Appendix 9.7 Ecological Reports

Appendix 9.7.1 Habitat Assessment Report

Habitat Assessment Report

Higher Ground Country Club Management Co., LLC Silo Ridge Country Club Golf Resort Community

State Route 22
Town of Amenia
Dutchess County, New York

May 2006-revised February 12, 2007
10454.00

THE Chazen COMPANIES

Prepared for:

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Management Co., LLC
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Habitat Assessment Report

Higher Ground Country Club Management Co., LLC Silo Ridge Country Club Golf Resort Community

State Route 22
Town of Amenia
Dutchess County, New York

May 2006-revised February 12, 2007

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EXECUTIVE SUMMARY

This Habitat Assessment Report (HA) was completed by The Chazen Companies (TCC) for Higher Ground Country Club Management Company, LLC, as part of the environmental review process pertaining to the proposed development within the +/-668 acre Silo Ridge Country Club Resort Community. This project calls for the redevelopment of the existing golf course footprint, along with areas of past human disturbances, and less than 50-acres of adjacent natural areas, all totaling approximately 274 acres of disturbance. The remaining land (approximately 394 acres) will remain undisturbed. The project area is located on New York State Route 22, in the Town of Amenia, Dutchess County, New York. The following sections of this report describe the methodologies used in the Assessment and provide a detailed description of the site and ecological resources present at the project area.

The methodology utilized to complete this assessment consisted of the visual analysis of flora and fauna on the subject property. In addition, Freedom of Information letters were submitted to the US Fish and Wildlife Service (USFWS) and the NYS Department of Environmental Conservation Natural Heritage Program to obtain information concerning the presence or absence of endangered, threatened, and/or rare species (ETR species).

During this HA, 117 species of plants, 9 mammals, 29 birds and 8 amphibians and reptiles, and 3 fish were identified within 10 different vegetative communities. In addition, 11 wetlands and 16 ponds/watercourses were identified on the property.

No state or federally-listed rare, threatened, or endangered species were found on the site during the assessment. However, Hill's pondweed (*Potamogeton hillii*), a State threatened species, is documented within NYSDEC wetland AM-15. There is also suitable habitat for Indiana bats (*Myotis sodalis*) located in some of the wooded areas bordering the golf course. Summer foraging and den habitat was found for timber rattlesnakes (*Crotalus horridus*); however, no basking habitat was found along the ridge along the ridgeline above the site,. Based on historical records and sightings, there does not appear to be a nearby population of snakes present to utilize the area. No suitable habitat was found for bog turtles (*Clemmys muhlenbergii*). Further coordination with the USFWS and NYSDEC may be warranted to address the concerns for two federally endangered species and two New York State threatened species that are known to occur in or near the vicinity of the Property.

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1.0 INTRODUCTION

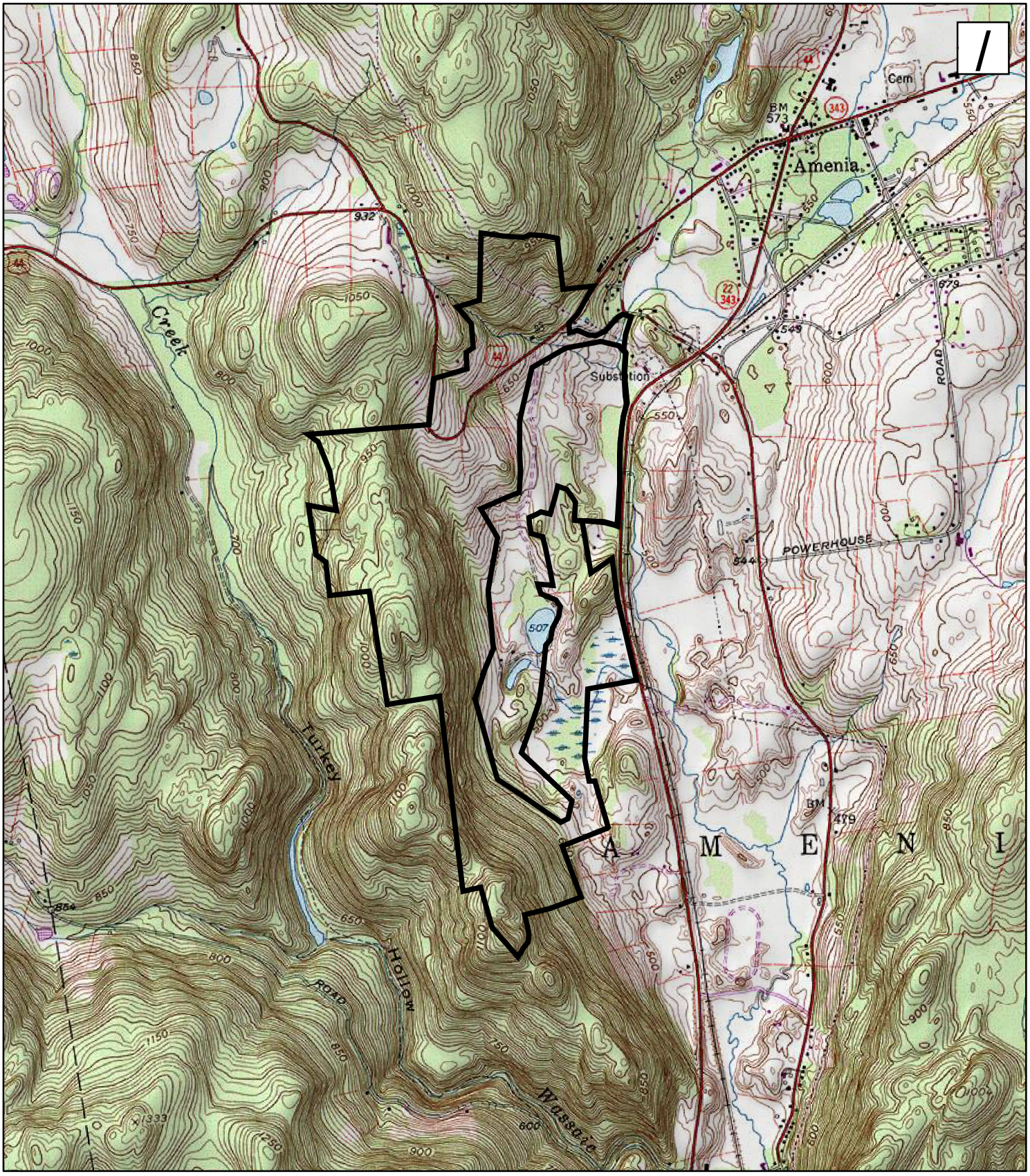
This Habitat Assessment (HA) Report was completed by The Chazen Companies (TCC) for the Higher Ground Country Club Management Co, LLC. as part of the environmental review process pertaining to the proposed development within the +/-668 acre Silo Ridge Resort Community. The activities proposed include the construction of single-family homes, townhomes, a resort hotel, banquet space, restaurants, conference space, and a spa and wellness center. The following sections of this report describe the methodologies used in the Assessment and provide a detailed description of the site and ecological resources present at the project area.

The project area consists of +/-668 acres situated on New York State Route 22, in the Town of Amenia, Dutchess County, New York (herein referred to as the Property). Figure 1.0-1, "Site Location Map," illustrates the Property on the USGS Amenia, NY (1958, photorevised 1984) Topographic Quadrangle.

The Property is currently a 135-acre golf course with a country club along with several maintenance buildings. Several open fields are located in the northwestern and southern portions of the Property. The western and northern portions of the Property consist largely of hardwood forests in varying stages of succession. NYSDEC wetland AM-15 is located in the south-central portion of the Property.

The proposed project, including the golf course redesign and the proposed development, will total approximately 274 acres. Of the 274 acres, 135 acres includes the existing golf course and 95 acres of proposed development will be within existing past impact areas (ie: old agriculture fields, quarry areas, etc). Only 44 acres of natural habitat will be disturbed. Approximately 394 of the 668 acres of the Silo Ridge Property, located primarily within the upper slope and ridge line in the western portion of the property, will remain undeveloped.

Work on this project was conducted by the Ecological Staff of TCC. This group consists of David Tompkins, MS, CWB; Steven Finch, BA; Jason Tourscher, MS; and Auggie Ruggerio, BA. Resumes for these individuals are included in Appendix B. TCC staff was assisted by Mr. Richard Stechart, a local herpetological consultant for issues regarding rattlesnakes and turtles.



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Silo Ridge Country Club

Figure 1.0-1 Site Location Map

Town of Amenia, Dutchess County, New York

USGS Topographical Map

Drawn:	TRO
Date:	January, 2007
Scale:	1 inch equals 2,000 ft
Project:	10454.02
Figure:	1.0-1

2.0 METHODOLOGY

As part of this HA, information was gathered from federal, state, and local agencies and was supplemented by a literature review and an on-site field investigation. The field investigation was designed to catalog the on-site flora and fauna.

2.1 Federal and State Agencies and Literature Review

The New York State Department of Environmental Conservation (NYSDEC) and the United States Fish and Wildlife Service (USFWS) were contacted[2] to obtain information concerning the presence or absence of endangered, threatened, and/or rare species (ETR) located within the vicinity of the Property. Copies of these letters are included in Appendix A, "Correspondence."

On May 17, 2005, the USFWS responded with information regarding the presence of endangered or threatened species within the vicinity of the Property. In this response, the USFWS indicated that the Indiana bat (*Myotis sodalis*), a federally endangered species, has been reported to occur at a roost located approximately 15 miles from the Property. Furthermore, the site is within 30 miles of a hibernacula in Ulster County. The USFWS requested that the Property be surveyed to determine the presence, amount and distribution of suitable summer roosting/maternity habitat, and the presence of any mines/caves that could serve as hibernacula. The USFWS also indicated that bog turtles (*Clemmys muhlenbergii*), a Federally threatened and State endangered species, are known to occur within five miles of the Property. The USFWS indicated that the site should be evaluated for the potential to support the bog turtle or its habitat. A copy of the USFWS response letter is attached in Appendix A, "Correspondence," of this report.

On May 9, 2005, the NYSDEC Natural Heritage Program (NYSNHP) responded in a letter stating that the NYSDEC has two records of known occurrences of threatened and endangered-listed animals and one record of plants, in the immediate vicinity of the Property. The bog turtle is documented by the NYSDEC to be found within a mile of the project site. Timber rattlesnakes (*Crotalus horridus*), a State threatened species, are documented within 1.5 miles from the Project area. Also Hill's pondweed (*Potamogeton hillii*), a State threatened species is documented within NYSDEC wetland AM-15, a portion of which is located within the Property. A copy of the NYSDEC response letter is attached in Appendix A, "Correspondence," of this report.

In addition to the information received from the NYSDEC and the USFWS, TCC reviewed in-house materials including the USGS Amenia, NY (1958 photorevised

[2] April 13, 2005

1984) Topographic Quadrangle; 2002 Dutchess County Soil Survey; 1990 National Wetland Inventory (NWI) Map, Amenia Quadrangle; 1973 NYSDEC Freshwater Wetlands Map, Amenia Quadrangle; and 2004 aerial photographs of the property.

As a standard operating procedure, TCC reviewed the natural history requirements of the species listed as possibly occurring on the site. Although not included in this report, TCC maintains substantial documentation on the life history and habitat requirements of these species. This information can be provided if requested.

2.2 Field Investigation

Biologists from The Chazen Companies (TCC) conducted on-site investigations of the Property on the following dates, shown below.

Table 2.1.1 Work Field Days

Silo Ridge Work Field Days and Activity Sheet			
Dates	**Staff**	**Man Hours**	**Work Conducted**
4/20/2005	SF, DT, RS	23	Habitat Assessment
5/3/2005	SF, AR	19	Habitat Assessment and Wetland Delineation
5/5/2005	SF, AR	17	Habitat Assessment and Wetland Delineation
5/6/2005	SF, AR	18	Habitat Assessment and Wetland Delineation
5/12/2005	SF, AR	20	Habitat Assessment
5/24/2005	SF, JT	15	Habitat Assessment and Wetland Delineation
11/3/2005	SF, JT	14	Habitat Assessment and Wetland Delineation
4/13/2006	SF		Wetland NYSDEC Validation
9/12/2006	SF		Wetland ACOE Jurisdictional Review
Total Field Days		7	*Does not include regulatory agency reviews
Total Man Hours		126	*Total man hours does not include drive time

During the field surveys, plant and animal species were inventoried to characterize existing populations, habitats, and communities. The potential for rare plants and animals, as well as general observations regarding vegetation and overall plant species composition and structure, wildlife, wetlands, degree of site disturbance, and other site characteristics were noted and recorded during the site inspections.

2.2.1 Wetlands

The wetland areas delineated within the boundaries of the Property are briefly described in Section 4.1.

2.2.2 Vegetation

Vegetative cover (habitat) types described herein follow those utilized by the New York Natural Heritage Program and as described by Edinger et al.[3] Vegetation identified within the Property is described in the following sections in terms of strata (layers – "overstory;" "understory;" and "groundcover").

Overstory vegetation represents the canopy tree species greater than six inches in diameter. Understory/shrub vegetation is comprised of woody tree species between two and six inches in diameter, and saplings and shrubs less than two inches in diameter and three to 12 feet in height. Ground layer vegetation consists of both woody and herbaceous vegetation less than three feet in height.

The Property was randomly traversed in its entirety to identify and compare vegetative cover types and search for wildlife species. During the site evaluation, the distributions of various habitats were noted along with the vegetative species composition, plant structure (i.e. layers), and other vegetative characteristics. This information was used to provide a written description of each habitat type as presented below. Additionally, interpretation of aerial photography was used to assist in preparing a more accurate depiction of vegetative communities for the Property.

