PROPERTY Z169
MOUNT PLEASANT, NEW YORK

ECOLOGICAL ASSESSMENT REPORT

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May 25, 2018

Ref. No. 3836

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EXECUTIVE SUMMARY

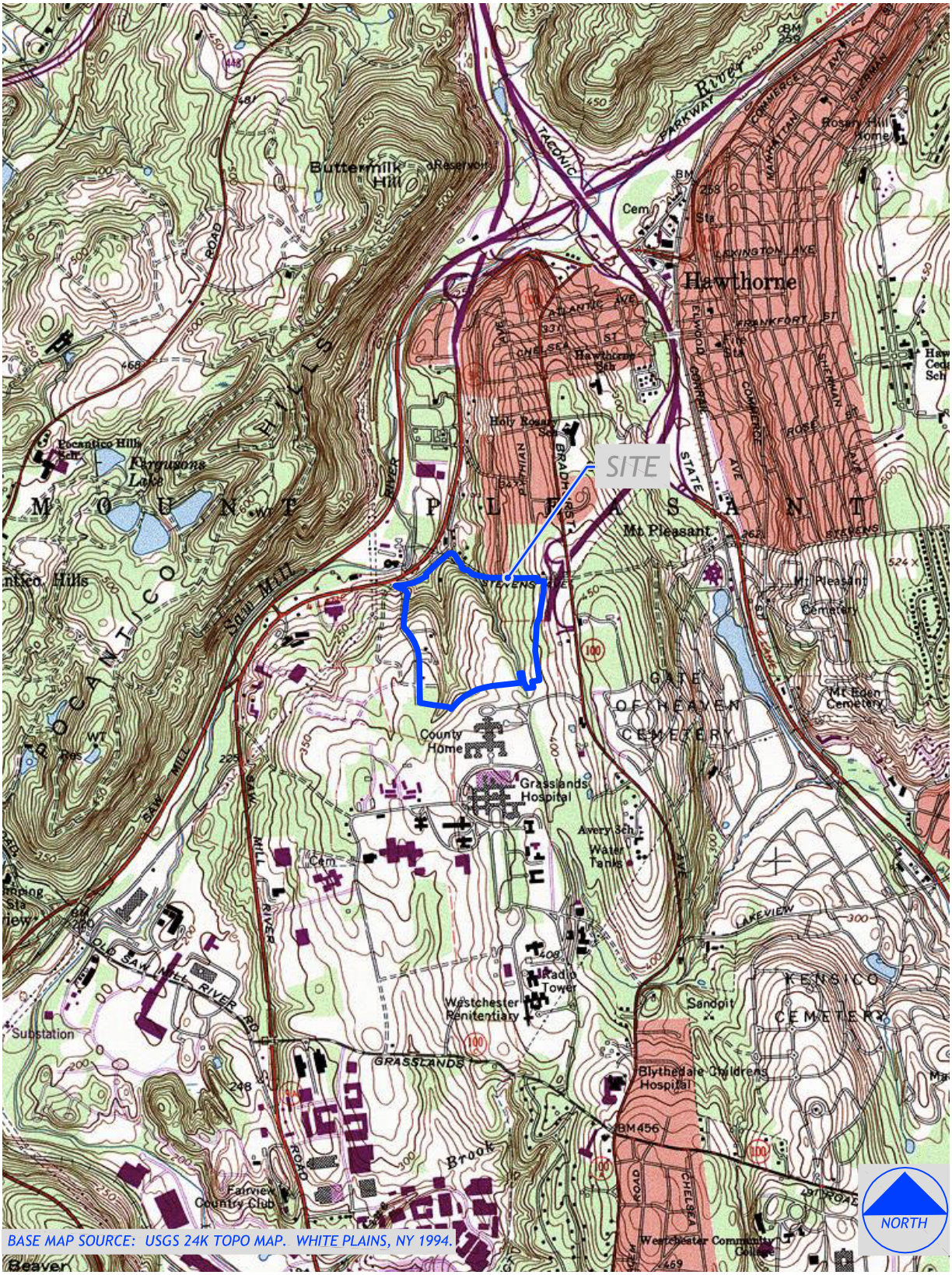
On behalf of Gateway Development, William Kenny Associates LLC (WKA) completed an ecological assessment and wetland and watercourse delineation of existing conditions for an approximately 79.0-acre property in central Westchester County in February, March and April of 2018. The purpose of this assessment was to identify and delineate all of the regulated wetland and watercourse systems within the study area and characterize and assess these systems as well as non-wetland areas. The following report provides information as to the ecological communities on the study area and the regulatory implications of the onsite wetlands and watercourses.

The subject property is located in the central portion of Westchester County in the Town of Mount Pleasant, New York (Figure 1). The property is bordered on the north by West Stevens Avenue, on the northwest by Old Saw Mill Road South, on the west by Nilsson Drive, on the south by Hospital Service Road and on the east by Sprain Brook Parkway. Existing improvements at the property are concentrated in the north, along the western property boundary and to the south and consist of several single-family residences, a small nursery, storage sheds, an in-ground pool, asphalt drives and parking areas and related improvements.

The site lies within the watershed of Saw Mill River, which drains to the Hudson River approximately 11 miles southwest of the site. Saw Mill River extends and flows northwest of the site, approximately 200 feet from the northern property boundary. Both wetland and watercourse systems exit the site to the north, draining directly into Saw Mill River.

The subject property is comprised primarily of undeveloped vegetated upland and wetland areas. Two types of wetland and watercourse systems were observed (predominantly rocky headwater streams), and eight types of upland communities were identified (beech-maple mesic forest, successional hardwood forest, successional old field, successional shrubland, disturbed beech-maple mesic forest, construction/maintenance spoils, paved road/parking lot and mowed lawn with trees). Wetland and watercourse areas were field marked and their approximate boundaries and are depicted on Figure 2. All ecological communities are depicted in Figure 3.

FIGURE 1: STUDY AREA LOCATION MAP



BASE MAP SOURCE: USGS 24K TOPO MAP. WHITE PLAINS, NY 1994.

The presence of wetlands and watercourses on the subject property triggers the potential for jurisdiction from a federal (Army Corps of Engineers (Corps)), state (New York State Department of Environmental Conservation (DEC)), and local (Town of Mount Pleasant) level. No wetlands at the site are classified as DEC regulated wetlands. However, the two-onsite watercourses are state regulated streams. Thus, the two entities that regulate the onsite wetlands are the Corps and the Town of Mount Pleasant. All but two of the delineated wetlands at the property are federally regulated wetlands. There are no mapped state wetlands in the study area. None of the wetlands exceed the size threshold of 12.4-acres or present a unique wetland ecosystem. Information regarding the regulated wetlands and watercourses on the subject property is provided in the following table (Table 1).

***Table 1**: Wetland and Watercourse Regulatory Jurisdiction*

ID NO.	Site Location	Watershed	Jurisdiction		
			ACOE	NYSDEC	TOWN
1	E	Saw Mill River	Yes	No	Yes
2	W	Saw Mill River	Yes	No[1]	Yes
3	E	Saw Mill River	No	No	Yes
4	W	Saw Mill River	No	No	Yes

[1]*The wetland watercourse system is not NYSDEC regulated but a Protection of Waters Permit is needed due to disturbance.*

WKA also performed an investigation to determine the presence or absence of state or federal plant and animal species listed as endangered, threatened or of special concern. No such species were observed or detected to be present. Moreover, a review of the New York State Department of Conservation Environmental Resource Mapper confirmed that neither rare plants or animals nor significant natural communities, including vernal pools, have been identified at or within approximately one mile of the property.

