LANDOWNER INFORMATION

Property Owner(s):	Town of Cumberland ATTN: Glenn Modica, AICP Planning Director
Address:	45 Broad Street Cumberland, RI 02864
Telephone:	401.728-2400 x 0146
Email:	gmodica@cumberlandri.org

PROPERTY INFORMATION

Legal Description

Assessor's Map	Lot/Parcel	Deed Book	Deed Page	Forested Acres	Total Acres
					481.0

Property location: 1464 Diamond Hill Road	GPS Coordinates: N 41 4'20.997" W 71 4' 35.6502"
FUNDED BY	Blackstone Valley Resilient Riparian Forest Project

AUTHOR INFORMATION

Prepared by:	Gregg J. Cassidy SAF Certified Forester #751 CT Licensed Forester #29 MA Licensed Forester #31 TSP-05-4655- expire 11/29/2026 2 ½ Cucumber Hill Road Foster, RI 02825 401.965.7086 forestguy@aol.com
Plan completed:	May 2024

Property Description

The property is located in the south western part of Cumberland, east of Diamond Hill Road. The parcel has frontage on Diamond Hill Road, Angell Road, and Palomino Road but is best accessed from the library site off Diamond Hill Road since the trailheads are located there.

Trappist Monks acquired the property in 1900 from the Diocese of Providence. At one time 150 monks lived and worked on the property. Aerial photographs showed that in 1938 land near the Abbey and Monastery Brook were in agricultural use while outlying areas had returned to forest. The Abbey burned in 1950 and the Town of Cumberland purchased the property, in segments from 1968-72. By 1980, forest had invaded many of the open fields and by 2020 only the trails and fields adjacent to the trails that are maintained by the town remained open. The Town redeveloped the Monastery site for cultural uses and recreation.

The property is protected by a conservation easement that restricts improvements, including management. This easement is being revised to permit management in accordance with a forest management plan.

The part of the property near the library is maintained as open fields. The trails that traverse the property originate in that area. Young forest borders the fields, with mature mixed hardwood forest on uplands and red maple swamp and emergent wetland on poorly drained soil in low lying areas. There is mixed conifer- oak forest in the south western part of the property.

The property is in the Blackstone River Watershed. Runoff from the property flows into Monastery Brook which bisects the property, eventually reaching the Blackstone River which is less than a mile south west of this parcel. Wetland on the property consists of forested wetlands and emergent marsh on poorly drained soil.

Property History

The Monks used the southern portion of the property for intensive agriculture, including orchards and row crops. The higher elevations in the south western part of the property were also quarried. There is also evidence of harvesting and tree planting in that part of the property.

Aerial photographs show that by 1939 the western part of the property had returned to forest while the eastern part remained open. By the 1960's only the fields closest to the Visitor Center remained open. Since 2010, efforts have been made to improve trails, remove invasive plants, and improve wildlife habitat in the fields adjacent to the Visitor Center.

Threatened and Endangered Plants & Animals

A review of US Fish and Wildlife Resources indicate two federally listed species of concern may occur on the property: Northern Long-eared bat and Monarch butterfly. Northern long-eared bats (NLEB) were listed as "endangered" by the United States Fish and Wildlife Service (USFWS) in 2023. If NRCS funding is to be used on the property measures must be taken to mitigate potential impacts on NLEB. Legal protections afforded by the listing status of the bat are focused on minimizing and avoiding direct loss of bats by protecting known hibernation sites and limiting forest management activities where NLEB are most likely to be present to certain times of the year. This species is dependent on forest for habitat but since they feed on insects they hibernate through the late fall and early spring to save energy when food is not available. No tree cutting should be done April 15th through August 15th (bat rearing period). Tree cutting between August 16th through November 1st requires consultation with USFWS, through NRCS to determine if to determine if there are bat hibernacula or maternal colonies nearby which may require additional protection during the active season.

Monarch butterfly is a candidate for listing as a threatened species due to decline in populations. The cause for decline is unknown but has been attributed to loss of milkweed, mortality during fall migration, and/or loss of wintering habitat in Mexico.

Eleven species of migratory birds may occur on or near the property including: Bald Eagle, Black Billed Cuckoo, Blue winged warbler, Bobolink, Canada Warbler, Chimney Swift, Lesser Yellowlegs, Pectoral sandpiper, Prairie Warbler, Rusty blackbird, and Wood Thrush. For forest management activities to be compliant with the Migratory Bird Treaty Act, no tree harvesting should take place between April 15th and August 15th. Bald Eagle nesting is longer and, if a nest is present, the timeline for safe harvesting is limited to early fall. If the cutting schedule slips into this window, a nest survey must be done as each section is cut to avoid trees with nests. Contact NRCS prior to commencing the tree cutting activities.

The north eastern part of the property is identified as potential critical habitat by the Rhode Island Natural Heritage Program. If any large-scale disturbance, like a timber sale, is anticipated, the Department of Environmental Management (DEM) should be contacted regarding the current status of the property as critical habitat. It is likely they would require detailed maps of the area to be disturbed, a survey by a biologist, and a report detailing mitigation measures to reduce negative impacts.

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Forest Management

Most of the management on the property is focused on maintaining the agricultural land and trails. Other than removal of trees interfering with trail access the forest shows no signs of recent management. The landowners' have a high interest in stewardship but little time or expertise in management and is initiating a forest management plan to determine current conditions in the forest and to guide management decisions.

As part of the process the property was inventoried; 65 points using a 10 basal area factor (BAF) prism were randomly distributed across the property to gather information on current conditions on the property. Based on the inventory; the forest was separated into three stands for management.

LANDOWNER GOALS

The primary ownership goals are to enhance wildlife habitat and recreational use of the property.

LANDOWNER RESOURCES AND LEVEL OF INTEREST

The landowner(s) have a high level of interest in forest stewardship but have limited staff and equipment to maintain and improve the property. The landowner(s) may wish to do some of the tasks associated with implementing the forest management plan themselves, employing volunteers and using grant programs for funding to contract some of the tasks.

SUMMARY OF ACTIVITIES TO ADDRESS RESOURCE CONCERNS			
Unit	Concern	Activity	Priority
1	Public safety	Hazardous Tree Evaluation & Removal	HIGH
2	Plant Pest Pressure	Brush Control to remove invasive plants	HIGH
2	Soil & Water Quality	Minimize disturbance and maintain forested buffer	HIGH
3,5	Plant Condition- Health & Vigor	Shelterwood Harvest to create a younger age class of forest	MODERATE
1,4,6,7	Plant structure and composition	Group selection harvest to create patches of young, regenerating forest	HIGH
6	Plant Condition- Health & Vigor	Forest Improvement to reduce competition for growing space	HIGH
8	Habitat for wildlife	Forest Improvement to create Old Growth conditions	MODERATE

EXISTING CONDITIONS STAND 1.

Acreage: 49.5 Acres ***Forest Type: Oak- Hardwoods***

This is a hardwood forest, primarily oak, on rolling terrain. The largest trees are oaks but they are being replaced by other tree species as they die. The dense canopy limits the growth of understory plants in much of this stand but low bush blueberry and huckleberry can be found in openings where sunlight reaches the forest floor.

Stand Information

Forest Inventory Summary

Property of Forest		**Monastery**		**3/24/2024**	
Type	Mixed oak		**Stand**		1
				VOLUME	
DBH	**Trees/AC**	**BA/AC**	**MBF/AC**	**Cords**	
4	10	1		0.09	
6	19	4		0.75	
8	5	2		0.37	
10	3	2		0.37	
12	7	5	246	0.56	
14	7	7	491	0.37	
16	7	10	901	0.00	
18	7	11	983	0.00	
20	5	9	737	0.19	
22	4	9	819	0.00	
24	2	5	409	0.19	
26	1	3	246	0.00	
28	1	6	409	0.37	
30	2	12	328	0.93	
TOTAL	79	86	5568	4.20	
			Avg. DBH	14.16	
			% AGS	0.76	

DBH	Diameter of trees at breast height (measured 4.5 ' off the ground)
BA/AC	Basal area= area occupied by the cross section of tree trunks
MBF	Thousand board feet (volume of sawtimber)
AGS	Acceptable growing stock; trees with the potential to be used as sawtimber

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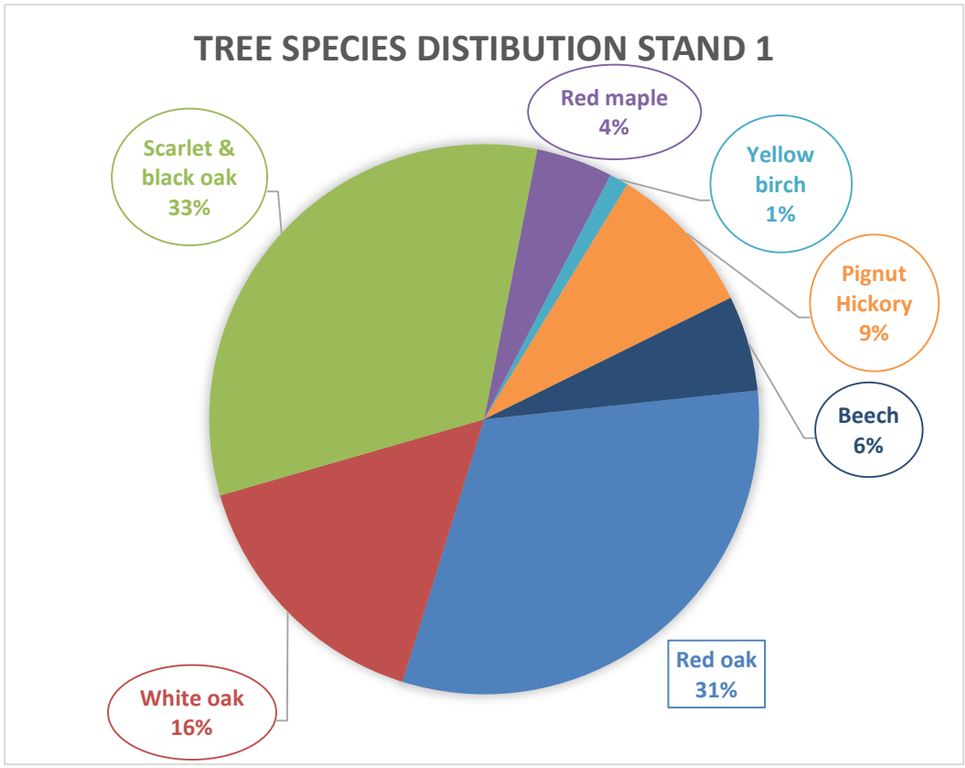
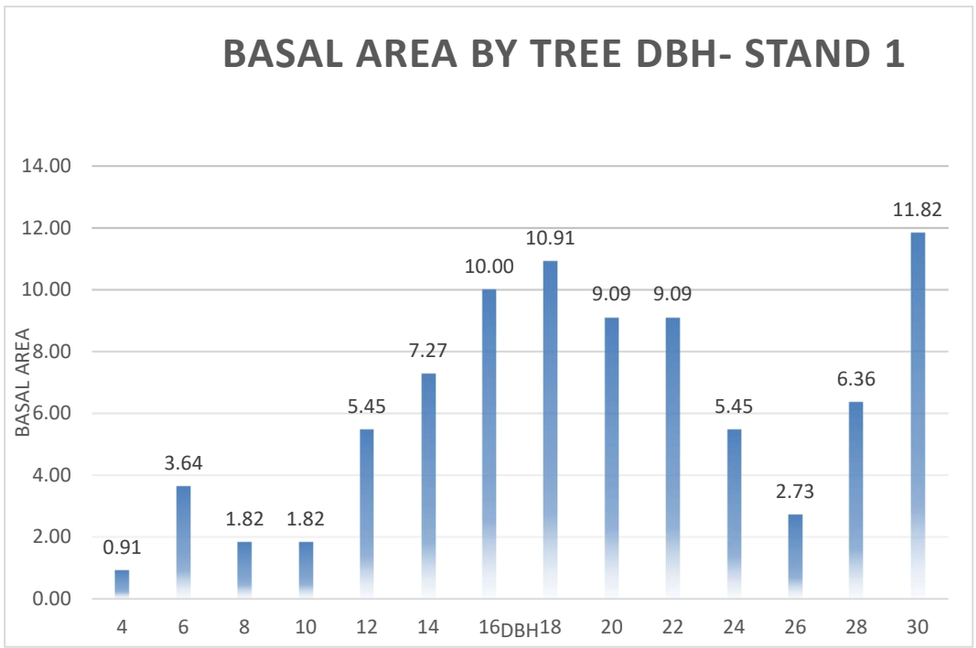

TREE SPECIES DISTIBUTION STAND 1
Red maple 4%
Yellow birch 1%
Pignut Hickory 9%
Beech 6%
Red oak 31%
White oak 16%
Scarlet & black oak 33%


BASAL AREA BY TREE DBH- STAND 1
BASAL AREA
DBH
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.91
3.64
1.82
1.82
5.45
7.27
10.00
10.91
9.09
9.09
5.45
2.73
6.36
11.82
4
6
8
10
12
14
16
18
20
22
24
26
28
30

Land use history: This area may have been cleared for agriculture but it has remained undisturbed for a long time and the oldest (and largest) trees on the property are found here. The most recent activity has been cutting of dead trees near the trail originating from parking lot near the library.

Successional trend: This is a mature stand; most of the trees here are 16 to 24" diameter at breast height (DBH) but larger trees are scattered through the area. The largest trees are more than 120 years old. There is a range of tree ages (and sizes) since younger trees became established more recently in openings created when large trees died. The largest trees are here are oaks while the smaller (younger) trees tend to be red maple and or black birch.

Forest health: The main factors impacting forest health is competition between the trees for growing space and poor drainage both which could result in slow tree growth and low vigor and predisposes the weakest trees to attack from insects or disease. Oaks were uncommon here but defoliation by spongy moth resulted in mortality of the few oaks scattered through the area. Heavy browsing by white tail deer has impacted the forest by removing small trees and shrubs.

Invasive plants: Non-native, invasive plants are wide spread in adjacent field and edge of the forest. A few Norway maple are scattered through the eastern part of the stand but are not widespread.

Site quality: This area has rolling terrain with mature trees 55 to 60 years old. Canton and Charlton fine sandy loam is the dominant soil here. This soil has moderate productivity for tree growth, with a site index of 60 for red oak. Site index refers to the expected height of trees when they are 50 years old. Lower slope positions have more moisture for tree growth, are more productive, and the trees are larger and healthier in these areas.

Stocking: This stand is stocked at about 82 percent; conditions are only slightly crowded since recent mortality of some large oaks has created space in the canopy for the crowns of the remaining trees to grow.

Habitat and Wildlife Use: This area has good value as habitat, the most important feature being the mature oaks that provide an important food source for a wide range of wildlife from game animals (like deer and turkey) to songbirds. There are also snags (standing dead trees) scattered through the edge area that serve as feeding and nesting habitat for songbirds.

Recreational opportunities: Access into and through this area is limited to the existing trails due to the slopes and dense vegetation.

Potential for forest products: Trees large enough to be used for timber are well distributed through this area but the sensitive nature of the site due to aesthetic concerns and difficult access due to poor drainage makes a large- scale commercial harvest here difficult. There is potential for a commercial harvest but this site has sensitive environmental conditions and potential harvests would need to be carefully planned and executed. General guidelines would be to mark trees to be harvested and skid trails prior to the harvest and conducting harvests when the ground is frozen.

Water quality issues: This area is well drained but activities here have the potential to affect nearby wetlands. Best management practices (BMP's) should always be used here such as maintaining a forested buffer adjacent to wet areas.

Desired Future Condition for Stand 1.

Improve wildlife habitat by:

- Facilitating the establishment of young forest, which is lacking in the surrounding area, to provide feeding and nesting areas for turkey, grouse, and many species of songbirds.

Improving recreation by:

- Removing hazardous trees adjacent to trails.
- Encouraging the establishment of a mixture of native plants which will enhance the visual diversity adjacent to trails.

FOREST MANAGEMENT ACTIVITIES FOR STAND 1.