Plants species were field identified to genus and species when possible. Unidentified plant species were collected for later identification. Upon the compilation of the species list, plants identified at the Property were compared to species listed in the New York Natural Heritage Program Rare Plant List to determine if any plants federally or state listed as endangered, threatened or rare (ETR) or special concern species were noted. Finally, species were categorized by location and general habitat characteristics were documented. A cumulative list of vegetation identified on the Property is provided in Appendix B.

2.2.3 Wildlife

On-site field surveys of wildlife species were conducted for reptiles, amphibians, mammals, and bird species in the spring, summer, and fall of 2005. The Hudsonia Biodiversity Assessment Manual was reviewed prior to the field investigations as guidance for reviewing natural habitats of the ETR species that were listed by the regulatory agencies within the vicinity of the property. In addition, TCC biologists relied on extensive field experience acquired through conducting habitat assessment work. The following discussion outlines the methods used.

[3] Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2002. Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. (Draft for review). New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.136 pgs.

Reptiles and Amphibians

Methods used to conduct the herptile survey, which is a combined survey for reptiles and amphibians, includes over-turning logs, debris, and large stones to reveal herptile species underneath. These species were detected and identified by visual encounter, vocalization, egg masses, larvae, and remains.

Mammals

Field methods to detect mammals were based on visual encounters, vocalization, tracks, scat, remains, or other signs. The site was randomly traversed to ensure that each vegetative and habitat community was surveyed.

Birds

Bird species were identified throughout the Property either visually, by song, and/or by nest evaluations. Both random walking transects (which covered all areas of the site) and random point count methods were used. Associations between bird species and their corresponding preferred habitat types were noted during the investigation.

3.0 EXISTING PHYSICAL CONDITIONS

The Silo Ridge Country Club is comprised of the golf course, main clubhouse, several maintenance buildings, and parking areas. The golf course is located in the northeast and central portions of the Property. The western section of the Property contains a ridgeline extending from the northern to southern boundary line. A NYSDEC wetland AM-15 is located in the east-central portion of the Property.

Development to the north of the Property consists primarily of residential homes and a closed landfill located to the south. State Route 22 and the Harlem Valley Rail Trail are located along the eastern side of the property. Development along the eastern side of the property consists of several commercial/industrial properties including a gun club and NYSDEC and State Superfund Site (located on the south side of Wetland L). The area to the west of the site consists of undeveloped land owned by the Tamarack Preserve.

3.1 Topography

According to the USGS Amenia (1958, photorevised 1984) topographic quadrangle maps, the Property exhibits rolling terrain to steep ridges. The Property's elevations range from approximately 490 feet above mean sea level (msl) in the

east-central portion of the site to approximately 1100 feet msl near the west-central boundary line. Figure 1.0-1 provides an illustration of the overall site topography.

3.2 Soils

According to the 2002 *Dutchess County Soil Survey*,[4] 17 soil types are mapped on the property. The following section provides a description of these soil types including soil properties, hydric or non-hydric capabilities, and general location of the soils within the Property. Figure 3.3-1, "Soil Map," illustrates the location of the soils for the site.

Copake gravelly silt loam, rolling (CuC) – This Copake soil type is identified in the northeastern and central portions of the property. This mapping unit is comprised of very deep, well drained soils that were formed in glaciofluvial deposits high in limestone fragments. Permeability is moderate or moderately rapid in the surface layer and subsoil, and very rapid in the substratum. Surface runoff is medium and the hazard for erosion is moderate. The available water capacity is moderate. The depth to seasonal water table is more than six feet. Slopes range from five to 16 percent.

Copake gravelly silt loam, hilly (CuD) –This Copake soil type is located in the northeastern portion of the property. This mapping unit consist of very deep, well drained soils that formed in glaciofluvial deposits high in limestone fragments. Slopes are complex and range from 15 to 30 percent. Permeability is moderate or moderately rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is moderate and the depth to seasonal high water is more than six feet. Surface runoff is medium and the hazard for erosion is severe.

Copake channery silt loam, fan, 3 to 8 percent slopes (CwB) –This Copake soil type is located in the central portion of the property. This mapping unit consists of very deep, gently sloping and well drained soils that formed in glacial outwash deposits. Slopes are complex and range from three to eight percent. Permeability is moderate or moderately rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is moderate and the depth to seasonal high water is three to six feet (April thru May). Surface runoff is slow and the hazard for erosion is slight.

Dutchess-Cardigan complex, hilly, rocky (DwD) –This soil complex is located on the very northern boundary line of the property. This mapping complex consists of very deep, well drained Dutchess soils and moderately deep, well drained Cardigan soils that formed in glacial till deposits. Slopes are complex and range

[4] USDA Natural Resource Conservation Service. Soil map for Dutchess County, New York.

from 15 to 30 percent. Permeability is moderate. The available water capacity is low to moderate and the depth to seasonal high water is more than six feet. Surface runoff is rapid and the hazard for erosion is severe.

Fluvaquents-Udifluvents complex, frequently flooded (Ff) –This soil complex is located in the central portion of the property. This mapping unit consists of nearly level, very deep, somewhat poorly drained to very poorly drained Fluvaquents and very deep, moderately well drained to somewhat excessively drained Udifluvents. Slopes range from zero to three percent. Permeability is very rapid to slow. The available water capacity is high to low and the depth to seasonal high water is 0.5 to six feet (Oct thru June). Surface runoff is slow to ponded and the hazard for erosion is moderate. There is no pedon for Fluvaquents or Udifluvents.

Galway-Farmington complex, hilly (GfD) –This soil complex is located in the central portion of the property. This mapping unit consists of moderately deep; well drained and moderately well drained Galway soils and shallow well drained and somewhat excessively drained Farmington soils that formed in glacial till deposits. Slopes are complex and range from 15 to 30 percent. Permeability is moderate. The available water capacity is low to very low and the depth to seasonal high water is from 1.5 to 3 feet (March thru April) up to more than six feet. Surface runoff is rapid and the hazard for erosion is severe.

Hollis-Chatfield-Rock outcrop complex, steep (HoE) – This soil complex is located in the eastern portion of the property. This mapping unit consists of shallow, well drained and somewhat excessively drained Hollis soils; moderately deep, well drained and somewhat excessively drained Chatfield soils; and areas of rock outcrop. Slopes are complex and range from 25 to 45 percent. Permeability is moderate to moderately rapid. The available water capacity is very low and the depth to seasonal high water is more than six feet. Surface runoff is very rapid and the hazard for erosion is very severe.

Nassau-Cardigan complex, rolling, very rocky (NwC) – This soil complex is located in the western portions of the property. This mapping unit consists of shallow, somewhat excessively drained Nassau soils and moderately deep, well drained Cardigan soils that formed in glacial till deposits. Slopes are complex and range from five to 16 percent. Permeability is moderate. The available water capacity is low to very low and the depth to seasonal high water is more than six feet. Surface runoff is medium and the hazard for erosion is moderate.

Nassau-Rock outcrop complex, steep (NxE) – This soil complex is located in the western portion of the property. This mapping unit consists of shallow, somewhat excessively drained Nassau soils and areas of rock outcrop. Slopes are complex and

range from 25 to 45 percent. Permeability is moderate. The available water capacity is very low and the depth to seasonal high water is more than six feet. Surface runoff is very rapid and the hazard for erosion is very severe.

Nassau-Rock outcrop complex, very steep (NxF) – This soil complex is located in the western portion of the property. This mapping unit consists of shallow, somewhat excessively drained Nassau soils and areas of rock outcrop. Slopes are complex and range from 45 to 70 percent. Permeability is moderate. The available water capacity is very low and the depth to seasonal high water is more than six feet. Surface runoff is very rapid and the hazard for erosion is very severe.

Stockbridge silt loam, 8 to 15 percent slopes (SkC) – This soil unit is located in the northern portions of the property. This mapping unit consists of very deep, sloping, and well drained Stockbridge soils that formed in glacial till deposits. Slopes are smooth and range from eight to 15 percent. Permeability is moderate in the surface layer and subsoil, and slow to moderately slow in the substratum. The available water capacity is high and the depth to seasonal high water is more than six feet. Surface runoff is rapid and the hazard for erosion is moderate.

Stockbridge silt loam, 15 to 25 percent slopes (SkD) – This soil unit is located in the northern portions of the property. This mapping unit consists of very deep, sloping, and well drained Stockbridge soils that formed in glacial till deposits. Slopes are complex and range from 15 to 25 percent. Permeability is moderate in the surface layer and subsoil, and slow to moderately slow in the substratum. The available water capacity is high and the depth to seasonal high water is more than six feet. Surface runoff is rapid and the hazard for erosion is severe.

Stockbridge silt loam, 25 to 45 percent slopes (SkE) – This soil unit is located in the northern portions of the property. This mapping unit consists of very deep, sloping, and well drained Stockbridge soils that formed in glacial till deposits. Slopes are complex and range from 25 to 45 percent. Permeability is moderate in the surface layer and subsoil, and slow to moderately slow in the substratum. The available water capacity is high and the depth to seasonal high water is more than six feet. Surface runoff is very rapid and the hazard for erosion is very severe.

Stockbridge-Farmington complex, hilly, rocky (SmD) – This soil complex is located in the south-central portion of the property. This mapping unit consists of very deep, well drained Stockbridge soils and shallow, well drained and somewhat excessively drained Farmington soils that formed in glacial till deposits. Slopes are complex and range from 15 to 30 percent. Permeability is moderate in the surface layer and subsoil, and slow to moderately slow in the substratum. The available water capacity is high to very low and the depth to seasonal high water is more than six feet. Surface runoff is rapid and the hazard for erosion is severe.

Udorthents, smoothed (Ud) – This soil unit is located in the southeastern portion of the property. This mapping unit consists of very deep, somewhat excessively drained to moderately well drained soils that have been altered by cutting and filling. Slopes are predominantly zero to eight percent but range from eight to 25 percent on the sides of excavations and along highways. There are no soil properties for this soil type.

Udorthents, wet substratum (Ud) – This soil unit is located in the northeastern portion of the property. This mapping unit consists of moderately well drained soils that have been altered by filling. Slopes are predominantly zero to eight percent but range from eight to 25 percent on the sides of excavations and along highways. There are no soil properties for this soil type. Udorthents soils do not have a pedon.

Wayland silt loam (Wy) – This soil unit is located near the eastern boundary line within the central portion of the property. This mapping unit consists of very deep, nearly level, and poorly drained and very poorly drained Wayland soils that formed in alluvium deposits. Slopes are smooth and range from zero to three percent. Permeability is moderately slow or moderate in the surface layer, slow in the subsoil and substratum. The available water capacity is high and the depth to seasonal high water is 0.5 to one foot (November-June). Surface runoff is slow and the hazard for erosion is slight. This soil unit is on the New York State Hydric Soils List.

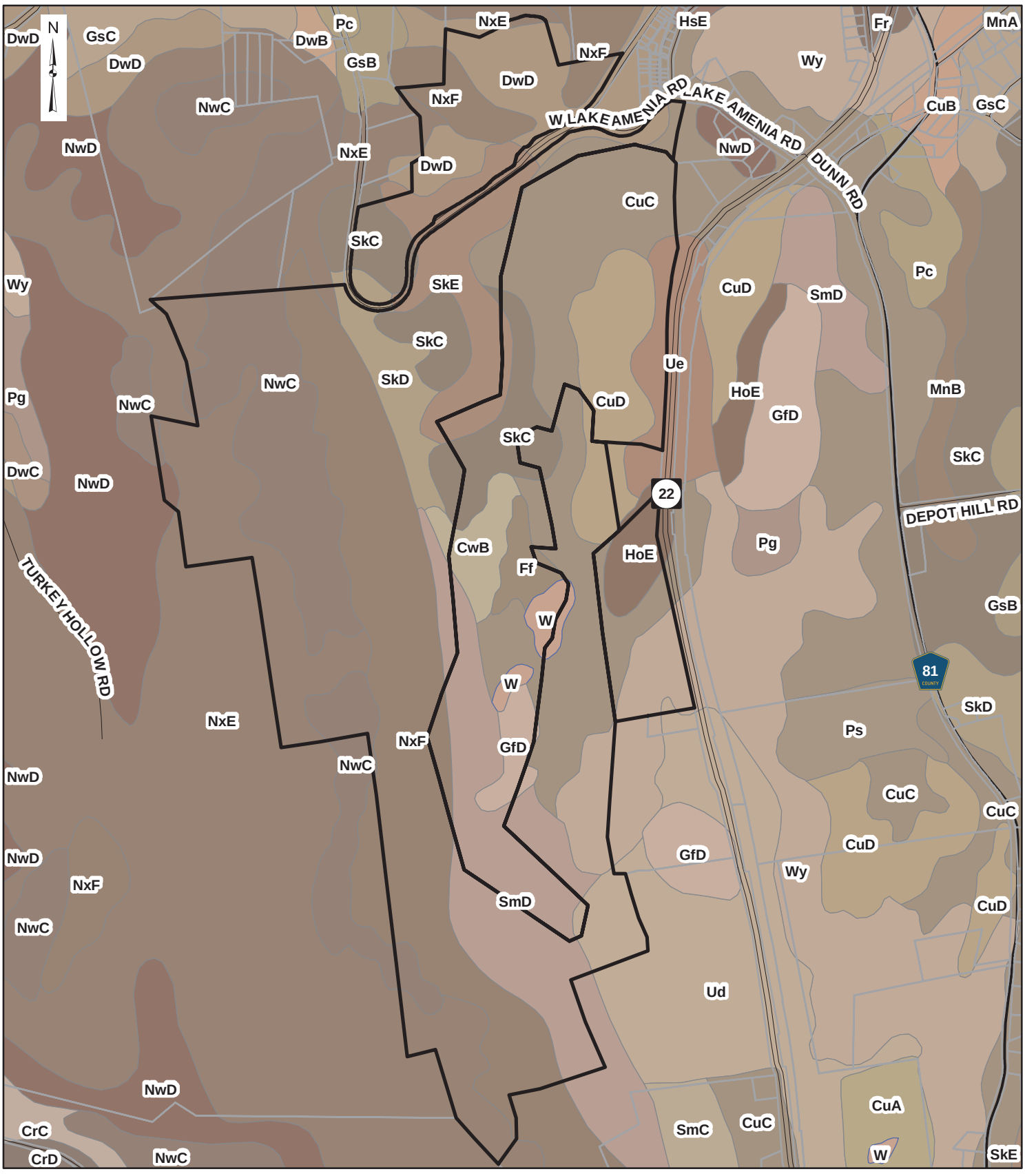

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Figure 3.3-1 Soil Map

Silo Ridge Country Club
Route 44
Town of Amenia, Dutchess County, New York

Dutchess County Soil Survey

Date: 6/9/05

Scale: 1 inch equals 1,200 feet

Project #: 10454

3.3 Hydrology and Wetland Mapping

The site is located within the drainage basin of Ten Mile River, which flows southeast into the Housatonic River. There is one named perennial stream (Amenia/Cascade Brook), one unnamed perennial stream, six intermittent streams, and eight ponds located within the property. Amenia/Cascade Brook is a Class C(T) stream indicating that the stream may support trout populations. Cascade Brook is approximately 12 to 15 feet wide with banks three to six feet high. Water depth ranges from six inches to four feet with the streambed consisting of a substrate that ranges from silt to boulders.