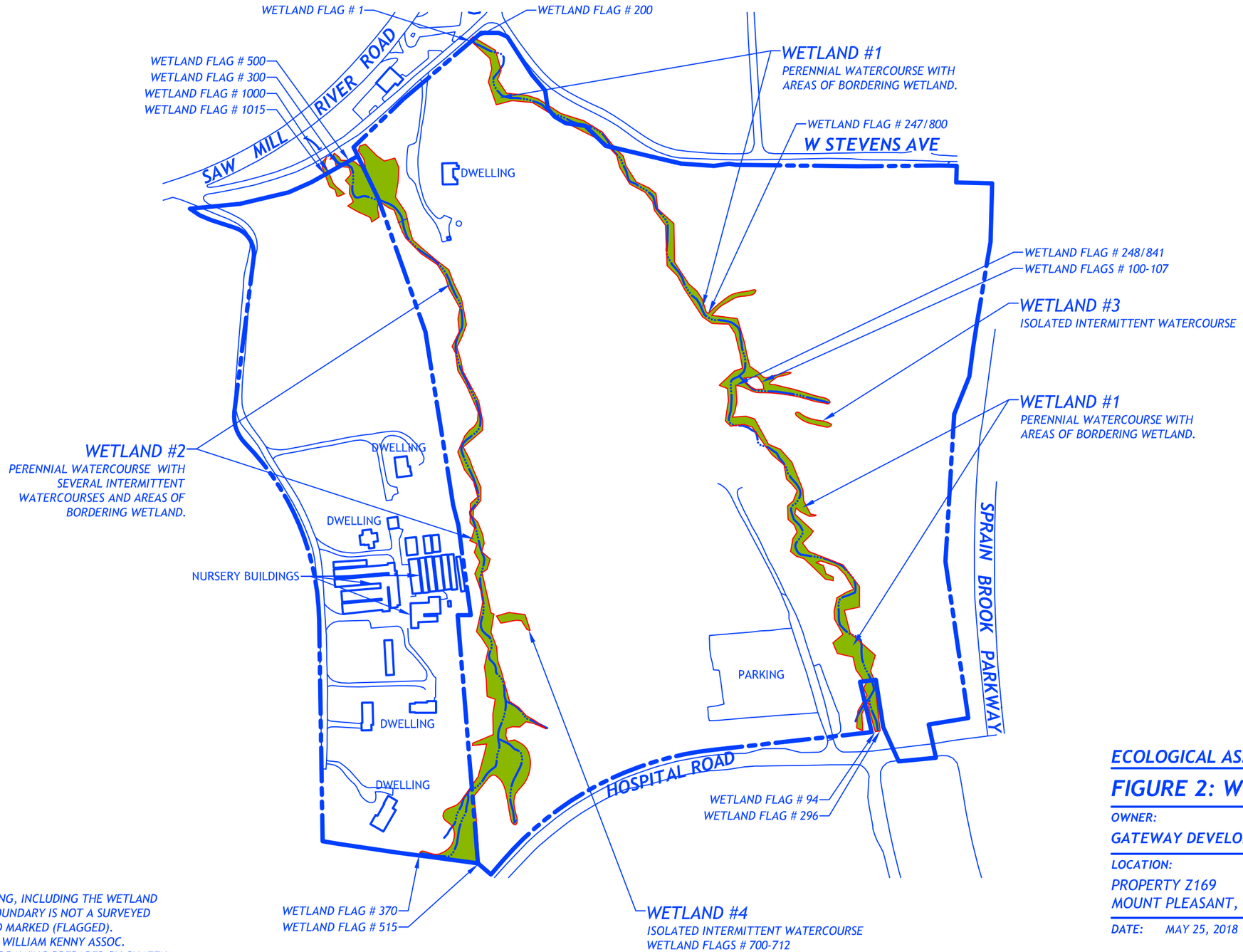
1.0 INTRODUCTION

On behalf of Gateway Development, William Kenny Associates LLC (WKA) completed a wetland and watercourse delineation and an assessment of existing ecological conditions of an approximately 79.0-acre property located in Mount Pleasant, New York. The wetland and watercourse delineations were conducted in accordance with the laws and regulations of the U.S. Army Corps of Engineers (Corps), the New York State Department of Environmental Conservation (DEC) and the Town of Mount Pleasant, New York.

The ecological assessment was conducted to inventory and evaluate onsite natural resources including wetlands, watercourses, wildlife and their habitat, soils, and geologic and hydrologic conditions. The work was completed through the review of readily available publications and public agency databases as well as several onsite investigations. Field investigations were completed in February, March and April 2018. The weather conditions at the time of the site investigations varied from clear to overcast while air temperatures ranged from the 40s to 50s Fahrenheit. Investigations were conducted on foot and observations were made while walking systematically through the property and along and within critical habitats (i.e. wetlands, watercourses and significant topographic features). William L. Kenny and Timothy F. Veit completed the assessment, delineation work and the preparation of this report. Resumes for these individuals are provided in Appendix A.

2.0 WETLAND & WATERCOURSE REGULATORY REQUIREMENTS

The study area was investigated to determine the presence and extent of jurisdictional wetlands and waterbodies in accordance with the requirements of applicable regulatory agencies. According to the completed investigation, the study area includes Corps and Town regulated wetlands and Corps, DEC and Town regulated watercourses. The identified upland, wetland and watercourse areas are shown on Figure 2 (*Wetland Map*).



NOTES:

- *INFORMATION SHOWN ON THIS DRAWING, INCLUDING THE WETLAND BOUNDARY, IS APPROXIMATE. THE BOUNDARY IS NOT A SURVEYED REPRESENTATION OF WHAT WAS FIELD MARKED (FLAGGED).*
- *WETLAND INFORMATION PROVIDED BY WILLIAM KENNY ASSOC. OTHER INFORMATION TAKEN FROM A DRAWING PREPARED BY CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTURE CO., D.P.C.*

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ECOLOGICAL ASSESSMENT REPORT

FIGURE 2: WETLAND MAP

OWNER:
GATEWAY DEVELOPMENT

LOCATION:
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DATE: MAY 25, 2018

NORTH

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Wetland and watercourse boundaries were demarcated (flagged) at the property with strips of pink surveying tape hung from vegetation or with small flags on wire stakes that are generally spaced a maximum of every 50 feet. The flags are sequentially numbered. Wetland and watercourse boundaries are located along the lines that connect these flags. The boundary locations are subject to change until adopted by the regulatory agencies. The adoption process includes the accurate mapping of the delineated boundaries by a licensed surveyor and, generally, a field review of the surveyed boundaries by representatives of each agency. The surveyed locations of the delineated boundaries are shown on Figure 2. The following is a summary of the applicable regulatory definitions and requirements, which were the basis for the completed wetlands and watercourse delineations.

2.1 Federal Requirements

Section 404 of the Clean Water Act (CWA) authorizes the Corps to regulate certain activities within the Waters of the United States (WUS). Waters of the United States include wetlands, streams, ponds and other surface waterbodies. The Corps defines wetlands based on a three-parameter approach; wetland (hydric) soils, wetland (hydrophytic) vegetation, and wetland hydrology as presented in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1987 Manual). In order for an area to be identified as a wetland under the Corps approach, all three criteria must be met. The Corps regulates any wetland that meets the three criteria, regardless of size. However, the Corps does not regulate isolated wetlands or wetlands created for stormwater management purposes in formerly nonwetland areas. Isolated wetlands are wetlands separated from WUS by natural upland features other than river berms and beach dunes or wetlands with no significant nexus (e.g. surface water outlet).

The Corps uses the presence or absence of an ordinary high water mark or bed and bank to determine surface waters (e.g. ponds and streams), including intermittent watercourses. Wetland vegetation need not be present to complete a waterbody determination. The Corps' jurisdiction ends at the boundaries of Waters of the United States. It does not extend to upland areas regardless of the juxtaposition to other wetlands or watercourses. Federally regulated wetland/watercourse areas were identified on the subject property in accordance with the United States Army Corps of Engineers 1987 Manual and the 2012 Regional Supplement to the Corps

of Engineers Wetland Delineation Manual: Northcentral and Northeast Region. Delineation data sheets, photos and map are provided in Appendix B.

Section 404 of the CWA authorizes the Corps to regulate the discharge of dredged or fill material into WUS. The Corps uses three types of permits: nationwide permits and individual permits. Nationwide permits are granted based upon specifically prescribed wetland and watercourse disturbances for 54 types of projects. The thresholds for the established types of projects have been deemed by the Corps to present little to no environmental impact. Should a project exceed these thresholds, a permit is still possible under an individual permit. The individual permitting process is more involved and includes a public notice and comment period.

2.2 State Requirements

The DEC protects freshwater wetlands in the State of New York under Article 24 of the Environmental Conservation Law. The Act defines wetlands "as lands and submerged lands commonly known as swamps, sloughs, bogs and flats which support wetland vegetation." Based on the New York State Wetlands Delineation manual, the primary criterion for wetland delineation is determined by the presence of hydrophytic vegetation. However, field verification of wetlands may be supported by the presence of hydric soils and wetland hydrology, as per the Corps 1987 manual. Under Title 3 of the Act, freshwater wetlands with an area of 12.4 acres or more are regulated by the DEC. Wetlands less than 12.4 acres may also be regulated, if they are determined to be of unusual importance. No state wetlands are located on the subject property but the western rocky headwater stream is protected by the DEC. Under the Protection of Waters Program, waters of the state with a quality classification of AA, A, B or a classification of C with a standard of (T) or (TS) are protected. However, waters that are a C without the (T) and (TS) standard and lower are protected if they drain into a downstream protected aquatic system.

2.3 Local Requirements

The Town of Mount Pleasant protects wetlands and watercourses under §111-2 of the *Code of the Town of Mount Pleasant*. The *Code* defines wetlands as "all lands and submerged lands known as bogs, marshes, swamps, fresh meadows and estuarine areas having types of soils such as alluvial land, Carlisle muck, Limerick and Sloan, including adjacent and peripheral land

with vegetation evidencing the same habitat, whether inundated at any given time or not…" Watercourses are defined as "any waterbody, natural or artificial, such as but not limited to a pond, reservoir, lake, stream or brook."

3.0 SITE LOCATION, SURROUNDINGS & LAND USE

The subject property is located in the central portion of Westchester County in Mount Pleasant, New York. The property is bordered on the north by West Steven Avenue, on the northwest by Old Saw Mill Road South, on the west by Nilsson Drive, on the south by Hospital Service Road and on the east by Sprain Brook Parkway. Access to the property is gained to the south from Hospital Service Road, from the west via Nilsson Drive and from the north via Old Saw Mill River Road South. Improvements, including several dwellings, a small nursery and asphalt drives and parking areas, are concentrated in the western portion of the property. An asphalt parking lot is also present in the southern portion of the property adjacent to Hospital Road while a single-family dwelling and asphalt drive is present in the northern portion of the property. This remainder of the property consists of old field areas, shrubland areas, woodland areas, forested areas and wetlands and watercourses.

Land use in the area is mixed. Residential communities are located north of the property while relatively large commercial enterprises are located to the west. To the south is the Valhalla campus of Westchester Medical Center and New York Medical College. Sprain Brook Parkway runs along the eastern border of the property.

