Jones Woods
Stewardship Outline Plan
August 2023

Prepared for

Burnham Park Association

Prepared by

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Ecological ES Solutions

Overabundant deer limit tree regeneration, but there are numerous small seedlings, such as this Black Oak nestled amongst a Christmas Fern

Introduction

Mike Van Clef visited Jones Woods on June 12, 2023 and was accompanied by Lynn Siebert, Richard Bye, Susan Landau, and John Landau. Natural plant communities, deer overabundance, and threats from invasive species were discussed in the context of development of a stewardship plan outline. This brief report is intended to summarize findings from the field survey to inform future stewardship efforts. Photographic documentation of current conditions is provided at the end of this report.

Site Description

- Jones Woods consists of approximately 115 acres, located in Morris Township, Morris County, New Jersey. Map 1 shows the property including the 2015 aerial photography and approximately 3 mile long trail network. Generally, the property contains upland, mature deciduous forest types – primarily oak-hickory and maple types.
- Rare Species – NJDEP Landscape Project version 3.3 suggests that the site may potentially harbor the federally listed Indiana Bat. The state threatened Wood Turtle has also been documented in the area. There are no documented Natural Heritage Priority Sites or reports of rare plant species in the area.
- Land Cover History – The Vermeule 1890's forest cover (Map 2) and the 1930 aerial photography (Map 3) suggests that the majority of the property has a long history of forest cover, making for relatively 'old forest' that was never subjected to agricultural tilling that tends to lead to very long-term loss of native biodiversity and susceptibility to invasive species infestations. However, it is very likely that the property has been logged multiple times since European colonization. Patches that were in agricultural cover were located in the northern portion of the property, areas around the existing lake, and several smaller patches in the southern portion of the property.
- Bedrock Geology – The majority of the property contains Quartz-Oligoclase Gneiss (Map 4). Remaining types include Diorite, Biorite-Quartz-Feldspar Gneiss, and Pyroxine Gneiss.
- Topography, Water, and Wetlands – The property contains numerous relatively gentle slopes and elevations range from 400 to 600 feet above sea level. The Ohio Brook, which is part of the Whippany River watershed, occurs from the northern property boundary to the artificial lake located in the center of the property. Wetlands are uncommon on the property and occur north of the lake along Ohio Brook. There are some very small, unmapped wetland patches and seeps located elsewhere on the property.

Tables summarizing collected observations and recommendations:

The following is a summary with notes on interpreting provided tables.

- Table 1 – Non-native Plant Species List
    - Each species is provided with Relative Threat Level (High, Moderate, Low), Stewardship Goal (0 = Species is not considered invasive, no treatment required, 1 = Eradicate all individuals, 2 = Control through long-term program, 3 = Do not treat unless resources allow), and a Stewardship Note indicating infestation levels and treatment suggestions. A link to treatment recommendations of the New Jersey Invasive Species Strike Team is included at the bottom of the table. This includes multiple control methods for each species, along with a mixing table that provides detailed information to prepare each of the possible application method x herbicide type combinations.

- Table 2 – Selected High Priority Invasive Plant Locations
    - There were a total of 37 recorded GPS points consisting of 14 highly threatening invasive plant species that are of highest priority for control efforts.
- Table 3 – Native Plant Species List
    - There were 100 observed species, but this should not be considered a comprehensive list. A comprehensive species list would require a minimum of several visits throughout the year and is best performed by a professional botanist.
- Table 4 – Stewardship Recommendations
    - Prioritized listing of goals for deer and invasive species management.


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Older forests with relatively few invasive species are common on the property. These forests have “empty” understories because deer have removed nearly all native species.

Native forest wildflowers are uncommon and often browsed by deer. This small White Wood Aster would be 5-10 times larger without browsing. And would be full of flowers serving pollinators in September.

Maple-leaved Viburnum, a species very sensitive to deer browsing, holds on with low numbers of highly browsed individuals.

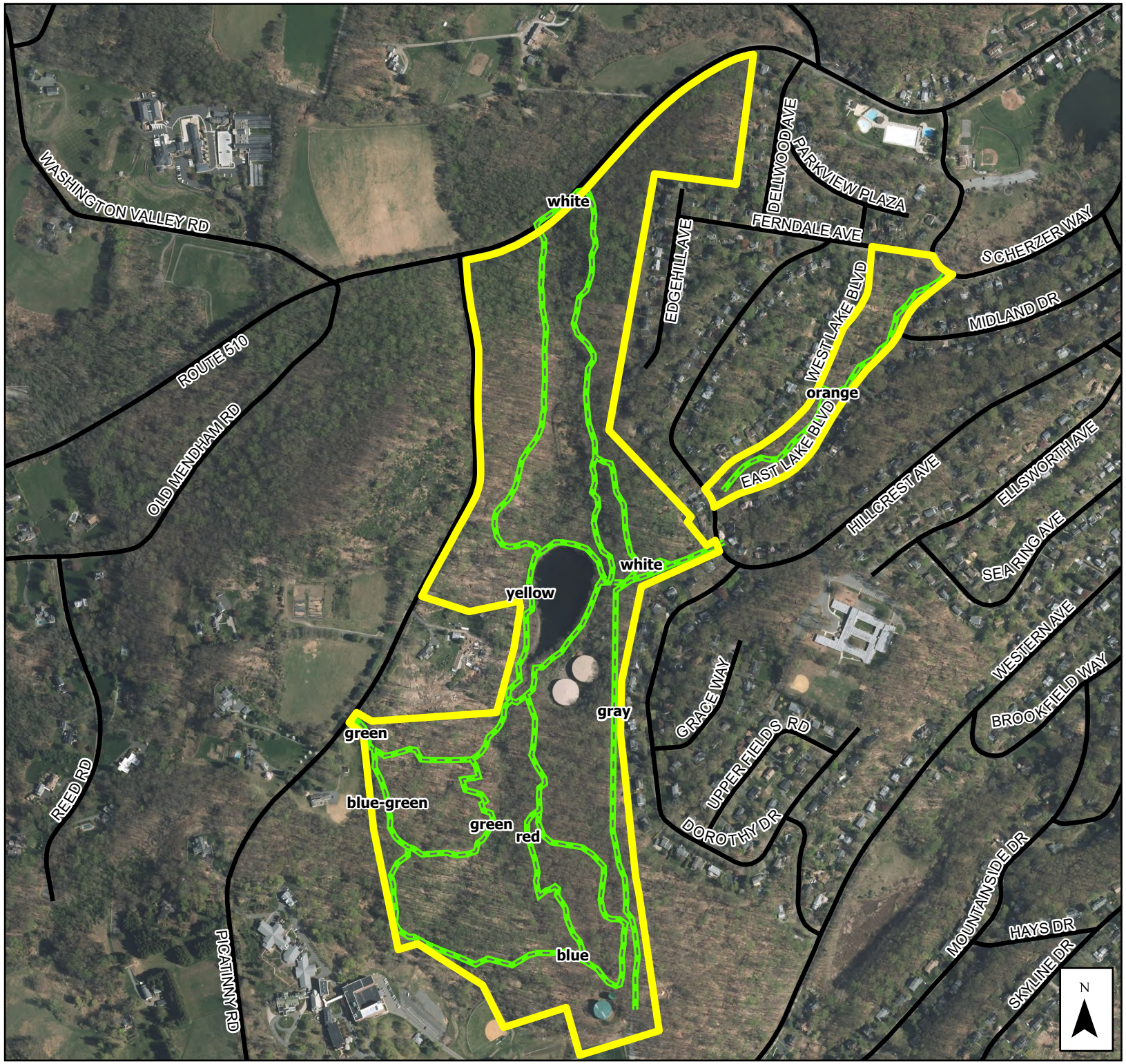
Larger native tree seedlings greater than 3’ tall are uncommon and nearly all observations were of fast growing Tulip Poplars.