Recommended silvicultural system:

- Hazardous tree evaluation & treatment
- Group selection harvest

Details of the silvicultural prescription:

The forest here is susceptible to mortality due to another stress event, like insect, disease, or weather, since most of the tress are old and there is little diversity in tree age or the tree species growing here. At a minimum, hazardous trees adjacent to trails should be identified and removed. Management efforts should also focus on regenerating the forest to establish a mixture of tree species and age classes and create a forest more resistant to mortality following a stress event (like insect attack or drought).

This stand should also receive a group selection harvest where there is good access adjacent to the trail but an undisturbed buffer should be retained adjacent to the stream. The group selection harvest should create several small clearings, each about ½ to one acre in size. All trees larger than two inches DBH should be cut in each clearing to ensure the forest floor receives full sunlight and encourage the establishment of young trees and shrubs.

Analysis of Forestry Conservation Alternatives:

1. Passive management (no action taken) would result in dangerous conditions for hikers and an older, declining forest.
2. The recommended alternative would will create a safe environment for recreation and a forest with diversity in tree species and ages that is resilient and able to withstand stress.
3. Intensive management (not recommended at this time) could involve harvesting throughout the Stand to establish a young, healthy, and diverse forest.

Planned Activities					
Treatment	BA/AC Removed	Volume/AC	Units	Year	Priority
Hazardous tree evaluation & treatment	TBD	TBD	2900 LF	2024-26	HIGH
Group selection harvest	86	5.5 MBF 4.2 Cords	1.5 AC	2025-30	MODERATE

EXISTING CONDITIONS STAND 2.

Acreage: 78.2 Acres ***Forest Type: Red Maple.***

This is a low- lying area with poorly drained soil. This area includes forested wetlands, shrub swamp, and emergent wetlands. The acreage of forested wetland fluctuates with activity of beavers since flooding kills the trees. Red maple is the dominant tree species with scattered oaks and white ash. Sweet pepperbush, highbush blueberry, and spicebush are the most common understory plants.

Forest Inventory Summary

Property of Forest		**Monastery**		**3/24/2024**
Type	Red maple		**Stand**	2
			VOLUME	
DBH	**Trees/AC**	**BA/AC**	**MBF/AC**	**Cords**
4	29	3		0.28
6	64	13		2.79
8	22	8		1.68
10	14	8		1.68
12	10	8	0	1.68
14	7	8	0	1.68
16	5	8	514	0.56
18	6	10	257	1.68
20	1	3	0	0.56
22	3	8	514	0.56
24	2	5	257	0.56
26	2	5	514	0.00
28	1	3	257	0.00
30	0	0	0	0.00
TOTAL	163	85	2313	13.69
			Avg. DBH	9.77
			% AGS	0.44

DBH	Diameter of trees at breast height (measured 4.5 ' off the ground)
BA/AC	Basal area= area occupied by the cross section of tree trunks
MBF	Thousand board feet (volume of sawtimber)
AGS	Acceptable growing stock; trees with the potential to be used as sawtimber

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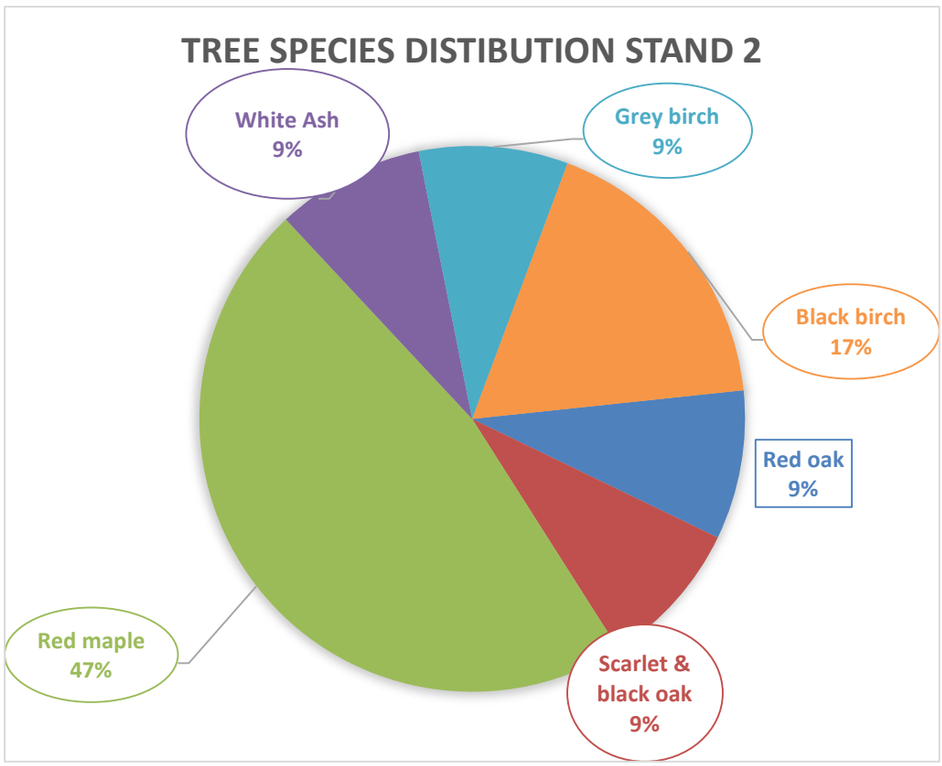
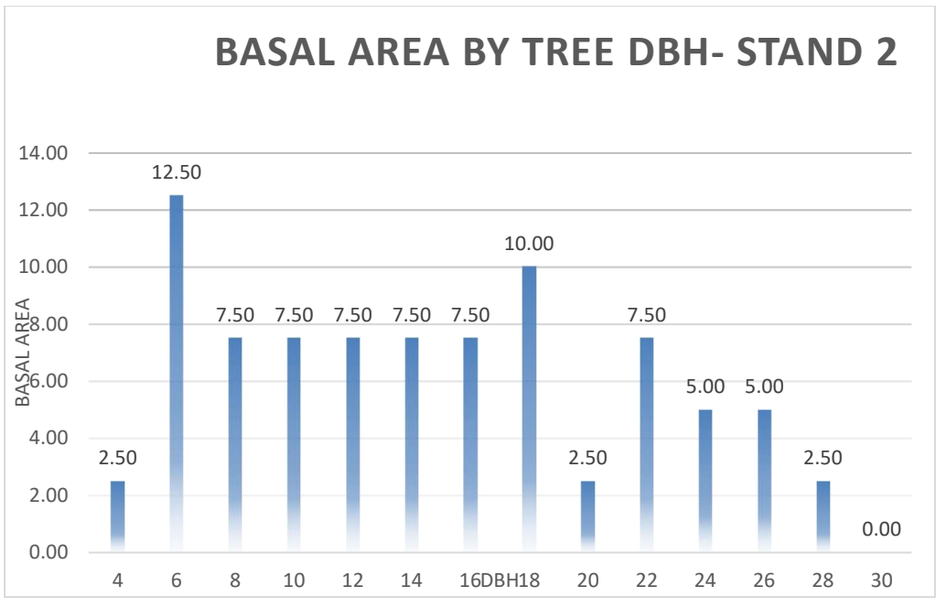

TREE SPECIES DISTIBUTION STAND 2
White Ash 9%
Grey birch 9%
Black birch 17%
Red oak 9%
Scarlet & black oak 9%
Red maple 47%


BASAL AREA BY TREE DBH- STAND 2
BASAL AREA
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
2.50
12.50
7.50
7.50
7.50
7.50
7.50
10.00
2.50
7.50
5.00
5.00
2.50
0.00
4
6
8
10
12
14
16DBH18
20
22
24
26
28
30

Land use history: Although this area may have been used for grazing or hay at one time, it is likely the wet and rocky conditions discouraged farming.

Successional trend: Most of the dominant trees here are 16 to 20" DBH, although larger trees are scattered through the area. The largest trees are red maple and oaks and are growing adjacent to streams where the drainage is slightly better.

Forest health: The main factor impacting forest health is the poor drainage which results in slow tree growth and could predispose the weakest trees to attack from insects or disease. Defoliation by Gypsy Moth had less of an impact here than other parts of the property since oaks are only found on the edges of the stand (where soil conditions are drier). Dead white ash are scattered through the stand area and is likely due to ash decline which can be caused by several diseases (ash yellows and verticillium wilt) as well as emerald ash borer. Non-native, invasive plants are scattered through the area. These plants could interfere with the establish and growth of native trees and shrubs.

Site quality: This is a low part of the property where runoff collects. Monastery Brook flows through this area toward the Blackstone River. Ridgebury, Whitman, and Leicester fine sandy loam is the soil throughout most of this area. Potential productivity for tree growth is low because of extreme wetness with a site index of 55 for red maple. Site index refers to the expected height of the tree at 50 years old; trees are taller on productive sites. The high-water table forces tree roots to grow near the surface, making windthrow (trees toppled by the wind) a problem. Rutting and soil compaction could also be a problem if heavy machinery is used in this area.

Stocking: This stand is stocked at 75 percent; the trees have adequate space to grow. Mortality of oaks and white ash has created openings in the canopy, allowing the crowns of the remaining trees to receive sunlight.

Invasive Plants: The eastern part of this stand part of this stand (near the library) has been impacted by invasive plants (primarily barberry, honey suckle and multiflora rose). Prior to any activities that disturb the site a program to eradicate the invasive plants should be implemented. A combination of mechanical and chemical methods should be used and the exact technique tailored to individual plant species. It may take three years of treatment to control the invasive plants and the site should be monitored annually to insure they don't spread.

Habitat and Wildlife Use: This stand is considered a wetland and provides unique habitat for wildlife. Wetlands have high intrinsic value for many species of wildlife and some areas, like adjacent to the stream, provide critical habitat for amphibians.

The forested wetland provides cover and increased plant diversity, benefiting a wide range of wildlife. The riparian area along the stream also provides a way for wildlife to move through the property and onto adjacent properties by using it as a natural travel corridor. Along the edges where conditions are drier, there are mature oaks that provide an important food source. There are also snags (standing dead trees) scattered through the edge area that serve as feeding and nesting habitat for songbirds.

Recreational opportunities: Access into and through this area is difficult due to the high-water table and dense vegetation and travel is limited to existing trails.

Potential for forest products: There are large trees here but many are red maple (which have low value for sawtimber). Difficult access due to wetlands further limit the potential for sustainable commercial harvests.

Water quality issues: This area is poorly drained with a high- water table which limits the rooting depth of the trees and increases the chance of trees blowing over from high winds.

Best management practices (BMP's) should always be used if/when harvesting here to protect the site including: leaving an undisturbed buffer adjacent to streams, harvesting only when the ground is frozen or very dry, limiting the number of trees harvested at one time, and seeding disturbed soil on trails to prevent erosion.

MANAGEMENT OBJECTIVES FOR STAND 2.

Improve wildlife habitat by:

- Maintaining this stand at a high density to provide shelter from weather and predators ranging from deer and small mammals, songbirds, to hawks and owls.

Protect soil and water quality:

- Maintaining high tree density and minimizing disturbance in low lying areas near the stream.

Enhance forest health

- Controlling invasive plants

MANAGEMENT RECOMMENDATIONS FOR STAND 2.

Recommended silvicultural system:

- Reevaluate
- Invasive plant removal

Details of the silvicultural prescription:

This stand provides important habitat for wildlife and protects water quality in the stream by filtering runoff. This stand should be maintained at high density stocking and no active management (other than control of invasive plants) is recommended for the next ten years except for removing storm damaged trees or those needed to be cleared to improve access.

Special treatment in is needed in the north western part of the stand since invasive plants are becoming established here. These non- native plants could prevent native trees from becoming established. A combination of mechanical and chemical methods should be used and the exact technique tailored to individual plant species. It may take three years of treatment to control the invasive plants and the site should be monitored annually to insure there isn't another outbreak.

Conditions will change over time and this area should be reevaluated every five years.

Analysis of Forestry Conservation Alternatives:

1. Passive management (no action taken) would will maintain high tree density and minimize disturbance but would allow the growth and spread of invasive plants.

2. The recommended option would involve an invasive plant removal.

3. Intensive management (not recommended at this time) could mimic old growth conditions. This would involve patch cuts, removing groups of trees to create small openings. The trees should be felled and left in place to serve as coarse woody debris. Additional trees should be girdled to create snags. An enhancement planting approach could be used to establish groups of white pine (planted 10-15 feet apart) to create shelter from weather and predators as well as to increase the diversity of tree species found here. These plantings may need protection from deer until they are well established.

Planned Activities					
Treatment	BA/acre	Volume /acre	Units	Year	Priority
Invasive Plant Control	NA	NA	42.5 AC	2024-2027	HIGH
Reevaluate	NA	NA	78.2 AC	2024-29	HIGH

EXISTING CONDITIONS STAND 3.

Acreage: 11.9 Acres ***Forest Type: Red oak.***

This is a forest, dominated by red oak, on side slopes adjacent to wetlands. The dense overstory suppresses the growth of understory plants but witch hazel and spicebush can be founded at the edges (adjacent to wetlands).

Stand Information

Forest Inventory Summary

Property of Forest		**Monastery**		**3/24/2024**
Type	Red oak		**Stand**	3
			VOLUME	
DBH	**Trees/AC**	**BA/AC**	**MBF/AC**	**Cords**
4	0	0		0.00
6	0	0		0.00
8	5	2		0.41
10	27	15		3.67
12	13	10	795	0.41
14	14	15	1432	0.00
16	11	15	1432	0.00
18	8	13	1273	0.00
20	6	12	955	0.41
22	2	5	477	0.00
24	2	7	636	0.00
26	1	3	318	0.00
28	1	3	318	0.00
30	2	12	1114	0.00
TOTAL	91	112	8750	4.89
			Avg. DBH	15.03
			% AGS	0.94

DBH	Diameter of trees at breast height (measured 4.5 ' off the ground)
BA/AC	Basal area= area occupied by the cross section of tree trunks
MBF	Thousand board feet (volume of sawtimber)
AGS	Acceptable growing stock; trees with the potential to be used as sawtimber

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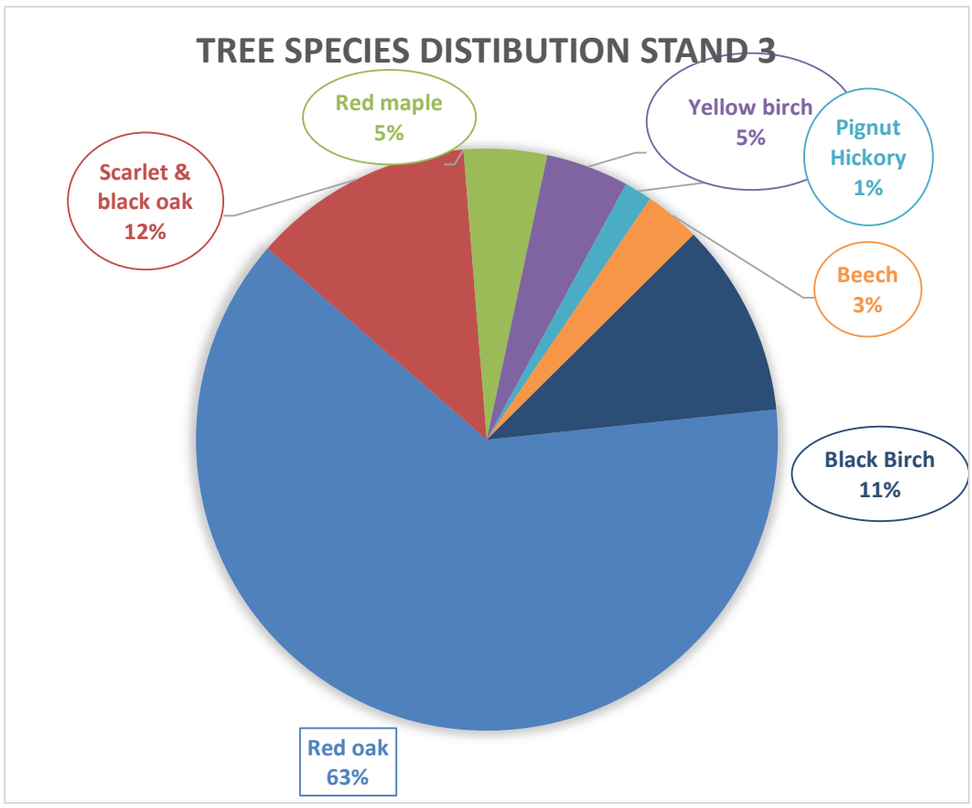
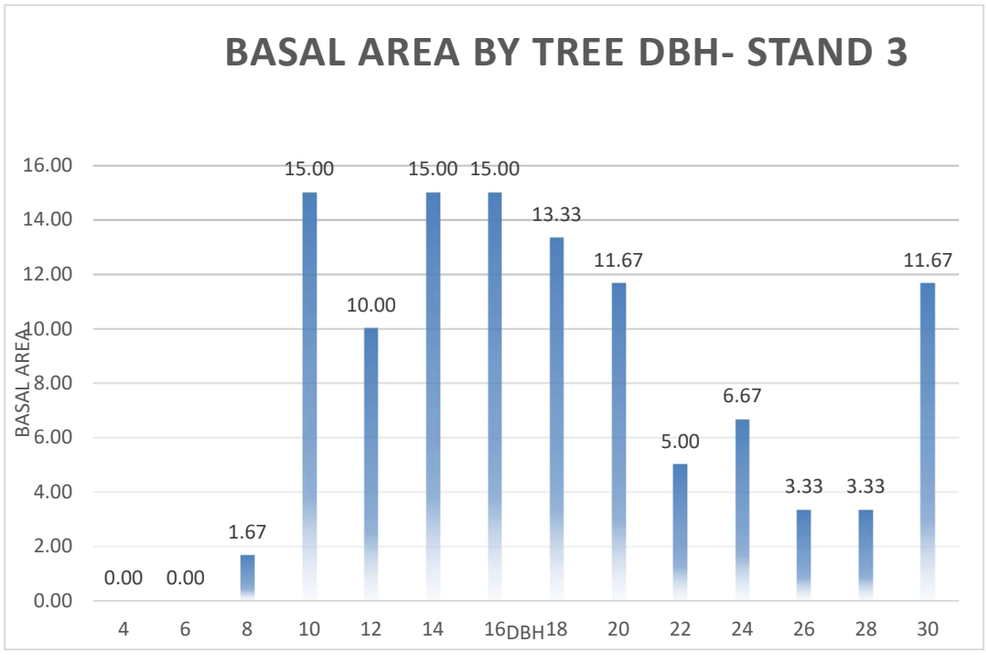