All other streams and ponds on-site are Class "C" waterbodies. The "C" classification[5] is for waters that support fisheries and are suitable for non contact activities. Table 3.4.1.1 below lists brief descriptions of each stream on-site. See Figure 1.1-1, "Site Location Map" for reference.

Table 3.4.1.1 Stream Characteristics

Stream Name[6]	Width	Bank Height	Substrate
Amenia/Cascade Brook, "C1,C2,C3"	10 to 12 feet	3 to 6 feet	Silt to boulders
E1, E2	1 to 3 feet	0.5 to 1 foot	Silt to sand
G1,G2	2 to 4 feet	0.5 to 2 feet	Silt to cobble
J/OO	2 to 6 feet	1 to 6 feet	Silt to boulders
L	3 to 6 feet	1 to 3 feet	Silt to cobble
M/P	2 to 4 feet	0.5 to 3 feet	Silt to cobble
QQ	1 foot	0.5 feet	Silt to sand
R/S	2 to 5 feet	1 to 6 feet	Silt to bedrock
V	3 to 8 feet	2 to 6 feet	Silt to bedrock

[5] 6 NYCRR 682.5

[6] It should be noted that all streams and ponds labeled herein are referred on the Wetland Survey Map as "wetlands". The labeling on the Wetland Survey Map does not separate the nomenclature of waterbodies, watercourses, and/or wetlands on the property.

Table 3.4.1.2 Pond Characteristics

Pond Name	Acres	Pond Name	Acres
A	0.52	J2 (Northwest)	0.15
B	0.87	H	0.51
D	0.43	K	2.06
J1 (Southeast)	0.42	Z	5.53

3.4.1 Wetland Mapping

According to the 1990, N*ational Wetland Inventory (NWI) Map,*[7] *Amenia Quadrangle*, one stream, two ponds, and three wetlands are mapped within the property. The first is Cascade Brook situated in the northeast portion of the site, which is mapped as R3UBH - [R] Riverine, [3] Upper Perennial, [UB] Unconsolidated Bottom, [H] Permanently Flooded. The two ponds located in the center portion of the site are mapped as PUBH - [P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded. A wetland on the western portion of the site is mapped as PFO1E – [P] Palustrine, [FO] Forested, [1] Broad-leaved Deciduous, [E] Seasonally Flooded/Saturated. A wetland in the northern portion of the site is mapped PUBHx – [P] Palustrine, [UB] Unconsolidated Bottom, [H] Permanently Flooded, [x] Excavated. The large wetland located in the east-central portion of the property is mapped with several different codes including PEM1Fh – [P] Palustrine, [EM] Emergent, [1] Persistent, [F] Semi-permanently Flooded, [h] Diked/Impounded; PFO1C - [P] Palustrine, [FO] Forested, [1] Broad-leaved Deciduous, [E] Seasonally Flooded; PFO1Eh - [P] Palustrine, [FO] Forested, [1] Broad-leaved Deciduous, [E] Seasonally Flooded/Saturated, [h] Diked/Impounded; and PSS1Eh – [P] Palustrine, [SS] Scrub-shrub, [1] Broad-leaved Deciduous, [E] Seasonally Flooded/Saturated, [h] Diked/Impounded.

Table 3.4.1.3 "NWI Definitions" defines the terms used to describe these wetlands identified within the project area. Figure 3.4-2 NWI and NYSDEC Wetland

[7] National Wetland Inventory Mapping is not a "regulatory map," and does not designate the official boundaries of federal wetlands. For the purposes of regulation under Section 404 of the Clean Water Act, federal wetlands are only designed by an on-site wetland delineation conducted in accordance to the 1987 US Army Corps of Engineers Wetland Delineation Manual.

Mapping" provides an illustration of these wetland resources adjacent to the study area.

According to the 1973, *NYSDEC Wetland Inventory Map*, *Amenia Quadrangle*, the wetland in the east-central portion is NYSDEC Wetland AM-15. Located on the east side of NYS Route 22, the same wetland system is mapped as NYSDEC Wetland AM-16.

Table 3.4.1.3 NWI Definitions

Term	Definition
Riverine	Wetlands and deepwater habitats contained in natural or artificial channels periodically or continuously containing flowing water or which forms a connecting link between the two bodies of standing water.
Palustrine	Non-tidal wetlands dominated by trees, shrubs, persistent emergent, or emergent mosses and lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.0 parts per thousand (ppt).
Upper Perennial	This Subsystem is characterized by a high gradient and fast water velocity. There is no tidal influence, and some water flows throughout the year. This substrate consists of rock, cobbles, or gravel with occasional patches of sand. There is very little floodplain development.
Scrub/shrub	Includes areas dominated by woody vegetation less than 6 m (20 feet) tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions.
Emergent	Characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants
Broad leaved deciduous	A class of woody vegetation (shrubs and trees) that have leaves not needles that are shed annually as part of the trees natural cycle.
Persistent	Dominated by species that normally remain standing at least until the beginning of the next growing season. This subclass is found only in the Estuarine and Palustrine systems.
Unconsolidated bottom	Includes all wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 6-7 cm), and vegetative cover less than 30%.
Permanently Flooded	Water covers the land surface throughout the year in all years.
Semi-permanently flooded	Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land's surface
Seasonally Flooded/Saturated	Surface water is present for extended periods especially early in the growing season and when surface water is absent, substrate remains saturated near the surface for most of the growing season.
Seasonally Flooded	Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.
Diked/Impounded	Created or modified by a man-made barrier or dam which obstructs the inflow or outflow of water.
Excavated	Lies within a basin or channel excavated by man
Source: US Department of the Interior Fish and Wildlife Service National Wetland Inventory	

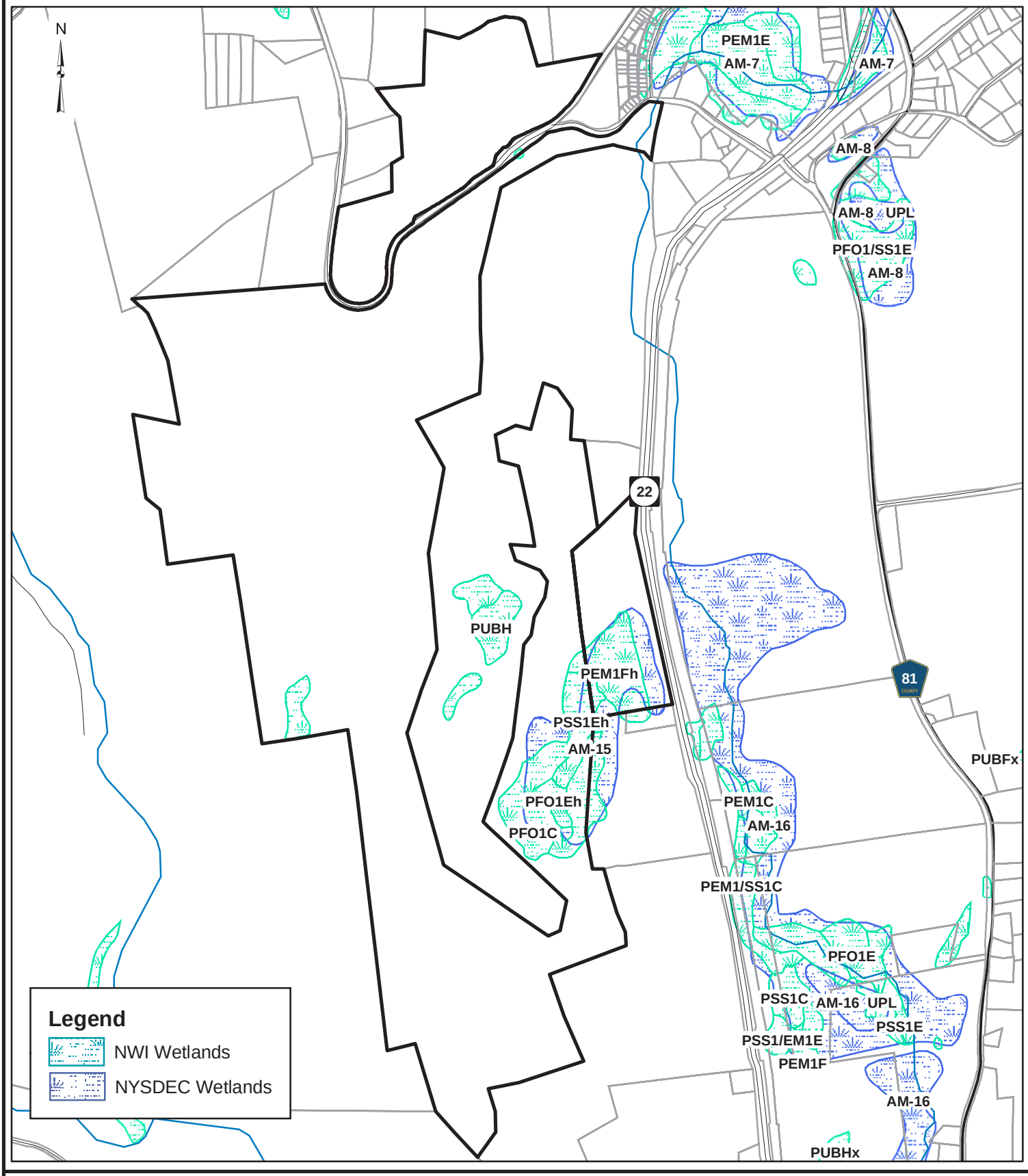

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Figure 3.4-2 Wetlands Map

Silo Ridge Country Club
Route 44
Town of Amenia, Dutchess County, New York

Dutchess County Soil Survey

Date: 6/9/05

Scale: 1 inch equals 1,200 feet

Project #: 10454

4.0 RESULTS

The following sections provide descriptions of the wetland areas delineated on-site and types of vegetative communities located within the Property. Section 4.2 describes the sites fauna and habitat characteristics.

4.1 Flora/Vegetative Communities

TCC staff identified over 117 plant species within ten vegetative communities as described in *Ecological Communities of New York.*[8] The following provides a description of these vegetative communities and their location on-site. A list of the species encountered during the field investigation and the associated habitat type where each species was encountered is included as Appendix B "Flora of Silo Ridge." This table provides a list of plants that were identified at the Property. A map illustrating the approximate location of each of the vegetative community types is included as Appendix C "Vegetative Cover Map." A photographic log of the various communities located within the boundaries of the Property is included as Appendix D "Photographic Log."

Successional southern hardwood forest - This community is established in the northern and central portions of the property. This community type occupies approximately 15% of the Property. As described by Edinger, et al.[9] this community is comprised of a hardwood or mixed forest that occurs on sites that have been cleared for farming, logging or otherwise disturbed. Species found within this community on the property include sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), red oak (*Quercus rubra*), white oak (*Quercus alba*), tartarian honeysuckle (*Lonicera tatarica*), multiflora rose (*Rosa multiflora*), garlic mustard (*Alliaria petiolata*), rue-anemone (*Thalictrum thalictroides*), and false Solomon's seal (*Maianthemum racemosum*). The trees in this community varied in size based upon location, but were generally between 10-18 inches in diameter at breast height (dbh). Several large trees (primarily oaks) with dbh as great as 50 inches were observed in the south-central portion of the Property north of Wetland L. A cluster of shagbark hickories (*Carya ovata*), a common roost tree for various bat species, were noted on the eastern edge of the golf course above the southwest bank sloping to wetland L.

Beech-maple mesic forest – This community is a hardwood forest with sugar maple and beech codominant. This is a broadly defined community type with several regional and soil influenced variants. These forests occur on moist, well-

[8] Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2002. Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. (Draft for review). New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.136 pgs.

[9] Ibid

drained, usually acid soils. This forest community dominates the western portion of the property along the east facing slopes. A small patch of this community is located to the north of the existing clubhouse. This community type occupies approximately 30% of the Property. Vegetation within this community within the property includes sugar maple, paper birch (*Betula papyrifera*), American beech (*Fagus grandifolia*), red oak, red trillium (*Trillium erectum*), Dutchman's breeches (*Dicentra cucullaria*), wild columbine (*Aquilegia canadensis*), and northern maidenhair (*Adiantum pedutum*). The majority of the trees in this forested community had a dbh between 12 and 18 inches.