Heavy infestations occur along moist areas / waterways and forests growing on post-agricultural lands. Multiflora Rose and Japanese Barberry shown here.

Beech trees are infected with Beech Leaf Disease that is likely to kill many trees, leaving canopy gaps susceptible to infestation.

Japanese Aralia is a very highly threatening species that appears to be rapidly spreading on the property. With effort, it is still possible to eradicate this species.

Bamboo, planted on a neighboring property, is spreading. Although this species does not spread by seed, it is prudent to halt its further spread and eliminate isolated stems advancing on the property.



FoHVOS New Jersey Invasive Species Strike Team

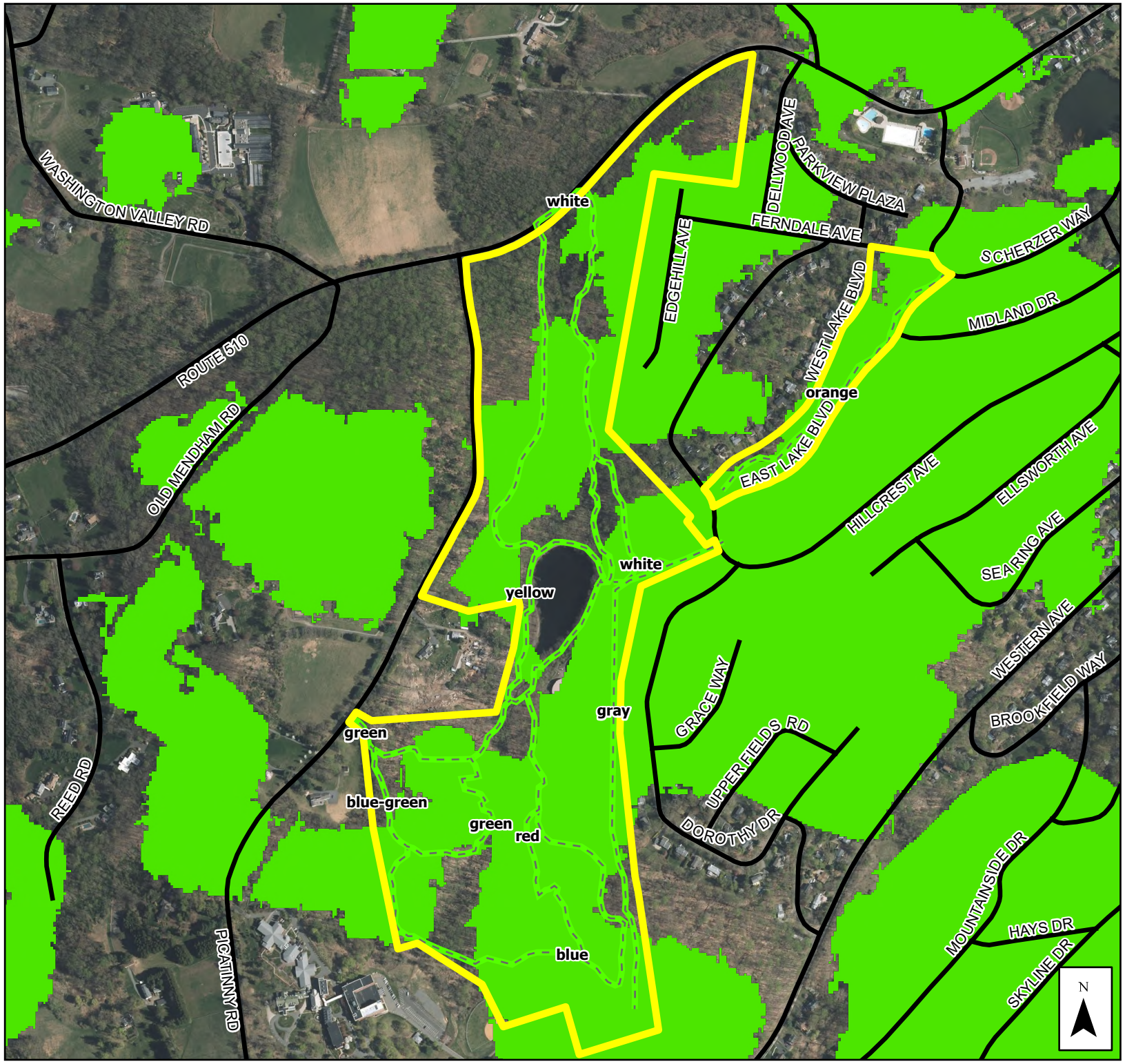
Jones Woods Stewardship Plan

2015 Aerial Photography

Legend

- Property Boundary
- Trails

0 500 1,000 Feet



FoHVOS New Jersey Invasive Species Strike Team

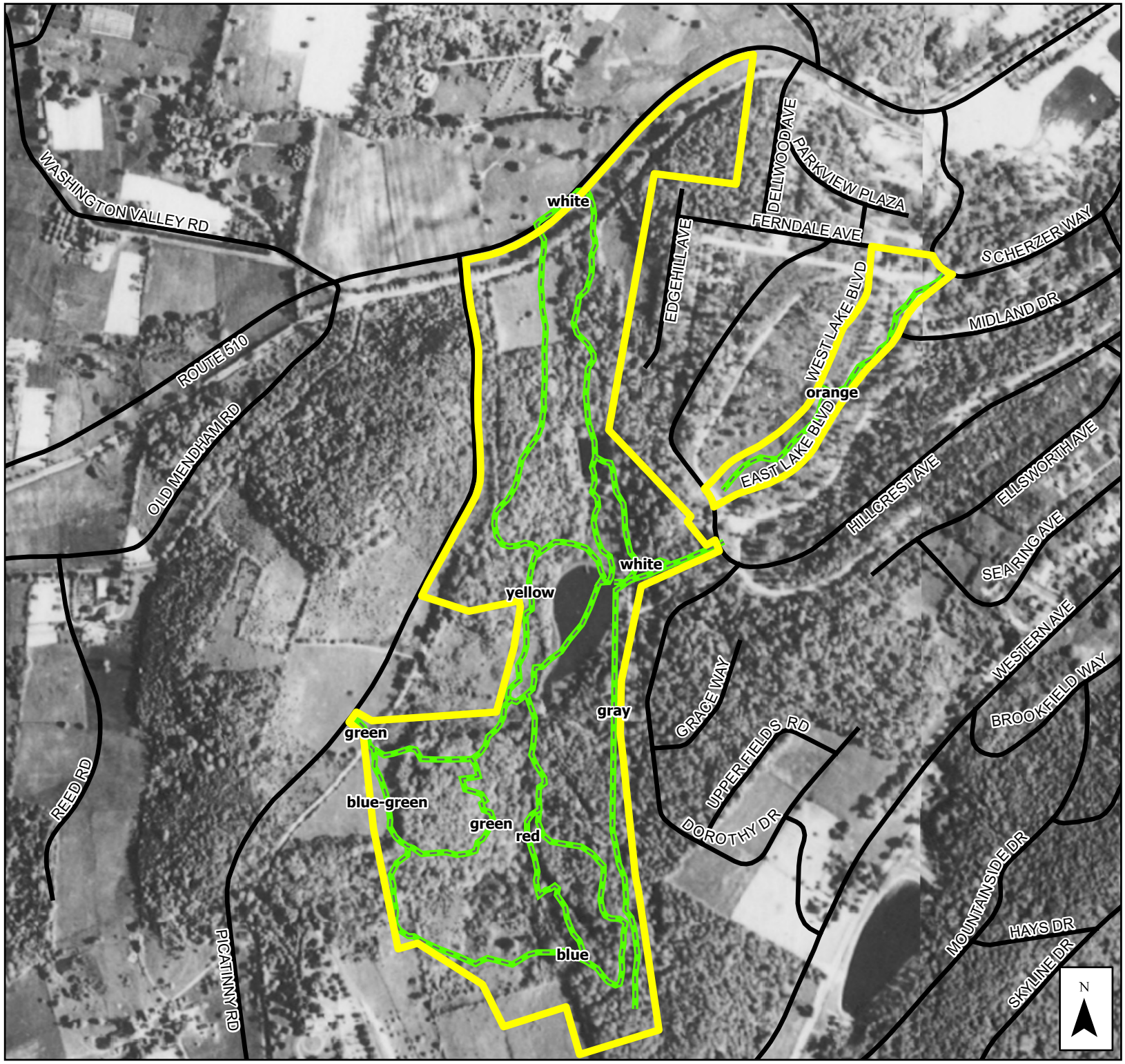
Jones Woods Stewardship Plan

1890 Forest Cover

Legend

- Property Boundary
- Trails
- Forest Cover - 1890

0 500 1,000 Feet



FoHVOS New Jersey Invasive Species Strike Team

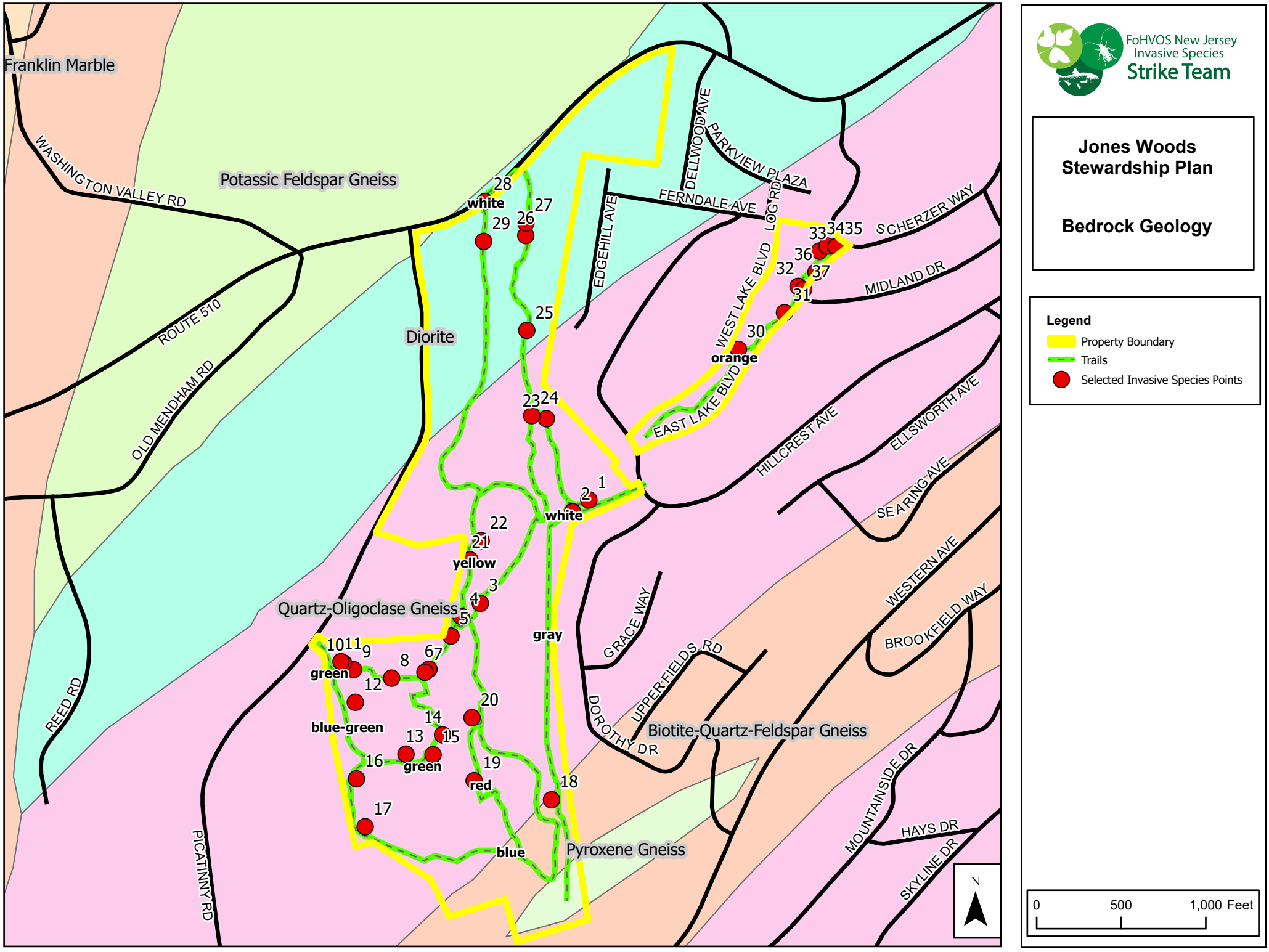
Jones Woods Stewardship Plan

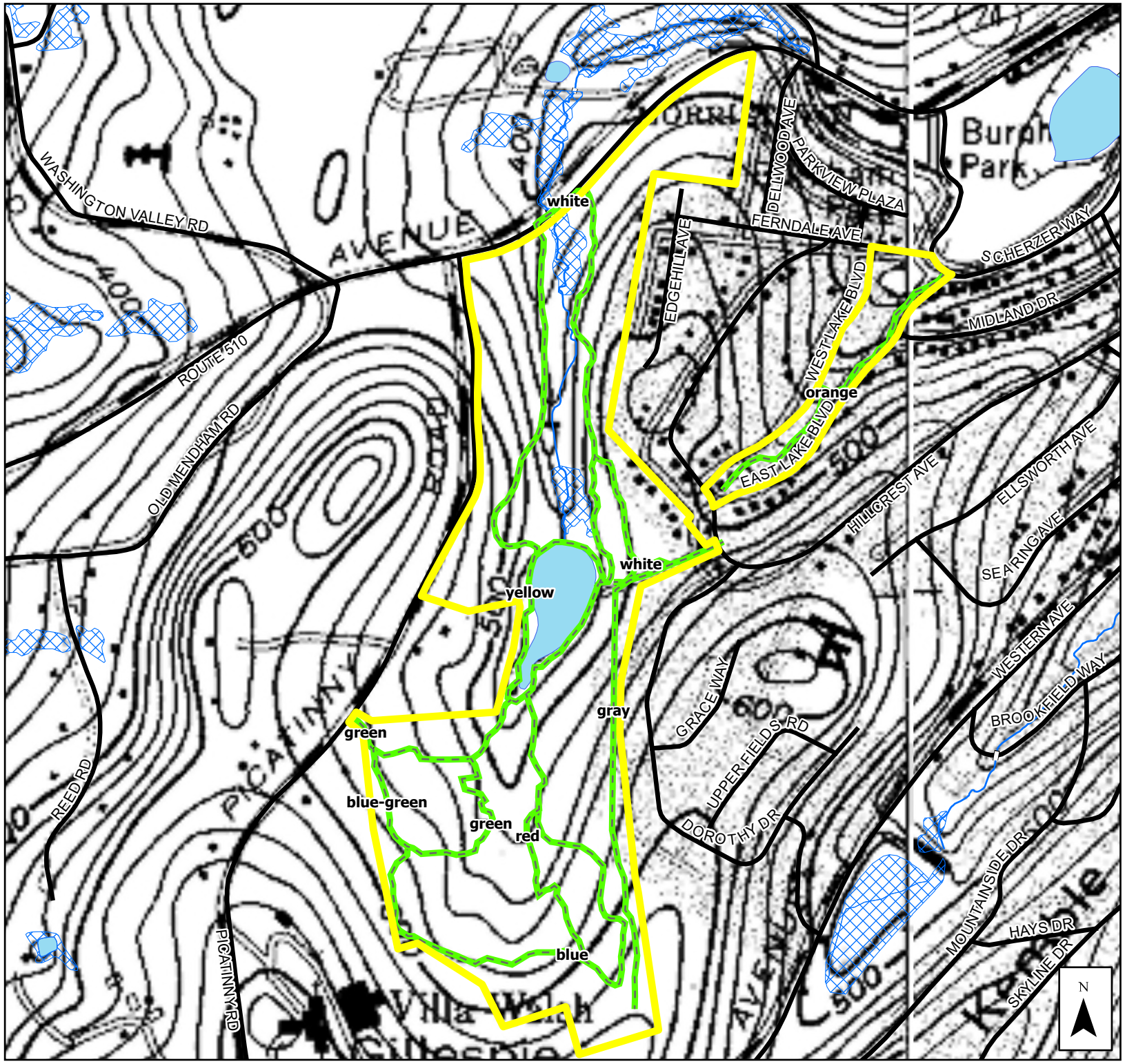
1930 Aerial Photography

Legend

- Property Boundary
- Trails

0 500 1,000 Feet


Franklin Marble
Potassic Feldspar Gneiss
Diorite
Quartz-Oligoclase Gneiss
Biotite-Quartz-Feldspar Gneiss
Pyroxene Gneiss
WASHINGTON VALLEY RD
ROUTE 510
OLD MENDHAM RD
REED RD
PICATINNY RD
EDGEHILL AVE
DELLWOOD AVE
PARKVIEW PLAZA
FERNDALE AVE
LOG RD
WEST LAKE BLVD
EAST LAKE BLVD
SCHERZER WAY
MIDLAND DR
HILLCREST AVE
ELLSWORTH AVE
SEARING AVE
WESTERN AVE
BROOKFIELD WAY
GRACE WAY
UPPER FIELDS RD
DOROTHY DR
MOUNTAINSIDE DR
HAYS DR
SKYLINE DR
white
orange
yellow
green
blue-green
green
red
gray
blue
white
N
FoHVOS New Jersey Invasive Species Strike Team
Jones Woods Stewardship Plan
Bedrock Geology
Legend
Property Boundary
Trails
Selected Invasive Species Points
0
500
1,000 Feet