4.0 HYDROGEOMORPHIC CONDITIONS

4.1 Landform and Drainage

The site lies within the watershed of the Saw Mill River watershed, which drains to the Hudson River approximately 11 miles southwest of the site. The site does not drain to a drinking water supply of New York City, thus the property is not subject to New York City Department of Environmental Protection (DEP) regulations. The Saw Mill River extends and flows northwest of the site, approximately 200 feet from the northern property boundary. Both wetland and watercourse systems exit the site to the north, flowing beneath Old Saw Mill River Road and Saw Mill River Road via stormwater culverts before draining into Saw Mill River.

The study area is located in the northern portion of the Manhattan Hills ecozone of New York State, close to the transition to the Hudson Highlands ecozone (Dickson 1979, Will et al. 1979). Ecozones are specific regions that differ primarily based on location, climate and geomorphic conditions. There are thirty to forty ecozones in New York. The Manhattan Hills ecozone is located in Westchester County, while the Hudson Highlands ecozone is located generally in Putnam and portions of Orange and Rockland Counties. This ecozone is characterized by its relatively mild climate (because of its southern location in the state and its relatively close proximity to the Atlantic Ocean) and its north-to-south aligned ridge and valley topography.

In general, the site drains to the north toward Old Saw Mill River Road. The south-central portion of the property is relatively level and the grade is moderate to severe to the north. Two small streams that extend and flow south to north in the western and eastern portions of the property have over thousands of years eroded deep ravines. The majority of surface and subsurface water at the site drains into these two watercourses; water in the eastern and east-central portion of the property flows into the eastern system and water in the western and west-central portion of the property flows into the western system. Both systems drain into Old Saw Mill River offsite to the north, which is a class C(T) stream per the DEC.

4.2 Geology

The study area is located in the New England Uplands physiographic province. The site is underlain by bedrock that is primarily shists of the Manhattan Formation. The study area is not bedrock controlled as a relatively deep layer of glacial till overlays the bedrock.

Surficial materials at the site consist of dense glacial till over much of the vegetated areas. Artificial fill, including construction debris, over glacial till is present is the central, south-central and western portions of the property. Glacial till is unsorted material of various sizes (clay particles to boulders) and shapes that was transported and deposited by glacial ice. Two major types of till are possible: lodgement and ablation. Lodgement includes compacted layers that usually begin 20 to 30 inches below the surface and continue with depth. Because of the compacted layers, groundwater may intermittently perch directly above the layers. Ablation till is deposited by melting ice at the margins of the glacier and does not include compacted

layers. The site contains primarily lodgement till that is deposited by the movement of the overriding ice sheet, which sculpted the drumlin landform from the preexisting landscape and the sediment the ice sheet carried.

4.3 Soils

A variety of soil types are found at the study area. The soils differ primarily based on their slope (nearly level to exceeding 40 percent), drainage class (well drained to very poorly drained), and parent material (glacial till and artificial fill). These conditions are common in the area and do not represent any unusual condition. The location and scope of these types were mapped (Figure 3) and reveal a general agreement with the survey published by US Natural Resource Conservation Service. Soil types found at the study area and their primary characteristics are noted in Table 2.

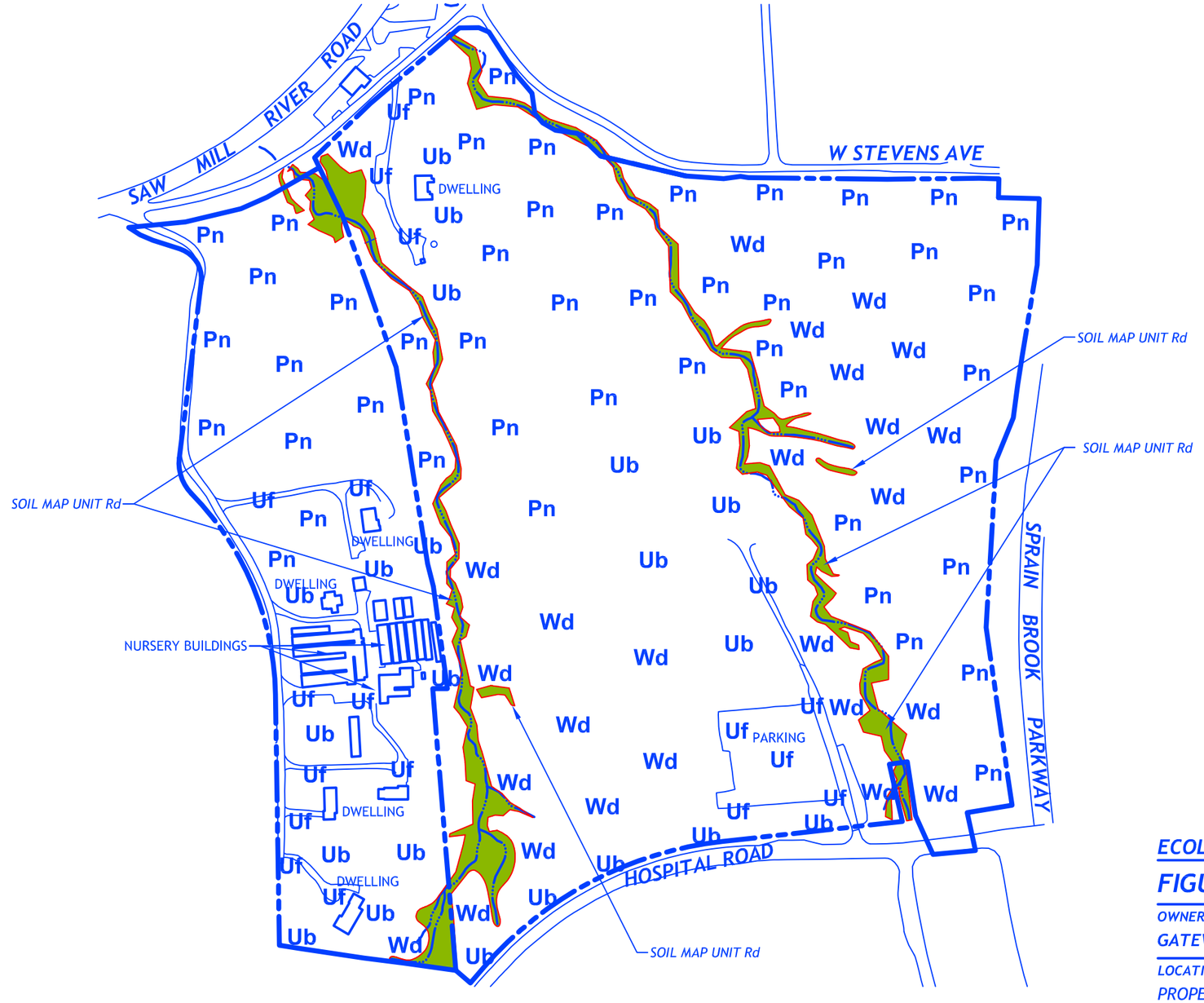
SOIL LEGEND:

UPLAND:

Pn	PAXTON FINE SANDY LOAM
Ub	UDORTHENTS, SMOOTHED
Uf	URBAN LAND COMPLEX
Wd	WOODBRIDGE LOAM

WETLAND:

Rd	RIDGEBURY LOAM



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- ***Pn, Ub, Wd** AND **Rd** ARE SOIL MAPPING UNIT SYMBOLS.*

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FIGURE 3: SOILS MAP

OWNER:

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Table 2: Soil Properties

Map Unit Sym.	Map Unit Name	Parent Material	Slope (%)	Drainage Class	High Water Table Depth (ft)	High Water Table Kind	High Water Table Mos.	Depth To Bedrock (in)
Upland Soil								
Pn	Paxton fine sandy loam	Compact Glacial Till	2-45	Well Drained	1.5->6.0	Perched	Feb-Apr	>60
Ub	Udorthents, smoothed	Excavated or Filled Soil (>2 feet)	0-40	Well Drained to Somewhat Poorly Drained	1.5->6.0	Apparent	Nov-May	>60
Uf	Udorthents-Urban Land Complex	Excavated or Filled Soil (>2 feet)	0-15	Well Drained to Somewhat Poorly Drained	1.5->6.0	Apparent	Nov-May	>60
		Pavement & structures account for 85% or more of the area. Additional investigations required to determine characteristics						
Wd	Woodbridge loam	Compact Glacial Till	0-15	Moderately Well Drained	1.5-2.5	Perched	Nov-May	>60
Wetland Soil								
Rd	Ridgebury loam	Compact Glacial Till	0-8	Poorly Drained, Somewhat Poorly Drained	0.0-1.5	Perched	Nov-May	>60

5.0 ECOLOGICAL COMMUNITIES

Ten distinct ecological communities, identified by primary vegetative cover type, were identified at the property (Figure 3). These areas are comprised of upland (U) and wetland (W) communities, and are common to the region and the state, according to the New York State Natural Heritage Program (NYNHP). The symbol, size, name and state and global rarity rank of each community are provided in Table 3.

