

WATERSHED FORESTRY PLAN

FOR THE PROPERTY OF

**SYLVAN GLEN & GRANITE KNOLLS PARK
PRESERVES**

YORKTOWN HEIGHTS, NEW YORK

JANUARY 28, 2013

PREPARED BY:

**Ted Kozlowski,
Certified Watershed Forester, Certified Forester (Society of American Foresters),
Certified Wetland Delineator (Rutgers University)
136 Big Elm Road
Brewster, New York 10509
(845) 278-6169**

RECEIVED
2013.01.28

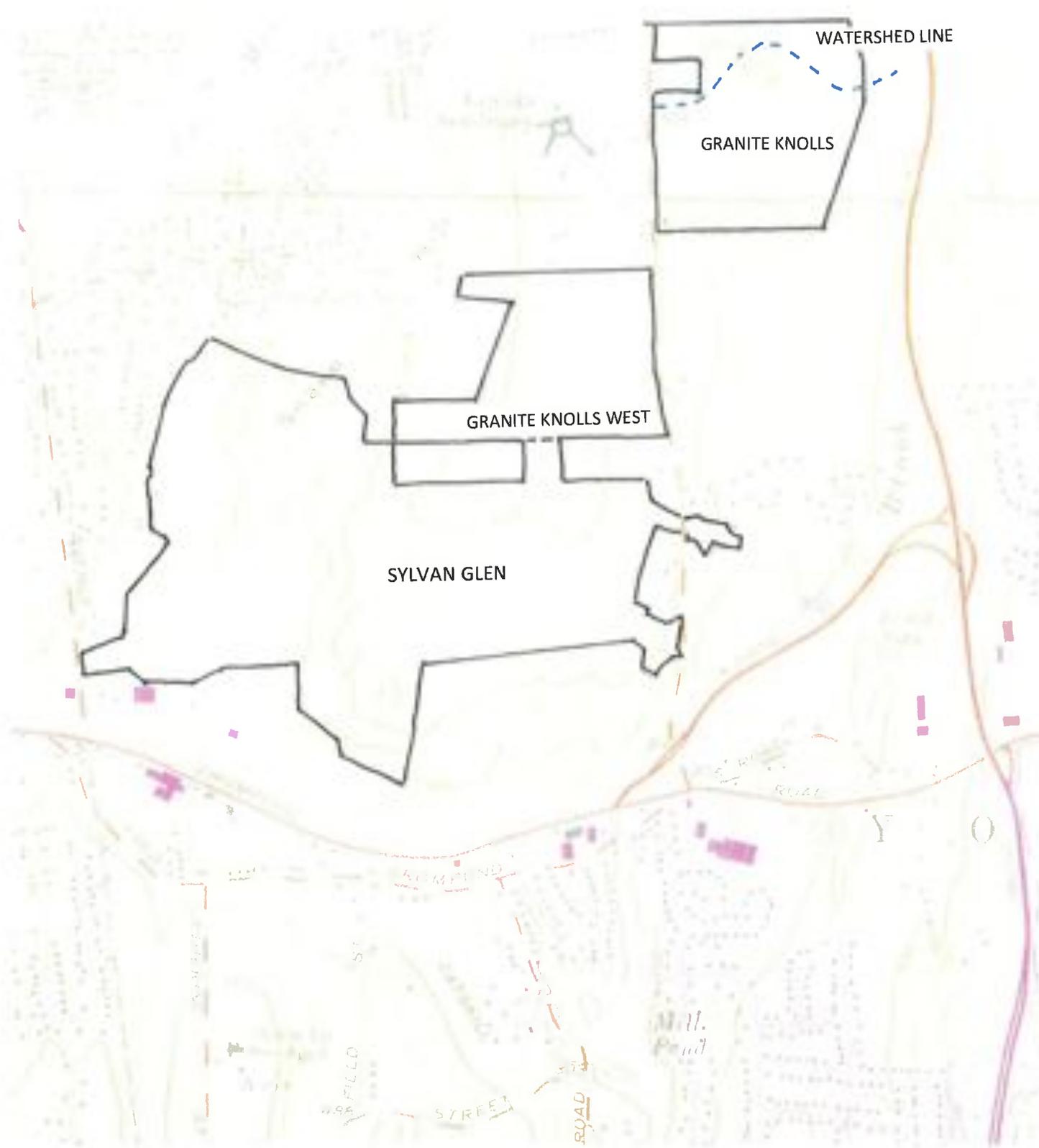
DEPT. OF ENVIRONMENTAL CONSERVATION

TABLE OF CONTENTS

<u>SUBJECT</u>	<u>PAGE</u>
1. LANDOWNER SPECIFICS.....	3
2. PROPERTY NARRATIVE.....	4
3. FOREST TYPES.....	6
4. FOREST RESOURCES WORK SCHEDULE.....	12
5. SOIL & WATER CONSERVATION	14
6. RIPARIAN/WETLAND RESOURCE.....	16
7. ACCESS SYSTEMS (FOREST ROADS)	19
8. WILDLIFE HABITAT	20
9. AESTHETICS & RECREATION	23
10. FOREST HEALTH & FIRE PROTECTION ..	25
11. PLAN HIGHLIGHTS	26
12. ASSISTANCE & FUNDING	27
13. DEFINITION OF TERMS	29

APPENDIX

- 14. BEST MANAGEMENT PRACTICES
- 15. INVASIVE SPECIES CONTROLS
- 16. INSECTS & DISEASES
- 17. SOIL MAPS & TYPES
- 18. WILDLIFE INFORMATION



WATERSHED LINE

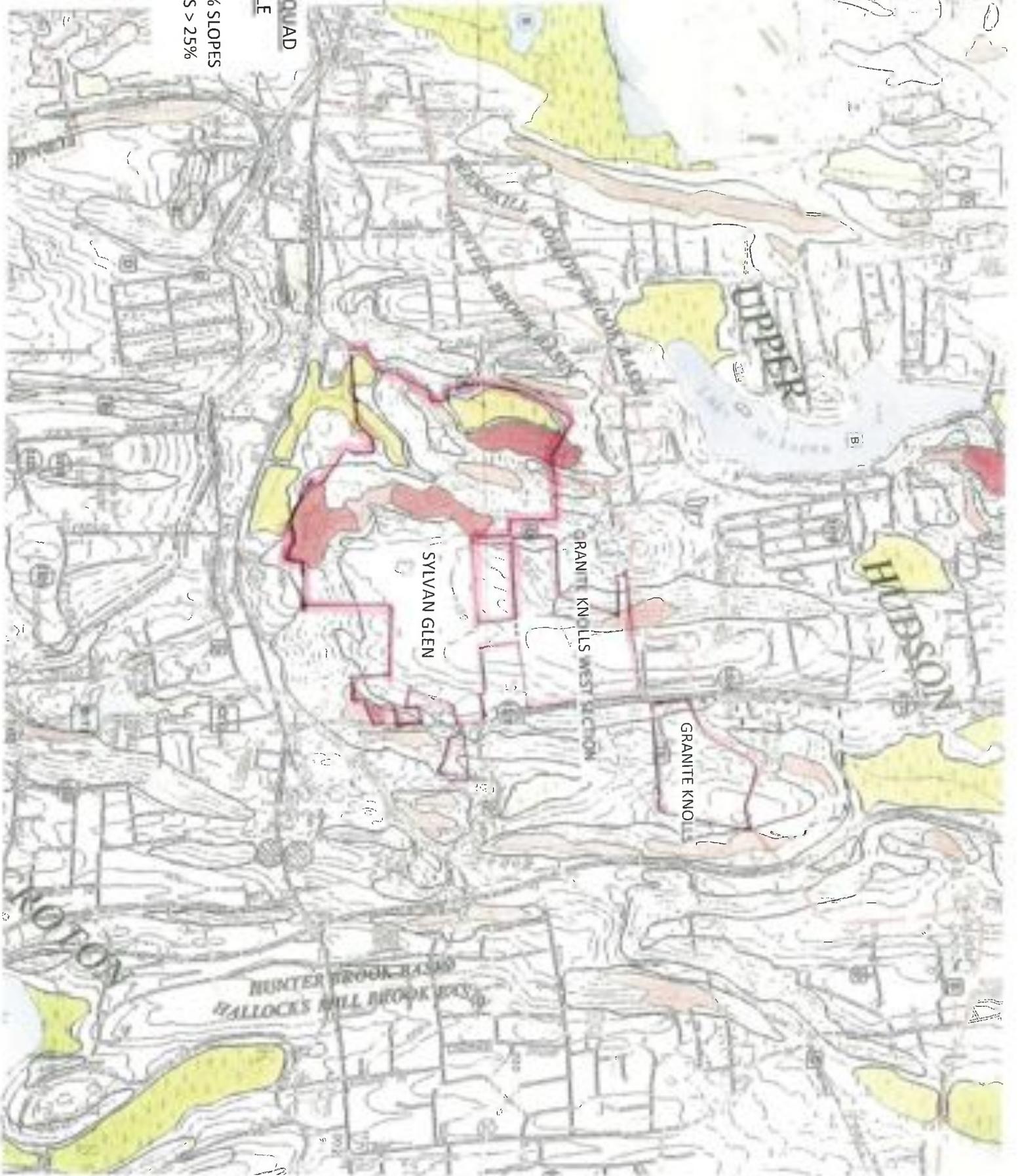
GRANITE KNOLLS

GRANITE KNOLLS WEST

SYLVAN GLEN

MOHEGAN LAKE QUAD
1:24000 SCALE

↑
N



MOHICAN LAKE QUAD

1:24000 SCALE



LIGHT PINK - 15-25% SLOPES

DARK PINK - SLOPES > 25%

LANDOWNER SPECIFICS

PROPERTY OWNER

Michael Grace, Supervisor
Town of Yorktown
363 Underhill Avenue
Yorktown Heights, NY 10598
(914) 962-5722
Supervisor@yorktownny.org

Brian Gray, Superintendent
Yorktown Parks Department
176 Granite Springs Road
Yorktown Heights, NY 10598
(914) 245-4650
ypr@yorktownny.org

PROPERTY LOCATION

Between Lexington Avenue and Stony Street (west of the Taconic Parkway), north of
NYS Route 202
Yorktown Heights, NY 10549

Tax Map Numbers – Town of Yorktown:

1. 25.16-1-25	6. 26.13-1-9
2. 25.20-1-8	7. 26.06-1-1
3. 26.13-1-1	8. 26.09-1-22
4. 26.13-1-1.1	9. 26.14-1-45
5. 26.13-1-2	10. 26.18-1-30

+ 25.2-1-12

PROPERTY SIZE & ZONING

518.07 Acres Total Town Parkland.
Residential Zone –R1-200 (4-acre) Town of Yorktown

LANDOWNER GOALS & OBJECTIVES

1. Optimize the health and biodiversity of the forest to enhance the enjoyment and usability of these parks by the public.
2. To manage the land for conservation of natural resources, passive use recreation and public education.
3. To preserve and protect the native forest, wildlife, water resources, and cultural and historic features within these parks.

As chief officer for this property, I have reviewed this management plan with my forester and I understand the contents and agree that it reflects the Town of Yorktown's goals and intentions for the management of this property.



2/6/13

PROPERTY NARRATIVE

Sylvan Glen and Granite Knolls Parks are located within the Town of Yorktown near the central northern edge of Westchester County, NY, and just west of the Taconic Parkway. These two public park preserves are owned by the Town and are under the jurisdiction of the Yorktown Parks and Recreation Department and maintained as a passive use parks with an emphasis on conservation. The parks also have a relationship with the NY & NJ Trail Conference which is a volunteer organization that promotes conservation and trail preservation within the metropolitan area. They assist in some maintenance operations and serve as advocates of the parks. In addition, the Westchester Mountain Bike Association is involved with the trails at Granite Knolls Park. Sylvan Glen Park is located between Lexington Avenue to the west, Stony Street to the east and just north of Route 202 (Crompond Road). The park is accessible from Morris Lane which is accessed from Lexington Avenue along the western borders of the parcel and can also be accessed from the eastern section off Deer Street, Quarry Drive and Stony Street.

Granite Knolls Park is 200 acres*, was purchased by the Town in 2010 and has less public accessibility at this time. It is located north of Sylvan Glen on the east and west sides of Stony Street and just to the west of the Taconic Parkway and NY State lands. Public parking is currently only available at Woodlands Legacy Fields, which is another Yorktown Park that is located on the east side of the Taconic Parkway. The Taconic Bridge Trail at Woodlands Park crosses a bridge over the Taconic Parkway to access Granite Knolls Park. There is public access via the Phoenix Academy property at the north boundary of the western section of Granite Knolls west of Stony Street.

The 342 acres of Sylvan Glen has a long history of ownership and uses prior to its present use as a public park when it was acquired by the Town in 1981. It was farmland until around 1850 when the large granite outcrops and glacial deposits became important raw materials for stonework throughout the metropolitan area and beyond. In 1925 Greci & Ellis Inc. purchased the property and developed a large quarry operation(known as the Mohegan Granite Quarry) that harvested a unique honey colored granite known as 'Golden Granite' that was used in many buildings and bridges. In the 1940's the operations ended and the property slowly reverted back to forest. There is still much evidence of the past intensive uses in this park. Steel cable, ruins, metal machinery and old rails still remain where they were seemingly abandoned as if the workers suddenly left the site. After the quarry operations ended the ownership changed and some small hobby farm operations were attempted.

Granite Knolls also received some attention from the granite industry and was later farmed by Jesuits who established a center on the property on the west side of Stony Street. A small sewerage treatment plant that has long been closed is located east of Stony Street and there is a barn in poor condition just off Stony Street at the southwestern edge of the parcel.

The general area is residential zoned with significant high density neighborhoods and some commercial operations along Route 202. Much of the surrounding areas are highly developed with residential housing and two main travel ways to the south and east. The Phoenix Academy (a non-profit substance abuse treatment center) lies just to the North of Sylvan Glen and west of Granite Knolls, on the opposite side of Stony Street where the Jesuits once established. The NY City Department of Environmental Protection owns land just west of the western section of Granite Knolls.

The two parks are within the Croton watershed and water from all of Sylvan Glen and most of Granite Knolls drains into the New Croton Reservoir, which is located within the NY City watershed. Significant wetlands are located within both parcels.

The site terrain ranges from level grades to steep forested slopes with many rock outcroppings and impressive rock formations and glacial erratics. The elevation ranges from highpoints of 646 feet at the northeast portion of Sylvan Glen and 660 feet in the central portion of the western section of Granite Knolls(620 feet on the east section) to low points of 320 feet at the southwest section at Sylvan Glen and 450 feet at the southwestern border of the eastern section of Granite Knolls (460 feet at the west section).

The geological aspects within these parks are quite remarkable. Large, steep, granite rock formations and former quarry piles are located in many areas, providing the casual hiker many exploring opportunities.

The parks have well defined trails that traverse the parcels and allow the visitor to connect to other Town lands. Almost all of the land is undeveloped (except for the quarry sites) and covered by native forest along with state and local regulated wetland systems.

Wetlands and a few streams traverse the properties add to the ecosystem diversity. Most of the forest types on these parcels are native upland hardwoods and typical red maple types in swampy areas. Upland hardwoods dominate within the high terrain, including mixed oaks, sugar maple, tulip and ash, along with pockets of cottonwood. The lower terrain is covered by lowland tree species including red maple, elm and tulip. This allows and supports diverse habitats for wildlife and serves as a significant wildlife corridor in the Town. This open space of publicly held lands for public use is a valuable asset for the rapidly developing suburbs of New York City.

These two parks additionally serves as open space buffers to the many residential homes surrounding it, which also positively affects their property values in the area. No doubt Town residents benefit from all the open space values offered here.

Over browsing by deer are seriously impacting the regeneration of native trees and plants within the park as well as invasive plant species in some locations (mostly at Sylvan Glen and along the western extremes of Granite Knolls). The regeneration of the natural forest within the ecosystems within these parks is a primary concern for the future.

***Please note that only approximately 150 acres of Granite Knolls Park is included within this plan as a portion of this park (approximately 50 acres) is not within the NYC watershed boundary and is not significantly discussed in this plan.**

FOREST TYPES

The forested areas on these two subject parcels were inspected and measurements were taken at numerous points, which included tree identification, tree *DBH*, site evaluation, regeneration patterns and stand density (*basal area*). The forest is divided into forest *stands* based on this data, ecological conditions and field observations. *Italicized* words are defined in the Definitions Section within the appendix.

The forest types will include wetland areas as they are all covered by red maple dominated forest. The Town has opted to not consider significant timber operations as part of this plan as it will impact the present aesthetic and recreational park uses. Therefore this plan will not include significant timber harvesting practices at this time. Active manipulation of a natural forest is not a necessary practice if the particular forest is healthy and unaffected by invasive species, heavy deer pressures and human disturbances. In this case, much of this plan is geared to controlling invasive plants, promoting regeneration by reducing deer pressures and protecting the natural ecosystems. If timber management was desired, then of course more forestry practices would be employed for this plan. The one exception is the possible production of firewood or fence posts from culling non native trees and salvaging storm damaged trees. The Town may, in the future, seek more timber producing related practices, which can be considered when the plans get updated.

SYLVAN GLEN

Stand 1

30-Acres – Red Maple Wetland (Red Maple 50%, elm 25%, ash 10%, cottonwood 5%).
Poles, 70 sq.ft.BA/Acre. Site Class III

This western section of the park is part of NY State DEC regulated wetland A-10 and is dominated by red maple, elm, cottonwood and ash. It includes Turtle Pond and extends north and south of the park boundaries. Any activities here should include controlling or eradication invasive Japanese stilt grass, multiflora rose and Japanese barberry, which are impacting natural regeneration and wildlife habitat. No major disturbances or herbicide applications can occur here without permits as this area is regulated by the Town, State and Army Corps of Engineers. Trash and debris is present along Grant Road and should be cleaned up and measures taken to reduce intentional dumping activities. It is best to not to conduct any future operations here that would disrupt the soils or water resources contained within this regulated zone other than to control invasive species. Much Town drainage enters here and along with it comes additional debris and pollutants. The Town may wish to investigate creating some mitigation action such as detention/catch basins along with public education for neighbors on protecting the watershed here.

Stand 2

57 -Acres– Mixed oaks (red 40%, white 30%, chestnut 2 %), black birch 12 %, maples 10% – *sawtimber*
100 sq.ft. BA/Acre, LITTLE REGENERATION, American beech, mixed maples
Site class II

This upland stand is located along the western section of Sylvan Glen and is bordered by State wetland A-10 to the west and a riparian (Sylvan Brook) wetland to the east. It is mostly elevated and somewhat steep terrain, which is a typical upland oak dominated site. There are few invasive species here and due to the steep portions and proximity to wetlands, any disturbances should be well secured from erosion challenges. Keeping out invasive plants along with maintaining erosion controls along the trails is top priority here.

Stand 3

2 Acres – White pine plantation.

150 sq. ft. BA/acre – *large sawtimber* - MINOR REGENERATION – maples & black birch .

Site Class II

This is an interesting old white pine plantation and adds diversity to the forest as there are few conifers at Sylvan Glen. Due to the age and size of this stand, it is better to fence in some areas with sunlight filtering in to allow for natural pine regeneration. Thinning this stand out would be a negative action as it would make the stand vulnerable to blown downs. Some invasive species are invading the site and should be eliminated.

Stand 4

32 Acres – Sylvan Brook riparian corridor and wetland. Red maple 60%, elm 20%, ash 10%.

90 sq.ft. BA/Acre – VERY LITTLE REGENERATION – some maple.

Site Class III

Located along a narrow band of lowland flowing north to south, this riparian area is a typical stream corridor flowing in and out of wetland systems. It should be maintained as wetland, protected from invasive plants and erosion challenges.

Stand 5

95 acres – Mixed upland oaks (red, white, black and chestnut) 60%, black birch 10%, American beech 10%, red maple 8%, – sawtimber

90 sq. ft. BA/Acre – MINOR REGENERATION – few maples, American beech

Site Class II

This upland forest comprises much of the former quarry operations and has covered much of the past history at Sylvan Glen. Invasive species are rare here but so is natural forest regeneration. Deer fencing can be placed in some selected locations to improve regeneration. American beech can become dominant with its capacity to spread so it should be monitored over time as it can crowd out oaks.

Stand 6

89 Acres – Red maple 47%, tulip 10%, ash, 8%, American beech 7%, black birch 7%
92sq.ft. BA/Acre. Small sawtimber - MINOR REGENERATION – some maples, black birch, American beech. Site Class II.

This forest type is located mostly to the east of the high quarry sites and descends to a somewhat lowland area at the eastern section of the park. There are some pockets of invasive vines and shrubs that should be controlled. In addition black locust trees are present in several pockets, especially at the eastern boundaries that should be removed and can be used for fence posts or firewood.

Stand 7

6 Acres – Red maple wetland –red maple 75%, elm 10%, ash 8%, cottonwood 5%.
90 sq.ft. Acre -*Large poles* –MINOR REGENERATION – Some maple, elms
Site Class III.

This is a small wetland receiving drainage from the elevated slopes to the west and north. Invasive plants are present and need to be controlled. This is a sensitive area and needs to be maintained for its stormwater buffering capacity.

Stand 8

3 Acres – Red maple 46%, tulip 38%, sugar maple 8%, black cherry 5%.
100 sq.ft BA/Acre – *poles* – MINOR REGENERATION – some maples
Site Class II

This is a former riding ring site that is a similar forest type as found in stand 6 but younger and smaller in diameter. Invasive plants have established here and need to be controlled. This may make a good site for wildlife habitat improvement by removing all the sapling trees and invasive plants and seeding with wildlife mix. Keep the large oak tree here for acorn production and aesthetic interest.

Stand 9

2 Acres –Tulip 75%, red maple 20%, ash 3%
90 sq.ft. BA/Acre – small sawtimber – MINOR REGENERATION – some maple
Site Class II.

This is a small tulip tree dominated forest near a linear wetland along the red trail.

Stand 10

4 Acres – pond and wetland. Red maple 65%, elm 10%, ash 10%, tulip 5%.
85 sq.ft. BA/Acre – large poles –MINOR REGENERATION – some red maple.
Site Class III

This is a created pond within a hydric soil dominated wetland. The lineal wetland system parallels the red trail and borders private residences on Stony Street. It should be maintained as a wildlife area as its water resources is important for amphibians and waterfowl.

Stand 11

8 Acres –Red maple 40%, Mixed oaks (white, red, chestnut) 40%, black birch 10%.
95 sq.ft. BA/Acre – large poles – Minor Regeneration – some maple
Site Class II

This irregular parcel is upland oak forest and secures the southeast corner of the park. It is a buffer to development and protects the wetland, likely serving as amphibian habitat for salamanders which may breed in the pond. Monitor and control invasives that are creeping in from the east.

Stand 12

5 Acres - Mixed oaks(red, black, white) 60%, hickory 10%, sugar maple 10%, black birch 10%.
80 sq.ft BA/Acre – small sawtimber. – MINOR REGENERATION – some maple, black birch.
Site Class II

This is a small piece of connecting parkland located within a residential area. A five car parking lot and small playground is located here. The land should be managed to monitor possible encroachments and dumping along with eliminating any invasive plants.

Stand 13

9 Acre wetland – red maple 60%, ash 15%, elm 10%, locust 5%.
80 sq.ft. BA/Acre - -large poles – NO REGENERATION –
Site Class III

This is the rectangular piece that connects Sylvan Glen to Granite Knolls and is sandwiched between two private parcels in the north central border of the park. Invasive plants such a Japanese silt grass has overtaken the forest floor, inhibiting natural regeneration. This should be controlled and managed. Remove locust trees that have established. Post the property and monitor for possible encroachments by neighbors.

GRANITE KNOLLS PARK (West of Stony Street)

Stand 1

2 Acre wetland – Red maple 75%, elm, 20%, ash 5%
90 sq.ft./Acre – large poles – Minimal Regeneration – some maple
Site Class III

This is a piece of a large system wetland that is off site to the north and south. It is located at the extreme northwest corner of the 75 acre west section of Granite Knolls. It is subject to neighbor disturbances so this remote section should be well posted and monitored.

Stand 2

2 Acre wetland – Ash 75%, red maple 20%, apple 5%
30sq.ft/ Acre – small poles – Minimal Regeneration – maple, ash
Site Class II

This is a small wet meadow located near Stony Street and just south of the gas line. It should be maintained as wet meadow for diversity and wildlife habitat (providing excellent bird area). Most of the poles should be removed and allow the apple trees to remain for wildlife.

Stand 3

6 Acres – Upland oaks (red and white) 60%, black birch 25%, red maple 10%, locust 2%
120sq.ft/Acre – small sawtimber – MINOR REGENERATION – some maple and black birch
Site Class II

This is a small upland forest type located along the south central portion of the parcel. The locust trees should be eliminated and invasives prevented from establishing.

