|
| | Property Boundary |
| | Forest Conservation Easement |
| | Forest Management Unit |
| | Stream |
| | Private Farm Access |




| |
|-------------------------------|
| MATTHEWS PROPERTY |
| FOREST MANAGEMENT PLAN |
| SITE MAP |
| BALTIMORE COUNTY |



LEGEND

 Property Boundary

 Soil Delineation

1 INCH = 200 FEET



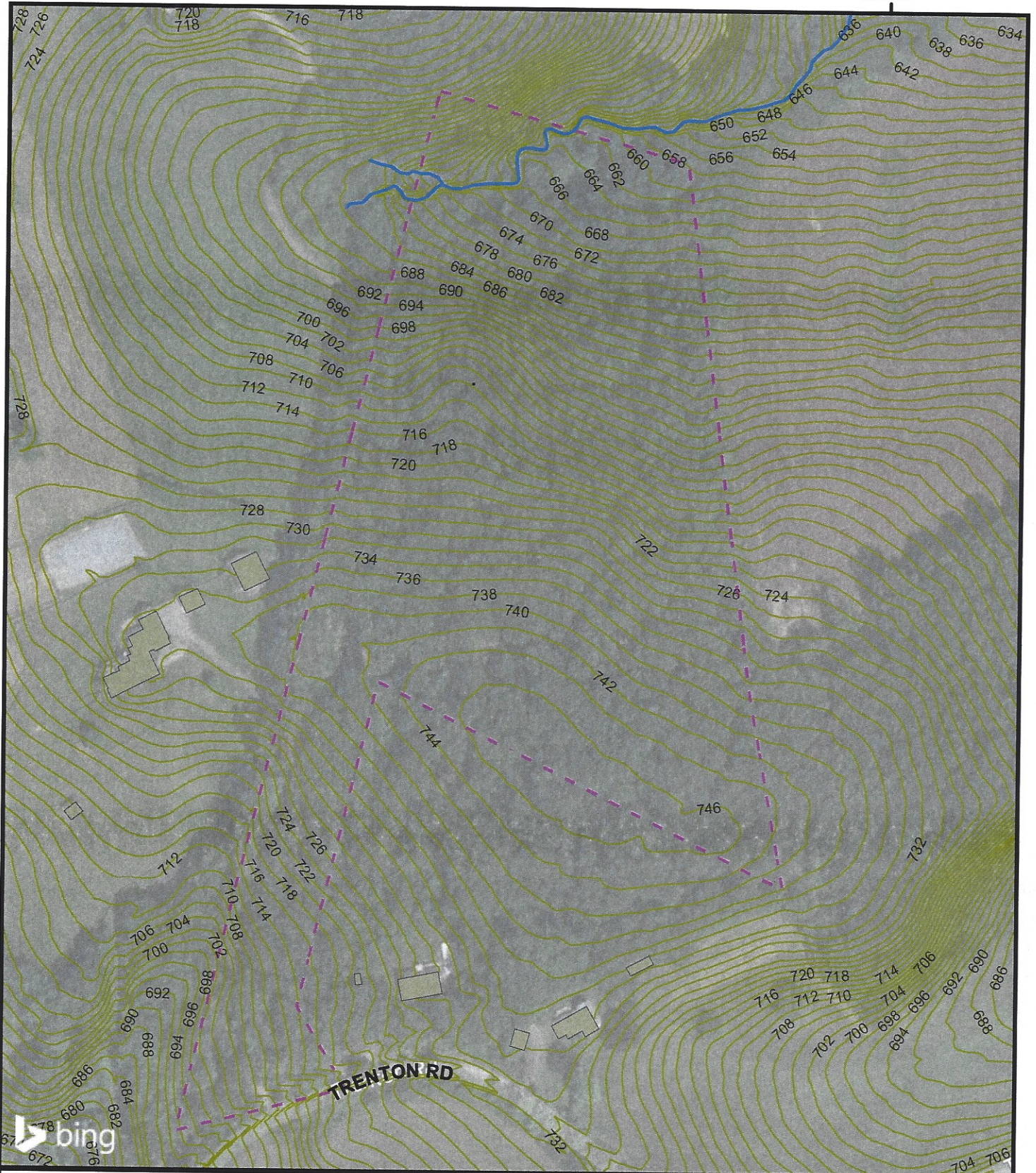
MATTHEWS PROPERTY

FOREST MANAGEMENT PLAN

SOIL TYPE MAP

BALTIMORE COUNTY

76°49'0"W



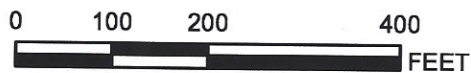
LEGEND

 Property Boundary

 Buildings

 Stream

1 INCH = 200 FEET



MATTHEWS PROPERTY

FOREST MANAGEMENT PLAN

TOPOGRAPHIC MAP

BALTIMORE COUNTY



TRENTON RD

Landowner Objectives:

Noland Matthews would like to practice good overall stewardship in order to maintain the health and productivity of his forestland. Specifically, he would like to manage the property for the production of firewood. Additionally, the landowner would like to maintain an agricultural assessment on the woodland by practicing sound forest management.

Primary – Wood Products (personal firewood)

Property Overview:

The property is located in northwestern Baltimore County, about 1.3 miles southwest of the MD 88 (Black Rock Road) and Trenton Road intersection. The parcel is composed primarily of forest land and an open meadow where he plans to build a residential dwelling. There is one seasonal intermittent stream within the property limits. It is an unnamed tributary to Piney Run and is identified as a Use III-P stream. This designation classifies the stream as a “nontidal cold water and public water supply,” which provides habitat for the growth and propagation of trout. For more detailed information describing Maryland’s designated uses please visit the Code of Maryland Regulations (COMAR) Sections 26.08.02.02 and 26.08.02.02-1. The property is primarily a mid-successional upland hardwood stand consistent with a Chestnut Oak Cover Type. Minimal harvesting of timber has occurred on the property within the last 70 years. Data from the Maryland MERLIN database indicates that there are no known rare, threatened or endangered species located on the property as well as no historic properties.

The management of trees begins with an understanding of the soil on which they grow or are to be grown. Some soils are very suitable for growing wood crops; others barely support tree cover. Different tree species may vary in production on the same soil. The probability of seedling survival, the relative danger of erosion when cover is removed, the resistance of trees to windthrow, and problems in equipment use are some of the management items that can be inferred from soils information.

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes. In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

- Class 1 soils have few limitations that restrict their use.
- Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
- Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.
- Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

- Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.
- Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one capability class. They are designated by adding a small letter, "e," "w," "s," or "c," to the class numeral, for example, 2e. The letter "e" shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; "w" shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); "s" shows that the soil is limited mainly because it is shallow, droughty, or stony; and "c," used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by "w," "s," or "c" because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, or wildlife habitat. If you have any questions please contact your consulting forester.