Table 3: Ecological Communities

SYM.	SIZE (AC)	NAME	Global Ranking	State Ranking
UPLAND COMMUNITIES				
U1	26.3	BEECH-MAPLE MESIC FOREST	G4	S4
U2	8.3	SUCCESSIONAL HARDWOOD FOREST	G5	S5
U3	11.5	SUCCESSIONAL OLD FIELD	G5	S5
U4	7.2	SUCCESSIONAL SHRUBLAND	G5	S5
U5	3.1	BEECH-MAPLE MESIC FOREST (NATURALLY DISTURBED)	G4	S4
U6	2.7	CONSTRUCTION/ROAD MAINTENANCE SPOILS	UC	UC
U7	2.6	PAVED ROAD/PARKING LOT	UC	UC
U8	14.2	MOWED LAWN WITH TREES	UC	UC

TOTAL ACREAGE	*75.8*			
WETLAND COMMUNITIES				
W1	*1.3*	*ROCKY HEADWATER STREAM*	*G4*	*S4*
W2	*1.9*	*ROCKY HEAD WATER STREAM*	*G4*	*S4*
W3	*0.03*	*RED MAPLE HARDWOOD SWAMP*	*G5*	*S4S5*
W4	*0.02*	*RED MAPLE HARDWOOD SWAMP*	*G5*	*S4S5*
TOTAL ACREAGE	*3.3*			

[1]*UC = Unranked Cultural*

The NYNHP global and state ranks are believed by the NYNHP to accurately reflect the relative rarity of each community. The global rank reflects the rarity of the community throughout its natural range and the state rank refers only to occurrences within New York State. A rank of "1" is for the rarest of species, those generally vulnerable to extinction or extirpation. A rank of "4" is for species that are apparently secure throughout their range or in New York and a rank of "5" is for species demonstrably secure throughout its range or in New York. The NYNHP classification system does not have associated regulations but are meant for informational and characterization purposes only. All the communities within the project area are ranked 4 or 5, both globally or state-wide, indicating there are no significant natural communities present.

An ecological community is "a variable assemblage of interacting plant and animal populations that share a common environment" (Edinger et al. 2002). Classifications of these types of systems are prevalent in the literature and allows for the presentation of information in a clear and brief format. In addition to the NYNHP descriptors, two additional classification systems were used to evaluate the onsite wetland areas: the Hydrogeomorphic (HGM) approach and the United States Fish and Wildlife Service (USFWS) system. The HGM[1] system groups communities according to their hydrologic and geomorphic conditions and is useful for identifying and accessing the physically-based functions of wetlands. The USFWS classification system includes vegetation and other modifiers, which are useful in understanding biological (flora and fauna) aspects of wetlands. The wetland classifications for the jurisdictional (state and/or federal) wetlands communities are provided in Table 4.

[1] A discussion of the potential of each wetland area to contribute to recognized wetland functions is presented in Section 6.0.

Table 4: Wetland and Watercourse Classifications

COMMUNITY - WETLAND NUMBER	CLASSIFICATION		
	NYNHP	HGM	USFWS
W1	Rocky Headwater Stream	Riverine	Riverine, Upper Perennial, Rock Bottom, Cobble-Gravel, Permanently Flooded
W2	Rocky Headwater Stream	Riverine	Riverine, Upper Perennial, Rock Bottom, Cobble-Gravel, Permanently Flooded
W3	Isolated Intermittent Watercourse	Slope	Palustrine, Forested, Broad-leaved Deciduous, Seasonally Saturated
W4	Isolated Intermittent Watercourse	Slope	Palustrine, Forested, Broad-leaved Deciduous, Seasonally Saturated

Ecological communities at the site were mapped using field observations, collection of field data, and remote sensed data (aerial photographs and topographic surveys). Descriptions of the upland and wetland communities are presented below and their locations are shown on Figure 4. The majority of the site is comprised of upland communities, with 70.8-acres or 93 percent of the property comprised of uplands and 5.1 acres of regulated wetlands and/or watercourses. Lists of observed vegetation and expected wildlife species are provided in Appendix B.

5.1 Upland Ecological Communities

U1 –Beech-Maple Mesic Forest

The beech-maple mesic forest community is present in the northeastern, eastern and western portions of the property. Hardwood canopy trees that are codominated by sugar maple and American beech characterize this community. However, sugar maples are at a significantly lower density than beeches at the site. Red oaks, black oaks, white oaks, black cherry, shagbark and pignut hickory and American elm are present within the community. In the western portions of the community, ironwood, American holly and red maple are common, in addition to the aforementioned species. In general, the percent canopy cover is fairly high (approximately 80 to 90 percent) and tree snags and fallen trees are present at a significant concentration of

approximately three per acre. A shrub layer is essentially nonexistent through the eastern portions of the community; isolated stands of invasive species such as privet, multiflora rose, wineberry and burning bush as well as native spicebush. The western portion of the community has a mild density of native species such as dogwood, arrowwood viburnum and witch hazel. The native greenbriar is very common in the southwestern portion of the property. Woody vines, including poison ivy and the invasive oriental bittersweet and porcelainberry, are also dense in various portions of the community. Ground cover is for the most part absent except for the occasional invasive garlic mustard and native trout lily. Soils are fine sandy loams and surface boulders are present in low density throughout the community, though increases in abundance near the rocky headwater streams.

Due to the variety of vegetation and relatively undisturbed nature of this upland area, the community has a good potential for wildlife use. The more mature trees that are present at a mild density within the forest may provide nesting, shelter and a food source for a variety of arboreal and semi-arboreal animals, while the mast crop provides a food source for white-tailed deer and turkey. Many trees contain cavities, excavated by woodpeckers or other natural means, which are utilized by a wide variety of arboreal and semi-arboreal mammals, such as white-footed deer mice, flying squirrels, gray squirrels and red squirrels. Avian species common to these physical structures include Northern Flicker, White-breasted Nuthatch and House Wren, in addition to the sparrow hawk, screech owl, and the saw-whet owl.

The downed and standing tree boles present throughout this upland community provides a food source for a wide variety of insects and fungi. These primary producers (fungi) assist in the breakdown of organic matter, replenishing soil nutrients and completing the microbial loop. Bacteria, while specifically decomposers, also provide a food source themselves for higher trophic level species.

U2 – Successional Hardwood Woodland

This community is a relatively narrow band immediately north and west of the successional old field. Though the community is similar to the beech-maple forest, the density of vegetation and age and type of the trees differs substantially enough to designate it as separate from its upland counterpart. With the exception of numerous, mature sugar maples, black locust

and oak, most trees within the community are sapling or pole timber in size and include American elm, sugar maple, American beech, black cherry and oak. The trees present cover approximately 50 to 60 percent of the canopy and many of these trees (greater than three per acre) are snags. Unlike the beech-maple forest, shrubs are in relatively high abundance with privet, wineberry, multiflora rose, spicebush and burning bush being dominant while woody vines such as porcelainberry and oriental bittersweet are present in mild amounts. Groundcover comprised of garlic mustard, clover, wild ginger and trout lily is present throughout the woodland floor is still predominantly leaf litter. There are very few surface stones and exposed bedrock was not observed. Lastly, portions of the southern woodland appear to have been recently cleared of shrub and vine vegetation though downed trees within the community appear to have fallen from natural circumstances. Habitat opportunities are consistent with those of Upland 1.

U3 – Successional Old Field

An approximate 11.5 area of land, located in the central portion of the property, appears to have been historically disturbed and cleared due to unnatural microtopography and soil profiles. The community consists primarily of herbaceous vegetation that is dominated by invasive species such as common reed, mugwort, goldenrod, ragweed, Japanese knotweed, garlic mustard and clover. Other species present are native wild onion and grasses. Trees, which are primarily saplings, and shrubs include yellow birch, black birch, white ash, sugar maple, American beech, honeysuckle and multiflora rose. The trees are present at a low density throughout the community while the shrub layers range from moderate to high in density. The land is fairly level in the central portions of the old field due to substantial human activity but gently slopes toward the north, transitioning to woodland. The southern portion of the community is gently sloping from southeast to northwest toward the adjacent wetland and watercourse system. No bedrock or natural surface stones are present within the old field; surface stones present are from construction debris. Soils are divided between Paxton and Woodbridge soils but they have been clearly disturbed and are overlain with a gravelly fill mixture. Old farm drains were also identified at a few locations in the central and southern portions of the community.

Though disturbed, the densely vegetated community provides cover and burrowing habitat for numerous avian and mammalian species, including the bobwhite quail, chipping sparrow, gray catbird, meadow vole, eastern cottontail, white-footed mouse and eastern chipmunk. The scattered standing trees provide habitat and a food source for nesting birds such as red-tailed hawks and turkey vultures which use them as perches. Reptilian species, specifically the Eastern garter snake, were observed utilizing the community during field investigations.

U4 – Successional Shrubland

This community extends along the majority of the eastern property boundary and appears to have been part of the Beech-Maple community. However, due to disturbance (natural and/or human), it seems that a large quantity of canopy trees were brought down, increasing the amount of light reaching the forest floor and thus causing a rapid growth in invasive vines and shrubs. This most likely furthered the progression of a shrubland as more trees were killed by oriental bittersweet and porcelain berry, which are present in high densities throughout the community. Though some mature white pine, maples and oaks remain, red maple, white ash and sugar maple saplings are primary trees and are concentrated in the southern portion of the community. Multiflora rose is the dominant species within the community, in addition to other invasive shrubs such as privet, wineberry and burning bush. Groundcover is sparse but includes garlic mustard and various ferns. Surface stone coverage appears mild in certain areas, specifically in the southern portion of the community near the wetland and watercourse system. Normally, shrub thickets make exceptional habitat for white-tailed deer due to the coverage and food source they provide. However, the density of multiflora rose appears too great as no deer were observed within the community, unlike the remainder of the property. Nevertheless, the shrubland is an important shelter source for the birds and mammals in the adjacent beech-maple forest and the remaining tree stands would provide nesting habitat for woodpeckers, chickadee's and others.