Stream P is a groundwater seep area that is located adjacent to the golf course in the southwestern portion of the property. The intermittent stream starts near the base of the ridge and flows to the east through man-made ditches and culverts through the golf course towards wetland L. The stream only flows during wet periods when the ground water table is high. The upper portion of this stream possesses good habitat primarily for amphibians due to high banks and surrounding shade trees to keep the area cool and damp. Mature forest is located around this seep.

Chestnut oak forest – This community is a hardwood forest that is located on the top of the ridge in the western portion of the Property. It occupies approximately 10% of the Property. These forests are well-drained sites in glaciated portions of the Appalachians and on the coastal plains. Dominant vegetation that characterize this community within the Property includes chestnut oaks (*Quercus montana*), and red and white oaks in the canopy layer. The trees in this forested community had dbh's between 12 and 18 inches. The subcanopy layer is dominated by mountain laurel (*Kalmia latifolia*) and low bush blueberry (*Vaccinium angustifolium*).

Shallow emergent marsh – This community consists of a marsh meadow that occurs on mineral soils or deep muck soils that generally are permanently saturated and seasonally flooded. This marsh is better drained than a deep emergent marsh; water depths may range from approximately six inches to three feet during flood stages, but the water level usually drops by mid to late summer and the substrate becomes exposed during an average year.

This community is located in several small areas within the golf course in the south-central portion of the property and within parts of NYSDEC wetland AM-15 on the eastern portion of the property. These areas were saturated or inundated at the time of the observation. This community type occupies less than 5% of the Property. Vegetation found within these wetlands includes broadleaf cattail (*Tyha latifolia*), purple loosestrife (*Lythrum salicaria*), skunk cabbage (*Symplocarpus foetidus*) and common duckweed (*Lemna minor*).

Red maple swamp – This community is a hardwood swamp that occurs in poorly drained depressions, usually on inorganic soils. This community is located in several areas within the property including along Cascade Brook, and in the northern and central portions of the property associated with several intermittent streams. It occupies less than 5% of the Property. Saturation and shallow inundation was observed at the time of the site visit. Vegetation found within this community on the property includes red maple, eastern cottonwood (*Populus deltoides*), red osier dogwood (*Cornus sericea*), silky dogwood (*Cornus amomum*), skunk cabbage, and marsh fern (*Thelypteris palustris*). The trees within this community are approximately 6-12 inches dbh.

Shrub swamp – This community is an inland wetland dominated by tall shrubs that occurs along the shores of a lake or river, in a wet depression or valley not associated with lakes, or as a transitional zone between a marsh, fen, or bog and a swamp or upland community. This community is located along the western edge of the NYSDEC wetland on the eastern portion of the site. It occupies less than 5% of the Property. This community was saturated at the time of the observation. Vegetation within this community includes tartarian honeysuckle, silky dogwood, red osier dogwood, marsh fern, and skunk cabbage.

Highbush blueberry bog thicket – This community is an ombrotrophic (rain-fed) or weakly minerotrophic (groundwater-fed) peatland dominated by tall, deciduous, ericaceous shrubs (shrubs belonging to the Heath family) and peat mosses; the water is usually nutrient-poor and acidic. The community is located near the top of the ridge in the west-central portion of the property. It occupies less than 5% of the Property. Shallow to deep inundation was observed during the site visit. Vegetation within this community includes highbush blueberry (*Vaccinium corymbosum*), mountain laurel, cinnamon fern (*Osmunda cinnamomea*), and sphagnum moss (*Sphagnum* spp.).

Common reed/purple loosestrife marsh – This community occupies much of the NYSDEC wetland as well as a wetland swale located in the northeastern portion of the property. It occupies less than 5% of the Property. This community type is a marsh that usually has been disturbed by draining, filling, etc. which reed grass and purple loosestrife have become dominant[10]. Shallow to deep inundated pockets that exist year round were observed throughout this community type. Vegetation within these wetlands includes common reed (*Phragmites australis*), purple loosestrife, and cattail.

Successional old field – This community is comprised of a meadow dominated by forbs and grasses that occurs on sites that have been cleared and plowed and then abandoned. This community is located in the north and northwestern sections of

[10] Ibid

the property and in the very southern portion of the site. This community occupies approximately 10% of the Property. The vegetation within this community is primarily herbaceous (e.g., 70%) and is approximately 2-3 feet tall. Vegetation within this community includes bluegrass (*Poa* spp.), panicgrass (*Panicum* spp.), red and white clover (*Trifolium pratance, T. repens*), and Queen Anne's lace (*Daucus carota*).

Mowed lawn – This community generally occurs as residential, recreational, or commercial land in which the groundcover is dominated by clipped grasses and less than 30 percent cover by trees. Ornamental and/or native shrubs may be present but usually cover less than 50 percent. For this site, the mowed community is the golf course lawns located in the central and northeastern portions of the property. This community occupies approximately 40% of the Property.

4.2 Wetland Delineation

TCC conducted a wetland delineation at the Property in May of 2005. Below is a brief summary describing each of the wetland areas delineated on-site.

Wetland C-1

Wetland C is an approximately 1.12 acre wetland established in the northeastern portion of the site. The wetland is very linear most likely the result of grading activities. The hydrology of this wetland is driven by a culvert connection to a pond to the north. Water moves south through the wetland and discharges into Amenia/Cascade Brook. The wetland is an emergent swamp community dominated by various vegetation including reed canary grass (*Phalaris arundinacea*), cattail, purple loosestrife, and sedges (*Carex* spp.). Hydrologic indicators include inundation, saturation, and oxidized root channels. Soils were a low chroma dark gray (2.5Y 3/1) sandy clay loam with mottles at four inches and deeper of a chroma of olive (2.5Y 3/4).

Wetland C-2

This wetland is located in the northeastern portion of the site and is associated with Amenia/Cascade Brook. This wetland is approximately 1.31 acres in size. Wetland C/CC is a red maple swamp dominated by red maple, multiflora rose, jewelweed (*Impatiens capensis*), tussock sedge (*Carex stricta*), sensitive fern (*Onoclea sensibilis*), and common reed. Hydrologic indicators include inundation, saturation, drainage patterns, and water stained leaves in the wetlands. Soils are a low chroma dark gray (2.5Y 3/1) silt loam. Hydric soil indicators include reducing soil conditions, and gleyed or low chroma colors.

Wetland G1

Wetland G1 is red maple swamp community associated with Stream G located within the northeastern portion of the property. The wetland is approximately 0.33 acres in size. Dominant vegetation within this wetland includes red maple, ironwood (*Carpinus caroliniana*), spicebush (*Lindera benzoin*), skunk cabbage, sensitive fern, and marsh marigold (*Caltha palustris*). Hydrologic indicators include inundation saturation, and drainage patterns. Soils are a low chroma dark gray (10YR 2/1) and an olive gray (2.5Y 5/1) sandy gravelly loam.

Wetland I

Wetland I is an isolated wetland located in the north central portion of the property and is approximately 0.06 acres in size. This wetland is a common reed marsh/purple loosestrife community dominated by vegetation including common reed, purple loosestrife, cattail, soft rush (*Juncus effusus*), and arrowleaf tear-thumb (*Polygonum sagittatum*). Hydrologic indicators include inundation, saturation, and oxidation. Soils are a low chroma dark gray (2.5Y 3/2) with abundant olive gray (2.5Y 5/1) mottles with a gravelly clay loam texture.

Wetland J/JJ

Wetland J/JJ is a series of small red maple forested wetlands associated with Stream J located in the west-central portion of the property. These wetlands are 2.46 acres in size. Dominant vegetation within these wetlands includes red maple, multiflora rose, spicebush, skunk cabbage, and jewelweed. Hydrologic indicators include inundation, saturation, drainage patterns, and water-stained leaves. Soils are a low chroma dark gray (2.5Y 3/1) and dark gray (2.5Y 4/1) with brown (10YR 4/6) mottles with a clay loam texture.

Wetland L

Wetland L is a complex wetland system that contains several wetland communities including a shallow emergent, scrub-shrub, common reed/purple loosestrife, and open water communities. This wetland is NYSDEC Wetland AM-15 and is associated with NYSDEC Wetland AM-16 and Cascade Brook. The on-site section of this wetland is approximately 25.9-acres and is located in the east-central portion of the site adjacent to State Route 22. Dominant vegetation within this wetland includes red maple, tartarian honeysuckle, silky dogwood, common reed, sensitive fern, and skunk cabbage. Hydrologic indictors include inundation, saturation, drainage patterns, water stained leaves, and oxidized root channels. Soils are a low chroma dark gray (10YR 3/2) with dark olive gray (2.5Y 4/1) abundant mottles at

one location in the northern boundary line and dark olive gray (2.5Y 3/1) with brown (7.5YR 4/6) mottles in the western portion of the wetland.

The eastern half (partially off-site and not part of the property) of wetland L comprises a NYSDEC Superfund site. A review of available data indicates water and sediment contamination with PCBs and metals. This area is scheduled for remediation by the NYSDEC.

Wetland N/O

These are two wetlands that were originally created on the golf course as water hazards, but through time have become shallow emergent wetland communities. These two wetlands are approximately 0.15 acres (Wetland N) and 0.04 acres (Wetland O) and are located in the south-central portion of the property. Dominant vegetation within these wetlands includes cattail, purple loosestrife, and duckweed (*Lemna* spp.). Hydrologic indicators found include inundation. Soils are a low chroma color.

Wetland S

Wetland S is a small red maple forested wetland community associated with Stream S. The wetland is located in the northwest corner of the property and is approximately 0.34 acres in size. Dominant vegetation within the wetland includes red maple, multiflora rose, skunk cabbage, and sensitive fern. Hydrologic indicators include saturated soils, drainage patterns, and water-stained leaves. Soils consist of low chroma.

Wetland U

Wetland U is a highbush blueberry bog thicket community approximately 2.78 acres in size located in the west-central portion of the property approximately three-quarters up the ridge. Dominant vegetation includes mountain laurel, highbush blueberry, fringed sedge (*Carex crinita*), cinnamon fern, and sphagnum moss. Hydrologic indicators include inundation, water-stained leaves, and drainage patterns. Soils consist of low chroma.

Wetland W

Wetland W is a red maple forested wetland that is approximately 1.30 acres in size located near the west-central boundary line on top of the ridge. Dominant vegetation within the wetland includes red maple, green ash (*Fraxinus pennsylvanica*), highbush blueberry, silky dogwood, royal fern (*Osmunda regalis*), and tussock sedge (*Carex stricta*). Hydrologic indicators include inundation,

saturation, water-stained leaves, and drainage patterns. Soils were dark brown (10YR 2/2) organic loam from zero to six inches transitioning to a gray (2.5Y 5/1) clay loam up to 13 inches.

Wetland X

Wetland X is a red maple forested wetland that is approximately 0.25 acres in size located just south of Wetland W. Dominant vegetation consists of red maple, American elm, ironwood, royal fern, cinnamon fern, and soft rush. Hydrologic indicators include inundation, saturation, and water-stained leaves. Soils were dark brown (10YR 2/1) clay loam from zero to six inches transitioning to an olive brown (2.5Y 4/2) with brown (2.5Y 4/6) clay loam up to 16 inches.

4.2.1 Endangered, Threatened, or Special Concern Flora

During the vegetation survey, no ETR species were found within the Property. Hill's pondweed was not observed during the time of observation in May. This is most likely because it flowers (July) and seeds (late August-September) were not formed at this time. According to the NYSDEC, the last documentation of this species on the Property occurred on August 8, 2001. Since the plant has been documented within Wetland AM-15 during the past several years, it is assumed that conditions within the wetland have not changed and that the plant still exists within the wetland.

4.3 Fauna

The fauna of the Property were also cataloged during the on-site investigation. In all, 48 species of wildlife were observed during the site visit. It was observed within the site investigations that the existing upland forested areas within the golf course, especially the southern section, contains small, forested, upland "islands" which have the potential to serve as good wildlife corridors between Wetland L and the western forested area occurring on the sloped terrain beyond the golf course. These forested islands contain young mature trees (8-16 inches dbh) along with shrubs along the outside edges of the islands. These islands create edge habitat (areas where forest cover meets open areas) in which a number of songbirds, reptiles and amphibians, along with mammalian species utilize for foraging, nesting, and cover. Based on the proposed site design, the existing upland islands will not be impacted by the redesign of the golf course or the proposed development areas. This will allow continued movement by a variety of species between the western undisturbed area and wetland L.

4.3.1 Birds

During the field investigations, twenty-nine species of birds were observed on or within the immediate vicinity of the Site. Bird species observed at the site either through sightings, calls, or nest evaluations are listed below (Table 4.3.1). Since observations of birds were conducted early in the migration period, the majority of birds found on-site are year-round residents or early migrant bird species. Associations between bird species and their corresponding habitat types were noted during the investigation. Some of the species observed within the property included a great horned owl (*Bubo virginianus*) with chicks, belted kingfisher (*Ceryle alcyon*), and palm warbler (*Dendroica palmarum*). To supplement the initial investigation, a breeding bird survey will be conducted in mid-late spring of 2007. This task is anticipated to consist of 4 to 5 early morning point count surveys for breeding birds. Each observation will be recorded along with the habitat type and activity pattern of the bird (ie: nesting behavior, or foraging).