FoHVOS New Jersey Invasive Species Strike Team

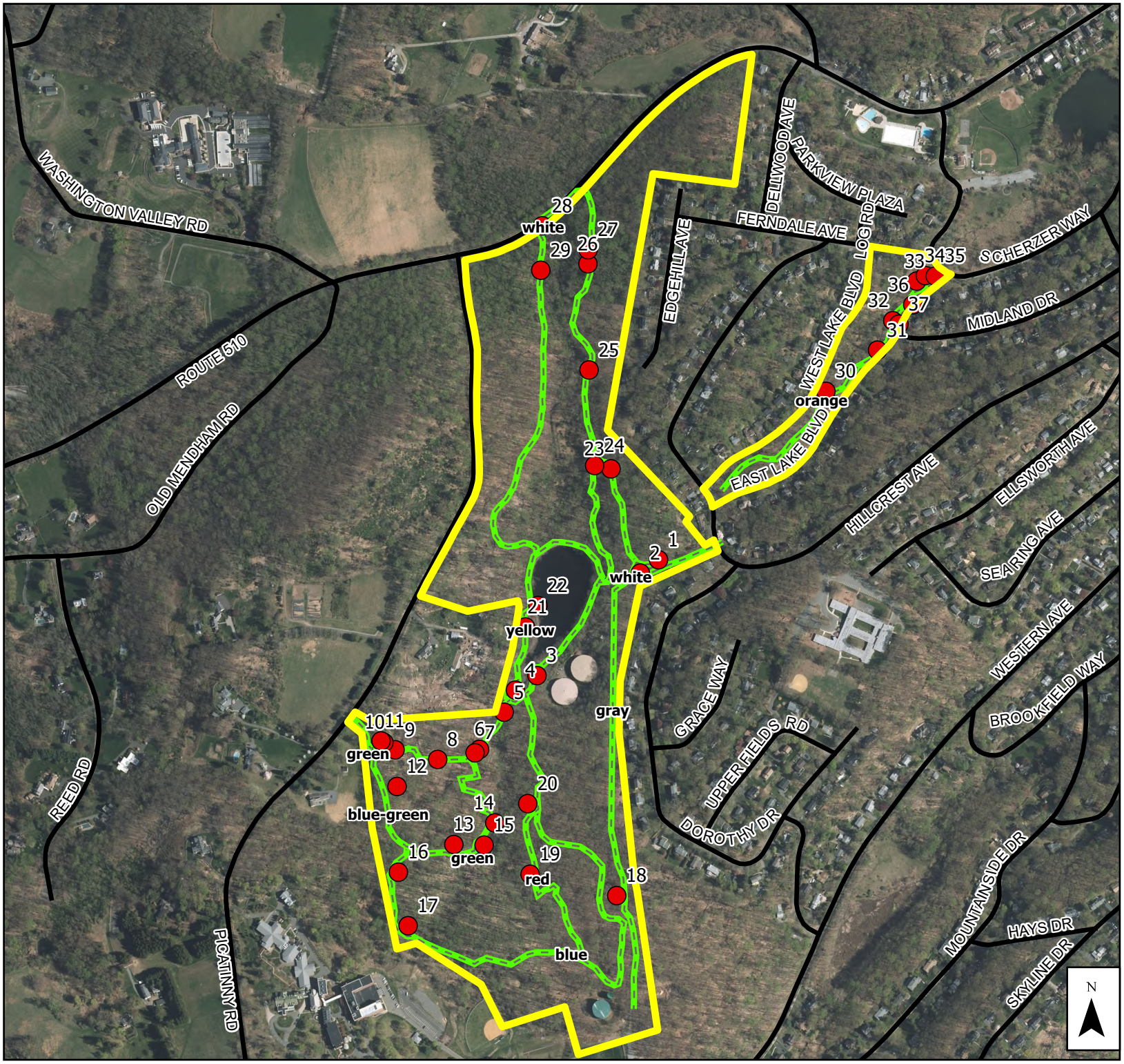
Jones Woods Stewardship Plan

Water, Wetlands, and Topography

Legend

- Property Boundary
- Trails
- Wetlands

0 500 1,000 Feet



FoHVOS New Jersey Invasive Species Strike Team

Jones Woods Stewardship Plan

Selected Invasive Species Points

Legend

- Property Boundary
- Trails
- Selected Invasive Species Points

0 500 1,000 Feet

Table 1. Non-Native Plant Species List

Scientific Name	Common Name	Growth Form	Relative Threat Level	Stewardship Goal	Stewardship Note
Dactylis glomerata	Orchard Grass	Grass	None	0	Weed of heavily disturbed areas
Dianthus armeria	Deptford Pink	Herb	None	0	Weed of heavily disturbed areas
Forsythia sp.	Forsythia	Shrub	None	0	Non-invasive, generally does not spread
Hibiscus syriacus	Rose-of-Sharon	Shrub	None	0	Non-invasive, generally does not spread
Lapsana communis	Nipplewort	Herb	None	0	Weed of heavily disturbed areas
Leucanthemum vulgare	Oxeye Daisy	Herb	None	0	Weed of heavily disturbed areas
Potentilla indica	Mock Strawberry	Herb	None	0	Non-invasive, generally found in disturbed areas
Prunella vulgaris	Heal-all	Herb	None	0	Non-invasive, generally found in disturbed areas
Rumex crispus	Curled Dock	Herb	None	0	Weed of heavily disturbed areas
Solanum dulcamara	Bittersweet Nightshade	Herb	None	0	Weed of heavily disturbed areas
Trifolium pratense	Red Clover	Herb	None	0	Weed of heavily disturbed areas
Trifolium repens	White Clover	Herb	None	0	Weed of heavily disturbed areas
Ampelopsis brevipedunculata	Porcelainberry	Vine	High	1	This is a very highly threatening species with limited distribution on the property. It occurs in 5 locations, most located on the narrow parcel located between West & East Lake Blvd's.
Aralia elata	Japanese Aralia	Tree	High	1	This species has begun to establish multiple populations on the property over the last 10 years. Without control, this species will degrade many acres.
Euonymus alatus	Winged Burning Bush	Shrub	High	1	Eliminate few existing individuals utilizing Basal Bark Method with Pathfinder II herbicide in summer or Cut Stump Method with glyphosate in winter. Treated individuals can be cut/removed after completely dead and location can be replanted with native species.
Euonymus fortunei	Wintercreeper	Vine	High	1	Observed in low numbers at two locations, but this species is becoming much more invasive throughout the state and eradication should be attempted to avoid future damage.
Kerria japonica 'Pleniflora'	Japanese Kerria	Shrub	Unknown	1	This is a novel species likely spread from nearby plantings. However, it is prudent to eliminate this single occurrence.
Prunus subhirtella	Weeping Higan Cherry	Tree	High	1	This species is emerging rapidly throuhgout the state and should be considered for eradication on the property