Soils types present on the property consist of Brinklow Channery, Glenelg Channery, and Glenville series. Descriptions of these soil map units are discussed below.

Brinklow Channery (BhD)— Brinklow channery loam, 15 to 25 percent slopes

The Brinklow component makes up 80 percent of the map unit. Slopes are 15 to 25 percent. This component is on hillslopes on piedmonts. The parent material consists of gravelly residuum weathered from phyllite and/or gravelly residuum weathered from schist. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 36 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Glenelg Channery (GeA)— Glenelg channery loam, 0 to 3 percent slopes

The Glenelg component makes up 75 percent of the map unit. Slopes are 0 to 3 percent. This component is on nearly level to steeply dissected hillslopes, upland piedmonts. The parent material consists of residuum weathered from mica schist. Depth to a root restrictive layer, bedrock, paralithic, is 56 to 98 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 1. This soil does not meet hydric criteria.

Glenelg Channery (GeB)— Glenelg channery loam, 3 to 8 percent slopes

Similar to GeA, except that many flat fragments of mica schist as much as 6 inches long occur throughout

the profile. These fragments make up 15 to 20 percent of the surface layer, and they generally are more abundant as depth increases. The fragments are abrasive to farm implements, but they help to retard soil loss through erosion. The profile also contains some hard quartzite gravel. Included in mapping are a few areas that are severely eroded. The soil is suited to crops, pasture, and trees. The hazard of further erosion is moderate. Nonirrigated land capability classification is 2e.

Glenelg Channery (GeC)— Glenelg channery loam, 8 to 15 percent slopes

The Glenelg component makes up 85 percent of the map unit. Slopes are 8 to 15 percent. This component is on hillslopes, piedmonts. The parent material consists of loamy residuum weathered from phyllite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Glenville (GhB)— Glenville silt loam, 3 to 8 percent slopes

The Glenville component makes up 75 percent of the map unit. Slopes are 3 to 8 percent. This component is on drainageways, piedmonts. The parent material consists of colluvium derived from metamorphic rock over schist, gneiss or phyllite residuum. Depth to a root restrictive layer, fragipan, is 29 to 31 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 20 inches during January, February, March, April, November, December. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Glenville (GhC)— Glenville silt loam, 8 to 15 percent slopes

The Glenville component makes up 85 percent of the map unit. Slopes are 8 to 15 percent. This component is on hillslopes, piedmonts. The parent material consists of loamy residuum weathered from phyllite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Potential Productivity

The table below can help forestland owners or managers plan the use of soils for wood crops. It shows the potential productivity of each of the soil types on your property.

Potential productivity of merchantable or common trees on a soil is expressed as a site index and as a volume number. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forestland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The volume of wood fiber, a number, is the yield likely to be produced by the most important tree species.

This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

| Forestland Productivity—Baltimore County Area, Maryland | | | | |
|---|------------------------|------------|----------------------|--|
| Map unit symbol and soil name | Potential productivity | | | Trees to manage |
| | Common trees | Site Index | Volume of wood fiber | |
| Brinklow Channery loam (all slope %) | Black oak | 74 | 57 | Eastern white pine, Virginia pine, Yellow-poplar |
| | Northern red oak | 79 | 57 | |
| | Virginia pine | 70 | 114 | |
| | White oak | 68 | 55 | |
| Glenelg Channery loam (all slope %) | Black oak | 78 | 57 | Black walnut, Eastern white pine, Japanese larch, Shortleaf pine, Virginia pine, Yellow-poplar |
| | Hickory | 75 | 55 | |
| | Northern red oak | 80 | 57 | |
| | Virginia pine | 70 | 114 | |
| | White oak | 75 | 57 | |
| | Yellow-poplar | 87 | 86 | |
| Glenville silt loam (all slope %) | Northern red oak | 80 | 57 | Eastern white pine, Loblolly pine, Virginia pine, Yellow-poplar |
| | Red maple | 90 | 57 | |
| | White ash | 90 | 57 | |
| | Yellow-poplar | 85 | 86 | |

FOREST MANAGEMENT UNIT DESCRIPTION AND RECOMMENDED PRACTICES

UNIT # 1 – BALTIMORE COUNTY FOREST BUFFER EASEMENT

AREA ACRES: 1.032 +/-

CONDITION: The larger overstory trees, smaller understory trees, and ground vegetation are all in good condition.

DOMINANT OVERSTORY TREE SPECIES: Blackgum, white oak, and red maple

DOMINANT UNDERSTORY TREE SPECIES: American dogwood and spicebush

DOMINANT HERBACEOUS SPECIES: Sparse understory primarily common greenbrier

DEVELOPMENT STAGE: Mid-Successional Forest Stand

STOCKING: Adequate; Basal Area = 100 sq.ft. per acre

RECOMMENDATIONS/PRACTICES:

Management Unit 1 is a bottomland hardwood stand within a Forest Buffer Easement. Baltimore County has defined a Forest Buffer as a wooded area, includes trees, shrubs, and herbaceous vegetation that exists or is established to protect a stream system.

The Protection of Water Quality, Streams, Wetlands and Floodplains law requires establishment of a Forest Buffer Easement along wetlands and streams when development occurs on a site. The width of the Easement varies depending on site conditions and stream use and order. Forest Buffers Easements provide long-term water quality protection for the County's streams, wetlands and ultimately the Chesapeake Bay. The buffer acts as a sponge to help absorb pollutants from uphill drainage. It also creates and protects wildlife habitat, providing diversity and aesthetic value for your property. Forested buffers provide habitat and temperature control in streams, particularly important in trout waters.

The Forest Buffer Easement is designated as a non-disturbance area. Disturbance includes, but is not limited to, mowing, dumping, storage of materials or firewood, placement of play equipment, sheds or other structures, grading, filling, or cutting of vegetation. Other prohibited practices include the storage or operation of motorized vehicles of any kind, housing or grazing of animals, and the use, storage, or application of pesticides. No disturbance may occur within an Easement without written permission from Baltimore County Department of Environmental Protection and Sustainability (DEPS). The record plat for the property will show this easement (EXHIBIT A, RW17-002, Item 14) prepared by Human & Rohde, LLC and included in this management plan.

Clearly demarcate property boundaries with signs or paint and maintain as necessary.

Re-inspect in 15 years.

UNIT # 2 – FOREST CONSERVATION EASEMENTS

AREA ACRES: 7.214 +/-

CONDITION: The larger overstory trees, smaller understory trees, and ground vegetation are all in good condition.

