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## ***HABITAT ASSESSMENT REPORT***

*For*

### ***MOUNTAINSIDE WOODS***

***SECTION 87.4, BLOCK 3, LOT 14 AND BLOCK 5, LOTS 1.2 AND 2***

***TOWN OF LLOYD, ULSTER COUNTY, NY***

*February 11, 2011*

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## **1.0 Introduction**

A. V. Agovino Associates, LLC (AVAA) conducted investigations and evaluations of vegetation, wildlife and habitats on the proposed Mountainside Woods Project site over the past five years. The property is  $\pm$  153.07 acres and includes three parcels of land referenced on the Town of Lloyd tax maps as Section 87.4, Block 3, Lot 14 and Block 5, Lots 1.2 and 2. Earlier investigations were conducted on SBL 87.4-5-1.2, the central portion of the property, by Thomas Baptist in 1987, in 1999 by Shuster Associates, and most recently by Tim Miller Associates (TMA) for the Westport Seniors proposal. This report includes the results from AVAA's investigations, as well as the past investigations, along with data received from federal and state agencies.

AVAA's site surveys were conducted over a five-year period from April 2005, through November 2010 and included offsite evaluations of the vegetation and habitat present, as well as two methods of field observation. AVAA utilized stationary observation posts for breeding activity surveys performed for both birds and amphibians and a series of random transects across the site with observation, listening, and/or ground searches conducted as site specific features and habitat changed along the transect route. The nature of the random transects allowed AVAA to observe and actively investigate conditions and activity along the route. AVAA evaluated the entire site for the purpose of preparation of this report.

## **2.0 Site and Project Description**

### **2.1 Site Description**

The proposed project area, containing a total of  $\pm$ 153.07 acres (61.94 hectares), is located on the north side of Hilltop Lane and Vista Drive, and to the west of New Paltz Road. The center of the Mountainside Woods site is bisected by the Central Hudson Gas and Electric power line easement. The power line easement is a 100-foot wide strip running north to south along the approximate boundary between Parcel 1 and Parcel 2. In addition, Twaalfskill Creek bisects the property from its northeastern corner to the southwestern border. The Mountainside Woods site can be accessed from Hilltop Lane, which dead ends adjacent to the power line easement, from a dirt road located at the end of Vista Drive, and by an access road running west from New Paltz Road. The central portion of the property (Parcel 2) is also accessible from Toc Road. Along the project area's southeastern boundary are residences that front on Cambridge Court. The northwestern boundary of the site is forested lands located at the base of Illinois Mountain. Cambridge Court, Hilltop Lane and Toc Roads are roadways that serve a residential development on the west side of Vineyard Avenue (NYS Route 44/55). The project area consists of three parcels: Parcel 1, located in the northern portion of the site, connects to Vista Drive; Parcel 2, located in the central portion of the site (formerly Westport Development site); Parcel 3 in the southern portion of the site.

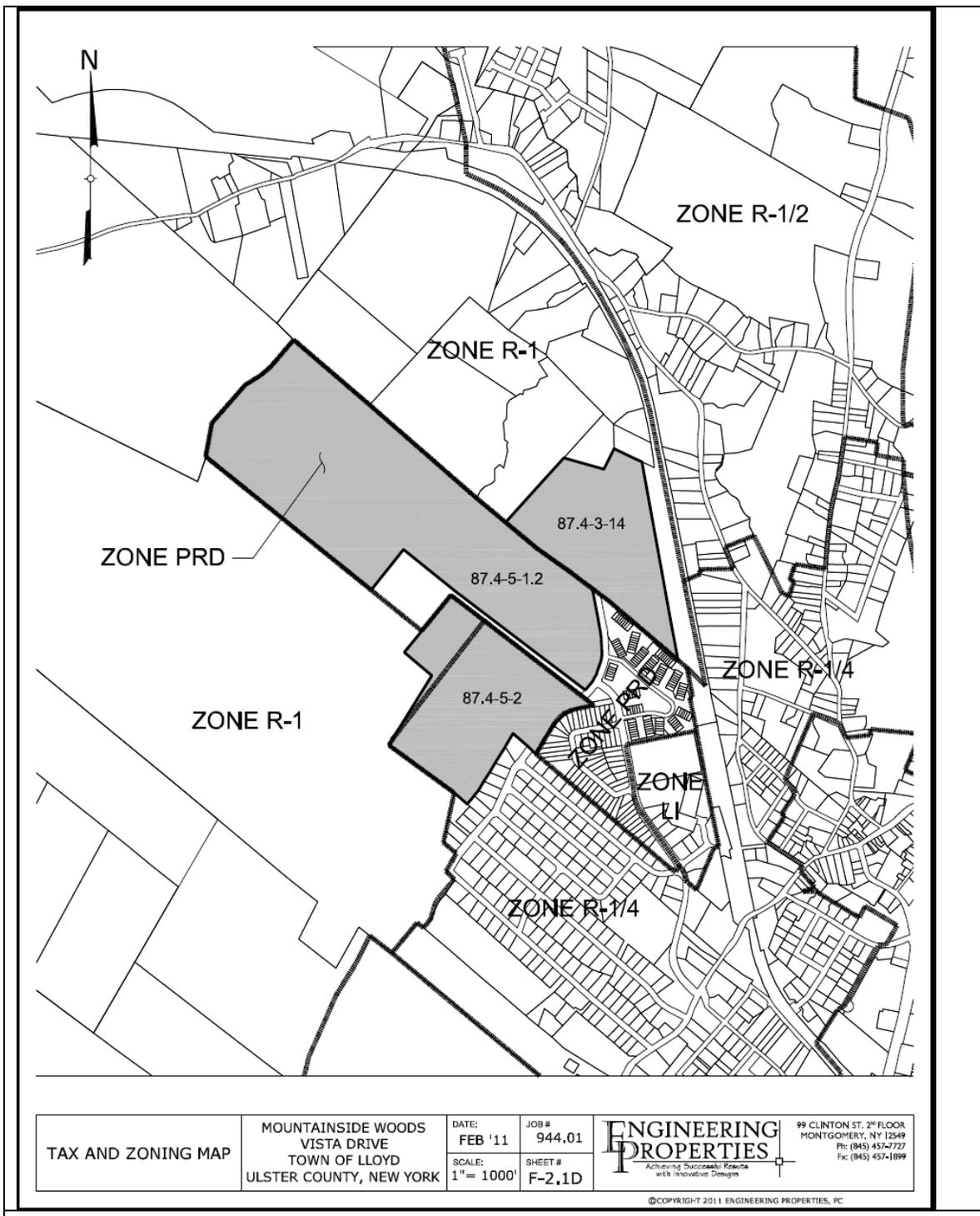


Figure 2-1: Tax and Zoning Map, Town of Lloyd (scale as shown)

The site is steeply undulating with varying elevations in surface topography. Elevations in Parcel 1 range from ±296.6 feet above mean sea level (AMSL) in the southernmost corner of the site to ±353.1 feet AMSL overlooking the stream corridor and its associated

wetland. Overall the entire site is steeply undulating with varying elevations ranging from ±327.1 feet to ±350 feet AMSL in the northwestern corner of the site. To the east, within Parcel 1 the elevations fall to ±303.4 feet AMSL along the former rail line and to 290 feet AMSL at the intersection with New Paltz Road. Parcel 2 contains elevations ranging from approximately 310 feet above mean sea level (AMSL) in the southeastern corner to 350 feet AMSL in the northwestern corner. To the west, at the base of Illinois Mountain, the land rises steeply to approximately 800 feet AMSL in the extreme western portion of the site. In Parcel 3 elevations range from ±333.3 feet above mean sea level (AMSL) in the western central portion of the site to ±480 feet AMSL in the northern portion of the site.

Geologically, the site is within the Ridge and Valley Province, which in the Hudson Valley extends from the Bear Mountain Bridge northward to Lake Champlain. This is an area of sedimentary rock that have been subjected to internal compression forces resulting in pronounced bending or folding of the rock layers. Exposed bedrock, some of which is shale, exists throughout the steep western portion of the site, but was not present to the same extent in the eastern portion, where it appears mining may have taken place. The underlying rock is of Cambrian-Ordovician age.<sup>1</sup>

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<sup>1</sup> Schubert, Christopher J. 1968. *The Geology of New York City and Environs*. The Natural History Press: Garden City, NY

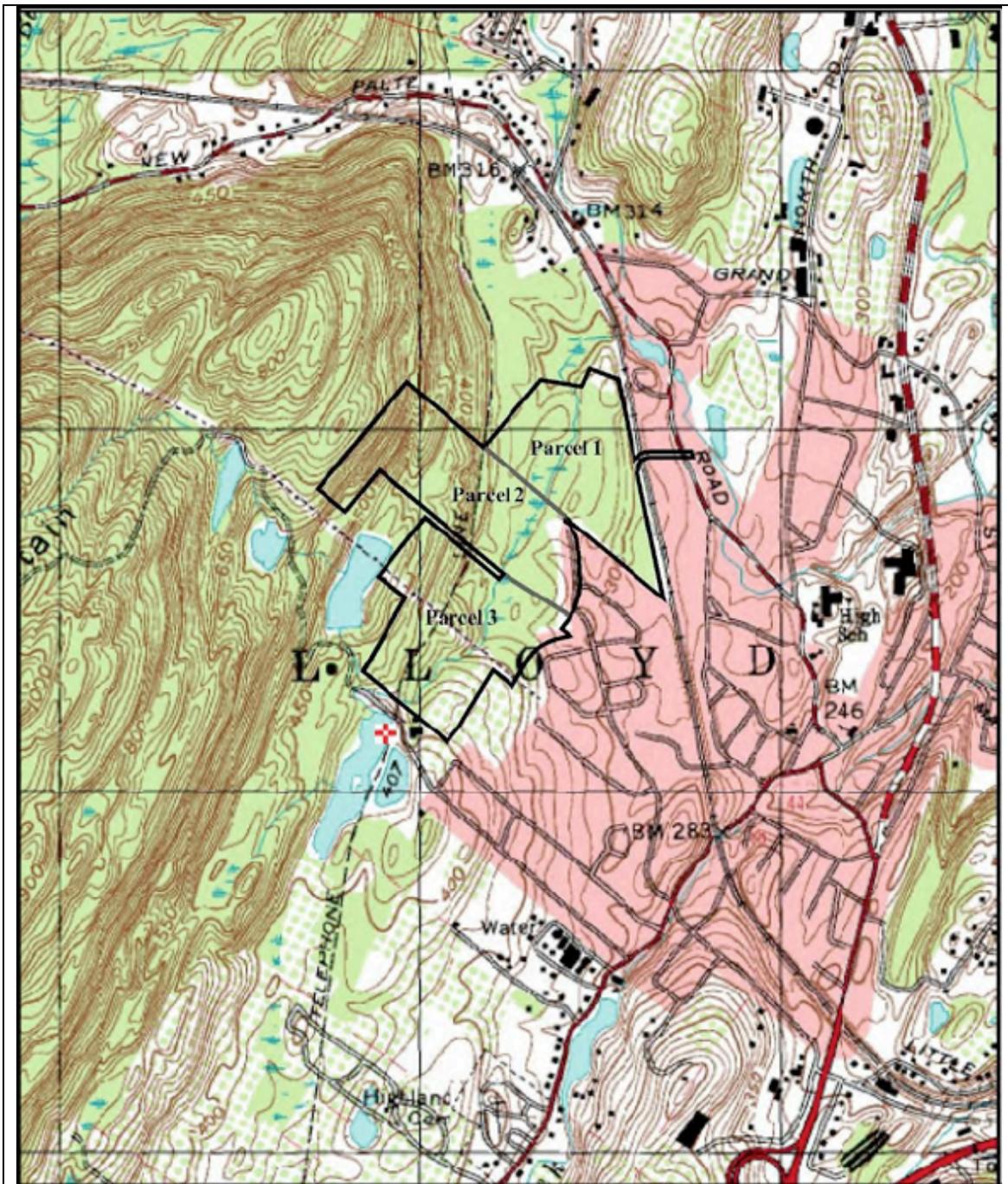


Figure 2-2: USGS 7.5 Minute Quadrangle Map: Poughkeepsie, NY Quad

## 2.2 Project Description

The project site is  $\pm 153.07$  acres in size and is located on Vista Drive in the Town of Lloyd, Ulster County, New York. The site consists of three Town of Lloyd tax lots, Section 87.004 Block 3 Lot 14 and Section 87.004 Block 5 Lots 1.2 and 2. A site location map is included as Figure 2-2 above. As proposed, the project involves the

subdivision of the site into 175 single-family residential lots. Approximately 9,890 linear feet of new roadway and associated infrastructure will be built to service the proposed 175 single-family residential lots. Multiple stormwater management facilities will be constructed within the project to mitigate any stormwater runoff quality and quantity increases. The remaining lands of the proposed project will be offered for dedication to the Town of Lloyd as open space. East of the property is the abandoned railway which is currently being used as a pedestrian and biking trail through the Rails to Trails program. The project is bordered to the south along Vista Drive and Hilltop Lane. Along Vista Drive are existing multi-family dwellings; single-family dwellings are located along Hilltop Lane. Illinois Mountain and the Town of Lloyd water treatment plant and reservoirs are located west of the property. Individual single-family residences are located to the north of the proposed project.

The project site is an irregularly shaped area of land that is bordered by single and multi-family residences, local municipality owned streets and facilities as well as privately owned vacant lands. The property contains variable slopes ranging from generally flat to severely sloped. Generally the site slopes downward from the east and the west to a central low corridor, which contains an existing stream that flows in a northerly direction. The existing site cover consists predominantly of woods with some low brush cover. There are existing streams and water bodies within these wooded areas.

Mountainside Woods has been designed to create an “old style” neighborhood with 175 smaller, moderately priced single-family homes, with front porches, set close to the street on small lots. The homes will be marketed with 3 bedrooms, 2.5 baths and a one-car garage. Homes will range from  $\pm 1,200$  SF to 2,400 SF with an average size of  $\pm 1,750$  SF. Lots will average 50' by 80'. Water and sewer will be provided through municipal services.

Sidewalks on both sides of the street will connect the neighborhood. Pockets of open space have been reserved throughout the site and will be offered to the Town for public parks. The utilization of smaller housing lots fosters a sense of neighborhood, and allows for approximately 120 acres of the site to be preserved as open space. Hiking trails cross the western undeveloped portions of the property providing access to Illinois Mountain. Seasonal parking for hikers will be provided on site and offered to the Town for dedication. Pedestrian access from the site to the Highland Rail Trail will also be a featured amenity.

A development plan of the Mountainside Woods project is presented in Figure 2-3 below:

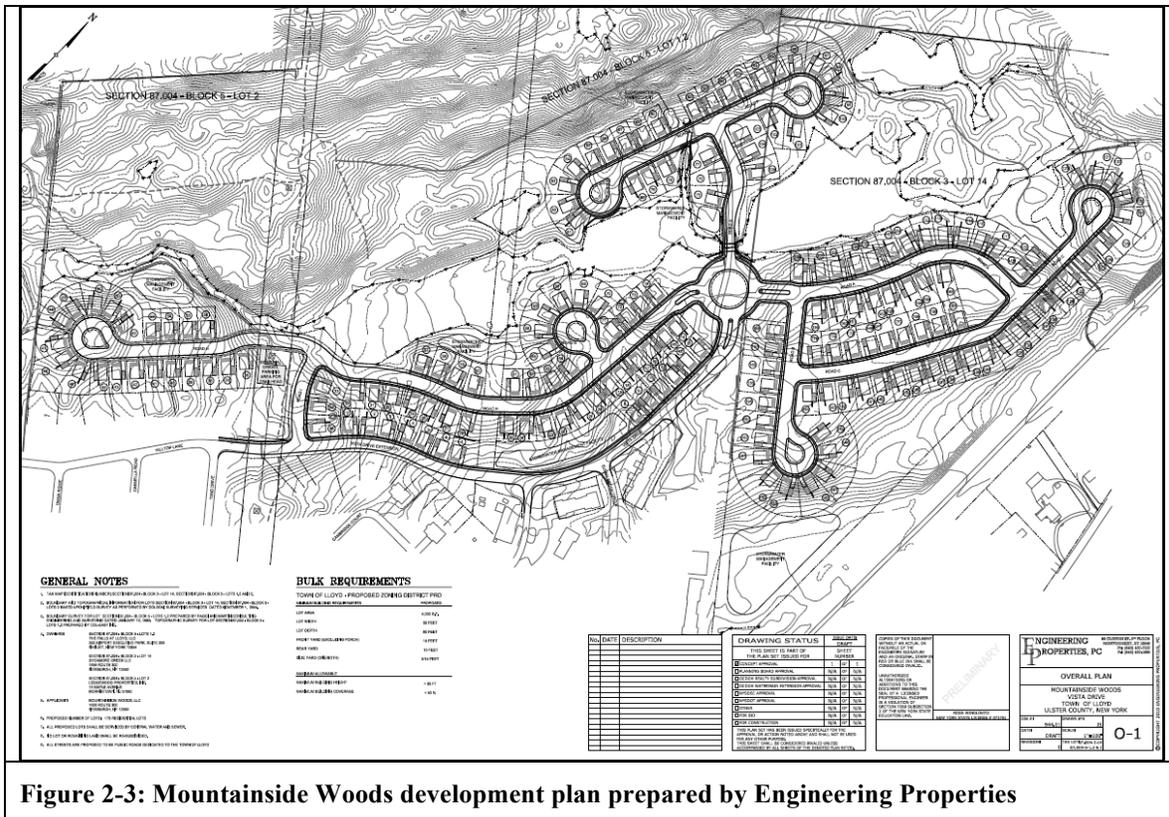


Figure 2-3: Mountainside Woods development plan prepared by Engineering Properties

### 3.0 Methodology

A. V. Agovino Associates, LLC (AVAA) conducted a standard environmental and ecological review of the site. This review consisted of a request for information from appropriate Federal and State agencies regarding the status of rare, threatened or endangered species on the site. Field surveys were conducted between April 2006 and November 2010. Field survey methods are discussed below.

#### 3.1 Agency Inquiries

A written inquiry to the New York State Department of Environmental Conservation, Natural Heritage Program (NHP) and the United States Fish and Wildlife Service (USFWS) to obtain information concerning records relating to the presence of rare, threatened or endangered species or significant habitats on or near the subject site. The surrounding vicinity is included since wildlife and other natural elements may have territories or zones of influence which extend over an area larger than the subject site. Hence, elements located off-site may be influenced by activities proposed for the site.

#### 3.2 Vegetation and Habitat Field Inventory

The evaluation of the site included identification of broad vegetation or habitat cover types as well as specific plant species present. General cover types were first identified

by reviewing aerial photographs of the site and vicinity and then investigating the habitats for identification and classification purposes. Cover types were identified, classified and approximately mapped on maps prepared by Engineering Properties, P.C. These maps have been provided separately.

Within each cover type, visual examination for herbaceous and woody plant species, or such parts as leaves, twigs, bark, seeds, flowers, fruits or other structures was conducted to identify and document on-site species. The Plot Transect method was employed for the vegetation inventory. In addition, the Opportunistic Encounter and Systematic Area Search Technique discussed in the Community Biodiversity Survey Manual prepared by the National Parks Association of New South Wales was utilized to supplement the inventory.<sup>2</sup> The Nature Conservancy's Designing Field Studies for Biodiversity Conservation<sup>3</sup>, the Hudsonia Ltd. Biodiversity Assessment Manual for the Hudson River Estuary Corridor<sup>4</sup> and Ecological Census Techniques: A Handbook<sup>5</sup> were also utilized. Plants were identified to species level whenever possible. Also utilized was the Metropolitan Conservation Alliance's Northern Walkill River Biodiversity Plan.<sup>6</sup> Specifically, the information from Area Number 20, Illinois Mountain Diversity Area, as it relates to species diversity, was utilized as a guide during AVAA's site investigations. Finally, the Phase 1A Literature Review and Sensitivity Analysis & Phase 1B Archaeological Field Reconnaissance Survey prepared by CITY/SCAPE: Cultural Resource Consultants (May, 2010) was reviewed during the preparation of the report.<sup>7</sup>

### 3.3 Wildlife Field Inventory

Field surveys for wildlife species were conducted during each site visit including those on April 17, 18, 19, May 10, 2006, April 23 & 24, May 7, 8, 14 & 21, June 2, 3, 17, 18, 25 and September 21, 2009, April 15 & 29, November 16, 2010. These surveys included mammals, birds, reptiles and amphibians. Species listed as special concern or threatened and endangered were the subject of special surveys targeted to the specific habitats for those species. Accordingly, multiple methodologies were utilized to increase the potential accuracy. Methods for each are described below.