U5 – Beech-Maple Mesic Forest (Naturally Disturbed)

Located in the northeastern portion of the property, this approximate 3.1-acre community appears to have historically been part of the beech-maple forest that it is surrounded by. However, similar to the successional shrubland, the area was heavily impacted by recent windstorms, resulting in the destruction of a large number of mature trees. As such, the area has

become a partial woodland community due to the canopy gaps (approximately 50 percent canopy coverage), which have permitted the growth of a shrub and groundcover layer consisting of privet, multiflora rose, wineberry, spicebush, eastern woodland sedge and various grasses. Trees that remain are primarily American beech, white ash, sugar maple, red oak, red maple, American elm and white pine and generally pole-timber in size. Vines, such as poison ivy, oriental bittersweet and porcelainberry are present but concentrated in the northwestern and northeastern portions of the community. The area is relatively level and appears to be infrequently inundated and periodically saturated but the soils, a fine sandy loam formed from compact glacial till, are well drained to moderately well drained. Surface stones are present at a very low density. Though disturbed, the area provides almost identical habitat as the surrounding beech-maple forest but, with the addition of a more substantial shrub layer and greater quantity of fallen trees, there is an increased food source for birds and deer and for fungi and bacteria, respectively.

U6 – Construction/Road Maintenance Debris

An approximate 2.7-acre area exists in the southern portion of the property that is comprised primarily of fill, gravel, sand, concrete blocks and other road maintenance and construction materials. The material has been irregularly placed on the property resulting in sharp peaks and valleys throughout this portion of the site. Construction vehicles are also present within the community. Presently, the area has very little vegetation, which is concentrated on the northern, eastern and western edges of the community and includes multiflora rose, common reed, Japanese knotweed, mugwort, ragweed and other herbaceous plants and grasses.

Though vegetation is sparse, the undulating surface topography within the debris zone provides some escape cover and vegetation allows for avian perching sites. The areas of burrowable substrate within this habitat may provide breeding areas for small mammals such as eastern cottontail rabbit, moles, voles and shrews. Other than that, the area provides little habitat value.

U7– Paved Road/Parking Lot

Immediately south of the construction/road maintenance debris is a paved parking lot with a corresponding road. Both the lot and road are in poor condition. As such, vegetation is

present along the paved edges and is present in cracks within the central portions of the lot. Vegetation includes turf grasses and weeds, specifically thale cress. Naturally, the area serves provides little to no habitat for nearby fauna.

U8 – Mowed Lawn with Trees

Mowed lawn with trees is primarily present within the southern portion of the property along Hospital Road but is also located in the western and northern portions of the property. In these areas, mowed lawn with shade and ornamental trees is found adjacent to parking areas, access ways, residential structures and commercial nursery improvements. In the western and northern portions of the property, the density of trees on the mowed lawn is greater than in the southern portion. This type of area provides some habitat, primarily to avian species such as the American robin and European starling, which forage for worms and insects in grassed areas. The trees in these areas can provide a food sources as well, for example, fruit-bearing ornamentals may provide a food source to foraging avian species. Small mammals such as rabbits, mice and squirrels may also use these areas.

5.2 Wetland Ecological Communities

Three wetland communities were delineated at the property. The wetlands and watercourses are identified in the following table, as well as Table 4: Wetland and Watercourse classifications.

Table 5: Wetland and Watercourse Primary Characteristics

ID NO.	Principal Water Source(s)	Water Table Type[2]	Vegetation Cover Type(s)
W1	Surface and shallow subsurface flow	Perched	Forested
W2	Surface and shallow subsurface flow	Perched	Forested
W3	Surface and shallow subsurface flow	Perched	Woodland
W4	Surface and shallow subsurface flow	Perched	Woodland

[2] A perched water table occurs in the unsaturated zone exists above the regional aquifer. An apparent water table, in contrast, is the regional water table where groundwater pressure is equal to atmospheric pressure.

W1- Rocky Headwater Stream

The first system is a watercourse system with area of bordering forested wetland that extends and flows south to north through the eastern portion of the property. The system enters the property from underneath Hospital Road and exits the property beneath Old Saw Mill River Road. The stream begins flowing north approximately 2,000 feet south of the property and encompasses a watershed area of about 60 acres; approximately half of this area is highly impervious. The stream has a water quality classification of C, which indicates fishing as the system's best use but due to the stream depth, significant fish presence is unlikely. Three intermittent watercourses intersect the system from the east in the central and northern portions of the property. The banks along the wetland and watercourse are severely steep in many areas, especially near the central portion of the property. The stream has carved away at the site for thousands of years. As such, the streambed is comprised of sand and gravel and cobble sized rock with a mild density of boulders present throughout. The watercourse is approximately five to ten feet wide in most locations and has wide depth range (3 to 24 inches). Debris such as home appliances, car parts and trash are present in and adjacent to the northern portion of the system along Stevens Avenue. Fallen trees are numerous in the northern and southern portions of the system. The bordering wetland soils are poorly to very poorly drained fine sandy loams.

Wetland vegetation is very sparse along the stream bank and intersecting intermittent watercourses due to the streambed composition. However, there are sporadic clumps of skunk cabbage and tussock sedge present in the bordering wetlands within the central and northern portions of the system. Immediately adjacent to the wetland are sparse clumps of spicebush, multiflora rose and burning bush. The southern portion of the system, by contrast, is densely vegetated with primarily multiflora rose and wineberry while native spicebush, skunk cabbage and grasses are also present in lower densities.

Due to the lack of vegetation and physical size of bordering wetland, the capacity of the wetland to provide habitat opportunities for mammals and birds are limited in the central and northern portions of the system. However, the southern portion of the system provides cover for deer, cottontails, squirrels, chipmunks and songbirds. The stream may potentially support some small, cold water fish species such as the creek chub and common shiner, though the number of these individuals present would likely be low. Microinvertebrates are also likely supported by the

system and include stoneflies, midges, crayfish, caddisflies and blackflies, which are a good food source for avian species. Lastly, the fallen trees are an important habitat for fungi, bacteria and other decomposers.

W2- Rocky Headwater Stream

Similar to the eastern rocky headwater stream, this watercourse system has an area of bordering forested wetland that extends and flows south to north through the western portion of the property. The system begins from a watercourse that extends offsite to the southwest for approximately 400 feet, encompassing a watershed area of about 90 acres that is highly impervious in the southern portion of the watershed. The stream has a water quality classification C(T), indicating fishing as the system's best use and the stream is specifically a trout water. However, due to the stream depth it's unlikely there is a significant fish presence. Once onsite, the system quickly combines with two other watercourses originating from onsite drainage outlets. The banks along the wetland and watercourse are severely steep in some areas, especially near the central portion of the property, but not as substantial as the eastern watercourse. At the confluence of the three watercourses, the system widens out with a decent-sized area of bordering wetland but quickly becomes heavily channeled and spans a width between five to ten feet. The depth range and streambed composition is similar to the eastern watercourse. Concrete and other construction debris are prevalent along the western banks near the existing nursery. Large and mature fallen trees are numerous in the northern and southern portions of the system. The bordering wetland soils are poorly to very poorly drained fine sandy loams.

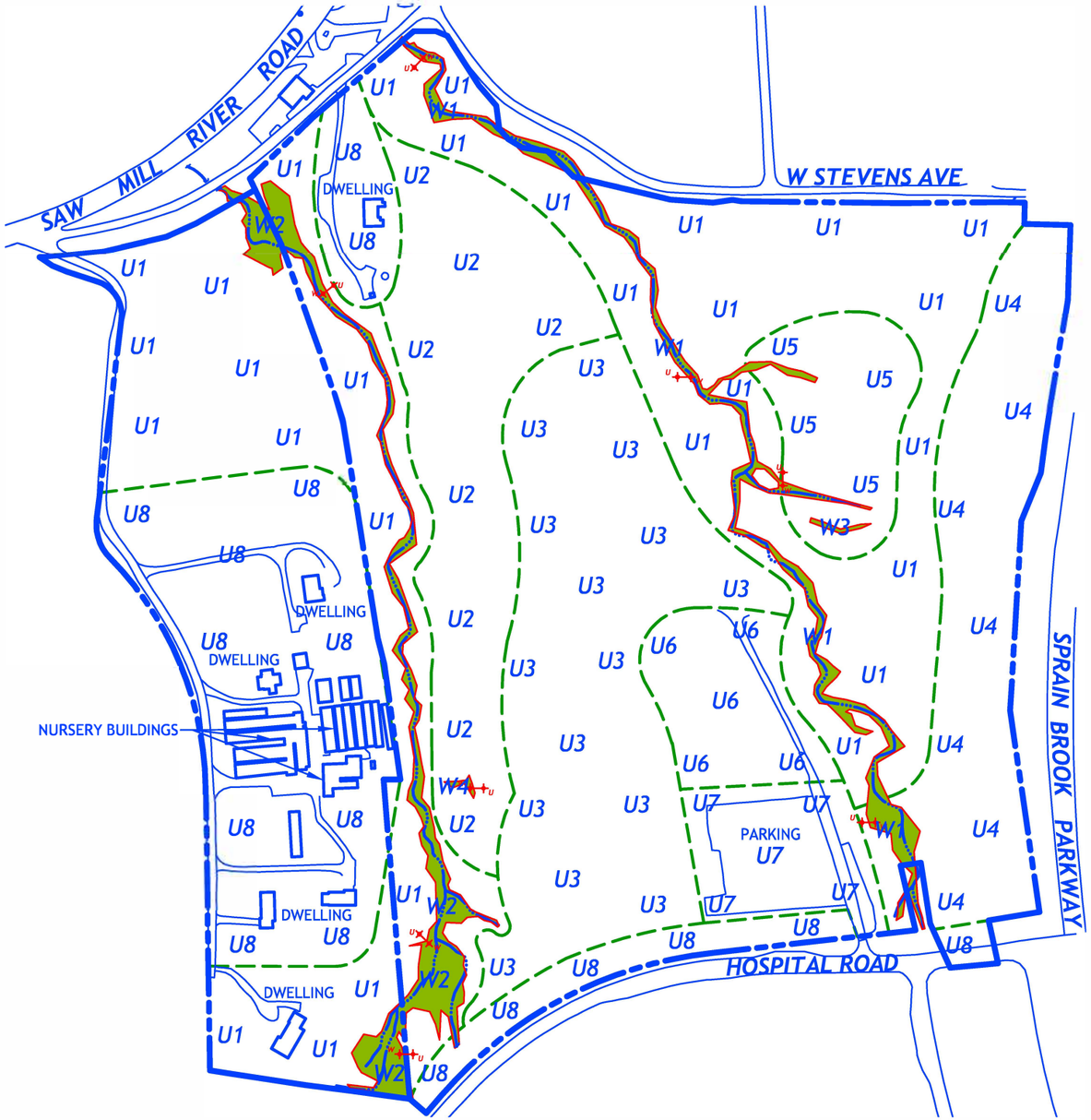
Wetland vegetation is sparse along the stream bank due to the streambed composition but it is denser than the eastern system. In the southern portions of the wetland, skunk cabbage, soft rush, eastern woodland sedge, tussock sedge and sensitive fern are common. A small area of cattail is also present in the system. The banks along the stream are more heavily vegetated with shrubs including spicebush, multiflora rose, wineberry and privet. Habitat opportunities are generally consistent with those of Wetland 1. Cattails also provide cover for raccoons, the eastern cottontail and wild turkeys while blackbirds and other avian species use the plant for shelter and nesting purposes. Moreover, the woodland and tussock sedge are an important food source for local waterfowl and small birds.