Table 4.3.1 Bird Species Observed

Scientific Name	Common Name	Habitat
Accipiter cooperii	Cooper's hawk	SSHF
Agelaius phoeniceus	Red-winged blackbird	CM/PL
Anas Platyrhynchos	Mallard	P
Branta canadensis	Canada goose	P
Bubo virginianus	Great horned owl	OF
Bueto jamaicensis	Red tail hawk	OF
Capodacus mexicanus	House finch	ML
Cardinalis cardinalis	Northern cardinal	SSHF
Carduelis tristis	American goldfinch	OF
Ceryle alcyon	Belted kingfisher	CM/PL
Charadrius vociferous	Killdeer	OF
Colaptes auratus	Northern flicker	SSHF
Coragyps atratus	Black vulture	OF
Cyanocitta cristata	Blue jay	SSHF
Dendroica palmarum	Palm warbler	BMF
Dendroica petechia	Yellow warbler	SSHF
Dryocopus pileatus	Pileated woodpecker	BMF
Hylocichla mustelina	Wood thrush	SSHF
Meleagris gallopavo	Wild turkey	BMF, SSHF
Melospiza melodia	Song sparrow	OF, ML
Molothrus ater	Brown-headed cowbird	OF, ML
Spizella passerina	Chipping sparrow	OF, SSHF
Picoides villosus	Hairy woodpecker	BMF, SSHF
Quiscalus quiscula	Common grackle	ML
Sayornis phoebe	Eastern phoebe	SSHF
Sialia sialis	Eastern bluebird	OF, SSHF
Sturnus vulgaris	European starling	ML
Tachycineta bicolor	Tree swallow	OF
Turdus migratorius	American robin	BMF, SSHF

Source: DeGraaf, RM, and M. Yamasaki. 2001. New England Wildlife: Habitat, Natural History, and Distribution. University Press of New England, Hanover, NH. 482 pgs.

Beech-Maple-mesic forest: BMF | Common reed/Purple loosestrife: CM/PL | Emergent/scrub swamp: EM/SS | Hemlock: H
Mowed lawn: ML | Old field: OF | Pond: P | Red maple swamp: RM
Successional southern hardwood forest: SSHF

4.3.2 Mammals

Nine species of mammals were either observed or recognized by their sign on or within the immediate vicinity of the Site (Table 4.3.2). Some of these species include black bear (*Ursus americanus*), white tailed deer (*Odocoileus virginiana*),

and eastern cotton-tail (*Sylvilagus floridanus*). No endangered, threatened, or special concern mammalian species were observed within the Site. However, suitable habitat was identified for tree dwelling bats, including the Indiana bat.

Table 4.3.2 Mammalian Species Observed

Scientific Name	Common Name	Habitat
Canis latrans	Coyote (calls, scat)	BMF
Castor canadensis	Beaver (lodge, tree cut)	EM/SS
Marmota monax	Woodchuck	ML
Odocoileus virginiana	White-tailed deer	BMF, SSHF
Procyon lotor	Raccoon (tracks)	RM
Sciurus carolinensis	Eastern gray squirrel	BMF, SSHF
Sylvilagus floridanus	Eastern cottontail	SSHF
Tamias striatus	Eastern chipmunk	BMF
Ursus americanus	Black bear (scat)	BMF

Source: DeGraaf, RM, and M. Yamasaki. 2001. New England Wildlife: Habitat, Natural History, and Distribution. University Press of New England, Hanover, NH. 482 pgs.
Beech-Maple-mesic forest: BMF Common reed/Purple loosestrife: CM/PL Emergent/scrub swamp: EM/SS Hemlock: H
Mowed lawn: ML Old field: OF Pond: P Red maple swamp: RM
Successional southern hardwood forest: SSHF

4.3.3 Reptiles, Amphibians, and Fish

Eight species of reptiles/amphibians and three identifiable fish species were observed during the field investigation (Table 4.3.3). Some of these species include green frog (*Rana clamitans*), eastern garter snake (*Thamnophis sirtalis*), and green sunfish (*Leponis cyanellus*).

Turtle egg shells and black racer shells (*Coluber constrictor*) were found along an old earthen berm near the southwestern edge of Wetland L. This area faces the south which gives optimum sun exposure. The berm also contains little vegetation and a sandy soil, which makes it ideal for reptiles to lay eggs for incubation. This area has been indicated on the Vegetative Cover map in Appendix D. In addition, to supplement the initial investigation, a herpetology study will be conducted in spring 2007. This task will include amphibian surveys conducted on rainy March evenings and hand capture surveys conducted at various times through the spring months.

Table 4.3.3 Reptiles, Amphibians, and Fish Species Observed

Scientific Name	Common Name	Habitat
Reptiles		
Chrysemys picta picta	Eastern painted turtle	P
*Clemmys insculpta**	Wood turtle	RMS
*Coluber constrictor***	Northern black racer	OF
Thamnophis sirtalis	Eastern garter snake	OF
Amphibians		
Bufo americanus	American toad	BMF
Notophthalmus viridescens viridescens	Red-spotted newt	BMF
Plethodon cinereus	Redback salamander ("leadback" phase)	BMF, RM
Pseudacris crucifer	Spring peeper	EM/SS
Rana clamitans	Green frog	EM/SS
Rana palustris	Pickerel frog	RM
Fish		
Micropterus dolomieu	Smallmouth bass	P
Cyprinus carpio	Carp	P
Lepomis cyanellus	Green sunfish	P
Not identifiable	Minnows	P

Source: DeGraaf, RM, and M. Yamasaki. 2001. New England Wildlife: Habitat, Natural History, and Distribution. University Press of New England, Hanover, NH. 482 pgs.
Beech-Maple-mesic forest: BMF Common reed/Purple loosestrife: CM/PL Emergent/scrub swamp: EM/SS Hemlock: H
Mowed lawn: ML Old field: OF Pond: P Red maple swamp: RM
Successional southern hardwood forest: SSHF
* Identified by Dr. Michael Klemens in the Cascade/Amenia Brook system located near the Town of Amenia Highway Department, adjacent to the Silo Ridge property, on an unknown date.
** Shells identified by Dr. Michael Klemens on February 6, 2007.

4.3.4 Endangered, Threatened, and Rare Wildlife Species

One species on the Specials Concern list, Cooper's hawk (*Accipiter cooperii*) was observed flying within the Site during the field investigation. It was not known during the investigation if the hawk was a resident or migrant. No other ETR species were seen during the site investigations.

Indiana Bats

It was determined that suitable tree cover, such as oaks and hickories, and other trees with physical features (e.g. exfoliating bark and/or broken limbs) that could provide the federally endangered Indiana bat with summer roosting habitat, is present in the forested sections within the golf course and on top of the ridge. In addition, a cluster of shagbark hickories (ranging in size from 12-24 inches dbh) are located in the southwestern corner of Wetland L. This cluster of trees has been

added to the cover map and will be mapped with GPS technology in the spring. No mines or caves were observed at the Property.

Due to the presence of potential summer roosting habitat at the Property and in lieu of the May 17, 2005 response from the USFWS concerning the Indiana bat, further coordination with the USFWS should be conducted. The USFWS may require bat surveys which can only be conducted from May 15th through August 15th. However, we believe that if appropriate habitat protection measures are taken to avoid certain trees (ie: shagbark cluster), the project can proceed without impact to bats. Previous field exercises with the NYSDEC and USFWS have indicated that human habitation or development do not restrict Indiana bats, provided that roost trees are preserved.

Timber Rattlesnakes

It was determined that there are minimal habitat areas for timber rattlesnakes. Rock outcrops were observed scattered along the ridge line; however, due to the dense canopy on the side of the ridge and lack of prolonged sun exposure, there were few areas for basking. The closest known timber rattlesnake den through historical records is the Murphy Den located approximately 1.6 miles east of the site. Timber rattlesnake movement from this den to the Silo Ridge property is most unlikely due to the number of obstacles, including two major thoroughfares and the rail trail. Mr. Richard Stechart, an area expert on timber rattlesnakes, conducted a field visit on April 20, 2005 with TCC staff and found no suitable basking or den sites on-site for timber rattlesnakes. Moreover, interviews were conducted with several neighbors (along Deep Hollow Road) of the Silo Ridge property along with the golf course supervisor and there have been no reports of timber rattlesnake sightings within the area.

Bog Turtles

Although NYSDEC wetland AM-15 and Amenia/Cascade Creek are part of a contiguous wetland/stream system that extends to the north to known bog turtle areas, TCC concludes that the wetlands within the Property do not contain suitable habitat for bog turtles. Bog turtles occur in fen or wet meadow habitats with open canopies and low emergent vegetation such as sedges. NYSDEC wetland AM-15 (Wetland L) contains primarily open water and common reed/purple loosestrife communities with either emergent or scrub shrub communities near the wetland edges. However, based on discussion with the Town's consultant, a Bog Turtle Habitat (Phase I) survey under the guidelines set forth by the USFWS will be conducted in spring 2007 as a supplement to this HA.

5.0 Conclusion

The site offers a variety of habitats interspersed throughout the project area. The vegetative communities located on the Property are not considered rare habitats, as they are common throughout the state. The wetland areas are also not considered rare; however, some are regulated under Section 404 of the Clean Water Act and/or Article 24 of the New York State Freshwater Wetlands Act. Although no threatened or endangered flora were identified within the boundaries of the Property, Hill's pondweed, a threatened species within New York State, is known to occur within NYSDEC wetland AM-15. Most of the remaining species identified within the Property are common throughout New York State.

No state or federally listed threatened or endangered fauna were observed during the field investigation. One NYSDEC special concern species (Cooper's hawk) was observed flying within the project area. Historical wood turtle sightings (a NYSDEC special concern species) have been observed within the Cascade/Amenia Brook system near the Town of Amenia Highway Department located adjacently northeast of the Silo Ridge property. The forested areas within the golf course and on top of the ridge exhibit suitable tree cover with physical features (e.g., exfoliating bark and/or broken limbs) that could provide the federally endangered Indiana bat with summer roosting habitat. Further coordination with the USFWS regarding this issue should be conducted prior to next summer. The USFWS may require that additional surveys or trapping be conducted to determine if the Indiana bats roost at the site.

Specific recommendations to maintain the site's ecological viability include the following:

- Preserve the cluster of shagbark hickories located along the edge of the golf course above the southwest bank of wetland L.

- Preserve the gravelly/sandy bank along the southwest edge of wetland L as this area serves as a nesting area for turtle and snake species.

- Maintain a 50-foot buffer around the springhead (Stream P) located on the west side of the golf course.

- If tree cutting must occur, generally cut trees between the period of October and March to avoid impacts to bats and other nesting birds.

- Maintain the island forest habitats on the south end of the site to allow habitat connectivity between wetland L and the western slopes.

Appendix A: Correspondence

CHAZEN ENGINEERING & LAND SURVEYING CO., P.C.

Capital District Office
Phone: (518) 235-8050

Orange County Office
Phone: (845) 567-1133

21 Fox Street, Poughkeepsie, New York 12601
Phone: (845) 454-3980 Fax: (845) 454-4026
Email: poughkeepsie@chazencompanies.com
Web: www.chazencompanies.com

North Country Office
Phone: (518) 812-0513

April 11, 2005

Ms. Jean Pietrusiak
NYSDEC - Information Services
NY Natural Heritage Program
625 Broadway, 5th Floor
Albany, NY 12233-4754

Re: Information Request, Threatened or Endangered Species
Proposed Golf Resort Community at Silo Ridge
Town of Amenia, Dutchess County, New York
Job # 10454.00

Dear Ms. Pietrusiak,

The Chazen Companies are in the process of preparing an Environmental Assessment Form (EAF) for the proposed Golf Resort Community at Silo Ridge. The proposed project includes construction of a hotel, a pro shop and approximately 360 residential units within the existing Silo Ridge golf course site. The project area is located along Route 44 and Route 22 in the Town of Amenia, Dutchess County, New York. The project includes five parcels identified by the Town of Amenia Tax Map as 7066-00-732810, 7066-00-860725, 7066-00-870350, 7066-00-670717 and 7067-00-709177. Please find the enclosed USGS topographic map (Amenia Quadrangle) illustrating the approximate location of the subject area.

We are required, under the New York State Environmental Quality Review Act (SEQRA) to address all of the potential impacts of this action. Please provide any information you may have concerning known occurrences of endangered or threatened wildlife species as well as any rare plant, animal, or other significant habitats either on the site or in the surrounding area.

If at all possible, please fax the requested information to me at (845) 454-4026. Please do not hesitate to contact me at (845) 486-1517 if you have any questions. Thank you for your assistance.

Sincerely,

Julie Melançon
Planner

Enclosures: USGS Topographic Map
Cc: Michael Farias, ASLA, CVE
Dr. Louise Wold
Nancy Vlahos, AICP

THE Chazen COMPANIES

Engineers/Surveyors
Planners
Environmental Scientists
GIS Consultants

CHAZEN ENGINEERING & LAND SURVEYING CO., P.C.

Dutchess County Office:
21 Fox Street
Poughkeepsie, NY 12601
Phone: (845) 454-3980

Orange County Office:
263 Route 17K
Newburgh, NY 12550
Phone: (845) 567-1133

Capital District Office:
20 Gurley Avenue
Troy, NY 12182
Phone: (518) 235-8050

North Country Office:
110 Glen Street
Glens Falls, NY 12801
Phone: (518) 812-0513

Topographic Map

Proposed Silo Ridge Golf Resort Community

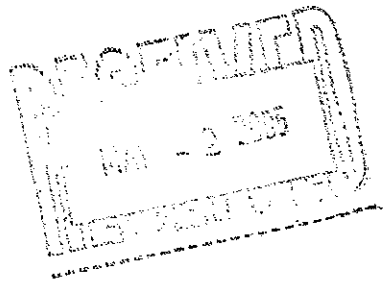
Routes 44 and 22
Town of Amenia
Dutchess County, New York

Created by:	J Melançon
Date:	April 11, 2005
Scale:	1:24,000
Project #:	10454.00

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **FAX:** (518) 402-8925
Website: www.dec.state.ny.