#### 3.2.1 Mammals

Mammalian species present or potentially present at the site were determined through identification of habitat, opportunistic sightings and search for scat, carcass and track

<sup>2</sup> National Parks Association of New South Wales, 1998. *Community Biodiversity Survey Manual*.

<sup>3</sup> Feinsinger, 2001. *Designing Field Studies for Biodiversity Conservation*

<sup>4</sup> Kiviat, Erik, Stevens, Gretchen. *Biodiversity Assessment Manual for the Hudson River Estuary Corridor*. Hudsonia Ltd., 2001.

<sup>5</sup> Sutherland, W.J. (Editor), 1996. *Ecological Census Techniques: A Handbook*. Cambridge University Press, 1996 NY.

<sup>6</sup> La Bruna, D.T. and M.W. Klemens. 2007. Northern Walkill Biodiversity Plan: Balancing Development and Environmental Stewardship in the Hudson River Estuary Watershed. Technical Paper No. 13, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, NY.

<sup>7</sup> CITY/SCAPE: Cultural Resource Consultants, 2010. Mountainside Site Phase 1A Literature Review and Sensitivity Analysis & Phase 1B Archaeological Field Reconnaissance Survey

marks. Sampling routes were established along transects through the property and included all cover types. The routes were walked and species recorded. Mammals identified are more fully discussed in Section 4.2.2 of this report.

### **3.2.2 Birds**

Bird surveys were conducted by AVAA on May 10, 2006, as well as May 7, 8, 14 & 21, June 2, 3, 17, 18, 25, 2009 and April 15 & 29, 2010 between the hours of 5:30 AM and 10:30 AM to identify avian species using the project site. Based on existing ecological community data from the previous site visits as well as knowledge of bird survey techniques, four (4) representative survey points were selected across the site. These points were chosen to provide data that would represent bird use in all ecological community types found on the property.

At each of the data collection points, bird surveys were conducted over a minimum twenty-minute interval. AVAA recorded all birds heard and/or seen during the point counts. As the surveyor(s) traveled between point locations and through the different habitats, incidental observations were documented. The additional data gathered while walking over the site was added to the list of species observed during the point counts. Birds on the wing were also included in the counts as "flyby" to indicate that these individuals were observed passing overhead.

Birds were identified based upon visual encounters, along with vocalizations, tracks, feathers, bones, droppings, drillings, nests or other recognizable signs in the habitats on the site. Avian species identified were included in the species list in Section 4.

### **3.2.3 Herptiles (Reptiles and Amphibians)**

The least mobile species of vertebrates observed belong to the Reptilian and Amphibian families. Herpetological species on the site were actively searched for by overturning stones, logs and other debris, especially in the areas in and adjacent to the freshwater wetlands. Species located were identified by active searches or by sound for vocal herptiles.

## 4.0 Existing Terrestrial & Aquatic Ecology

### 4.1 Vegetation

No critical habitats were observed during the site investigations. "Critical habitat" is designated for threatened and endangered species by the U.S. Fish and Wildlife Service and defined as "a specific designated area declared essential for the survival of a protected species under authority of the Endangered Species Act."

Wetlands are emphasized in this report because they contain much of the site's floral and faunal diversity. Approximately 6% of the total property is classified as wetlands that are anticipated to be of moderate in value as biotic communities.

#### 4.1.1 Wetlands and Watercourses

The on-site forested wetlands contain a mixture of tree canopy species dominated by Acer rubrum (Red Maple, FAC), Betula nigra (River Birch, FACW) and Quercus palustris (Pin Oak, FACW). Other tree species observed include Fraxinus pennsylvanica (Green Ash, FACW), Ulmus rubra (Slippery Elm, FAC), Betula populifolia (Gray Birch, FAC) and Platanus occidentalis (Sycamore, FACW-). The sloped wooded portions of these wetlands are comprised of second growth vegetation with the majority of trees having an 8 - 16 inch diameter at breast height (DBH) and estimated to be approximately 30 - 50 years old. Shrub species observed include Carpinus caroliniana (American Hornbeam, FAC), Lindera benzoin (Spice-Bush, FACW), Hamamelis virginiana (Witch Hazel, FAC-) and Viburnum recognitum (Northern Arrowwood, FACW-). Characteristic of this community was a closed tree canopy with moderate understory and herbaceous vegetation. Herbaceous plants in the wetlands include Symplocarpus foetidus (Skunk Cabbage, OBL), Impatiens capensis (Jewelweed, FACW), Onoclea sensibilis (Sensitive Fern, FACW), Lythrum salicaria (Purple Loosestrife, FACW+), Polygonum sagittatum (Arrow Leaved Tear-Thumb, OBL), Juncus effusus (Soft Rush, FACW+) and Carex stricta (Tussock Sedge, OBL).

The emergent wetland community on the site includes Sambucus canadensis (Elderberry, FACW-), red maple saplings, green ash saplings and Salix discolor (Pussy Willow, FACW). The herbaceous layer is dominated by Typha latifolia (Common Cattail, OBL), Leersia oryzoides (Rice cutgrass, OBL) and other emergents including Onoclea sensibilis (Sensitive Fern, FACW), skunk cabbage, Osmunda regalis (Royal fern, OBL), Polygonum sagittatum (Arrow Leaved Tear-Thumb, OBL), Scirpus cyperinus (Woolgrass, FACW+) and purple loosestrife. The stream channel that runs through the wetland complex was observed to support Lemna minor (Duckweed, OBL) and Ludwigia palustris (Water purslane, OBL).

**Table 4-1: Summary of Wetlands on the Mountainside Woods Site**

Wetland Area	Type	Buffer	Total Area (S.F.)	Total Area (Ac.)	Isolated
A	ACOE	No	128,978	2.961	No
B	Other	No	3,915	0.090	Yes
C	Other	No	1,542	0.035	Yes
D	ACOE	No	12,241	0.281	No
E	Other	No	3,888	0.089	Yes
F	ACOE	No	79,703	1.830	No
G	ACOE	No	50,767	1.165	No
H	ACOE	No	159,016	3.651	No
I	ACOE	No	7,110	0.163	No

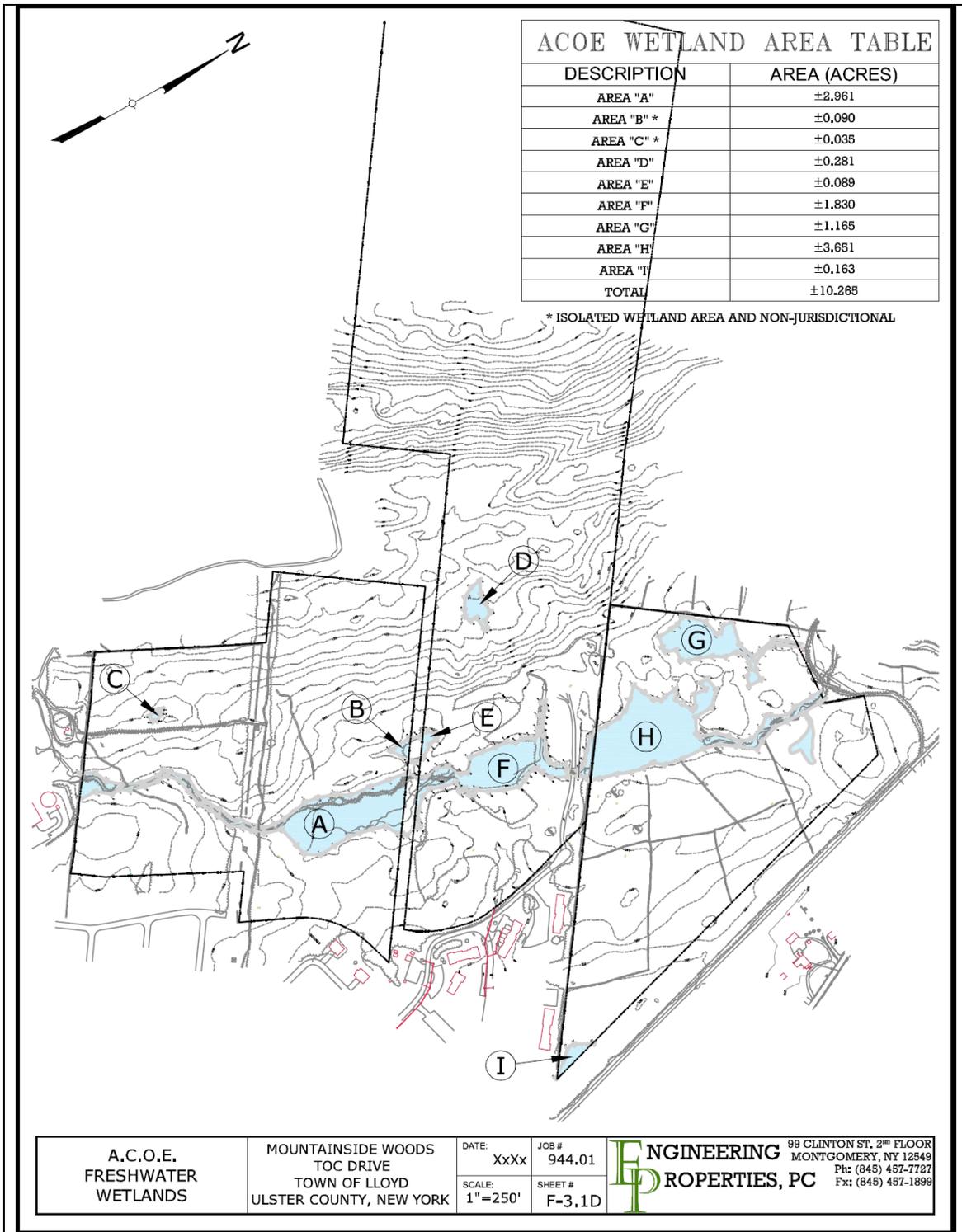


Figure 4-1: Mapped Wetlands on the Mountainside Woods Site (scale as shown)

#### 4.1.2 Forest Communities

In a November 14, 2005 Natural Heritage data search, the New York State Department of Environmental Conservation National Heritage Program identified the potential for a Hemlock-Northern Hardwood forest community at or near the site. This is a mixed forest that typically occurs on middle to lower slopes of ravines, on cool, mid-elevation slopes, and on moist, well-drained sites at the margins of swamps. It is a close-canopy forest with Tsuga canadensis (Eastern Hemlock, FACU) present in the canopy. Hemlock may occur in nearly pure stands, with nearly 100% canopy cover, or reach an abundance as low as 20% canopy cover, intermingled with other canopy trees. Tsuga canadensis (Eastern Hemlock, FACU) is co-dominant with any one to three of the following tree species: Fagus grandifolia (American Beech, FACU), Acer saccharum (Sugar Maple, FACU), Acer rubrum (Red Maple, FAC), Prunus serotina (Black Cherry, FACU), Pinus strobus (White Pine, FACU), yellow birch (Betula alleghaniensis, FACU), Betula lenta (Black Birch, FACU), Quercus rubra (Northern Red Oak, FACU-), and Tilia americana (Basswood, FACU). The relative cover of eastern hemlock is quite variable, ranging from nearly pure stands in some steep ravines to as little as 20% of the canopy cover. Striped maple (Acer pensylvanicum) is often prominent as a mid-story tree. According to the NYSDEC, this is a broadly defined and very widespread community with many variants. For example, in the Hudson Valley, eastern hemlock is sometimes co-dominant with red oak; in the Adirondacks, yellow birch and sugar maple are sometimes co-dominant.<sup>8</sup>

Additionally, the November 14, 2005 letter identifies the presence of an Appalachian oak-hickory forest. This is a hardwood forest that occurs on well-drained sites, usually on ridgetops, upper slopes, or south- and west-facing slopes. The soils are usually loams or sandy loams. This is a broadly defined forest community with several variants. The dominant trees include one or more species of oak. Appalachian oak-hickory forests have less hemlock, sugar maple, and beech than hemlock-northern hardwood forests, but have a higher abundance of oaks and hickories (*Carya* spp.).

AVAA's inspection noted the conspicuous absence of hemlock dominance, with few individuals identified and those present were in the understory rather than in the canopy. Additionally, hickories were seldom identified throughout the site. Based upon the site inspections, AVAA characterizes the site-specific forest community as a Beech-maple mesic forest. This community is not protected and is widespread throughout upstate New York. It forms the matrix forest of the Northern Appalachian Ecoregion in the Adirondacks and Tug Hill. Beech-maple mesic forest communities are closed-canopy hardwood forests with co-dominating sugar maple and American beech. This is a broadly defined community type with several regional and edaphic variants. These forests occur on moist, well-drained, usually acid soils. There are many spring ephemerals that bloom before the canopy trees leaf out. Hemlock may be present at a low density. (Edinger et al.

<sup>8</sup> <http://www.acris.nynhp.org/guide.php?id=9991>. Accessed January 16th, 2011

2002). Beech-maple mesic forests have fewer hemlocks than hemlock-northern hardwood forests, but many of the other canopy species are similar.

#### 4.1.3 Rare Plant Species

No federally listed rare or endangered plant species were identified for the site by the United States Fish and Wildlife Service (USFWS). Ten state-listed threatened or endangered plant species were identified by the NYSDEC as occurring or possibly occurring on or in the immediate vicinity of the project site. The November 14, 2005, correspondence received from the NHP indicates that there have been historical findings made within the vicinity of the project site or its surroundings between 1887-1903 for the following 12 state-listed plant species:

- Yellow giant-hyssop (*Agastache nepetoides*),
- Puttyroot (*Aplectrum hyemale*),
- Virginia snakeroot (*Aristolochia serpentaria*),
- Straw sedge (*Carex straminea*),
- Golden corydalis (*Corydalis aurea*),
- Rattlebox (*Crotalaria sagittalis*)
- Stiff tick-trefoil (*Desmodium obtusum*),
- Purple bluets (*Houstonia purpurea* var. *calycosa*),
- Velvety bush-clover (*Lespedeza stuevei*),
- Large twayblade (*Liparis lilifolia*),
- Erect knotweed (*Polygonum erectum*), and
- Small-flowered crowfoot (*Ranunculus micranthus*).

The NHP's database findings are considered sensitive information so the specific database search results are not provided by the NHP when it issues its findings. A copy of the letter from NHP is included in Appendix B of this report. Actual locations of these findings are also not available to determine the past locations of the listed plants and no more recent records of specimens of any of the species listed have been reported by the NHP.

Specific information from the NYSDEC on these species is provided in the following paragraphs taken from the 2005 NHP letter as well as the NYSDEC website. On-site field surveys were conducted by AVAA from 2005 through 2010 at times appropriate to the different flowering periods for the species cited by the NHP. As presented below, the determination was made that only one of these plant species was noted to be possibly present on the project site. The site was evaluated for habitats and plant associations that might indicate these vascular plant species might be present on the property. The available ecosystem types occurring on the site indicate that habitat conditions potentially supportive of each of these plant species are present. However, the vast majority of the identified viable habitat present is associated with the forested slopes of Illinois Mountain, which will remain undisturbed as a result of the proposed project.

**Yellow giant-hyssop (*Agastache nepetoides*)**. According to the NHP records, yellow giant-hyssop is listed as a threatened species within New York State that is “demonstrably secure” globally. Its last recorded local sighting occurred in 1899 in a wooded location near Highland. The diagnostic features of this herbaceous plant include its large size and prominent flowering spike. Flowering plants are from four to six feet in height and from one to three feet wide at the base. The flower spike is tightly clustered with greenish-yellow flowers from mid-August to first frost. The plant is found in full sun to partially shaded conditions in moist rich soils of open thickets and woodlands.

No specimens of yellow giant-hyssop were observed on the project site during on-site field investigations by AVAA. Given the extensive period of time (100+ years) since the last recorded sighting and with no historical sightings in the area of the proposed development, it is our opinion that this species does not occur on the project site.

**Putty Root (*Aplectrum hyemale*)**. According to the NHP records, putty root is a state-listed endangered species that is “demonstrably secure” globally. Its last recorded local sighting occurred in 1895 in a wooded location near Highland. In summer, this herbaceous plant produces 6 to 20 purplish or yellowish-brown flowers on a 10 to 20 inch tall stem. This plant produces a single four to six inch long elliptical leaf in the fall that is appressed to the ground and withers after flowering. The plant is found in partially shaded conditions in rich woodland soils.

No specimens of putty root were observed on the project site during on-site field investigations by AVAA. Given the extensive period of time (100+ years) since the last recorded sighting and with no historical sightings in the area of the proposed development, it is our opinion that this species does not occur on the project site.

**Virginia snakeroot (*Aristolochia serpentaria*)**. According to the NHP records, Virginia snakeroot is a state-listed endangered species that is “apparently secure” globally. Its last recorded local sighting occurred in 1895 in a location in Highland. In early spring through early summer, this herbaceous plant produces cryptic solitary 3/4” long purplish-brown flowers on an eight to 24 inch stem with elongated heart-shaped leaves. This plant grows in a wide variety of forested upland habitats, including on streambanks as well as in rich moist woodlands and in dry rocky woods.

No specimens of Virginia snakeroot were observed on the project site during on-site field investigations by AVAA. Given the extensive period of time (100+ years) since the last recorded sighting and with no historical sightings in the area of the proposed development, it is our opinion that this species does not occur on the project site.

**Straw sedge (*Carex straminea*)**. According to the NHP records, Straw sedge is a state-listed endangered species that is “demonstrably secure” globally. Its last recorded local sighting occurred in 1896 in a location in Highland. From June through July, this 24 to 40 inch tall plant produces fruiting bodies from its tufted perennial base. This plant is found in moist, shaded or semi-shaded environments, including wooded floodplains, wooded swamps, wet meadows, wetland borders and clearings.

No specimens of straw sedge were observed on the project site during on-site field investigations by AVAA. Given the extensive period of time (100+ years) since the last recorded sighting and with no historical sightings in the area of the proposed development, it is our opinion that this species does not occur on the project site.

**Golden corydalis (*Corydalis aurea*)**. According to the NHP records, Golden corydalis is a state-listed threatened species that is “demonstrably secure” globally. Its last recorded local sighting occurred in 1887 in a location in Highland. In late spring, this herbaceous plant produces four to twelve pale to bright ½ inch long yellow flowers in loose clusters on six to eight inch long prostrate stems. The plant is present in sandy or rocky soils on banks and in open woods.

No specimens of golden corydalis were observed on the project site during on-site field investigations by AVAA. Given the extensive period of time (100+ years) since the last recorded sighting and with no historical sightings in the area of the proposed development, it is our opinion that this species does not occur on the project site.

**Rattlebox (*Crotalaria sagittalis*)**. According to the NHP records, rattlebox is a state-listed endangered species that is “demonstrably secure” globally. Its last recorded local sighting occurred in 1907 in a location in Highland. Rattlebox is an annual, herbaceous, leguminous weed. It has an erect, hairy stem 10 to 40 cm tall, with conspicuous stipules persisting along the upper stem. The leaves are alternate, sessile, pubescent, and lanceolate to linear, and 3 to 8 cm long. The flowers have a hairy, pale green calyx enclosing a pale yellow, two-lipped corolla. The distinctive fruits are very inflated, pendant legumes.

No specimens of rattlebox were observed on the project site during on-site field investigations by AVAA. Given the extensive period of time (100+ years) since the last recorded sighting and with no historical sightings in the area of the proposed development, it is our opinion that this species does not occur on the project site.

**Stiff tick-trefoil (*Desmodium obtusum*)**. According to the NHP records, Stiff tick-trefoil is a state-listed endangered species that is “apparently secure” globally. Its last recorded local sighting occurred in 1896 in a dry woods location near Highland. Tick-trefoils are found widely in habitats as diverse as dry, open meadows to open forests and thickets.