TREE SPECIES DISTIBUTION STAND 3
Red maple 5%
Yellow birch 5%
Pignut Hickory 1%
Scarlet & black oak 12%
Beech 3%
Black Birch 11%
Red oak 63%


BASAL AREA BY TREE DBH- STAND 3
BASAL AREA
DBH
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.00
0.00
1.67
15.00
10.00
15.00
15.00
13.33
11.67
5.00
6.67
3.33
3.33
11.67
4
6
8
10
12
14
16
18
20
22
24
26
28
30

Land use history: The stone walls on the perimeter indicate this area may have been used for grazing at one time but returned to forest. Many of the trees here originated from stump sprouts so it is likely that this area was heavily harvested around the turn of the century.

Successional trend: Although this stand originated from an aggressive harvest, the trees are now mature, with most trees 18-22 inches DBH. Very large trees are scattered through the so it is likely some trees were retained. Most of the trees are 80-100 years old but older trees are present, mostly near the adjacent wetland.

Forest health: The main factors impacting forest health here is competition between the trees for growing space and the age of the trees. Many of the oaks have dieback in the crowns and show other symptoms of decline. This is likely due to the age and condition of individual trees since a tree with a small crown and many dead branches will be surrounded by trees that appear healthy and vigorous.

Invasive plants: Non-native invasive plants are not present in this stand but were detected in adjacent areas. The edges of this stand should be monitored annually.

Site quality: Canton- Charlton fine sandy loam is the main soil found here. This soil is well drained with low potential productivity for tree growth (site index ranging from 60 to 65 for red oak). The highest parts of the stand have less fertile soil while lower slope positions have more moisture for tree growth, are more productive, and the trees are larger and healthier here.

Stocking: This stand is stocked at 88 percent; there is a high degree of competition between trees for growing space.

Habitat and Wildlife Use: This area has moderate to good value as habitat, the main features being mature oaks that provide an important food source and snags (standing dead trees) scattered through the area that serve as feeding and nesting habitat for songbirds.

Recreational opportunities: There is good access to this area via a network of trails and a power line bisecting the property but difficult topography and dense vegetation limits access to the perimeter.

Potential for forest products: Trees large enough to be used for timber are well distributed through this Stand. The size and quality of the trees is better than other parts of the property and there is potential for a commercial harvest.

The most important steps to improve the outlook for sustainable harvests is to locate and mark the property boundaries and to carefully plan the harvest trails and landings to avoid disturbing nearby wetlands. Trees should be marked prior to the harvest and a contract used to specify the terms of the harvest.

Water quality issues: This area is well drained area but activities here have the potential to affect nearby wetlands.

DESIRED FUTURE CONDITION FOR STAND 3.

Improve Forest health by:

- Creating young forest that is resilient and able to withstand and recover from adverse conditions, such as drought or attack from insects or disease.

Protect soil and water quality:

- Maintaining high tree density and minimizing disturbance in areas near the adjacent wetland.

Improved wildlife habitat by:

- Creating young forest (less than 20 years old) that is lacking in the surrounding area to provide browse for deer and feeding and nesting areas for turkey, grouse, and many species of songbirds.
- Increasing production of acorns by promoting the growth of mature oaks, especially white oak.

Enhance production of forest products by:

- Promoting the establishment and growth of oaks and other hardwood trees in the understory.
- Removing poor quality trees to increase the growth rate of the remaining trees.

FOREST MANAGEMENT ACTIVITIES FOR STAND 3.

Recommended silvicultural system:

- Shelterwood Harvest

Details of the silvicultural prescription:

The forest here is susceptible to mortality due to another stress event, like insect, disease, or weather, since most of the tress are old and there is little diversity in tree age or the tree species growing here. Management efforts should focus on regenerating the forest to establish a mixture of tree species and age classes and create a forest more resistant to mortality following a stress event (like insect attack or drought). Access to the western perimeter is difficult due to wetlands and unclear property boundaries but efforts should be made to address that and the condition there reevaluated in 5 years before implementing management.

The stand should receive a shelterwood harvest which is designed to remove a large portion of the stand, while leaving some trees to shelter the site. The harvest would remove 40 to 60 percent of the mature trees including trees from all diameter classes (not just the largest trees). The intensity of the harvest can be varied somewhat to higher tree density near the home site and areas that slope toward wetlands. A key step is the removal of small (4-10 "DBH) trees, as well as larger trees, to ensure enough light reaches the forest floor to encourage the establishment and early growth of seedlings. About ½ of the poor quality and un-merchantable trees should be harvested as firewood or left to provide habitat on the forest floor.

Mature trees left scattered through the area provide a source of seed and shelter for the seedlings. The increased sunlight and soil disturbance caused by harvesting will stimulate the establishment and early growth of seedlings. The remaining trees can be removed in two or more harvests when seedlings and saplings are well developed. The length of time before another harvest varies depending on the amount of regeneration present and other conditions (weather, animals) that could impact the germination and early growth of tree seedlings. The time required typically takes from five to 15 years but the area should be periodically re-evaluated to ensure adequate regeneration is present (400-500 seedlings per acre) before another harvest.

Analysis of Forestry Conservation Alternatives:

1. Passive management (no action taken) would maintain an older forest that is likely to experience heavy mortality following stress like a drought or insect outbreak.

2. The recommended alternative would will create a safe environment for recreation and a forest with diversity in tree species and ages that is resilient and able to withstand stress.

3. Intensive management (not recommended at this time) would involve removing more trees, in patch cuts and group selection harvests in a more aggressive harvest, to facilitate the establishment of young forest more quickly.

Planned Activities					
Treatment	BA/acre Removed	Volume /acre Harvested	Units	Year	Priority
Shelterwood Harvest	47	3.9 MBF 2.0 CDS	11.9 AC	2028-30	HIGH

EXISTING CONDITIONS STAND 4.

Acreage: 43.1 Acres ***Forest Type: Mixed Oak***

This area consists of level to gently sloping terrain dominated by oak trees. Low bush blueberry and huckleberry are the most common understory plants.

Stand Information

Forest Inventory Summary

Property of		**Monastery**		**3/24/2024**
Forest Type	Mixed oak		**Stand**	4
			VOLUME	
DBH	**Trees/AC**	**BA/AC**	**MBF/AC**	**Cords**
4	0	0		0.00
6	17	3		0.72
8	15	5		1.07
10	24	13		2.86
12	17	13	431	1.79
14	11	12	862	0.36
16	15	22	1868	0.00
18	5	8	718	0.00
20	2	3	144	0.36
22	1	2	144	0.00
24	0	0	0	0.00
26	0	0	0	0.00
28	0	0	0	0.00
30	0	0	0	0.00
TOTAL	106	82	4167	7.15
			Avg. DBH	11.89
			% AGS	0.67

DBH	Diameter of trees at breast height (measured 4.5 ' off the ground)
BA/AC	Basal area= area occupied by the cross section of tree trunks
MBF	Thousand board feet (volume of sawtimber)
AGS	Acceptable growing stock; trees with the potential to be used as sawtimber

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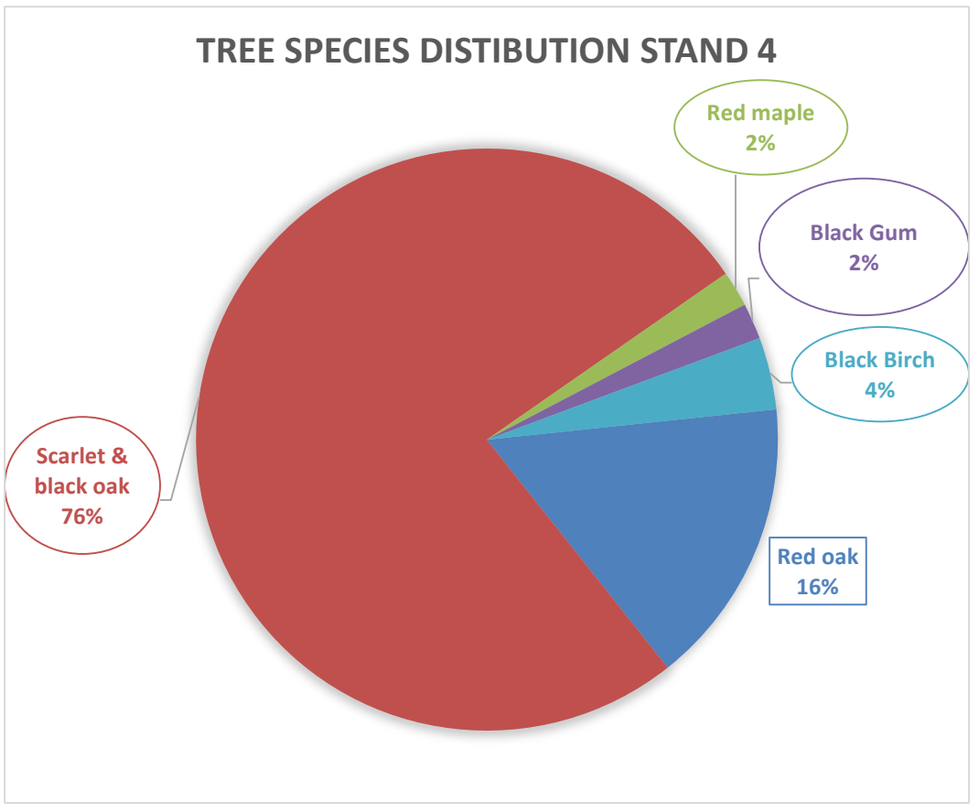
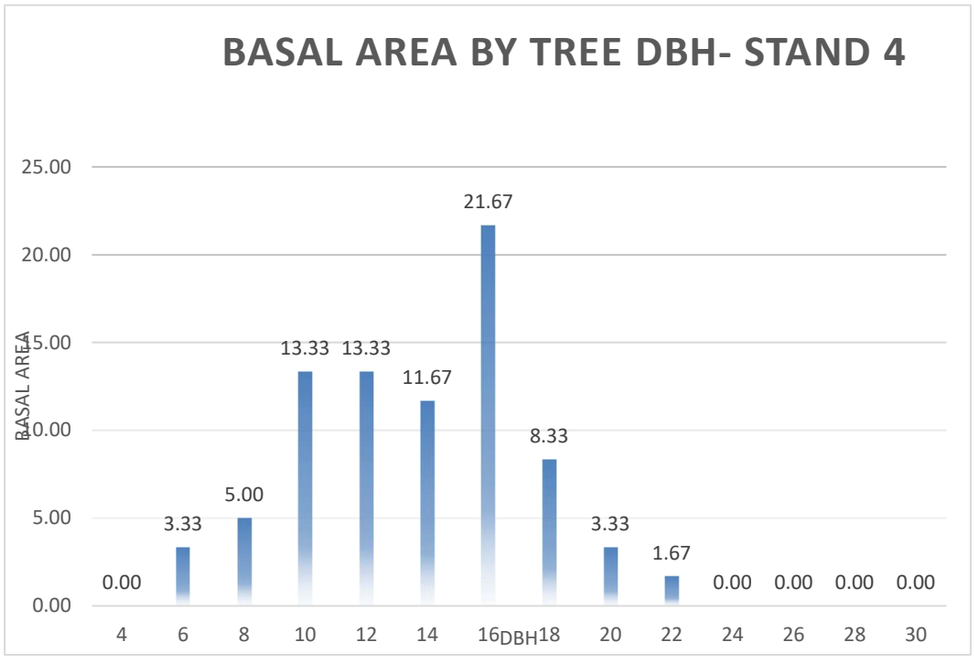

TREE SPECIES DISTIBUTION STAND 4
Red maple 2%
Black Gum 2%
Black Birch 4%
Red oak 16%
Scarlet & black oak 76%


BASAL AREA BY TREE DBH- STAND 4
BASAL AREA
DBH
25.00
20.00
15.00
10.00
5.00
0.00
0.00
3.33
5.00
13.33
13.33
11.67
21.67
8.33
3.33
1.67
0.00
0.00
0.00
0.00
4
6
8
10
12
14
16
18
20
22
24
26
28
30

Land use history: Although it may have been used for grazing, the low productivity limited its use. The forest here originated from stump sprouts so it was harvested after the farmland returned to forest.

Successional trend: This is a mature stand, with most trees 60 -80 years old and 14-18' DBH.

Forest health: The main factor impacting forest health has been recent defoliation by Spongy moth (Gypsy moth) and many of the oaks here have dieback in the crowns and show other symptoms of decline associated with poor growing conditions and low growth rate. About seven percent of the trees have recently died, likely due to defoliation and drought. The poor growing conditions due to the sandy, infertile soil makes trees less resilient and attack from insects and/or disease has a more dramatic negative impact on tree health and vigor than other parts of the property.

Invasive plants: Non-native invasive plants are not present in the stand but the southern boundary (adjacent to the power line) should be monitored since this is the area where non- native invasive plants are likely to first get established.

Site quality: Canton and Charlton fine sandy loam is the soil found here. This soil is well drained with low potential productivity for tree growth (site index ranging from 50 to 55 for scarlet oak). The soil has low capacity for holding moisture and nutrients making it less productive for growing trees. Although there are no mature conifers here, conifers (like white pine) are better adapted to grow on the soil conditions here and will outgrow all other tree species. There are low "wet spots" in this stand where water collects. These areas have more moisture for tree growth and the trees are larger and healthier here.

Stocking: This stand is stocked at 68 percent; there is low competition between trees for growing space due to recent mortality of some of the larger oaks.

Habitat and Wildlife Use: This area has low value as habitat, the main features being mature oaks that provide an important food source and snags (standing dead trees) scattered through the area that serve as feeding and nesting habitat for songbirds.

Recreational opportunities: There is good access to this Stand via the transmission line the serves as the southern boundary as well as hiking trails that traverse the area.

Potential for forest products: The low volume and low quality of the trees hampers management of this area for forest products since markets for the type of trees found here are poor.

Water quality issues: This area is well drained area but there are areas where water collects.

DESIRED FUTURE CONDITION FOR STAND 4.

Improve wildlife habitat by:

- Increasing production of acorns by favoring potential mast producing trees when harvesting.
- Creating young forest (less than 20 years old) that is lacking in the surrounding area.
- Alternating cut and uncut areas to maximize edge habitat.