Acer platanoides	Norway Maple	Tree	Moderate	2	Only treat seedlings and saplings to prevent spread

Table 1. Non-Native Plant Species List

Scientific Name	Common Name	Growth Form	Relative Threat Level	Stewardship Goal	Stewardship Note
Alliaria petiolata	Garlic Mustard	Herb	Moderate	2	Only treat in high value areas with few invasives, especially older forest areas. Hand pulling prior to seed set in May can be effective, but must be repeated annually for at least several years as seeds continue to germinate from the seed bank. Late winter herbicide treatments on basal rosettes can be effective.
Berberis thunbergii	Japanese Barberry	Shrub	High	2	Isolated individuals along with relatively isolated infestations in areas with higher moisture. Focus efforts in upland forests, especially canopy gaps where it can flourish.
Cardamine impatiens	Narrowleaf Bittercress	Herb	Moderate	2	Biennial species that should be treated the same as Garlic Mustard (See above).
Celastrus orbiculata	Asiatic Bittersweet	Vine	Moderate	2	Focus on removing vines that are threatening larger trees and any vines growing in canopy gaps.
Hesperis matronalis	Dame's Rocket	Herb	Moderate	2	Although quite beautiful, this species can become invasive in partial shade habitats. Begin treatment if abundance increasing. Treatment method same as Garlic Mustard.
Ligustrum obtusifolium	Border Privet	Shrub	Moderate	2	This species is most threatening to the relatively few moist to wet areas on the property.
Lonicer morrowii	Morrow's Honeysuckle	Shrub	Moderate	2	Generally requires open woodland to form infestations. Treat in canopy gaps only.
Lonicera japonica	Japanese Honeysuckle	Vine	Moderate	2	Focus on removing vines that are threatening larger trees and any vines growing in canopy gaps.
Microstegium vimineum	Japanese Stiltgrass	Grass	Moderate	2	Generally absent from uplands unless disturbed, but infestations observed in moist to wet patches on the property.
Phragmites australis	Common Reed	Grass	Moderate	2	There is a single population in an isolated wetland.
Phyllostachys sp.	Running Bamboo	Grass	Moderate	2	Large planted populations occur along the property boundary. See Table 2 for points.
Reynoutria japonica	Japanese Knotweed	Herb	High	2	Highly threatening species that is isolated to disturbed areas. Small populations should be elimated and larger populations contained.
Rosa multiflora	Multiflora Rose	Shrub	Moderate	2	Generally does not occur in mature upland forest, but treat in canopy gaps to allow potential native tree regeneration.
Rubus phoenicolasius	Wineberry	Shrub	Moderate	2	Generally does not occur in mature upland forest, but treat in canopy gaps to allow potential native tree regeneration.