Four other regionally common species of tick-trefoils (Table 3-2) were present in dry woods on the site in habitat that could be exploitable by stiff tick-trefoil. However, no specimens of stiff tick-trefoil were observed on the project site during AVAA’s surveys, those conducted by the other previous environmental consultants or by the NHP.

Given the extensive period of time (100+ years) since the last recorded sighting and with no historical sightings in the area of the proposed development, it is our opinion that this species does not occur on the project site.

**Purple bluets (*Houstonia purpurea* var. *calycosa*).** According to the NHP records, purple bluets is a state-listed endangered species that is “demonstrably secure” globally. Its last recorded sighting occurred in 1896 in a meadow location near Highland. In early summer this herbaceous plant produces broad terminal clusters of three or more flowers within clumps of six to eight inch upright stems. This plant may be found on well-drained slopes, woods, pine barrens or grasslands.

No specimens of purple bluets were observed on the project site during on-site field investigations by AVAA. Given the extensive period of time (100+ years) since the last recorded sighting and with no historical sightings in the area of the proposed development, it is our opinion that this species does not occur on the project site.

**Velvety bush-clover (*Lespedeza stuevei*).** According to the NHP records, Velvety bush-clover is a state-listed threatened species that is “apparently secure” globally. Its last recorded local sighting occurred in 1899 in Highland. In mid-summer this herbaceous plant produces a crowded spike of pea-like pink or purplish-pink flowers on densely downy plants that are two to six feet tall. It is found typically in open uplands, barrens or bottomlands and less frequently in semi-open dry forests.

One other regionally common species of bush-clover (Table 3-2) was common in the open, disturbed meadows on the site that includes habitat that could be exploitable by velvety bush-clover. However, no specimens of velvety bush-clover were observed on the project site during surveys conducted AVAA, the other previous environmental consultants, or by the NHP.

Given the extensive period of time (100+ years) since the last recorded sighting and with no historical sightings in the area of the proposed development, it is our opinion that this species does not occur on the project site.

**Large twayblade (*Liparis lilifolia*).** According to the NHP records, the large twayblade is a state-listed threatened species within New York State that is “demonstrably secure” globally. Its last recorded local sighting occurred in 1903 in woods near Highland. From June to July this herbaceous plant produces a spike of ½ inch long lipped, dull pink to brown flowers on a 12” tall stem. This plant is found in loamy or sandy soils of rich, mossy woods or along ravines and streambanks.

No specimens of large twayblade were observed on the project site during on-site field investigations by AVAA. Given the extensive period of time (100+ years) since the last recorded sighting and with no historical sightings in the area of the proposed development, it is our opinion that this species does not occur on the project site.

**Erect knotweed (*Polygonum erectum*).** According to the NHP records, erect knotweed is a state-listed endangered species that is “demonstrably secure” globally. Its last recorded local sighting occurred in 1892 in a location in Highland. It is an annual plant species with upright or ascending stems. Plants grow 10 to 50 cm tall with many to few, non wiry branches. The leaves have distinct veins and entire edges or have jagged cut edges. The pedicels are shorter or equal the length of the calyx and typically longer than

the ocreae. The closed flowers have a small calyx that is green in color and 5-lobed. Flowers in clusters of 1 to 5 in the axils of most leaves.

No specimens of erect knotweed were observed on the project site during on-site field investigations by AVAA. Given the extensive period of time (100+ years) since the last recorded sighting and with no historical sightings in the area of the proposed development, it is our opinion that this species does not occur on the project site.

**Small-flowered crowfoot (*Ranunculus micranthus*)**. According to the NHP records, the small-flowered crowfoot is a state-listed threatened species within New York State that is “demonstrably secure” globally. Its last recorded local sighting occurred in 1893 in woods near Highland. In early spring this species of buttercup produces a single yellow flower on a stem up to 16 inches tall in dry or moist rich soils of rocky woods.<sup>9</sup>

A similar species, the littleleaf buttercup (*Ranunculus abortivus*), is commonly present along the watercourse that flows through the wetlands. However, the small-flowered crowfoot was not observed on the project site during surveys conducted AVAA, the previous environmental consultants or by the NHP

Given the extensive period of time (100+ years) since the last recorded sighting and with no historical sightings in the area of the proposed development, it is our opinion that this species does not occur on the project site.

In addition to the site specific surveys that AVAA conducted, the NHP has conducted recent searches in the Town of Highland for each of the above listed species without any discovery of remnant populations or individuals.<sup>10 11</sup>

#### 4.1.4 Wooded Areas

Much of the site is upland, dominated by second-growth mixed forests that are typical of those that grow in the region. Species such as *Quercus alba* (White Oak, FACU-), *Fagus grandifolia* (American Beech, FACU), *Betula lenta* (Black Birch, FACU), *Quercus velutina* (Black Oak, NL), *Acer saccharum* (Sugar Maple, FACU), *Prunus serotina* (Black Cherry, FACU), *Quercus rubra* (Northern Red Oak, FACU-) and *Castanea dentata* (American Chestnut, NL) were commonly observed.

Based upon the site inspections, AVAA characterizes the dominant site-specific forest community as primarily a Beech-maple mesic forest. This community is not protected and is widespread throughout upstate New York. It forms the matrix forest of the Northern Appalachian Ecoregion in the Adirondacks and Tug Hill. Beech-maple mesic forest communities are closed-canopy hardwood forests with co-dominating sugar maple

<sup>9</sup> Gleason, Henry A. and A. Cronquist. 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. The New York Botanical Garden. 910 pp.

<sup>10</sup> <http://www.acris.nynhp.org/guide.php?id=9277&part=2>, accessed 1/5/2011

<sup>11</sup> New York Natural Heritage Program. 2005. Biotics Database. Albany, NY.

and American beech. This is a broadly defined community type with several regional and edaphic variants. These forests occur on moist, well-drained, usually acid soils. There are many spring ephemerals that bloom before the canopy trees leaf out. Hemlock may be present at a low density. (Edinger et al. 2002). Beech-maple mesic forests have fewer hemlocks than hemlock-northern hardwood forests, but many of the other canopy species are similar.

Two other forest communities are also present on site. The Chestnut Oak Forests, which extend widely across the Appalachians on mid-elevation slopes with well-drained glacial soils, occur throughout this region on higher elevation lands and slopes that have not been recently cleared. The dominant trees are oaks (*Quercus* spp.) and red maple (*Acer rubrum*). Remnant clusters of vegetatively sprouting American chestnut (*Castanea dentata*) may be interspersed among the dominant tree species. This ecosystem type is recognized as being globally secure and apparently secure in New York State.

A mixed successional hardwood community, the Successional Northern Hardwood Forest, also develops in this region where lands have been cleared for farming, logging or otherwise disturbed in the more recent past. The dominant overstory trees in this hardwood community are usually any two or more of the following: poplars and aspens (*Populus* spp.), birches (*Betula* spp.), cherries (*Prunus* spp.), red maple, ashes (*Fraxinus* spp), and elms (*Ulmus* spp.) or other introduced species such as black locust (*Robinia psuedo-acacia*) or tree-of-heaven (*Ailanthus altissima*). This ecosystem type is recognized as being globally and locally secure.

These three forest community types are represented on specific portions of the project site. On the higher elevations, up to and including the northern ridgeline of Illinois Mountain, the species composition of the overstory trees includes oaks (primarily black and chestnut), maples (primarily sugar and red) and occasional hemlock. Understory trees and shrubs include mountain laurel, lowbush blueberry, maple-leaf viburnum, Eastern hop hornbeam and seedlings and saplings of the overstory trees. Groundcover species include lowbush blueberry and poison ivy.

At mid-level elevations of the mountain slopes, the canopy consists of red and black oaks, sugar maple and black birch with some specimens of red maple, chestnut oak, sycamore, black willow, hemlock and paper birch. The understory in these areas includes tree saplings, lowbush blueberry, maple-leaf viburnum, spicebush and Eastern hop hornbeam.

The lowest elevations of the slopes of Illinois Mountain have a tree canopy layer that is dominated by white and red oaks, sugar maples and black birch with an understory that is comprised primarily of sassafras, maple-leaf viburnum, and saplings of the overstory trees. Other canopy or understory species observed on the lower slopes included hemlock, black oak, red maple, sassafras, American beech, yellow birch, Eastern hop hornbeam, witch-hazel, flowering dogwood, Virginia creeper, honeysuckles, maple-leaf viburnum, Christmas fern and lowbush blueberry.

The presence of old logging roads, decaying sawn stumps and multi-stemmed regrowth of some trees indicates that the site has been partially logged in the past. In spite of earlier logging activities, many of the trees located on the mountain are large specimens and have been estimated to be from 75 to 100 years old.

The level, eastern portion of the property was clear-cut and portions of the site graded and filled in the 1990's as part of previous development activities. These areas now exist as Successional Old Field/Shrubland habitats as described in the Wildlife section that follows below.

<b>Table 4-2: Regional and Site Vegetation</b>	
<b>Common Name (Scientific Name)</b>	
<b>TREES</b>	
American beech ( <i>Fagus grandifolia</i> )	Pin oak ( <i>Quercus palustris</i> )
American chestnut ( <i>Castanea dentata</i> )	Quaking aspen ( <i>Populus tremuloides</i> )
Big tooth aspen ( <i>Populus grandidentata</i> )	Red maple ( <i>Acer rubrum</i> )
Black cherry ( <i>Prunus serotina</i> )	Red oak ( <i>Quercus rubra</i> )
Black oak ( <i>Quercus velutina</i> )	River birch ( <i>Betula nigra</i> )
Black willow ( <i>Salix nigra</i> )	Sassafras ( <i>Sassafras albidum</i> )
Bladdernut ( <i>Staphylea trifolia</i> )	Scarlet oak ( <i>Quercus coccinea</i> )
Chestnut oak ( <i>Quercus prinus</i> )	Shagbark hickory ( <i>Carya ovata</i> )
Eastern cottonwood ( <i>Populus deltoides</i> )	Smooth sumac ( <i>Rhus glabra</i> )
Eastern hemlock ( <i>Tsuga canadensis</i> )	Staghorn sumac ( <i>Rhus typhina</i> )
Eastern hop hornbeam ( <i>Ostrya virginiana</i> )	Striped maple ( <i>Acer pennsylvanicum</i> )
Eastern red cedar ( <i>Juniperus virginiana</i> )	Sugar maple ( <i>Acer saccharum</i> )
Paper birch ( <i>Betula papyrifera</i> )	Sweet (black) birch ( <i>Betula lenta</i> )
Pignut hickory ( <i>Carya glabra</i> )	
<b>SHRUBS</b>	
Allegheny blackberry ( <i>Rubus allegheniensis</i> )	Mountain laurel ( <i>Kalmia latifolia</i> )
Black raspberry ( <i>Rubus occidentalis</i> )	Multiflora rose ( <i>Rosa multiflora</i> )
Brambles ( <i>Rubus</i> spp.)	Northern arrowwood ( <i>Viburnum recognitum</i> )
Common elderberry ( <i>Sambucus canadensis</i> )	Purple-flowering raspberry ( <i>Rubus odoratus</i> )
Flowering dogwood ( <i>Cornus florida</i> )	Pussy willow ( <i>Salix discolor</i> )
Highbush blueberry ( <i>Vaccinium corymbosum</i> )	Spicebush ( <i>Lindera benzoin</i> )
Japanese barberry ( <i>Berberis thunbergii</i> )	Maple-leaved viburnum ( <i>Viburnum acerifolium</i> )
Leatherwood ( <i>Dirca palustris</i> )	Wineberry ( <i>Rubus phoenicolasius</i> )
Lowbush blueberry ( <i>Vaccinium myrtilloides</i> )	Witchhazel ( <i>Hamamelis virginiana</i> )
Maple-leaved viburnum ( <i>Viburnum acerifolium</i> )	

HERBACEOUS PLANTS AND VINES	
American pennyroyal ( <i>Hedeoma pulegioides</i> )	Licorice bedstraw ( <i>Galium circaezans</i> )
Arrow-leaf tearthumb ( <i>Polygonum sagittatum</i> )	Littleleaf buttercup ( <i>Ranunculus abortivus</i> )
Arrow-leaved violet ( <i>Viola sagittata</i> )	Mad-dog skullcap ( <i>Scutellaria laterifolia</i> )
Birdsfoot trefoil ( <i>Lotus corniculatus</i> )	Marsh seedbox ( <i>Ludwigia palustris</i> )
Bittersweet nightshade ( <i>Solanum nigrum</i> )	Marsh pennywort ( <i>Hydrocotyle americana</i> )
Black-eyed Susan ( <i>Rudbeckia hirta</i> )	Milk purslane ( <i>Euphorbia supina</i> )
Black false bindweed ( <i>Polygonum convolvulus</i> )	Morrow's honeysuckle ( <i>Lonicera morrowii</i> )
Bladder campion ( <i>Silene cucubalus</i> )	Mouse ear chickweed ( <i>Cerastium vulgatum</i> )
Bloodroot ( <i>Sanguinaria canadensis</i> )	Mouseear hawkweed ( <i>Hieracium flagellare</i> )
Blue flag ( <i>Iris versicolor</i> )	Mugwort ( <i>Artemisia vulgaris</i> )
Boneset ( <i>Eupatorium perfoliatum</i> )	Naked flowered ticktrefoil ( <i>Desmodium paniculatum</i> )
Branched bur-reed ( <i>Sparganium angrocladum</i> )	Narrowleaf cattail ( <i>Typha augustifolia</i> )
Broad-leaved cattail ( <i>Typha latifolia</i> )	Northern blue iris ( <i>Iris versicolor</i> )
Canada goldenrod ( <i>Solidago canadensis</i> )	Ox-eye daisy ( <i>Chrysanthemum leucanthemum</i> )
Canada mayflower ( <i>Maianthemum canadense</i> )	Panicled hawkweed ( <i>Hieracium paniculatum</i> )
Canada moonseed ( <i>Menispermum canadense</i> )	Panicled ticktrefoil ( <i>Desmonium paniculatum</i> )
Cespitose smartweed ( <i>Polygonum cespitosum</i> )	Partridgeberry ( <i>Mitchella repans</i> )
Chicory ( <i>Cichorium intybus</i> )	Pearly everlasting ( <i>Anaphalis margaritacea</i> )
Clearweed ( <i>Pilea pumila</i> )	Perfoliated bellwort ( <i>Uvularia perfoliata</i> )
Cleavers ( <i>Galium aparine</i> )	Pilewort ( <i>Erechtites hieraciifolia</i> )
Coltsfoot ( <i>Tussilago farfara</i> )	Pointed leaf ticktrefoil ( <i>Desmodium glutinosus</i> )
Common blue-eyed grass ( <i>Sisyrinchium montanum</i> )	Poison ivy ( <i>Toxicodendron radicans</i> )
Common cinquefoil ( <i>Potentilla simplex</i> )	Pokeweed ( <i>Phytolacca americana</i> )
Common dandelion ( <i>Taraxacum officinale</i> )	Prickly lettuce ( <i>Lactuca serriola</i> )
Common dodder ( <i>Cuscuta gronovii</i> )	Prostate ticktrefoil ( <i>Desmodium rotundifolium</i> )
Common duckweed ( <i>Lemna minor</i> )	Purple loosestrife ( <i>Lythrum salicaria</i> )
Common evening primrose ( <i>Oenothera biennis</i> )	Queen Anne's Lace ( <i>Daucus carota</i> )
Common greenbriar ( <i>Smilax rotundifolia</i> )	Rattlesnake weed ( <i>Hieracium venosum</i> )
Common hawkweed ( <i>Hieracium</i> spp.)	Red clover ( <i>Trifolium pratense</i> )
Common mullein ( <i>Verbascum thapsus</i> )	Red trillium ( <i>Trillium erectum</i> )
Common plantain ( <i>Plantago major</i> )	Rice cut grass ( <i>Leersia orizoides</i> )
Common ragweed ( <i>Ambrosia artemisiifolia</i> )	Round-lobed hepatica ( <i>Hepatica americana</i> )
Common reed ( <i>Phragmites australis</i> )	Sedge ( <i>Carex</i> spp.)
Common speedwell ( <i>Veronica officinalis</i> )	Sharp-winged monkey flower ( <i>Mimulus alatus</i> )
Common St-John's wort ( <i>Hypericum perforatum</i> )	Sheep sorrel ( <i>Rumex acetosella</i> )
Cowwheat ( <i>Melampyrum lineare</i> )	Skunk cabbage ( <i>Symplocarpus foetidus</i> )
Daisy fleabane ( <i>Erigeron annuus</i> )	Small-flowered crowfoot ( <i>Ranunculus micranthus</i> )
Deptford pink ( <i>Dianthus armeria</i> )	Smooth goldenrod ( <i>Solidago gigantea</i> )
Downy rattlesnake-plantain ( <i>Goodyera pubescens</i> )	Smooth rock cress ( <i>Arabis laevigata</i> )
Downy yellow false foxglove ( <i>Aureolaria virginica</i> )	Spiked lobelia ( <i>Lobelia spicata</i> )
Duckweed ( <i>Lemna</i> spp.)	Spotted jewelweed ( <i>Impatiens capensis</i> )
Early goldenrod ( <i>Solidago juncea</i> )	Spotted knapweed ( <i>Centaurea maculosa</i> )

Enchanter's nightshade ( <i>Circaea lutetiana</i> )	Spotted spurge ( <i>Euphorbia maculata</i> )
English plantain ( <i>Plantago lanceolata</i> )	Spotted wintergreen ( <i>Chimaphila maculata</i> )
False nettle ( <i>Boehmeria cylindrica</i> )	Squawroot ( <i>Conopholis americana</i> )
False Solomon's seal ( <i>Maianthemum racemosum</i> )	Stout blue-eyed grass ( <i>Sisyrinchium angustifolium</i> )
Field hawkweed ( <i>Hieracium kalmii</i> )	Suckling clover ( <i>Trifolium dubium</i> )
Field strawberry ( <i>Fragaria virginiana</i> )	Sulfur cinquefoil ( <i>Potentilla recta</i> )
Flattop goldenrod ( <i>Euthamia gaminifolia</i> )	Tall meadowrue ( <i>Thalictrum pubescens</i> )
Foam flower ( <i>Tiarella cordifolia</i> )	Three-square rush ( <i>Scirpus pungens</i> )
Four-leaved milkweed ( <i>Asclepias quadrifolia</i> )	Thyme-leaved speedwell ( <i>Veronica serpyllifolia</i> )
Fox grape ( <i>Vitis labrusca</i> )	Venus' looking glass ( <i>Triodanis perfoliata</i> )
Garlic mustard ( <i>Alliaria petiolata</i> )	Violet ( <i>Viola</i> spp.)
Grape ( <i>Vitis</i> spp.)	Virginia creeper ( <i>Parthenocissus quinquefolia</i> )
Hairy bedstraw ( <i>Galium pilosum</i> )	Virginia dayflower ( <i>Commelina virginica</i> )
Hairy bushclover ( <i>Lespedeza hirta</i> )	Waterpepper ( <i>Polygonum hydropiper</i> )
Hairy solomon's seal ( <i>Polygonatum pubescens</i> )	White avens ( <i>Geum canadense</i> )
Halberd-leaved tearthumb ( <i>Polygonum arifolium</i> )	White baneberry ( <i>Actaea pachypoda</i> )
Honewort ( <i>Cryptotaenia canadensis</i> )	White clover ( <i>Trifolium repens</i> )
Hooked crowfoot ( <i>Ranunculus recurvatus</i> )	White sweet clover ( <i>Melilotus alba</i> )
Hop clover ( <i>Trifolium agrarium</i> )	Whorled loosestrife ( <i>Lysimachia quadrifolia</i> )
Horseflyweed ( <i>Baptisia tinctoria</i> )	Wild bergamot ( <i>Monarda fistulosa</i> )
Horsenettle ( <i>Solanum carolinense</i> )	Wild geranium ( <i>Geranium maculatum</i> )
Indian cucumber root ( <i>Medeola virginiana</i> )	Wild ginger ( <i>Asarum canadense</i> )
Indian hemp ( <i>Apocynum cannabinum</i> )	Wild licorice ( <i>Galium lanceolatum</i> )
Indian pipe ( <i>Monotropa uniflora</i> )	Wild madder ( <i>Galium mollugo</i> )
Indian tobacco ( <i>Lobelia spicata</i> )	Wild mint ( <i>Mentha arvensis</i> )
Jack in the Pulpit ( <i>Arisaema atorubens</i> )	Wild peppergrass ( <i>Lepidium virginicum</i> )
Japanese knotweed ( <i>Polygonum cuspidatum</i> )	Winged monkey flower ( <i>Mimulus alatus</i> )
Jumpseed ( <i>Polygonum virginianum</i> )	Woolly grass bulrush ( <i>Scirpus cyperinus</i> )
Long-bracted orchid ( <i>Habenarius viridis</i> )	Yarrow ( <i>Achillea millefolium</i> )
Lesser stitchwort ( <i>Stellaria graminea</i> )	Yellow wood sorrel ( <i>Oxalis europaea</i> )
<b>FERNS</b>	
Blunt lobed woodsia ( <i>Woodsia obtusa</i> )	Hayscented fern ( <i>Dennstaedtia punctilobula</i> )
Bracken fern ( <i>Pteridium aquilinum</i> )	Maidenhair spleenwort ( <i>Asplenium trichomanes</i> )
Christmas fern ( <i>Polystichum acrostichoides</i> )	Marginal woodfern ( <i>Dryopteris marginalis</i> )
Cinnamon fern ( <i>Osmunda cinnamomea</i> )	Princess pine ( <i>Lycopodium</i> spp.)
Common polypody ( <i>Polypodium vulgare</i> )	Rattlesnake fern ( <i>Botrychium virginianum</i> )
Ebony spleenwort ( <i>Asplenium platyneuron</i> )	Royal fern ( <i>Osmunda regalis</i> )
* Plants observed during site visit(s): April 29, May 6, 15, 18, June 12, 27 and July 21, 2006 (TMA); April 17, 18, 19, May 10, 2006, April 23 & 24, May 7, 8, 14 & 21, June 2, 3, 17, 18, 25 and September 21, 2009, April 15 & 29, November 16, 2010 by AVAA.	
Indicates ferns that are not protected in New York State. All other species are protected.	
Note: This list also includes many species that could potentially inhabit this site.	
Source: A. V. Agovino Associates, LLC	

## 4.2 Wildlife

### 4.2.1 Wildlife Habitat

A variety of wildlife habitats occur on the property within ecological communities occurring across the site. None of these habitats or populations is unique to the area or specifically to the project site. Vegetative cover of these habitat areas has been described above. Some populations of wildlife are known or can be expected to occur within these habitats, as described below. The NHP did not identify any endangered, threatened, or special concern species of fauna as occurring on, or in the immediate vicinity, of the property. The U. S. Fish and Wildlife Service (USFWS) noted the potential for the Federally- and State-listed endangered Indiana bat (*Myotis sodalis*) to occur within the proposed project area and that the project site is in the vicinity of historic bog turtle (*Clemmys muhlenbergii*) sites.