Stand 4

25 Acres – Red maple 30%, black birch, 30%, locust 25%, ash 10%
140 sq.ft. BA/Acre – Sawtimber – MINOR REGENERATION – maple and black birch
Site Class II

This stand is a transition stand from upland to wetland located in the central portion of the site. The locust is well established and has reduced native forest habitat. It should be removed and invasive plants must be prevented to establish.

Stand 5

13 Acres – Red maple 25%, black birch, 20%, locust 20%, sugar maple 10%
120sq.ft/Acre – large poles – SOME REGENERATION – maple, birch
Site Class II

Located in the east central portion of the parcel, this previously disturbed site (likely farming operations) is well on the way to becoming an established forest. Invasive species are established and must be removed to maintain its vigor.

Stand 6

21 Acres – Ash 20%, red maple 15%, locust 10%, grey birch 5%
60sq.ft/Acre – small poles – SOME REGENERATION – maples, black birch
Site Class II

This is former farm area that is located along the eastern section of the property and is naturally regenerating as a forest but greatly affected by invasive species such as locust, Norway maple and vines. In order for this forest to properly recover the invasive species must be controlled.

SYLVAN GLEN NATURE PRESERVE

MOHEGAN LAKE, NY
TOWN OF YORKTOWN PARK

Trail	Length
Deer Hollow	0.2 mi
Grant Lookout	0.3 mi
High Quarry	1.1 mi
Old Farm	0.6 mi
Ring	0.25 mi
Sylvan Brook	0.3 mi
Sylvan Glen	1.3 mi
Turtle Pond	0.9 mi



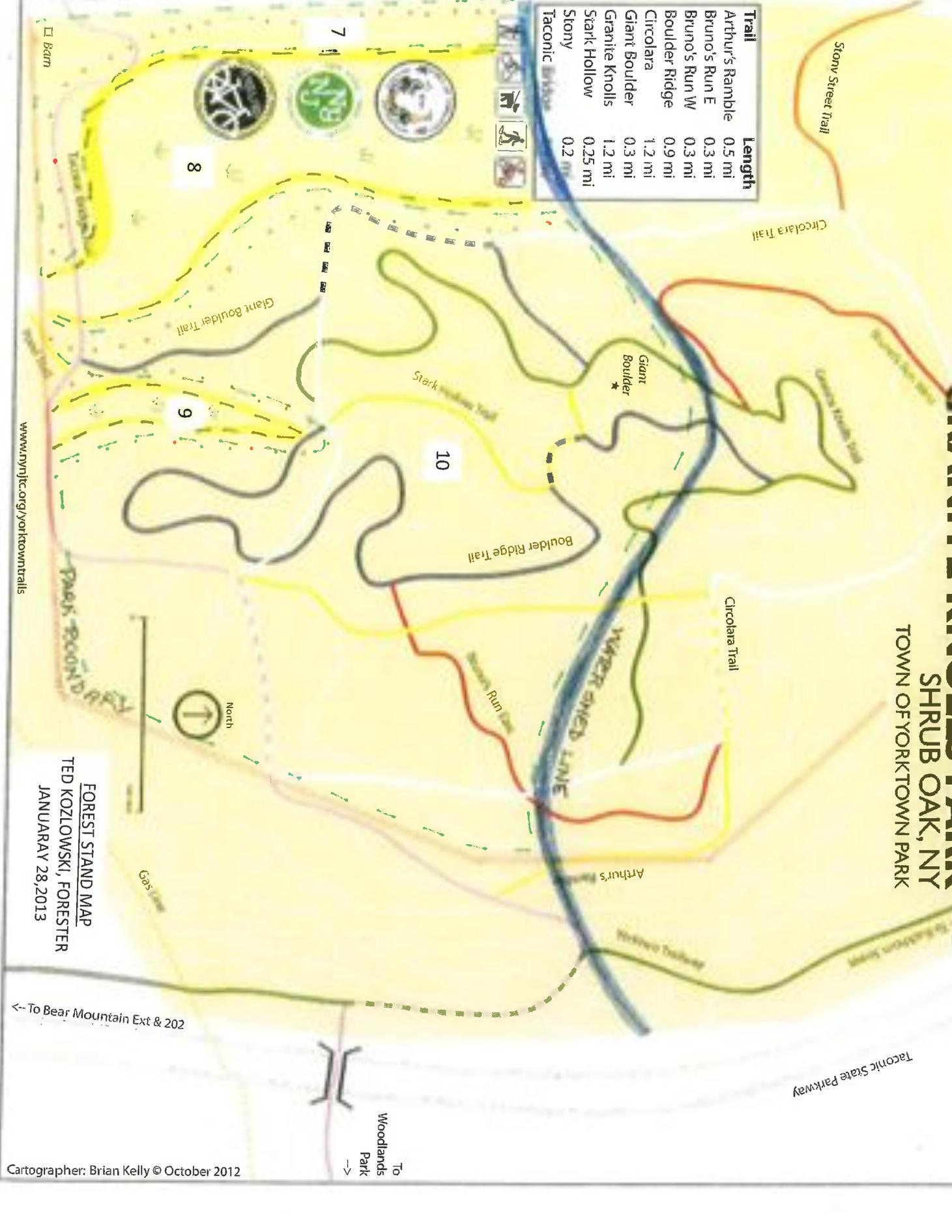
FOREST STAND MAP
BMP WET AREA CROSSING
BMP WATER DIVERSION
TED KOZLOWSKI, FORESTER
JANUARY 28, 2013

GRANITE KNOLLS PARK

SHRUB OAK, NY

TOWN OF YORKTOWN PARK

Trail	Length
Arthur's Ramble	0.5 mi
Bruno's Run E	0.3 mi
Bruno's Run W	0.3 mi
Boulder Ridge	0.9 mi
Circolara	1.2 mi
Giant Boulder	0.3 mi
Granite Knolls	1.2 mi
Stark Hollow	0.25 mi
Stony	0.2 mi
Taconic Parkway	



FOREST STAND MAP
TED KOZLOWSKI, FORESTER
JANUARY 28, 2013

www.ny/njtc.org/yorktowntrails

FOREST RESOURCE WORK SCHEDULE

While agro-forest products are encouraged in WAC forest management plans, the present use as a designated passive use public park and the Town of Yorktown likely does not have the resources to enter into an aggressive forest product generating program by itself. However the Town may wish to investigate the potential opportunities to enter in agreements with local farmers, organic farmers, or BOCES to grow some products such as mushrooms, ginseng, wild blueberries, raspberries and wild honey (from commercial honeybee hives). The Phoenix Academy may have some opportunities for a possible relationship with the Town to establish such agro forest activities for their clients to be used as part of its program. The fields along the gas line and stand 6 on Granite Knolls would be the most promising for all these products should the Town be interested and Cooperative Extension is a good resource for more information.

2013 – Properly post the park boundaries, especially along residential borders. Identify and secure plans to begin invasive plant controls within the parks, especially noting areas within stands identified as invasive problem areas. Identify and remove hanging limbs from trees all along trails that present a safety hazard to users (along with metal cables over trails). Add wood chip mulch (which can be obtained from the Highway Dept.) to steep trails and to cover exposed tree roots for protection and to reduce tripping hazards. Develop plans to establish regeneration plots within all stands (consider the use of deer exclusion fencing). Discuss the possibility of establishing a limited deer hunting program. Consider using cut trees for public, revenue generating firewood programs. Monitor neighbors and protect from encroachments. Create park maps for both parks and add new and missing trails (see Aesthetics & Recreation section and map for additional considerations, which include establishing new trails). Install wet area crossings and erosion controls identified in the Forest Roads section. Monitor funding opportunities. Apply for WAC funding opportunities in February and July.

2014 -2015 - Continue invasive controls. Consider removing all trees (except the apple trees) in the wet meadow on Granite Knolls and the former riding ring (stand 8) at Sylvan Glen for wildlife habitat. Inspect trails and repair erosion issues where necessary as well as monitor posted signs. Add more enclosure fences in selected stands. Apply for WAC funding opportunities in February and July.

2015- 2016 – Continue invasive controls. Maintain boundaries, trails, and regeneration operations. Monitor boundaries and check erosion controls. Apply for WAC funding in February and July.

2016 -2017 –Continue invasive controls. Add enclosure fences and inspect and repair others as necessary. Inspect trails; maintain erosion controls and property signs. Re-mark the colored trails. Apply for WAC funding opportunities in February and July.

2017-2018 - Update the Forest Management Plan. Mow wildlife meadow on stand 8 at Sylvan Glen. Continue invasive controls. Re-inspect all enclosure fences, repair as necessary and continue to improve regeneration activities. Inspect trails and re-post entire property. Apply for funding opportunities.

2018 - 2019 – Continue invasive species controls, erecting deer enclosure fencing and inspect trails and posted signs. Re-mark the colored trails. Monitor neighbor boundaries and re-post where necessary. Clear wet meadow on Granite Knolls (west section) of sapling trees. Apply for funding opportunities.

2019 -2020 – Depending upon deer exclusion success, thinning new stands to reduce density and to promote better growth should be considered. Continue with invasive controls and exclusion fencing maintenance practices. Mow meadow on stand 8 at Sylvan Glen. Cut down tree saplings on wet meadow at Granite Knolls. Apply for WAC funding.

2020 -2021 – Continue deer exclusion fencing maintenance; monitor posted signs and invasive controls. Apply for WAC funding.

2021 - 2022 – Remove any exclusion fencing that has been up for 10 years and relocate to new areas. Inspect trails and re-post boundaries as necessary. Continue invasive species controls. Apply for WAC funding.

2022 -2023 – Update the Forest Management Plan. Mow meadow on stand 8 at Sylvan Glen. Continue to relocate exclusion fencing and re-evaluate invasive species controls. Re-mark trail system, monitor boundary lines, inspect erosion controls, apply for WAC funding if necessary.

2023 - 2024 – Continue all the monitoring and invasive species controls. Evaluate regeneration program and adjust if necessary. Apply for WAC funding.

2024 – 2025 – Continue invasive species controls. Remove trees establishing in the wet meadow at Granite Knolls. Add new deer exclusion fencing if necessary. Apply for WAC funding.

2025 – 2026 – Re-post boundary signs where necessary. Continue invasive species controls (investigate if new biological controls are available). Mow meadow on stand 8 at Sylvan Glen. Clear tree saplings on wet meadow at Granite Knolls. Add new deer enclosure fencing if necessary. Apply for WAC funding.

2026-2027 – Monitor erosion controls and add new practices if necessary. Continue invasive species controls and evaluate deer impacts. Add new exclusions if necessary. Apply for WAC funding.

2027-2028 – Update the Forest Management Plan. Maintain invasive species controls and post boundaries where needed. Mow meadow at stand 8 on Sylvan Glen. Apply for WAC funding.

SOIL AND WATER CONSERVATION

The Westchester County Soil Survey and the US Conservation Service has identified ten soil types on this property. They range from dry rocky outcrop to wetland muck. A complete list of these soils, their location maps, and general information are provided in the appendix.

The following soil type found on this property is considered hydric in nature, which means that is considered to be soils associated with wetlands due to wetness created by high organic content, impervious subsurface, drainage patterns, topography, and groundwater:

Ce – Carlisle Muck. Found in low topographic depressions within glacial tills, this is considered a common hydric wetland soil type found in many wetlands in this area of New York State.

LcA – Leicester loam, 0 -3% slopes.

Pa – Palms muck.

Pc – Palms and Carlisle ponded soils (is either a natural or created pond site).

RdA- Ridgebury loam, 0 -3% slopes.

Sh – Sun Loam.

The hydric soils indicated above provide favorable wetland conditions that will likely result in regulated wetland in that general area. These soils are prone to severe erosion and instability. Many development and high use activities are severely limited to these qualities. It is best to avoid these areas with any significant improvements, development or site disturbances.

The following soil types can show hydric qualities that deserve further field review to determine if wetland conditions are present:

LeB – Leicester loam, 2-8% slopes, very stony.

LcB – Leicester loam, 2-8% slopes, stony.

PnB – Paxton fine sandy loam, 2- 8% slopes. This can be considered hydric is conditions are right but in this case these soils do not have enough hydrological support.

PnC – Paxton fine sandy loam, 8 – 15% slopes. A transition soil type usually near wetlands but not hydric.

Rd – Ridgebury loam, 3-8% slopes.

Ub – Udorthents, smoothed. A fragile soil associated with water bodies, past disturbances in wet areas or from outwash.

Uc – Udorthents, wet substratum.

The following soil types are not considered wetland soils and vary in degree of dryness, water table depth and slope. The complete list is enclosed with the soil maps in the appendix:

ChB – Charlton loam, 2 -8% slopes

ChC – Charlton loam, 8 -15% slopes

ChD – Charlton loam, 15 -25% slopes. Slopes over 20% are very steep areas and should not be disturbed.

ChE – Charlton loam, 25 -35% slopes.

CID – Charlton loam, 15 -25% slopes, very stony.

CrC – Charlton- Chatfield complex, rolling and very rocky. Found on hilltops, this soil type is very well drained and usually found above bedrock. This soil was formed from glacial till originating from granite, schist, and gneiss rock. The water table is usually greater than 6 feet in depth. These soils have limited development potential.

CsD – Chatfield-Hollis-Rock Outcrop complex, rolling, very rocky. These are very deep, well-drained soils found on hilltops. They can be excessively drained and are not suitable for agricultural purposes. Oaks are commonly found dominating the forest on this soil.

CtC – Chatfield-Hollis-Rock Outcrop complex, hilly. However the soil map indicated wetland conditions in a small portion of this soil type within the northeast corner of the property. This may be due to limited drainage from underlying bedrock or seeps.

CuD – Chatfield Hollis- Rock Outcrop complex, hilly.

HrF – Hollis-Rock outcrop complex, very steep. This is the rugged steep rocky ridges in the southern section of the parcel.

PnD – Paxton fine sandy loam, 15 – 25% slopes.

PoC – Paxton fine sandy loam, 8-15% slopes.

Pv – This indicates a quarry pit location.

Pw – Pompton silt loam with a loamy substratum.

WdA – Woodbridge loam, 0-3% slopes

WdB – Woodbridge loam, 3-8% slopes.

WdC – Woodbridge loam, 8-15% slopes.

RIPARIAN/WETLANDS

Both parks represent a significant natural resource where diverse woodlands and steep, rocky slopes provide an undisturbed watershed to the wetland systems at the lowlands in various parts of the respective parks. This watershed filters and slows runoff from the slopes into these wetlands which then act as giant filters for the streams they feed, which eventually flow into the New Croton Reservoir. There are 81 acres of wetlands on Sylvan Glen and 21 acres of wetland on Granite Knolls. The 100-foot buffer area for these areas is approximately an additional 51 acres. These parks are within the northern edge of the NYCDEP watershed boundary where the Hunter Brook watershed basin meets the Peekskill Hollow watershed basin. The Hunter Brook Basin is considered to be within the NYCDEP watershed while the Peekskill Hollow Basin is not. The Hunter Brook Basin and NYCDEP watershed boundary cuts off approximately 50 acres of the northern section of Granite Knolls Park, which flows into the Peekskill Hollow Basin. However, that portion of Granite Knolls Park is very important to the Peekskill Hollow Basin and should be regarded just as importantly as the subject watershed.

Sylvan Glen contains three created ponds, five wetland systems, two significant streams and several depressions created by the quarry operations that function as vernal ponds. Turtle Pond is part of a State wetland system known as A-10. It is located at the western edge of the park and it extends south beyond the park borders. This wetland drains into Turtle Pond and then discharges into a small class C stream southeast, off site, flowing south and back into the park at the extreme southwest corner. This wetland widens and then is connected with approximately 32 acres of the Sylvan Brook wetland corridor draining from the north. This is all part of NYSDEC Wetland A-10. The wetland continues to flow offsite to the south and east where it all eventually connects with Hunter Brook, a significant trout stream at Mill Pond, which then drains into the New Croton Reservoir. The portion of State wetland A-10 on Sylvan Glen is approximately 30 acres including the 2.4 acre Turtle Pond.

A smaller 6 acre wetland is on the east side of the high quarry and flows south off site on to the Stateland parcel. It is fed from the slopes to the north and west. A small ponded 2 acre wetland is located at the western center edge of Sylvan Glen. It was likely created for the farming operations that took place some time ago. A 9-acre wetland is located in the connecting parkland between the Old Farm Trail (Green Trail) and the north parcel, west of the Quarry Drive development. A very small seasonal pond/wetland also is found along the High Quarry Trail near the intersection with the Sylvan Glen Trail. It may function as a vernal pond.

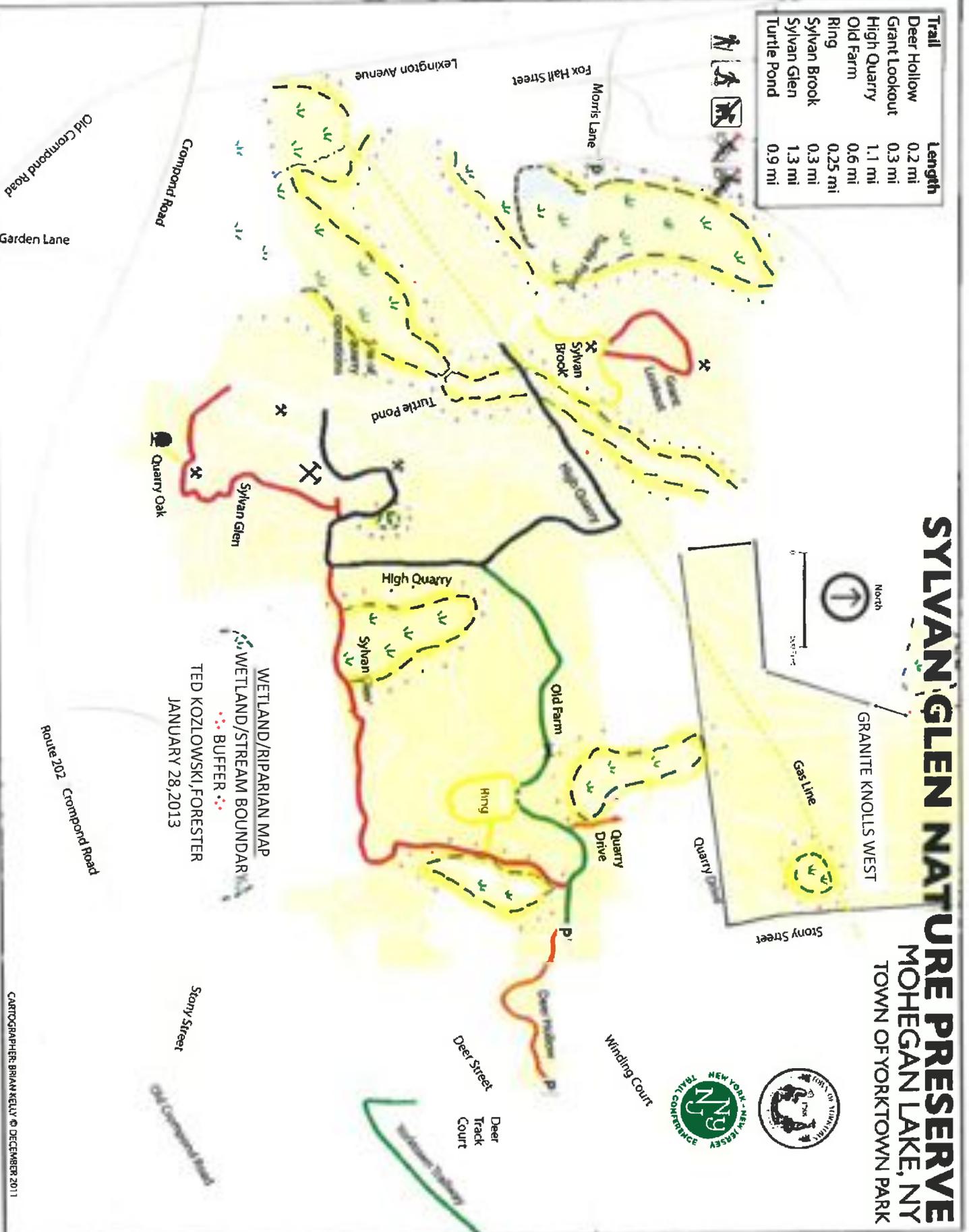
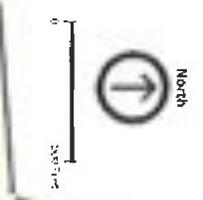
Wetland A-10 and its' 100-foot buffer on this property is regulated by the New York State Department of Environmental Conservation (NYSDEC), US Army Corps of Engineers and the Town of Yorktown. The wetland is determined by hydrological soil types (in this case it is Palms, Sun and Leicester hydric soil types), dominance of hydric vegetation, stream and seep corridors, and topography. The smaller wetlands are regulated by the Army Corps of Engineers as well as the Town. The streams are regulated by the Town and NYSDEC.

Granite Knolls contains a large wetland system along much of its eastern section along Stony Street. This system is part of State wetland A-5 and it eventually flows south into another State wetland, A-35 which is located offsite. The wetland portion of A-5 on this

SYLVAN GLEN NATURE PRESERVE

MOHEGAN LAKE, NY
TOWN OF YORKTOWN PARK

Trail	Length
Deer Hollow	0.2 mi
Grant Lookout	0.3 mi
High Quarry	1.1 mi
Old Farm	0.6 mi
Ring	0.25 mi
Sylvan Brook	0.3 mi
Sylvan Glen	1.3 mi
Turtle Pond	0.9 mi



WETLAND/RIPARIAN MAP
WETLAND/STREAM BOUNDARIES
TED KOZLOWSKI, FORESTER
JANUARY 28, 2013



property is approximately 17 acres. However only 15 acres of this are within the NYC Watershed boundary. There is no significant open water or ponds located here although a small part of a pond is on the parcel at the extreme south central portion, which also connects to State Wetland A-35.

A second wetland just east of the larger one is associated with a seep that surfaces near the Green Trail where it meets the blue trail. It is approximately 2 acres and it is narrow and linear flowing down slope. It eventually flows into State wetland A-35.

There are two small wetlands on the western section of Granite Knolls, west of Stony Street. One is a small 2-acre wet meadow along the gas line near stony Street. The second wetland is a 2-acre piece of a larger wetland extending north and south at the extreme northwestern edge of the park property. The wet meadow is very important to many species of song birds and should be maintained as such for biodiversity.

Both of the parks are within the NY City Watershed and eventually drain into the New Croton Reservoir system. Any significant disturbances such as roadways, crossings, development and soil disturbances on these sites as well as from neighboring parcels will likely require wetland permits from the mentioned regulatory agencies and possibly NY City Department of Environmental Protection as well (if septic systems or impervious surfaces are involved).

There are a few small vernal ponds scattered on both parcels that are natural or were created from the quarry operations in the past. Vernal ponds are valuable breeding sites for amphibians as they do not support fish that would feed on their eggs. Such sites should be protected and not allowed to have their buffers or drainage patterns disturbed. Most wetland ordinances regulate them as wetlands.