Erin M. Crotty
Commissioner

May 9, 2005



Julie Melancon
Chazen Engineering
21 Fox Street
Poughkeepsie, NY 12601

Dear Ms. Melancon:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to an Environmental Assessment for the proposed Golf Resort Community at Silo Ridge, Job 10454, area as indicated on the map you provided, located in the Town of Amenia, Dutchess County.

Enclosed is a report of rare or state-listed animals and plants, significant natural communities, and other significant habitats, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site. The information contained in this report is considered sensitive and may not be released to the public without permission from the New York Natural Heritage Program.

The presence of rare species may result in this project requiring additional permits, permit conditions, or review. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the enclosed address.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environment impact assessment.

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

Sincerely,

Heidi J. Krahling, Information Services
NY Natural Heritage Program

Encs.
cc: Reg. 3, Wildlife Mgr.
Reg. 3, Fisheries Mgr.
Peter Nye, Endangered Species Unit, Albany

NYNHP SITE #663

Natural Heritage Report on Rare Species

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor, Albany, NY 12233-4757
(518) 402-8935

~This report contains **SENSITIVE** information that may not be released to the public without permission from the NY Natural Heritage Program.
~Refer to the User's Guide for explanations of codes, ranks and fields.
~We do not provide maps for species most vulnerable to disturbance.

REPTILES

Clemmys muhlenbergii
Bog Turtle

Office Use 5219

NY Legal Status:	Endangered	**NYS Rank:**	Imperiled
Federal Listing:	Threatened	**Global Rank:**	Vulnerable
County:	Dutchess		
Town:	Amenia		
Location:	Documented within 1 mile of project site. Animals can move 1 mile or more from documented locations. For information, please contact the NYS DEC Regional Wildlife Manager or NYS DEC Endangered Species Unit at 518-402-8859.		

ESU

Crotalus horridus
Timber Rattlesnake

Office Use 5775

NY Legal Status:	Threatened	**NYS Rank:**	Vulnerable
Federal Listing:		**Global Rank:**	Apparently secure
County:	Dutchess		
Town:	Amenia		
Location:	Documented within 1.5 miles of project site. Animals can move 1.5 miles or more from documented locations. For information, please contact the NYS DEC Regional Wildlife Manager or NYS DEC Endangered Species Unit at 518-402-8859.		

ESU

2 Records Processed

Natural Heritage Report on Rare Species and Ecological Communities

NYNHP SITE #663

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor, Albany,
NY 12233-4757
(518) 402-8935

*** Location displayed on map**

~This report contains **SENSITIVE** information that may not be released to the public without permission from the NY Natural Heritage Program.
~Refer to the User's Guide for explanations of codes, ranks and fields.
~Location maps for certain species and communities may not be provided if 1) the species is vulnerable to disturbance, 2) the location and/or extent is not precisely known, and/or 3) the location and/or extent is too large to display.

VASCULAR PLANTS

Potamogeton hillii

Office Use

Hill's Pondweed

NY Legal Status: Threatened

NYS Rank: ; Imperiled

Global Rank: ; Vulnerable

1289

Last Report: 2001-08-18

EO Rank: Fair or Poor

County: Dutchess

Town:

Location: Amenia Wetland

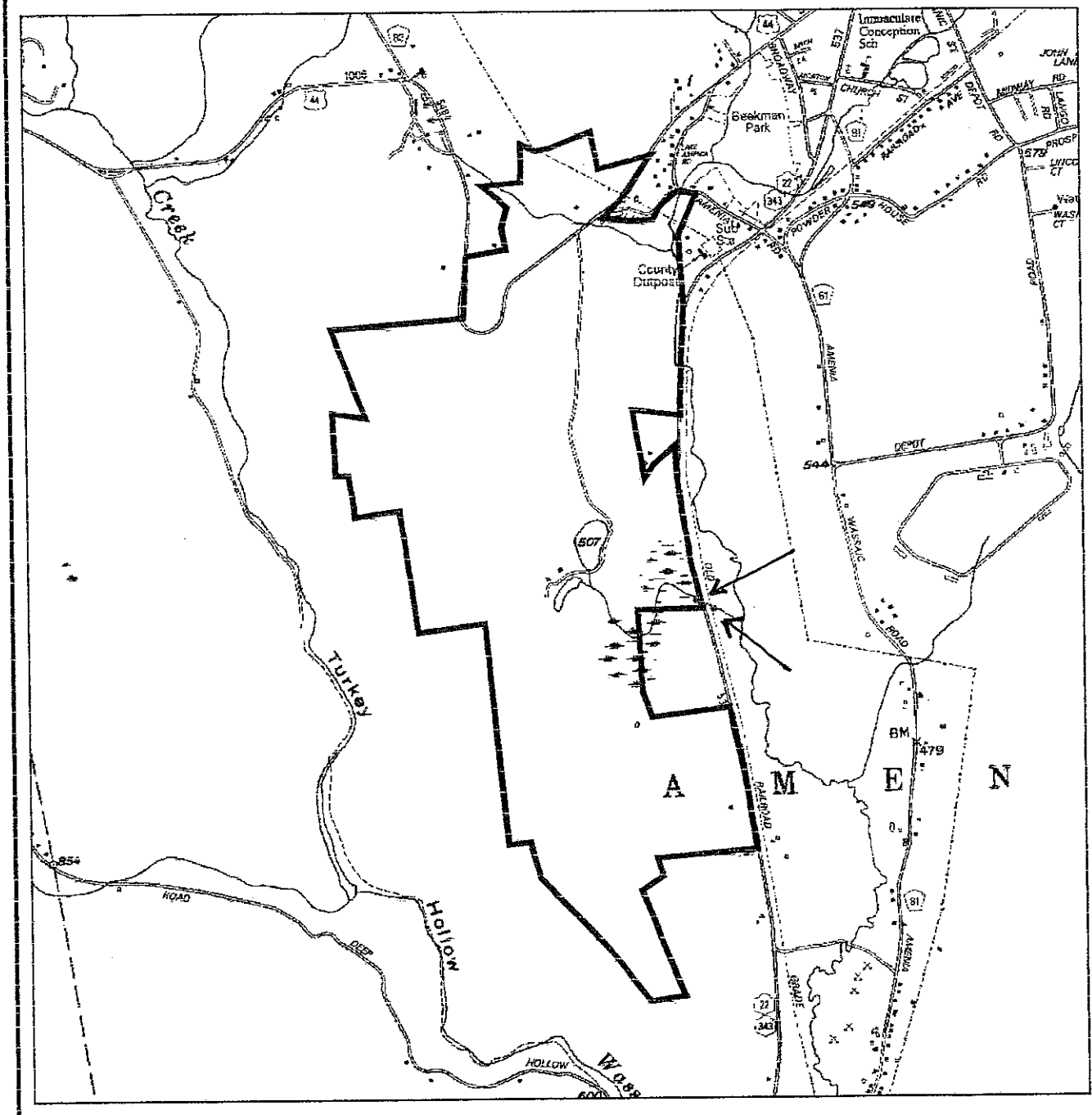
Directions: From the Village of Amenia, follow Route 22 South for approximately 1.5 miles to a large marsh located on the west side of the road. The plants were found in the pools around the culvert located on both sides of the road. No plants were found within the

General Quality and Habitat: A small population in pools around a roadside culvert. This is a former beaver marsh that has completely drained with the exception of two small streams flowing through the area. In previous years, water levels were higher and the Potamogeton hillii was likely more widespread. The area is now a semi-dry marsh dominated by graminoids and purple loosestrife. The Potamogeton hillii is currently restricted to the pools near the culvert openings on both sides of the highway, but the plants could become more widespread if water levels rise. The water level of the

1 Records Processed

Natural Heritage Map of Rare Species and Ecological Communities

Prepared May 4, 2005 by NY Natural Heritage Program, NYS DEC, Albany, New York



PROJECT SITE (NYNHP SITE #663)

New York Natural Heritage Progam Database Records*

- Plant
- Animal
- Animal Concentration Area
- Community

Scale: 1:24000

N

0.5 0 0.5 Miles

*** The locations that are displayed are considered sensitive and cannot be released to the public without permission. We do not provide map locations for all records. Please see report for details.**

DIVISION OF ENVIRONMENTAL PERMITS REGIONAL OFFICES

January 2004

REGION	COUNTIES	REGIONAL PERMIT ADMINISTRATORS
1	Nassau & Suffolk	John Pavacic NYS-DEC BLDG. 40 SUNY at Stony Brook Stony Brook, NY 11790-2356 Telephone: (631) 444-0365
2	New York City (Boroughs of Manhattan, Brooklyn, Bronx, Queens, & Staten Island	John Cryan NYS-DEC One Hunters Point Plaza 47-40 21st Street Long Island City, NY 11101-5407 Telephone: (718) 482-4997
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster & Westchester	Margaret Duke NYS-DEC 21 South Putt Corners Road New Paltz, NY 12561-1696 Telephone: (845) 256-3054
4	Albany, Columbia, Greene, Montgomery, Rensselaer & Schenectady	William Clarke NYS-DEC 1150 North Wescott Road Schenectady, NY 12306-2014 Telephone: (518) 357-2069
4 (sub-office)	Delaware, Otsego & Schoharie	Kent Sanders NYS-DEC Route 10 HCR#1, Box 3A Stamford, NY 12167-9503 Telephone: (607) 652-7741
5	Clinton, Essex, Franklin & Hamilton	Thomas Hall NYS-DEC Route 86, PO Box 296 Ray Brook, NY 12977-0296 Telephone: (518) 897-1234
5 (sub-office)	Fulton, Saratoga, Warren & Washington	Thomas Hall NYS-DEC County Route 40 PO Box 220 Warrensburg, NY 12885-0220 Telephone: (518) 623-1281
6	Jefferson, Lewis & St. Lawrence	Brian Fenlon NYS-DEC State Office Building 317 Washington Street Watertown, NY 13601-3787 Telephone: (315) 785-2245
6 (sub-office)	Herkimer & Oneida	J. Joseph Homburger* NYS-DEC State Office Building 207 Genesee Street Utica, NY 13501-2885 Telephone: (315) 793-2555

USERS GUIDE TO NY NATURAL HERITAGE DATA

New York Natural Heritage Program, 625 Broadway, 5th Floor, Albany, NY 12233-4757 phone: (518) 402-8935

NATURAL HERITAGE PROGRAM: The NY Natural Heritage Program is a partnership between the NYS Department of Environmental Conservation (NYS DEC) and The Nature Conservancy. Our mission is to enable and enhance conservation of rare animals, rare plants, and significant communities. We accomplish this mission by combining thorough field inventories, scientific analyses, expert interpretation, and the most comprehensive database on New York's distinctive biodiversity to deliver the highest quality information for natural resource planning, protection, and management.

DATA SENSITIVITY: The data provided in the report are ecologically sensitive and should be treated in a sensitive manner. The report is for your in-house use and should not be released, distributed or incorporated in a public document without prior permission from the Natural Heritage Program.

EO RANK: A letter code for the quality of the occurrence of the rare species or significant natural community, based on population size or area, condition, and landscape context.

A-E = Extant: A=Excellent, B=Good, C=Fair, D=Poor, E=Extant but with insufficient data to assign a rank of A-D.
F = Failed to find. Did not locate species during a limited search, but habitat is still there and further field work is justified.
H = Historical. Historical occurrence without any recent field information.
X = Extirpated. Field/other data indicates element/habitat is destroyed and the element no longer exists at this location.
U = Extant/Historical status uncertain.
Blank = Not assigned.

LAST REPORT: The date that the rare species or significant natural community was last observed at this location, as documented in the Natural Heritage databases. The format is most often YYYY-MM-DD.

NY LEGAL STATUS – Animals:

Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.

E - **Endangered Species:** any species which meet one of the following criteria:
- Any native species in imminent danger of extirpation or extinction in New York.
- Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

T - **Threatened Species:** any species which meet one of the following criteria:
- Any native species likely to become an endangered species within the foreseeable future in NY.
- Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.

SC - **Special Concern Species:** those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).

P - **Protected Wildlife** (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.

U - **Unprotected** (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.

G - **Game** (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

NY LEGAL STATUS – Plants:

The following categories are defined in regulation 6NYCRR part 193.3 and apply to NYS Environmental Conservation Law section 9- 1503.

E - **Endangered Species:** listed species are those with:
- 5 or fewer extant sites, or
- fewer than 1,000 individuals, or
- restricted to fewer than 4 U.S.G.S. 7 ½ minute topographical maps, or
- species listed as endangered by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

T - **Threatened:** listed species are those with:
- 6 to fewer than 20 extant sites, or
- 1,000 to fewer than 3,000 individuals, or
- restricted to not less than 4 or more than 7 U.S.G.S. 7 and ½ minute topographical maps, or
- listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

R - **Rare:** listed species have:
- 20 to 35 extant sites, or
- 3,000 to 5,000 individuals statewide

continued on back

V - Exploitably vulnerable: listed species are likely to become threatened in the near future throughout all or a significant portion of their range within the state if causal factors continue unchecked.
U - Unprotected; no state status.

FEDERAL STATUS (PLANTS and ANIMALS): The categories of federal status are defined by the United States Department of the Interior as part of the 1974 Endangered Species Act (see Code of Federal Regulations 50 CFR 17). The species listed under this law are enumerated in the Federal Register vol. 50; no. 188, pp. 39526 - 39527. The codes below without parentheses are those used in the Federal Register. The codes below in parentheses are created by Heritage to deal with species which have different listings in different parts of their range, and/or different listings for different subspecies or varieties.