#### 4.2.1.1 *Second-growth Hardwood Forests*

This community type includes mature and semi-mature tree species that provide food as mast (beech, oaks, hickories), forage or browse for deer and other mammals and also provide cover in the upper canopy and in standing dead trees. Deadfalls from trees, including limbs and stumps, were commonly observed across the site. Populations of insects, earthworms, snails and slugs within dead and decaying wood and in the leaf litter collectively form the basis for the food chain on this site. The proximity of the woodlands to wetland areas provides additional benefit to wildlife by offering a water source and additional forage opportunities. Lack of significant understory and thickets limits its use as cover for some smaller ground-based animals. A number of trees that are either standing dead or damaged provide potential habitat for cavity dwellers (e.g., woodpeckers, owls, flying squirrels and chipmunks).

Signs of deer and raccoon were observed throughout this habitat type, primarily near the wetland edges. It is likely that deer migrate through the wooded portion of the site, as well as utilizing the more open areas for foraging. The project site and surrounding properties contain “edge habitats” preferred by feeding deer.

#### 4.2.1.2 *Successional Shrubland*

In areas of younger successional woodland, the tree canopy is not as dense and invading sunlight promotes a denser shrub and herb layer. These habitats provide thickets of berry producing bushes and an open canopy that provides diverse habitat for smaller mammals, reptiles, some amphibians and many species of birds, particularly songbirds. These thickets are made up of raspberries, blackberries, elderberries, viburnums and multiflora rose. Indicators of predatory species, including coyote, bobcat and fox have not been found on the site, although habitat does exist that would encourage use by such species, and food sources are readily available. The open fields seasonally support large numbers

of grasshoppers, butterflies and other insects that provide forage for a wide variety of birds.

#### 4.2.1.3 *Forested and Emergent Wetlands*

Of the larger species likely to use the site, signs of deer and raccoon were observed throughout the wooded wetland areas. It is likely that the deer migrate through the wooded wetland while also utilizing the on-site field areas and nearby residential lawn areas.

The wooded wetlands also provide habitat for a number of other animal species as identified in Table 4-3. Small reptiles and amphibians living within the wetland areas offer an additional food source to some of the larger omnivorous mammals that may be present (i.e., raccoons, fox). Tree coverage over portions of the wetlands provides shade that moderates temperature fluctuations within the streams and the relatively undeveloped woodland floor. In addition, the vegetation along the watersheds draining to the central wetland/watercourse system moderates other water quality characteristics of the streams.

Populations of small reptiles, amphibians and invertebrates living within the stream corridors provide additional food resources to some of the larger omnivorous mammals that may be present. The streams on the project site support smaller, warmwater fish species, primarily minnows (Cyprinidae). Crayfish, green frogs and aquatic stream macroinvertebrates (caddisflies, mayflies) were also noted in the channel flowing off of the mountain upstream from the point of entry into wetlands. Muskrats may be present in the main stream channel that flows through the wetlands in the vicinity of the easternmost culvert.

#### 4.2.1.4 *Vernal Pools*

Although there is no NY State regulatory definition for vernal pools, Edinger et al. describe vernal pools as ephemerally ponded, small, shallow depressions that typically hold surface waters only during spring months and sometimes additionally after heavy rainfalls or during the fall. They usually do not have a flowing outlet with the exception of intermittent outlets associated with occasional high water conditions. The isolated and intermittent nature of these pools allows for the support of unique assemblages of animals that can develop in the absence of fish populations. Obligate vernal pool animals include spotted salamanders and wood frogs.

The isolated wetlands in the central portion of the site may provide breeding opportunities for spotted salamanders, wood frogs, spring peppers and some of the other common amphibians on the site, depending upon that retention of water after precipitation events.<sup>12</sup> The rock substrate, however, allows rapid drainage from the

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<sup>12</sup> Calhoun, A.J.K. And M.W. Klemens. 2002. Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States. MCA Tech. Paper No. 5. Metropolitan Conservation Alliance, Ridgefield, CT. 57pp.

depressions. Herbaceous vegetation observed here included royal and marsh fern, smartweed, false nettle, and tussock sedge. Spicebush fringe the pool as do large green ash trees. The ash trees have buttressed trunks and very distinct watermarks in the form of moss. The area supports vegetation over approximately 50% of its area, the remainder has no vegetative cover but some woody debris in various piles.

#### *4.2.1.5 Habitat Summary*

Each of the vegetation associations noted above represents a different type of wildlife habitat. The "edge habitats" between the different vegetative communities provide a diversity of structure and niches for wildlife species. The overall value of the property as wildlife habitat is relatively high due to the substantial amount of contiguous and interlaced wildlife habitats on and in the vicinity of the site. Importantly, the development plan calls for the preservation of a large portion of that on site habitat.

### **4.2.2 Wildlife Observed and Expected**

Table 4-3 includes a list of wildlife species observed and expected to use the project site. The wildlife list includes species observed by AVAA, recorded sightings by TMA and other consultants during the various site visits, as well as other species that could potentially occur on the site. The wildlife surveys were based on observations made in the field and did not include trapping or other invasive techniques that would be required to attempt to estimate wildlife populations on site. Based on the field surveys and similar surveys conducted in the region, the typically dominant mammalian species on such a site would include white-tailed deer, coyote, fox, gray squirrel, raccoon, striped skunk, chipmunk, mice, shrews and voles. Dominant avian species would include resident songbirds (e.g., chickadee, nuthatch, vireos, cardinals and warblers), woodpeckers, blue jay, American crow, mourning dove, mockingbird and wild turkey. No State- or Federally-listed rare or endangered species were observed on the site during recent field investigations.

<b>Table 4-3 Regional and Site Wildlife</b>					
<b>Common Name</b>	<b>Scientific Name</b>	<b>Habitat Type</b>			
<b>MAMMALS</b>		<b>OF</b>	<b>Upl</b>	<b>Wet</b>	<b>Ed</b>
White-tail deer * <sup>2</sup>	<i>Odocoileus virginianus</i>	X	X	X	X
Coyote	<i>Canis latrans</i>	X	X	X	
Raccoon *	<i>Procyon lotor</i>		X	X	X
Red fox	<i>Vulpes vulpes</i>	X	X	X	X
Opossum	<i>Didelphis virginiana</i>		X	X	
Eastern chipmunk *	<i>Eutamias sp.</i>		X		X
Gray squirrel * <sup>2</sup>	<i>Sciurus carolinensis</i>		X	X	
Cottontail rabbit *	<i>Sylvilagus floridanus</i>	X	X		X
Striped skunk	<i>Mephitis mephitis</i>		X		X
White-footed mouse	<i>Peromyscus leucopus</i>	X	X		X
New York weasel	<i>Mustela frenata</i>		X	X	X
Deer mouse	<i>Peromyscus maniculatus</i>	X	X		X
Meadow vole	<i>Microtus pennsylvanicum</i>	X			X
Muskrat *	<i>Ondatra zibethicus</i>			X	
Woodchuck *	<i>Marmota monax</i>	X	X		
Short-tailed shrew	<i>Blarina brevicauda</i>	X	X		X
Common shrew	<i>Sorex cinereus</i>	X	X		X
Indiana bat	<i>Myotis sodalis</i>		X	X	X
Little brown bat	<i>Myotis lucifugus</i>		X	X	X
Red bat	<i>Lasiurus borealis</i>		X	X	X
<b>REPTILES</b>		<b>OF</b>	<b>Upl</b>	<b>Wet</b>	<b>Ed</b>
Garter snake *	<i>Thamnophis sirtalis</i>	X	X	X	X
Brown snake	<i>Storeria dekayi</i>	X	X	X	X
Northern watersnake	<i>Nerodia sipedon</i>			X	X
Ratsnake *	<i>Elaphe obsoleta</i>	X	X		X
Milksnake	<i>Lampropeltis triangulum</i>	X	X		X
Box turtle *	<i>Terrapene carolina</i>		X	X	X
Wood turtle	<i>Clemmys insculpta</i>	X	X	X	X
Painted turtle	<i>Chrysemys picta</i>			X	X
Snapping turtle	<i>Chelydra serpentina</i>			X	X

<b>AMPHIBIANS</b>		<b>OF</b>	<b>Upl</b>	<b>Wet</b>	<b>Ed</b>
Red-backed salamander	<i>Plethodon cinereus</i>		X	X	X
Spotted salamander *	<i>Ambystoma maculatum</i>		X	X	X
Slimy salamander *	<i>Plethodon glutinosus</i>		X		
Red-spotted newt *	<i>Notophthalmus viridescens</i>		X	X	X
American toad *	<i>Bufo americanus</i>		X	X	X
Gray treefrog	<i>Hyla versicolor</i>		X	X	X
Wood frog *	<i>Rana sylvatica</i>		X	X	X
Pickerel frog *	<i>Rana palustris</i>			X	X
Green frog *	<i>Rana clamitans</i>			X	X
Spring peeper *	<i>Pseudacris crucifer</i>		X	X	X
<b>BIRDS</b>		<b>OF</b>	<b>Upl</b>	<b>Wet</b>	<b>Ed</b>
Mallard	<i>Anas platyrhynchos</i>			X	
Wood duck	<i>Aix sponsa</i>			X	
Great blue heron <sup>1</sup>	<i>Ardea herodias</i>				
Canada goose <sup>1</sup>	<i>Branta canadensis</i>				
Common grackle*	<i>Quiscalus quiscula</i>	X			X
Carolina wren *	<i>Thryothorus ludovicianus</i>	X		X	
Song sparrow *	<i>Melospiza melodia</i>	X			X
Chimney swift <sup>1</sup>	<i>Chaetura pelagica</i>				
Flycatchers *	<i>Empidonax spp.</i>	X			X
Worm-eating warbler *	<i>Helmitheros vermivorus</i>		X		
Hairy woodpecker *	<i>Picoides villosus</i>		X		X
Wild turkey *	<i>Meleagris gallopavo</i>	X	X		
Wood thrush *	<i>Hylocichla mustelina</i>	X	X		
Pileated woodpecker *	<i>Dryocopus pileatus</i>		X		
Downy woodpecker *	<i>Picoides pubescens</i>		X		X
Red-bellied woodpecker *	<i>Centurus carolinus</i>		X		X
Northern flicker *	<i>Colaptes auratus</i>		X		X
Ovenbird *	<i>Seiurus aurocapillus</i>		X		X
European starling *	<i>Sturnus vulgaris</i>	X			X
Sharp-shinned hawk	<i>Accipiter striatus</i>	X	X		X
Cooper's hawk	<i>Accipiter cooperii</i>	X	X		X
Broad-winged hawk	<i>Buteo platypterus</i>	X	X		X
Red-tailed hawk *	<i>Buteo jamaicensis</i>	X	X		X
American robin *	<i>Turdus migratorius</i>	X	X		X
Gray catbird *	<i>Dumetella carolinensis</i>	X	X		X
Northern mockingbird *	<i>Mimus polyglottos</i>	X			X
Great crested flycatcher *	<i>Myiarchus crinitus</i>		X		X
Eastern phoebe *	<i>Sayornis phoebe</i>		X		X
Golden-crowned kinglet * <sup>2</sup>	<i>Regulus satrapa</i>		X		X
Common yellowthroat *	<i>Geothlypis trichas</i>	X			X
American redstart	<i>Setophaga ruticella</i>		X	X	X

Red-eyed vireo *	<i>Vireo olivaceus</i>		X	X	
American crow * <sup>2</sup>	<i>Corvus brachyrhynchos</i>	X	X		X
Blue jay *	<i>Cyanocitta cristata</i>	X	X	X	X
Scarlet tanager *	<i>Piranga olivacea</i>		X	X	
American goldfinch * <sup>2</sup>	<i>Carduelis tristis</i>		X	X	X
Pine siskin <sup>2</sup>	<i>Carduelis pinus</i>	X	X		X
Northern cardinal *	<i>Cardinalis cardinalis</i>		X		X
Chipping sparrow *	<i>Spizella passerina</i>				X
Brown-headed cowbird *	<i>Molothrus ater</i>	X	X		X
Red-winged blackbird *	<i>Agelaius phoeniceus</i>			X	
Eastern towhee *	<i>Pipilo erythrophthalmus</i>		X	X	
Tufted titmouse * <sup>2</sup>	<i>Parus bicolor</i>		X		X
Indigo bunting *	<i>Passerina cyanea</i>	X			X
Blue-winged warbler *	<i>Vermivora pinus</i>		X	X	
Black-throated blue warbler *	<i>Dendroica caerulescens</i>		X		
Black-throated green warbler *	<i>Dendroica virens</i>		X		
Winter wren <sup>2</sup>	<i>Troglodytes troglodytes</i>		X		X
Eastern pewee *	<i>Contopus virens</i>		X	X	
Dark-eyed junco	<i>Junco hyemalis</i>		X		X
Mourning dove *	<i>Zenaida macroura</i>				X
Black-capped chickadee * <sup>2</sup>	<i>Parus atricapillus.</i>		X	X	X
White-breasted nuthatch *	<i>Sitta carolinensis</i>		X	X	
Baltimore oriole *	<i>Icterus galbula</i>		X		X
Finches	<i>Carpodacus spp.</i>	X	X		X
Ruby-throated hummingbird *	<i>Archilochus colubris</i>	X			X
Yellow-billed cuckoo *	<i>Coccyzus americanus</i>	X	X		
Evening grosbeak	<i>Hesperiphona vespertina</i>		X		X
Turkey vulture <sup>1</sup>	<i>Cathartes aura</i>				
Green heron <sup>1</sup>	<i>Butorides striatus</i>				
Eastern Kingbird*	<i>Tyrannus tyrannus</i>				X
Eastern screech owl	<i>Otus asio</i>	X	X		X
White throated sparrow*	<i>Zonotrichia albicollis</i>	X	X		X
Black duck	<i>Anas rubripes</i>			X	
Great horned owl	<i>Bubo virginianus</i>	X	X		X
Barred owl	<i>Strix varia</i>		X		
Cedar waxwing	<i>Bombycilla cedrorum</i>	X			X

\*Observed individuals or species indicators during site visit(s): August, 2005; April 29, May 6, 15, 18, June 12, 27 and July 21, 2006 (TMA); April 17, 18, 19, May 10, 2006, April 23 & 24, May 7, 8, 14 & 21, June 2, 3, 17, 18, 25 and September 21, 2009, April 15 & 29, November 16, 2010 (AVAA).

<sup>1</sup> Observed flying by the site.

<sup>2</sup> Observed by Thomas R. Baptist, B.S. during site visits on November 21 and 22, 1987.

Note: This list includes many species that could potentially inhabit the project site. It is not, however, an exhaustive list, particularly relative to migratory bird species.

Source: A. V. Agovino Associates, LLC, 2006-2010; NYS BBA data, 1980-1985 and 2000-2004, Thomas R. Baptist reports, TMA reports.

**Key to Abbreviations:**

**E: Endangered Species** are determined by the New York State Department of Environmental Conservation (DEC) to be in imminent danger of extinction or extirpation in New York State, or are federally listed as endangered. All such species are fully protected under New York State ECL 11-0535.

**T: Threatened Species** are determined by the DEC as likely to become endangered within the foreseeable future in New York State, or are federally listed as threatened. All such species are fully protected under the New York State ECL 11-0535.

**SC: Special Concern Species** are those native species which are not yet recognized as endangered or threatened, but for which documented evidence exists relating to their continued welfare in New York State. Legislation adopted 2 January 2006 gave Protected Wildlife status under ECL 11-0103 to all species listed as Special Concern. Special Concern species may also be protected under other laws.

**PB: Protected Birds** are defined in ECL 11-0103 as all wild birds except those named as unprotected. Some of these birds, such as waterfowl and gallinaceous birds, are also listed as game species with seasons set, while others may not be taken at any time.

**G: Game species** are defined as “big game”, “small game” or “game bird” species in ECL 11-0103. In the checklist, **GS** indicates that there are seasons set for the species when they may be legally hunted. **GN** indicates that, while classified under the law as a game species, there are no seasons set and the species may not be hunted or taken at any time in New York.

**Un: Unprotected** means that the species may be taken at any time without limit. However, a license to take may be required.

**P: Protected Wildlife** - species besides birds protected under ECL 11-0103. This now includes all Special Concern (SC) species.

**OF: Open field**

**WET: Wetland**

**UPL: Wooded Upland**

**ED: Edge habitat**

#### 4.2.2.1 *Amphibians and Reptiles*

The NYSDEC Herpetological Atlas identifies known locations of amphibians and reptiles based on field survey observations recorded from 1990 through 1998. Table 4-3 includes all of the species of amphibians, snakes, and turtles that were reported for the local topographical map unit during those years, and specifically identifies the eight amphibian species that were observed or expected on the project site by AVAA during 2006 - 2010.

Spring peepers, wood frogs, green frogs, red-spotted newts, and spotted salamanders were observed in or adjacent to the isolated wetlands during spring breeding surveys

conducted in 2006 and 2009. Slimy salamanders, American toads and pickerel frogs were observed during summer months in the vicinity of the wetlands.

#### 4.2.2.2 *Birds*

Bird surveys were conducted by AVAA on May 10, 2006, as well as May 7, 8, 14 & 21, June 2, 3, 17, 18, 25, 2009 and April 15 & 29, 2010 between the hours of 5:30 AM and 10:30 AM to identify avian species using the project site. Based on existing ecological community data from the previous site visits as well as knowledge of bird survey techniques, four (4) representative survey points were selected across the site. These points were chosen to provide data that would represent bird use in the ecological community types found on the property.