W3- Isolated Intermittent Watercourse

Located in the southern portion of the disturbed beech-maple community, this system is a small and very narrow watercourse, approximately 0.03-acre in size. The topography of the system is sloping and at the time of our investigations, the surface was inundated (approximately one inch). Soils are poorly drained fine sandy loams formed from compact glacial till and surface stone coverage is nonexistent. Despite the poorly drained soils and surface inundation, it's likely the area is seasonally wet and during drier months is indistinguishable from the surrounding environment. With the exception of a few red maples and an American elm, there is some privet, wineberry and grasses. While red maple wetlands provide a number of wildlife habitat opportunities across the food web, this wetland is so physically small that the capacity for the wetland to provide habitat opportunities is extremely limited to tree nesting habitat and a food source for birds.

W4- Isolated Intermittent Watercourse

This small and narrow system is approximately 0.02-acre and is located immediately east of the western rocky headwater stream. The topography of the system is gently sloped toward the stream and has a slight depression in its southern portion; no connection exists between the system and the adjacent watercourse. At the time of the investigations, portions of the system were inundated (less than once inch depth). Similar to the eastern watercourse, the soils are poorly drained fine sandy loams formed from compact glacial till, have no surface stones are present and is likely seasonally inundated/saturated. Despite being smaller than the eastern watercourse, this system has a greater density of vegetation including red maple, American elm, spicebush, privet, eastern woodland sedge and some grasses. Deadwood is also present throughout the system. As such, this community provides more ecological benefit for birds that utilize the trees and sedges and decomposers that make use of the fallen branches than the eastern swamp. However, the physical size of the system likely prevents the wetland from providing any substantial benefit to local fauna.



NOTES:
ECOLOGICAL COMMUNITIES INFORMATION PROVIDED BY WILLIAM KENNY ASSOC. OTHER INFORMATION TAKEN FROM A DRAWING PREPARED BY CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTURE CO., D.P.C.

WILLIAM KENNY ASSOCIATES LLC

SOIL SCIENCE
ECOLOGICAL SERVICES
LAND USE PLANNING
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ECOLOGICAL COMMUNITIES

SYM.	NAME	SIZE (AC)
UPLAND COMMUNITIES		
U1	BEECH-MAPLE MESIC FOREST	26.3
U2	SUCCESSIONAL HARDWOOD FOREST	8.3
U3	SUCCESSIONAL OLD FIELD	11.5
U4	SUCCESSIONAL SHRUBLAND	7.2
U5	BEECH-MAPLE MESIC FOREST (NATURALLY DISTURBED)	3.1
U6	CONSTRUCTION/ROAD MAINTENANCE SPOILS	2.7
U7	PAVED ROAD/PARKING LOT	2.6
U8	MOWED LAWN WITH TREES	14.2
	TOTAL:	75.8
WETLAND & WATERCOURSE COMMUNITIES		
W1	ROCKY HEADWATER STREAM	1.3
W2	ROCKY HEAD WATER STREAM	1.9
W3	ISOLATED INTERMITTENT WATERCOURSE	0.03
W4	ISOLATED INTERMITTENT WATERCOURSE	0.02
	TOTAL:	3.3

ECOLOGICAL ASSESSMENT REPORT

FIGURE 4: EXISTING ECOLOGICAL COMMUNITIES MAP

OWNER:
GATEWAY DEVELOPMENT

LOCATION:
PROPERTY Z169
MOUNT PLEASANT, NEW YORK

DATE: May 25, 2018

NORTH

REF. NO. 3836

6.0 WETLAND/WATERCOURSE FUNCTIONAL EVALUATION

The biophysical elements (e.g. landscape position, geology, hydrology, substrate, and vegetation) of wetlands determine their functions and to what capacity they are performed. The functions they provide and the capacity of those functions vary from wetland to wetland. To better understand these differences as they relate to the onsite wetlands, a functional evaluation was completed for the wetlands identified. Each onsite wetland was assessed to determine its capacity to provide eight wetland functions:

1. Modification of groundwater discharge
2. Modification of groundwater recharge
3. Storm and floodwater storage
4. Modification of stream flow
5. Modification of water quality
6. Export of detritus
7. Contribution to abundance and diversity of wetland vegetation
8. Contribution to abundance and diversity of wetland fauna

The evaluation completed for this project was based in part on *The Rapid Assessment Procedure for Assessing Wetlands Functional Capacity* (Hollens and Magee 1998). This method assesses the relative importance of the wetlands for performing functions and provides a logical framework for observations, a structure for standardizing results, and a basis for achieving repeatable results among users. The results of the completed assessment for each wetland are provided in Table 6.

The classification system utilized to evaluate the functionality is based on the biophysical characteristics of the wetlands, which is primarily a function of landscape position and associated hydrology. Though differing cover types may be found within each of the delineated wetland areas, the functionality of the wetlands was assessed from a broader "macro scale" perspective, and each wetland was evaluated as a whole, as opposed to segmenting it into smaller cover type parts. The small shifts in vegetative cover types over relatively small areal extents within each wetland do not affect the overall functioning of the wetlands as much as the location and associated hydrologic position of the wetland.

***Table 6**: Wetland and Watercourse Functional Assessment*

Wetland & Watercourse Function	Wetland & Watercourse ID No.[1]			
	1	2	3	4
Modification of groundwater discharge	M-H	M-H	M	M
Modification of groundwater recharge	L-M	L-M	L	L
Storm and floodwater storage	L	L	L	L
Modification of water quality	L	L	L	L
Export of detritus	L	H	M	M
Contribution to the abundance and diversity of wetland vegetation	M	M	L	L
Contribution to the abundance and diversity of wetland fauna	M	M	L	L

1: *H: High M: Moderate L: Low*

The capacity for the onsite wetlands to perform the wetland functions varies from wetland to wetland and from function to function. The differences are due to natural (hydrogeomorphic) and human (e.g. past and current land use activities) conditions. For a general description of each function and its potential societal value, refer to Appendix C.

7.0 ENDANGERED AND THREATENED SPECIES

The study area was investigated to determine the presence or absence of state or federal plant and animal species listed as endangered, threatened or special concern. None were observed or detected to be present at or within approximately one mile of the property. As well, no areas were identified on the subject property that was of unique composition or unusual ecological value.

8.0 CONCLUSIONS

On behalf of Gateway Development, WKA conducted an ecological assessment on the 79.0-acre property in Mount Pleasant, New York. The investigation included the identification, delineation, and assessment of regulated wetlands and watercourses; an evaluation of wetland protection laws; and mapping of vegetation & wildlife communities and soil types.

The majority of the 79.0-acre study area is undeveloped and occupied by forest and successional woodland and shrubland. Ten common upland and wetland communities were identified at the study area. The identified wetland and watercourse systems are predominately

streams with areas of bordering wetland and are located in the eastern and western portions of the property.

The property was investigated to determine the presence or absence of state or federal plant and animal species listed as endangered, threatened or special concern. None were observed or detected to be present at or within one mile of the property. All of the identified ecosystems are considered regionally common.

9.0 REFERENCES

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APPENDIX A:

Resumes of Investigators and Authors

Mr. William L. Kenny has more than 20 years of experience in site and environmental planning and construction. Mr. Kenny is a Registered Landscape Architect, Certified Professional Wetland Scientist, a Soil Scientist and Certified Organic Land Care Professional. Prior to establishing William Kenny Associates, Mr. Kenny was a senior project manager at Triton Environmental, Inc. of Guilford, CT and a project manager at Jay Fain & Associates of Southport, CT; Divney Tung Schwalbe, LLP of White Plains, NY; Towers/Golde, PC of New Haven, CT; and Winter Ridge Nursery of Hamden, CT.

Education

University of Massachusetts, 1993-1995. Postgraduate studies in soil science.