(blank) = No Federal Endangered Species Act status.
LE = The element is formally listed as endangered.
LT = The element is formally listed as threatened.
PE = The element is proposed as endangered.
PT = The element is proposed as threatened.
C= The element is a candidate for listing.
LE,LT = The species is formally listed as endangered in part of its range, and as threatened in the other part; or, one or more subspecies or varieties is listed as endangered, and the others are listed as threatened.
LT,PDL = Populations of the species in New York are formally listed as threatened, and proposed for delisting.
(LE) = If the element is a full species, all subspecies or varieties are listed as endangered; if the element is a subspecies, the full species is listed as endangered.
LT,T(S/A) = One or more subspecies or populations of the species is formally listed as threatened, and the others are treated as threatened because of similarity of appearance to the listed threatened subspecies or populations.
PS = Partial status: the species is listed in parts of its range and not in others; or, one or more subspecies or varieties is listed, while the others are not listed.

GLOBAL AND STATE RANKS (animals, plants, ecological communities and others): Each element has a global and state rank as determined by the NY Natural Heritage Program. These ranks carry no legal weight. The global rank reflects the rarity of the element throughout the world and the state rank reflects the rarity within New York State. Infraspecific taxa are also assigned a taxon rank to reflect the infraspecific taxon's rank throughout the world. ? = Indicates a question exists about the rank. Range ranks, e.g. S1S2, indicate not enough information is available to distinguish between two ranks.

GLOBAL RANK:
G1 - Critically imperiled globally because of extreme rarity (5 or fewer occurrences), or very few remaining acres, or miles of stream) or especially vulnerable to extinction because of some factor of its biology.
G2 - Imperiled globally because of rarity (6 - 20 occurrences, or few remaining acres, or miles of stream) or very vulnerable to extinction throughout its range because of other factors.
G3 - Either rare and local throughout its range (21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range (e.g. a physiographic region), or vulnerable to extinction throughout its range because of other factors.
G4 - Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5 - Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
GH - Historically known, with the expectation that it might be rediscovered.
GX - Species believed to be extinct.

NYS RANK:
S1 - Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.
S2 - Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.
S3 - Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.
S4 - Apparently secure in New York State.
S5 - Demonstrably secure in New York State.
SH - Historically known from New York State, but not seen in the past 15 years.
SX - Apparently extirpated from New York State.
SZ - Present in New York State only as a transient migrant.

SxB and SxN, where Sx is one of the codes above, are used for migratory animals, and refer to the rarity within New York State of the breeding (B)populations and the non-breeding populations (N), respectively, of the species.

TAXON (T) RANK: The T-ranks (T1 - T5) are defined the same way as the Global ranks (G1 - G5), but the T-rank refers only to the rarity of the subspecific taxon.
T1 through T5 - See Global Rank definitions above
Q - Indicates a question exists whether or not the taxon is a good taxonomic entity.

CHAZEN ENGINEERING & LAND SURVEYING CO., P.C.

Capital District Office
Phone: (518) 235-8050

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Phone: (845) 567-1133

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Web: www.chazencompanies.com

North Country Office
Phone: (518) 812-0513

April 11, 2005

Mr. Michael Stoll
United States Fish and Wildlife Service
New York Field Office
3817 Luker Road
Cortland, New York 13045

Re: Information Request, Threatened or Endangered Species
Proposed Golf Resort Community at Silo Ridge
Town of Amenia, Dutchess County, New York
Job # 10454.00

Dear Mr. Stoll,

The Chazen Companies are in the process of preparing an Environmental Assessment Form (EAF) for the proposed Golf Resort Community at Silo Ridge. The proposed project includes construction of a hotel, a pro shop and approximately 360 residential units within the existing Silo Ridge golf course site. The project area is located along Route 44 and Route 22 in the Town of Amenia, Dutchess County, New York. The project includes five parcels identified by the Town of Amenia Tax Map as 7066-00-732810, 7066-00-860725, 7066-00-870350, 7066-00-670717 and 7067-00-709177. Please find the enclosed USGS topographic map (Amenia Quadrangle) illustrating the approximate location of the subject area.

We are required, under the New York State Environmental Quality Review Act (SEQRA) to address all of the potential impacts of this action. Please provide any information you have concerning known occurrences of endangered, threatened and/or special concern wildlife species as well as rare plant, animal or natural community occurrences, or other significant habitats either on the site or in the surrounding area.

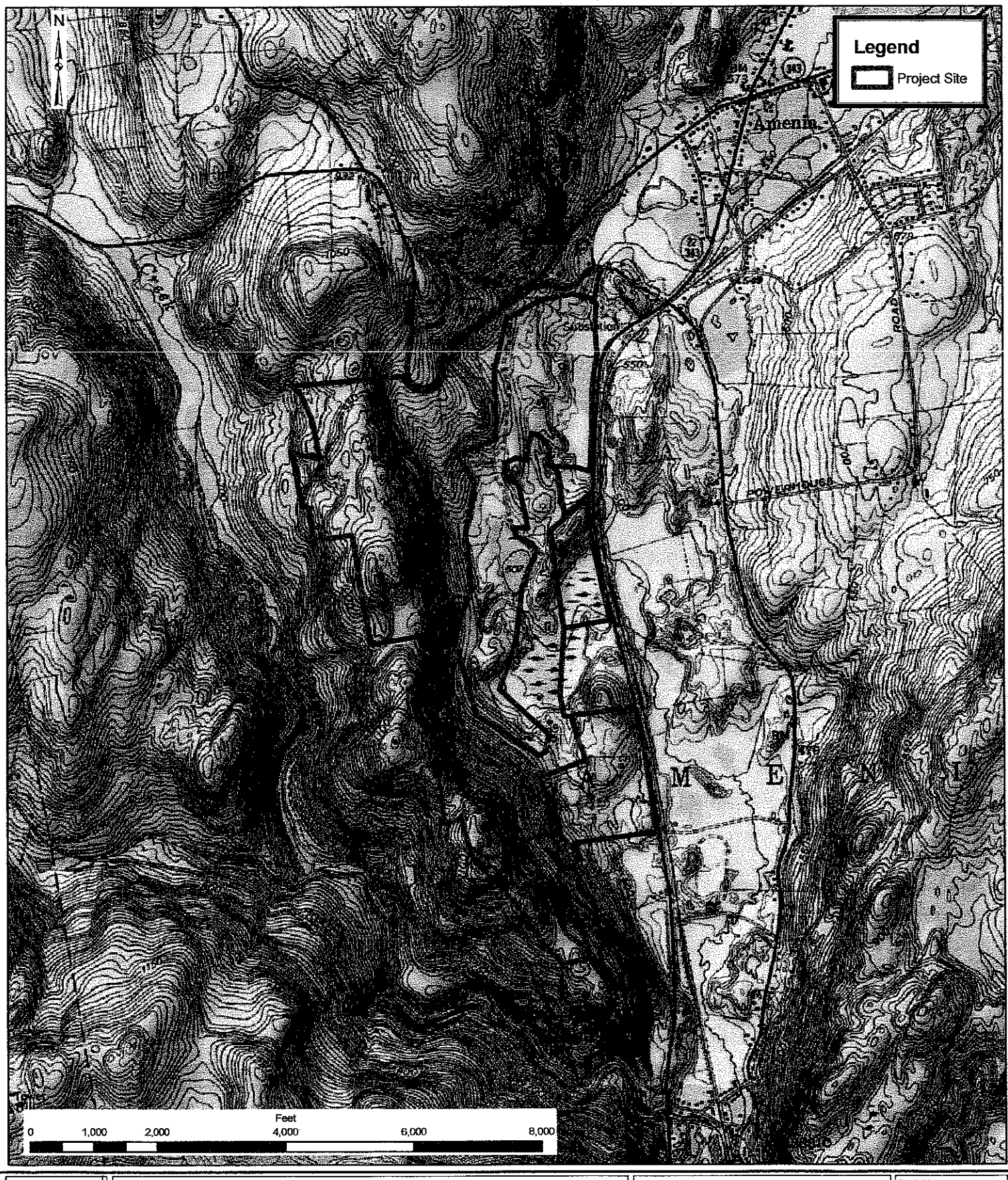
If at all possible, please fax the requested information to me at (845) 454-4026. Please do not hesitate to contact me at (845) 486-1517 if you have any questions.

Thank you for your assistance.

Sincerely,

Julie Melançon
Planner

Enclosures: USGS Topographic Map
Cc: Michael Farias, ASLA, CVE
Dr. Louise Wold
Nancy Vlahos, AICP



THE Chazen COMPANIES

Engineers/Surveyors
Planners
Environmental Scientists
GIS Consultants

CHAZEN ENGINEERING & LAND SURVEYING CO., P.C.

Dutchess County Office:
21 Fox Street
Poughkeepsie, NY 12601
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20 Gurley Avenue
Troy, NY 12182
Phone: (518) 235-8050

North Country Office:
110 Glen Street
Glens Falls, NY 12801
Phone: (518) 812-0513

Topographic Map

Proposed Silo Ridge Golf Resort Community

Routes 44 and 22
Town of Amenia
Dutchess County, New York

Created by:	J Melançon
Date:	April 11, 2005
Scale:	1:24,000
Project #:	10454.00

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

May 17, 2005

Ms. Julie Melançon
Planner
Chazen Engineering & Land Surveying, Co., P.C.
21 Fox Street
Poughkeepsie, NY 12601

Dear Ms. Melançon:

This responds to your April 11, 2005, letter requesting information on the presence of endangered or threatened species in the vicinity of the proposed Golf Resort Community at Silo Ridge along Route 44 and Route 22 in the Town of Amenia, Dutchess County, New York.

There is potential for the Federally- and State-listed endangered Indiana bat (*Myotis sodalis*) to occur within the proposed project area. The Indiana bat is known to winter in six counties in New York State. While the U.S. Fish and Wildlife Service (Service) has learned a great deal about the wintering population with standardized biennial counts organized by the New York State Department of Environmental Conservation (NYSDEC) Endangered Species Unit, we are continuing to study Indiana bat migratory patterns and summer habitat use within the State. Previous research has documented Indiana bat movements of up to 330 miles between hibernacula and summer habitats (Kurta and Murray 2002). However, that study, as well as the majority of research on Indiana bats, took place in the Midwest.

In the Northeast, multiple State and Federal agencies are investigating Indiana bat movements; the most recent studies of bats from hibernacula in Essex and Ulster Counties, New York, provide additional information. In the spring of 2002 through 2004, the NYSDEC successfully tracked female Indiana bats from their hibernacula in Essex and Ulster Counties to their spring roosts, distances up to approximately 30 miles. From the Ulster County study, multiple roosts were located on both sides of the Hudson River in the Towns of Crawford, Wallkill, Hamptonburgh, and New Windsor, Orange County, and near the City of Poughkeepsie and in the Towns of Beekman, East Fishkill, and LaGrange, Dutchess County. The closest observed roost trees were within approximately 15 miles from the proposed project and the Ulster County hibernacula are approximately 30 miles from the proposed project. Based on the proximity of the proposed project site to both the hibernacula and known spring roost locations, the Indiana bat may be found at the proposed project site if suitable roosting or foraging habitat is present.

The Indiana bat is typically associated with cave habitats for hibernacula and trees with exfoliating bark for roosting. Suitable potential summer roosting habitat is characterized by trees (dead, dying, or alive) or snags, greater than or equal to 5 inches diameter breast height (d.b.h.) with exfoliating or defoliating bark, or containing cracks, crevices, or holes that could potentially

be used by Indiana bats as a roost. However, maternity colonies generally use trees greater than or equal to 9 inches d.b.h. Overall, structure appears to be more important than a particular tree species or habitat type. The growing body of information, including ongoing studies in New York, indicates usage of numerous species of trees that contain suitable structure. Only site-specific information can lead to habitat suitability determinations. Additional information on potentially suitable summer habitat can be found on our website at http://nyfo.fws.gov/es/ibatdraft99.pdf.

Streams, associated floodplain forests, and impounded water bodies (ponds, wetlands, reservoirs, etc.) provide preferred foraging habitat for pregnant and lactating Indiana bats, some of which may fly up to 1.5 miles from upland roosts. Indiana bats also forage within the canopy of upland forests, over clearings with early successional vegetation (*e.g.* old fields), along the borders of croplands, along wooded fencerows, and over farm ponds in pastures (U.S. Fish and Wildlife Service 1999).

The project site should be evaluated and described by a qualified person as to the presence, amount, and distribution of suitable summer roosting/maternity and foraging habitat, and the presence of any mine(s)/cave(s) that could serve as a hibernacula that would be disturbed by the proposed project. Please contact us to discuss this evaluation in greater detail. Staff from our office may be available to assist with an initial site visit to determine whether additional detailed habitat analyses or surveys for Indiana bats will continue to be recommended.