At each of the data collection points, bird surveys were conducted over a minimum twenty-minute interval. AVAA recorded all birds heard and/or seen during the point counts. As the surveyor(s) traveled between point locations and through the different habitats, incidental observations were documented. The additional data gathered while walking over the site was added to the list of species observed during the point counts. Birds on the wing were also included in the counts as "flyby" to indicate that these individuals were observed passing overhead.

Bird species were identified either on, adjacent to, or "flying by" the project site (Table 4-3) during the formal bird surveys conducted in 2006 through 2010. None of the species identified are protected at the state or federal level. Species were identified by their calls and/or by visual observation. This typically results in the recording of a higher proportion of birds that are more vocal and/or have a loud call (e.g. red-eyed vireo and ovenbird) and a lower proportion of those that are not as vocal and/or have softer or high pitched call (e.g. cedar waxwing and golden crowned kinglet). Vocal birds may also be counted in habitats they do not typically use because their calls can carry for long distances making it difficult to accurately place their location. While bird songs are relatively unique to a species, bird calls of different species can be quite similar making it difficult to accurately identify the calling bird. During the surveys, there were occasions on which calling birds were not identified due to similarities in the calls of different species, duration of the call, and distance from the calling bird, etc.

The New York State Breeding Bird Atlas is a comprehensive, statewide bird survey that documents the breeding birds identified by trained volunteers in three-mile square blocks. The most recent surveys (2000 through 2004) have been completed and data was compiled for inclusion in the final report released in 2008. The listings include data on the breeding behavior observed, the year the bird(s) was observed and the state protection status. The project site falls within the Breeding Bird Atlas Block number 5861A.<sup>14</sup> The breeding bird list for this block is available from both the 1980 - 1985 and the recent 2000 - 2005 surveys. The data is included in the Appendix of this report.

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<sup>14</sup> New York State Department of Environmental Conservation (NYSDEC). 2005. NYS Breeding Bird Atlas website <http://www.dec.state.ny.us/apps/bba/results/>.

It is important to note that birds will choose to breed in habitat suitable to their species. The listing of a particular bird in a breeding block does not mean that the species will breed everywhere in that block but only within specific habitat locations within the block. Thus, the list for each block will include a greater number of breeding birds than will utilize any given site within that block.

#### 4.2.2.3 *Threatened and Endangered Species*

Correspondence from the NYSDEC Natural Heritage Program (NHP) and the USFWS indicates that there are no known occurrences of protected or rare wildlife species (including invertebrates, amphibians, fish, reptiles, mammals and birds) on the project site or adjacent properties (A copy of the letters received from these agencies is included in the Appendix of this report). However, the USFWS did advise that there is the potential for the regional, historical or seasonal occurrence of two federally- and state-listed endangered species (the Indiana bat and the bog turtle) on or in the vicinity of the project site. This letter is generally sent by the USFWS to all potential sites in the Hudson Valley region that may occur in the vicinity of previously identified habitat for these two species. It requires most sites of proposed developments be investigated for the presence of potential Indiana bat habitat and many sites to be investigated for the presence of potential bog turtle habitat.

##### *Bog turtle (Clemmys muhlenbergii)*

The USFWS letter indicates that the project site is “in the vicinity of historic bog turtle...sites.” The ecological habits of the bog turtle, as presented in the USFWS species recovery plan<sup>15</sup>, generally define the animal as a semi-aquatic species, preferring habitat with cool, shallow, slow-moving water, deep soft muck soils, and tussock-forming herbaceous vegetation in areas of broadly open tree or shrub canopies. Nesting typically occurs on top of relatively tall and sparsely vegetated tussocks while shrub and tree root systems are frequently associated with hibernation sites. The Mountainside Woods site does not contain the habitat needed to support bog turtles and the NYSDEC Herpetological Atlas does not list this species as having been observed within the mapping unit that includes the Mountainside Woods site. Thus, it is unlikely that the species would be present on or in the near vicinity of the project.

##### *Indiana bat (Myotis sodalis)*

The USFWS letter indicates that the closest observations of Indiana bats hibernating in caves are approximately eleven miles distant from the site and that the closest observations of Indiana bats roosting in trees were approximately five miles from the site. The ecological habits of the Indiana bat, as presented in the USFWS species recovery

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<sup>15</sup> Klemens, M. 2001. Bog Turtle (*Clemmys muhlenbergii*) Northern Population Recovery Plan. 2001. United States Fish and Wildlife Service, Region 5, Hadley, Massachusetts. 83 pp. + appendices.

plan<sup>16</sup>, generally characterizes Indiana bats as utilizing caves for winter hibernation and trees with snags or strongly exfoliating bark for roosting during all other seasons. Indiana bats have been reported to exploit several tree species for summer and nursery roosts, including live deciduous trees (primarily shagbark hickory (*Carya ovata*) and black locust (*Robinia pseudoacacia*)) with strongly exfoliating bark, coniferous trees providing dense shelter from wind and rain, and dead trees or branches which provide crevices for shelter.

Multiple environmental/ecological surveys of the site have been conducted. Collectively, these assessments allow for a reasonably detailed evaluation of the site for potential Indiana bat habitat. The surveys included multiple site visits by project environmental scientists that have documented plants and animals observed on the site.

Based on the results of the field surveys, and in consideration of the ecological habitats, the following narrative describes the potential for Indiana bat habitat to be present on the project site:

Overwintering - According to the USFWS letter, the nearest known overwintering locations for Indiana bat are approximately eleven miles distant from the project site. The property does not have any exposed rock cave or crevices which could be used as roosts for this species. Therefore the species is not expected to be present on the site during its winter hibernation period.

Nursery/Summer roosting - According to the USFWS letter, the nearest known summer roosting locations for Indiana bat is approximately five miles distant from the project site.

There is the potential for the species to exist in the area as a migrant or seasonal resident during dispersal from winter roosts, however the overall composition of the tree community on the project site is not compatible with the reported summer and nursery roosting preferences reported for Indiana bat. The dominant tree varieties observed during the tree survey were oaks and maples, with few black locust and shagbark hickories located on the property.

Dead or dying trees with snags also may provide roost sites, while dense stands of coniferous trees may provide shelter from inclement weather. The project site does contain a number of trees in these two categories and therefore the species may occupy spring, summer or fall roosts on the site. However, these are generally out of the area of development, so impact to the species from loss of roost sites is not expected.

Foraging - The forested tree canopy, riparian corridor and open water areas provide Indiana bat foraging habitat that is typical for the region, and the species may utilize the site for foraging activity.

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<sup>16</sup> US Fish and Wildlife Service. 1983. Recovery Plan for the Indiana Bat. US FWS, Twin Cities, Minnesota. 82 pp.

## 5.0 POTENTIAL IMPACTS

### 5.1 Area of Disturbance

The portions of the Mountainside Woods project site proposed for development are largely disturbed and exist on the boundary between undeveloped forested land to the north, south and west with developed residential properties to the east. The proposed area of development (AOD) is restricted to 17.55 acres of the 31.68-acre Parcel 1, 13.16 acres of the 84-acre Parcel 2, and 9.4 acres of the 37.39-acre Parcel 3. This disturbance would eliminate existing upland woodlands and the Successional Old Field/Shrubland on formerly cleared areas where clear cutting and possibly mining activities have taken place. Most of the land to be developed is located on the eastern portion of the site, near Vista Drive, with the remainder located on the west side of the stream corridor and wetland, at the base of the existing wooded slopes of the mountain.

The total disturbance of 40.11 acres of the total 153.07 acres represents 26.2% of the site, with 73.8% of the property remaining undisturbed. Impervious surfaces will cover 16.1 acres, or 10.52% of the entire site; lawns and landscaping account for the remaining 24.01 acres of disturbance. The existing vegetative cover and habitat on the remaining 112.96 acres would not be disturbed by the project.

The proposed areas of disturbance, as calculated by Engineering Properties, are summarized in Table 5-1. Most of the proposed disturbance to woodland vegetation would be to the pioneering species that now dominate the site. Plant species that are state-listed and were identified by the NHP as being sighted within the vicinity of the site are primarily forest species. Given the fact that none of the listed and identified species were located during AVAA's site investigations, or during the other consultants' studies, as well as the long time period since these sightings were made and the substantial amount of open space and habitat that will be left on the site post-development, the likelihood for adverse effects on any listed species is very low.

<b>Table 5-1: Vegetation Distribution and Disturbances on the Mountainside Woods Project</b>			
<b>Parcel 1 (87.4-3-14)</b>			
	<b>Existing (Ac.)</b>	<b>Proposed (Ac.)</b>	<b>Change (Ac.)</b>
Woodlands	26.82	9.30	-17.52
Brush	0.03	0.00	-0.03
Old Fields	0.00	0.00	0.00
Wetlands	4.83	4.83	0.00
Lawn/landscaping	0.00	10.93	10.93
Impervious/buildings	0.00	6.62	6.62
<b>TOTAL</b>	31.68	31.68	
<b>Parcel 2 (87.4-5-1.2)</b>			
	<b>Existing (Ac.)</b>	<b>Proposed (Ac.)</b>	<b>Change (Ac.)</b>
Woodlands	73.12	67.78	-5.34
Brush	8.48	0.71	-7.77
Old Fields	0.05	0.00	-0.05
Wetlands	2.35	2.35	0.00
Lawn/landscaping	0.00	7.89	7.89
Impervious/buildings	0.00	5.27	5.27
<b>TOTAL</b>	84.00	84.00	
<b>Parcel 3 (87.4-5-2)</b>			
	<b>Existing (Ac.)</b>	<b>Proposed (Ac.)</b>	<b>Change (Ac.)</b>
Woodlands	31.11	22.28	-8.83
Brush	3.17	2.62	-0.55
Old Fields	0.02	0.00	-0.02
Wetlands	3.09	3.09	0.00
Lawn/landscaping	0.00	5.19	5.19
Impervious/buildings	0.00	4.21	4.21
<b>TOTAL</b>	37.39	37.39	

## 5.2 Water Quality

The project is not expected to adversely affect the surface water quality. No point sources such as underground storage tanks (UST) or similar structures will be present on the site. Potential sources of impacts to aquatic resources include sedimentation during construction, post-development increases in pollutant loading in storm water and bed and bank erosion in receiving watercourses resulting from increased storm water discharge velocities. Sedimentation of the receiving water bodies would result in decreased light

penetration, nutrient enrichment, increased transport of dissolved or adsorbed pollutants, shielding of pathogens from natural disinfection processes, and clogging of gills or filter-feeding apparatus in aquatic organisms.

Surface water quality will be enhanced or held in balance by the construction of the water quality/detention basins, which will remove particulates, petroleum residues and other contaminants. The plans for the detention basins will be reviewed and approved for conformance with all appropriate storm water management regulations. The current design calls for the storm water to be diverted to the storm water basins via a collector system in the proposed roadways.

The contaminants referenced are from non-point sources and will flow variably with the precipitation. Hydrocarbons (constituents of oils), have a strong affinity for sediments and will adsorb to particles and settle out. Salts, in comparison, dilute and are either washed away or retained by vegetation at the low point of the basin.<sup>17</sup> By utilizing best management practices (BMP) as discussed in the Stormwater Pollution Prevention Plan prepared by Engineering Properties, P.C., the design conforms to accepted practice throughout the country.

The layout of the project was designed to maintain the existing drainage sheds as well as to enhance and protect the natural features of the property including existing vegetation, natural vistas, stone rows, and environmental constraints such as wetlands and steep slopes.

The post-development runoff will be treated through the implementation of comprehensive storm water management techniques. The development of the property will include the installation of grass swales, inlets and storm sewers to collect storm water runoff from the developed lots and proposed roads and convey it to one of the proposed storm water management facilities. These facilities will detain and treat the storm water prior to its discharge downstream. The facilities have been designed as detention basins, and when paired with an infiltration basin, serve as sediment forebays.

### **5.3 Low Impact Development Characteristics**

During the design process, numerous Low Impact Development techniques and objectives were incorporated:

- Layout that honors existing features, terrain, fences, hedgerows.
- Large areas of native vegetation have been preserved.
- Areas that naturally filter storm water runoff have been preserved.
- Impervious surfaces have been minimized to the maximum extent practicable.
- Existing drainage patterns and features have been maintained.

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<sup>17</sup> Schueler, T.R., 1987. *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs*. Department of Environmental Programs, Metropolitan Washington Council of Governments. Washington: Metropolitan Washington Council of Governments. July, 1987.

- Inflow into wetlands has been maintained.
- Vegetated open-channel conveyance systems have been provided to discharge into storm water management facilities.
- A treatment train enhancing water quality of the runoff has been established.

Plantings will conform to the specifications supplied by Engineering Properties, unless otherwise specified.

#### **5.4 Habitat Alteration**

Potential impacts to species occurring from development of the property can come from a variety of factors. Habitat components such as cover, food, water, or migration routes may be altered or reduced. Potential impacts to fauna on the site may include:

- Habitat loss, which will cause a loss in the amount of vegetation on the site and subsequently may affect local wildlife populations on the site.
- Noise, which will occur during the construction phase, could affect local bird populations by allowing more aggressive non-native bird species such as starlings to dominate a niche.
- Increased human occupancy may permanently alter the population dynamics of game species such as deer.
- Post-development impacts to wildlife populations on the site will more than likely lead to the displacement of species that tend to utilize certain local niches.
- Bird/mammal species that prey on insects on the site may forage on adjacent properties causing a local increase in insects on the site.

The portions of the Mountainside Woods project site proposed for development are largely disturbed and exist on the boundary between undeveloped forested land to the north, south and west with developed residential properties to the east and therefore, their development for residential purposes would not constitute “fragmentation” of the local forest resource as there is connectivity between other open space parcels and the portions of the project site that are not to be developed. These parcels include large tracts of forested uplands encompassing nearly the entirety of Illinois Mountain. These areas provide contiguous upland habitat and movement corridors for existing wildlife to traverse. The only barrier to wildlife movement in the immediate vicinity of the project site is the existing residential development along the southeastern boundary on the opposite side of Vista Drive.

The large wetland complex that runs through the central portion of the site provides a good corridor for wildlife to move between habitats both on and off site. The proposed development, in leaving the wetland untouched and the slopes of Illinois Mountain undeveloped, should maintain the majority of the functioning habitat provided by these features. Many avian species and the "suburban" mammals (deer, raccoon, turkeys, squirrels, etc.) will continue to utilize developed land while forest interior species should continue to use the habitat on Illinois Mountain.

Some loss of wildlife habitat will result from the proposed development as described above. Portions of the on-site habitat would be cleared in the vicinity of the buildings and infrastructure improvements proposed for this development.

The alteration of the habitat immediately surrounding the central wetland corridor has been designed to prevent the resulting loss of connection between the wetland and the upland around portions of the wetland perimeter. This will allow wildlife to utilize the wetland and stream as a source of water and food. Species most likely to utilize the corridor include muskrat, deer and many of the on-site amphibians.

The greatest potential impact to non-aquatic species lies in the loss of the Successional Old Field/Shrubland on the site. Bird species, including the blue winged warbler and indigo bunting, that use this habitat will have to relocate to other areas such as the surrounding residential landscaping where suitable habitat is available. Loss of this habitat will affect the insect population as well, thereby altering available prey for both bird and mammal species in the area.

It should be expected that a certain number of animals will be displaced by construction. However, because the construction will be completed gradually, this displacement will be minimized.

With regard to threatened, endangered or species of concern, none were sighted and are generally felt to be less likely to be impacted due to the preservation of the forest and wetlands.

In general, as a project site is developed, some species will relocate to similar habitats either on- or off-site. Because only approximately 40.11 acres of the total 153.07-acre site will be altered, it is likely that on-site wildlife will relocate from the areas to be developed to adjacent undeveloped areas offering similar habitats. The composition of the wildlife population on the project site may be slightly altered immediately adjacent to developed areas, as species able to adapt to a suburban environment (e.g. squirrels, raccoons, opossum, woodchucks, mice and some songbirds) would have a greater ecological advantage in comparison to species that are less tolerant of human activity. Many species of trees and shrubs commonly chosen for landscaping use will provide food, shelter and nesting sites for small mammals, songbirds and other avian species.

No protected wildlife have been identified or observed on the project site, thus, no impacts to these species are projected.

## 6.0 MITIGATION MEASURES

The following measures are proposed to mitigate to the greatest extent practicable any potential impacts to wildlife and its habitat:

The applicant proposes to leave approximately 112.96 acres of the site, including the upper portion of the project site, extending up the slopes of Illinois Mountain to its crest unimproved open space. This portion of the property is contiguous with similar and more extensive forested habitat on protected Town watershed property south of the site. This open space will be protected from any future development through a conservation easement. The applicant proposes to make an offer of dedication of this protected land to the Town or to donate it to a local not for profit conservation organization.

The existing trees and vegetation beyond the identified AOD will be preserved by the installation of stakes and fencing which will clearly identify the limits of disturbance. The small streams entering the property will continue to provide a water and food source for local birds and mammals.

Noninvasive native plants will be used for new landscaping projects. The landscaping proposed to be installed throughout the project site is identified by species and planting location on the landscaping plan for this project prepared by Engineering Properties. This list would be supplemented with other minor landscaping shrubs and plants that would cumulatively provide a variety of foraging, nesting and shelter benefits for the wildlife that repopulates the portions of the site within the proposed AOD.

While the existing woodland vegetation will be replaced by ornamental plants, lawns and gardens within the developed areas, the introduced plantings could still be used as forage by deer and other wildlife and many of the tree and shrub species chosen for residential landscaping will provide habitat for songbirds and other avian species. The landscaping plants proposed as part of the final development will include berry and seed-bearing trees and shrubs that will offer a food source for birds. Trees that are planted will mature in the long-term and would provide some roosting and nesting opportunities for birds that are adaptable to suburban conditions.

Typical landscape plantings will be chosen for their hardiness to the local climate and in the proposed setting of their usage on the site. Planting workmanship will be monitored for up to two years after installation and any dead specimens will be replaced with similar plantings. Regionally appropriate tree plantings, such as red maples and white pine, are to be incorporated into the landscape to provide habitat benefits for some birds.

A review of the development plan indicates that several steps will be taken in an effort to develop the site with the least possible disturbance to the environment. These are as follows:

- The existing topography will be changed as necessary and required. Proposed changes in the existing topography are necessary for safety and drainage considerations to provide access to the site. The grading is proposed to minimize, to the greatest extent possible, major changes to the topography.
- Tree and vegetation removal will be limited to the area of development. Any trees to be retained will be clearly marked prior to construction. Development has been planned out of the forested areas as much as possible to avoid impact to trees. Mature trees to be saved will be clearly marked to assure their protection. Mature trees will be saved and protected wherever possible by dripline fences and markings.
- Storm water runoff will be accomplished in accordance with applicable regulations under the supervision of municipal, county, and state officials and will be required to meet the conditions imposed therein. Additional recharge capabilities have been designed into the system.
- A comprehensive soil erosion and sediment control plan will be implemented during construction for the protection of the soils and surface water. Engineering Properties has submitted the supporting documentation for this aspect of the application. Soil Erosion and Sedimentation Control will be accomplished as described in the plans under the supervision of municipal, county and state officials and will be required to meet the conditions imposed therein.
- All solid waste materials generated during construction will be held onsite in suitable rolloffs, dumpsters or containers and will be disposed of in accordance with state, county and local regulations; therefore no impact is expected from this aspect of development.