Yale University, MEM, 1992. Masters Degree in Environmental Management. Concentration and thesis work in ecosystem ecology, hydrology, and restoration.

University of Connecticut, BS, 1987. Bachelor of Science Degree in Landscape Design.

Representative Project Experience

Wetland Delineation, Assessment, and Impact Mitigation

Mr. Kenny has extensive experience with tidal and inland wetland and watercourse delineation, assessment, and impact mitigation projects and obtaining related regulatory approvals as a project scientist and manager. Project work has included approval and construction documents for residential, commercial, recreational, and institutional developments. Specific tasks Mr. Kenny has completed include: (1) wetland delineations and functional assessments in Connecticut and New York in accordance with federal, state, and local requirements; (2) development planning and design consultation to minimize wetland impacts; (3) impact assessments and wetland construction mitigation designs; and (4) hydrologic evaluations for inland and tidal wetland restoration and creation projects.

Water Resource Management

Mr. Kenny has a wide range of experience with water resource management projects and attaining related development approvals and permits as a project manager and scientist. Project work has included stormwater pollution prevention plan preparation in accordance with New York City, New York State, and Connecticut requirements; stormwater treatment Best Management Practices design; stormwater pollutant loading and BMP effectiveness modeling; groundwater modeling for subsurface sanitary disposal systems, and erosion and sediment control plan preparation for residential, commercial, recreational, and institutional developments.

Ecological Inventories and Impact Assessments

Mr. Kenny has broad experience with preparing ecological inventories and impact

assessments and attaining related development approvals and permits as a project manager and scientist. Project work included Environmental Impact Statement (EIS) preparation to fulfill New York State requirements. Specific management or technical responsibilities included mapping and assessing existing conditions and potential impacts to bedrock and surficial geology, soils, vegetative communities, wetlands, surface and groundwater bodies, and wildlife and their habitat.

Site Planning and Landscape Architecture

Mr. Kenny has more than 20 years experience with site planning and landscape architectural projects either as the primary designer and project manager, a collaborating design professional, or construction contractor. Mr. Kenny has design and management experience with all project phases: from master planning and conceptual design to construction and bid document preparation and construction observation.

Regulatory Agency Consulting

Mr. Kenny has been retained by Connecticut municipalities to conduct analyses and prepare reports regarding inland wetlands and watercourses permit applications to be heard by local agencies. This work includes the review of wetland boundary delineations.

Professional Training

OSHA 24-hour HAZWOPER Training
Organic Land Care
CT DEP Master Wildlife Conservationist Program
Pond Management
Wetland Construction
Wetland Functional Assessment Techniques
Urban Stormwater Management Practices
Erosion and Sediment Control
Soil Sciences
Computer Aided Drafting

Publications

Kenny, W.L. 1995. The West River salt marsh: past and present. In *Proceedings of the West River Symposium*, ed. By E. McDiarmid, P.K. Barten, and C.J. Genshlea, 33-40. New Haven, CT: Center for Coastal and Watershed Systems, Yale School of Forestry and Environmental Studies.

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Contributing graduate student author to:
Bormann, F.H., D. Balmori, and G.T. Geballe, 1993. *Redesigning the American lawn: a search for environmental harmony*. Yale University Press, New Haven and London.

Professional Affiliations and Registrations

Flood & Erosion Control Board, Fairfield, Connecticut (Member 2011- 2015)
Shellfish Commission, Fairfield, Connecticut (Member 1995 -2006, Chairman 1996 - 2005)
Connecticut Association of Wetland Scientist (Member 1999-present, Secretary 2001 - 2010)
Society of Soil Scientist of Southern New England (Associate Member 1995-2004, Professional Member 2004 -present)
Society of Wetland Scientists (Member 2001-present)
Certified Professional Wetland Scientist (#1372), Society of Wetland Scientists (2003-present)
Professional registration, Landscape Architecture
#664, State of Connecticut (1990-present)
#001869, State of New York (2003-present)
American Society of Landscape Architects (Member 2001-2010, 2013-present)
Northeast Organic Farming Association (2004-present)
Certified Organic Land Care Professional (2005-present)
OSHA Certified (24-hour HAZWOPER Training)

Timothy F. Veit
Ecologist

WILLIAM KENNY ASSOCIATES LLC

Mr. Timothy F. Veit has experience providing numerous environmental services, including assessing the quality and functionality of various coastal and inland ecosystems, evaluating the potential biological and environmental impacts of proposed projects, delineating wetland and watercourse boundaries and monitoring erosion and sediment control measures during project construction. Prior to this position, Mr. Veit attended Vassar College, where he worked as a biology student research fellow, studying emerald ash borer prevention methods, research that was presented at the Northeast Natural History Conference at the Eagle Hill Institute. Moreover, he participated in ecological restoration projects that focused on the removal and prevention of invasive vines and *Phragmites australis*.

Education

Vassar College, Poughkeepsie, NY, 2012-2016. Bachelor of Arts in Biology with a minor in Religion.

Representative Project Experience

Wetland Delineation, Assessment and Impact Mitigation

Mr. Veit has experience with inland and tidal wetland and watercourse delineations as well as assessing the impacts of proposed projects on the surrounding ecosystem as a project ecologist. Project work includes assisting with attaining approval and construction documents for residential, commercial, recreational and institutional developments. Specific tasks Mr. Veit has completed include: (1) wetland delineations and functional assessments in Connecticut and New York in accordance with federal, state and local standards; (2) impact assessments and for projects in coastal and inland areas.

Ecological Inventories and Assessments

Mr. Veit has experience with preparing ecological inventories and impact assessments for properties in coastal and inland areas for the purpose of assisting with attaining development approvals and permits as a project ecologist. Specific management or technical responsibilities included mapping and assessing existing conditions and potential impacts to soils, vegetative communities, wetlands, surface and groundwater bodies, wildlife and their associated habitats.

Erosion And Sediment Control

Mr. Veit has experience with erosion and sediment control protocols which include numerous visits at a variety of project sites to ensure compliance with state and town guidelines. This includes reviewing proposed erosion and sediment control measures and routine inspection of their functional status during construction.

Timothy F. Veit
Ecologist

WILLIAM KENNY ASSOCIATES LLC

Publications

Principal Author

Veit, T.F. 2016. Emerald Ash Borer (Agrilus Planipennis) Prevention and Management at the Vassar Farm and Ecological Preserve. Senior project, Vassar College Biology Department, Poughkeepsie, NY.

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Contributing Author

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APPENDIX B:

List of Vegetation and Wildlife

VEGETATION INVENTORY

SCIENTIFIC NAME	COMMON NAME
Trees	
Acer platanoides	*Norway maple*
Acer rubrum	*Red maple*
Acer saccharum	*Sugar maple*
Betula lenta	*Black birch*
Carpinus caroliniana	*American hornbeam*
Carya glabra	*Pignut hickory*
Carya ovata	*Shagbark hickory*
Catalpa speciosa	*Northern catalpa*
Cornus florida	*Flowering dogwood*
Fagus grandifolia	*American beech*
Fraxinus americana	*White ash*
Hamamelis virginiana	*Witch hazel*
Ilex opaca	*American holly*
Juniperus virginiana	*Eastern red cedar*
Liriodendron tulipifera	*Tulip tree*
Nyssa sylvatica	*Black tupelo*
Pinus strobus	*White pine*
Prunus serotina	*Black cherry*
Quercus alba	*White oak*
Quercus bicolor	*Swamp white oak*
Quercus montana	*Chestnut oak*
Quercus palustris	*Pin oak*
Quercus rubra	*Red oak*
Quercus velutina	*Black oak*
Robinia pseudoacacia	*Black locust*
Salix spp.	*Willows*
Sassafras albidum	*Sassafras*
Tsuga canadensis	*Eastern hemlock*
Ulmus americana	*American elm*
Zanthoxylum americanum	*Common prickly-ash*
Shrubs and Vines	
Ampelopsis glandulosa var. brevipedunculata	*Porcelain berry*
Berberis thunbergii	*Japanese barberry*
Celastrus orbiculatus	*Oriental bittersweet*
Euonymus alatus	*Winged euonymus*
Hedera helix	*English ivy*
Ligustrum vulgare	*Common privet*
Lindera benzoin	*Spicebush*
Parthenocissus quinquefolia	*Virginia creeper*

Rhododendron maximum	*Rosebay rhododendron*
Rosa multiflora	*Multiflora rose*
Rubus phoenicolasius	*Wineberry*
Smilax rotundifolia	*Green brier*
Toxicodendron radicans	*Poison ivy*
Viburnum dentatum var. recognitum	*Northern arrowwood*
Vitis spp.	*Wild grape*

Herbaceous Species *

Ambrosia trifida	*Giant ragweed*
Artemisia vulgaris	*Common mugwort*
Asclepias syriaca	*Common milkweed*
Athyrium filix-femina	*Lady fern*
Carex blanda	*Eastern woodland sedge*
Carex stricta	*Tussock sedge*
Dichanthelium clandestinum	*Deer-tongue grass*
Erythronium americanum	*Trout lily*
Juncus effusus	*Soft rush*
Microstegium vimineum	*Japanese stilt-grass*
Onoclea sensibilis	*Sensitive fern*
Pachysandra terminalis	*Japanese pachysandra*
Poa pratensis	*Kentucky blue-grass*
Polystichum acrostichoides	*Christmas fern*
Symplocarpus foetidus	*Skunk cabbage*

- Herbaceous list not comprehensive based on seasonal constraints of field work.