DOMINANT OVERSTORY TREE SPECIES: Chestnut Oak, white oak, red oak, pignut hickory and blackgum

DOMINANT UNDERSTORY TREE SPECIES: American dogwood and spicebush

DOMINANT HERBACEOUS SPECIES: Primarily Japanese stiltgrass

DEVELOPMENT STAGE: Primarily pole timber and sawtimber. Average DBH range is 12-24" DBH.

STOCKING: Adequate; Basal Area = 95 sq.ft. per acre

RECOMMENDATIONS/PRACTICES:

Management Unit 2 consists of two areas; however, both are within a Forest Conservation Easement. There are certain rules and restrictions that are enforced once a property is put under easement. These rules can be reviewed in the Deed of Easement, which apply to the property even if the current owner did not place the property in the easement program. Follow guidelines stipulated in the Deed of Easement. It should not preclude you from ever being able to remove vegetation or trees within this area; however, any disturbances within these areas will need written permission from Baltimore County DEPS. The record plat for the property will show this easement (EXHIBIT A, RW17-002, Item 14) prepared by Human & Rohde, LLC and included in this management plan.

Clearly demarcate property boundaries with signs or paint and maintain as necessary.

Re-inspect in 15 years.

UNIT # 3 – UPLAND HARDWOODS (uneven age)

AREA ACRES: 5.404 +/-

CONDITION: The larger overstory trees, smaller understory trees, and ground vegetation are all in good condition.

DOMINANT OVERSTORY TREE SPECIES: Chestnut Oak, white oak, red oak, pignut hickory and blackgum.

DOMINANT UNDERSTORY TREE SPECIES: American dogwood and spicebush

DOMINANT HERBACEOUS SPECIES: Primarily Japanese stiltgrass

DEVELOPMENT STAGE: Primarily pole timber and sawtimber. Average DBH range is 12-24" DBH.

STOCKING: Adequate; Basal Area = 95 sq.ft. per acre

RECOMMENDATIONS/PRACTICES:

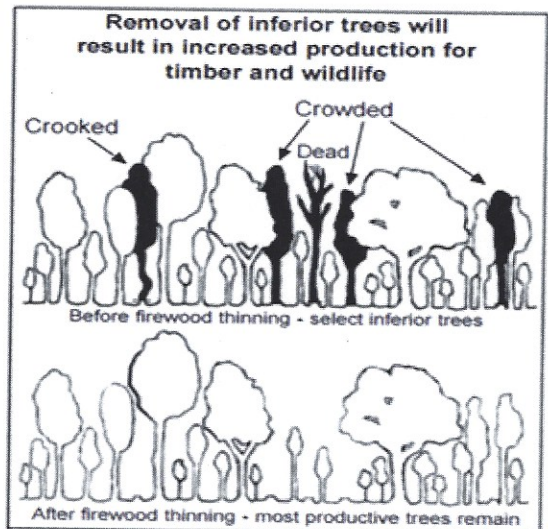
Management Unit 3 is the remaining woodland portion of the property that is not within a forest conservation easement. The overstory consists mainly of mixed hardwoods dominated primarily by oaks (white, red, and chestnut) and pignut hickory with codominant consisting of red maple and blackgum. The understory is dominated by spicebush, American dogwood, and blackgum. The management unit is currently stocked at 95 square feet of basal area (sq.ft./ac) per acre. Basal area is a forestry term/measurement that is used to determine the occupancy of a site by trees and is expressed as the cross-sectional area of the trunk at 4.5 feet (diameter of breast height, DBH) above the ground. Based on the current calculated basal area, the stand could provide a selective timber harvest; however, the landowner's primary objective is to use this land for personal firewood.

Clearly demarcate property boundaries with signs or paint and maintain as necessary.

Forest Products

In order to manage for a sustainable supply of firewood, the landowner first needs to understand how much is available and not take more than is necessary. The following procedure is recommended to help ensure a sustainable supply of firewood. To ensure that the forest unit remains productive, steps must be taken to ensure that enough trees are available for two or three cords of stacked wood to be harvested annually without depleting the supply. Before cutting any firewood, inventory all the trees within the boundary of the unit you have set aside for fuel wood production. The inventory should include the number and species of trees and two measurements: the total height (in feet) and the diameter (in inches) at breast height (DBH). The DBH is generally taken at 4.5 feet above the ground. A table has been provided below to help identify the number of standard cords of firewood that can be cut from that tree. Repeat this for each tree in the woodlot to find the total number of standard cords of firewood currently available. Keep records of the initial inventory of trees and wood volume. Record and deduct the trees and volume you remove and watch for those trees that were previously not counted but grew large enough to be measured and added to the total volume. As a rule, an acre of good hardwood land should be capable of producing about two cords of wood each year. Some trees might be good choices to cut for firewood, to leave for use by wildlife, or to keep for aesthetic reasons. When identifying trees to use for firewood, you should look for trees with evidence of disease, like cankers, bleeding lesions, and dieback in the crown. Crooked or densely arranged hardwoods make good firewood. This will help you monitor your progress as a good steward towards your forestland. Ideal seasoned hardwoods include sugar and red maples, hickory, locust, and oaks. A diagram has been included below to provide a helpful reference for determining which trees to cut and how many you might need to equal a cord of wood.

| Tree Diameter (inches) | Total height (feet) | | | | | | | | | |
|---------------------------|---------------------|------|------|------|------|------|------|-----|-----|--|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | |
| 4 | 0.02 | 0.03 | 0.04 | 0.05 | 0.06 | | | | | |
| 6 | 0.03 | 0.05 | 0.07 | 0.09 | 0.11 | | | | | |
| 8 | 0.05 | 0.08 | 0.11 | 0.14 | 0.19 | | | | | |
| 10 | | 0.12 | 0.16 | 0.2 | 0.24 | 0.28 | 0.32 | | | |
| 12 | | | 0.22 | 0.27 | 0.33 | 0.43 | | | | |
| 14 | | | 0.28 | 0.35 | 0.5 | 0.57 | 0.64 | | | |
| 16 | | | | 0.45 | 0.54 | 0.72 | 0.81 | | | |
| 18 | | | | 0.55 | 0.67 | 0.77 | 0.88 | 1 | 1.1 | |
| 20 | | | | 0.67 | 0.81 | 0.94 | 1.1 | 1.2 | 1.3 | |
| 22 | | | | 0.8 | 0.96 | 1.1 | 1.3 | 1.4 | 1.6 | |
| 24 | | | | | 1.1 | 1.3 | 1.5 | 1.7 | 1.9 | |
| 26 | | | | | 1.3 | 1.5 | 1.7 | 1.9 | 2.1 | |
| 28 | | | | | 1.5 | 1.7 | 2 | 2.2 | 2.5 | |
| 30 | | | | | 1.7 | 2 | 2.3 | 2.6 | 2.8 | |
| 32 | | | | | | 2.2 | 2.6 | 2.9 | 3.2 | |
| 34 | | | | | | 2.5 | 2.9 | 3.2 | 3.6 | |
| 36 | | | | | | 2.8 | 3.2 | 3.6 | 4 | |