## 7.0 References Utilized

- Calhoun, A.J.K. and M.W. Klemens. 2002. Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States. MCA Tech. Paper No. 5. Metropolitan Conservation Alliance, Ridgefield, CT. 57pp.
- Callahan, E.V. III. 1993. Indiana bat summer habitat requirements. Master of Science thesis, University of Missouri, Columbia.
- Callahan, E.V., R.D. Drobney, and R.L. Clawson. 1997. Selection of summer roosting sites by Indiana bats (*Myotis sodalis*) in Missouri. *Journal of Mammalogy*, Vol 78, No. 3, pp. 818-825.
- CITY/SCAPE: Cultural Resource Consultants, 2010. Mountainside Site Phase 1A Literature Review and Sensitivity Analysis & Phase 1B Archaeological Field Reconnaissance Survey
- Clark, D.R., Jr., 1971. "Branding as a Marking Technique for Amphibians and Reptiles". *Copeia*, No.1, pp. 148-151.
- Conant, Roger - 1975. A Field Guide to Reptiles and Amphibians of Eastern and Central North America, Houghton Mifflin Company, Boston, Massachusetts, pp. 1-429.
- Conant, R. and J.T. Collins, 1991. A Field Guide to Reptiles and Amphibians of Eastern and Central North America. Houghton Mifflin Co., Boston, MA.
- La Bruna, D.T. and M.W. Klemens. 2007. Northern Wallkill Biodiversity Plan: Balancing Development and Environmental Stewardship in the Hudson River Estuary Watershed. Technical Paper No. 13, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, NY.
- Edinger, Gregory J., ed. *Ecological Communities of New York State*, second edition. New York Natural Heritage Program, 2002. Revised and expanded edition of Reschke, Carol. *Ecological Communities of New York State*, 1990.
- Ernst, Carl H. and Roger W. Barbour - 1972. Turtles of the United States. The University Press of Kentucky, pp. 80-83.
- Feinsinger, 2001. *Designing Field Studies for Biodiversity Conservation*.
- Gardner, J.E., J.D. Garner, and J.E. Hofmann. 1991. Summer roost selection and roosting behavior of *Myotis sodalis* (Indiana bat) in Illinois. Unpublished report for U.S.F.W.S., 56 pp.
- Gleason, Henry A. and A. Cronquist. 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. The New York Botanical Garden. 910 pp.
- Kiviat, Erik, Stevens, Gretchen. *Biodiversity Assessment Manual for the Hudson River Estuary Corridor*. Hudsonia Ltd., 2001.
- Klemens, M.W. 1993. Standardized bog turtle site-quality analysis. Unpublished report to USFWS (State College, PA) December 3 1, 1993. 7pp.
- Klemens, M. 2001. Bog Turtle (*Clemmys muhlenbergii*) Northern Population Recovery Plan. 2001. United States Fish and Wildlife Service, Region 5, Hadley, Massachusetts. 83 pp. + appendices.
- Kurta, A., D. King, J.A. Teramino, J.M. Stribley, and K.J. Williams, Eastern Michigan University. 1993. Summer Roosts of the Endangered Indiana Bat (*Myotis sodalis*) on the Northern Edge of Its Range. *American Midland Naturalist*, pp 132-138.
- Leopold, A., 1933. Game Management. Scribner Publishing, New York.
- National Parks Association of New South Wales, 1998. *Community Biodiversity Survey Manual*.
- Newcomb, Lawrence. Newcomb's Wildflower Guide, 1977. Little, Brown and Company.
- New York Natural Heritage Program. 2005. Biotics Database. Albany, NY.
- New York State Department of Environmental Conservation (NYSDEC). 2005. NYS Breeding Bird Atlas website <http://www.dec.state.ny.us/apps/bba/results/>.
- Schneller-McDonald, K., 2005. *Habitat Assessment Guidelines, Town of Milan*. Endorsed by the Town of Milan Planning Board, March, 2005.
- Schuberth, Christopher J. 1968. The Geology of New York City and Environs. The Natural History Press: Garden City, NY

- Schueler, T.R., 1987. *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs*. Department of Environmental Programs, Metropolitan Washington Council of Governments. Washington: Metropolitan Washington Council of Governments. July, 1987.
- Sutherland, W.J. (Editor), 1996. *Ecological Census Techniques: A Handbook*. Cambridge University Press, 1996 NY.
- Tiner, R.W. Jr., 1988. Field Guide to Non-Tidal Wetland Identification. Maryland Department of Natural Resources, Annapolis, MD and Fish and Wildlife Service, Newton Comer, MA. Cooperative publication 283 pp. and plates.
- U.S. Army Corps of Engineers; North Atlantic Division, New York, N.Y., *Wetland Plants of the Eastern United States - February, 1977 with Supplements August, 1979*.
- USDA-SCS, 1981. Soil Survey of Ulster County, New York.
- USDOT, 2001. Habitat Conservation Plan for the Six Points Road Interchange and Associated Development. Project No. DEM-070-3(196)68 Des. No.: 9500900
- United States Fish and Wildlife Service, 1987. Official List of Hydric Soils.
- United States Fish and Wildlife Service, 1988. National List of Plant Species that Occur in Wetlands. Northeast (Region I); Washington, D.C.
- U.S. Fish and Wildlife Service. 1999. Agency Draft Indiana Bat (*Myotis sodalis*) Revised Recovery Plan. Fort Snelling, Minnesota. 53pp.
- USFWS, 2002. Threatened and Endangered Species, Indiana bat (*Myotis sodalis*)
- Zappalorti, Robert T. and R.R. Farrell- 1980. An Ecological Study of the Bog Turtle, Clemmys mühlenbergli. Schoepff, (Reptilia, Testudines, Emydidae) in New Jersey (Fifth Supplement).

## 8.0 Qualifications of Preparer

A. Vincent Agovino, Managing Member  
Sr. Environmental Consultant

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### *PROFESSIONAL EXPERIENCE*

- 30 years of environmental consulting experience throughout New Jersey, New York, Pennsylvania, North Carolina, Maine, Massachusetts and Maryland.
- 14 years of public service in the environmental and environmental health field with municipalities in New Jersey.
- Conducted approximately 5,000 soil evaluations, 2,000 wetland evaluations and habitat assessments throughout New Jersey, New York, Pennsylvania, Maine and Maryland utilizing currently accepted methodologies.
- Conducted identification and evaluations of habitats of several endangered species in New Jersey and Orange, Sullivan and Ulster Counties in New York, including the timber rattlesnake, Indiana bat, upland sandpiper, prairie wedge grass, northern running-pine, Pine Barrens tree frog, snowy egret, northern harrier, black-crowned night herons, osprey, least tern, tricolored heron, black skimmer, common tern, little blue heron, great blue heron, barred owl, red-shouldered hawk, Blanding's turtle, wood turtle and bog turtle.
- Authored or co-authored approximately 300 Environmental Impact Statements pursuant to local ordinances in New Jersey, as well as papers published in professional journals.
- Conducted approximately 200 Phase I Environmental Site Assessments throughout New Jersey in accordance with ASTM Standard E-1527 and the New Jersey *Technical Requirements for Site Remediation*.
- Testified as an expert witness in numerous municipalities before planning boards, boards of adjustment and environmental commissions, as well as in Superior Court, including municipalities in:
  - Somerset County*
  - Middlesex County*
  - Hunterdon County*
  - Morris County*
  - Monmouth County*
  - Union County*
  - Morris County Superior Court*
  - Middlesex County Superior Court*
  - Somerset County Superior Court*
  - Federal District Court – Williamsport, PA*
- Community Noise Advisor (CNA) with the former Federal ECHO program and the National League of Cities. One of three original CNA's for New Jersey's first ECHO program.
- Faculty Coordinator and instructor at Cook College, Rutgers University in the following courses:
  - Environmental Audits and Site Assessments*
  - Environment and Public Health*
  - Preparation of Environmental Impact Statements*
  - 40-Hour Lead Inspector/Risk Assessor Training*
  - Soils and Site Evaluation*
- Adjunct Faculty, Environmental Health, Montclair State University,
- Vice Chairman of the Technical Committees to revise the New Jersey Regulations (NJAC 7:9-2.1, et seq.) pertaining to soils evaluation and onsite sewage disposal.

V

***EDUCATION***

- B.S. degree Environmental Science, Cook College, Rutgers. 1975.
- M.A. degree Administration, Rider College. 1985.
- Ph.D. Environmental Engineering, Columbia Southern University. 2001
- Graduate level and continuing education credits in Soils, Soil Morphology, Wetland Soils, Vegetation, Plant Science, Groundwater Hydrology, Wetland Vegetation, Coastal Wetland Vegetation, Soils and Site Evaluation, Underground Storage Tanks (UST's), Hazardous Waste Management and Stream Encroachment/Floodplain Management.

***PROFESSIONAL REGISTRATIONS***

- Professional Wetland Scientist Registration Number: 000241
- N J Sanitary Inspector (Environmental Health Specialist) Reg. No.: B-0904
- New Jersey Health Officer Registration Number: A-0390
- NEHA Registered Environmental Health Specialist
- NJDEPE Subsurface Evaluation (UST)
- NJDEP Licensed Site Remediation Professional (LSRP) No. 514513
- OSHA 40-hour Health and Safety Training (1910.120)
- OSHA Confined Space Entry Training
- New Jersey Lead Inspector/Risk Assessor Number 003336

***TECHNICAL AND PROFESSIONAL SOCIETIES***

- Society of Wetland Scientists
- Association of State Wetland Managers
- National Environmental Health Association
- New Jersey Environmental Health Association
- New Jersey Health Officers Association

***PUBLICATIONS & PRESENTATIONS***

- Agovino, A.V. 1989. "The Local Health Department's Role in Wetland Protection." **New Jersey Municipalities.**
- Agovino, A.V. 1990. "Wetland Identification." **Journal of Environmental Health.** March - April, 1990.
- "Groundwater Pollution Control and Soils/Onsite Sewage Disposal" work plan for Somerset County pursuant to the New Jersey County Environmental Health Act.
- Olenik, T.J., and A.V. Agovino, 1995. "Negative Consequences of the New Jersey Freshwater Wetlands Protection Act." Presented to the American Society of Agricultural Engineers annual conference entitled "Wetlands Diversity in the Agricultural Landscape," Tampa, Florida, September, 1995.
- Agovino, A.V. 2001. "Soil Properties and Other Factors Related to Failing Onsite Sewage Disposal Systems in Northern and Central New Jersey." Doctoral Dissertation, Columbia Southern University.
- Agovino, A.V. 2007. "Why Septic Systems Fail." Presented to the National Environmental Health Association's Annual Educational Conference, Atlantic City, NJ. June 18, 2007.
- Annual lecturer at the New Jersey Institute of Technology (NJIT) Environmental Engineering 401 class in the areas of wetlands, environmental impact statements, contamination assessments and site remediation.

### ***PROFESSIONAL AWARDS***

1980 - New Jersey Environmental Health Association *Certificate of Merit*.

1981 - National Environmental Health Association *Certificate of Merit*.

1982 - United States Environmental Protection Agency *Appreciation Award*.

1983 - New Jersey Health Officers Association *Outstanding Service to Public Health in New Jersey*.

1981, 1982, 1983 - New Jersey Department of Environmental Protection *ECHO Awards*.

### ***SELECTED PROJECT EXPERIENCE***

#### **Confidential Clients, Somerset, Union, Middlesex, Bergen, Hunterdon, Essex, Hudson, Passaic and Monmouth Counties, NJ.**

Principal environmental scientist on numerous Phase I and II environmental site assessments of vacant and undeveloped land, agricultural/orchard land, auto body shops, carpet factories, trucking terminals, warehouses, apartment buildings, retail facilities and plastic manufacturers related to pre-acquisition requirements, refinancing, and pre-ECRA/ISRA analyses. These facilities were assessed for potential sources of environmental contamination related to the operation and appropriate sampling conducted as necessary.

#### **Texas Eastern Transmission Co. Pipeline Headquarters, South Plainfield, NJ.**

Principal environmental scientist assigned to provide Wetland Delineation, Soil Evaluation and Percolation Tests for headquarters building. The 75-acre tract was studied for the presence and extent of freshwater wetlands and habitats present. The development plan was formulated based upon that evaluation and construction completed with minimal impact to the wetlands.

#### **Confidential Client, Medford, Burlington County, NJ.**

Principal environmental consultant assigned to the project undertaken pursuant to the Environmental Cleanup Responsibility Act (ECRA). This application was completed, submitted and approved by NJDEPE, Industrial Site Evaluation Element.

#### **Brick Church Appliance, Marlboro Twp, Monmouth County, NJ.**

Principal environmental scientist on the wetland evaluation and habitat assessment of a 50 acre site planned for a Retail Store & Municipal Parking Facility. Responsible for securing U.S. Army Corps of Engineers Nationwide Permit pursuant to appropriate regulations at that time.

#### **Confidential Client, Piscataway, NJ.**

Principal environmental scientist on the wetland evaluation and habitat assessment of four large townhouse and condominium developments throughout Central New Jersey. Responsible for securing U.S. Army Corps of Engineers Nationwide Permit and Letters of Interpretation (LOI) from the NJDEPE, Division of Coastal Resources, Bureau of Freshwater Wetlands.

#### **Confidential Client, State College, PA.**

Principal environmental scientist on an evaluation of the installation of a well field by the State College Borough Water Authority. Assessment of the environmental and public health aspects of the installation on the residents of the community and their wells, as well as the emergency response capability of the community to hazardous material incidents related to chemicals utilized by the facility. Computer analysis of the environmental and health effects of the specific chemicals via CAMEO program including

anticipated plume, concentrations immediately dangerous to life and health (IDLH) and analysis of the Material Safety Data Sheets for all chemicals stored and handled on site.

**Confidential Clients, Camden, Monmouth, Cape May, Union, Hudson and Somerset Counties, NJ.**

Principal environmental scientist and project leader on investigation and remediation of leaking underground storage tanks. Coordinated and conducted activities in all phases of subsurface investigations including DICAR, site assessments, closure plans and other related activities. Responsible for applications to and securing approvals from the Bureau of Underground Storage Tanks, NJDEPE.

**Confidential Client, State College, PA.**

Principal environmental scientist on an evaluation of the potential environmental contamination and public health effects resulting from emissions at the Applied Research Laboratory (ARL) and the Pennsylvania Transportation Institute vehicular test track at the Pennsylvania State University. The facility is the site of tests utilizing a variety of hazardous materials which are undertaken by the Federal government, the Commonwealth of Pennsylvania and the Pennsylvania State University. The project consisted of soil sampling, surface water sampling, groundwater sampling and air sampling for the materials utilized in the tests. A major portion of the work included formulation of a Perimeter Air Monitoring and Sampling Plan, meteorological monitoring and report generation related to dust and other emissions from the ARL. Sample analyses were compiled, utilizing Tier II Quality Assurance/Quality Control procedures, into a report of the findings of the investigation, along with specific recommendations for remedial action.

**Confidential Client, Somerset County, NJ.**

Principal environmental consultant on the evaluation of regulated freshwater wetlands along the route of a one and one half-mile proposed sanitary sewer interceptor. Responsible for obtaining an Individual Freshwater Wetlands permit for the client and the municipal utilities authority to allow the installation of the line in an EPA Priority Wetland.

**Confidential Client, Hudson County, NJ.**

Principal environmental scientist on the subsurface evaluation and Underground Storage Tank closure plans for maintenance facilities throughout Hudson County.

**Confidential Client, Newark, NJ.**

Licensing project specialist for a major electric and gas utility with responsibility for preparation and submission of site plan applications, subdivision applications, Freshwater Wetlands permit applications, NJPDES permits, Waterfront Development Permits, Coastal Area Facilities Review Act (CAFRA) applications, Stream Encroachment applications and Soil Erosion Control applications for substations, switching stations, generating stations and transmission line rights-of-way. Preparation of proposed corporate policy for environmental protection during maintenance in transmission line rights-of-way.

**Confidential Client, Hudson County, NJ.**

Project leader in a major waste characterization study for a large urban New Jersey County.

**Confidential Client, Bergen County, NJ.**

Project leader on a pilot study related to a county Sludge Management Plan for the purpose of determining the environmental and health effects related to the utilization of chemically stabilized sludge for landfill closure cover. A major portion of the work included formulation of a Perimeter Air Monitoring and

Sampling Plan, meteorological monitoring and reporting related to dust and fumes generated from the disturbances and placement of the sludge.

**Confidential Client, Hudson County, NJ.**

Project leader on the installation of storm drainage system and regional commuter parking facility for a large Hudson River waterfront restaurant and commuter ferry depot. Due to the identified presence of hexavalent chromium, served as the on-site health and safety officer with the purpose of determining the environmental and health effects related to the exposure of subsurface soils. A major portion of the work included formulation of a Perimeter Air Monitoring and Sampling Plan, meteorological monitoring and reporting related to dust generated from the soil disturbance.

**Confidential Client, Middlesex County, NJ.**

Principal wetland scientist on a 286-acre tract of land in Carteret Borough planned for development as a regional shopping center. The project involves delineation and characterization of freshwater and tidal wetlands and habitats along the Rahway River and Arthur Kill, permit applications including Individual Freshwater Wetlands Permit, Waterfront Development Permit and U.S. Army Corps of Engineers permits to allow the development to proceed.

**Confidential Clients, Middlesex, Somerset, Hunterdon, Warren, Sussex, Mercer, Monmouth, Ocean, Passaic and Burlington Counties, NJ, Bucks and Union Counties, PA.**

Principal scientist and soil evaluator on individual lots and major subdivisions. Projects included soil profile pits, permeability testing and evaluations for the purpose of determination of the suitability for installation of individual subsurface sewage disposal systems for residential and commercial sites. Testing was conducted in accordance with applicable regulations in the respective states. Additional projects included evaluation of existing residential systems for proper functioning and potential causes of malfunctions.

**Confidential Client, Orange, Ulster and Sullivan Counties, NY.**

Principal environmental scientist on the wetland evaluation and habitat assessment of six large, commercial, single-family, townhouse and condominium developments throughout southern New York. Responsible for securing U.S. Army Corps of Engineers Jurisdictional Determinations and Nationwide Permits, as well as New York Department of Environmental Conservation approvals. Habitat assessment for several endangered species, including the timber rattlesnake, Indiana bat, upland sandpiper, wood turtle, Blandings turtle and bog turtle. Approved Phase I and II bog turtle (*Clemmys muhlenbergii*) surveys on wetland systems associated with two proposed residential subdivisions in the Town of Minisink, Orange County, New York within the Hudson/Housatonic Recovery Unit as identified in the United States Fish and Wildlife Service (USFWS) *Bog Turtle Northern Population Recovery Plan, May, 2001*. Prepared the wetland mitigation plans, construction supervision and on-site monitoring for mitigation projects related to permitting as well as restoration of previously disturbed wetlands.

**Confidential Client, Orange, County, NY.**

Principal environmental scientist on the wetland evaluation and habitat assessment and contamination assessment of an approximately 252-acre parcel of land in Sterling Forest in the Town of Warwick. The subject property was formerly utilized as a nickel research and development (R&D) facility with a dedicated sewage and chemical treatment plant. The project included conducting Phase I and II Environmental Site Assessments along with preparation of specifications for remediation and demolition of the structures on the site. In addition, an ecological evaluation has begun to allow potential development as a private university campus, while maintaining and protecting the environmentally and ecologically sensitive areas on and near the site.

**Confidential Client, Ludlow, MA.**

Principal environmental scientist on the wetland evaluation and habitat assessment of an approximately 5.081-acre parcel of land in the Town of Ludlow. The subject property is an actively farmed property consisting of farmland and a 100+-year-old barn. The farm is presently used to raise goats, rabbits, chickens and sheep and received an Enforcement Order from the Ludlow Conservation Commission pursuant to the Massachusetts Wetlands Protection Act. The project also involved the research of the applicability of the cited regulation to the activities on the property and determination of the applicability of the Massachusetts agricultural exemption in the context of the present farming activities. Litigation support and expert witness services were provided. The agricultural exemption was upheld.

**Confidential Clients, Hudson, Middlesex, Somerset & Sussex Counties, NJ.**

Principal environmental scientist on the evaluations of childcare facilities to identify areas of environmental concern as they relate to licensing pursuant to N.J.A.C 10:122-5.2, Indoor Environmental Health Assessment (IEHA) requirements of the New Jersey State Department of Health and Senior Services and the New Jersey Technical Requirements for Site Remediation (TRSR).

**Confidential Clients, Middlesex, Monmouth, Somerset & Warren Counties, NJ.**

Principal environmental scientist on the Baseline Ecological Evaluations (BEE) and Ecological Risk Assessments (ERA) related to the remediation of contaminated sites. Projects included qualitative and quantitative, site-specific evaluations of the likelihood of adverse ecological effects which have occurred or will occur from site-related contamination. The evaluations were conducted pursuant to the New Jersey Technical Requirements for Site Remediation (TRSR) and EPA Guidance document *Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments* (EPA 540-R-97-006).