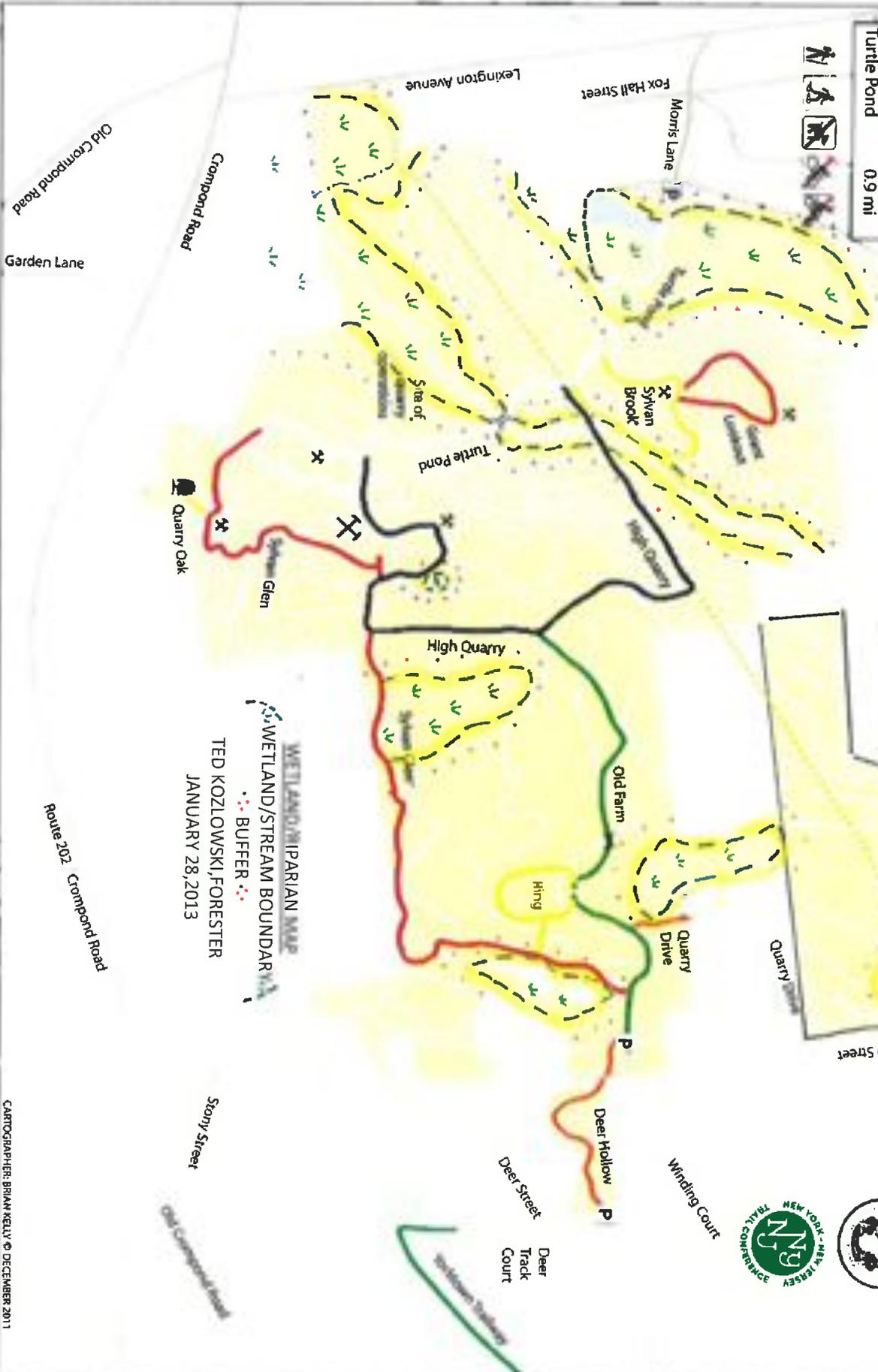
Wetlands are environmentally important areas where water is naturally filtered, groundwater is recharged, stormwater and pollution is mitigated, nutrients are recycled, wildlife is abundant and utilizes wetlands for breeding and habitat, protects watersheds, ponds, lakes and streams, and provides aesthetic and recreational resources. Most communities in this region actively protect this natural resource through local ordinances. The Town of Yorktown has a wetland ordinance, which self-regulates this wetland. It is best to avoid any disturbances within these wetlands and their 100-foot buffer zones as outlined on the enclosed site map provided in this document. These areas should be managed for aesthetics, passive recreation, wildlife resources, and forest diversity. Existing trails in these areas are acceptable and should be regularly inspected and maintained to avoid erosion and sediment problems.

With the sensitive nature that these wetland systems contain and with the large amount of upland forest surrounding it, it is best to not disturb the riparian forested sites with any future timber activities, mountain bike or horseback trails and ATV use as these activities disturb soils, add to erosion and pollution that negatively affects the functions of the wetlands, and disrupt wildlife. Any vehicle or animal access through these sites should be on higher ground and simple stream and water crossings utilized (such as culverts) when crossing a wet area is unavoidable. Fortunately the current management policies of these parks prevent most of these challenges. However, similar to Turkey Mountain Park Preserve, many people walk their dogs in both parks and many dogs are not leashed. This does represent a hazard to wildlife, native habitat and dog waste is a potential

SYLVAN GLEN NATURE PRESERVE

MOHEGAN LAKE, NY
TOWN OF YORKTOWN PARK

Trail	Length
Deer Hollow	0.2 mi
Grant Lookout	0.3 mi
High Quarry	1.1 mi
Old Farm	0.6 mi
Ring	0.25 mi
Sylvan Brook	0.3 mi
Sylvan Glen	1.3 mi
Turtle Pond	0.9 mi



WETLAND/RIPIARIAN MAP
WETLAND/STREAM BOUNDARY
••••• BUFFER
TED KOZLOWSKI, FORESTER
JANUARY 28, 2013



pollutant in wetlands. Not to mention that some dogs are not appreciated by some hikers. This is an enforcement issue that the Town should resolve.

The riparian areas are best conserved and protected by allowing them to function as undisturbed wetland systems and manage the surrounding upland forest with this in mind. By disturbing the surrounding forest the wetland is also affected by increased runoff, sedimentation, pollution, higher water temperatures, loss of wildlife habitat and loss of water quality. The best way to manage the riparian areas is to keep it native and undisturbed. The biggest challenges will come from possible trail over use, illegal ATV's and wayward mountain bikers, where runoff and related activities can create challenges for the wetland. Presently debris is being introduced into State wetland A-10 at Sylvan Glen along Grant Street, either from road runoff and/or illegal dumping. The same is true at Granite Knolls along Stony Street. Good stewardship, vigilance and public education will make a difference.

The functions of the wetland systems on these park preserves are:

1. Tributaries and filtration services to the Hunter Brook Basin and the New Croton Reservoir.
2. Groundwater recharge.
3. Wildlife habitat (food, shelter, breeding, fisheries).
4. Stormwater mitigation.
5. Flood control.
6. Pollution mitigation.
7. Nutrient recycling.
8. Buffer to and for neighbors.
9. Economic benefits (increases real estate value) to adjacent property owners in Yorktown.
10. Recreational activities (nature observation, study, potential hunting, photography).
11. Aesthetic (open space).

The management goals for these riparian wetland systems should be:

1. To maintain it as undisturbed as possible.
2. Installing proper water diversions and crossings where noted in this plan.
3. Improving stormwater filtering capacity off public roadways.
4. Keep invasive plant and animal species from establishing and remove existing invasive species. Some invasive species has established in wetlands A -10 and A-5, and should be controlled.
5. Improve wildlife habitat by removing invasive plants, correcting possible future erosion problems on trails, adding nesting boxes in pond sites, and improve forest and plant regeneration.
6. Maintain the small vernal ponds and protect from disturbances.
7. Maintain posted signs along the property lines and clean up debris.
8. Add information about the wetlands on the kiosks for the visiting public.
9. Enforce the dog policy as the public is allowing dogs to enter the park unleashed and their feces is detrimental to water quality as well as unleashed dogs can disrupt wildlife and habitat.

See possible funding opportunities for wetlands in the section on FUNDING SOURCES.

ACCESS SYSTEMS (Forest Roads)

There are many hiking trails and access trails on these properties from past uses and developed by the NY/NJ Trail Conference. There is no need to create new forest roads within this parcel. Ten existing hiking trails along with quarry operation forest trails predominantly access much of Sylvan Glen, which allow for maintenance operations. They are simply identified as Blue, Yellow and White, Red, Green and Orange on the trail guide and as markers on trees along the trails. Ten trails exist at Granite Knolls. There is a white trail that is located on the western section of Granite Knolls that should be connected to Sylvan Glen, either via the gas line corridor or through the connecting parcel noted on the Trail Map. In addition, a connecting trail from the gas line corridor to the Taconic Bridge Trail would be useful at Granite Knolls as well as an addition connecting loop trail from Turtle Pond Trail to Sylvan Brook Trail at Sylvan Glen. This would utilize an already existing forest roadway that dead ends. Proposed new trails are identified on the Trail Maps.

The trails are maintained and in good shape at this time. However, some improved water diversion is needed at several locations on the steeper trails. This is especially necessary at the Turtle Pond Trail at Sylvan Glen, where open box culverts might be installed. In addition, three puncheons (simple wood board walkways) should be installed along the Sylvan Glen red trail. The Forest Stand Map will note needed erosion control locations identified as BMP (Best Management Practice). Details for these BMP's are located in the Appendix.

Sylvan Glen is accessed from gravel parking lots off Morris Lane and Stony Street, along with access points from Deer Street, Quarry Drive the Phoenix Academy property and the gas line corridor.

Granite Knolls is a younger acquisition and needs better public access locations. Currently there is no proper public road access off Stony Street. A new parking lot and access point would be desirable if the old barn is removed on the eastern section along Stony Street. Parking access for Granite Knolls is currently at Woodlands Park, located east of the Taconic Parkway. One can hike from Sylvan Glen trails and cross Stony Street to access the eastern section of Granite Knolls as well.

A general map is provided to identify the major access points for this property as well as identifying the trails. Pedestrian trails on steeper slopes have some exposed tree roots that should be mulched to reduce tripping hazards and protect root systems. Any areas on the existing and future trails that get disturbed from future maintenance practices or recreational activities should be regraded and spot seeded for proper erosion controls. These areas should be sown with the following mixture:

Creeping red fescue or tall fescue @ .25 lb. /1000sq. ft.

Redtop or perennial ryegrass @ .25 lb/1000sq. ft.

Use 2 lb. of rough bluegrass per acre in shady /wet areas.

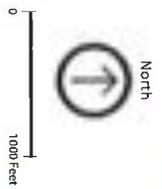
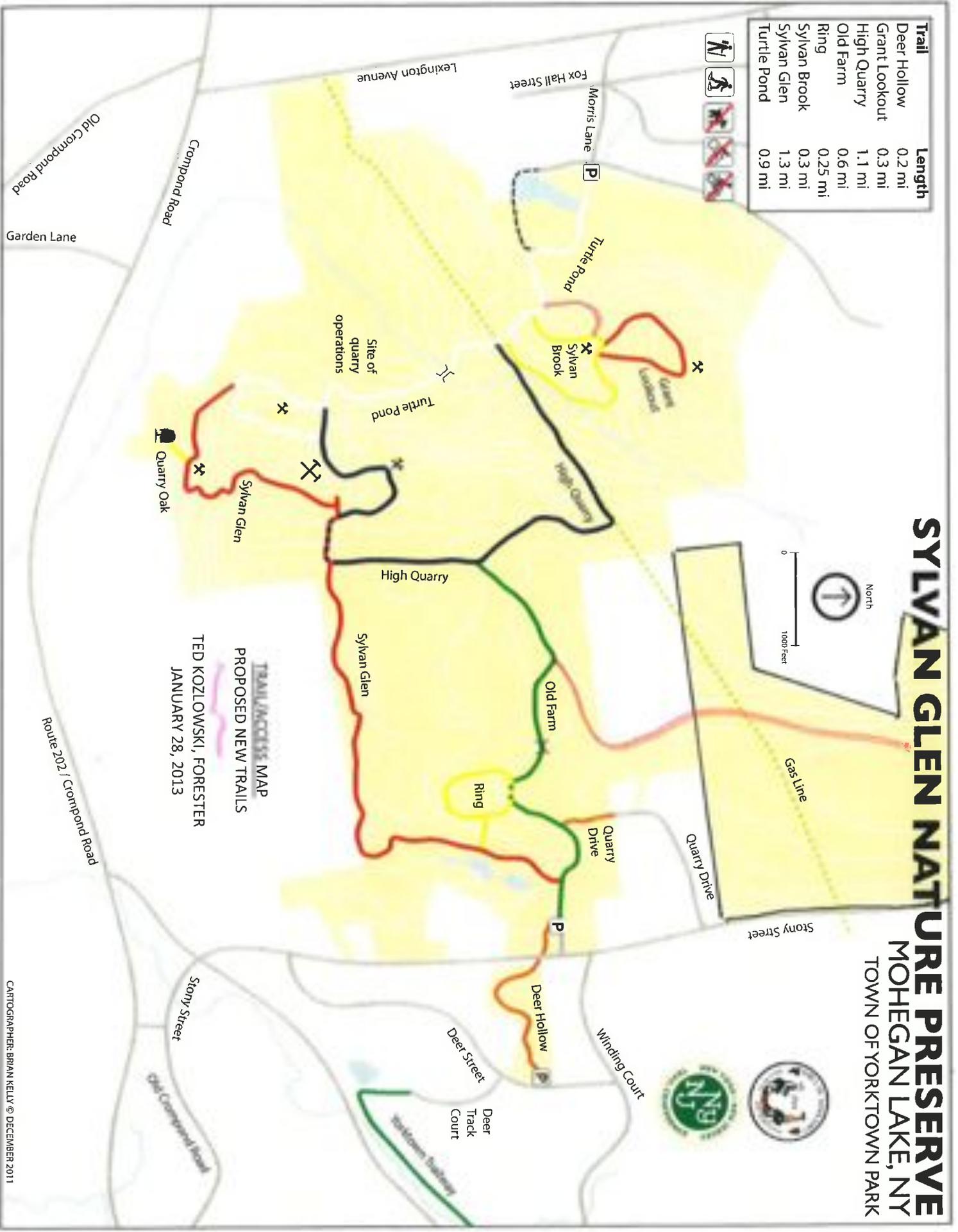
The seed should be lightly raked in the bare soil and mulched with 3 bales of hay spread out per 1000 sq. feet.

SYLVAN GLEN NATURE PRESERVE

MOHEGAN LAKE, NY

TOWN OF YORKTOWN PARK

Trail	Length
Deer Hollow	0.2 mi
Grant Lookout	0.3 mi
High Quarry	1.1 mi
Old Farm	0.6 mi
Ring	0.25 mi
Sylvan Brook	0.3 mi
Sylvan Glen	1.3 mi
Turtle Pond	0.9 mi



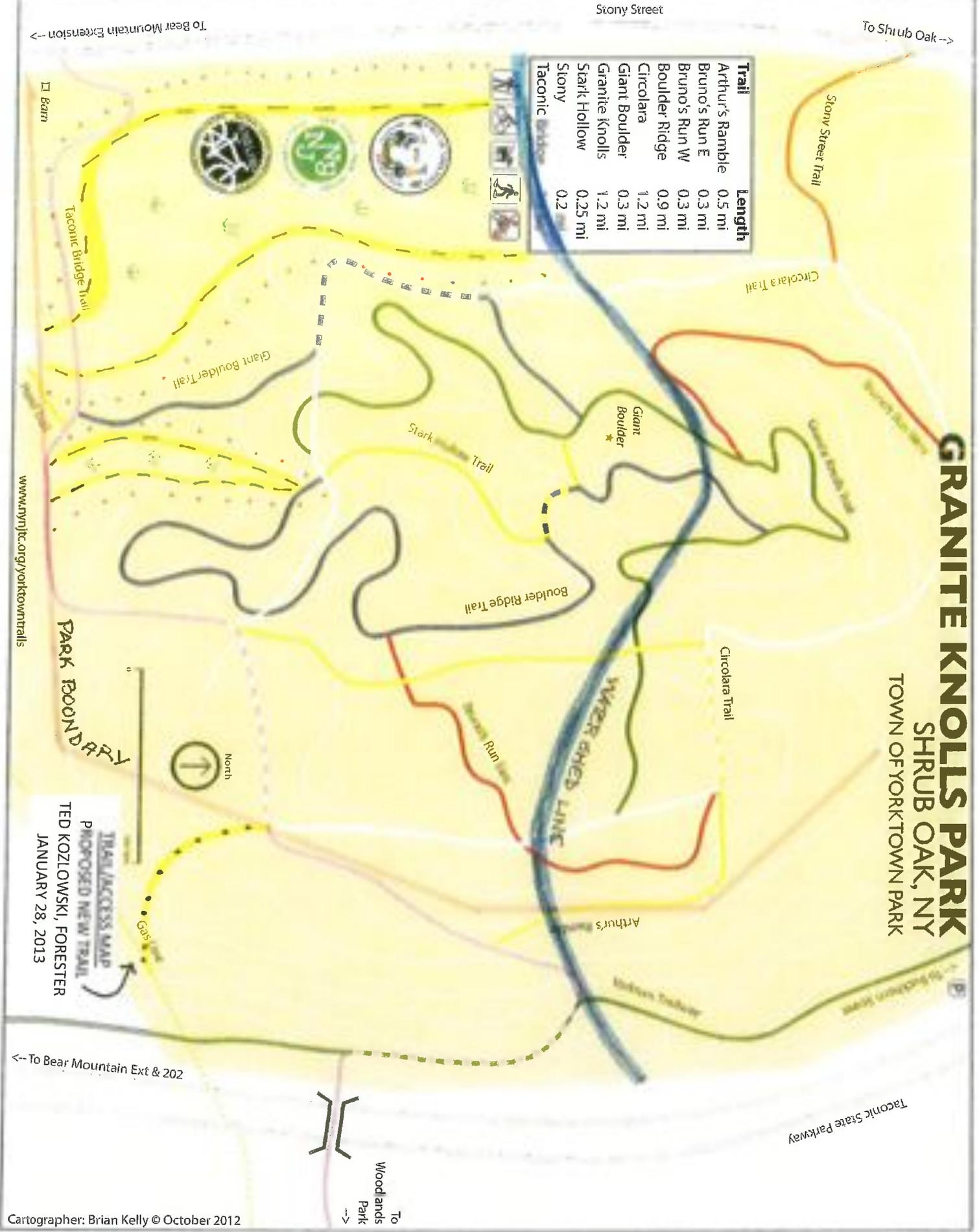
TRAIL MAPS MAP
 PROPOSED NEW TRAILS
 TED KOZLOWSKI, FORESTER
 JANUARY 28, 2013



GRANITE KNOLLS PARK

SHRUB OAK, NY
TOWN OF YORKTOWN PARK

Trail	Length
Arthur's Ramble	0.5 mi
Bruno's Run E	0.3 mi
Bruno's Run W	0.3 mi
Boulder Ridge	0.9 mi
Circolara	1.2 mi
Giant Boulder	0.3 mi
Granite Knolls	1.2 mi
Stark Hollow	0.25 mi
Stony	0.2 mi
Taconic	



WILDLIFE HABITAT

Sylvan Glen and Granite Knolls parks are large pieces of open green space surrounded by intensive development within the Town. It serves as a connecting green space to other significant public lands to the southwest for wildlife. Given the source of forest, wetlands and streams, extensive rocky outcrops, along with the seclusion of the sites, these properties are a potential haven for many animal species found in this part of the County. In 2007 the Town commissioned a private firm, Stearns and Wheeler, LLC, to produce a biodiversity study (Biodiversity Conservation Study, Town of Yorktown) within the Town. This study is well done and much is addressed about wildlife here. The wildlife lists enclosed in the appendix is from the biodiversity study that identifies species found in Yorktown and are potential species that can be found on this property. A review by the Natural Heritage Program has indicated no rare, threatened or endangered species have been found on these sites.

There are two significant streams and several bodies of water to maintain fish species on this property. It is expected that minnows, bluegills and sunfish are present and it is possible that largemouth bass is present in Turtle pond. The relatively clean, cool waters leaving these properties contribute to more fish habitat populations downstream at Mill Pond and Hunter Brook, which could include trout and bass.

Along with the previously mentioned wetland significance, the wildlife habitat within this open space is considerable for the residential zones that it is in. As Yorktown becomes further developed, this area will become even more valuable as a wildlife habitat resource for breeding, food and refuge. Fragmentation is a term used to describe large open space lands that are subdivided into smaller lots, developed, that fragments the natural resources, which usually has a negative impact on wildlife by disrupting their habitat and range. These two large parcels are valuable and will become more valuable for wildlife species that are negatively affected by fragmentation.

However, there is one very significant negative impact from the wildlife here and that is the damage the white tailed deer herd is causing on the forest ecosystems throughout Yorktown and elsewhere. Significant numbers of deer were observed during the field investigation for this plan. The large numbers of deer are consuming much of the native forest lower tiered flora, including tree seedlings. Forest regeneration is suppressed.

A secondary impact can come from invasive plant species that will disrupt natural succession and habitat if they are allowed to flourish. They also fill in and take over areas where the natural regeneration is suppressed. This was further addressed in the other sections of this plan. A final impact can come from development pressures from the adjoining neighbors as they develop their landscapes and possibly encroach on park property. It remains to be seen what will eventually develop on the Phoenix Academy property.

The results of the forest data collected during the field investigation revealed that very little regeneration of native trees and plants is occurring. There is minimal regeneration of oaks, maples and little of anything else. The loss of tree and plant seedlings will negatively affect the long term health of the forest and biodiversity. If this is not reversed

the forest will become less diverse in tree species, which will negatively impact wildlife. The lack of significant regeneration will allow invasive plants to better establish. As the forest weakens it will increase insect and disease problems, it will become less economically viable with the loss of quality mature trees such as oaks, maples and ash that provide much food and habitat. A weakened forest will reduce wildlife habitat and diversity, reduce water quality by loss of filtration and stormwater functions, and become less aesthetic. Natural forest regeneration is the key to a healthy forest, which in turn equates to a diverse wildlife area.

The Town may wish to consider hunting as an option for controlling deer as a viable management tool to improve forest habitat and regeneration. It has been successful on other public lands in Westchester County. Other options are to exclude deer from various areas within the forest stands with fencing to allow tree seedlings and plants to germinate and establish. It is an effective and non-lethal method of controlling deer impacts. Fifty-foot square, 8-foot high, deer exclusion fencing can be erected in less dense forested areas throughout the forest sections over time. These sites will allow trees and plants to establish. Every 10 years they can be relocated to other areas of the forest to establish new regeneration colonies. This in turn will support many species of insects, birds, mammals and amphibians. The fenced in areas must be maintained by eliminating any invasive plants and for breaches in the fence. These exclusion areas can be larger in size if time and funding permits. Funding may be available through WAC or other agencies. They should be located around significant mature trees such as oaks, conifers and maples that will provide a good seed source.

There are several small open areas scattered about as well as the gas line corridor easement, which provides considerable open grassy areas. The gas line is maintained by the utility company and they may be amenable to support improved grasses and low shrubs along the corridor for wildlife diversity. The open areas within the parks should be maintained as open fields for *edge effect* by mowing them once every two years by maintaining a diverse herbaceous and shrub field for food and cover.

The following are additional measures for wildlife habitat improvements:

1. Protect the wetland from disturbances, pollution, and severe runoff.
2. Keep large dead trees standing (where they will not be a human hazard) for *den trees*.
3. Place nesting boxes for bird species in fields and along open water areas where appropriate. The open fields along the gas line are perfect bluebird sites.
4. Pile downed tree branches and limbs into *brush piles* for wildlife cover.
5. Keep the remote rocky outcroppings free of shade trees to create sunning areas for snakes.
6. Do not disturb low areas in the forest where water ponds in the spring. These vernal pools are important amphibian breeding locations.
7. Do not disturb stonewalls as they are important cover areas for small mammals.
8. Maintain *edge effect* along all roadways and trails and open fields.
9. Consider creating an open field in the former riding ring site at Sylvan Glen to improve habitat.
10. Unusable logs can be left on the forest floor for insects and nutrients that will benefit wildlife and the soils.
11. Remember that a diversity of trees, plants and environments will create a diversity of wildlife.

12. Maintain the integrity of the wetland buffer areas, as they provide shelter and upland conditions for many species of wildlife.
13. Avoid human impacts within wetlands and sensitive forest floor zones. Use simple bridges or culverts to traverse wetlands and to allow water flow.
14. Discourage and destroy exotic and invasive plants such as multiflora rose, black locust, Norway maple, Japanese barberry, silt grass, euonymus and bittersweet vines. They destroy natural habitat and reduce forest vigor.
15. The deer exclusion fencing will promote new trees and plants that will provide additional wildlife habitat.
16. Maintain shade over seasonal streams and allow for occasional dead tree snags to remain for wildlife in ponds.
17. Do not disturb along stream banks and try to maintain a healthy forest cover buffer all along stream corridors to keep cool water temperatures and provide habitat.
18. Allow many fallen trees to remain on the forest floor for animals and insect habitat and diversity.
19. Place some bat boxes on trees in several locations.
20. Maintain the wet meadow at Granite Knolls by removing most of the trees that are filling in.
21. The Town may wish to consider establishing a wildlife corridor south of Sylvan Glen to cross under Route 202 and connect to open space south of Route 202. Perhaps some sort of wildlife corridor tunnel can be created under Route 202 at the Hunter Brook stream crossing should a large commercial project be considered by the Town
20. Periodically check with the New York State Department of Environmental Conservation (NYSDEC) – Bureau of Fish and Wildlife at (845) 256 –3000 to determine if any rare, threatened or endangered species (protected in NY State) have been identified in your vicinity and manage accordingly.

See FUNDING SOURCES for possible cost share programs to assist in wildlife habitat improvements.

AESTHETICS & RECREATION

These passive use parks are open to the public to enjoy as a natural resource and for minimal impact recreational activities. They offer opportunities for hiking, cross-country skiing, mountain biking (at Granite Knolls), wildlife observation, and jogging. There are some nice views from the high rocky hill tops at a few locations along the upper quarry at Sylvan Glen. These parks are a great asset for residents, which provides large open space, wildlife values, cooling temperatures in the summer, improves air quality, increase property values and watershed protection.