Enhance forest health by:

- Establishing young forest, which is usually vigorous and resistant to attack from insects and disease.

FOREST MANAGEMENT ACTIVITIES FOR STAND 4.

Recommended silvicultural system:

- Group Selection Harvest

Details of the silvicultural prescription:

Due to the infertile soil conditions and poor health of the mature trees a thinning will not stimulate growth very much. This stand should receive a group selection harvest to promote the regeneration of valuable trees and increase the diversity of age classes on the property, which will improve its value to wildlife

The group selection harvest should create two (2) to four (4) small openings' 1/2 to 1 acre in size. These areas will receive full sunlight and encourage the development of a dense stand of trees and shrubs. The dense growth of young trees in these areas will provide browse for deer and feeding and nesting areas for turkey, grouse, and many species of songbirds. A series of various size (and shaped) openings scattered throughout the stand are more valuable as habitat than a few larger openings.

Oaks with large, well-formed crowns should be favored on the edges of each clearing by removing competing trees on at least three sides. This will improve the health and vigor of the trees and lead to increased mast production benefiting wildlife. The removal of hazardous trees adjacent to trails should be coordinated with this harvest.

Analysis of Forestry Conservation Alternatives:

1. Passive management (no action taken) would result in an older, declining forest.

2. The recommended alternative would will create a safe environment for recreation and a forest with diversity in tree species and ages that is resilient and able to withstand stress.

3. Intensive management (not recommended at this time) would involve more numerous group selection harvests and supplemental planting of white pine to create cover for wildlife.

Planned Activities					
Treatment	BA/acre Removed	Volume /acre Harvested	Units	Year	Priority
Group selection harvest	82	4.1 MBF 7.1 CDS	4.0 AC	2025-28	MOD

EXISTING CONDITIONS STAND 5.

Acreage: 29.9 Acres ***Forest Type: Oak- Hardwoods***

This area consists of level to gently sloping terrain on a hillside. Oaks are the dominant tree species but a mixture of other hardwoods are also found here. Low bush blueberry and huckleberry are the most common understory plants but spice bush, witch hazel, and high-bush blueberry are common at the edge of the adjacent wetland.

Stand Information

Forest Inventory Summary

Property of Forest		**Monastery**		**3/24/2024**
Type	Oak- Hardwoods		**Stand**	5
			VOLUME	
DBH	**Trees/AC**	**BA/AC**	**MBF/AC**	**Cords**
4	13	1		0.12
6	28	6		1.16
8	23	8		1.62
10	12	7		1.39
12	12	9	845	0.00
14	3	3	211	0.23
16	7	10	951	0.00
18	7	11	1057	0.00
20	3	7	634	0.00
22	3	7	528	0.23
24	1	3	317	0.00
26	1	2	211	0.00
28	1	7	634	0.00
30	0	0	0	0.00
TOTAL	113	80	5389	4.75
			Avg. DBH	11.40
			% AGS	0.81

DBH	Diameter of trees at breast height (measured 4.5 ' off the ground)
BA/AC	Basal area= area occupied by the cross section of tree trunks
MBF	Thousand board feet (volume of sawtimber)
AGS	Acceptable growing stock; trees with the potential to be used as sawtimber

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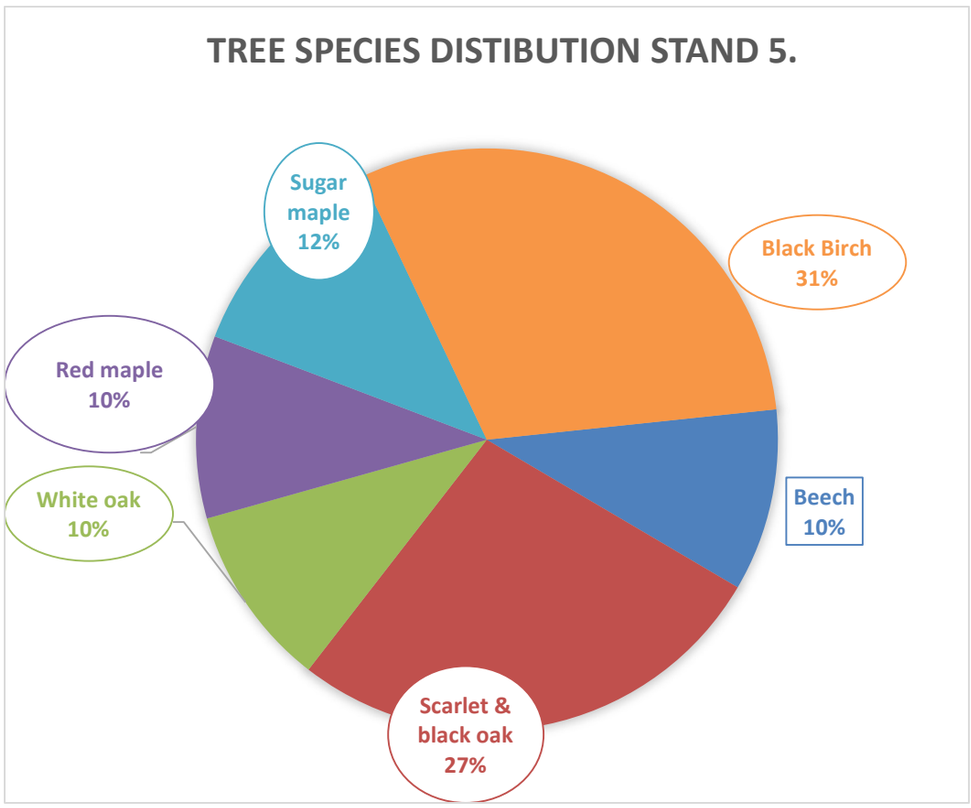
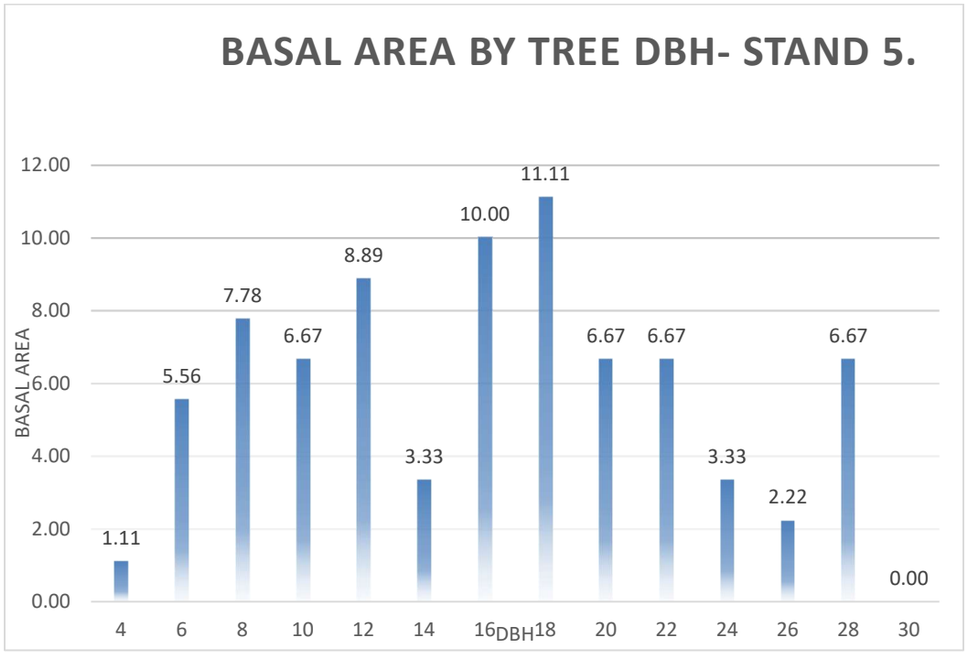

TREE SPECIES DISTIBUTION STAND 5.
Sugar maple 12%
Black Birch 31%
Red maple 10%
White oak 10%
Beech 10%
Scarlet & black oak 27%


BASAL AREA BY TREE DBH- STAND 5.
BASAL AREA
DBH
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1.11
5.56
7.78
6.67
8.89
3.33
10.00
11.11
6.67
6.67
3.33
2.22
6.67
0.00
4
6
8
10
12
14
16
18
20
22
24
26
28
30

Land use history: Although it may have been used for grazing, the rocky soil limited its use. The forest here originated from stump sprouts so it was harvested after the farmland returned to forest.

Successional trend: This is a mature stand, with most trees 80-100 years old but many trees over 100 years old scattered through the area.

Forest health: The main factor impacting forest health is the age of the trees and recent defoliation by Spongy moth (Gypsy moth); about eight percent of the trees have recently died. Many of the oaks here have dieback in the crowns and show other symptoms of decline associated with recent stress and low vigor.

Invasive plants: Invasive non-native plants were not observed in the forest but the area near the edge of the forest should be monitored annually since open areas are usually where they become established initially.

Site quality: Canton and Charlton fine sandy loam is the soil found here. This soil is well drained with good potential productivity for tree growth (site index ranging from 60 to 65 for red oak). The terrain influences productivity since lower slope positions have more moisture and higher fertility and the trees are larger and healthier than adjacent areas.

Stocking: This stand is stocked at 68 percent; there is low competition between trees for growing space due to recent mortality of some of the larger oaks.

Habitat and Wildlife Use: This area has good value as habitat, the most important feature being the mature oaks that provide an important food source for a wide range of wildlife from game animals (like deer and turkey) to songbirds. There are also snags (standing dead trees) scattered through the edge area that serve as feeding and nesting habitat for songbirds. There are now about 6 snags (standing dead trees) per acre which is nearly optimal for meeting the needs of wildlife.

Recreational opportunities: There is good access to the edge of this stand via trails but access to the interior is limited by dense vegetation, rockiness, and wet conditions in some areas.

Potential for forest products: Trees large enough to be used for timber are well distributed through this area but difficult access and aesthetic concerns are considerations influencing harvests.

There is potential for a commercial harvest in about ten years but the most important step to improve the outlook for producing forest products here is to resolve issues with the easement governing use of the property and to improve access into the interior of this stand. This site has sensitive environmental conditions and potential harvests need to be carefully planned and executed. General guidelines would be to mark trees to be harvested and skid trails prior to the harvest and conducting harvests when the ground is frozen.

Water quality issues: Drainage in this stand varies from fairly well drained in the south part of the stand to poorly drained near the stream. Activities in the drier parts of the stand still have the potential to affect nearby wetlands due to surface runoff. The area near the stream is poorly drained with a seasonal high-water table which limits the rooting depth of the trees and increases the chance of trees blowing over from high winds. The soil here is also prone to rutting if large equipment is used here during wet season.

Best management practices (BMP's) should always be used when harvesting here to protect the site including: harvesting only when the ground is frozen or very dry, limiting the number of trees harvested at one time, and seeding disturbed soil on trails to prevent erosion.

DESIRED FUTURE CONDITION FOR STAND 5.

Improve Forest health by:

- Creating young forest that is resilient and able to withstand and recover adverse conditions, such as drought or attack from insects or disease.

Protect soil and water quality:

- Maintaining high tree density and minimizing disturbance in areas near the adjacent wetland.

Improved wildlife habitat by:

- Creating young forest (less than 20 years old) that is lacking in the surrounding area to provide browse for deer and feeding and nesting areas for turkey, grouse, and many species of songbirds.
- Increasing production of acorns by promoting the growth of mature oaks, especially white oak.

Enhance production of forest products by:

- Promoting the establishment and growth of oaks in the understory.
- Removing poor quality trees to increase the growth rate of the remaining trees.

FOREST MANAGEMENT ACTIVITIES FOR STAND 5.

Recommended silvicultural system:

- Shelterwood Harvest

Details of the silvicultural prescription:

Management efforts should focus on regenerating the forest to establish a mixture of tree species and age classes and create a forest more resistant to mortality following a stress event (like insect attack or drought).

This stand should receive a shelterwood harvest but an undisturbed buffer should be retained adjacent to the stream.

The shelterwood harvest is designed to remove a large portion of the stand (allowing sunlight to reach the forest floor) while retaining some trees to provide a source of seed and shelter the site. The harvest would remove about 40 percent of the trees but the intensity of the harvest can be varied somewhat to retain higher tree density near areas that slope toward wetlands.

The increased sunlight and soil disturbance caused by harvesting will stimulate the establishment and early growth of seedlings. Mature oaks left scattered through the area provide a source of seed and shelter from the sun and wind. These trees can be harvested after seedlings and saplings are well developed. The length of time before another harvest varies depends on adequate regeneration (400-500 seedlings per acre) being present. This is affected by the number of seed produced by the remaining trees as well as other conditions (weather, animals) that impact the germination and early growth of tree seedlings. It typically takes five to 15 years for saplings to develop but the area should be periodically re-evaluated to ensure adequate regeneration is present before considering another harvest.

Analysis of Forestry Conservation Alternatives:

1. Passive management (no action taken) would result in an older, declining forest.

2. The recommended alternative would will create a safe environment for recreation and a forest with diversity in tree species and ages that is resilient and able to withstand stress.

3. Intensive management (not recommended at this time) would involve more aggressive harvesting including numerous group selection harvests.

Planned Activities					
Treatment	BA/acre Removed	Volume /acre Harvested	Units	Year	Priority
Shelterwood Harvest	35	3.0 MBF 1.0 CDS	29.9 AC	2032-34	MOD

EXISTING CONDITIONS STAND 6.

Acreage: 67.7 Acres ***Forest Type: Mixed Oak***

This is a mixed oak forest on rolling terrain. There are scattered mature white pine and hemlock and white pine saplings are common. Low bush blueberry and huckleberry are the most common understory plants.

Stand Information

Forest Inventory Summary

Property of Forest		**Monastery**		**3/24/2024**
Type	Mixed oak		**Stand**	6
			VOLUME	
DBH	**Trees/AC**	**BA/AC**	**MBF/AC**	**Cords**
4	61	5		0.56
6	31	6		1.25
8	41	14		2.92
10	31	17		3.61
12	10	7	549	0.28
14	6	7	488	0.28
16	7	11	793	0.42
18	4	7	610	0.14
20	4	8	610	0.28
22	1	3	122	0.28
24	0	1	61	0.00
26	0	0	0	0.00
28	0	0	0	0.00
30	0	1	0	0.00
TOTAL	197	87	3233	10.01
			Avg. DBH	9.02
			% AGS	0.75

DBH	Diameter of trees at breast height (measured 4.5 ' off the ground)
BA/AC	Basal area= area occupied by the cross section of tree trunks
MBF	Thousand board feet (volume of sawtimber)
AGS	Acceptable growing stock; trees with the potential to be used as sawtimber