**Confidential Clients, Middlesex, Monmouth, and Ocean Counties, NJ, and Orange and Ulster Counties, NY.**

Principal environmental scientist on the habitat assessments of tracts of land ranging in size from 20 to 400 acres, responsible for conducting comprehensive environmental and ecological reviews of the sites. The evaluations included identification of broad vegetation or habitat cover types as well as specific plant species present on the site. Field surveys for wildlife species were designed and conducted in accordance with numerous sources including the Habitat Assessment Guidelines for the Town of Milan, New York, the Community Biodiversity Survey Manual prepared by the National Parks Association of New South Wales, the Nature Conservancy's Designing Field Studies for Biodiversity Conservation, the Hudsonia Ltd. Biodiversity Assessment Manual for the Hudson River Estuary Corridor) and Ecological Census Techniques: A Handbook. Reports prepared for these assessments were utilized during the planning process to minimize the impact on various wildlife species present.

# APPENDIX I: New York State Breeding Bird Atlas Data

## Breeding Bird Atlas Block 5861A

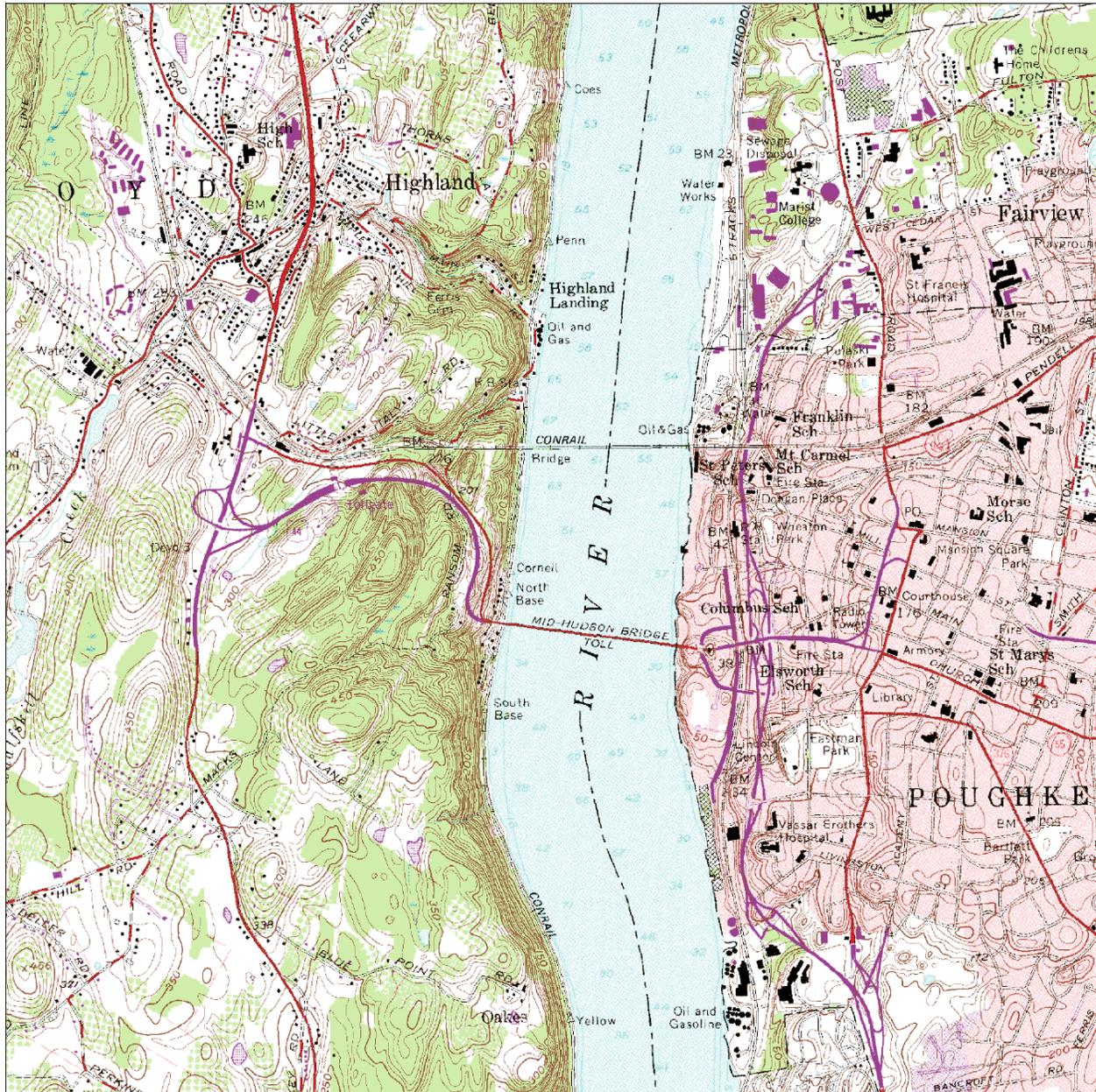


Figure 1: New York Breeding Bird Atlas 5861A (scale as noted)

### List of Species Breeding in Atlas Block 5861A, 1980-1985

<u>Common Name</u>	<u>Scientific Name</u>	<u>Behavior Code</u>	<u>Date</u>	<u>NY Legal Status</u>
Canada Goose	<i>Branta canadensis</i>	<u>X1</u>	1984	<u>Game Species</u>
American Black Duck	<i>Anas rubripes</i>	<u>FL</u>	1984	<u>Game Species</u>
Mallard	<i>Anas platyrhynchos</i>	<u>FL</u>	1984	<u>Game Species</u>
Ring-necked Pheasant	<i>Phasianus colchicus</i>	<u>X1</u>	1984	<u>Game Species</u>
Turkey Vulture	<i>Cathartes aura</i>	<u>X1</u>	1984	<u>Protected</u>
Broad-winged Hawk	<i>Buteo platypterus</i>	<u>P2</u>	1984	<u>Protected</u>
Red-tailed Hawk	<i>Buteo jamaicensis</i>	<u>P2</u>	1984	<u>Protected</u>
American Kestrel	<i>Falco sparverius</i>	<u>FY</u>	1984	<u>Protected</u>
Killdeer	<i>Charadrius vociferus</i>	<u>FL</u>	1984	<u>Protected</u>
Spotted Sandpiper	<i>Actitis macularius</i>	<u>X1</u>	1984	<u>Protected</u>
Rock Pigeon	<i>Columba livia</i>	<u>NY</u>	1984	<u>Unprotected</u>
Mourning Dove	<i>Zenaida macroura</i>	<u>FL</u>	1984	<u>Protected</u>
Barred Owl	<i>Strix varia</i>	<u>X1</u>	1984	<u>Protected</u>
Chimney Swift	<i>Chaetura pelagica</i>	<u>S2</u>	1984	<u>Protected</u>
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	<u>X1</u>	1984	<u>Protected</u>
Belted Kingfisher	<i>Megaceryle alcyon</i>	<u>X1</u>	1984	<u>Protected</u>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	<u>X1</u>	1984	<u>Protected</u>
Downy Woodpecker	<i>Picoides pubescens</i>	<u>FY</u>	1984	<u>Protected</u>
Hairy Woodpecker	<i>Picoides villosus</i>	<u>FY</u>	1984	<u>Protected</u>
Northern Flicker	<i>Colaptes auratus</i>	<u>FL</u>	1984	<u>Protected</u>
Pileated Woodpecker	<i>Dryocopus pileatus</i>	<u>NY</u>	1981	<u>Protected</u>
Eastern Wood-Pewee	<i>Contopus virens</i>	<u>S2</u>	1984	<u>Protected</u>
Eastern Phoebe	<i>Sayornis phoebe</i>	<u>NY</u>	1984	<u>Protected</u>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	<u>S2</u>	1984	<u>Protected</u>
Eastern Kingbird	<i>Tyrannus tyrannus</i>	<u>NE</u>	1984	<u>Protected</u>
Yellow-throated Vireo	<i>Vireo flavifrons</i>	<u>S2</u>	1984	<u>Protected</u>
Warbling Vireo	<i>Vireo gilvus</i>	<u>S2</u>	1984	<u>Protected</u>
Red-eyed Vireo	<i>Vireo olivaceus</i>	<u>FY</u>	1984	<u>Protected</u>
Blue Jay	<i>Cyanocitta cristata</i>	<u>NE</u>	1981	<u>Protected</u>
American Crow	<i>Corvus brachyrhynchos</i>	<u>FL</u>	1984	<u>Game Species</u>
Fish Crow	<i>Corvus ossifragus</i>	<u>B2</u>	1981	<u>Protected</u>
Tree Swallow	<i>Tachycineta bicolor</i>	<u>T2</u>	1984	<u>Protected</u>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	<u>UN</u>	1984	<u>Protected</u>
Bank Swallow	<i>Riparia riparia</i>	<u>X1</u>	1984	<u>Protected</u>

Barn Swallow	<i>Hirundo rustica</i>	<u>FY</u>	1984	<u>Protected</u>
Black-capped Chickadee	<i>Poecile atricapillus</i>	<u>FY</u>	1984	<u>Protected</u>
Tufted Titmouse	<i>Baeolophus bicolor</i>	<u>T2</u>	1984	<u>Protected</u>
White-breasted Nuthatch	<i>Sitta carolinensis</i>	<u>T2</u>	1984	<u>Protected</u>
Brown Creeper	<i>Certhia americana</i>	<u>S2</u>	1984	<u>Protected</u>
House Wren	<i>Troglodytes aedon</i>	<u>NY</u>	1981	<u>Protected</u>
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	<u>X1</u>	1984	<u>Protected</u>
Veery	<i>Catharus fuscescens</i>	<u>S2</u>	1984	<u>Protected</u>
Wood Thrush	<i>Hylocichla mustelina</i>	<u>FY</u>	1984	<u>Protected</u>
American Robin	<i>Turdus migratorius</i>	<u>FL</u>	1984	<u>Protected</u>
Gray Catbird	<i>Dumetella carolinensis</i>	<u>FY</u>	1984	<u>Protected</u>
Northern Mockingbird	<i>Mimus polyglottos</i>	<u>FY</u>	1984	<u>Protected</u>
Brown Thrasher	<i>Toxostoma rufum</i>	<u>X1</u>	1984	<u>Protected</u>
European Starling	<i>Sturnus vulgaris</i>	<u>NY</u>	1984	<u>Unprotected</u>
Cedar Waxwing	<i>Bombycilla cedrorum</i>	<u>FY</u>	1984	<u>Protected</u>
Yellow Warbler	<i>Dendroica petechia</i>	<u>FY</u>	1984	<u>Protected</u>
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	<u>S2</u>	1984	<u>Protected</u>
Prairie Warbler	<i>Dendroica discolor</i>	<u>S2</u>	1984	<u>Protected</u>
Black-and-white Warbler	<i>Mniotilta varia</i>	<u>S2</u>	1984	<u>Protected</u>
American Redstart	<i>Setophaga ruticilla</i>	<u>S2</u>	1984	<u>Protected</u>
Worm-eating Warbler	<i>Helmitheros vermivorum</i>	<u>S2</u>	1984	<u>Protected</u>
Ovenbird	<i>Seiurus aurocapilla</i>	<u>DD</u>	1984	<u>Protected</u>
Common Yellowthroat	<i>Geothlypis trichas</i>	<u>X1</u>	1984	<u>Protected</u>
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	<u>FY</u>	1984	<u>Protected</u>
Chipping Sparrow	<i>Spizella passerina</i>	<u>FL</u>	1984	<u>Protected</u>
Field Sparrow	<i>Spizella pusilla</i>	<u>S2</u>	1984	<u>Protected</u>
Song Sparrow	<i>Melospiza melodia</i>	<u>FY</u>	1984	<u>Protected</u>
Scarlet Tanager	<i>Piranga olivacea</i>	<u>S2</u>	1984	<u>Protected</u>
Northern Cardinal	<i>Cardinalis cardinalis</i>	<u>FY</u>	1984	<u>Protected</u>
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	<u>S2</u>	1984	<u>Protected</u>
Indigo Bunting	<i>Passerina cyanea</i>	<u>S2</u>	1984	<u>Protected</u>
Bobolink	<i>Dolichonyx oryzivorus</i>	<u>S2</u>	1984	<u>Protected</u>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	<u>FY</u>	1984	<u>Protected</u>
Eastern Meadowlark	<i>Sturnella magna</i>	<u>X1</u>	1984	<u>Protected</u>
Common Grackle	<i>Quiscalus quiscula</i>	<u>FL</u>	1984	<u>Protected</u>
Brown-headed Cowbird	<i>Molothrus ater</i>	<u>FL</u>	1984	<u>Protected</u>
Baltimore Oriole	<i>Icterus galbula</i>	<u>FY</u>	1984	<u>Protected</u>

House Finch	<i>Carpodacus mexicanus</i>	<u>FY</u>	1981	<u>Protected</u>
American Goldfinch	<i>Spinus tristis</i>	<u>S2</u>	1984	<u>Protected</u>
House Sparrow	<i>Passer domesticus</i>	<u>FY</u>	1981	<u>Unprotected</u>

**Block 5861A Summary**

Total Species:	74
Probable:	24
Possible:	13
Confirmed:	37

**List of Species Breeding in Atlas Block 5861A, 2001-2005**

<u>Common Name</u>	<u>Scientific Name</u>	<u>Behavior Code</u>	<u>Date</u>	<u>NY Legal Status</u>
Canada Goose	<i>Branta canadensis</i>	<u>FL</u>	5/29/2004	<u>Game Species</u>
Wood Duck	<i>Aix sponsa</i>	<u>S2</u>	5/29/2004	<u>Game Species</u>
Mallard	<i>Anas platyrhynchos</i>	<u>FL</u>	5/29/2000	<u>Game Species</u>
Wild Turkey	<i>Meleagris gallopavo</i>	<u>FL</u>	7/29/2004	<u>Game Species</u>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	<u>S2</u>	5/29/2004	<u>Protected</u>
Great Blue Heron	<i>Ardea herodias</i>	<u>X1</u>	5/29/2004	<u>Protected</u>
Green Heron	<i>Butorides virescens</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Turkey Vulture	<i>Cathartes aura</i>	<u>S2</u>	5/29/2004	<u>Protected</u>
Bald Eagle	<i>Haliaeetus leucocephalus</i>	<u>X1</u>	6/11/2004	<u>Threatened</u>
Red-tailed Hawk	<i>Buteo jamaicensis</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Peregrine Falcon	<i>Falco peregrinus</i>	<u>NY</u>	5/2003	<u>Endangered</u>
Killdeer	<i>Charadrius vociferus</i>	<u>FL</u>	6/21/2004	<u>Protected</u>
Rock Pigeon	<i>Columba livia</i>	<u>FL</u>	6/11/2004	<u>Unprotected</u>
Mourning Dove	<i>Zenaida macroura</i>	<u>P2</u>	5/29/2004	<u>Protected</u>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	<u>S2</u>	6/21/2004	<u>Protected</u>
Chimney Swift	<i>Chaetura pelagica</i>	<u>P2</u>	5/29/2004	<u>Protected</u>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	<u>T2</u>	6/18/2003	<u>Protected</u>
Downy Woodpecker	<i>Picoides pubescens</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Hairy Woodpecker	<i>Picoides villosus</i>	<u>FY</u>	5/13/2004	<u>Protected</u>
Northern Flicker	<i>Colaptes auratus</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Pileated Woodpecker	<i>Dryocopus pileatus</i>	<u>P2</u>	5/29/2000	<u>Protected</u>
Eastern Wood-Pewee	<i>Contopus virens</i>	<u>S2</u>	6/11/2004	<u>Protected</u>
Willow Flycatcher	<i>Empidonax traillii</i>	<u>X1</u>	5/29/2004	<u>Protected</u>

Eastern Phoebe	<i>Sayornis phoebe</i>	<u>FL</u>	6/21/2004	<u>Protected</u>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	<u>T2</u>	6/21/2004	<u>Protected</u>
Eastern Kingbird	<i>Tyrannus tyrannus</i>	<u>FY</u>	6/21/2004	<u>Protected</u>
Yellow-throated Vireo	<i>Vireo flavifrons</i>	<u>X1</u>	5/29/2004	<u>Protected</u>
Blue-headed Vireo	<i>Vireo solitarius</i>	<u>X1</u>	5/13/2004	<u>Protected</u>
Warbling Vireo	<i>Vireo gilvus</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Red-eyed Vireo	<i>Vireo olivaceus</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Blue Jay	<i>Cyanocitta cristata</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
American Crow	<i>Corvus brachyrhynchos</i>	<u>FY</u>	5/29/2004	<u>Game Species</u>
Tree Swallow	<i>Tachycineta bicolor</i>	<u>P2</u>	5/13/2004	<u>Protected</u>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	<u>X1</u>	5/29/2003	<u>Protected</u>
Barn Swallow	<i>Hirundo rustica</i>	<u>FY</u>	6/21/2004	<u>Protected</u>
Black-capped Chickadee	<i>Poecile atricapillus</i>	<u>FY</u>	6/11/2004	<u>Protected</u>
Tufted Titmouse	<i>Baeolophus bicolor</i>	<u>FY</u>	5/13/2004	<u>Protected</u>
White-breasted Nuthatch	<i>Sitta carolinensis</i>	<u>FY</u>	7/29/2004	<u>Protected</u>
Carolina Wren	<i>Thryothorus ludovicianus</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
House Wren	<i>Troglodytes aedon</i>	<u>ON</u>	5/15/2004	<u>Protected</u>
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Eastern Bluebird	<i>Sialia sialis</i>	<u>FL</u>	6/21/2004	<u>Protected</u>
Wood Thrush	<i>Hylocichla mustelina</i>	<u>NE</u>	5/13/2004	<u>Protected</u>
American Robin	<i>Turdus migratorius</i>	<u>NE</u>	5/13/2004	<u>Protected</u>
Gray Catbird	<i>Dumetella carolinensis</i>	<u>FY</u>	6/21/2004	<u>Protected</u>
Northern Mockingbird	<i>Mimus polyglottos</i>	<u>NY</u>	5/29/2004	<u>Protected</u>
Brown Thrasher	<i>Toxostoma rufum</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
European Starling	<i>Sturnus vulgaris</i>	<u>FL</u>	6/18/2003	<u>Unprotected</u>
Cedar Waxwing	<i>Bombycilla cedrorum</i>	<u>FL</u>	6/11/2004	<u>Protected</u>
Blue-winged Warbler	<i>Vermivora pinus</i>	<u>FY</u>	6/11/2004	<u>Protected</u>
Yellow Warbler	<i>Dendroica petechia</i>	<u>FL</u>	6/21/2004	<u>Protected</u>
Magnolia Warbler	<i>Dendroica magnolia</i>	<u>X1</u>	5/13/2004	<u>Protected</u>
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	<u>S2</u>	6/21/2004	<u>Protected</u>
Prairie Warbler	<i>Dendroica discolor</i>	<u>T2</u>	6/21/2004	<u>Protected</u>
Black-and-white Warbler	<i>Mniotilta varia</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
American Redstart	<i>Setophaga ruticilla</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Worm-eating Warbler	<i>Helmitheros vermivorum</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Louisiana Waterthrush	<i>Seiurus motacilla</i>	<u>S2</u>	5/29/2004	<u>Protected</u>
Common Yellowthroat	<i>Geothlypis trichas</i>	<u>P2</u>	5/29/2004	<u>Protected</u>

Eastern Towhee	<i>Pipilo erythrophthalmus</i>	<u>FL</u>	6/21/2004	<u>Protected</u>
Chipping Sparrow	<i>Spizella passerina</i>	<u>FL</u>	6/21/2004	<u>Protected</u>
Field Sparrow	<i>Spizella pusilla</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Song Sparrow	<i>Melospiza melodia</i>	<u>T2</u>	5/29/2004	<u>Protected</u>
Scarlet Tanager	<i>Piranga olivacea</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Northern Cardinal	<i>Cardinalis cardinalis</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
Indigo Bunting	<i>Passerina cyanea</i>	<u>S2</u>	6/11/2004	<u>Protected</u>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	<u>T2</u>	5/13/2004	<u>Protected</u>
Common Grackle	<i>Quiscalus quiscula</i>	<u>FY</u>	6/21/2004	<u>Protected</u>
Brown-headed Cowbird	<i>Molothrus ater</i>	<u>FL</u>	6/21/2004	<u>Protected</u>
Orchard Oriole	<i>Icterus spurius</i>	<u>P2</u>	5/13/2004	<u>Protected</u>
Baltimore Oriole	<i>Icterus galbula</i>	<u>ON</u>	5/29/2004	<u>Protected</u>
Purple Finch	<i>Carpodacus purpureus</i>	<u>S2</u>	5/1/2004	<u>Protected</u>
House Finch	<i>Carpodacus mexicanus</i>	<u>FY</u>	5/25/2004	<u>Protected</u>
American Goldfinch	<i>Spinus tristis</i>	<u>FL</u>	7/29/2004	<u>Protected</u>
House Sparrow	<i>Passer domesticus</i>	<u>FY</u>	5/13/2004	<u>Unprotected</u>

#### **Block 5861A Summary**

Total Species:	76
Possible:	7
Probable:	20
Confirmed:	49

## **APPENDIX II: Natural Heritage Program Information**



DEPARTMENT OF THE ARMY  
NEW YORK DISTRICT, CORPS OF ENGINEERS  
JACOB K. JAVITS FEDERAL BUILDING  
NEW YORK, N.Y. 10278-0090

REPLY TO  
ATTENTION OF:

Regulatory Branch

JUN 09 2008

SUBJECT: Permit Application Number NAN-2006-3315-WOR  
by Sycamore Creek, LLC

A. Vincent Agovino  
A.V. Agovino Associates, LLC  
12 Hastings Lane  
Hainesport, New Jersey 08036

Dear Mr. Agovino:

On October 31, 2006, the New York District of Corps of Engineers received a request for a Department of the Army jurisdictional determination for the above referenced project. This request was made by A.V. Agovino Associates, LLC, as consultant for Sycamore Creek, LLC. The site consists of approximately 33.16 acres, in the Hudson River watershed, located on Toc Road in the Town of Lloyd, Ulster County, New York.