The trails are plenty and offer various opportunities for hikers, skiers and bikers. Allowing hunting will offer more opportunities. Some of the slopes are quite steep and the trails accessing these areas can be challenging to some visitors, especially at the former quarry sites at Sylvan Glen. The trails are well marked for the most part but a few new connecting trails are suggested as well as connecting the existing white trail on the western section of Granite Knolls to Sylvan Glen. This white trail is notably missing on the published park map. Please refer to the Trail Map for more details.

The trails can be used to access much of the parks for hiking, skiing, jogging and maintenance activities. Remember that tree roots are very important and avoid trail locations that will severely impact exposed roots. Avoid steep areas and "soft" areas (wetlands) where soil erosion can occur. Make sure trails are well marked and property lines are properly posted. The existing boardwalks across wetland areas greatly improve access and recreational opportunities in otherwise inaccessible sites.

While Sylvan Glen is a unique park for its past history with quarry operations it does present some hazards to a visitor. Steel cable is strewn about in many locations that present tripping hazards as well as some old structures that are weak and can cause injury to the unwary. Consideration should be given to remove these hazards as well as salvaging some of the metal. The metal salvage will help reduce cleanup costs.

The parking lot off Morris Lane at Sylvan Glen is acceptable for a number of vehicles. It could use a recycle bin and a more prominent dog control sign. The Stony Street parking area for Sylvan Glen needs some additional improvements that includes a park sign at Stony Street, better driveway conditions for winter weather (it is steep and icy), debris cleaned up, provide a recycle bin and garbage can, along with a good dog control sign.

The sign at the Woodland Park Bridge is so badly weathered that it is unreadable. Although it is on NYS property, the Town should request the State to restore it. Recent storms have left a number of hanging tree limbs which pose a danger to hikers and are unsightly. They should be safely removed as soon as possible. Felled trees should be properly cut to reduce hanging limbs and branches. Cut all limbs low to the ground to reduce fire hazards and negative visual impacts.

The old barn and silo is unsightly and hazardous to visitors. Unwanted dumping is occurring along Stony Street. This may get resolved with improved parking, signage and maintenance.

The following is future considerations to improve the aesthetics and recreational opportunities at these two parks:

1. Establish a memorial tree and bench program to establish benches on the trails and new trees for the parking areas.
2. Create official maps of the two parks identifying property boundaries and let the section of Granite Knolls that is west of Stony Street be part of Sylvan Glen.
3. It would be a good idea to redesign existing weathered signs and place several new interpretive signs along the trails identifying quarry activities and wetlands explaining the history, geology and natural resources of the area.
4. Parking, boundary signs and a park sign is needed at Granite Knolls along Stony Street. The old barn should be removed and the area can be used for public parking along with signs, recycle and garbage bins.
5. The Town may wish to offer guided tours of the old quarry operations, geologic features, wetland and forest eco-studies as part of camp programs and other Town sponsored events.
6. Establish a limited deer hunting program on these parcels.
7. Consider providing some basic security cables at steep locations where the quarry operations took place at the higher elevations.
8. Plant some conifers (white spruce and white pine) along the golf driving range at Sylvan Glen to buffer the views.
9. Remove some trees at the upper peaks at the impressive former quarry operations to improve views.
10. The old barn has metal and other materials that may be worthwhile to recycle and generate some revenue before the building is raised.
11. Add a few picnic tables near the Sylvan Glen main parking lot off Morris Lane.
12. The Town should have a formal agreement with the NY State to use its property west of Granite Knolls if this has not already been accomplished.

FOREST HEALTH & FIRE PROTECTION

At this time there is little evidence of major fire risks. However, fire risks can exist during dry periods. Be aware of weather patterns such as drought or hot, windy, dry periods that may increase fire hazards especially along trails traversing the shallow, dry slopes. Debris from felled trees should be in contact with the forest floor to maintain high moisture levels and reduce fire hazards. Check with the local NYSDEC Forest Ranger for more information.

There are two serious tree afflictions observed during the stand evaluations. The first is nectria canker, a fungal disease that affects black birch trees. Unfortunately this is very common in this area and there is not much we can do other than remove affected trees. The second tree health issue is of course the lack of regeneration along with invasive plant species establishing. As discussed in prior sections, the deer population is a major problem with the natural forest regeneration in this entire section of Westchester County. Deer repellants can be effective, but this is costly over time and is labor intensive. Deer exclusion fencing, as previously discussed, is the best option for this property along with selected hunting opportunities.

Promote more tree and shrub diversity by removing any invasive plants, black locust and poor quality red maples and black birch, and allowing natural regeneration of other trees to occur. Deer exclusion fencing will be necessary here. Supplemental plantings can be made with seedlings purchased from the NYSDEC Nursery (see enclosed brochure). There are additional references enclosed for your information.

Maintaining a diverse, well-managed forest increases the odds for a healthy forest. The combination of various species of trees, plants and wildlife all interrelate and make conditions unfavorable for a pathogen to take hold and cause extensive damage. Monitor the forest simply by walking through it and observing conditions. Consult with Cooperative Extension, NYSDEC Foresters and local arborists for information on current insect and disease concerns that may affect your forest. Make sure future forestry operations follow best management practices, avoid damaging uncut trees and keep their root systems intact. Avoid damage or injury to trees and their root systems. Do not disturb very steep slopes and avoid vehicle access in areas over 15 % slopes. Safeguard the soil and reduce erosion problems. Minimize stress to the trees and this will avoid predisposing them to future insect and disease attacks. Prevention is always the best route to avoiding future problems. Posting this information on the park website and at parking lots will be helpful.

PLAN HIGHLIGHTS

1. The local deer herd is significantly affecting forest regeneration and diversity. Hunting programs and exclosure fencing should be implemented.
2. The wetlands, streams and vernal ponds are significant resources. Maintaining a healthy, diverse wetland forest and eradicating invasive species is the top management priority.
3. Add exclosure fencing in areas with mature hardwoods to get the best opportunity for regeneration.
4. Consider utilizing cut trees and limbs for firewood and possible revenue opportunities along with salvaging some of the metal cable at Sylvan Glen.
5. Add more benches for the visiting public and use it as revenue generator.
6. Add mulch on steep trails and over exposed tree roots to reduce tripping hazards and protect tree roots.
7. Consider renovating the parking lots with improved signage and added features such as bike racks and recycling receptacles.
8. Add interpretative signs along selected areas on the trails
9. Add several new trails in the two parks
10. The Town should make official maps of the parks for visitors and incorporate the western section of Granite Knolls into Sylvan Glen.
11. Funding from WAC is generally available for applications submitted by February 15 and July 15 of each year. Apply for invasive plant controls and fencing as much as possible.

ASSISTANCE AND FUNDING SOURCES

FREE TECHNICAL ASSISTANCE

WESTCHESTER COUNTY:

CORNELL COOPERATIVE EXTENSION

126 Legion Drive
Valhalla, NY 10595
285-4624

Information on conservation, horticulture, insects and diseases.

WESTCHESTER COUNTY SOIL & WATER CONSERVATION DISTRICT

148 Martine Ave
White Plains, New York 10608
(914) 995-4422

Information on conservation, ponds and wetlands, seedling programs, soil conservation and possible funding sources.

NEW YORK STATE:

NYSDEC

21 South Putt Corners Road
New Paltz, NY
(845) 256-3000

Information on forestry, wood product marketing, fish & wildlife, forest fire protection, hunting, seedling program, and enforcement.

OTHER:

QUALITY DEER MANAGEMENT ASSOCIATION (www.hvqdma.com)

A web site with much information on deer management

PHONE NUMBERS:

NY Forest Owners Association – (800) 836 – 3566
Region 3 Forest Practice Board – (845) 256-3000 (ask for Forestry Bureau)
Empire State Forest Products Association – (518) 463-1297
USDA Forest Service (603) 868-7616
Watershed Agricultural Council – 962-6355

FUNDING PROGRAMS:

The following programs may be available and can be incorporated into this Forestry Plan. Funding is not guaranteed and is subject to budgetary processes. Any possible funding must be applied for and granted *prior* to implementing any activities discussed within this plan.

I. USDA FARM BILL

Wildlife Habitat Incentives Program (WHIP) – Technical assistance and cost-share programs for wildlife habitat improvements.

Forest Stewardship Incentive Program (SIP) – Forestry operations including thinning, trails, and stand improvements.

Wetland Reserve Program (WRP) – Wetland restoration and improvement cost-sharing opportunities.

CONTACT: Westchester County Soil & Water Conservation District
NYSDEC – Bureau of Forest Management

II. WATERSHED FORESTRY PROGRAM

Every February and July funding opportunities can be available to Watershed Forest Management plan owners for various forestry practices including erosion controls, planting, invasive controls and fencing. Deadlines are February 15 and July 15 of each year.

CONTACT: Watershed Agricultural Council
33195 State Highway 10
Walton, New York 13856
(607) 865-7790

III. FLEP (Forest Land Enhancement Program) – A NYSDEC forestry program that can offer cost sharing for Forest Stewardship, Forest Stand Improvements, Fish & Wildlife, and Forest Health & Protection.

CONTACT: www.dec.state.ny.us for details or contact:
NYSDEC Forester, Barbara Lucas- Wilson at
(845) 831-8780 x 309.

Overview of Watershed Agricultural Council Cost-Share Programs for Landowners

Watershed Agricultural Council
Forestry Program
www.nycwatershed.org



January 2011



You have received your management plan, but how will you take the next step and implement its recommendations? The Watershed Agricultural Council's Forestry Program can work with you in implementing your plan and achieving your ownership objectives by providing technical assistance and cost-sharing programs that provide funding for a wide range of management activities. Below is a summary of the Forestry Program's landowner assistance programs for your reference.

Management Assistance Program (MAP)

This program provides funding for:

- Tree Planting
- Timber Stand Improvement (TSI) / precommercial thinning
- Riparian Area and Forest Wetland Improvement
- Wildlife Habitat Improvement including
 - Wild crop tree/fruit tree release and pruning
 - Seep protection and enhancement
 - Snag and cavity tree development
 - Creation of forest openings for wildlife
 - Establishment of wildlife seeding in forest openings
- Invasive Plant Control

Two grant rounds are held per year, with deadlines of February 15 and July 15. Participants may receive up to \$2,575 of MAP funding per round and up to \$5,150 of MAP funding per year. Only practices specifically recommended in your forest management plan are eligible for funding.

Best Management Practice (BMP) Program

This program loans portable, temporary bridges, arch culverts, and rubber tire mats to loggers for use in stream crossings during timber harvests. Free samples of BMP materials required for your project are available such as: silt fencing with stakes, pipe culverts, grass seed, hay bales, biodegradable bar and chain oil, erosion control blankets and straw wattles.

This program also provides cost-share funding for installing BMPs such as water bars, both as part of active timber harvests and to address existing erosion problems on your property.

Want to learn more about management?

The Watershed Agricultural Council's Forestry Program supports numerous landowner workshops annually, often at low or no cost to participants. Topics for these workshops include forest taxation, forest health, forest road remediation, wildlife management and the production of non-timber products in woodlots.

For a firsthand look at management in action, visit one of the Forestry Program's **model forests**. These outdoor classrooms allow you to see real timber harvests, BMPs and other management tools in practice. All model forests feature free admission. The Forestry Program currently partners with three locations:

1. Lennox Model Forest – Back River Road, Delhi, NY

This model forest is across the street from the 4-H Camp Shankitunk and is open to the public daily from dawn to dusk. The forest is owned by Delaware County and managed by Cornell Cooperative Extension of Delaware County.

2. Frost Valley YMCA Model Forest – Frost Valley Road, Claryville, NY

Located on the campus of the Frost Valley YMCA Camp, this forest is open to the public but requires all visitors to check in at the Camp's Administration Desk before entering the model forest. For more information, please contact Frost Valley at (845) 985-2291 or visit their website at www.frostvalley.org/environmental-science/watershed-model-forest.html.

3. Siuslaw Model Forest – Route 23, Acra, NY

Located across the street from the Agroforestry Resource Center (ARC), this forest is owned and managed by Cornell Cooperative Extension of Greene County. The ARC also hosts a wide variety of free and low-cost workshops for the public. For more information, please contact the ARC at (518) 622-9820 or visit their website at www.agroforestrycenter.org.

Watershed Agricultural Council

Forestry Program

www.nycwatershed.org



*For more information on any of these programs and to obtain grant applications,
please contact:*

Watershed Agricultural Council Forestry Program
33195 State Highway 10
Walton, NY 13856
(607) 865-7790
www.nycwatershed.org

DEFINITIONS OF TERMS

- Basal Area (BA) - Is the measurement of the cross-sectional area of a tree trunk in square feet at 4 ½' from the ground (breast height). It is a measure of stand density.
- Brush Piles – A number of cut tree limbs and debris piled into dense mounds three to four feet high to promote wildlife shelters.
- DBH – Tree diameter at breast height (4.5 feet from the ground) measured in inches.
- Den Tree – A tree suitable for wildlife nesting. Usually a large dead tree with open cavities to allow animal access for nesting purposes.
- Forest Edge Effect– The area where an open field meets the forest creating layers of plants, shrubs and trees that is highly desirable for wildlife.
- Forest Stand – An area of forest similar in tree species, sizes and condition that differs it from other forest areas.
- Hydric – Pertaining to wet conditions, especially in soils where conditions are favorable for wetland plants to dominate.
- Landing – Open level area for timber harvesters to store cut logs to be transferred off site.
- Large Poles – Trees with a DBH between 9 and 11 inches.
- Poles – Trees with a DBH between 5 and 9 inches.
- Sawtimber – Trees with a DBH greater than 12 inches. Small sawtimber is between 12 and 16 inches, Medium is between 16 and 20 inches, and Large is considered greater than 20 inches.
- Shelterwood Cut – It is a method to remove most trees in a given area and leave a few desirable mature tree species to re-seed and regenerate the forest.
- Site Class – The quality of a forest site to produce and grow trees. Expressed in three levels I through III, with I designated as best.
- Stands - A forest stand is a large grouping of trees in similar diameter sizes (i.e. saplings, poles, sawtimber) and species composition.
- Understory – The layer of small trees, shrubs and plants growing under the dominant forest canopy.
- Vernal Pond – A seasonal ponding of water within a forest that dries up in summer.
- Wetland Buffer Zone – A 100-foot wide strip of land along the outer edge of wetland area. It is usually regulated by local and possibly State wetland laws.
- Wolf Tree – A large, widespread tree within a forest that has little timber value but good aesthetic and wildlife value.

APPENDIX

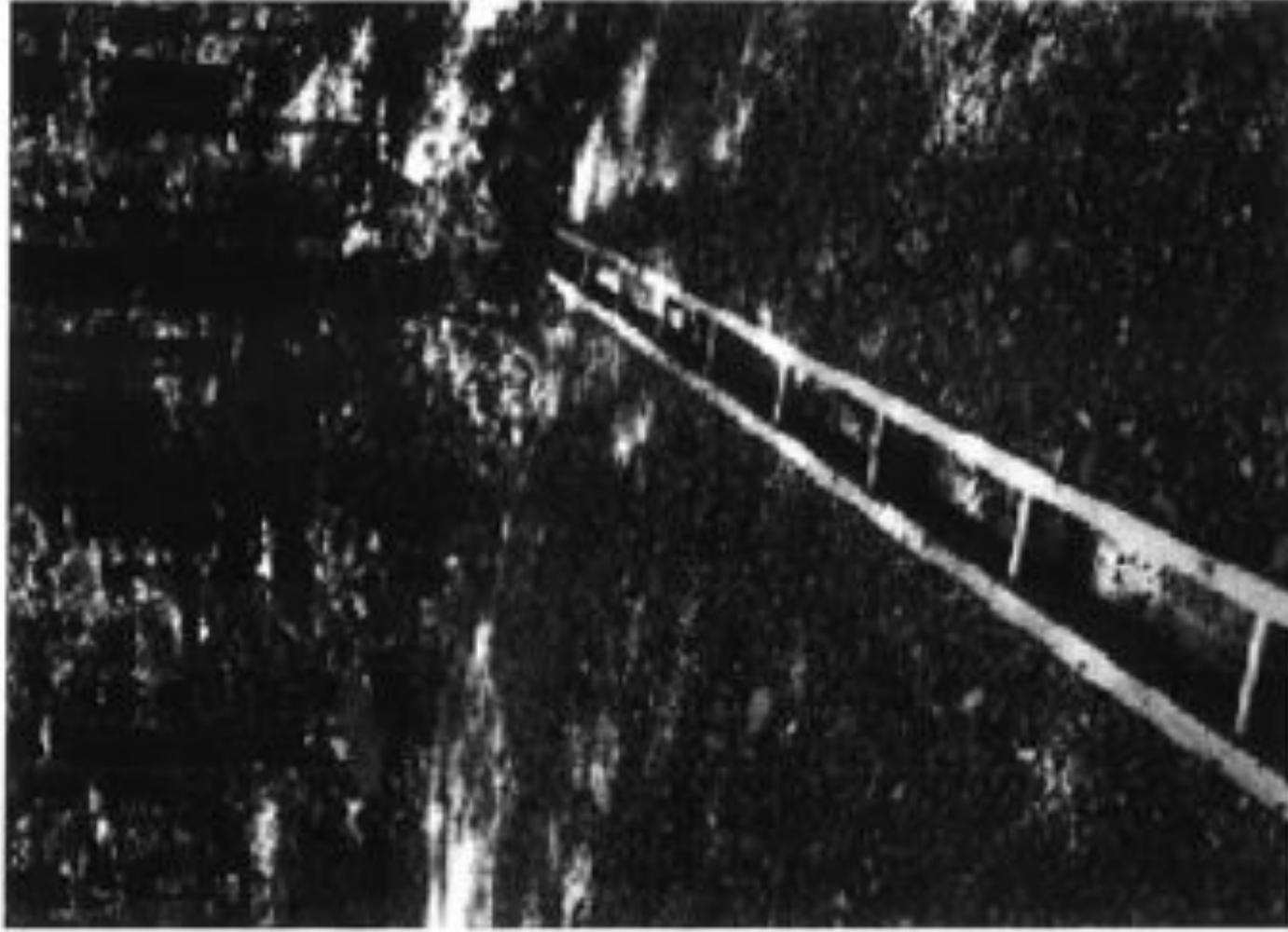
BEST MANAGEMENT PRACTICES

FOREST ROADS

FOREST ROADS - EROSION CONTROL TECHNIQUES

OPEN TOP CULVERTS

Open top culverts are also an excellent BMP for forest roads that will support regular vehicle traffic after a harvest is completed. Open top culverts come in a variety of forms. Metal pipes, pressure-treated lumber and even small diameter trees can be used to create an open top culvert that effectively diverts the flow of water from the compacted forest road surface into undisturbed forest soil. Open top culverts should be installed at a 30-degree downward angle, extend the entire width of the forest road and possess a clear outlet



to facilitate water drainage into undisturbed forest soil. The top, or slotted side, of the culvert should be flush or 3 inches below road grade. Open top pipe culverts are usually self-cleaning, as long as they are used with slopes greater than 10 percent and with adequate downslope angle. The number of open top culverts installed on a forest road is contingent upon the trail slope. The steeper the slope, the greater the number of open top culverts necessary to control runoff on the forest road. The culverts can be used in place of broad based dips on road grades greater than 10 percent at spacings determined by the following calculation: 400/percent slope + 100 feet. Like water bars, open top culverts control the volume and velocity of water that flows down forest roads, intercepting runoff and returning water to its natural place within the landscape where it can be absorbed by undisturbed forest soils.

TABLE 6:
OPEN TOP CULVERT
SPACING GUIDELINES

Slope (percent)	Spacing (feet)
2-4	300-200
5-7	180-160
8-10	150-140

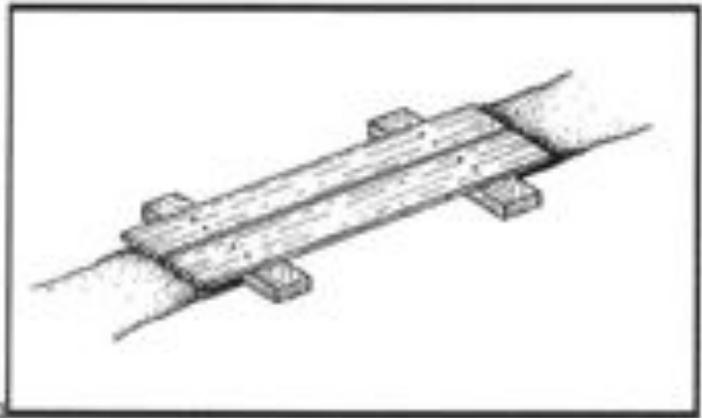
Because of the locations of the North Country NST and long distances through the Lake States, water is more than a short-term springtime concern. Water does not dissipate as quickly as in hillier areas, and lasts well into the summer. Permanent solutions (e.g., bridges) are more appropriate for these areas than fording.

PUNCHEON

Puncheon is an effective way to cross some types of bogs, shallow marshes, and wooded wetlands. It uses sawed, treated lumber or native logs to elevate the trail tread above wet areas that are not feasible to drain. It provides a hardened surface that lasts for many years depending on the material used. The walking surface is parallel to the direction of the trail, and the support structures (sills) rest directly on the ground. The use of puncheon is strongly recommended since a wet, muddy trail and the damage caused from hiking directly through wetlands are undesirable. A puncheon bridge can range from as little as 10 feet to hundreds of feet long for crossing a swamp.

Puncheon can be constructed using either native or milled materials and often is a combination of the two. Most typically, the sill logs are made of long lasting native material (such as cedar, tamarack, locust, etc.) and the walking surface is made of heavy, treated planks. The determination of the material depends on a number of factors—the distance from an access point, ability to haul materials to the site, the availability of native materials, the skills available for the difficult job of hewing native puncheon, the desired length of time between replacement, and the ROS setting.

Once the route through a wetland is chosen and the trail is cleared, the first step is to obtain and place the sill logs. These rest directly on the wet soil and vary in length from about 3 feet to 5 or 6 feet depending on the amount of support provided by the wetland. The stringers (walking surface) are then placed on top of the sill logs and secured in place with large spikes. If native logs are used as stringers, some notching and fitting



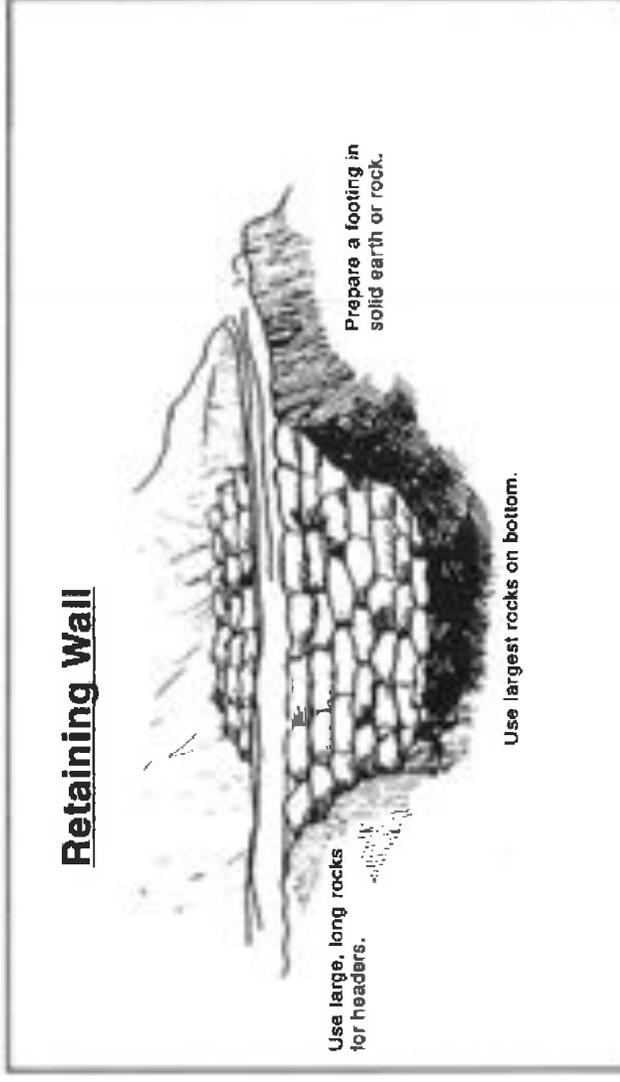
has to be done so they do not rock on the sills. Puncheon is normally built in 8 to 10-foot sections with no more than 6 inches from the end of one section to the beginning of the next. When treated planks are used, the ends typically rest directly on the sill logs—often without gaps between the sections. In this situation, one sill is located directly at the junction between two sets of planks. However, because planks have more flex, a center sill may be needed. In order to achieve the puncheon width specified in Figure 2, two 2" × 8" or 2" × 10" planks will be needed.