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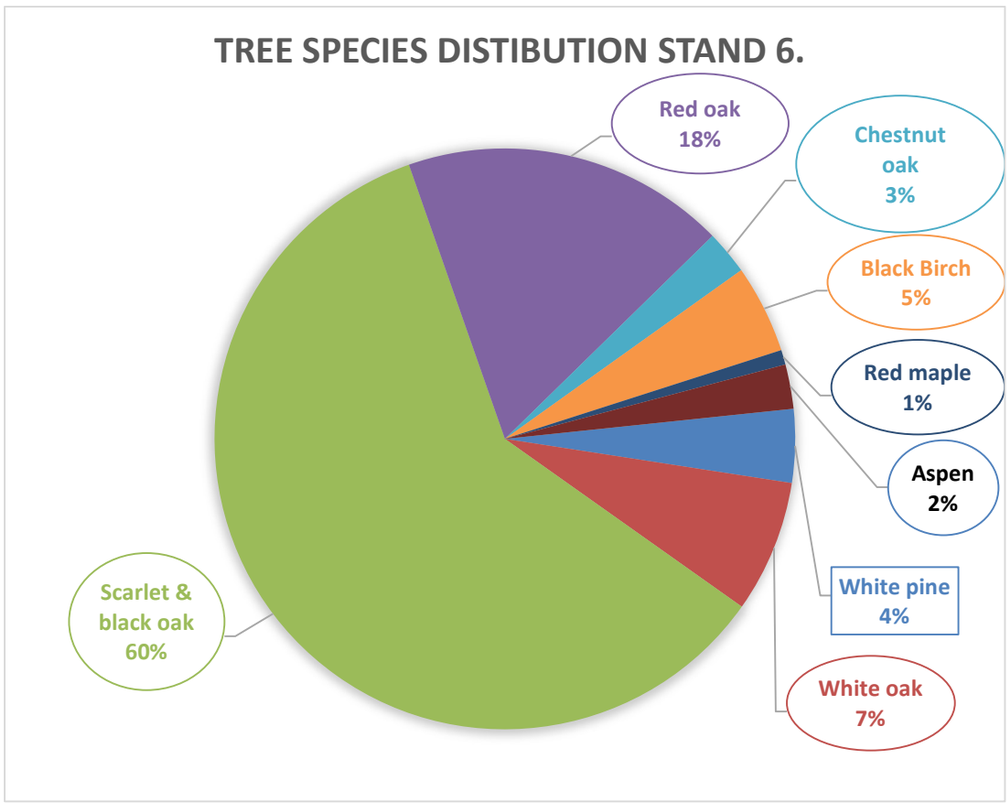
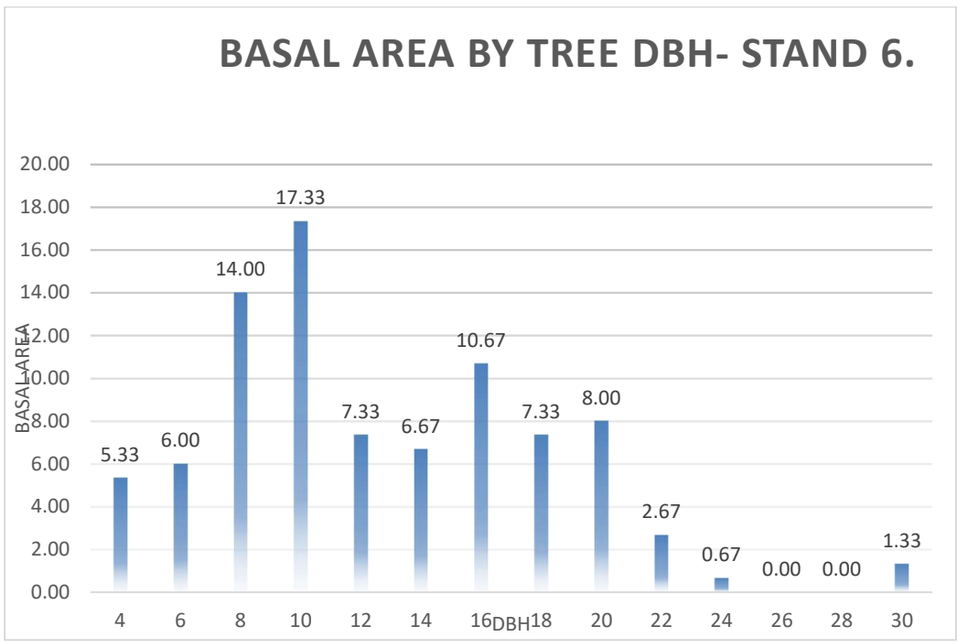

TREE SPECIES DISTIBUTION STAND 6.
Red oak 18%
Chestnut oak 3%
Black Birch 5%
Red maple 1%
Aspen 2%
White pine 4%
White oak 7%
Scarlet & black oak 60%


BASAL AREA BY TREE DBH- STAND 6.
BASAL AREA
DBH
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
5.33
6.00
14.00
17.33
7.33
6.67
10.67
7.33
8.00
2.67
0.67
0.00
0.00
1.33
4
6
8
10
12
14
16
18
20
22
24
26
28
30

Land use history: Although it may have been used for grazing, the low productivity limited its use. The forest here originated from stump sprouts so it was harvested after the farmland returned to forest. There are some spruce and larch trees, which are non- native, so someone made an effort to establish conifers here.

Successional trend: Although this is a mature stand, with most trees 60 -80 years old and 14-18' DBH, the forest here is younger than other parts of the property.

Forest health: The main factors impacting forest health are the infertile soil conditions and competition between the trees for growing space. The low productivity of the soil on the highest elevation accounts for the slow growth and poor health of the trees; many of the oaks here have dieback in the crowns and show other symptoms of decline associated with poor growing conditions and the growth rate of the trees is less than two percent. White pine saplings are common in this area since the crowns of declining trees allow sunlight to reach the understory.

Invasive plants: Non-native invasive plants are not present in the stand but the southern boundary (adjacent to the property boundary) should be monitored since this is an area where non- native invasive plants are likely to first get established.

Site quality: Canton and Charlton fine sandy loam is the soil found here. This soil is well drained with low potential productivity for tree growth (site index ranging from 50 to 60 for scarlet oak). The highest parts of the stand have shallow, sandy soil with low capacity for holding moisture and nutrients making it less productive for growing trees. Conifers, such as white pine, are better adapted to grow on the soil conditions here, will outgrow all other tree species and be larger and healthier. Lower slope positions have more moisture for tree growth, are more productive, and the trees are larger and healthier here.

Stocking: This stand is stocked at 76 percent; there is moderate competition between trees for growing space due to recent mortality of some of the larger oaks.

Habitat and Wildlife Use: This area has moderate value as habitat, the main features being mature oaks that provide an important food source and snags (standing dead trees) scattered through the area that serve as feeding and nesting habitat for songbirds. This mixture of conifers improves the value as habitat since there is increased plant diversity and improved cover.

Recreational opportunities: There is good access to the eastern and southern part of this area via the trails. These trails probably originated as logging roads since they are rutted and in poor condition on slopes. This trail should be expanded and upgraded, with water bars and other erosion control devices installed as needed to facilitate better access for management.

Potential for forest products: The low volume and poor quality of the trees hampers the attractiveness of managing this area for forest products. Aesthetic concerns may further constrain the feasibility of commercially harvesting this area but sustainable harvests may be possible through careful long-term management. Trees to be harvested should be marked before being cut and a contract should always be used to specify the terms of the harvest.

Water quality issues: This area is well drained but activities here have the potential to affect nearby wetlands. Best management practices, primarily seeding vegetation that will become quickly established and installing erosion control devices to prevent erosion on trails, are needed when managing this area.

DESIRED FUTURE CONDITION FOR STAND 6.

Enhance production of forest products by:

- Removing poor quality trees to promote the growth of higher value trees.

Improving forest health by:

- Reducing competition between the trees for growing space and improving the growth of the remaining trees, promoting their health and vigor.
- Favoring white pine on the least productive soil since it will outgrow other tree species there.
- Establishing young forest, which is usually vigorous and resistant to attack from insects and disease.

Improve wildlife habitat by:

- Increasing production of acorns by favoring potential mast producing trees when harvesting.
- Creating young forest that is lacking in the surrounding area.
- Stimulating the growth of white pine and hemlock (now growing in the understory) to promote vegetation diversity and the development of cover for wildlife.

FOREST MANAGEMENT ACTIVITIES FOR STAND 6.

Recommended silvicultural system:

Improvement Cut

Create/improve trails

Group selection harvest

Details of the silvicultural prescription:

This stand should receive an improvement cut to reduce competition for growing space, allowing the crowns of the remaining trees to receive more sunlight. This harvest would remove about 25 percent of the trees (essentially all of the diseased and poor- quality trees eight to 20 "DBH) for fuelwood. This will leave the remaining trees spaced about 18 feet apart.

A high management priority for the near future should also be to create improve trails through this area to enhance access for management and recreation. It appears the trail

follows old logging roads and is in poor condition in some places. This trail needs improvement; hazardous trees in the woods adjacent to the trail should be removed and rutted areas regraded. Erosion control devices, such as water bars, should be planned and installed on the trail as needed. After the trail is used to provide access by equipment for harvests it should be seeded with vegetive cover to prevent erosion.

The southern part of the stand has more level conditions that would facilitate a group selection harvest, removing all trees, to promote the regeneration of the forest. This would improve wildlife habitat by creating young forest but could also provide an opportunity to create one or more scenic vistas.

Analysis of Forestry Conservation Alternatives:

1. Passive management (no action taken) would result in an older, declining forest. Hemlock and white pine that are growing in the understory are unlikely to persist in the future.

2. The recommended alternative would will create a safe environment for recreation and a healthy forest. The improvement harvest will also promote the development of a mixed conifer/hardwood forest increasing its value as cover for wildlife as well as adding visual diversity for aesthetics.

3. Intensive management (not recommended at this time) would involve more numerous group selection harvests.

Planned Activities					
Treatment	BA/acre Removed	Volume /acre Harvested	Units	Year	Priority
Improvement Harvest	25	4.6 CDS	57.7	2028-10	HIGH
Group selection harvest	87	3.2 MBF 10.0 CDS	1.0	2028-10	MOD
Improve trails	NA	NA	2400 LF	2028-10	HIGH

EXISTING CONDITIONS STAND 7.

Acreage: 108.5 Acres ***Forest Type: Oak- Mixed.***

This area consists of hardwood forest, dominated by oaks, on well drained terrain with slight slopes. Low bush blueberry and huckleberry are the most common understory plants.

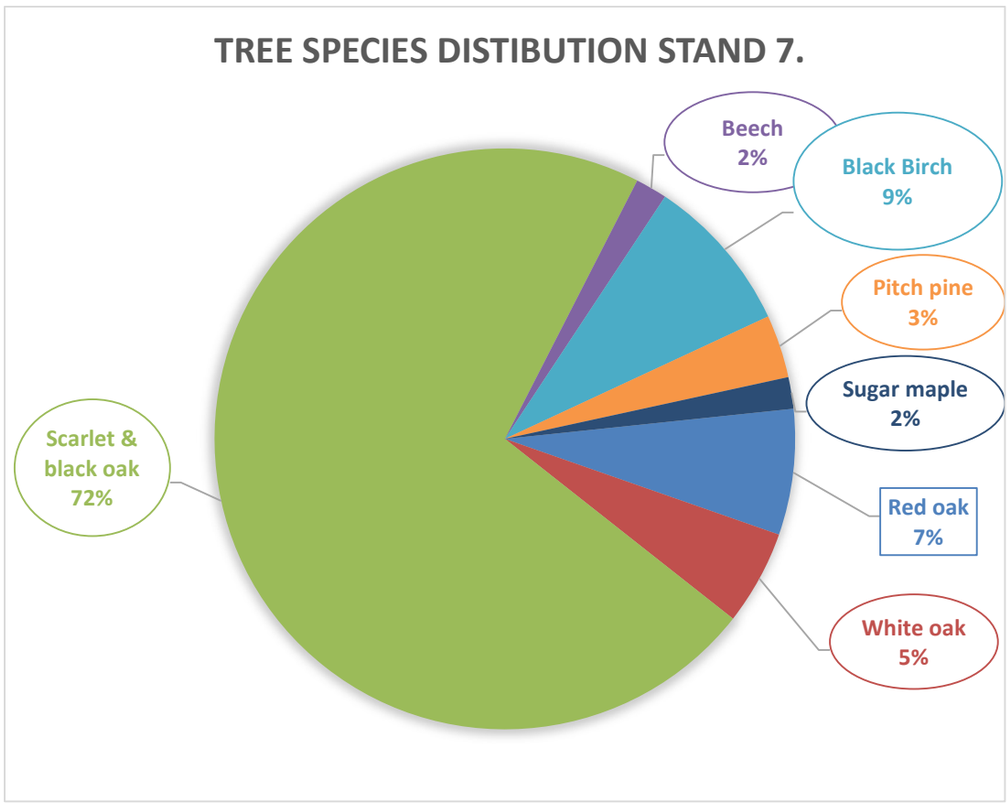
Stand Information

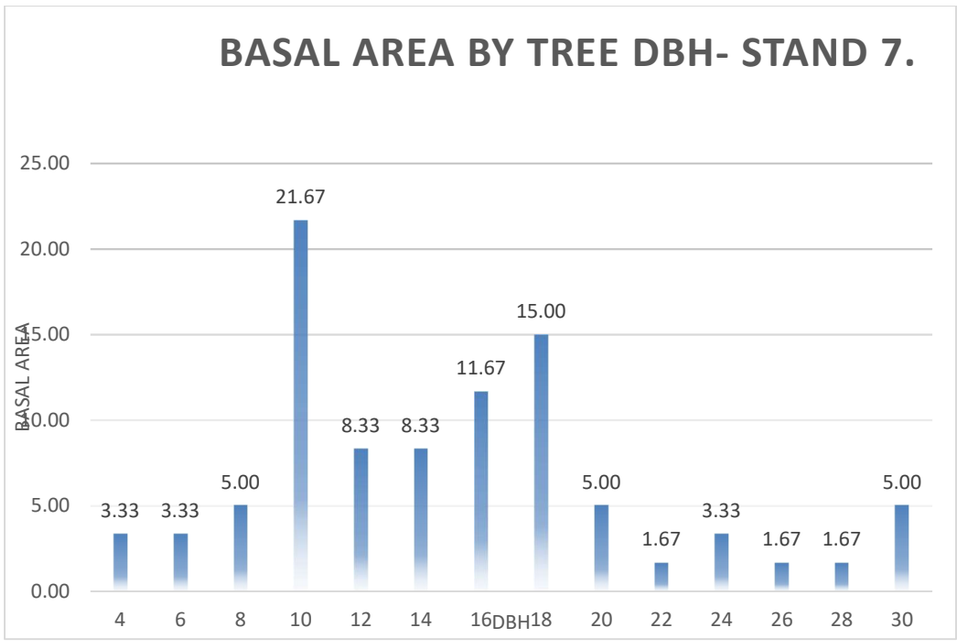
Forest Inventory Summary

Property of Forest		**Monastery**		**3/24/2024**
Type	Mixed oak		**Stand**	7
			VOLUME	
DBH	**Trees/AC**	**BA/AC**	**MBF/AC**	**Cords**
4	38	3		0.32
6	17	3		0.64
8	15	5		0.96
10	39	22		4.16
12	11	8	421	0.64
14	8	8	701	0.00
16	8	12	842	0.32
18	9	15	1263	0.00
20	3	5	421	0.00
22	1	2	140	0.00
24	1	3	140	0.32
26	1	2	140	0.00
28	0	2	0	0.32
30	1	5	140	0.64
TOTAL	150	95	4208	8.32
			Avg. DBH	10.76
			% AGS	0.81

DBH	Diameter of trees at breast height (measured 4.5 ' off the ground)
BA/AC	Basal area= area occupied by the cross section of tree trunks
MBF	Thousand board feet (volume of sawtimber)
AGS	Acceptable growing stock; trees with the potential to be used as sawtimber

Prepared by Echo Woods Forestry, Foster RI. forestguy@aol.com


TREE SPECIES DISTIBUTION STAND 7.
Beech 2%
Black Birch 9%
Pitch pine 3%
Sugar maple 2%
Red oak 7%
White oak 5%
Scarlet & black oak 72%


BASAL AREA BY TREE DBH- STAND 7.
BASAL AREA
25.00
20.00
15.00
10.00
5.00
0.00
3.33
3.33
5.00
21.67
8.33
8.33
11.67
15.00
5.00
1.67
3.33
1.67
1.67
5.00
4
6
8
10
12
14
16
DBH
18
20
22
24
26
28
30

Land use history: The north western part of this stand was an orchard. and although the remainder of the stand may have been cleared at one time, the low productivity and difficult terrain would have limited its use to grazing and when active use ceased it returned to forest. The trees are 60 to 80 years old and since many of the trees originated from stump sprouts so it was heavily harvested at that time.

Successional trend: This is a mature stand with most of the trees 10 to 18 inches DBH and 50 to 55 feet tall.

Forest health: The main factor impacting forest health here is the relatively low productivity of the soil and recent defoliation by Spongy moth (Gypsy moth). Many of the oaks here have dieback in the crowns and show other symptoms of decline associated with poor growing conditions and low growth rate. The poor growing conditions due to the shallow, rocky soil and exposure to wind makes trees less resilient and attack from insects and/or disease has a more dramatic negative impact on tree health and vigor than other parts of the property.

Invasive plants: Non-native invasive plants are not present here.

Site quality: Canton- Charlton fine sandy loam is the main soil found here. This soil is well drained but very rocky with low potential productivity for tree growth (site index ranging from 50 to 55 for scarlet oak). The highest parts of the stand have shallow, sandy soil with low capacity for holding moisture and nutrients making it less productive for growing trees. Lower slope positions have more moisture for tree growth, are more productive, and the trees are larger and healthier here.