The First Firewood Harvest (2020)

On a well-forested site, the first firewood harvesting effort should be a thinning. Suppressed trees (i.e., trees that are tall, slender, and have compressed crowns because of overcrowding) should be removed. Leave for the time being dominant trees that have expressed a competitive advantage by producing a full, wide-spreading crown. This method of cutting often called a "low thinning" or "thinning from below," facilitates the removal of trees that have not grown as fast as others in the stand. It also reduces unnecessary competition for the fast-growers. Any improvements to the stand, such as taking out diseased, damaged, and defective trees, may be conducted at this time. Dead trees or decaying snags may be left as nesting cavities for birds and animals. These relics are by no means competing with the other trees, and the decaying wood is less than satisfactory for fuel. However, they may cause accidents when they fall, so watch them closely. If possible, conduct thinning and cutting operations in the late winter/early spring of the year in which the wood will be used. This schedule gives adequate time for the wood to dry to the right moisture content for efficient burning. It is also important in regenerating the stand.

Second-Year Harvest (2021)

Because most of the suppressed, dead, and dying trees were removed during the first year's low thinning and improvement operations, the second-year harvest must come from the larger, healthier trees in the stand. Thus, the second year's harvest will drastically modify the stand, because trees that make up the main canopy will be removed. Choosing the trees to cut during the second year may be based on several factors, but the most important relates to the growth rate of the individual trees. Using the inventory information from the previous year, several trees that were measured should be identified. New measurements should be taken on those trees to find out how much new wood has accrued over the past year. For example, if the estimated standing volume after the first cut (the low thinning and cut) was 10 cords and the estimated standing volume before the second year's harvest is 11 cords, harvest only one cord during the second year. Make the second-year firewood cut from those trees that did not show any growth over the past year. If all the trees that were measured showed some new growth, cut from those that grew the least.

It is important to remember not to allow the harvest to exceed the amount of wood that the stand is adding through growth each year. This concept, known as "sustained yield management," ensures a steady supply of firewood for the future. By eliminating the slow-growing species and reducing competition for sunlight, space, nutrients, and moisture, the best trees may even have higher growth rates. In fact, if handled properly, the volume of the annual harvest may increase. Plans for conducting the third-year and subsequent harvests

should be carried out in the same manner as the second year's operations.

Regenerating the Stand (2021-2035)

During the second year's cutting operations, known as "selective thinning" or "thinning from above," some provision must be made for the regeneration of new trees. Keep in mind during the harvest that several young trees are already present in the general area of the one being cut. Identify some of the larger, more vigorous seedlings and protect them during the cutting operation. Many species of hardwoods will sprout from living stumps to produce a "coppice," or sprout stand. Some species sprout more than others, and in general the younger trees sprout better than older ones. Many of the species that make excellent firewood, such as oaks, sprout abundantly. Cutting the parent tree in late winter/early spring also may increase the chances for sprouting. Because the stump already has an extensive root system and it is still alive, first-season sprouts will grow more rapidly than either planted or natural seedlings. During the first spring, each stump may produce numerous sprouts. Select the largest stem on each stump and pull or cut the remaining ones. This concentrates the future growth into one tree rather than several small ones that would be overcrowded. Because the stand will have large gaps left in the canopy, many species of grasses, shrubs, nettles, and briars will invade the open area in the spring. This vegetation may not over top the seedlings and sprouts that were left, but it will compete for nutrients and moisture. Controlling the undesirable vegetation through chopping, raking, or chemical treatment should increase the growth rates of the favored seedlings. Once the planted stands are established, they may be managed similar to the management scheme detailed previously for natural stands. The first harvest should be a low thinning to take out those trees that were suppressed. The second and all future harvests should be based on the amount of wood that grew the previous year.

Re-inspect in 15 years.

Additional Information

Forest Interior Dwelling Songbirds (FIDS): Your woodland is considered forest interior dwelling species (FIDS) habitat. Songbirds in Maryland can be divided into four groups based on residency: birds that breed here but winter farther south, birds that winter here but breed farther north, birds that pass through during migration, and birds that are permanent residents.

These songbirds require relatively large tracts of undisturbed mature hardwood or mixed pine/ hardwood forests as breeding habitat. Your forestland, combined with the surrounding contiguous forests, provides possible FIDS habitat.

The loss of contiguous forests, and the fragmentation of the remainder due to agriculture and increasing urbanization here in North America as well as in South America, is the leading threat to these birds. Other threats include: competition for nest sites from edge species which arrive earlier to the nesting grounds or which are year-round residents, nest parasitism by brown-headed cowbirds, and nest destruction by edge species like bluejays and raccoon. Critical habitat for these birds is the interior forest. Together, den trees and snags serve as homes and provide a steady source of food for wildlife.

Snags are also used as perches by hunting raptors and as roosts by vultures and bats.

Trails: Trails provide good opportunities and access for monitoring the property, nature enjoyment and wildlife observation. All trails should be maintained throughout the property to provide further access and enjoyment, and to allow for emergency access in case of forest fire. Monitor the trails for erosion problems, especially on steeper sections where bare soil may be exposed. Extra care must be taken because of the erodibility of many soils. Maintain a cover such as leaves, mulch, or wood chips on the trails whenever possible. Water bars can be installed at a 45-degree angle across the trails by building small earthen berms to divert flowing water off the trails. Prune back overhanging branches as needed to maintain clear passage. Contact the Maryland Forest Service for further details about trail maintenance.

Protecting the Forest from Insect and Disease: Numerous species of insects and diseases attack all parts of a tree: leaves, stems, branch-wood and roots. There are wood borers, sapsuckers, leafminers, and defoliators, to name a few of woodland pests. Old, non-vigorous trees are the first targets of these killers, but young, healthy trees can succumb to invasion under favorable conditions. Pest problems warrant careful attention. Foresters and other professionals are available to identify potential problems and provide solutions. If you see signs of symptoms do not hesitate to contact a professional. Defoliation of leaves, webs and tents, excessive oozing of sap from wounds, and large numbers of egg cases are all clues to the presence of insect pests. Shelf-like fruiting bodies and unusual growths are clues to some of the common tree diseases.