The trail tread at both ends of the puncheon must be solid and dry; otherwise, the stepping-off point may become soft and muddy, eventually requiring the construction of an extra section of puncheon. It may be necessary to place several flat stepping stones at the ends of the puncheon to help the soil withstand the impact of hikers.

In areas subject to flooding, such as along streams or near beaver activity, puncheon is not a good choice because it can float out of position or even completely away. In these areas, relocating the trail or using boardwalk should be considered (provided it is protected from spring floods along streams).

RETAINING WALLS

Retaining walls are structures of stone or wood designed to stabilize the trail base on steeper side slopes. They are time consuming to construct but may be necessary to prevent soil slide or slump when sidehill trails are crossing the face of a slope that exceeds 40% to 50%. Retaining walls are a long lasting investment—many



INVASIVE SPECIES CONTROLS

Managing Invasive Plants

Methods of Control

by Christopher Matrick

They're out there. The problem of invasive plants is as close as your own backyard.

Maybe a favorite dogwood tree is struggling in the clutches of an Oriental bittersweet vine. Clawlike canes of multiflora rose are scratching at the side of your house. That handsome burning bush you planted few years ago has become a whole clump in practically no time ... but what happened to the azalea that used to grow right next to it?

If you think controlling or managing invasive plants on your property is a daunting task, you're not alone. Though this topic is getting lots of attention from federal, state, and local government agencies, as well as the media, the basic question for most homeowners is simply, "How do I get rid of the invasive plants in my own landscape?" Fortunately, the best place to begin to tackle this complex issue is in our own backyards and on local conservation lands. We hope the information provided here will help you take back your yard. We won't kid you—there's some work involved, but the payoff in beauty, wildlife habitat, and peace of mind makes it all worthwhile.

PLAN OF ATTACK

Three broad categories cover most invasive plant control: mechanical, chemical, and biological. Mechanical control means physically removing plants from the environment



Spraying chemicals to control invasive plants.

through cutting or pulling. Chemical control uses herbicides to kill plants and inhibit regrowth. Techniques and chemicals used will vary depending on the species. Biological controls use plant diseases or insect predators, typically from the targeted species' home range. Several techniques may be effective in controlling a single species, but there is usually one preferred method—the one that is most resource efficient with minimal impact on non-target species and the environment.

MECHANICAL CONTROL METHODS

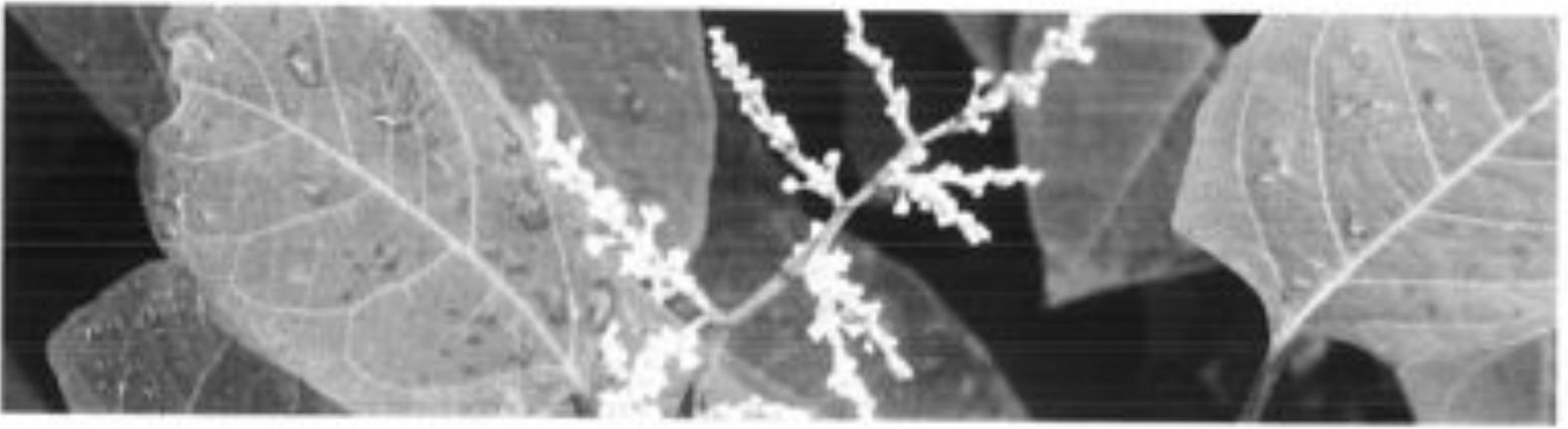
Mechanical treatments are usually the first ones to look at when evaluating an invasive plant removal project. These procedures do not require special licensing or introduce chemicals into the environment. They do require permits in some situations, such as wetland zones. [See sidebar on page 23.] Mechanical removal is highly labor intensive and creates a significant amount of site disturbance, which can lead to rapid reinvansion if not handled properly.

Pulling and digging

Many herbaceous plants and some woody species (up to about one inch in diameter), if present in limited quantities, can be pulled out or dug up. It's important to remove as much of the root system as possible; even a small portion can restart the infestation. Pull plants by hand or use a digging fork, as shovels can shear off portions of the root system, allowing for regrowth. To remove larger woody stems (up to about three inches in diameter), use a Weed Wrench™, Root Jack, or Root Talon. These tools, available from several manufacturers, are designed to remove the aboveground portion of the plant as well as the entire root system. It's easiest to undertake this type of control in the spring or early summer when soils are moist and plants come out more easily.



Using tools to remove woody stems.



Volunteers hand pulling invasive plants.

Suffocation

Try suffocating small seedlings and herbaceous plants. Place double or triple layers of thick UV-stabilized plastic sheeting, either clear or black (personally I like clear), over the infestation and secure the plastic with stakes or weights. Make sure the plastic extends at least five feet past the edge of infestation on all sides. Leave the plastic in place for at least two years. This technique will kill everything beneath the plastic—invasive and non-invasive plants alike. Once the plastic is removed, sow a cover crop such as annual rye to prevent new invasions.

Cutting or mowing

This technique is best suited for locations you can visit and treat often. To be effective, you will need to mow or cut infested areas three or four times a year for up to five years. The goal is to interrupt the plant's ability to photosynthesize by removing as much leafy material as possible. Cut the plants at ground level and remove all resulting debris from the site. With this treatment, the infestation may actually appear to get worse at first, so you will need to be as persistent as the invasive plants themselves. Each time you cut the plants back, the root system gets slightly larger, but must also rely on its energy reserves to push up new growth. Eventually, you will exhaust these reserves and the plants will die. This may take many years, so you have to remain committed to this process once you start; otherwise the treatment can backfire, making the problem worse.

CHEMICAL CONTROL METHODS

Herbicides are among the most effective and resource-efficient tools to treat invasive species. Most of the commonly known invasive plants can be treated using only two herbicides—glyphosate (the active ingredient in Roundup™ and Rodeo™) and triclopyr (the active ingredient in Brush-B-Gone™ and Garlon™). Glyphosate is non-selective, meaning it kills everything it contacts. Triclopyr is selective and does not injure monocots (grasses, orchids, lilies, etc.). Please read labels and follow directions precisely for both environmental and personal safety. These are relatively benign herbicides, but improperly used they can still cause both short- and long-term health and environmental problems. Special aquatic formulations are required when working in wetland zones. You are required to have a state-issued pesticide applicator license when applying these chemicals on land you do not own. To learn more about the pesticide regulations in your state, visit or call your state's pesticide control division, usually part of the state's Department of Agriculture. In wetland areas, additional permits are usually required by the Wetlands Protection Act. [See sidebar on page 23.]

Foliar applications

When problems are on a small scale, this type of treatment is usually applied with a backpack sprayer or even a small handheld spray bottle. It is an excellent way to treat large monocultures of herbaceous plants, or to spot-treat individual plants that are difficult to remove mechanically, such as gooseweed, swallowwort, or purple loosestrife. It is also an effective treatment for some woody species, such as Japanese barberry, multiflora rose, Japanese honeysuckle, and Oriental bittersweet that grow in dense masses or large numbers over many acres. The herbicide mixture should contain no more than five percent of the active ingredient, but it is important to follow the instructions on the product label. This treatment is most effective when the plants are actively growing, ideally when they are flowering or beginning to form fruit. It has been shown that plants are often more susceptible to this type of treatment if the existing stems are cut off and the regrowth is treated. This is especially true for Japanese knotweed. The target plants should be thoroughly wetted with the herbicide on a day when there is no rain in the forecast for the next 24 to 48 hours.

Cut stem treatments

There are several different types of cut stem treatments, but here we will review only the one most commonly used. All treatments of this type require a higher concentration of the active ingredient than is used in foliar applications. A 25 to 35 percent solution of the active ingredient should be used for cut stem treatments, but read and follow all label instructions. In most cases, the appropriate herbicide is glyphosate, except for Oriental bittersweet, on which triclopyr should be used. This treatment can be used on all woody stems, as well as phragmites and Japanese knotweed.

For woody stems, treatments are most effective when applied in the late summer and autumn—between late August and November. Stems should be cut close to the ground, but not so close that you will lose track of them. Apply herbicide directly to the cut surface as soon as possible after cutting. Delaying the application will reduce the effectiveness of the treatment. The herbicide can be applied with a sponge, paintbrush, or spray bottle.



Cut stem treatment tools.

For phragmites and Japanese knotweed, treatment is the same, but the timing and equipment are different. Plants should be treated anytime from mid-July through September, but the hottest, most humid days of the summer are best

for this method. Cut the stems halfway between two leaf nodes at a comfortable height. Inject (or squirt) herbicide into the exposed hollow stem. All stems in an infestation should be treated. A wash bottle is the most effective application tool, but you can also use an eyedropper, spray bottle, or one of the recently developed high-tech injection systems.

It is helpful to mix a dye in with the herbicide solution. The dye will stain the treated surface and mark the areas that have been treated, preventing unnecessary reapplication. You can buy a specially formulated herbicide dye, or use food coloring or laundry dye.

There is not enough space in this article to describe all the possible ways to control invasive plants. You can find other treatments, along with more details on the above-described methods, and species-specific recommendations on The Nature Conservancy Web site (tncweeds.ucdavis.edu). An upcoming posting on the Invasive Plant Atlas of New England (www.ipane.org) and the New England Wild Flower Society (www.newfs.org) Web sites will also provide further details.



Hollow stem injection tools.

Biological controls—still on the horizon

Biological controls are moving into the forefront of control methodology, but currently the only widely available and applied biocontrol relates to purple loosestrife. More information on purple loosestrife and other biological control projects can be found at www.invasiveplants.net.

DISPOSAL OF INVASIVE PLANTS

Proper disposal of removed invasive plant material is critical to the control process. Leftover plant material can cause new infestations or reinfest the existing project area. There are many appropriate ways to dispose of invasive plant debris. I've listed them here in order of preference.

- 1. Burn it**—Make a brush pile and burn the material following local safety regulations and restrictions, or haul it to your town's landfill and place it in their burn pile.
- 2. Pile it**—Make a pile of the woody debris. This technique will provide shelter for wildlife as well.
- 3. Compost it**—Place all your herbaceous invasive plant debris in a pile and process as compost. Watch the pile closely for resprouts and remove as necessary. Do not use the resulting compost in your garden. The pile is for invasive plants only.



Injecting herbicide into the hollow stem of phragmites.

4. Dry it/cook it—Place woody debris out on your driveway or any asphalt surface and let it dry out for a month. Place herbaceous material in a doubled-up black trash bag and let it cook in the sun for one month. At the end of the month, the material should be non-viable and you can dump it or dispose of it with the trash. The method assumes there is no viable seed mixed in with the removed material.

Care should be taken in the disposal of all invasive plants, but several species need extra attention. These are the ones that have the ability to sprout vigorously from plant fragments and should ideally be burned or dried prior to disposal: Oriental bittersweet, multiflora rose, Japanese honeysuckle, phragmites, and Japanese knotweed.

Christopher Mattrick is the former Senior Conservation Programs Manager for New England Wild Flower Society, where he managed conservation volunteer and invasive and rare plant management programs. Today, Chris and his family work and play in the White Mountains of New Hampshire, where he is the Forest Botanist and Invasive Species Coordinator for the White Mountain National Forest.



Controlling Invasive Plants in Wetlands

Special concerns; special precautions

Control of invasive plants in or around wetlands or bodies of water requires a unique set of considerations. Removal projects in wetland zones can be legal and effective if handled appropriately. In many cases, herbicides may be the least disruptive tools with which to remove invasive plants. You will need a state-issued pesticide license to apply herbicide on someone else's property, but all projects in wetland or aquatic systems fall under the jurisdiction of the Wetlands Protection Act and therefore require a permit. **Yes, even hand-pulling that colony of glossy buckthorn plants from your own swampland requires a permit.** Getting a permit for legal removal is fairly painless if you plan your project carefully.

1. Investigate and understand the required permits and learn how to obtain them. The entity charged with the enforcement of the Wetlands Protection Act varies from state to state. For more information in your state, contact:

ME: Department of Environmental Protection
www.state.me.us/dep/blwq/docstand/nrpage.htm

NH: Department of Environmental Services
www.des.state.nh.us/wetlands/

VT: Department of Environmental Conservation
www.anr.state.vt.us/dec/waterq/permits/htm/pm_cud.htm

MA: Consult your local town conservation commission

RI: Department of Environmental Management
www.dem.ri.gov/programs/benviron/water/permits/fresh/index.htm

CT: Consult your local town Inland Wetland and Conservation Commission

2. Consult an individual or organization with experience in this area. Firsthand experience in conducting projects in wetland zones and navigating the permitting process is priceless. Most states have wetland scientist societies whose members are experienced in working in wetlands and navigating the regulations affecting them. A simple Web search will reveal the contact point for these societies. Additionally, most environmental consulting firms and some nonprofit organizations have skills in this area.
3. Develop a well-written and thorough project plan. You are more likely to be successful in obtaining a permit for your project if you submit a project plan along with your permit application. The plan should include the reasons for the project, your objectives in completing the project, how you plan to reach those objectives, and how you will monitor the outcome.
4. Ensure that the herbicides you plan to use are approved for aquatic use. Experts consider most herbicides harmful to water quality or aquatic organisms, but rate some formulations as safe for aquatic use. Do the research and select an approved herbicide, and then closely follow the instructions on the label.
5. If you are unsure—research, study, and most of all, ask for help. Follow the rules. The damage caused to aquatic systems by the use of an inappropriate herbicide or the misapplication of an appropriate herbicide not only damages the environment, but also may reduce public support for safe, well-planned projects.

INSECT & DISEASES



Yard & Garden

BRIEFS

NECTRIA CANKER

Crystal Floyd

canker most commonly occurs on maple and honey locust, but can also infect apple, aspen, basswood, birch, elm, oak, walnut, and other hardwood trees. The fungus *Nectria galligena* causes target-like cankers on many hardwoods (Fig. 1), while *N. cinnabarina* causes similar cankers on honey locust (Fig. 2).

In spring and early summer, pink or cream colored, cushion-like reproductive structures (sporodochia) form on the surface of tissue infected the previous year. Other reproductive structures, perithecia, are formed in late summer to early fall (Fig. 3). These structures are initially red colored, later turning brown or black. Spores are dispersed from these structures by wind or splashing water to wounds and natural openings on nearby trees. Wounds caused by improper pruning, sunscald, frost cracks, storm damage, or other types of mechanical damage serve as entry points. Infection can occur during wet periods throughout the growing season.

Nectria canker initially appears as a slightly sunken, elongated lesion. The surface of the outer bark is often discolored and may be open or covered with bark. Attempts by the tree to contain the infection result in the formation of a callus ridge during the growing season. If the tree is not successful, the fungus will re-infect healthy wood beyond the callus ridge the following year. As a result, perennial cankers develop a target-like appearance, due to the alternation of fungal growth and the production of callus tissue by the tree (Fig. 1). Eventually, branch dieback or death of the tree may occur if branches or the trunk are girdled by the fungus. Cankered trees are vulnerable to windthrow, commonly breaking at the canker site.

Nectria canker is most severe on stressed trees. To keep trees growing vigorously, choose proper planting sites, apply mulch around base of trees, water during dry periods, and properly fertilize and prune. Cankered branches may be pruned during dry periods. Use a 10% bleach solution (one part bleach to nine parts water) to disinfect pruning tools between each cut.



Fig. 1

Photo: Chad Behrendt



Fig. 2

Photo: Robert Blanchette



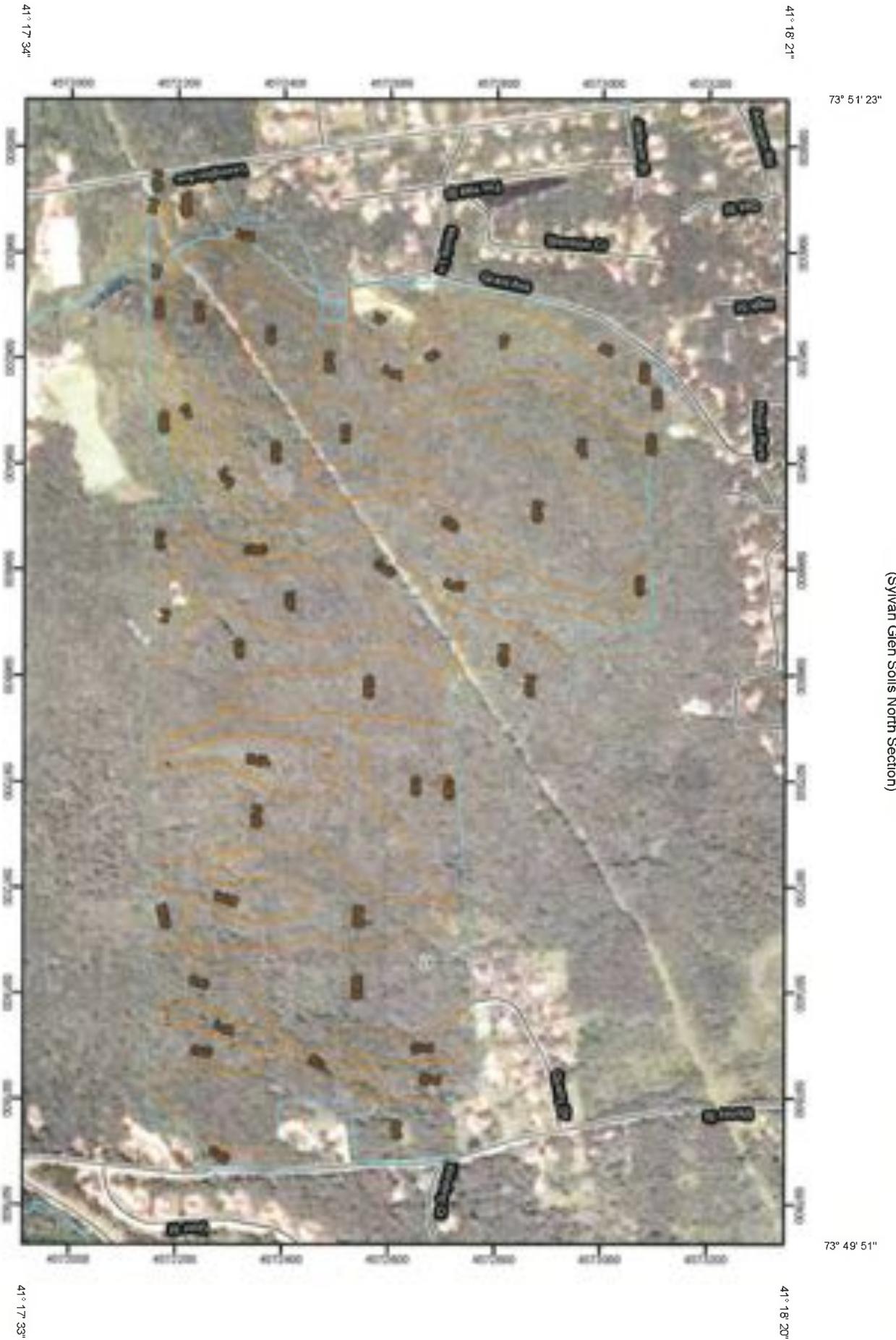
Fig. 3

Photo: U of MN Plant Disease Clinic

P431N
1/99[top of page](#)[Index to Yard & Garden Briefs](#)UNIVERSITY OF MINNESOTA
EXTENSION

SOILS

Soil Map—Westchester County, New York
(Sylvan Glen Soils North Section)



MAP LEGEND

	Area of Interest (AOI)		Very Stony Spot
	Area of Interest (AOI)		Wet Spot
	Soils		Other
	Soil Map Units		Other
	Special Point Features		Short Steep Slope
	Blowout		Other
	Borrow Pit		Cities
	Clay Spot		Streams and Canals
	Closed Depression		Transportation
	Gravel Pit		+++ Rails
	Gravelly Spot		Interstate Highways
	Landfill		US Routes
	Lava Flow		Major Roads
	Marsh or swamp		Local Roads
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		
	Spoil Area		
	Stony Spot		

MAP INFORMATION

Map Scale: 1:10,300 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 8, Sep 18, 2012

Date(s) aerial images were photographed: 7/31/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Westchester County, New York (NY119)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ce	Carlisle muck	11.4	3.7%
ChB	Charlton loam, 2 to 8 percent slopes	1.6	0.5%
ChC	Charlton loam, 8 to 15 percent slopes	16.9	5.5%
ChD	Charlton loam, 15 to 25 percent slopes	0.1	0.0%
ChE	Charlton loam, 25 to 35 percent slopes	0.8	0.3%
CID	Charlton loam, 15 to 25 percent slopes, very stony	6.0	2.0%
CRC	Charlton-Chatfield complex, rolling, very rocky	56.9	18.5%
CSD	Chatfield-Charlton complex, hilly, very rocky	49.5	16.1%
CUD	Chatfield-Hollis-Rock outcrop complex, hilly	6.7	2.2%
Hrf	Hollis-Rock outcrop complex, very steep	20.1	6.6%
LcA	Lester loam, 0 to 3 percent slopes, stony	20.4	6.6%
LeB	Lester loam, 2 to 8 percent slopes, very stony	15.1	4.9%
Pa	Palms muck	1.4	0.5%
Pc	Palms and Carlisle soils, ponded	1.3	0.4%
PnB	Paxton fine sandy loam, 2 to 8 percent slopes	28.0	9.1%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	3.7	1.2%
PnD	Paxton fine sandy loam, 15 to 25 percent slopes	6.1	2.0%
Pv	Pits, quarry	3.3	1.1%
Pw	Pompton silt loam, loamy substratum	0.1	0.0%
RdA	Ridgebury loam, 0 to 3 percent slopes	5.9	1.9%
RdB	Ridgebury loam, 3 to 8 percent slopes	13.1	4.3%
Sh	Sun loam	6.3	2.1%
Ub	Udorthents, smoothed	1.2	0.4%
W	Water	2.4	0.8%
WdB	Woodbridge loam, 3 to 8 percent slopes	25.0	8.1%
WdC	Woodbridge loam, 8 to 15 percent slopes	3.8	1.2%
Totals for Area of Interest		307.3	100.0%



Soil Map—Westchester County, New York
(Sylvan Glen Soils East Section)



MAP LEGEND

	Area of Interest (AOI)		Very Stony Spot
	Area of Interest (AOI)		Wet Spot
	Soils		Other
	Soil Map Units		Gully
	Special Point Features		Short Steep Slope
	Blowout		Other
	Borrow Pit		Political Features
	Clay Spot		Cities
	Closed Depression		Water Features
	Gravel Pit		Streams and Canals
	Gravelly Spot		Transportation
	Landfill		Rails
	Lava Flow		Interstate Highways
	Marsh or swamp		US Routes
	Mine or Quarry		Major Roads
	Miscellaneous Water		Local Roads
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slipp		
	Sodic Spot		
	Spoil Area		
	Stony Spot		

MAP INFORMATION

Map Scale: 1:1,410 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Disclaimer of maps beyond the scale of mapping can show misrepresentation of the detail of mapping and accuracy of soil line placement. The maps do not show the exact areas of individual maps that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>

Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York

Survey Area Data: Version 8, Sep 18, 2012

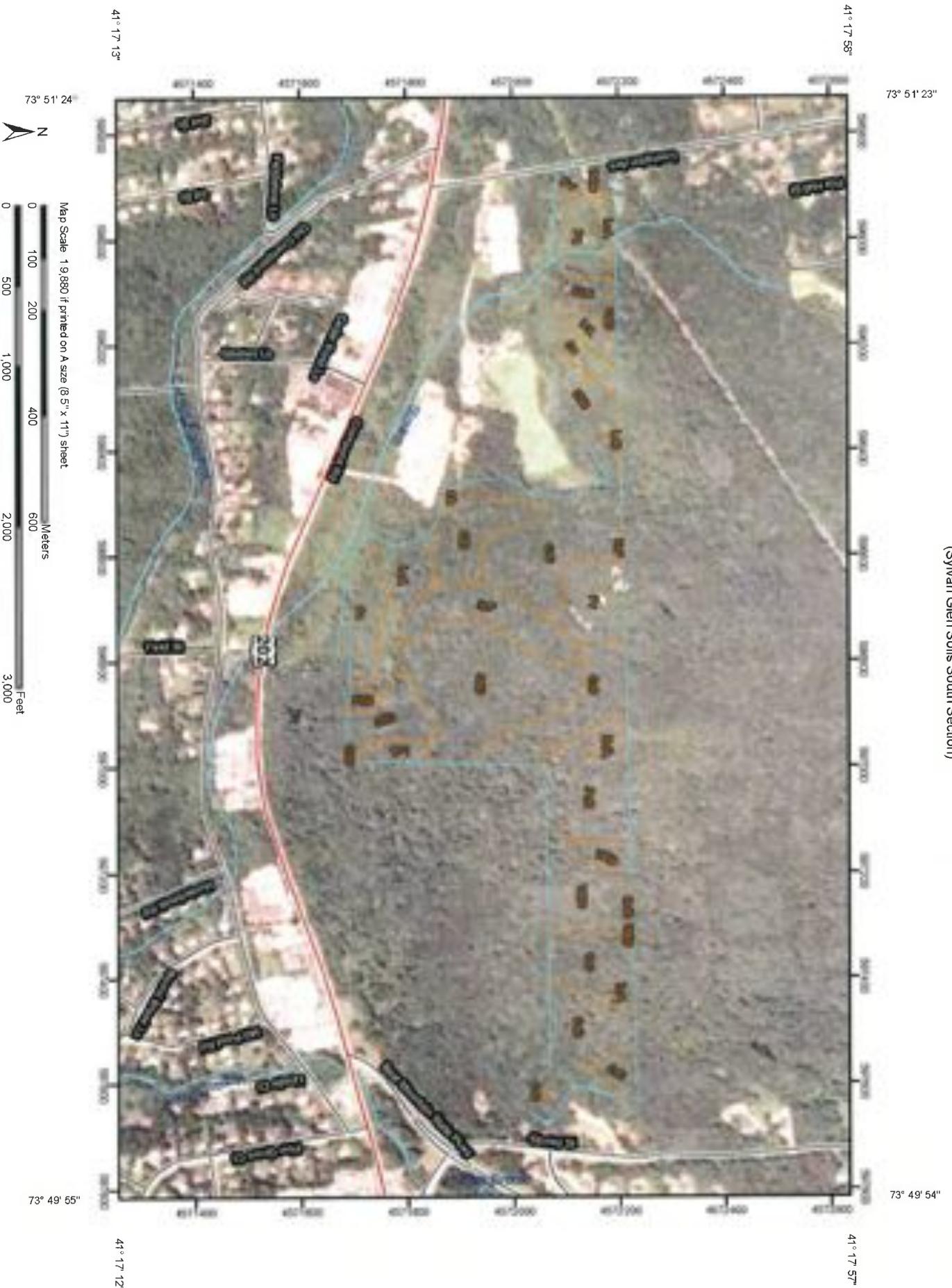
Date(s) aerial images were photographed: 7/31/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Westchester County, New York (NY119)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
C1C	Charlton-Charfield complex, rolling, very rocky	1.4	34.9%
C1D	Charfield-Charlton complex, hilly, very rocky	2.7	65.1%
Totals for Area of Interest		4.1	100.0%

Soil Map—Westchester County, New York
(Sylvan Glen Soils South Section)



MAP LEGEND

 Area of Interest (AOI)	 Very Stony Spot
 Area of Interest (AOI)	 Wet Spot
 Soils	 Other
 Soil Map Units	Special Line Features
Special Point Features	 Gully
 Blowout	 Short Steep Slope
 Borrow Pit	 Other
 Clay Spot	Political Features
 Closed Depression	 Cities
 Gravel Pit	Water Features
 Gravelly Spot	 Streams and Canals
 Landfill	Transportation
 Lava Flow	 Rails
 Marsh or swamp	 Interstate Highways
 Mine or Quarry	 US Routes
 Miscellaneous Water	 Major Roads
 Perennial Water	 Local Roads
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	
 Spoil Area	
 Stony Spot	

MAP INFORMATION

Map Scale: 1:9,880 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 8, Sep 18, 2012

Date(s) aerial images were photographed: 7/31/2006

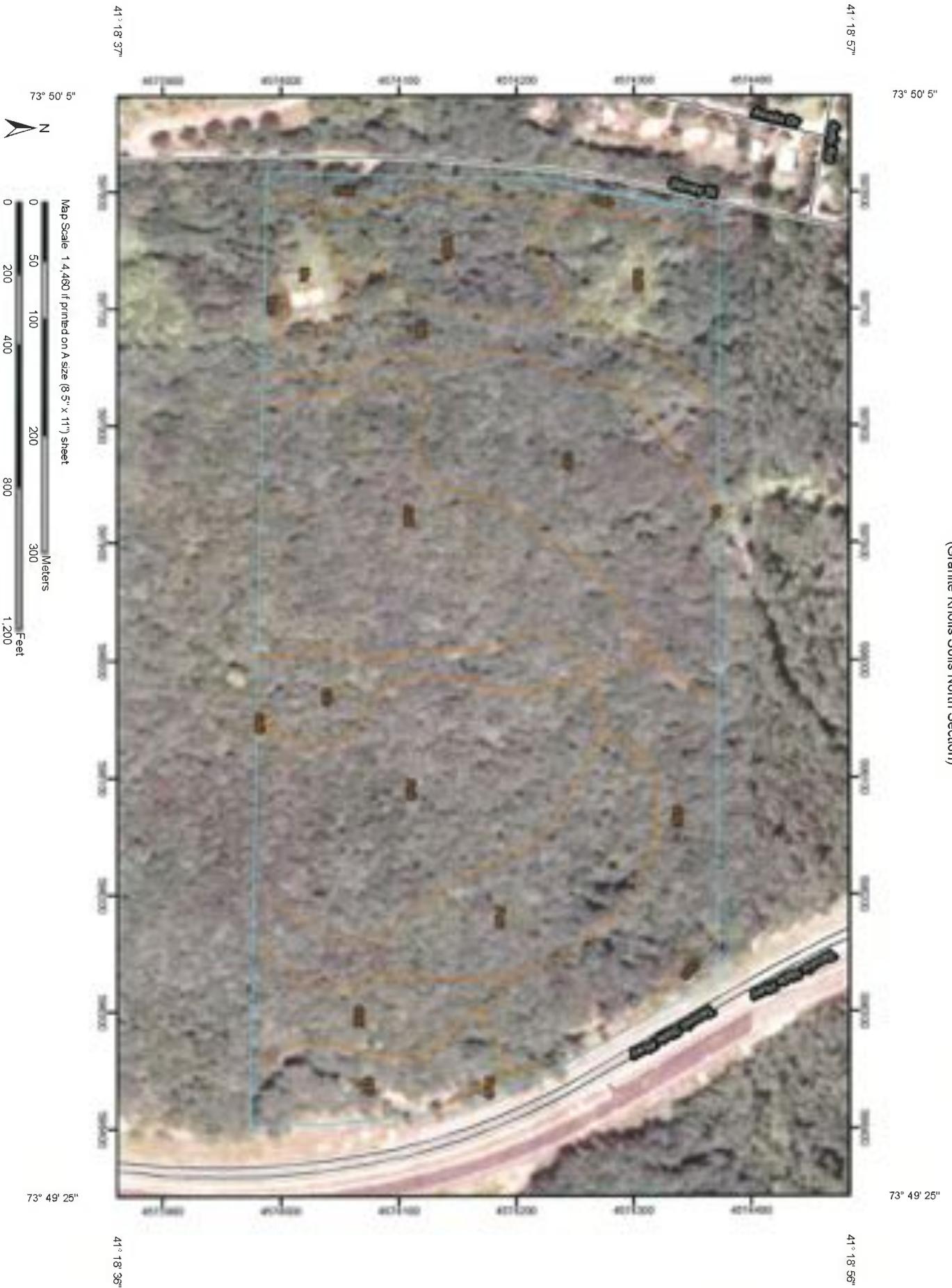
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Westchester County, New York (NY119)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ce	Carlisle muck	6.2	6.0%
ChB	Charlton loam, 2 to 8 percent slopes	5.4	5.1%
ChD	Charlton loam, 15 to 25 percent slopes	3.4	3.2%
CID	Charlton loam, 15 to 25 percent slopes, very stony	4.7	4.5%
CnC	Charlton-Chatfield complex, rolling, very rocky	23.9	22.8%
CsD	Chatfield-Charlton complex, hilly, very rocky	21.5	20.5%
HrF	Hollis-Rock outcrop complex, very steep	6.0	5.8%
LcA	Leicester loam, 0 to 3 percent slopes, stony	7.3	7.0%
LcB	Leicester loam, 3 to 8 percent slopes, stony	1.2	1.2%
LcB	Leicester loam, 2 to 8 percent slopes, very stony	0.2	0.2%
Pa	Palms muck	4.1	3.9%
PnB	Paxton fine sandy loam, 2 to 8 percent slopes	7.0	6.7%
PnD	Paxton fine sandy loam, 15 to 25 percent slopes	0.0	0.0%
Pv	Pits, quarry	4.5	4.3%
Pw	Pompton silt loam, loamy substratum	0.7	0.7%
RdA	Ridgebury loam, 0 to 3 percent slopes	0.6	0.5%
RdB	Ridgebury loam, 3 to 8 percent slopes	0.1	0.1%
Ub	Udorthents, smoothed	0.1	0.1%
WdB	Woodbridge loam, 3 to 8 percent slopes	1.4	1.3%
WdC	Woodbridge loam, 8 to 15 percent slopes	6.4	6.1%
Totals for Area of Interest		105.0	100.0%



Soil Map—Westchester County, New York
(Granite Knolls Soils North Section)



MAP LEGEND

	Area of Interest (AOI)		Very Stony Spot
	Soils		Wet Spot
	Soil Map Units		Other
Special Point Features			
	Blowout		Short Steep Slope
	Borrow Pit		Gully
	Clay Spot		Other
	Closed Depression	Political Features	
	Gravel Pit		Cities
	Gravelly Spot	Water Features	
	Landfill		Streams and Canals
	Lava Flow	Transportation	
	Marsh or swamp		Rails
	Mine or Quarry		Interstate Highways
	Miscellaneous Water		US Routes
	Perennial Water		Major Roads
	Rock Outcrop		Local Roads
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		
	Spoil Area		
	Stony Spot		

MAP INFORMATION

Map Scale: 1:4,460 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 8, Sep 18, 2012

Date(s) aerial images were photographed: 7/31/2006

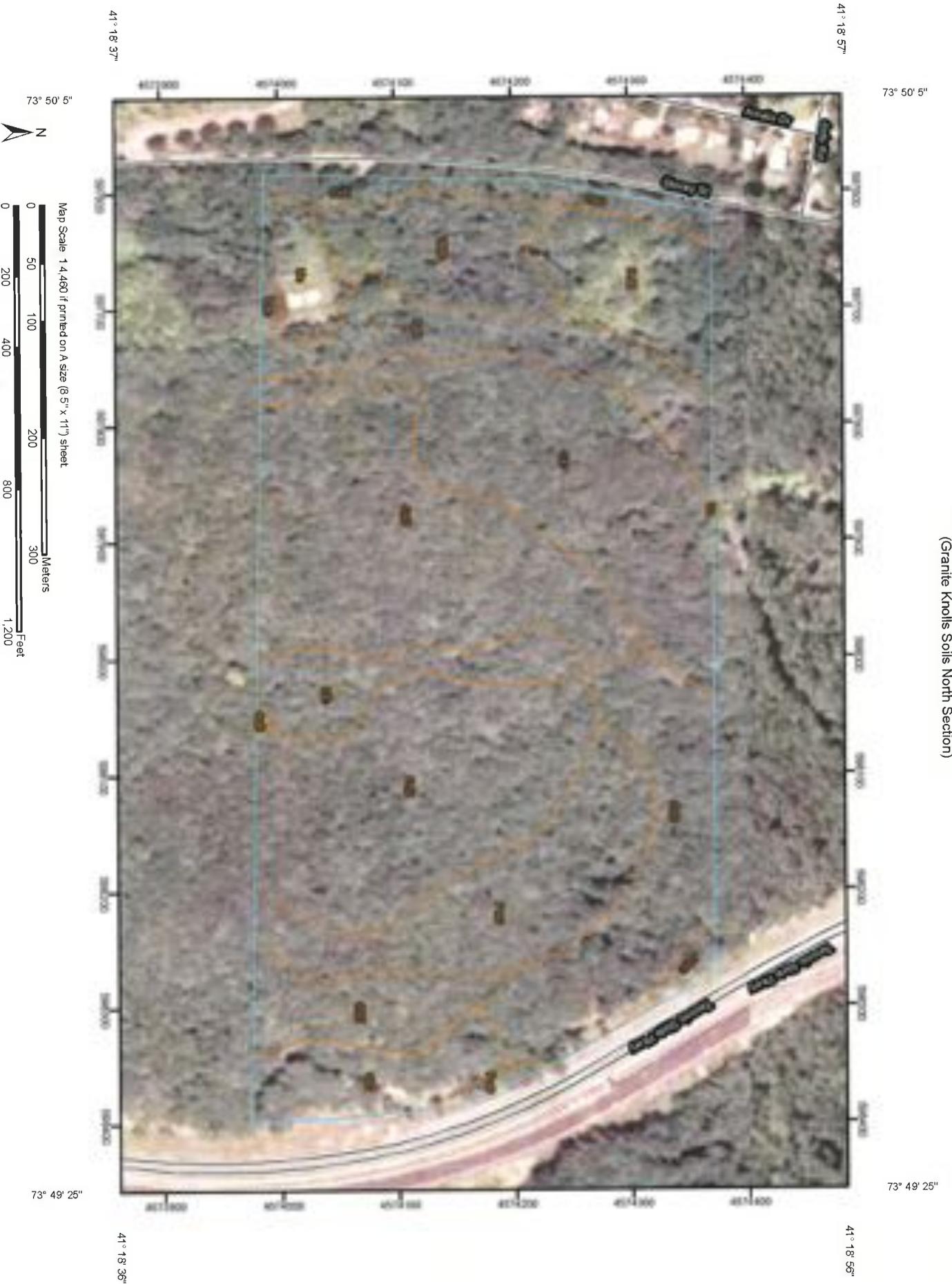
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Westchester County, New York (NY119)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ce	Carlisle muck	0.0	0.0%
ChC	Charlton loam, 8 to 15 percent slopes	0.5	0.6%
ChD	Charlton loam, 15 to 25 percent slopes	8.4	11.4%
ChE	Charlton loam, 25 to 35 percent slopes	3.8	5.1%
CIC	Charlton loam, 8 to 15 percent slopes, very stony	13.4	18.1%
CID	Charlton loam, 15 to 25 percent slopes, very stony	3.1	4.2%
CIC	Charlton-Chatfield complex, rolling, very rocky	0.1	0.2%
CsD	Chatfield-Charlton complex, hilly, very rocky	12.1	16.3%
LeB	Leicester loam, 2 to 8 percent slopes, very stony	4.8	6.4%
PnB	Paxton fine sandy loam, 2 to 8 percent slopes	11.1	15.0%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	7.1	9.5%
PoC	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	0.3	0.3%
RdB	Ridgebury loam, 3 to 8 percent slopes	3.8	5.2%
Uc	Udorthents, wet substratum	1.6	2.2%
WdC	Woodbridge loam, 8 to 15 percent slopes	4.0	5.3%
Totals for Area of Interest		74.0	100.0%



Soil Map—Westchester County, New York
(Granite Knolls Soils North Section)



MAP LEGEND

	Area of Interest (AOI)		Very Stony Spot
	Area of Interest (AOI)		Wet Spot
	Soil Map Units		Other
Special Point Features		Special Line Features	
	Blowout		Gully
	Borrow Pit		Short Steep Slope
	Clay Spot		Other
	Closed Depression	Political Features	
	Gravel Pit		Cities
	Gravelly Spot	Water Features	
	Landfill		Streams and Canals
	Lava Flow	Transportation	
	Marsh or swamp		Rails
	Mine or Quarry		Interstate Highways
	Miscellaneous Water		US Routes
	Perennial Water		Major Roads
	Rock Outcrop		Local Roads
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slipp		
	Sodic Spot		
	Spoil Area		
	Stony Spot		

MAP INFORMATION

Map Scale: 1:4,460 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the exact areas of soil mapping with that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 8, Sep 18, 2012

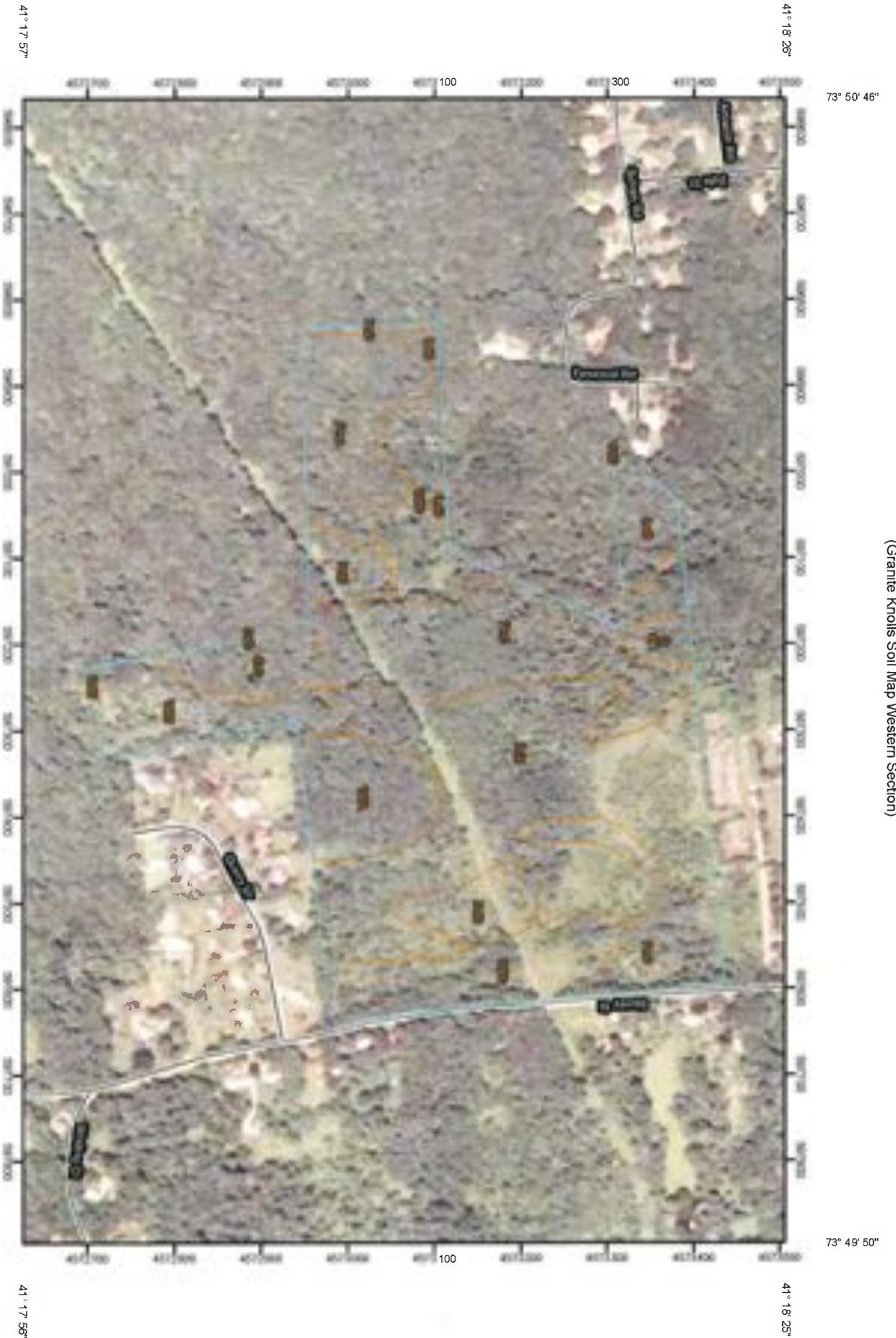
Date(s) aerial images were photographed: 7/31/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Westchester County, New York (NY119)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ce	Carlisle muck	0.0	0.0%
ChC	Charlton loam, 8 to 15 percent slopes	0.5	0.6%
ChD	Charlton loam, 15 to 25 percent slopes	8.4	11.4%
ChE	Charlton loam, 25 to 35 percent slopes	3.8	5.1%
CiC	Charlton loam, 8 to 15 percent slopes, very stony	13.4	18.1%
CiD	Charlton loam, 15 to 25 percent slopes, very stony	3.1	4.2%
CrC	Charlton-Chatfield complex, rolling, very rocky	0.1	0.2%
CsD	Chatfield-Charlton complex, hilly, very rocky	12.1	16.3%
LeB	Leicester loam, 2 to 8 percent slopes, very stony	4.8	6.4%
PnB	Paxton fine sandy loam, 2 to 8 percent slopes	11.1	15.0%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	7.1	9.5%
PoC	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	0.3	0.3%
RdB	Ridgebury loam, 3 to 8 percent slopes	3.8	5.2%
Uc	Udorthents, wet substratum	1.6	2.2%
WdC	Woodbridge loam, 8 to 15 percent slopes	4.0	5.3%
Totals for Area of Interest		74.0	100.0%

Soil Map—Westchester County, New York
(Granite Knolls Soil Map Western Section)



MAP LEGEND

	Area of Interest (AOI)		Area of Interest (AOI)		Very Stony Spot
	Soils		Soil Map Units		Other
	Special Point Features		Blowout		Gully
	Borrow Pit		Clay Spot		Short Steep Slope
	Closed Depression		Gravel Pit		Other
	Gravelly Spot		Landfill		Cities
	Lava Flow		Marsh or swamp		Streams and Canals
	Mine or Quarry		Miscellaneous Water		Transportation
	Perennial Water		Rock Outcrop		+++ Ralls
	Saline Spot		Sandy Spot		Interstate Highways
	Severely Eroded Spot		Sinkhole		US Routes
	Slide or Slip		Sodic Spot		Major Roads
	Spoil Area		Stony Spot		Local Roads

MAP INFORMATION

Map Scale: 1:6,300 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000. Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 8, Sep 18, 2012