Table 1. Non-Native Plant Species List

Scientific Name	Common Name	Growth Form	Relative Threat Level	Stewardship Goal	Stewardship Note
Artemisia vulgaris	Mugwort	Herb	Low	3	Extremely challenging to control, requires use of Milestone herbicide applied as foliar spray in early October. This herbicide is soil active, do not apply under desirable trees or shrubs. Generally, this species is sparse in shaded areas and does not represent a severe threat in the majority of the property.
Cirsium arvense	Canada Thistle	Herb	Low	3	Species requires bare ground to persist over time. Plant is spiny and would be undesirable around heavy human use areas.
Commelina communis	Asiatic Dayflower	Herb	Low	3	Generally a weed of disturbed locations, but should be watched for spread into less disturbed areas. It is possible that this species is beginning to 'make its move' as it has been observed more frequently in recent yeaars.
Pachysandra terminalis	Japanese Pachysandra	Herb	Low	3	Non-invasive, generally does not spread, but can become abundant at its point of introduction
Vinca minor	Lesser Periwinkle	Vine	Low	3	Non-invasive, generally does not spread, but can become abundant at its point of introduction

Stewardship Goal Notes:
0 = Non-invasive, do not treat
1 = Eradicate all observed individuals
2 = Control through a long-term program
3 = Do not treat unless resources allow (only Very High, High or Moderate Threat species)

See Strike Team website for "Invasive Species List and Control Recommendations" and "Herbicide Use Suggestions and Mixing Table"

Table 2. Selected High Priority Invasive Plant Locations

Point ID	Species Nme	Population Size	Latitude	Longitude
3	Bamboo	11-100	40.79060932	-74.50673729
4	Bamboo	11-100	40.79039826	-74.50714884
11	Bamboo	>1000	40.78966157	-74.50971245
30	Chinese Wisteria	11-100	40.79473112	-74.50122544
17	Dame's Rocket	2-10	40.78698163	-74.50919579
7	Japanese Aralia	2-10	40.78948916	-74.50791922
8	Japanese Aralia	11-100	40.78939352	-74.50863202
13	Japanese Aralia	101-1000	40.78815945	-74.5083239
25	Japanese Aralia	2-10	40.79504066	-74.50574504
33	Japanese Aralia	2-10	40.79632913	-74.49949516
15	Japanese Barberry	101-1000	40.78815141	-74.50774605
16	Japanese Barberry	> 1000	40.78775846	-74.50938161
21	Japanese Barberry	> 1000	40.79131398	-74.50695866
26	Japanese Barberry	> 1000	40.79658008	-74.50576642
12	Japanese Kerria	1	40.78900108	-74.50940668
5	Japanese Knotweed	2-10	40.79007824	-74.50736434
18	Japanese Knotweed	11-100	40.78741917	-74.50521606
37	Japanese Knotweed	101-1000	40.79570568	-74.49983354
19	Japanese Stiltgrass	> 1000	40.78772879	-74.50686847
27	Linden Viburnum	2-10	40.79678292	-74.50576281
29	Linden Viburnum	2-10	40.79648662	-74.50666613
24	Phragmites	> 1000	40.79365547	-74.50563851
28	Porcelain-berry	101-1000	40.79713144	-74.50663654
31	Porcelain-berry	2-10	40.79532833	-74.5002404
32	Porcelain-berry	> 1000	40.79575514	-74.49994979
34	Porcelain-berry	2-10	40.79640918	-74.49932895
36	Porcelain-berry	11-100	40.79598564	-74.4995685
10	Tree-of-Heaven	1	40.78963936	-74.50965897
1	Weeping Higan Cherry	2-10	40.79228838	-74.50441919
6	Weeping Higan Cherry	2-10	40.78953903	-74.50783406
9	Weeping Higan Cherry	2-10	40.789533	-74.50944557
14	Weeping Higan Cherry	2-10	40.78847277	-74.50754288
20	Weeping Higan Cherry	2-10	40.78875256	-74.50691373
22	Weeping Higan Cherry	2-10	40.79162462	-74.50671986
23	Weeping Higan Cherry	2-10	40.79360694	-74.50532637
2	Wintercreeper	2-10	40.79209643	-74.5047662
35	Wintercreeper	2-10	40.79640197	-74.49913994

Table 3. Native Plant Species List
Sorted by Growth Form, then Scientific Name

Scientific Name	Common Name	Growth Form
Amauropelta noveboracensis	New York Fern	Herb - Fern
Claytosmunda claytoniana	Interrupted Fern	Herb - Fern
Dendrolycopodium obscurum	Ground Pine	Herb - Fern
Dennstaedtia punctilobula	Hayscented Fern	Herb - Fern
Dryopteris sp.	Wood Fern species	Herb - Fern
Onoclea sensibilis	Sensitive Fern	Herb - Fern
Osmundastrum cinnamomeum	Cinnamon Fern	Herb - Fern
Polystichum acrostichoides	Christmas Fern	Herb - Fern
Carex pensylvanica	Pennsylvania Sedge	Herb - Grass
Carex playphylla	Broadleaved Sedge	Herb - Grass
Chasmanthium latifolium	Northern Sea Oats	Herb - Grass
Cinna arundinacea	Wood Reed	Herb - Grass
Dichanthelium clandestinum	Deertongue Grass	Herb - Grass
Glyceria striata	Fowl Manna Grass	Herb - Grass
Juncus tenuis	Path Rush	Herb - Grass
Leersia virginica	White Grass	Herb - Grass
Actaea racemosa	Black Cohosh	Herb - Wildflower
Ageratina altissima	White Snakeroot	Herb - Wildflower
Alisma subcordatum	American Water Plantain	Herb - Wildflower
Amphicarpaea bracteata	Hog Peanut	Herb - Wildflower
Antennaria neglecta	Field Pussytoes	Herb - Wildflower
Apocynum cannabinum	Dogbane	Herb - Wildflower
Arisaema triphyllum	Jack-in-the-Pulpit	Herb - Wildflower
Chelone glabra	Turtlehead	Herb - Wildflower
Chimaphila maculata	Striped Wintergreen	Herb - Wildflower
Circaea lutetiana	Enchanters Nightshade	Herb - Wildflower
Claytonia virginica	Spring Beauty	Herb - Wildflower
Cryptotaenia canadensis	Honewort	Herb - Wildflower
Dioscorea villosa	Wild Yam	Herb - Wildflower
Erigeron strigosus	Daisy Fleabane	Herb - Wildflower
Eurybia divaricata	White Wood Aster	Herb - Wildflower
Geum canadense	White Avens	Herb - Wildflower
Hackelia virginiana	Virginia Stickseed	Herb - Wildflower
Impatiens capensis	Jewelweed	Herb - Wildflower
Krigia biflora	Two-flowered Cynthia	Herb - Wildflower
Lobelia siphilitica	Great Blue Lobelia	Herb - Wildflower
Maianthemum canadense	Canada Mayflower	Herb - Wildflower
Maianthemum racemosum	False Solomon Seal	Herb - Wildflower
Mitchella repens	Partridgeberry	Herb - Wildflower
Persicaria virginiana	Jumpseed	Herb - Wildflower