Japanese stiltgrass Identification and Management: Native to Asia, Japanese stiltgrass was introduced to the U.S. about one hundred years ago, probably as packing material in shipments from China. It has colonized most of the eastern United States plus Oklahoma and Texas. As well as along roads and ditches and in moist woodlands, it is increasingly found on the edges of farm fields, in pasture, hay fields, home landscapes, and turf areas. Information on how to identify and manage this invasive species has been provided below.

Japanese Stiltgrass Identification and Management

NC STATE EXTENSION

Horticulture Information Leaflets

Brief Description

Japanese stiltgrass (also known as bamboograss flexible sesagrass, Japanese grass, Mary's grass, microstegium, Nepal microstegium, Nepaleze browntop, or Vietnamese grass) is a summer annual commonly found in shady, moist areas, and is spreading rapidly in woodlands as well as shaded landscapes and low maintenance turf throughout the southeastern United States, Mid-Atlantic States and north to New England (Figure 1). Japanese stiltgrass germinates in early spring, several weeks before crabgrass, yet flowers and seeds much later, from mid-September through October. It has broader, shorter leaves than most other annual grasses; somewhat resembling broadleaf signalgrass or spreading dayflower. After frost, the foliage and wiry stems turn a distinctive light tan in color and persist through the winter. Vegetative identification characteristics include: rolled vernation, a very short membranous ligule, and leaf blades that are shorter and broader than most other grasses.



Figure 1. Japanese stiltgrass habit.

Attribution: J. C. Neal

General Description

Japanese stiltgrass is a prostrate to erect, sprawling and freely branched summer annual with spreading stems that root at the nodes. The stems are stiff and climb over other vegetation reaching more than 3 feet (~1 meter) in height but will remain prostrate if mowed. Leaves are rolled in the

bud; ligules are short (~0.5 mm) membranous with hairs on the backside; auricles are absent. Leaf blades are broader than many other grasses, particularly under shady conditions (Figure 2). Young seedlings are easily distinguished from other summer annual grasses by the very broad, rounded first leaf (Figure 3). Leaves on older plants are narrowly elliptic, about 8 times longer than wide (3 to 8 cm long and 5 to 10 mm wide), sparsely hairy on the upper surface, and hairless or nearly so on the under side. The sheath has a hairy margin and hairs at the collar region but otherwise is not hairy. With age some of the hairiness of the upper leaf blade may diminish. Plants have a shallow fibrous root system. Plants tolerate mild frosts, often flowering after the first frost, but die with hard frost. Dead plant parts persist through winter and well into spring and early summer (Figure 4).

Identifying Characteristics

- Rolled in the bud
- Short membranous ligule
- Auricles absent
- Leaf blades broader than many grasses
- Upper blade sparsely hairy
- Sheath margin hairy
- Collar hairy
- Shady, moist habitats



Figure 2. Note the relatively short, broad leaves on Japanese stiltgrass.

Attribution: J. C. Neal



Figure 3. Japanese stiltgrass seedlings, with distinctively rounded first leaves, emerge in early spring through mid-summer.

Attribution: J. C. Neal



Figure 4. Dead, straw-colored stems persist through the winter.

Attribution: J. C. Neal

Habitat and Distribution

Japanese stiltgrass is most commonly found in shady, moist, disturbed areas including wetlands, ditch banks, utility rights of way, mulched landscape beds, and low maintenance turf; however, infestations are common in upland forests as well. Infestations typically begin in disturbed sites;

once established, infestations can spread to undisturbed areas. Introduced from tropical Asia, it has spread rapidly in public lands throughout the Eastern United States. It is most common in woodlands of the piedmont and mountains of the southeast, less common in the coastal plains.

Reproduction and Spread

A summer annual; reproduction is by seed that germinate in early to mid-spring (early to mid-March in central North Carolina) and sporadically throughout the growing season. Plants flower in early to mid-autumn (late September through October in central North Carolina). Flowers are produced in a branched spike, with 1 to 3 (rarely 6) branches (rachis), each 3 to 5 cm long (Figure 5). Flowers also produced within leaf sheaths; these flowers do not expand beyond the sheath and thus are rarely noticed.

Spikelets are in pairs on the rachis, each 4.5 to 6 mm long and hairy, one sessile and the other on a short pedicel. Only one of the spikelets in each pair is fertile; the fertile one sometimes having a slender awn 4 to 8 mm long. Japanese stiltgrass can produce large numbers of seeds – from 16,000 to 50,000 seeds per square meter. At least some of those flowers are cleistogamous (self-fertilized before the flower opens). Such an adaptation has direct implications on sanitation measures; to prevent seed production, early removal before anthesis is imperative because some florets will produce seed before flowers have opened.

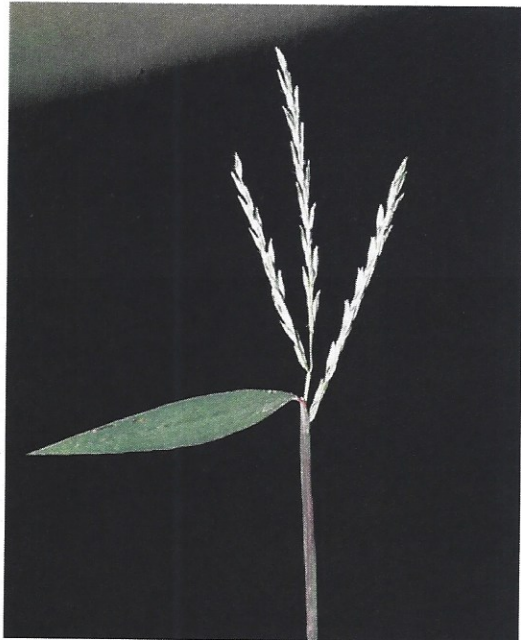


Figure 5. Japanese stiltgrass plants flower and seed in mid- to late autumn.

Attribution: J. C. Neal

Control

Since Japanese stiltgrass infestations typically begin in disturbed areas and then spread from those sites, early detection and control can prevent severe infestations. Research suggests that seeds remain viable in the soil for less than 7 years, and that populations rapidly decline when control measures prevent seed production. Therefore, long-term management programs should emphasize prevention of seedhead formation to deplete the seed reservoir.

Cultural / Mechanical Control

Mulches are generally ineffective. Regular, close mowing reduces seed production. Mowing once in late summer can be as effective as frequent mowing in reducing seed production. Hand weeding is effective on small infestations but is generally not practical for larger infestations. Flame weeding has been shown to be effective in moist sites where fire hazard can be mitigated. When flowers are first visible, many seed will mature even if the plants are mowed or pulled. Therefore, mechanical control should be done before flowers are visible.