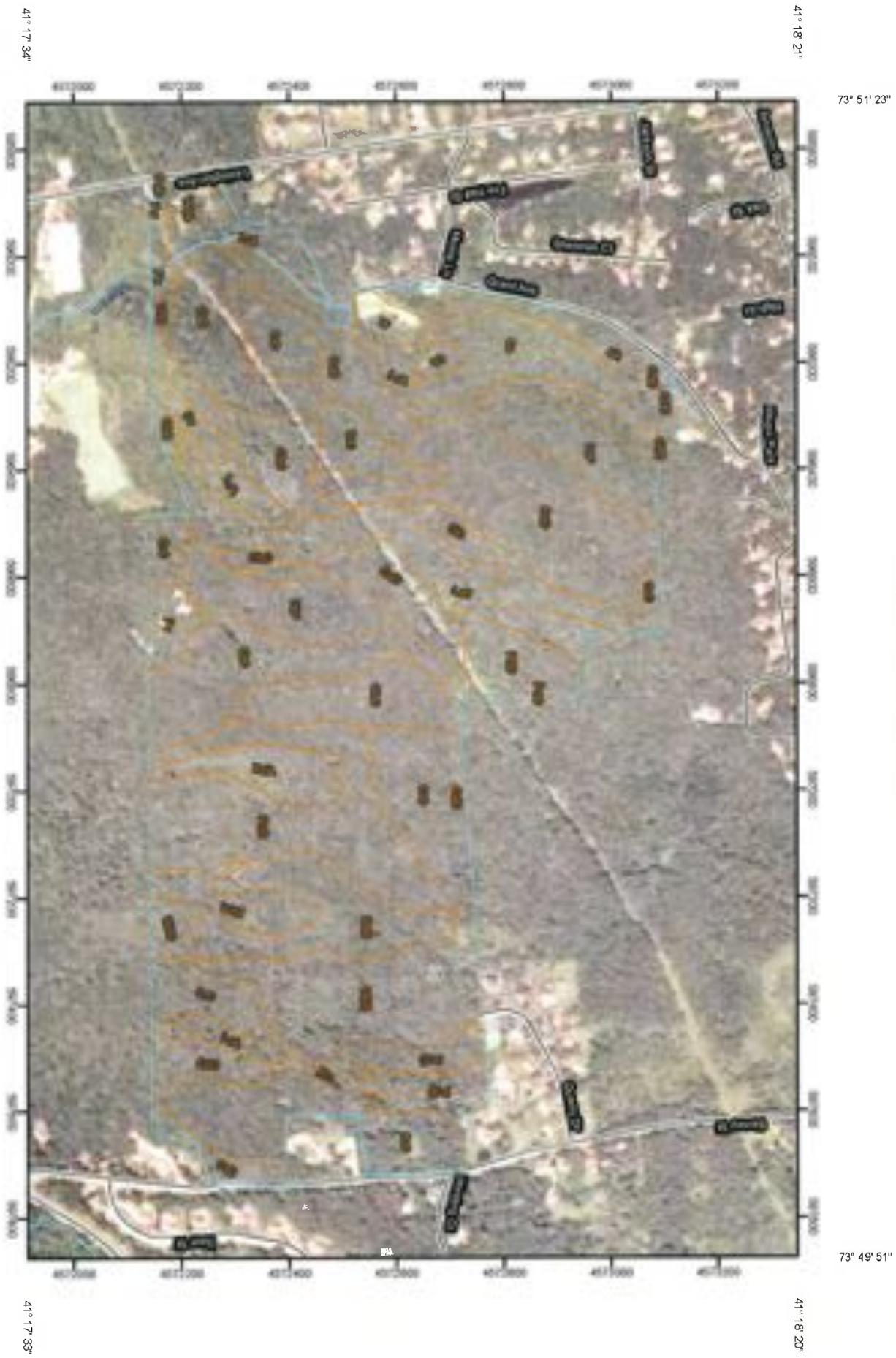
Date(s) aerial images were photographed: 7/31/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Westchester County, New York (NY119)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Crc	Charlton-Charlton complex, rolling, very rocky	2.7	3.5%
Csd	Charlton-Charlton complex, hilly, very rocky	0.0	0.0%
LeB	Leicester loam, 2 to 8 percent slopes, very stony	2.4	3.2%
PnB	Paxton fine sandy loam, 2 to 8 percent slopes	23.9	31.9%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	22.7	30.3%
PnD	Paxton fine sandy loam, 15 to 25 percent slopes	1.2	1.6%
RdB	Ridgebury loam, 3 to 8 percent slopes	2.6	3.5%
WdA	Woodbridge loam, 0 to 3 percent slopes	4.6	6.1%
WdB	Woodbridge loam, 3 to 8 percent slopes	4.7	6.3%
WdC	Woodbridge loam, 8 to 15 percent slopes	10.1	13.5%
Totals for Area of Interest		75.0	100.0%

Soil Map—Westchester County, New York
(Sylvan Glen Soils North Section)



MAP LEGEND

 Area of Interest (AOI)	 Area of Interest (AOI)	 Very Stony Spot	 Wet Spot
Soils	 Soil Map Units	 Other	
Special Point Features	 Blowout	Special Line Features	
 Borrow Pit	 Closed Depression	 Short Steep Slope	
 Clay Spot	 Gravel Pit	 Gully	
 Gravelly Spot	 Landfill	 Other	
 Lava Flow	 Marsh or swamp	Political Features	
 Mine or Quarry	 Miscellaneous Water	 Cities	
 Perennial Water	 Rock Outcrop	Water Features	
 Saline Spot	 Sandy Spot	 Streams and Canals	
 Severely Eroded Spot	 Sinkhole	Transportation	
 Slide or Slip	 Sodlic Spot	 Rails	
 Spoil Area	 Stony Spot	 Interstate Highways	
		 US Routes	
		 Major Roads	
		 Local Roads	

MAP INFORMATION

Map Scale: 1:10,300 if printed on A size (8.5" x 11") sheet

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 8, Sep 18, 2012

Date(s) aerial images were photographed: 7/31/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Westchester County, New York (NY119)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ce	Carlisle muck	11.4	3.7%
ChB	Charlton loam, 2 to 8 percent slopes	1.6	0.5%
ChC	Charlton loam, 8 to 15 percent slopes	16.9	5.5%
ChD	Charlton loam, 15 to 25 percent slopes	0.1	0.0%
ChE	Charlton loam, 25 to 35 percent slopes	0.8	0.3%
CID	Charlton loam, 15 to 25 percent slopes, very stony	6.0	2.0%
CIC	Charlton-Charfield complex, rolling, very rocky	56.9	18.5%
CSD	Charfield-Charlton complex, hilly, very rocky	49.5	16.1%
CUD	Charfield-Hollis-Rock outcrop complex, hilly	6.7	2.2%
HIF	Hollis-Rock outcrop complex, very steep	20.1	6.6%
LcA	Leicester loam, 0 to 3 percent slopes, stony	20.4	6.6%
LeB	Leicester loam, 2 to 8 percent slopes, very stony	15.1	4.9%
Pa	Palms muck	1.4	0.5%
Pc	Palms and Carlisle soils, ponded	1.3	0.4%
PnB	Faxton fine sandy loam, 2 to 8 percent slopes	28.0	9.1%
PnC	Faxton fine sandy loam, 8 to 15 percent slopes	3.7	1.2%
PnD	Faxton fine sandy loam, 15 to 25 percent slopes	6.1	2.0%
Pv	Pits, quarry	3.3	1.1%
Pw	Pompton silt loam, loamy substratum	0.1	0.0%
RdA	Ridgebury loam, 0 to 3 percent slopes	5.9	1.9%
RdB	Ridgebury loam, 3 to 8 percent slopes	13.1	4.3%
Sh	Sun loam	6.3	2.1%
Ub	Udorthents, smoothed	1.2	0.4%
W	Water	2.4	0.8%
WdB	Woodbridge loam, 3 to 8 percent slopes	25.0	8.1%
WdC	Woodbridge loam, 8 to 15 percent slopes	3.8	1.2%
Totals for Area of Interest		307.3	100.0%



WILDLIFE INFORMATION

TED KOZLOWSKI
136 BIG ELM ROAD
BREWSTER, NEW YORK 10509
(845) 278-6169
TKOZLOW@AOL.COM

December 28, 2012

NYSDEC – DFWMR
Ms. Jean Pietrusiak
NY Natural Heritage Program – Informational Services
625 Broadway, 5th Floor
Albany, NY 12233-4757

RE: Sylvan Glenn & Granite Knolls Parks (Mohegan Lake Quad)
Yorktown Heights, NY 10598

Dear Jean:

I have been retained by The Town of Yorktown, owners of approximately 518 acres on the above site within Yorktown (Westchester County) to prepare a Watershed Forest Management Plan as per the guidelines of the NYC Agricultural Watershed Forestry program. I have enclosed a copy of the property highlighted on the Mohegan Lake, NY Quad. The parcels do contain parts of State Wetlands A-5 and A-10.

There are no development plans and the property is being held as public land in perpetuity. As required by the Agricultural Watershed guidelines, please let me know if any Rare, Threatened, or Endangered plant or animal species are located in this area and if there is any other special considerations I may be advised about to incorporate within my management plan.

Thank you.

Sincerely,

Ted Kozlowski, Certified Forester

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov



Joe Martens
Commissioner

January 29, 2013

Ted Kozlowski
Forester136
Big Elm Road
Brewster, NY 105091

Dear Mr. Kozlowski:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to an Environmental Assessment for the Proposed 519 Acre Watershed Forest Management Area, site as indicated on your enclosed map, located in the Town of Yorktown Heights, Westchester County.

We have no records of rare or state listed animals or plants, or significant natural communities, on or in the immediate vicinity of your site.

The absence of data does not necessarily mean that rare or state-listed species, or significant natural communities, do not exist on or adjacent to the proposed site. Rather, our files currently do not contain information which indicates their presence. For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

This response applies only to known occurrences of rare or state-listed animals and plants, significant natural communities and other significant habitats maintained in the Natural Heritage Databases. Your project may require additional review or permits; for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, as listed at www.dec.ny.gov/about/39381.html.

Sincerely,


Jean Pietrusiak, Information Services

NYS Department Environmental Conservation

Enc

cc: Reg, 3, Wildlife Mgr

43



Flora Identified in Yorktown

Ferns

<i>Athyrium filix-femina</i>	Lady Fern
<i>Dennstaedtia punctilobula</i>	Hayscented Fern
<i>Dryopteris marginalis</i>	Marginal Woodfern
<i>Onoclea sensibilis</i>	Sensitive Fern
<i>Osmunda cinnamomea</i>	Cinnamon Fern
<i>Osmunda claytoniana</i>	Interrupted Fern
<i>Osmunda regalis</i>	Royal Fern
<i>Polystichum acrostichoides</i>	Christmas Fern
<i>Pteridium aquilinum</i>	Bracken Fern
<i>Thelypteris noveboracensis</i>	New York Fern

Aquatic Plants

<i>Lemna minor</i>	Duckweed
<i>Nuphar lutea</i>	Bull Head Lily
<i>Nymphaea odorata</i>	White Water-Lily
<i>Pontederia cordata</i> *	Pickerel Weed
<i>Typha angustifolia</i>	Narrow Leaf Cattail
<i>Typha latifolia</i>	Broad Leaf Cattail

Grasses, Sedges, and Rushes

<i>Andropogon virginicus</i>	Broom Sedge
<i>Carex stricta</i>	Tussock Sedge
<i>Cortaderia selloana</i>	Pampas Grass
<i>Dactylis glomerata</i>	Orchard Grass
<i>Elytrigia repens</i>	Quack Grass
<i>Festuca capillata</i>	Hair Grass
<i>Juncus effusus</i>	Soft Rush
<i>Juncus tenuis</i>	Path Rush
<i>Lolium spp.</i>	Rye Grass
<i>Microstegium vimineum</i>	Japanese Stilt Grass
<i>Panicum capillare</i>	Old Witch Grass



State
Listing Status

<i>Hyla versicolor</i>	Gray Tree Frog
<i>Plethodon cinereus</i>	Red-Backed Salamander
<i>Pseudoeccris crucifer</i>	Spring Peeper
<i>Rana catesbeiana</i>	Bull Frog
<i>Rana clamitans</i>	Green Frog
<i>Rana palustris</i>	Pickerel Frog
<i>Rana pipiens</i>	Northern Leopard Frog
<i>Rana sylvatica</i>	Wood Frog
Reptiles	
<i>Chelydra serpentina</i>	Snapping Turtle
<i>Chrysemys picta</i>	Eastern Painted Turtle
<i>Thamnophis sirtalis</i>	Garter Snake
Invertebrates	
<i>Culicidae spp.</i>	Mosquito
<i>Danaus plexippus</i>	Monarch
<i>Dermacentor variabilis</i>	American Dog Tick
<i>Ixodes scapularis</i>	Deer Tick
<i>Polistes dominula</i>	Paper Wasp



<i>Panicum clandestinum</i>	Deer Tongue Grass
<i>Phalaris arundinacea</i>	Reed Canary Grass
<i>Phragmites australis</i>	Phragmites
<i>Poa compressa</i>	Canada Blue Grass
<i>Schizachyrium scoparium</i>	Little Blue Stem
<i>Setaria italica</i>	Foxtail Grass
<i>Sisyrinchium spp.*</i>	Blue-Eyed Grass

Herbs

<i>Aconitum noveboracense*</i>	Monkshood
<i>Actaea racemosa*</i>	Black Cohosh
<i>Alliaria petiolata</i>	Garlic Mustard
<i>Allium schoenoprasum</i>	Chive
<i>Amaranthus retroflexus*</i>	Red Root
<i>Ambrosia artemisiifolia</i>	Common Ragweed
<i>Anemone virginiana*</i>	Thimbleweed
<i>Aralia racemosa*</i>	American Spikenard
<i>Arctium minus</i>	Common Burdock
<i>Arisaema triphyllum*</i>	Jack-in-the-Pulpit
<i>Artemisia vulgaris</i>	Mugwort
<i>Asclepias syriaca</i>	Common Milkweed
<i>Asclepias tuberosa*</i>	Butterfly Weed
<i>Asplenium platyneuron</i>	Ebony Spleenwort
<i>Aster vimineus</i>	Small White Aster
<i>Bidens cernua*</i>	Bur-Marigold
<i>Bidens spp.</i>	Bidens
<i>Caltha palustris*</i>	Marsh Marigold
<i>Chimaphila maculata</i>	Spotted Wintergreen
<i>Chrysopsis mariana*</i>	Maryland Golden Aster
<i>Cichorium intybus</i>	Chicory
<i>Cirsium vulgare</i>	Bull Thistle
<i>Claytonia virginica*</i>	Spring Beauty



<i>Clintonia borealis</i> *	Blue Bead Lily
<i>Coptis trifolia</i> *	Goldthread
<i>Cornus canadensis</i> *	Bunchberry
<i>Cypripedium acaule</i>	Pink Lady's Slipper
<i>Cypripedium reginae</i>	Showy Lady's Slipper
<i>Daucus carota</i>	Queen Anne's Lace (Wild Carrot)
<i>Dicentra cucullaria</i> *	Dutchman's Breeches
<i>Dicentra eximia</i> *	Wild Bleeding Heart
<i>Diphylleia cymosa</i>	American Umbrella Leaf
<i>Dipsacus sylvestris</i>	Teasel
<i>Epigaea repens</i> *	Trailing Arbutus
<i>Erigeron annuus</i>	Daisy Fleabane
<i>Erythronium americanum</i>	Trout Lily
<i>Eupatorium maculatum</i>	Joe-Pye-Weed
<i>Eupatorium perfoliatum</i> *	Boneset
<i>Euphorbia albomarginata</i>	Rattlesnake Weed
<i>Eurybia divaricata</i> *	White Wood Aster
<i>Fallopia japonica</i>	Japanese Knotweed
<i>Galax urceolata</i> *	Galax
<i>Galium spp.</i>	Bedstraw
<i>Gentiana clausa</i> *	Closed Gentian
<i>Geranium maculatum</i>	Wild Geranium
<i>Geranium robertianum</i>	Herb-Robert
<i>Glechoma hederacea</i>	Ground Ivy
<i>Hepatica acutiloba</i> *	Sharp-Lobed Hepatica
<i>Hepatica americana</i> *	Round-Lobed Hepatica
<i>Heuchera villosa</i> *	Hairy Alum Root
<i>Hibiscus moscheutos</i> *	Swamp Rose-Mallow
<i>Houstonia caerulea</i> *	Bluets
<i>Hydrastis canadensis</i> *	Goldenseal
<i>Hypericum virginicum</i> *	Marsh St. Johnswort



<i>Impatiens capensis</i>	Jewelweed
<i>Iris cristata</i> *	Crested Iris
<i>Iris versicolor</i> *	Blue Flag
<i>Jeffersonia diphylla</i> *	Twinleaf
<i>Linnaea borealis</i> *	Twinflower
<i>Lobelia siphilitica</i> *	Blue Lobelia
<i>Lobelia cardinalis</i> *	Cardinal Flower
<i>Lotus corniculatus</i>	Bird's Foot Trefoil
<i>Ludwigia alterniflora</i> *	Seed Box
<i>Lysimachia quadrifolia</i> *	Whorled Loosestrife
<i>Lysimachia terrestris</i> *	Swamp Candles
<i>Maianthemum canadense</i>	Canada Mayflower
<i>Medeola virginiana</i> *	Indian Cucumber-Root
<i>Medicago lupulina</i>	Black Medic
<i>Mertensia virginica</i> *	Virginia Blue Bells
<i>Mimulus ringens</i> *	Monkey Flower
<i>Mitchella repens</i>	Partridgeberry
<i>Mitella caulescens</i> *	Miterwort
<i>Monarda fistulosa</i> *	Wild Bergamot
<i>Mondara didyma</i> *	Bee Balm
<i>Monotropa uniflora</i> *	Indian Pipe
<i>Oxalis acetosella</i>	Wood Sorrel
<i>Pachysandra terminalis</i>	Pachysandra
<i>Panax trifolius</i>	Dwarf Ginseng
<i>Penstemon spp.</i> *	Beardtongue
<i>Phlox stolonifera</i> *	Creeping Phlox
<i>Physostegia virginiana</i> *	False Dragonhead
<i>Plantago lanceolata</i>	English Plantain
<i>Polygala paucifolia</i> *	Fringed Polygala
<i>Polygonatum biflorum</i>	True Solomon's Seal
<i>Polygonum hydropiper</i>	Common Smartweed



<i>Polygonum persicaria</i>	Lady's Thumb Smartweed
<i>Porteranthus trifoliata</i> *	Bowman's Root
<i>Potentilla simplex</i>	Common Cinquefoil
<i>Prunella vulgaris</i>	Heal-All
<i>Ranunculus acris</i>	Tall Buttercup
<i>Ranunculus ficaria</i>	Celandine
<i>Ranunculus septentrionalis</i>	Swamp Buttercup
<i>Rudbeckia hirta</i> *	Black-Eyed Susan
<i>Rumex crispus</i>	Curly Dock
<i>Sagittaria latifolia</i> *	Broadleaf Arrowhead
<i>Sanguinaria canadensis</i> *	Blood Root
<i>Sarracenia purpurea</i> *	Purple Pitcherplant
<i>Saururus cernuus</i> *	Lizards Tail
<i>Saxifraga virginiensis</i> *	Early Saxifrage
<i>Shortia galacifolia</i> *	Oconee Bells
<i>Smilacina racemosa</i>	False Solomon's Seal
<i>Solidago bicolor</i> *	Silverrod
<i>Solidago canadensis</i>	Canada Goldenrod
<i>Solidago spp.</i>	Goldenrod
<i>Sonchus oleraceus</i>	Common Sow Thistle
<i>Symplocarpus foetidus</i>	Skunk Cabbage
<i>Taraxacum officinale</i>	Dandelion
<i>Thalictrum dioicum</i> *	Early Meadow Rue
<i>Thalictrum pubescens</i>	Tall Meadow Rue
<i>Tiarella cordifolia</i> *	Heartleaved Foamflower
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Trillium spp.</i>	Trillium
<i>Trillium cernuum</i> *	Nodding Trillium
<i>Trillium grandiflorum</i> *	Large-Flowered Trillium
<i>Trillium sessile</i> *	Toadshade



**State
Listing Status**

<i>Branta bernicla</i> *	Brant	
<i>Branta canadensis</i>	Canada Goose	
<i>Bubo virginianus</i> *	Great Horned Owl	
<i>Bucephala albeola</i> *	Bufflehead	
<i>Buteo jamaicensis</i>	Red Tailed Hawk	
<i>Buteo lagopus</i> *	Rough-Legged Hawk	
<i>Buteo lineatus</i>	Red-Shouldered Hawk	SC
<i>Buteo platypterus</i> *	Broad-Winged Hawk	
<i>Caprimulgus vociferus</i> *	Whip-Poor-Will	SC
<i>Cardinalis cardinalis</i>	Northern Cardinal	
<i>Carduelis flammea</i> *	Common Redpoll	
<i>Carduelis pinus</i> *	Pine Siskin	
<i>Carduelis tristis</i>	American Goldfinch	
<i>Carpodacus mexicanus</i>	House Finch	
<i>Carpodacus purpureus</i> *	Purple Finch	
<i>Cathartes aura</i>	Turkey Vulture	
<i>Catharus fuscescens</i>	Veery	
<i>Catharus guttatus</i> *	Hermit Thrush	
<i>Catharus minimus</i> *	Gray Cheeked Thrush	
<i>Catharus ustulatus</i> *	Swainson's Thrush	
<i>Certhia americana</i>	Brown Creeper	
<i>Ceryle alcyon</i>	Belted Kingfisher	
<i>Chaetura pelagica</i> *	Chimney Swift	
<i>Charadrius vociferus</i>	Killdeer	
<i>Chen caerulescens</i> *	Snow Goose	
<i>Chordeiles minor</i> *	Common Nighthawk	SC
<i>Circus cyaneus</i> *	Northern Harrier	T
<i>Cistothorus palustris</i> *	Marsh Wren	
<i>Coccythraustes vespertinus</i> *	Evening Grosbeak	
<i>Coccyzus americanus</i> *	Yellow-Billed Cuckoo	



**State
Listing Status**

<i>Coccyzus erythrophthalmus</i> *	Black-Billed Cuckoo
<i>Colaptes auratus</i> *	Northern Flicker
<i>Colinus virginianus</i> *	Northern Bobwhite
<i>Columba livia</i>	Rock Pigeon
<i>Contopus virens</i>	Eastern Wood Pewee
<i>Corvus brachyrhynchos</i>	American Crow
<i>Corvus brachyrhynchos</i> *	Fish Crow
<i>Corvus corax</i>	Common Raven
<i>Cyanocitta cristata</i>	Blue Jay
<i>Cygnus olor</i> *	Mute Swan
<i>Dendroica caerulescens</i> *	Black-Throated Blue Warbler
<i>Dendroica castanea</i> *	Bay-Breasted Warbler
<i>Dendroica coronata</i> *	Yellow-Rumped Warbler
<i>Dendroica discolor</i> *	Prairie Warbler
<i>Dendroica fusca</i> *	Blackburnian Warbler
<i>Dendroica magnolia</i> *	Magnolia Warbler
<i>Dendroica palmarum</i> *	Palm Warbler
<i>Dendroica pensylvanica</i> *	Chestnut-Sided Warbler
<i>Dendroica petechia</i> *	Yellow Warbler
<i>Dendroica pinus</i> *	Pine Warbler
<i>Dendroica striata</i> *	Blackpoll Warbler
<i>Dendroica tigrina</i> *	Cape May Warbler
<i>Dendroica virens</i> *	Black-Throated Green Warbler
<i>Dolichonyx oryzivorus</i> *	Bobolink
<i>Dryocopus pileatus</i>	Pileated Woodpecker
<i>Dumetella carolinensis</i>	Gray Catbird
<i>Empidonax alnorum</i> *	Alder Flycatcher
<i>Empidonax flaviventris</i> *	Yellow-Bellied Flycatcher
<i>Empidonax minimus</i> *	Least Flycatcher
<i>Empidonax traillii</i> *	Willow Flycatcher



		<u>State Listing Status</u>
<i>Empidonax virescens</i> *	Acadian Flycatcher	
<i>Eudocimus albus</i> *	White Ibis	
<i>Euphagus carolinus</i> *	Rusty Blackbird	
<i>Falco columbarius</i> *	Merlin	
<i>Falco peregrinus</i> *	Peregrine Falcon	E
<i>Falco sparverius</i>	American Kestrel	
<i>Fulica americana</i> *	American Coot	
<i>Gavia immer</i>	Common Loon	SC
<i>Geothlypis trichas</i>	Common Yellowthroat	
<i>Haliaeetus leucocephalus</i>	Bald Eagle	T
<i>Helmitheros vermivorus</i> *	Worm-Eating Warbler	
<i>Hirundo pyrrhonota</i> *	Cliff Swallow	
<i>Hirundo rustica</i>	Barn Swallow	
<i>Hyllocichla mustelina</i> *	Wood Thrush	
<i>Icterus galbula</i>	Baltimore Oriole	
<i>Icteria virens</i> *	Yellow-Breasted Chat	SC
<i>Icterus spurius</i> *	Orchard Oriole	
<i>Junco hyemalis</i>	Dark-Eyed Junco	
<i>Larus argentatus</i> *	Herring Gull	
<i>Larus delawarensis</i>	Ring-Billed Gull	
<i>Larus marinus</i>	Great Black-Backed Gull	
<i>Lophodytes cucullatus</i>	Hooded Merganser	
<i>Melanerpes carolinus</i>	Red-Bellied Woodpecker	
<i>Meleagris gallopavo</i>	Wild Turkey	
<i>Melospiza georgiana</i> *	Swamp Sparrow	
<i>Melospiza lincolni</i> *	Lincoln's Sparrow	
<i>Melospiza melodia</i>	Song Sparrow	
<i>Mergus merganser</i>	Common Merganser	
<i>Mimus polyglottos</i> *	Northern Mockingbird	
<i>Mniotilta varia</i>	Black-and-White Warbler	