Stocking: This stand is stocked at 68 percent; there is moderate competition between trees for growing space due to recent mortality of oaks.

Habitat and Wildlife Use: This area has low value as habitat, the main features being mature oaks that provide acorns (a food source) and snags (standing dead trees) scattered through the area that serve as feeding and nesting habitat for songbirds.

Recreational opportunities: There is good access to this area via existing trails but access for management would likely be through new trails created to provide entry from the Water Tower in the north western part of the stand.

Potential for forest products: There are some large trees scattered through this area but the poor quality of the trees, low volume, and difficult access restrict the use of this area for forest products.

Water quality issues: This area is well drained area but activities here have the potential to affect nearby wetlands.

DESIRED FUTURE CONDITION FOR STAND 7.

Improve wildlife habitat by:

- Facilitating the establishment of young forest, which is lacking in the surrounding area, to provide feeding and nesting areas for turkey, grouse, and many species of songbirds.

Improve recreation

- Enhancing access through new trails constructed for management.

FOREST MANAGEMENT ACTIVITIES FOR STAND 7.

Recommended silvicultural system:

- Group Selection Harvest
- Forest Trail

Details of the silvicultural prescription:

Most of the surrounding property consists of mature forest. The value of this area as wildlife habitat and for forest health can be improved by group selection harvests adjacent to the trail. This involves removing blocks of trees to stimulate the growth of young forest. The clearings should be alternated on either side of the trail and separated by an uncut buffer of several hundred feet.

Each clearing should be large enough (at least 100 feet by 150 feet) to allow sunlight to reach the forest floor and promote the growth of young vegetation. Larger openings, over 200 feet wide are better. All trees larger than 2 inches DBH are harvested and additional trees cut in a selective thinning in a 25- to 50-foot perimeter around each opening to create a transition from open land to mature forest. This a gradual transition in vegetation size and height, increasing the value for songbirds. Promote the growth of white pines and white oaks in this buffer zone by removing competing trees so the crowns receive more sunlight.

The sunlight reaching the forest floor as well as the soil disturbance caused by harvesting will stimulate the establishment of a diverse mix of tree seedlings here. Young forest usually grows quickly and is more vigorous than older stands of trees and is generally more resistant to attack from insects and disease.

Several openings should be created in this area over the next ten years with additional openings created in the next decade. Over the course of several decades, harvests enlarge the existing openings so eventually they connect and the entire area is relatively young forest. No harvesting is recommended on steep slopes, especially adjacent to wetlands, since the forest here provides a buffer and prevents erosion so the ultimate goals is younger forest in accessible areas and slopes and rocky areas maintained as older forest.

Access for management would be through new trails created from the water tower site off Palomino drive, the recreational trails would remain undisturbed. The "forest management" path should wide enough (10') to provide access for forestry equipment. The route should be cleared and extended as activities proceed: so, it eventually reaches the second proposed group selection harvest. When it is actively used, erosion control devices (like water bars) may be needed on slopes to slow runoff and prevent erosion. Disturbed soil on the trail may need to be seeded (with quickly established vegetation)to stabilize soil and prevent erosion.

Analysis of Forestry Conservation Alternatives:

1. Passive management (no action taken) would result in a declining forest.

2. The recommended alternative would will stimulate regeneration of young trees, creating a forest with diversity in tree species and ages that is resilient and able to withstand stress.

3. Intensive management (not recommended at this time) would involve extensive harvesting to facilitate regeneration of a larger acreage in this stand and an improvement harvest in the remainder of the stand.

Planned Activities					
Treatment	BA/acre Removed	Volume /acre Harvested	Units	Year	Priority
Group Selection Harvest	95	4.2 MBF 8.3 CDS	4.0-5.0 AC	2028-33	HIGH
Forest Trail	NA	NA	1500 LF	2028-33	HIGH

EXISTING CONDITIONS STAND 8.

Acreage: 21.7 Acres ***Forest Type: Oak- Hardwood.***

This area consists of hardwood forest, dominated by oaks, at the base of slopes adjacent to wetlands. Spice bush and witch hazel are the most common understory plants.

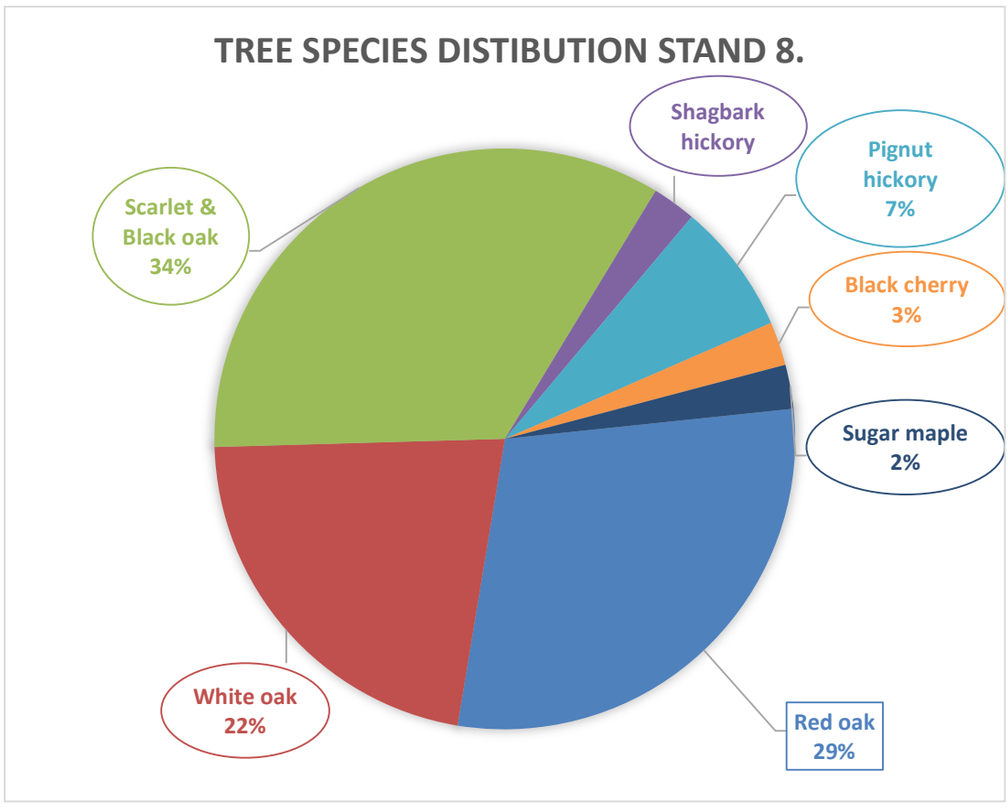
Stand Information

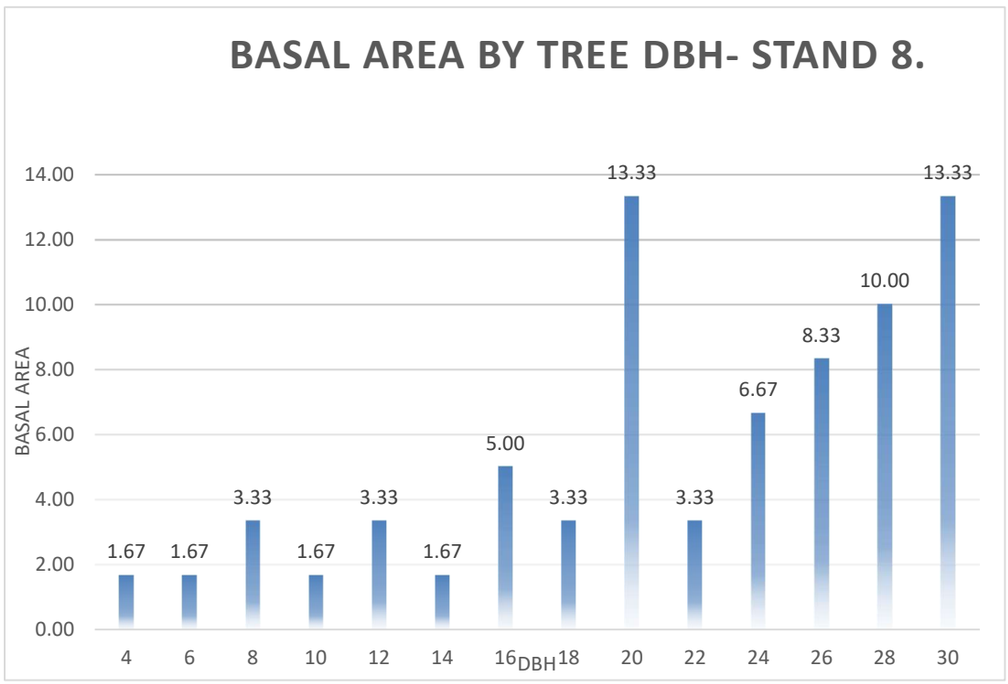
Forest Inventory Summary

Property of		**Monastery**		**3/24/2024**
Forest Type	Oak- Hardwoods		**Stand**	8
			VOLUME	
DBH	**Trees/AC**	**BA/AC**	**MBF/AC**	**Cords**
4	19	2		0.16
6	9	2		0.33
8	10	3		0.65
10	3	2		0.33
12	4	3	168	0.33
14	2	2	168	0.00
16	4	5	504	0.00
18	2	3	336	0.00
20	7	13	1344	0.00
22	1	3	336	0.00
24	2	7	504	0.33
26	3	8	840	0.00
28	2	10	672	0.33
30	3	13	504	0.00
TOTAL	69	77	5375	2.45
			Avg. DBH	14.29
			% AGS	0.78

DBH	Diameter of trees at breast height (measured 4.5 ' off the ground)
BA/AC	Basal area= area occupied by the cross section of tree trunks
MBF	Thousand board feet (volume of sawtimber)
AGS	Acceptable growing stock; trees with the potential to be used as sawtimber

Prepared by Echo Woods Forestry, Foster RI. forestguy@aol.com


TREE SPECIES DISTIBUTION STAND 8.
Shagbark hickory
Pignut hickory 7%
Scarlet & Black oak 34%
Black cherry 3%
Sugar maple 2%
White oak 22%
Red oak 29%


BASAL AREA BY TREE DBH- STAND 8.
BASAL AREA
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1.67
1.67
3.33
1.67
3.33
1.67
5.00
3.33
13.33
3.33
6.67
8.33
10.00
13.33
4
6
8
10
12
14
16
DBH
18
20
22
24
26
28
30

Land use history: The stone walls and very large "wolf trees" that once grew under open conditions indicate this area was used as pasture at one time but returned to forest.

Successional trend: This is a mature stand; most of the trees here are larger than 16"DBH. There are several age classes of trees; very large trees that grew here when this was pasture, trees established when grazing stopped, and scattered trees established over the last 30 years. The oldest trees ae likely more than 150 years old but most trees here are 60-80 years old. The largest trees are oaks while the smaller (younger) trees tend to be hickory, maple or birch. The dominant trees are 65-70 feet tall.

Forest health: The main factors impacting forest health is the age of the forest. The age of the tree's accounts for the slow growth and low vigor of the trees; many of the oaks have dieback in the crowns and show other symptoms of decline associated with old trees.

Site quality: Canton and Charlton fine sandy loam is the dominant soil in this part of the property with Sutton fine sandy loam near wetlands. These soils are productive for tree growth with a site index ranging from 60 to 65 for red oak. Lower slope positions have more moisture for tree growth, are more productive, and the trees are larger and healthier in these areas. The main limitation to management is a seasonal high-water table which could hamper access.

Stocking: This stand is stocked at about 65 percent; there is only moderate competition between trees for growing space.

Habitat and Wildlife Use: This area has good value as habitat, the most important feature being the mature oaks that provide an important food source for a wide range of wildlife. Very large "wolf trees" are common (about three per acre). These trees are older than other trees growing here and were likely retained to provide shade when this area was used as pasture. These trees, are much larger than the surrounding trees, have cavities and defects and provide habitat for nesting, roosting, and cover not found elsewhere on the property.

Recreational opportunities: Access into and through this area is difficult due to the dense vegetation and wet conditions in some areas.

Potential for forest products: Trees large enough to be used for timber are well distributed through this area but the relatively small size of the area available to harvest and difficult access due to wetlands limits the potential for sustainable commercial harvests.

Invasive Plants: Invasive non-native plants were not observed in the forest, but the area near the edge of the forest (near fields) should be monitored annually since this is likely the area where they would be first established.

Water quality issues: Drainage in this stand varies from fairly well drained in the western part of the stand to poorly drained near the stream. Activities in the drier parts of the stand still have the potential to affect nearby wetlands due to surface runoff. The area near the stream has a seasonal high-water table which limits the rooting depth of the trees and increases the chance of trees blowing over from high winds.

Best management practices (BMP's) should always be used when harvesting here to protect the site including: harvesting only when the ground is frozen or very dry, limiting the number of trees harvested at one time, and seeding disturbed soil on trails to prevent erosion.

DESIRED FUTURE CONDITION FOR STAND 8.

Protect soil and water quality:

- Maintaining high tree density and minimizing disturbance in areas near the adjacent wetland.

Improved wildlife habitat by:

- Create a forest reserve with old growth characteristics.

FOREST MANAGEMENT ACTIVITIES FOR STAND 8.

Recommended silvicultural system:

- Forest Improvement to create old growth characteristics

Details of the silvicultural prescription:

Difficult access into this stand makes intensive management not feasible but management focusing on creating old growth characteristics could be done with a combination of active and passive management.

Passive management means nothing is done and the trees grow older. Active management entails activities to create old growth characteristics. The soil here is productive for tree growth and old growth conditions will develop faster than other parts of the property. The goal is to create a diversity of tree species, ages and sizes, including some very large trees.

This involves identifying "legacy trees" that would never be cut. This would include 50% of the mature trees- in this stand it would involve about 15 trees per acre. There is more diversity in tree species in this part of the property due to the soil and site conditions. Maintaining this diversity is beneficial from the standpoint of wildlife habitat and as well as forest health. It's likely most of the Legacy trees would be large oaks but some birch, maples, and other species should be retained.

Efforts should be made to create small gaps in the canopy cutting small groups of mature trees to encourage regeneration of forest. These "patch cuts" will establish a mixture of tree species and age classes and create a forest more resistant to mortality following a stress event (like insect attack or drought). The openings are 50-75 feet wide and create conditions similar to a storm event that blows down groups of trees. The trees cut can be left on the

forest floor to serve as coarse woody debris. Additional large trees can be killed in place, through girdling, to serve as snags and provide wildlife habitat. About 10 trees per acre should be felled and left to rot on the forest floor and an additional 5 trees per acre girdled to create snags.

Analysis of Forestry Conservation Alternatives:

1. Passive management (no action taken) would have no impact on forest health or improve the property as unique wildlife habitat.