Chemical Control

Very few herbicides are specifically labeled for Japanese stiltgrass control. Furthermore, few herbicides are labeled for use in the wet woodlands where this weed is common. However, most preemergence and postemergence herbicides used for crabgrass control in turfgrass and landscape plantings are effective on Japanese stiltgrass. Herbicides specifically labeled for Japanese stiltgrass control include: imazapic (Plateau), fenoxaprop-p (Acclaim Extra), imazamox (Clearcast) and metsulfuron + sulfometuron (Sulfomet Extra). Plateau may be applied preemergence or postemergence to Japanese stiltgrass. The other herbicides should be applied postemergence; all but Acclaim Extra will also provide some residual control. Consult the herbicide labels for details and restrictions.

Research Results

Several preemergence herbicides registered for use in turfgrass and landscape plantings have been shown to be effective on Japanese stiltgrass including: trifluralin (Preen), dithiopyr (Dimension), oryzalin (Surflan), pendimethalin (Pendulum), proflam (Barricade), isoxaben + trifluralin (Snapshot TG), and oxadiazon (Ronstar). S-metolachlor (Pennant Magnum), benefin + trifluralin (Team Pro), napropamide (Devrinol), and indaziflam (Specticle) were less effective. If preemergence herbicides are to be used, applications must be made before the weed germinates - which occurs several weeks before crabgrass germination.

Research has also demonstrated that non-selective herbicides such as glyphosate (many trade names) and glufosinate (Finale) provided excellent control with one or two applications, respectively. Glyphosate has been shown to be very effective at low doses. Other selective postemergence grass herbicides including sethoxydim (Segment), fluazifop-p (Fusilade II) and clethodim (Envoy) were also effective. In natural stands of Japanese stiltgrass, the effectiveness of Acclaim Extra, Segment

and Plateau were equally effective when applied early season (pre-tiller), mid-season (1 to 2 tillers) and late season (pre-flowering). In general, two applications provided greater control than a single treatment. Dimension, MSMA and Drive (quinclorac) were not effective for postemergence control.

** Before using any herbicide, read the label and follow all label directions and restrictions.

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BASF Corporation

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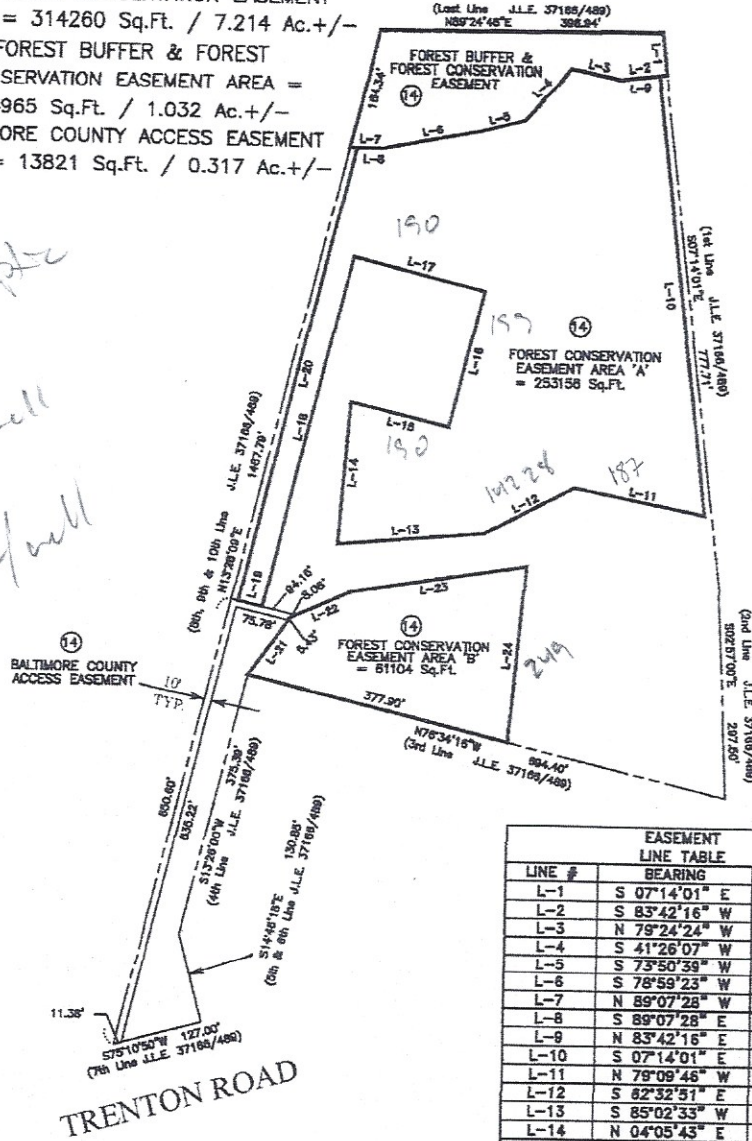
14

PATRICK J. REILLY &
KRISTEN K. REILLY
J.L.E. 37166/489

EXHIBIT "A"
RW17-002
ITEM 14

TOTAL FOREST CONSERVATION EASEMENT
AREA = 314260 Sq.Ft. / 7.214 Ac.+/-
FOREST BUFFER & FOREST
CONSERVATION EASEMENT AREA =
44965 Sq.Ft. / 1.032 Ac.+/-
BALTIMORE COUNTY ACCESS EASEMENT
AREA = 13821 Sq.Ft. / 0.317 Ac.+/-

20ft bds to septu
20ft bds to cell
100ft from septu/cell



| EASEMENT LINE TABLE | | |
|---------------------|---------------|----------|
| LINE # | BEARING | DISTANCE |
| L-1 | S 07°14'01" E | 54.83' |
| L-2 | S 83°42'16" W | 64.87' |
| L-3 | N 79°24'24" W | 70.58' |
| L-4 | S 41°26'07" W | 94.88' |
| L-5 | S 73°50'39" W | 63.93' |
| L-6 | S 78°59'23" W | 141.16' |
| L-7 | N 89°07'28" W | 45.48' |
| L-8 | S 89°07'28" E | 35.26' |
| L-9 | N 83°42'16" E | 54.87' |
| L-10 | S 07°14'01" E | 620.66' |
| L-11 | N 79°09'48" W | 186.71' |
| L-12 | S 82°32'51" E | 142.28' |
| L-13 | S 85°02'33" W | 205.76' |
| L-14 | N 04°05'43" E | 197.49' |
| L-15 | S 76°31'51" E | 142.13' |
| L-16 | N 13°28'09" E | 199.00' |
| L-17 | N 76°31'51" E | 190.24' |
| L-18 | S 13°28'09" W | 505.23' |
| L-19 | N 76°31'51" W | 35.00' |
| L-20 | N 13°28'09" E | 655.09' |
| L-21 | N 35°22'49" E | 102.17' |
| L-22 | N 65°29'17" E | 92.36' |
| L-23 | N 80°56'47" E | 248.69' |
| L-24 | S 04°52'49" W | 249.42' |

THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION, OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT AND/OR FOREST BUFFER AND FOREST CONSERVATION EASEMENT EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.