**State
Listing Status**

<i>Molothrus ater</i>	Brown-Headed Cowbird	
<i>Myiarchus crinitus</i> *	Great Crested Flycatcher	
<i>Nycticorax nycticorax</i> *	Black-Crowned Night-Heron	
<i>Oporornis philadelphia</i> *	Mourning Warbler	
<i>Oporornis formosus</i> *	Kentucky Warbler	
<i>Otus asio</i>	Eastern Screech-Owl	
<i>Oxyura jamaicensis</i> *	Ruddy Duck	
<i>Pandion haliaetus</i> *	Osprey	SC
<i>Parula americana</i> *	Northern Parula	
<i>Parus articapillus</i>	Black-Capped Chickadee	
<i>Parus bicolor</i>	Tufted Titmouse	
<i>Passer domesticus</i>	House Sparrow	
<i>Passerella iliaca</i> *	Fox Sparrow	
<i>Passerina cyanea</i> *	Indigo Bunting	
<i>Phalacrocorax auritus</i>	Double Crested Cormorant	
<i>Phalacrocorax carbo</i> *	Great Cormorant	
<i>Phasianus colchicus</i> *	Ring-Necked Pheasant	
<i>Pheucticus ludovicianus</i> *	Rose-Breasted Grosbeak	
<i>Picoides pubescens</i>	Downy Woodpecker	
<i>Picoides villosus</i>	Hairy Woodpecker	
<i>Pinicola enucleator</i> *	Pine Grosbeak	
<i>Pipilo erythrophthalmus</i>	Eastern Towhee	
<i>Piranga olivacea</i>	Scarlet Tanager	
<i>Podiceps grisegena</i>	Red-Necked Grebe	
<i>Podilymbus podiceps</i> *	Pied-Billed Grebe	T
<i>Polioptila caerulea</i> *	Blue-Gray Gnatcatcher	
<i>Pooecetes gramineus</i> *	Vesper Sparrow	SC
<i>Prothonotaria citrea</i> *	Prothonotary Warbler	
<i>Quiscalus quiscula</i>	Common Grackle	
<i>Regulus calendula</i>	Ruby-Crowned Kinglet	



**State
Listing Status**

<i>Regulus satrapa</i>	Golden-Crowned Kinglet	
<i>Sayornis phoebe</i>	Eastern Phoebe	
<i>Scolopax minor*</i>	American Woodcock	
<i>Seiurus aurocapillus</i>	Ovenbird	
<i>Seiurus motacilla*</i>	Lousiana Waterthrush	
<i>Seiurus noveboracensis*</i>	Northern Waterthrush	
<i>Setophaga ruticilla*</i>	American Redstart	
<i>Sialia sialis*</i>	Eastern Bluebird	
<i>Sitta canadensis*</i>	Red-Breasted Nuthatch	
<i>Sitta carolinensis</i>	White-Breasted Nuthatch	
<i>Sphyrapicus varius*</i>	Yellowed-Bellied Sapsucker	
<i>Spizella arborea*</i>	American Tree Sparrow	
<i>Spizella passerina</i>	Chipping Sparrow	
<i>Spizella pusilla*</i>	Field Sparrow	
<i>Steigidopetrx serripennis*</i>	Northern Rough-Winged Swallow	
<i>Strix varia*</i>	Barred Owl	
<i>Sturnella magna*</i>	Eastern Meadowlark	
<i>Sturnus vulgaris</i>	European Starling	
<i>Tachycineta bicolor*</i>	Tree Swallow	
<i>Thryothorus ludovicianus</i>	Carolina Wren	
<i>Toxostoma rufum*</i>	Brown Thrasher	
<i>Tringa solitaria*</i>	Solitary Sandpiper	
<i>Troglodytes aedon*</i>	House Wren	
<i>Troglodytes troglodytes*</i>	Winter Wren	
<i>Turdus migratorious</i>	American Robin	
<i>Tyrannus tyrannus*</i>	Eastern Kingbird	
<i>Vermivora chrysoptera*</i>	Golden-Winged Warbler	SC
<i>Vermivora peregrina*</i>	Tennessee Warbler	
<i>Vermivora pinus*</i>	Blue-Winged Warbler	
<i>Vermivora ruficapilla*</i>	Nashville Warbler	



**State
Listing Status**

<i>Vireo flavifrons</i> *	Yellow-Throated Vireo
<i>Vireo gilvus</i> *	Warbling Vireo
<i>Vireo olivaceus</i>	Red-Eyed Vireo
<i>Vireo philadelphicus</i> *	Philadelphia Vireo
<i>Vireo solitarius</i> *	Solitary Vireo
<i>Wilsonia canadensis</i> *	Canada Warbler
<i>Wilsonia citrina</i> *	Hooded Warbler
<i>Wilsonia pusilla</i> *	Wilson's Warbler
<i>Zenaida macroura</i>	Mourning Dove
<i>Zonotrichia albicollis</i>	White-Throated Sparrow
<i>Zonotrichia leucophrys</i> *	White-Crowned Sparrow

Mammals

<i>Canis latrans</i>	Coyote
<i>Marmota monax</i>	Woodchuck
<i>Mephitis mephitis</i>	Striped Skunk
<i>Odocoileus virginianus</i>	White-Tailed Deer
<i>Ondatra zibethicus</i>	Muskrat
<i>Peromyscus leucopus</i>	White-Footed Mouse
<i>Peromyscus maniculatus</i>	Deer Mouse
<i>Scalopus aquaticus</i>	Eastern Mole
<i>Sciurus carolinensis</i>	Gray Squirrel
<i>Sylvilagus floridanus</i>	Eastern Cottontail
<i>Tamias striatus</i>	Eastern Chipmunk
<i>Tamiasciurus hudsonicus</i>	Red Squirrel
<i>Vulpes vulpes</i>	Red Fox

Amphibians

<i>Ambystoma laterale</i>	Spotted Salamander
<i>Bufo americanus</i>	American Toad
<i>Eurycea bislineata</i>	Northern Two-Lined Salamander



<i>Tussilago farfara</i>	Coltsfoot
<i>Uvularia perfoliata*</i>	Perfoliate Bellwort
<i>Verbascum thapsus</i>	Giant Mullein
<i>Verbena hastata*</i>	Blue Vervain
<i>Vernonia noveboracensis*</i>	New York Ironweed
<i>Veronicastrum virginicum*</i>	Culver's Root
<i>Viola canadensis*</i>	Canada White Violet
<i>Viola septentrionalis</i>	Northern Blue Violet
<i>Viola blanda*</i>	Sweet White Violet
<i>Viola papilionacea*</i>	Common Blue Violet
<i>Viola pubescens*</i>	Downy Yellow Violet

Vines

<i>Campsis radicans</i>	Trumpet Creeper
<i>Celastrus orbiculatus</i>	Asiatic Bittersweet
<i>Lonicera japonica</i>	Japanese Honeysuckle
<i>Parthenocissus quinquefolia</i>	Virginia Creeper
<i>Polygonum arifolium</i>	Halberleaf Tearthumb
<i>Toxicodendron radicans</i>	Poison Ivy
<i>Vitis spp.</i>	Grape

Lichens and Fungi

<i>Cladonia cristatella</i>	British Soldier Lichen
<i>Trametes versicolor</i>	Turkey Tail Fungus

Shrubs

<i>Amelanchier arborea</i>	Common Serviceberry
<i>Andromeda polifolia var. glaucophylla</i>	Bog Rosemary
<i>Azalea spp.</i>	Rhododendron
<i>Berberis thunbergii</i>	Japanese Barberry
<i>Buddleia davidii</i>	Butterfly Bush
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Cercis canadensis</i>	Eastern Redbud



<i>Clethra alnifolia</i>	Sweet Pepper Bush
<i>Cornus amomum</i>	Silky Dogwood
<i>Cornus rugosa</i>	Roundleaf Dogwood
<i>Cornus sericea</i>	Red-Osier Dogwood
<i>Elaeagnus umbellata</i>	Autumn Olive
<i>Euonymus alatus*</i>	Burningbush
<i>Forsythia spp.</i>	Forsythia
<i>Ilex verticillata</i>	Common Winterberry
<i>Juniperus spp.</i>	Juniper
<i>Kalmia latifolia</i>	Mountain Laurel
<i>Ligustrum vulgare</i>	European Privet
<i>Lindera benzoin</i>	Northern Spicebush
<i>Lonicera tatarica</i>	Tartarian Honeysuckle
<i>Morus alba</i>	White Mulberry
<i>Rhamnus cathartica</i>	Common Buckthorn
<i>Rhododendron spp.</i>	Rhododendron
<i>Rhus typhina</i>	Staghorn Sumac
<i>Rosa multiflora</i>	Multiflora Rose
<i>Rubus allegheniensis</i>	Allegheny Blackberry
<i>Rubus occidentalis</i>	Black Raspberry
<i>Rubus spp.</i>	Bramble
<i>Sambucus spp.</i>	Elderberry
<i>Smilax rotundifolia</i>	Roundleaf Greenbriar
<i>Spiraea latifolia</i>	White Meadowsweet
<i>Spiraea tomentosa</i>	Steeplebush
<i>Syringa vulgaris</i>	Lilac
<i>Taxus canadensis</i>	Canada Yew
<i>Vaccinium angustifolium</i>	Lowbush Blueberry
<i>Vaccinium corymbosum</i>	Highbush Blueberry
<i>Viburnum acerifolium</i>	Maple Leaf Viburnum
<i>Viburnum trilobum</i>	Highbush Cranberry



Trees

<i>Acer negundo</i>	Box Elder
<i>Acer platanoides</i>	Norway Maple
<i>Acer rubrum</i>	Red Maple
<i>Acer saccharinum</i>	Silver Maple
<i>Acer saccharum</i>	Sugar Maple
<i>Ailanthus altissima</i>	Tree-of-Heaven
<i>Alnus rugosa</i>	Speckled Alder
<i>Alnus rubra</i>	Red Alder
<i>Betula lenta</i>	Black Birch
<i>Betula nigra</i>	River Birch
<i>Betula pendula</i>	European Birch
<i>Betula populifolia</i>	Gray Birch
<i>Carpinus caroliniana</i>	Musclewood
<i>Carya ovata</i>	Shagbark Hickory
<i>Carya tomentosa</i>	Mockernut Hickory
<i>Catalpa speciosa</i>	Northern Catalpa
<i>Cornus florida</i>	Flowering Dogwood
<i>Fagus grandifolia</i>	American Beech
<i>Fraxinus americana</i>	White Ash
<i>Fraxinus excelsior</i>	European White Ash
<i>Fraxinus pennsylvanica</i>	Green Ash
<i>Gleditsia triacanthos</i>	Honey Locust
<i>Hamamelis virginiana</i>	Witch-Hazel
<i>Juglans nigra</i>	Black Walnut
<i>Juniperus virginiana</i>	Eastern Red Cedar
<i>Liriodendron tulipifera</i>	Tuliptree
<i>Malus domestica</i>	Apple
<i>Ostrya virginiana</i>	Hop hornbeam
<i>Picea abies</i>	Norway Spruce
<i>Picea pungens</i>	Blue Spruce



<i>Pinus strobus</i>	Eastern White Pine
<i>Pinus sylvestris</i>	Scotch Pine
<i>Platanus occidentalis</i>	Eastern Sycamore
<i>Platanus acerifolia</i>	London Plane Tree
<i>Populus tremuloides</i>	Quaking Aspen
<i>Prunus avium</i>	Sweet Cherry
<i>Prunus serotina</i>	Black Cherry
<i>Quercus alba</i>	White Oak
<i>Quercus bicolor</i>	Swamp White Oak
<i>Quercus coccinea</i>	Scarlet Oak
<i>Quercus ilicifolia</i>	Scrub Oak
<i>Quercus lyrata*</i>	Overcup Oak
<i>Quercus palustris</i>	Pin Oak
<i>Quercus montana</i>	Chestnut Oak
<i>Quercus rubra</i>	Red Oak
<i>Robinia pseudoacacia</i>	Black Locust
<i>Salix discolor</i>	Pussy Willow
<i>Salix nigra</i>	Black Willow
<i>Sassafras albidum</i>	Sassafras
<i>Thuja occidentalis</i>	Northern White Cedar
<i>Tilia cordata</i>	Little Leaf Linden
<i>Tsuga canadensis</i>	Eastern Hemlock
<i>Ulmus americana</i>	American Elm

A. **Riparian Buffers.** Improving and maintaining good water quality helps to support a healthy biodiversity. The recent successes in improving water quality in Hallocks Mill Brook play an important role in conserving unique wildlife habitat. By protecting and enhancing local water quality, the Town can improve overall biodiversity. Riparian buffers, vegetated areas along watercourses, are critical to renovating stormwater runoff quantity and quality within the Town. Specifically, riparian zones have the following functions:

1. Remove particle pollutants and sediment from runoff.
2. Provide flood storage.
3. Provide wildlife habitat and corridors.
4. Provide bank stabilization which protects downstream water quality.
5. Reduce water temperature, protecting aquatic habitat.
6. Recreational and educational opportunities.

By asserting jurisdiction on riparian buffers, the Town can maximize conservation and biodiversity because of the many functions performed within the riparian zone. Reference is made to the attached model ordinances for riparian buffer (Appendix F) prepared by Westchester County and the Association of State Wetland Managers.

B. **Vernal and Woodland Pools.** Vernal pools are bodies of standing water that may dry up during the year, but remain flooded long enough to provide breeding habitat for a variety of amphibians (frogs and salamanders) and invertebrates, including some rare, declining, or listed (as special concern, threatened, or endangered) species. The key features of vernal pools are that they lack defined inlets and outlets, filling from overland runoff or groundwater; and that they do not support fish, which are often predators on amphibians and invertebrates. Thus, vernal pools provide amphibians and invertebrates with protected breeding areas. Yorktown should recognize vernal pools as an important and unique natural resource. Unfortunately, the isolated or ephemeral nature of vernal and woodland pools often leaves them unprotected under local, state, and federal wetland regulations.

Yorktown could amend Chapter 178 of the Town Code to add vernal and woodland pool definitions, and could add land use requirements to maintain their integrity. Calhoun and Klemens' (2002) "*Best Management Practices for Vernal Pools*" provides useful guidance on how vernal pools should be managed to maintain their viability as amphibian breeding and dispersal habitat. Some of their recommendations include maintaining an undisturbed vernal pool

envelope, the area within 100 feet of the pool, and limiting disturbance of natural cover within 750 feet of a vernal pool to 75 percent. These recommendations are not hard and fast rules, but rather ideal guidelines to aspire to.

C. Conservation Subdivisions. Conservation subdivisions are a low-impact development strategy that can help communities preserve open space and natural areas as part of residential housing developments. Essentially, a conservation subdivision is development with the maximum permitted number of dwellings on smaller sized, clustered lots that allow for protection and conservation of open space and resources. The benefits of planning conservation subdivisions include the preservation of open space, wildlife habitat, preservation of corridors and trail networks, improvement of infrastructure, and resource protection.

For Yorktown to authorize conservation subdivisions, the existing cluster development provisions in Chapter 300 and applicable portions of Chapter 195 of the Town Code would need to be modified. Model language relative to the establishment of a new conservation subdivision and/or open space ordinance is contained in Appendix F.

went undetected, and the size of the subject site (more than 50 square miles) and property access restrictions were limiting factors in sampling. Therefore, these numbers are more of a representative index of diversity, indicating that the Town of Yorktown has a healthy diversity of species.

An estimate of biodiversity in Yorktown was prepared based on the habitat types identified throughout the Town. Habitat types are one predictor of wildlife species, but all available habitats are not universally occupied, so it is important to note that not all possible species in a habitat are necessarily present. Appendix C contains a matrix of wildlife species that may possibly be found on the site, based on the available habitats (DeGraaf and Yamasaki, 2001). The matrix also indicates how each habitat may be used by each species. This matrix is a valuable predictive tool to use when determining what species may possibly occupy a site proposed for development or other land use change. It provides the first indication of potential environmental impact to a site.

3.3 SPECIAL CONCERN, THREATENED, AND ENDANGERED SPECIES

The federal Endangered Species Act (ESA) requires the USFWS to maintain a list of organisms that are threatened (imminently in danger of becoming endangered) and endangered (imminently in danger of becoming extinct) either throughout the U.S. or in particular regions of the U.S. The New York State ESA requires the NYSDEC to maintain a list of threatened and endangered species within the state, and in addition, requires listing of species of special concern, which are species whose populations are in decline and in danger of becoming threatened. All of these groups are collectively and individually referred to as *listed species*.

The New York Office of the USFWS provides information on federally listed species to the public via their website, which lists endangered and threatened species found in each county of the state (they no longer provide site-specific lists in response to written or verbal requests). The list for Westchester County is provided in Appendix B. Of the species listed, Stearns & Wheler confirmed the presence of Bald Eagle in Yorktown, wintering over Croton Reservoir. It has the potential to use any of the larger water bodies in the Town for foraging at any time of year, though it may not currently nest in the Town. The Bald Eagle has been delisted at the federal level (it is no longer considered threatened or endangered), but remains on the USFWS lists because it is protected under the federal Bald and Golden Eagle Protection Act. It is also still considered a threatened species by the NYSDEC.

The Town of Yorktown falls within the range of the Indiana bat (*Myotis sodalis*), New England Cottontail (*Sylvilagus transitionalis*), and the bog turtle (*Glyptemys muhlenbergii*), and appropriate habitat for each exists within the Town. However, detection of these species requires live trapping or specialized surveys for individual species, which was beyond the scope of this study. Surveys for these species should be conducted as part of the environmental impact assessment for sites that contain appropriate habitat and are proposed for development. Atlantic and shortnosed sturgeon, also identified on the USFWS list for Westchester County, are confined to the Hudson River and lower reaches of tributaries to the Hudson River, so they do not occur in Yorktown.

The NYSDEC and New York Natural Heritage Program (NYNHP) maintain records of confirmed locations of state-listed species and provide that information on a site-specific basis in response to written requests. Stearns & Wheler did request information on state-listed species for the entire Town of Yorktown, but the NYNHP would only provide records of listed species for specific sites, not entire towns. Limited information is available on state-listed species online at the NYSDEC's website via their interactive Environmental Resource Mapper (<http://www.dec.ny.gov/ismmaps/erm/viewer>). This site is a good resource for checking for existing records of listed species at specific sites, but it still cannot provide information for the entire Town at once. Stearns & Wheler conducted an online search for listed species information for the Hilltop Hanover Farm sampling site to provide an illustration of the information provided by the NYSDEC interactive Environmental Resource Mapper. The results of this search are provided in Appendix B. All environmental impact analyses conducted for sites proposed for development should begin with such an online search, and should be followed up with written inquiries to NYNHP and field surveys to confirm findings.

In addition to the online resources, Stearns & Wheler's review of published species lists from local experts and our own field surveys identified a number of state- and federal-listed species. These included the following:

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS
American bittern	<i>Botaurus lentiginosus</i>	State-special concern
Bald eagle	<i>Haliaeetus leucocephalus</i>	State-threatened
Common loon	<i>Gavia immer</i>	State-special concern
Common nighthawk	<i>Chordeiles minor</i>	State-special concern
Cooper's hawk	<i>Accipiter cooperi</i>	State-special concern

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS
Golden-winged warbler	<i>Vermivora chrysoptera</i>	State-special concern
Grasshopper sparrow	<i>Ammodramus savannarum</i>	State-special concern
Northern goshawk	<i>Accipiter gentilis</i>	State-special concern
Northern harrier	<i>Circus cyaneus</i>	State-threatened
Osprey	<i>Pandion haliaetus</i>	State-special concern
Peregrine falcon	<i>Falco peregrinus</i>	State-endangered
Pied-billed grebe	<i>Podilymbus podiceps</i>	State-threatened
Red-shouldered hawk	<i>Buteo lineatus</i>	State-special concern
Sharp-shinned hawk	<i>Accipiter striatus</i>	State-special concern
Vesper sparrow	<i>Pooecetes gramineus</i>	State-special concern
Whip-poor will	<i>Caprimulgus vociferous</i>	State-special concern
Yellow-breasted Chat	<i>Icteria virens</i>	State-special concern

All of these species are protected under state endangered species law, and the bald eagle is also protected under the Bald and Golden Eagle Protection Act. Any proposed land use change that may adversely impact any of these species should include consultation with the NYSDEC, and may require application for a listed species license for incidental take. This list should be checked against NYSDEC's list of special concern, threatened, and endangered species annually for updates, since species are periodically added to the list as their numbers decline, or they are imperiled, and species may be removed from the list if their populations recover.

3.4 ENVIRONMENTALLY SENSITIVE RESOURCES

Stearns & Wheler has identified the following list of environmentally sensitive resources in the Town of Yorktown based on our field investigations, literature review, and GIS mapping.

A. **Wetlands, Water Bodies and Vernal Pools.** Wildlife habitat consists of four major components: food, water, protective shelter, and space for populations to disperse and mix. While many cover types provide food, shelter, and space, only water bodies, watercourses, and wetlands provide water. They are vital habitat resources for all wildlife species, as well as for humans. Wetlands provide a wide variety of functions and benefits to humans, including groundwater recharge and discharge, filtration of excess nutrients, capture of eroded sediments, export of nutrients to other ecosystems, fish and shellfish habitat, wildlife habitat, flood flow attenuation, shoreline stabilization, sources of recreation, education and research subjects, visual aesthetics, natural heritage value as unique habitats, and potential habitat for threatened and

endangered species (New England District U.S. Army Corps of Engineers, 1999) and should be protected. Aquatic resources, including wetlands, watercourses, and vernal pools are shown on Figure 2.

B. Critical Environmental Areas (CEAs). In New York State, certain areas are defined as CEAs. To be designated as a CEA, an area must have an exceptional or unique character as it relates to:

- ▶ a benefit or threat to human health;
- ▶ natural setting;
- ▶ agricultural, social, cultural, historic, archaeological, recreational, or educational values; or
- ▶ an inherent ecological, geological or hydrological sensitivity to change that may be adversely affected by any change.

There are three CEAs in the Town of Yorktown: (1) FDR State Park; (2) Mohansic County Park; and (3) Kitchawan Preserve (see Figure 3). These areas are all unique sites that have been recognized at the state level for their ecological attributes and value. Consideration should be given to these sites when making land use decisions in surrounding areas to avoid adversely impacting them.

C. Riparian Areas and Floodplains. Riparian areas are vegetated buffers along watercourses that provide bank stabilization, wildlife habitat, and water quality benefits via sediment and pollutant trapping. Often the riparian zone includes a floodplain which may be mapped according to the FEMA Flood Insurance Rate Map or the Town Code of Yorktown. The floodplain provides storage for runoff in high flow or storm events. Watercourses that have a well defined riparian buffer and floodplain free of obstructions are well suited for enhanced water quality. These resources should be conserved and protected for water quality benefits as well as to protect or limit damages to property.

D. Hydric Soils. Hydric (poorly and very poorly drained) soils are soils which are sufficiently saturated or inundated during the growing season to develop anaerobic conditions in their upper horizons that favor the growth and regeneration of hydrophytic vegetation ((USDA Soil Conservation Service 1985, as amended by the NOTCHES in December 1986). Hydric soils are not well-suited for land-uses requiring percolation (septic systems) or infiltration (stormwater

management strategies to increase overall biodiversity and protect surface water quality. The open space resources are shown on Figure 7 in Appendix I.

3.5 SENSITIVE HABITATS

Sensitive habitats are habitats that may or may not support rare species, but are particularly valuable because they provide important functions to both wildlife and human populations, including vernal pools and wildlife corridors.

A. **Vernal Pools.** Vernal pools are considered sensitive habitats because they provide breeding sites for amphibian species that are protected from predatory fish. Vernal pools also provide important travel corridors and the ability for amphibian populations to disperse and mix, so that those populations can remain healthy, diverse, and viable. Stearns & Wheler identified 10 vernal pools in several locations in Yorktown, based on field searches and reports from others, but there are undoubtedly more. Environmental impact assessments of all currently undeveloped lands should include surveys for vernal pools, and land use planning should aim to avoid impacts to

these features. Potential vernal pool locations identified during this study are illustrated in Figure 5 in Appendix I.

B. Wildlife Corridors. Wildlife corridors are routes regularly used by any wildlife species to travel from one area to another. Corridors can be defined on a macro scale (e.g., a forested area or hedgerow through which large mammals may travel), or on a micro scale (e.g., a fallen log along which a mouse or salamander may travel). Corridors are not evenly distributed in the landscape, are created by many different species at multiple scales, and therefore are not easy to define or plot on a map. For example, salamanders or birds may regularly use a particular woodlot or hedgerow to travel from one place to another, but each individual may use a different specific pathway for each trip. Conversely, deer are known to use one trail time after time, leaving easily identified concentrated trails of tracks through the woods, but they may only use such trails at certain times of year, or even at particular times of day. The one important factor that all corridors have in common is that they provide some measure of protective cover in which wildlife can safely travel. Wildlife corridors are important wildlife habitat elements because they provide the ability for wildlife species to travel across the landscape, enabling them to maintain mixed, diverse, and therefore healthy populations. Figure 6 in Appendix I illustrates potential and general landscape-scale wildlife corridors throughout Yorktown. While wildlife species are not limited to moving only within these corridors, it is important to maintain such corridors to facilitate wildlife movement throughout the Town.