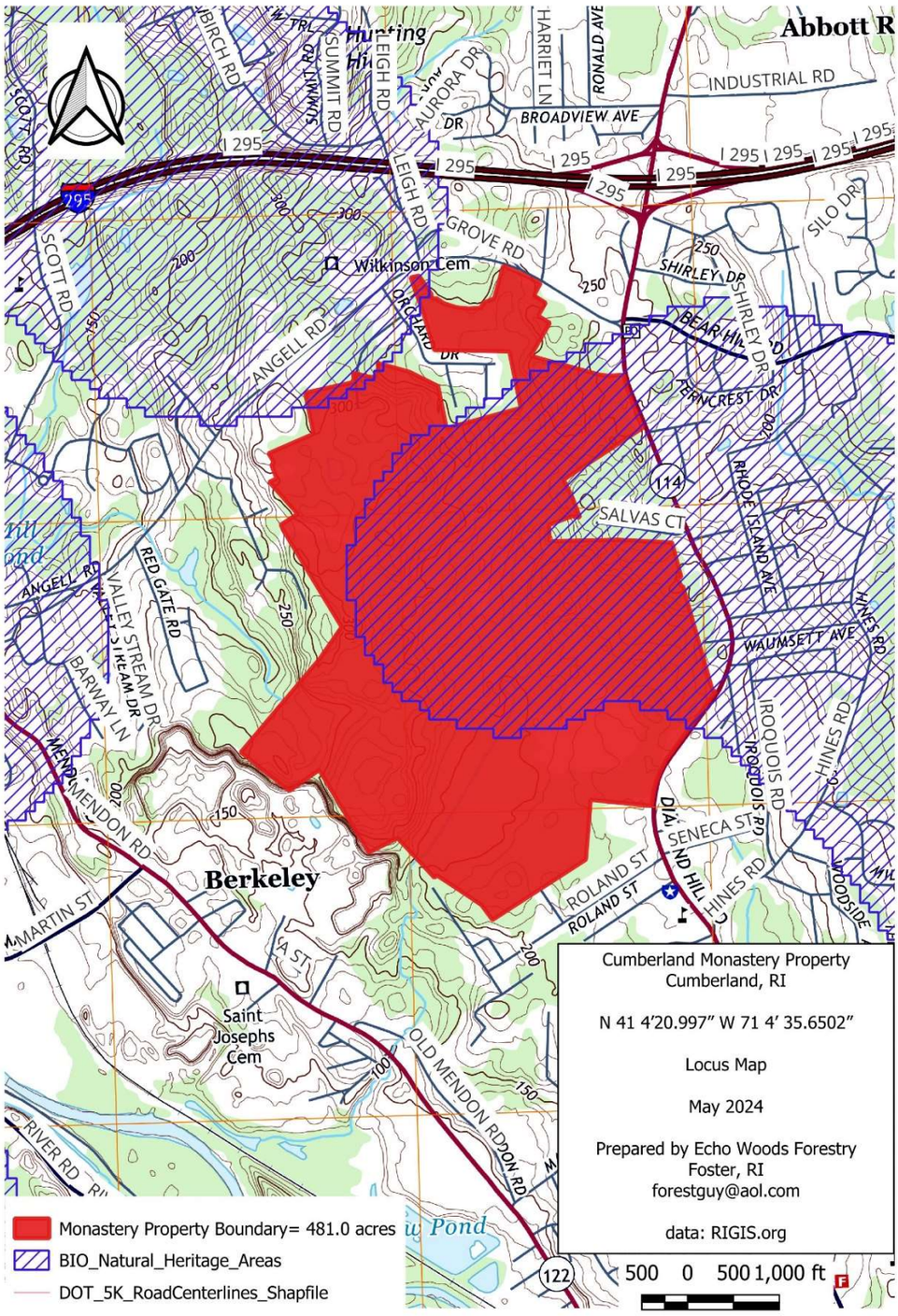
2. The recommended alternative would will create unique wildlife habitat

3. Intensive management (not recommended at this time) would involve harvesting of large trees to facilitate regeneration.

Planned Activities					
Treatment	BA/acre Removed	Volume /acre Harvested	Units	Year	Priority
Forest Improvement to create old growth conditions	10	0.2 MBF 0.3 CDS	11.7 AC	2028-33	MODERATE

SUMMARY OF PROPOSED FORESTRY CONSERVATION PRACTICES & TIMELINE							
Unit	Resource Concern	Activity	BA/AC Removed	Units/AC	Units	Year	Priority
1	Public Safety	Hazardous tree evaluation & treatment	TBD	TBD	2900 LF	2024-26	HIGH
1	Plant structure and composition: Age and Condition of the Forest leads to decline in tree health	Group selection harvest to establish patches of young forest	86	5.5 MBF 4.2 CDS	1.5 AC	2025-30	MODERATE
2	Invasive Plants	Invasive Plant Control to remove nonnative invasive plants	NA	NA	42.5 AC	2024-27	HIGH
2	Soil & Water Conservation: Minimize disturbance in the riparian buffer near the stream	Reevaluate: Maintaining High Plant density will serve as a filter to prevent erosion and maintain water quality.	NA	NA	78.2 AC	2024-29	HIGH
3	Plant Productivity & Health	Shelterwood Harvest to establish a younger age class of forest	47	3.9 MBF 2.0 CDS	11.9 AC	2028-30	HIGH
4	Plant Productivity & Health: Condition of the Forest (due to infertile soils and leads to a decline in tree health	Group selection harvest to create a forest with diversity in tree species and ages that is resilient and able to withstand stress.	82	4.1 MBF 7.1 CDS	4.0 AC	2025-28	MOD
5	Plant Productivity & Health	Shelterwood Harvest to establish a younger age class of forest	35	3.0 MBF 1.0 CDS	29.9 AC	2032-34	MOD
6	Plant Productivity & Health: Condition of the Forest (due to infertile soils and high tree density) leads to a decline in tree health.	Improvement Harvest to reduce competition between trees for growing space	25	4.6 CDS	57.7	2028-10	HIGH
6	Plant Productivity & Health	Group selection harvest to create a younger age class of forest	87	3.2 MBF 10.0 CDS	1.0	2028-10	MOD
6	Soil Compaction & Erosion on trails	Improve trails: grade, install erosion control devices, and seed trails post-harvest	NA	NA	2400 LF	2028-10	HIGH

7	Public Safety	Forest Trail: create new trail to improve access for management & recreation	NA	NA	1500 LF	2028-33	HIGH
7	Plant Productivity & Health	Group selection harvest to create a younger age class of forest	95	4.2 MBF 8.3 CDS	4.0-5.0 AC	2028-33	HIGH
8	Plant structure and composition:	Forest Improvement to create old growth conditions	10	0.2 MBF 0.3 CDS	11.7 AC	2028-33	MODERATE
All		Locate & Mark Property Boundaries	NA	NA	481.0 AC	2024-28	HIGH


Abbott R
INDUSTRIAL RD
BROADVIEW AVE
HARRIET LN
RONALD AVE
AURORA DR
LEIGH RD
SUMMIT RD
BIRCH RD
SCOTT RD
GROVE RD
Wilkinson Cem
SHIRLEY DR
SILO DR
BEAR HILL DR
FERNCREST DR
ORCHARD DR
ANGELL RD
SALVAS CT
RHODE ISLAND AVE
WAUMSETT AVE
HINES RD
IROQUOIS RD
SENECA ST
DIAMOND HILL RD
ROLAND ST
WOODSIDE
RED GATE RD
VALLEY STREAM DR
BARWAY LN
MENDON RD
Berkeley
MARTIN ST
A ST
Saint Josephs Cem
OLD MENDON RD
RIVER RD
Pond
Monastery Property Boundary= 481.0 acres
BIO_Natural_Heritage_Areas
DOT_5K_RoadCenterlines_Shapfile
Cumberland Monastery Property
Cumberland, RI
N 41 4'20.997" W 71 4' 35.6502"
Locus Map
May 2024
Prepared by Echo Woods Forestry
Foster, RI
forestguy@aol.com
data: RIGIS.org
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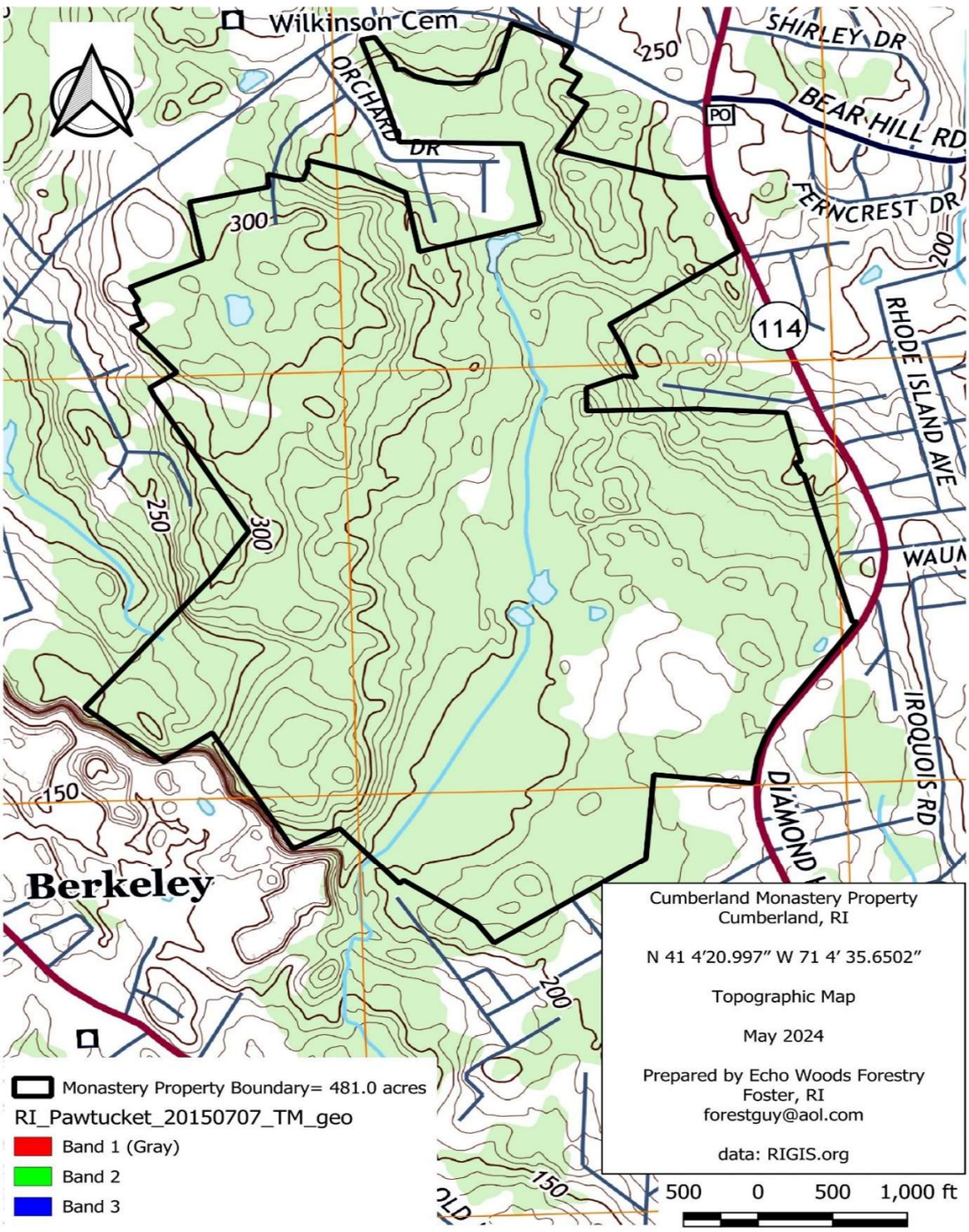
Wilkinson Cem
ORCHARD DR
SHIRLEY DR
BEAR HILL RD
FERNCREST DR
RHODE ISLAND AVE
IROQUOIS RD
DIAMOND
114
PO
250
300
200
150
Berkeley
Monastery Property Boundary= 481.0 acres
RI_Pawtucket_20150707_TM_geo
Band 1 (Gray)
Band 2
Band 3
Cumberland Monastery Property
Cumberland, RI
N 41 4'20.997" W 71 4' 35.6502"
Topographic Map
May 2024
Prepared by Echo Woods Forestry
Foster, RI
forestguy@aol.com
data: RIGIS.org
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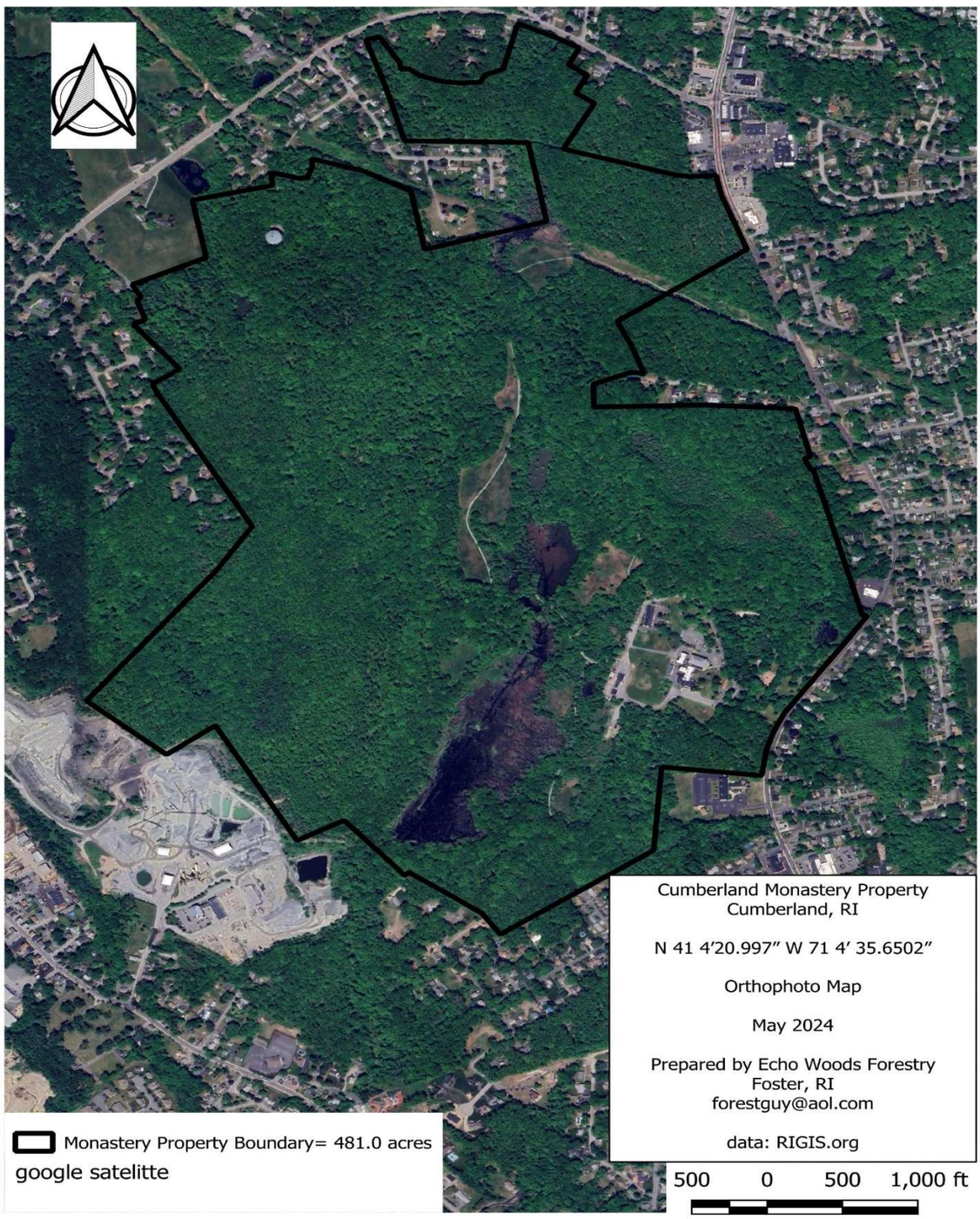
Monastery Property Boundary= 481.0 acres
google satelitte
Cumberland Monastery Property
Cumberland, RI
N 41 4'20.997" W 71 4' 35.6502"
Orthophoto Map
May 2024
Prepared by Echo Woods Forestry
Foster, RI
forestguy@aol.com
data: RIGIS.org
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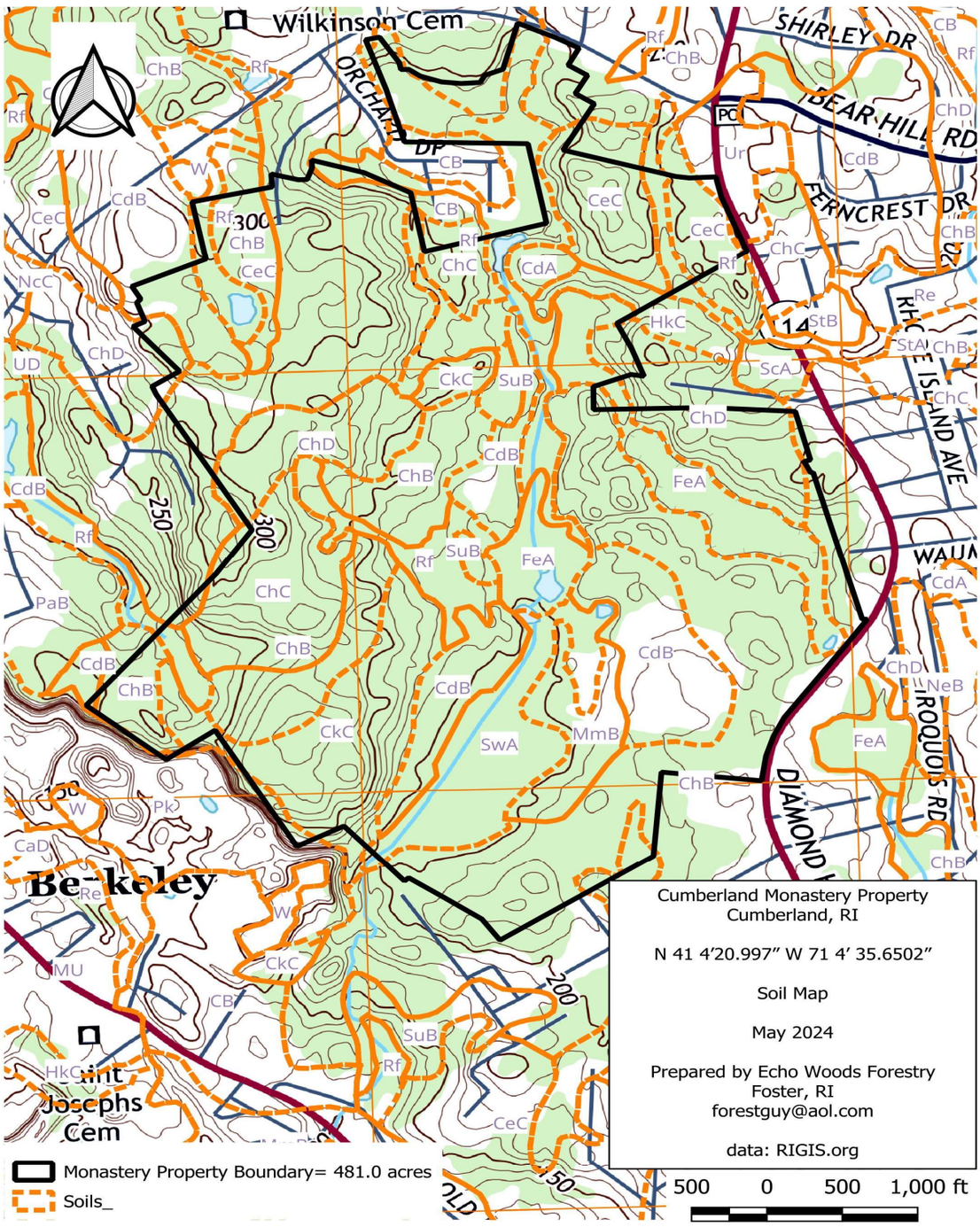
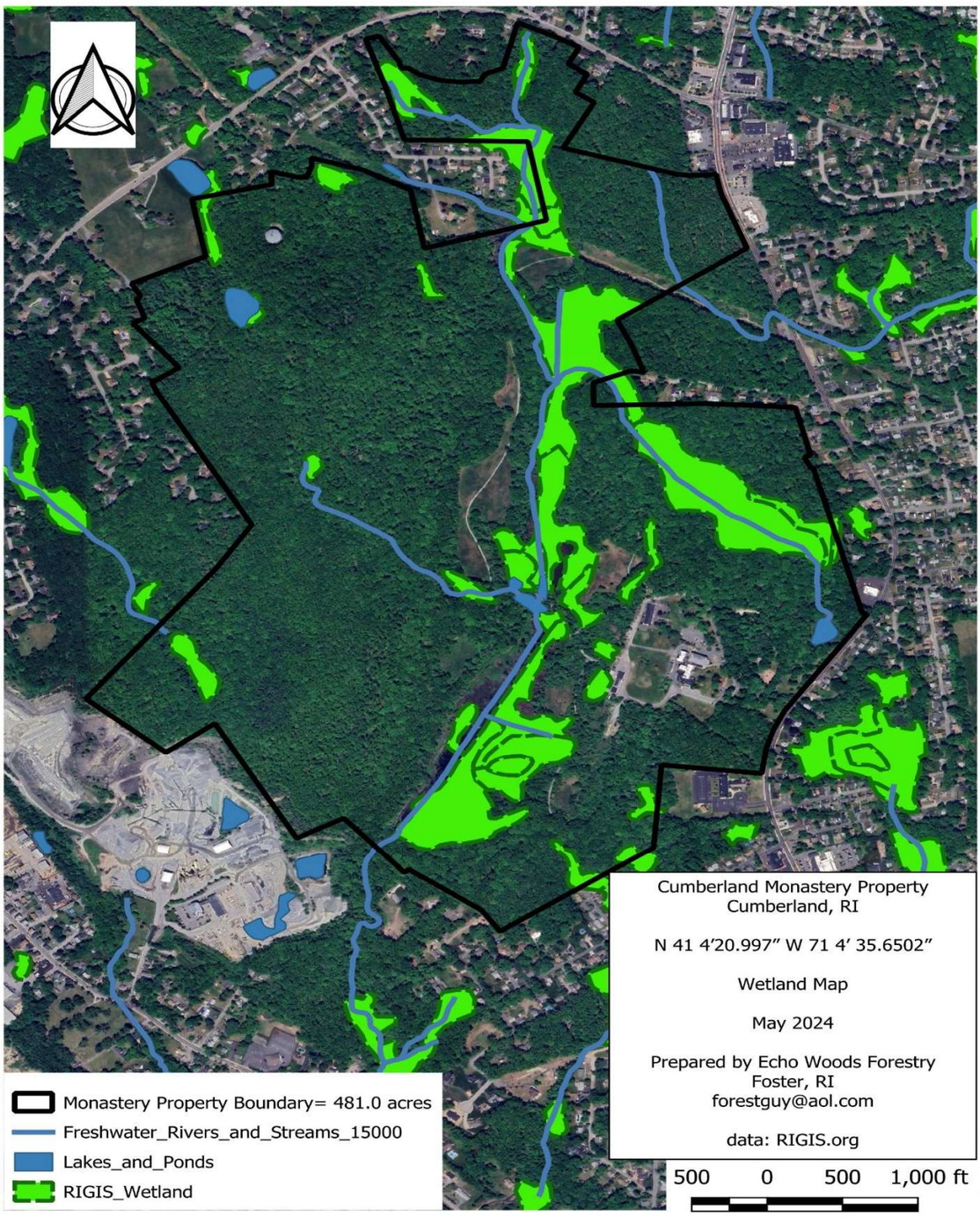