ANY FOREST CONSERVATION EASEMENT AND/OR FOREST BUFFER AND FOREST CONSERVATION EASEMENT SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF BALTIMORE COUNTY AND WHICH RESTRICT DISTURBANCE AND USE OF THESE AREAS.

DISTRICT NO. 5C3

APPROVED Environmental Protection and Sustainability

DATE

Note:
This plat was prepared from a drawing by: Human & Rohde, LLC

□ AREA TO BE ACQUIRED ▨ EXISTING COUNTY R/W
▩ AREA TO BE RELEASED

| ITEM NO. | RECORDED |
|----------|----------|
| | |
| | |
| | |

DRAWN BY
FSB

EXHIBIT "A"

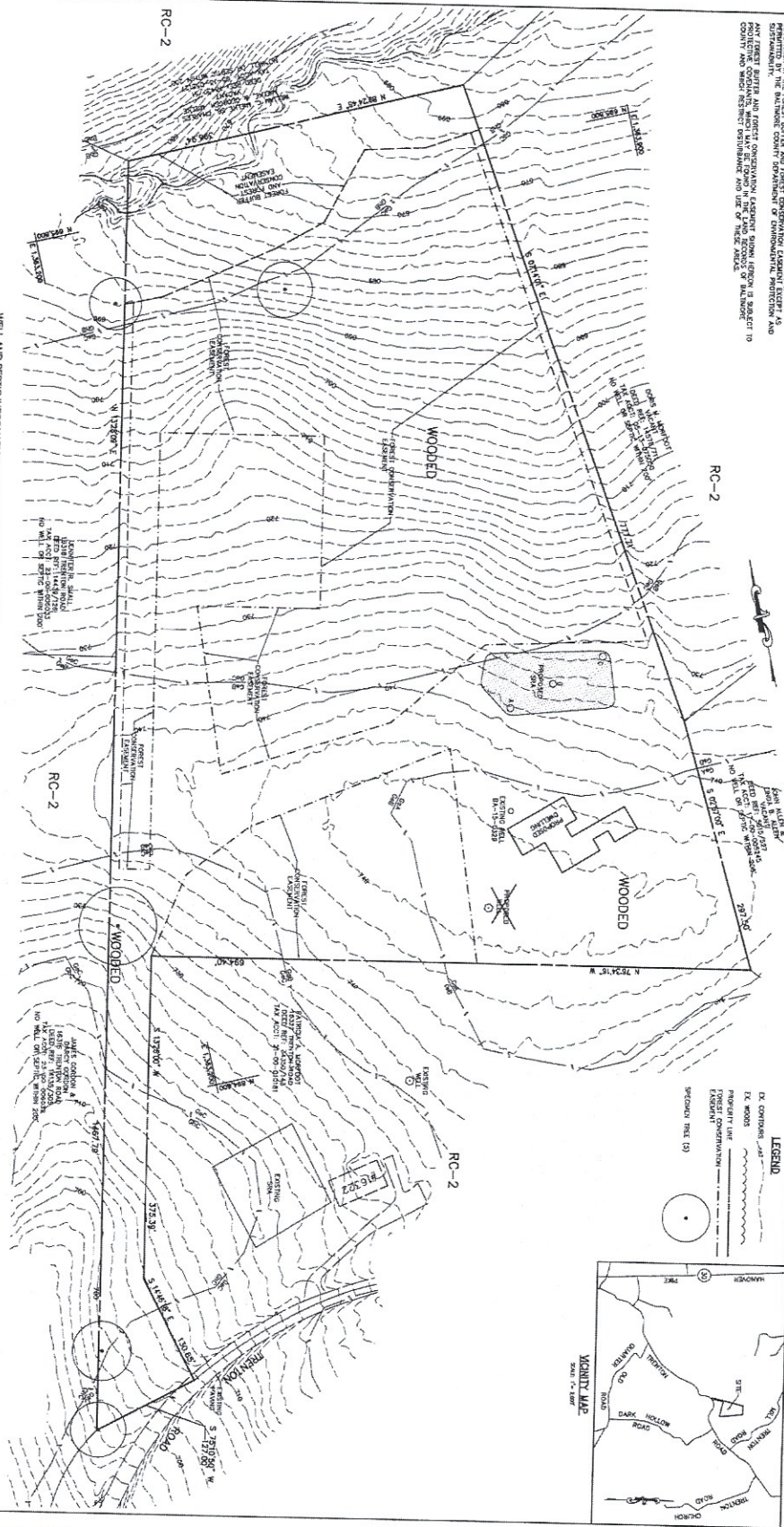
SCALE: 1" = 200'

B.C. JOB ORDER NO.
'0'

RW17-002-14

REVISIONS

STANDARD NON-EXISTENCE NOTES:
 THIS PLAN IS NOT A GUARANTEE OF ACCURACY OR COMPLETENESS. THE INFORMATION CONTAINED HEREIN IS FOR INFORMATIONAL PURPOSES ONLY AND DOES NOT CONSTITUTE AN OFFER OF ANY FINANCIAL PRODUCT OR SERVICE. THE INFORMATION CONTAINED HEREIN IS NOT TO BE USED AS A BASIS FOR ANY INVESTMENT DECISION. THE INFORMATION CONTAINED HEREIN IS NOT TO BE USED AS A BASIS FOR ANY INVESTMENT DECISION. THE INFORMATION CONTAINED HEREIN IS NOT TO BE USED AS A BASIS FOR ANY INVESTMENT DECISION.