Table 3. Native Plant Species List
Sorted by Growth Form, then Scientific Name

Scientific Name	Common Name	Growth Form
Phytolacca americana	Pokeweed	Herb - Wildflower
Plantago major	Broadleaf Plantain	Herb - Wildflower
Podophyllum peltatum	Mayapple	Herb - Wildflower
Polygonatum biflorum	Smooth Solomons Seal	Herb - Wildflower
Potentilla simplex	Field Cinquefoil	Herb - Wildflower
Pyrola americana	American Shinleaf	Herb - Wildflower
Sisyrinchium angustifolium	Blue-eyed Grass	Herb - Wildflower
Solidago caesia	Wreath Goldenrod	Herb - Wildflower
Solidago spp.	Goldenrod species	Herb - Wildflower
Symplocarpus foetidus	Skunk Cabbage	Herb - Wildflower
Verbena urticifolia	White Vervain	Herb - Wildflower
Viola sp.	Violet species	Herb - Wildflower
Alnus serrulata	Smooth Alder	Shrub
Amelanchier arborea	Downy Serviceberry	Shrub
Cornus alternifolia	Pagoda Dogwood	Shrub
Corylus americana	Hazelnut	Shrub
Hamamelis virginiana	Witch-hazel	Shrub
Ilex verticillata	Winterberry Holly	Shrub
Lindera benzoin	Spicebush	Shrub
Rubus allegheniensis	Allegheny Blackberry	Shrub
Rubus occidentalis	Blackcap Raspberry	Shrub
Sambucus canadensis	Common Elderberry	Shrub
Vaccinium corymbosum	Highbush Blueberry	Shrub
Vaccinium pallidum	Lowbush Blueberry	Shrub
Viburnum acerifolium	Mapleleaf Viburnum	Shrub
Viburnum dentatum	Arrowwood Viburnum	Shrub
Viburnum prunifolium	Blackhaw Viburnum	Shrub
Acer rubrum	Red Maple	Tree
Acer saccharum	Sugar Maple	Tree
Betula alleghaniensis	Yellow Birch	Tree
Betula lenta	Sweet Birch	Tree
Carpinus caroliniana	Ironwood	Tree
Carya cordiformis	Bitternut Hickory	Tree
Carya ovata	Shagbark Hickory	Tree
Catalpa speciosa	Catalpa	Tree
Fagus grandifolia	American Beech	Tree
Fraxinus americana	White Ash	Tree
Fraxinus pensylvanica	Green Ash	Tree
Gleditsia triacanthos	Honey Locust	Tree
Juglans nigra	Black Walnut	Tree

Table 3. Native Plant Species List
Sorted by Growth Form, then Scientific Name

Scientific Name	Common Name	Growth Form
Juniperus virginiana	Eastern Red Cedar	Tree
Liriodendron tulipifera	Tulip Poplar	Tree
Nyssa sylvatica	Black Tupelo	Tree
Ostrya virginiana	Hop Hornbeam	Tree
Populus deltoides	Cottonwood	Tree
Prunus serotina	Wild Black Cherry	Tree
Quercus alba	White Oak	Tree
Quercus montana	Chestnut Oak	Tree
Quercus palustris	Pin Oak	Tree
Quercus rubra	Red Oak	Tree
Robinia pseudoacacia	Black Locust	Tree
Sassafras albidum	Sassafras	Tree
Ulmus americana	American Elm	Tree
Ulmus rubra	Slippery Elm	Tree
Parthenocissus quinquefolia	Virginia Creeper	Vine
Smilax rotundifolia	Roundleaved Catbriar	Vine
Toxicodendron radicans	Poison-ivy	Vine
Vitis cinerea	Winter Grape	Vine
Vitis riparia	Riverbank Grape	Vine
Vitus labrusca	Fox Grape	Vine

Table 4. Stewardship Recommendations

Goal Number	Description
1	Deer Management: Consider establishing a deer management program to allow native species to fill forest understory and effectively compete against invasive species. Contact Strike Team for advice on establishing a program.
2	Eradication of Newly Emerging Species: There are 6 species listed as Stewardship Goal = 1 on the Non-Native Species List (Table 1). These include Porcelain-berry, Japanese Aralia, Winged Burning Bush, Wintercreeper, Weeping Higan Cherry, and Japanese Kerria. GPS coordinates for all observed populations of these species are provided in Table 2. Additional searching should be conducted on a regular basis and any new populations should be eradicated.
3	Protect Canopy Gaps: These light filled areas are susceptilbe to infestation and native trees are often devoured by deer. Target control efforts on all 15 invasive species with Stewardship Goal = 2 (see Table 1), with special emphasis on invasive vines such as Japanese Honeysuckle and Asiatic Bittersweet. Fencing entire gaps or protecting small groups of young native trees (especially species of oak and hickory) should occur to assure forest regeneration.
3	Protect Clean Areas: Large portions of the property have older forests with few invasive species. Priority areas should be established and be subject to regular control efforts targeting all 15 invasive species with Stewardship Goals = 2 (Table 1). Areas should have logical boundaries (e.g., between trail and property boundary).
4	Long-term Control: The highest priority Stewardship Goal = 2 species should be subject control efforts at reducing / containing existing infestations. The highest priorty species include Japanese Knotweed, Japanese Barberry, and Running Bamboo. Phragmites occurs in a single isolated wetland. Control may be considered, especially given that wetlands are uncommon on the property and ideally, this could become a healthy wetland.