Wilkinson Cem
SHIRLEY DR
BEAR HILL RD
FERNCREST DR
ORCHARD DR
RHODE ISLAND AVE
DIAMOND HILL RD
IROQUOIS RD
Be-keley
Saint Josephs Cem
Cumberland Monastery Property
Cumberland, RI
N 41 4'20.997" W 71 4' 35.6502"
Soil Map
May 2024
Prepared by Echo Woods Forestry
Foster, RI
forestguy@aol.com
data: RIGIS.org
Monastery Property Boundary= 481.0 acres
Soils_
500 0 500 1,000 ft


Monastery Property Boundary= 481.0 acres
Freshwater_Rivers_and_Streams_15000
Lakes_and_Ponds
RIGIS_Wetland
Cumberland Monastery Property
Cumberland, RI
N 41 4'20.997" W 71 4' 35.6502"
Wetland Map
May 2024
Prepared by Echo Woods Forestry
Foster, RI
forestguy@aol.com
data: RIGIS.org
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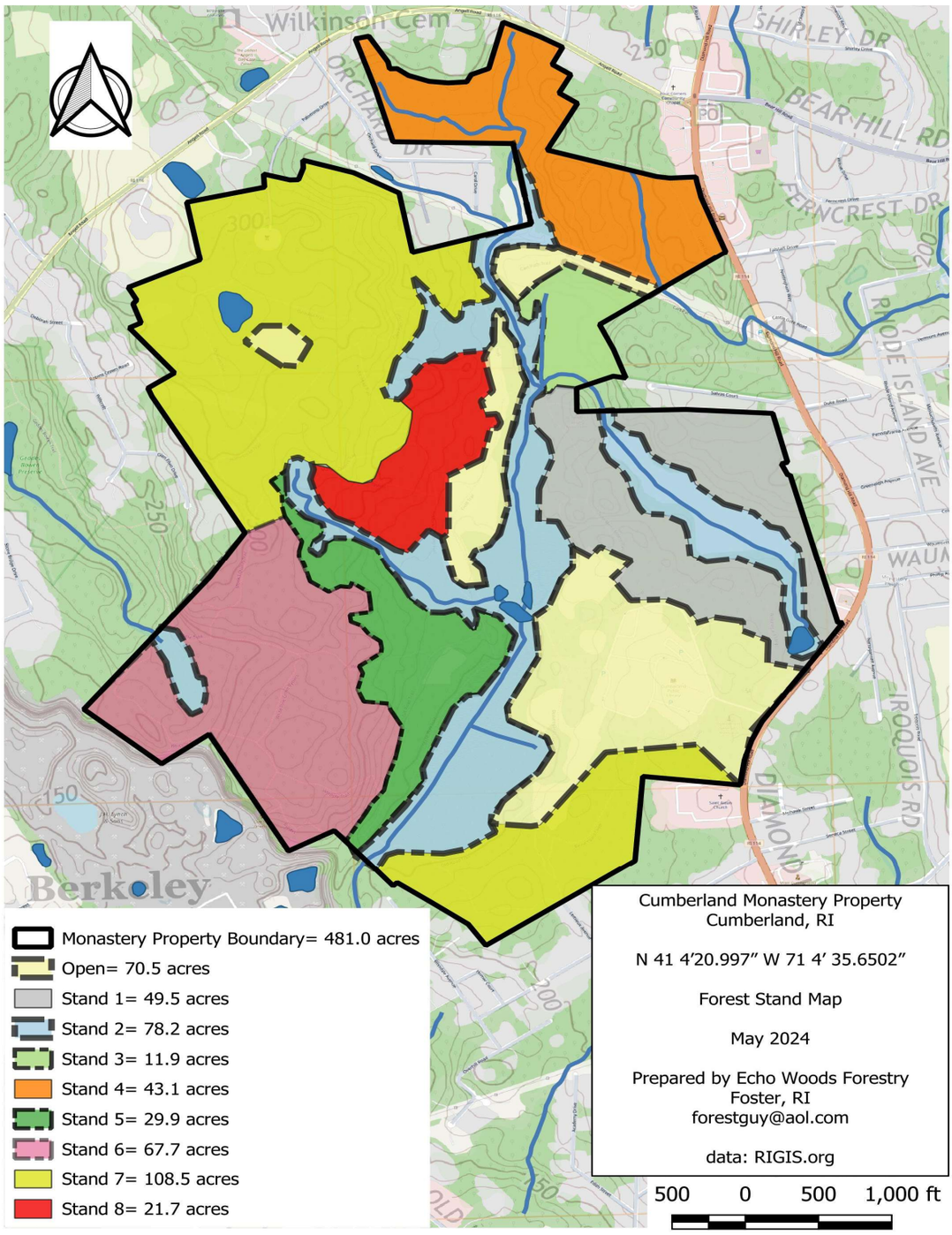
Wilkinson Cem
SHIRLEY DR
BEAR HILL RD
FERNCREST DR
RHODE ISLAND AVE
IROQUOIS RD
DIAMOND
Berkeley
Monastery Property Boundary= 481.0 acres
Open= 70.5 acres
Stand 1= 49.5 acres
Stand 2= 78.2 acres
Stand 3= 11.9 acres
Stand 4= 43.1 acres
Stand 5= 29.9 acres
Stand 6= 67.7 acres
Stand 7= 108.5 acres
Stand 8= 21.7 acres
Cumberland Monastery Property
Cumberland, RI
N 41 4'20.997" W 71 4' 35.6502"
Forest Stand Map
May 2024
Prepared by Echo Woods Forestry
Foster, RI
forestguy@aol.com
data: RIGIS.org
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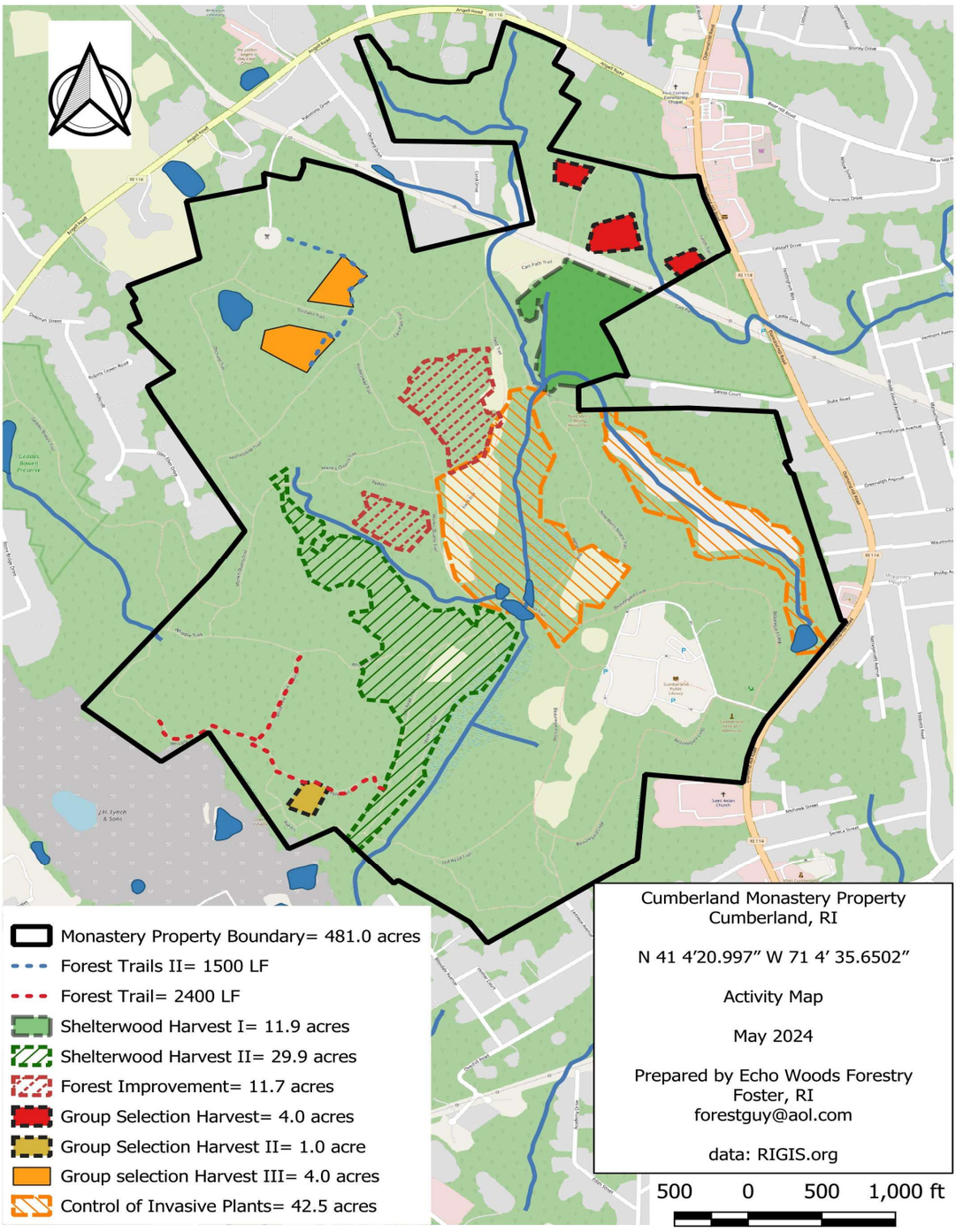
Monastery Property Boundary= 481.0 acres
Forest Trails II= 1500 LF
Forest Trail= 2400 LF
Shelterwood Harvest I= 11.9 acres
Shelterwood Harvest II= 29.9 acres
Forest Improvement= 11.7 acres
Group Selection Harvest= 4.0 acres
Group Selection Harvest II= 1.0 acre
Group selection Harvest III= 4.0 acres
Control of Invasive Plants= 42.5 acres
Cumberland Monastery Property
Cumberland, RI
N 41 4'20.997" W 71 4' 35.6502"
Activity Map
May 2024
Prepared by Echo Woods Forestry
Foster, RI
forestguy@aol.com
data: RIGIS.org
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