WELL AND SEPTIC INFORMATION FOR SURROUNDING PROPERTIES

| PROPERTY ADDRESS | TYPE OF TRENCH | DEPTH (FT) | AS PER PERMITS | STATUS | REMARKS |
|------------------|----------------|------------|----------------|---------|---------|
| 142 MAP # 1000 | WELL | 10 | AS PER PERMITS | UNKNOWN | |
| ADDRESS # 1 | WELL | 10 | AS PER PERMITS | UNKNOWN | |
| ADDRESS # 2 | WELL | 10 | AS PER PERMITS | UNKNOWN | |

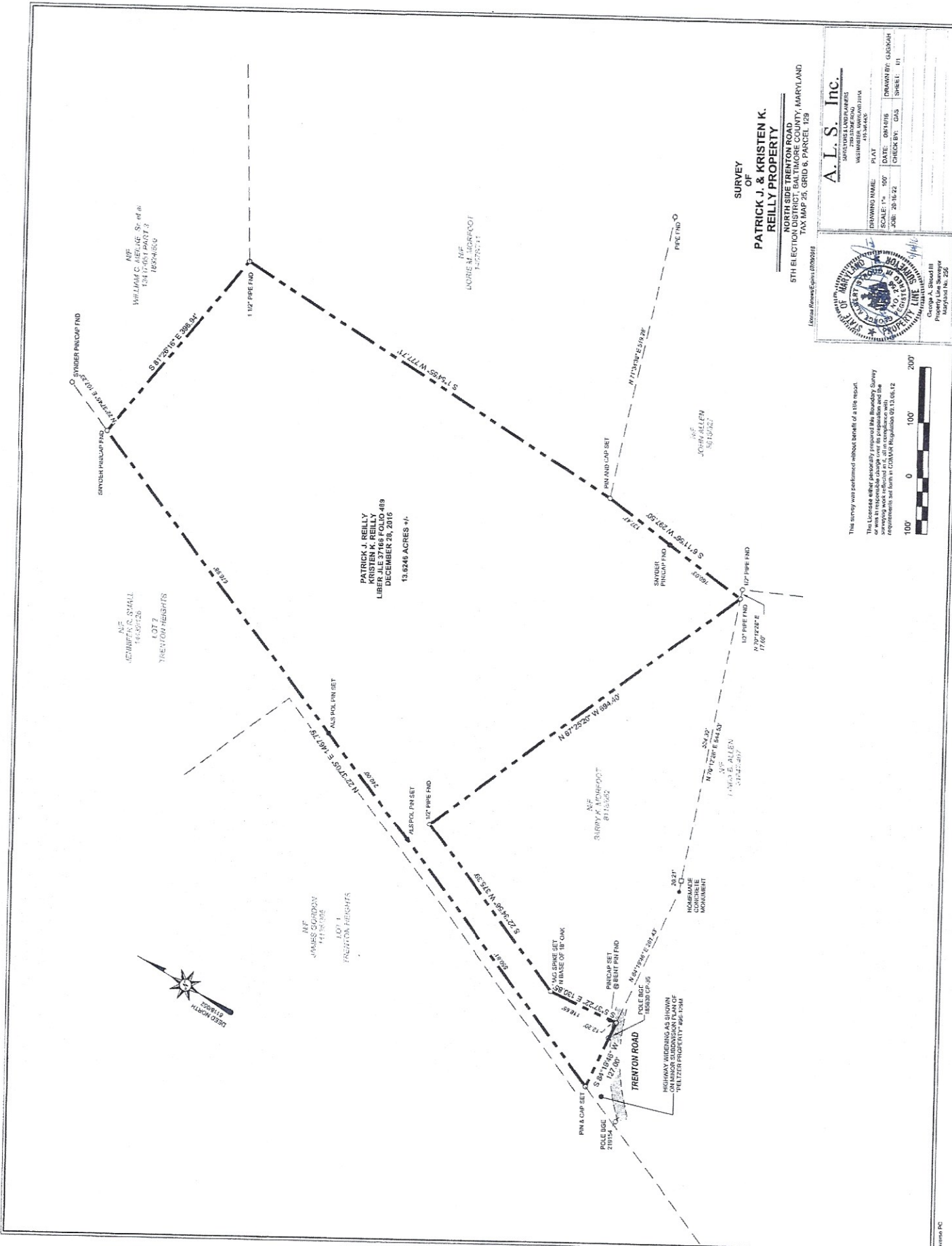
SOILS LIMITATION CHART

| SOIL TYPE | SOIL UNIT | PROPOSED LIMITATIONS | SEPTIC SYSTEM | EXISTING SEPTIC SYSTEM | WELL | WATER TREATMENT |
|-----------|-----------|----------------------|----------------|------------------------|----------------|-----------------|
| CLAY | CLAY | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION |
| CLAY LOAM | CLAY LOAM | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION |
| LOAM | LOAM | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION |
| LOAM SAND | LOAM SAND | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION |
| SAND | SAND | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION | NO PERCOLATION |

Polaris
 LAND CONSULTANTS
 10000 ROUTE 100
 SUITE 100
 WASHINGTON, DC 20001
 PHONE: (703) 251-1411
 FAX: (703) 251-1412
 WWW.POLARISLANDCONSULTANTS.COM

OWNER INFORMATION
 PROJECT: 16320 TRENTON ROAD
 CLIENT: [Name Redacted]
 DATE: 10/20/2018

WELL LOCATION AS DRILLED
 PLAN TO ACCOMPANY APPLICATION
 FOR PERCOLATION TESTING
16320 TRENTON ROAD
 SHEET 1 OF 1



SURVEY OF
PATRICK J. & KRISTEN K. REILLY PROPERTY

NORTH SIDE TRENTON ROAD
 5TH ELECTION DISTRICT, BALTIMORE COUNTY, MARYLAND
 TAX MAP 25, GRID 5, PARCEL 129

License No. 060107000015
A.L.S. Inc.
 3001 W. BELT ROAD
 WASHINGTON, MD 20783
 203-530-6200

| | | | |
|---------------|-----------|-----------|---------|
| DRAWING NAME: | PLAT | DRAWN BY: | GUSCHAK |
| SCALE: | 1" = 100' | CHECK BY: | GAS |
| JOB: | 20-12-22 | SHEET: | 11 |



The survey was performed without benefit of a title report.
 The Licensee either personally prepared this Boundary Survey or supervised the preparation of the same and the surveying work indicated is in compliance with the requirements set forth in COMAR Regulation 09.13.06.12



PATRICK J. REILLY
KRISTEN K. REILLY
 LIBERTY BELLS
 17168 FOLIO 489
 DECEMBER 30, 2019
 13.9246 ACRES +/-

MF
 WILLIAM C. HELENE
 134 F-051 PART 3
 18504850

MF
 MORRIS M. DORFROOT
 1-225211

MF
 JOHN ALLEN
 81-15127

MF
 GEORGETOWN STALL
 14-00728
 LOT 7
 TRENTON HEIGHTS

MF
 JAMES GORDON
 1170052
 LOT 1
 TRENTON HEIGHTS

MF
 BARRY K. DORFROOT
 8715562

MF
 JOHN E. ALLEN
 21427-207

MF
 HOMERADE
 CONCRETE
 MONUMENT

MF
 HIGHWAY WIDENING AS SHOWN
 ON PLAT OF
 "TRENTOUR PROJECT" 2008