WILDLIFE SPECIES LIST
OBSERVED, POTENTIALLY OCCURRING IN, OR UTILIZING
VEGETATION & WILDLIFE COMMUNITIES

SCIENTIFIC NAME[1]	COMMON NAME
Amphibians	
Anaxyrus americanus americanus	*Eastern American toad*
Eurycea bislineata	*Northern two-lined salamander*
Hyla versicolor	*Grey treefrog*
Lithobates catesbeianus	*Bull frog*
Lithobates clamitans	*Green frog*
Notophthalmus viridescens	*Red-spotted newt*
Plethodon cinereus	*Red-backed salamander*
Pseudacris crucifer	*Northern spring peeper*
Reptiles	
Trachemys scripta elegans	*Red-eared slider*
Coluber constrictor	*Northern black racer*
Pantherophis obsoletus	*Black rat snake*
Glyptemys insculpta	*Wood turtle*
Storeria dekayi	*Northern brown snake*
Thamnophis sirtalis sirtalis	*Eastern garter snake*
Birds	
Agelaius phoeniceus	*Red-winged blackbird*
Anas platyrhynchos	*Mallard*
Asio otus	*Long-eared owl*
Aythya collaris	*Ring-necked duck*
*Baeolophus bicolor***	*Tufted titmouse*
Bombycilla cedrorum	*Cedar waxwing*
Bonasa umbellus	*Ruffed grouse*
Branta canadensis	*Canada goose*
*Buteo jamaicensis**	*Red-tailed hawk*
*Buteo lineatus***	*Red-shouldered hawk*
*Cardinalis cardinalis***	*Northern cardinal*
*Cathartes aura***	*Turkey vulture*
Catharus fuscescens	*Veery*
Chaetura pelagica	*Chimney swift*
Charadrius vociferus	*Killdeer*
Colaptes auratus	*Northern flicker*
Colinus virginianus	*Bobwhite quail*
Columba livia	*Rock dove*
Contopus virens	*Eastern wood pewee*
*Corvus brachyrhynchos**	*American crow*
Corvus ossifragus	*Fish crow*

*Cyanocitta cristata**	*Blue jay*
*Dumetella carolinensis **	*Gray catbird*
Euphagus carolinus	*Rusty blackbird*
Haemorhous mexicanus	*House finch*
Hirundo rustica	*Barn swallow*
*Junco hyemalis***	*Dark-eyed junco*
Larus delawarensis	*Ring-billed gull*
Leiothlypis ruficapilla	*Nashville warbler*
*Leuconotopicus villosus**	*Hairy woodpecker*
*Lophodytes cucullatus***	*Hooded merganser*
*Megaceryle alcyon***	*Belted kingfisher*
Melanerpes carolinus	*Red-bellied woodpecker*
Melanerpes erythrocephalus	*Red-headed woodpecker*
Meleagris gallopavo	*Eastern wild turkey*
Phalacrocorax auritus	*Double-crested cormorant*
*Picoides pubescens**	*Downy woodpecker*
*Poecile atricapillus**	*Black-capped chickadee*
*Quiscalus quiscula***	*Common grackle*
*Regulus satrapa***	*Golden-crowned kinglet*
*Sayornis phoebe***	*Eastern phoebe*
Scolopax minor	*American woodcock*
Setophaga ruticilla	*American redstart*
Sialia sialis	*Eastern bluebird*
Sitta carolinensis	*White-breasted nuthatch*
*Sphyrapicus varius***	*Yellow-bellied sapsucker*
*Spinus tristis***	*American goldfinch*
*Spizella arborea**	*American tree sparrow*
Spizella passerina	*Chipping sparrow*
Stelgidopteryx serripennis	*Northern Rough-winged swallow*
Strix varia	*Barred owl*
Sturnus vulgaris	*European starling*
*Troglodytes hiemalis***	*Winter wren*
Turdus migratorius	*American robin*
Tyto alba	*Barn owl*
*Zenaida macroura**	*Mourning dove*

Mammals

Blarina brevicauda	*Northern short-tailed shrew*
Canis latrans	*Coyote*
Didelphis virginiana	*Virginia opossum*
Glaucomys volans	*Southern flying squirrel*
Marmota monax	*Woodchuck*
Mephitis mephitis	*Striped skunk*
Microtus pennsylvanicus	*Meadow vole*
*Odocoileus virginianus**	*White-tailed deer*
Peromyscus leucopus	*White-Footed mouse*
Procyon lotor	*Raccoon*
Scalopus aquaticus	*Eastern mole*
*Sciurus carolinensis**	*Gray squirrel*

Sciurus vulgaris	*Red squirrel*
Sorex cinereus	*Masked shrew*
*Sylvilagus floridanus**	*Eastern cottontail*
*Tamias striatus**	*Eastern chipmunk*
Urocyon cinereoargenteus	*Gray fox*
*Vulpes vulpes**	*Red fox*

* Indicates species observed either directly or by sign
** Indicates species observed near the site (<1 mile) during the winter season by local birdwatchers (Cornell Lab of Ornithology & the National Audubon Society)

APPENDIX C:

General Description of Wetland & Watercourse Functions

Modification of Groundwater Discharge:

Modification of groundwater discharge is the capacity of a wetland to influence the amount of water moving from the ground to the surface. Typically, a perennial inlet and outlet indicates that a wetland is directly linked with the regional water table and has a high capacity to perform this function. This can affect groundwater and surface water supplies and recreational activities.

Modification of Groundwater Recharge:

Modification of groundwater recharge is the capacity of a wetland to influence the amount of surface water moving to groundwater aquifers and thereby affecting public and private groundwater supplies. The subsoil and location of a site play a significant role in ability for wetlands to modify groundwater recharge. With the exception of slope wetlands, all wetlands have some capacity to contribute to this function. Poorly developed or no microrelief is an indication that the water table is below the substrate of a wetland for most of the growing season and that groundwater recharge is occurring. Wetlands with perennial outlets are discharge areas and cannot be recharge areas, even seasonally.

Storm and Floodwater Storage:

Storm and floodwater storage is the capacity of a wetland to detain or retain stormwater on its surface. This benefits society by preventing storm damage and the loss of life and property. All wetlands, except slope wetlands, have some capacity to contribute to this function. Depressional wetlands have the highest potential for providing this function.

Modification of Water Quality:

Modification of water quality is the removal of suspended and dissolved solids from surface water and dissolved solids from groundwater and conversion into other forms, plant or animal biomass or gases. This function may contribute to societal values related to public water supply, recreation, and aesthetics. The primary mechanisms for the removal of suspended solids are sedimentation and filtration. Dissolved constituents can be removed or made unavailable for downstream plant use via adsorption and absorption by soil particles, uptake by vegetation, loss to the atmosphere by microbiological processes, or combination of the three. Flow characteristics and residence time are the primary wetland characteristics affecting the ability of a wetland to perform this function. Generally, depressional, lacustrine fringe and flat wetlands have the highest potential for performing this function because typically the residence time of water is maximized. Conversely, slope wetlands have the least potential.

Export of Detritus:

Export of detritus refers to the ability of the wetland to produce and export dissolved and particulate organic particles to downstream aquatic ecosystems to serve as an energy source, to support their food chain, or both. Society may value this function as it relates to food web support and ultimately nature research and education, recreation (e.g. hunting and fishing), and the type and density of fauna supported by the wetland. The structure and composition of the wetland's vegetation affects the production of detritus and the degree of the wetland's surface water connection with a stream, river or lake affects the transport of detritus. An increase in the productivity and diversity of an ecological community generally equates to a greater capacity to perform this function. Based on hydrogeomorphic conditions, riverine wetlands have the greatest potential for export of detritus due to an unrestricted outlet. Depressional and flat wetlands have the least potential because of their greater potential to retain suspended sediments.

Contribution to Abundance and Diversity of Wetland Vegetation:

Contribution to abundance and diversity of wetland vegetation is related to the number and type of hydrophytic plants that a wetland can produce and support. Society may value this function as it relates to environmental research and education, recreation, the type and density of fauna supported by the wetland, and production of harvestable goods. Because wetlands support plant species that occur in wetter and dryer (upland) habitats and species that grow only in wetland habitats (poorly drained and very poorly drained soils), most wetlands have a high capacity to contribute to the abundance and diversity of a landscape's vegetation. The primary variables affecting a wetland's capacity to perform this function are its plant species diversity, its vegetation density and dominance, its water regime diversity, and its juxtaposition to other wetlands.

Contribution to Abundance and Diversity of Wetland Fauna:

Contribution to abundance and diversity of wetland vegetation is the capacity of a wetland to support large and/or diverse populations of animal species that spend part or all of their life cycle in wetlands; either an individual wetland or a system or network of wetlands. Society may value this function as it relates to environmental research and education, recreation, aesthetics, and providing a source of food. A wetland's water regime is the primary factor affecting this function, as it largely controls the dominant vegetation type present and influences the animal movement to and within the wetland to food, cover and breeding areas. Other factors affecting the capacity of a wetland to contribute to the abundance and diversity of wetland fauna are the structure and composition of the vegetation community and the juxtaposition of the wetland to other habitat types (e.g., another wetland, upland forest, farm field, surface waterbody, etc.).

The preceding table reveals the onsite wetlands provide basic wetland functions in varying degrees of effectiveness. Presence of non-native plants negatively affects the ability of the onsite

wetlands to provide wildlife habitat. The abundance of slope wetland systems results in a low capacity to function as a source for groundwater recharge due to the hydrodynamics of the wetland areas. Small size of wetland areas limits the ability to contribute to basic wetland functions.