In the letter received on October 31, 2006, your office submitted a proposed delineation of the extent of waters of the United States within the subject property. A site inspection was conducted by a representative of this office on November 29, 2006, in which it was agreed that changes would be made to the delineation and that the modified delineation would be submitted to this office. On December 6, 2006, this office received the modified delineation.

Based on the material submitted and the observations of the representative of this office during the site visit, this site has been determined to contain jurisdictional waters of the United States based on: the presence of wetlands determined by the occurrence of hydrophytic vegetation, hydric soils and wetland hydrology according to criteria established in the 1987 "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1 that are either adjacent to or part of a tributary system; and the presence of a defined water body (e.g. stream channel, lake, pond, river, etc.) which is part of a tributary system.

These jurisdictional waters of the United States are shown on the drawing entitled "ACOE Wetland Delineation Map Trailside Toc Road & New Paltz Road Town of Lloyd Ulster County, New York", prepared by Engineering Properties, PC, dated April 19, 2006, and last revised December 5, 2006. This drawing indicates that there are three (3) principal wetland areas on the project site which are part of a tributary system, and are considered to be waters of the United States.

The first wetland (Wetlands Area "A") is located on the western half of the property and is approximately 3.48 acres within the subject property. The second wetland (Wetlands Area "B") is located approximately 100 feet west of Wetland A and is approximately 1.17 acres within the subject property. The third wetland (Wetlands Area "C") is located in the southeastern corner of the property and is approximately 0.16 acres within the subject property.

This determination regarding the delineation shall be considered valid for a period of five years from the date of this letter unless new information warrants revision of the determination before the expiration date.

This delineation/determination has been conducted to identify the limits of the Corps Clean Water Act jurisdiction for the particular site identified in this request. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed is a combined Notification of Appeal Process (NAP) and Request For Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the North Atlantic Division Office at the following address:

James W. Haggerty, Regulatory Appeals Review Officer  
North Atlantic Division, U.S. Army Engineer Division  
Fort Hamilton Military Community  
General Lee Avenue, Building 301  
Brooklyn, New York 11252-6700

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by AUG 08 2008. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

This delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

It is strongly recommended that the development of the site be carried out in such a manner as to avoid as much as possible the discharge of dredged or fill material into the delineated waters of the United States. If the activities proposed for the site involve such discharges, authorization from this office may be necessary prior to the initiation of the proposed work. The extent of such discharge of fill will determine the level of authorization that would be required.

If any questions should arise concerning this matter, please contact Brian A. Orzel, of my staff, at (917) 790-8413.

Sincerely,

  
For George Nieves  
Chief, Western Permits Section

Enclosures



DEPARTMENT OF THE ARMY  
NEW YORK DISTRICT, CORPS OF ENGINEERS  
JACOB K. JAVITS FEDERAL BUILDING  
NEW YORK, N.Y. 10278-0090

FEB 20 2009

REPLY TO  
ATTENTION OF:

Regulatory Branch

SUBJECT: Permit Application Number NAN-2008-21-WOR  
by Ash Creek Development LLC

A. Vincent Agovino  
A. V. Agovino Associates  
12 Hastings Lane  
Hainesport, New Jersey 08036

Dear Mr. Agovino:

On November 19, 2007, the New York District of the U.S. Army Corps of Engineers received a request for a Department of the Army jurisdictional determination for the above referenced project. The site consists of approximately 37.39 acres, in the Hudson River watershed, located on Hilltop Road in the Town of Lloyd, Ulster County, New York. The proposed project would involve the construction of a residential subdivision to be known as Ledgewood Estates.

In a letter received on January 9, 2008, your office submitted a complete proposed delineation of the extent of waters of the United States within the subject property. A site inspection was conducted by a representative of this office on May 14, 2008, in which it was agreed that changes would be made to the delineation and that the modified delineation would be submitted to this office. On August 11, 2008, this office received the modified delineation.

Based on the material submitted and the observations of the representative of this office during the site visit, this site has been determined to contain jurisdictional waters of the United States based on: the presence of wetlands determined by the occurrence of hydrophytic vegetation, hydric soils and wetland hydrology according to criteria established in the 1987 "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1 that are either adjacent to or part of a tributary system; the presence of a defined water body (e.g. stream channel, lake, pond, river, etc.) which is part of a tributary system; and the fact that the location includes property below the ordinary high water mark, high tide line or mean high water mark of a water body as determined by known gage data or by the presence of physical markings including, but not limited to, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter or debris or other characteristics of the surrounding area.

These jurisdictional waters of the United States are shown on the drawing entitled "ACOE Wetland Delineation Map Ledgewood Estates Hilltop Road & Toc Road Town of Lloyd Ulster County, New York", prepared by Engineering Properties, PC, dated April 19, 2006, and last revised May 23, 2008. This drawing indicates that there is one (1) principal wetland area on the project site which is part of a tributary system, and is considered to be waters of the United States. The wetland (Wetlands Area "A") includes a portion of Twaalfskill Creek, is located throughout the eastern half of the property and is approximately 2.95 acres within the subject property.

Wetland Area "B", located along the northeastern property line, is approximately 0.09 acres within the subject property. Wetland B is connected by a non-relatively permanent water (non-RPW) of approximately 40 feet in length to Wetland A and Twaalfskill Creek. As required by the jurisdictional determinations for non-RPWs and/or their adjacent wetlands, a significant nexus evaluation must be made to determine whether the non-RPW and/or its adjacent wetlands have a more than speculative or insubstantial effect to the physical, chemical and/or biological integrity of the traditional navigable water (TNW), the Hudson River. Through the evaluation, Wetland B and its non-RPW tributary did not show a significant nexus to the TNW, and are therefore non-jurisdictional features.

It should be noted that, in light of the U.S. Supreme Court decision (Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, No. 99-1178, January 9, 2001), the remainder of the wetlands shown on the above referenced drawing (Wetland Area "C" (0.035 acres)) do not meet the current criteria of waters of the United States under Section 404 of the Clean Water Act. The Court ruled that isolated, intrastate waters can no longer be considered waters of the United States, based solely upon their use by migratory birds.

This determination regarding the delineation shall be considered valid for a period of five years from the date of this letter unless new information warrants revision of the determination before the expiration date.

This determination was documented using the Approved Jurisdictional Determination Form. A copy of that document is enclosed with this letter, and will be posted on the New York District website at:  
<http://www.nan.usace.army.mil/business/buslinks/regulat/jurisdet/index.htm>.

This delineation/determination has been conducted to identify the limits of the Corps Clean Water Act jurisdiction for the particular site identified in this request. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed is a combined Notification of Appeal Process (NAP) and Request For Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the North Atlantic Division Office at the following address:

Michael G. Vissichelli, Administrative Appeals Review Officer  
North Atlantic Division, U.S. Army Engineer Division  
Fort Hamilton Military Community  
General Lee Avenue, Building 301  
Brooklyn, New York 11252-6700

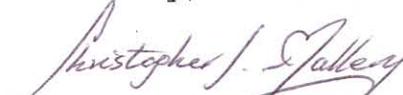
In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by APR 21 2009. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

This delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

It is strongly recommended that the development of the site be carried out in such a manner as to avoid as much as possible the discharge of dredged or fill material into the delineated waters of the United States. If the activities proposed for the site involve such discharges, authorization from this office may be necessary prior to the initiation of the proposed work. The extent of such discharge of fill will determine the level of authorization that would be required.

If any questions should arise concerning this matter, please contact Brian A. Orzel, of my staff, at (917) 790-8413.

Sincerely,



Christopher S. Mallery  
Chief, Western Permits Section

Enclosures

## NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Ash Creek Development LLC	File Number: NAN-2008-21	Date: <b>FEB 20 2009</b>
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Attached is:	See Section Below
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	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

**SECTION I -** The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <http://usace.army.mil/inet/functions/cw/cecwo/reg> or Corps regulations at 33 CFR Part 331.

**A: INITIAL PROFFERED PERMIT:** You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the New York District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations (JD) associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the New York District Engineer. Your objections must be received by the New York District Engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the New York District Engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the New York District Engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

**B: PROFFERED PERMIT:** You may accept or appeal the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the New York District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the North Atlantic Division Engineer, ATTN: CENAD-PD-PSD-O, Fort Hamilton Military Community, Building 301, General Lee Avenue, Brooklyn, NY 11252-6700. This form must be received by the Division Engineer within 60 days of the date of this notice.

**C: PERMIT DENIAL:** You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the North Atlantic Division Engineer, ATTN: CENAD-PD-PSD-O, Fort Hamilton Military Community, Building 301, General Lee Avenue, Brooklyn, NY 11252-6700. This form must be received by the Division Engineer within 60 days of the date of this notice.

**D: APPROVED JURISDICTIONAL DETERMINATION:** You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the North Atlantic Division Engineer within 60 days of the date of this notice with a copy furnished to the New York District Engineer.

**E: PRELIMINARY JURISDICTIONAL DETERMINATION:** You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: LOT 87.004-S-1.2 Date: 7-21-04

Applicant/Owner: WILLBERRY CORP County: ULSTER

Investigator: BOB TORGERSEN State: NEW YORK

Do Normal Circumstances exist on the site? Yes No  
Is the site significantly disturbed (Atypical Situation)? Yes No  
Is the area a potential Problem Area? Yes No  
(If needed, explain on reverse.)  
Community ID: A  
Transect ID: \_\_\_\_\_  
Plot ID: \_\_\_\_\_

**VEGETATION**  
Dominant Plant Species      Stratum Indicator

- 1. RED MAPLE TREE      FAC
- 2. PINOAK TREE      FACW
- 3. SPIKE BUSH SHRUB      FACW
- 4. SKUNK CABBAGE      FORB OBL
- 5. SENS. FERN      FERN      FACW
- 6. ROYAL FERN      FERN      OBL
- 7. IMPATIENS      FORB      FACW
- 8.
- 9.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: \_\_\_\_\_

**HYDROLOGY**

- Recorded Data (Describe in Remarks): Wetland Hydrology Indicators:
- Stream, Lake, or Tide Gauge Primary Indicators:
- Aerial Photographs  Inundated
- Other  Saturated in Upper 12 Inches
- No Recorded Data Available  Water Marks

Field Observations:  
Depth of Surface Water: stream (in.)  
Depth to Free Water in Pit: 4-12" (in.) along Border  
Depth to Saturated Soil: 16 (in.)

- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands
- Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks:  
wetland adjacent to seasonal streams standing water

Project/Site: Lot 87.004-S-1.2 Date: 7-21-04

SOILS A

Map Unit Name LYONS ATHERTON COMPLEX Drainage Class: PD-XP  
(Series and Phase): 1

Field Observations MOLLIC HAPLAQUEPTS  
Taxonomy (Subgroup): AIRIC HAPLAQUEPTS Confirm Mapped Type? Yes No

Profile Description:

Depth (inches) Matrix Color Mottle Colors Mottle Abundance/ Texture, Concretions.  
Horizon (Munsell Moist) (Munsell Moist) Size/Contrast Structure, etc.

0-1	7.5YR 3-1			
1-8	7.5YR 4/1	7.5YR 4/4	few low	
8-16	7.5YR 5/1	7.5YR 5/4	few low	

Hydric Soil Indicators:

- Histosol  Concretions
- Histic Epipedon  High Organic Content in Surface Layer in Sandy Soils
- Sulfidic Odor  Organic Streaking in Sandy Soils
- Aquic Moisture Regime  Listed on Local Hydric Soils List
- Reducing Conditions  Listed on National Hydric Soils List
- Gleyed or Low-Chroma Colors  Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

- Hydrophytic Vegetation Present? Yes No (Circle) (Circle)
- Wetland Hydrology Present? Yes No
- Hydric Soils Present? Yes No Is this Sampling Point Within a Wetland? Yes No

Remarks:

Area A and Area C are one continuous wetland system divided by a large box culvert

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: LOT 87.004 - 5 - 1.2 Date: 7-21-04

Applicant/Owner: WILLBERRY CORP County: ULSTER

Investigator: BOB TORGERSEN State: NEW YORK

Do Normal Circumstances exist on the site?  Yes  No  
Is the site significantly disturbed (Atypical Situation)?  Yes  No  
Is the area a potential Problem Area?  Yes  No  
(If needed, explain on reverse.)  
Community ID: B  
Transect ID: \_\_\_\_\_  
Plot ID: \_\_\_\_\_

**VEGETATION**

Dominant Plant Species      Stratum Indicator

- 1. RED MAPLE TREE      FAC
- 2. RIVER BIRCH TREE      FACW
- 3. SPICE BUSH SHRUB      FACW
- 4. IMPATIENS FORB      FACW
- 5.
- 6.
- 7.
- 8.
- 9.

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 100%

Remarks:

**HYDROLOGY**

\_\_\_ Recorded Data (Describe in Remarks): Wetland Hydrology Indicators:

\_\_\_ Stream, Lake, or Tide Gauge Primary Indicators:

\_\_\_ Aerial Photographs \_\_\_ Inundated

\_\_\_ Other  Saturated in Upper 12 Inches

\_\_\_ No Recorded Data Available \_\_\_ Water Marks

Field Observations:

Depth of Surface Water:        (in.)

Depth to Free Water in Pit: 16" (in.)

Depth to Saturated Soil: 17" (in.)

\_\_\_ Drift Lines

\_\_\_ Sediment Deposits

Drainage Patterns in Wetlands along seasonal streambed

Secondary Indicators (2 or more required):

\_\_\_ Oxidized Root Channels in Upper 12 Inches

\_\_\_ Water-Stained Leaves

\_\_\_ Local Soil Survey Data

\_\_\_ FAC-Neutral Test

\_\_\_ Other (Explain in Remarks)

Remarks:

Project/Site: 87.004-5-1.2 Date: July 21, 2004

**SOILS**

Map Unit Name (Series and Phase): BOD BATH Drainage Class: WD

Field Observations  
Taxonomy (Subgroup): TYPIC FRAGIOCHREPTS Confirm Mapped Type?  Yes  No

Profile Description:  
Depth (inches) Matrix Color Mottle Colors Mottle Abundance/ Texture, Concretions,  
Horizon (Munsell Moist) (Munsell Moist) Size/Contrast Structure, etc.

5" B 10YR 4/1 10YR 4/4

Hydric Soil Indicators:

- Histosol  Concretions
- Histic Epipedon  High Organic Content in Surface Layer in Sandy Soils
- Sulfidic Odor  Organic Streaking in Sandy Soils
- Aquic Moisture Regime  Listed on Local Hydric Soils List
- Reducing Conditions  Listed on National Hydric Soils List
- Gleyed or Low-Chroma Colors  Other (Explain in Remarks)

Remarks:

**WETLAND DETERMINATION**

- Hydrophytic Vegetation Present?  Yes  No (Circle) (Circle)
- Wetland Hydrology Present?  Yes  No
- Hydric Soils Present?  Yes  No Is this Sampling Point Within a Wetland?  Yes  No

Remarks:

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
(1987 COE Wetlands Delineation Manual)

Project/Site: LOT 87.004-S-1.2 Date: 7-21-04

Applicant/Owner: WILLBERRY CORP. County: ULSTER

Investigator: BOB TORGENSEN State: NEW YORK

Do Normal Circumstances exist on the site?  Yes  No  
Is the site significantly disturbed (Atypical Situation)? Yes  No   
Is the area a potential Problem Area? Yes  No   
(If needed, explain on reverse.)  
Community ID: C  
Transect ID: \_\_\_\_\_  
Plot ID: \_\_\_\_\_

**VEGETATION**

Dominant Plant Species      Stratum Indicator

- |                  |      |       |
|------------------|------|-------|
| 1. RED MAPLE     | TREE | FAC   |
| 2. PIN OAK       | TREE | FACW  |
| 3. SPICE BUSH    | BUSH | FACW- |
| 4. SKUNK CABBAGE | FORB | OBL   |
| 5. SENS. FERN    | FERN | FACW  |
| 6.               |      |       |
| 7.               |      |       |
| 8.               |      |       |
| 9.               |      |       |

Forest Wetland

Percent of Dominant Species that are OBL, FACW or FAC  
(excluding FAC-). \_\_\_\_\_

Remarks:

**HYDROLOGY**

\_\_\_ Recorded Data (Describe in Remarks): Wetland Hydrology Indicators:

\_\_\_ Stream, Lake, or Tide Gauge Primary Indicators:

\_\_\_ Aerial Photographs \_\_\_ Inundated

\_\_\_ Other  Saturated in Upper 12 Inches

\_\_\_ No Recorded Data Available \_\_\_ Water Marks

Field Observations:

Depth of Surface Water: \_\_\_\_\_ (in.)

Depth to Free Water in Pit: \_\_\_\_\_ (in.)

Depth to Saturated Soil: \_\_\_\_\_ (in.)

\_\_\_ Drift Lines

\_\_\_ Sediment Deposits

\_\_\_ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

\_\_\_ Oxidized Root Channels in Upper 12 Inches

\_\_\_ Water-Stained Leaves

\_\_\_ Local Soil Survey Data

\_\_\_ FAC-Neutral Test

\_\_\_ Other (Explain in Remarks)

Remarks:

wetlands directly adjacent to stream bc

Project/Site: LOT 87.004-5-1.2 Date: 7-21-04

SOILS C

Map Unit Name (Series and Phase): ATHERTON COMPLEX Drainage Class: PD

Field Observations Taxonomy (Subgroup): MOLLIC HAPLAQUEPTS Confirm Mapped Type? (Yes) No

Profile Description:

Depth (inches) Matrix Color Mottle Colors Mottle Abundance/ Texture, Concretions, Horizon (Munsell Moist) (Munsell Moist) Size/Contrast Structure, etc.

8-16" 7.5YR 5/2 7.5YR 5/6 few/low contrast

Hydric Soil Indicators:

- Histosol  Concretions
- Histic Epipedon  High Organic Content in Surface Layer in Sandy Soils
- Sulfidic Odor  Organic Streaking in Sandy Soils
- Aquic Moisture Regime  Listed on Local Hydric Soils List
- Reducing Conditions  Listed on National Hydric Soils List
- Gleyed or Low-Chroma Colors  Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle) (Circle)

Wetland Hydrology Present? (Yes) No

Hydric Soils Present? (Yes) No Is this Sampling Point Within a Wetland? (Yes) No

Remarks:

Area's A and C are one continuous wetland system divided by a concrete box culvert previously installed.

willberry  
w/ guide