In addition to the Indiana bat, the proposed project is within approximately five miles of known bog turtle (*Clemmys muhlenbergii*) sites. The bog turtle is Federally-listed as threatened and State-listed as endangered. The Service recommends that an evaluation be completed of any existing habitat that would be disturbed, directly or indirectly, by the project, and its potential to support the bog turtle (Phase 1 survey). Bog turtles prefer open canopy wetlands with soft, saturated soils such as fens or sedge meadows fed by seeps and springs of cold groundwater that has been in contact with calcium-rich bedrock or soils. In New York, bog turtles are very often found in or near rivulets having deep mucky substrate, but where above-surface water depths are very shallow – usually only a few inches deep at most. Plant species commonly associated with bog turtle habitats include tamarack (*Larix laricina*), cinquefoil (*Potentilla* spp.), alders (*Alnus* spp.), willows (*Salix* spp.), sedges (*Carex* spp.), sphagnum moss (*Sphagnum* sp.), jewelweed (*Impatiens capensis*), rice cut-grass (*Leersia oryzoides*), tearthumb (*Polygonum sagittatum*), arrow arum (*Peltandra virginica*), red maple (*Acer rubrum*), skunk cabbage (*Symplocarpus foetidus*), rushes (*Juncus* spp.), and bulrushes (*Scirpus* spp.). Information on surveys can be found at http://nyfo.fws.gov/es/btsurvey.pdf

The Service and NYSDEC should be sent a copy of the Phase 1 survey results for review and comment including a USGS topographic map indicating location of site; project design map, including location of wetlands and streams; color photographs of the site; surveyors name; date of visit; opinion on potential/not potential habitat; description of the hydrology, soils, and vegetation.

If the Phase 1 survey identifies any wetlands with potentially suitable habitat, an evaluation is needed to determine whether the proposed project will completely avoid all direct and indirect effects to the wetlands, in consultation with the Service and the NYSDEC. If impacts cannot be avoided, a Phase 2 survey should be completed. The purpose of the Phase 2 survey is to determine the actual presence of bog turtles at the site in potentially suitable habitat. Please see

detailed instructions regarding survey protocols at http://nyfo.fws.gov/es/btsurvey.pdf. Also, please contact this office before conducting any Phase 2 surveys.

The project's environmental documents should identify project activities that might result in adverse impacts to the Indiana bat, bog turtle, or their habitat. Information to assist with the evaluation of potential impacts on bog turtles can be found in Appendix A - Bog Turtle Conservation Zones of the Bog Turtle (*Clemmys muhlenbergii*) Northern Population Recovery Plan (U.S. Fish and Wildlife Service 2001) which can be found at http://nyfo.fws.gov/es/btconszone.pdf. Information on any potential impacts and the results of any recommended habitat analyses or surveys for the Indiana bat and bog turtle should be provided to this office and they will be used to evaluate potential impacts to the Indiana bat, bog turtle, or their habitat, and to determine the need for further coordination or consultation pursuant to the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for the potential for Indiana bat, bog turtle, and occasional transient individuals, no other Federally-listed or proposed endangered or threatened species under our jurisdiction are known to exist in the project area. In addition, no habitat in the project area is currently designated or proposed "critical habitat" in accordance with provisions of the ESA. Should project plans change, or if additional information on listed or proposed species or critical habitat becomes available, this determination may be reconsidered. The most recent compilation of Federally-listed and proposed endangered and threatened species in New York* is available for your information. If the proposed project is not completed within one year from the date of this letter, we recommend that you contact us to ensure that the listed species presence/absence information for the proposed project is current.

The above comments pertaining to endangered species under our jurisdiction are provided as technical assistance pursuant to the ESA. This response does not preclude additional Service comments under other legislation.

The NYSDEC requests that you be advised that the timber rattlesnake (*Crotalus horridus*) occurs in the vicinity of the proposed project. The timber rattlesnake is listed as threatened by the State of New York. In addition, as stated above, the Indiana bat and bog turtle are listed as endangered by the State of New York. The information requested above should be coordinated with both this office and with the NYSDEC. The NYSDEC contact for the Endangered Species Program is Mr. Peter Nye, Endangered Species Unit, 625 Broadway, Albany, NY 12233 (telephone: [518] 402-8859).

For additional information on fish and wildlife resources or State-listed species, we suggest you contact the appropriate State regional office(s),* and:

New York State Department of Environmental Conservation
New York Natural Heritage Program Information Services
625 Broadway
Albany, NY 12233-4757
(518) 402-8935

Since wetlands, ponds, and/or streams may be present, you may want to utilize the National Wetlands Inventory (NWI) maps* as an initial screening tool. However, they may or may not be available for the project area. Please note that while the NWI maps are reasonably accurate, they should not be used in lieu of field surveys for determining the presence of wetlands or delineating

wetland boundaries for Federal regulatory purposes. Online information on the NWI program and digital data can be downloaded from Wetlands Mapper, http://wetlands.fws.gov/mapper_tool.htm.

Work in certain waters of the United States, including wetlands and streams, may require a permit from the U.S. Army Corps of Engineers (Corps). If a permit is required, in reviewing the application pursuant to the Fish and Wildlife Coordination Act, the Service may concur, with or without recommending additional permit conditions, or recommend denial of the permit depending upon potential adverse impacts on fish and wildlife resources associated with project construction or implementation. The need for a Corps permit may be determined by contacting the appropriate Corps office(s).* In addition, should any part of the proposed project be authorized, funded, or carried out, in whole or in part, by a Federal agency, such as the Corps, further consultation between the Service and that Federal agency pursuant to the ESA may be necessary.

Thank you for your time. If you require additional information please contact Robyn Niver at (607) 753-9334. Future correspondence with us on this project should reference project file 51229.

Sincerely,

David A. Stilwell

David A. Stilwell
Field Supervisor

*Additional information referred to above may be found on our website at: http://nyfo.fws.gov/es/section7.htm

References:

Kurta, A., and S.W. Murray. 2002. Philopatry and migration of banded Indiana bats (*Myotis sodalis*) and effects of radio transmitters. Journal of Mammalogy 83(2):585-589.

U.S. Fish and Wildlife Service. 1999. Agency Draft Indiana Bat (*Myotis sodalis*) Revised Recovery Plan. Fort Snelling, MN: U.S. Department of the Interior, Fish and Wildlife Service, Region 3. 53 p.

U.S. Fish and Wildlife Service. 2001. Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan. Hadley, Massachusetts. 103 pp.

cc: NYSDEC, New Paltz, NY (Attn: S. Joule)
NYSDEC, Albany, NY (Endangered Species; Attn: P. Nye)
NYSDEC, Albany, NY (Natural Heritage)
COE, New York, NY

Appendix B:
Resumes

DAVID TOMPKINS, CWB, PWS

Director of Ecological and Wetland Services / Senior Scientist

Education

Master of Science, Wildlife Ecology, West Virginia University, 1981
Bachelor of Arts, Environmental Science and Geography, State University of New York, Plattsburgh, 1979

Professional Registration

Certified Wildlife Biologist -- The Wildlife Society
Professional Wetland Scientist -- Soc. of Wetland Scientists, #318
Certified Subsurface Evaluator -- Dept. of Env. Protection, NJ

Professional Experience

Mr. Tompkins has 25 years of experience conducting and managing biological and environmental investigations and providing wetland consulting services. His work has included environmental impact statements, hazardous waste remediation projects, wetland delineations, permitting and mitigation, hazardous waste sampling analyses, biological monitoring, endangered species studies and permitting for hazardous waste and commercial development projects. He is well versed in regulatory permitting, regulatory negotiations, and compensatory mitigation. Mr. Tompkins' experience also includes projects targeted at the mitigation of impacts from surface mining, deep quarry mining, and development impacts on both aquatic and terrestrial natural ecosystems. He has worked in over 15 different states, including extensive work in New York, New Jersey, and Pennsylvania. Ecological evaluations have include field surveys, species identification and habitat assessments, vegetative cover mapping, ecosystem evaluation, assessment of impact on hunting/fishing, recreational activities, and identification of contaminant migration pathways to both wildlife and human food chains. Mr. Tompkins has developed biota sampling and monitoring plans for various USEPA and NYSDEC Superfund sites undergoing remediation. Additionally, he conducted numerous ecological surveys to identify resident and migratory wildlife species, including fish surveys and macro-invertebrate benthic sampling. Results of several of these studies have been presented at regional conferences. Many

of these projects have included wetland and stream restoration and mitigation projects.

Recent development projects have included the assessment of impacts to various ETR species. Species of concern have included various vascular plants, eastern timber rattlesnakes, cricket frogs, Indiana bats, turtles (bog, Blanding's, spotted, box, and wood), short eared owls, northern harriers, and various migratory passerine birds. Specific tasks have included nesting evaluations, population studies, live capture and radio telemetry, habitat assessments, and habitat management.

Representative Projects

Wetland Delineation and Permitting

Moore Project, WCI/Spectrum, East Fishkill, NY
Assisted project team with the delineation and assessment of on-site wetlands, development of permit documents and mitigation plans. Project activities included extensive negotiations with USCOE for permit issuance.

The Marketplace, Wilder Balter Partners, Newburgh, NY
Project included the delineation of wetlands on a 108-acre parcel and the subsequent obtainment of a jurisdictional determination (JD). As part of the JD negotiations, approximately 4 acres were determined to be isolated pursuant to the SWANC decision.

Site Development and Permitting, Stone Industries, Ramapo, NY
As project manager and senior biologist, Mr. Tompkins provided environmental and engineering services in support of a mining permit application for an approximate 500-acre site in Ramapo, New York. Prepared various environmental impact analyses for traffic, noise, visual, ecology, archaeology and hydrogeology.

Wetland Mitigation and Mitigation Monitoring

Mitigation Monitoring, Beekman Country Club, Town of Beekman, NY
Currently managing project which involves the bi-monthly monitoring of a1.85 acre wetland mitigation site. Project involves monitoring the reestablishment of hydrophic species, hydrology and the re-colonization by wildlife species. An assessment is also performed on the impact of herbivores. A monitoring report was written and submitted for the USCOE.

Wetland Mitigation Monitoring, Woodbury Premium Outlets, Woodbury, NY

Successfully conducted and managed a 5 year program designed to document the successful establishment of a wetland community in an off-site mitigation site. The project included vegetation monitoring, hydrologic monitoring, and documentation of wildlife utilization. Annual reports were submitted to the USCOE and after 5 years the bond for the monitoring was released.

Dutchess County Airport Landfill, Landfill Board of Trustees, Town of Wappingers

Remediation efforts at this site required the delineation of wetlands and ecological resources to minimize and compensate for impacts. Subsequently, a wetland delineation was performed, permitting documents were prepared for submittal to the USCOE and Town, which included the preparation of approximately 2 acres of compensatory wetland sto be established after remediation was completed.

Habitat/Biodiversity Evaluation

Indiana Bat Evaluations, Various Clients, Hudson Valley, NY

Supervised and performed numerous habitat evaluations for Indiana Bats focused on identifying roost and maternity trees for nesting females. Activities have also included mist netting and radio tracking. Project work is routinely reviewed by USFWS and NYSDEC staff. Also performed exit counts and roost tree identification using radio telemetry as part of Hudson Valley monitoring program.

Eastern Timber Rattlesnakes Population Study Rockland County, NY

Conducted a 4 year study identifying population levels, den and basking area locations using live capture and radio telemetry techniques, performed den surveys, and overall evaluation of habitat suitability and impacts from development projects.

General Wildlife Survey, Various Clients, New York and New Jersey

Routinely evaluate sites for identification of natural resources (wildlife and plant species) and evaluate impacts from proposed development projects. This evaluation includes site visits, historical data source review, interpolation from existing habitat conditions and known reference site conditions and species assemblages. Commonly, this work includes specific focus on migratory songbirds and reptiles and amphibians.

Stream Assessments, Syracuse, Watertown, German Flats, Chazy, NY

Using either the Hilsenhoff Biotic Index or The Rapid Bioassessment Protocols established by USEPA and various state agencies, stream assessments were conducted at a variety of sites in support of ongoing remedial investigation being conducted under the NYSDEC Superfund program. These assessments included benthic sampling for

macroinvertebrates (including taxonomic enumeration), fish surveys seining and electro-shocking), and habitat assessments to determine the level of impairment on a given stream from both anthropogenic sources and site contamination. Several of these studies focused on the bioaccumulation of contaminants in the food chain. In some cases, stream remediation and subsequent restoration was required and implemented. Two specific studies included the impacts of site contaminants on the reproductive potential of mink and on piscivorous birds.

Timber Rattlesnake Assessment, Putnam Valley Planning Board, Putnam Valley, NY

As part of Town Consultant responsibilities, an assessment of historical records and existing habitat was conducted to determine if a proposed subdivision had potential for impacts to remnant timber rattlesnake populations.

Technical Advice and Training

Environmental Compliance, US Postal Service, Six Districts

Mr. Tompkins developed an environmental compliance guidebook for postmasters in six districts of the US Postal Service, including: New York, New Jersey, Maryland, Puerto Rico, and Virgin Islands. Coordinated and managed the training for the implementation of the guidebook.

Town of Wawayanda, Town Planning Board, Orange County, NY

As consultants to the Town Planning Board, all applications presented to the Planning Board were screen for wetland and ecological impacts. Either directly or by supervising staff, all wetland lines were field verified, and evaluated for permitting needs and possible mitigation. Where applicable, applicants were forwarded to NYSDEC or USCOE for permitting review. Impacts to resident wildlife was also assessed and discussed with project applicants.

Training

OSHA 40-Hour Hazardous Waste Operations
OSHA 8-Hour Supervisor
Endangered and Threatened Species of New Jersey, Cook College, NJ 2003
Freshwater Wetlands Construction Techniques, Cook College, NJ, 1993
Hydric Soils, Rutgers University, NJ, 1992
Wetland Evaluation Technique (WET II), Wetland Training Institute, MD, 1991

Professional Organizations

Association of State Wetland Managers

SETAC -- North Atlantic Chapter
Society of Wetland Scientists
National Registry of Environmental Professionals
The Wildlife Society

THE Chazen COMPANIES

ENGINEERING | SURVEYING | ENVIRONMENTAL | PLANNING

BARBARA BEALL, PWS

Senior Environmental Scientist/ Wetland Specialist

Education

Master of Science, Environmental Studies, State University of New York, 1984

Bachelor of Arts, Environmental Chemistry, Long Island University, 1982

Professional Registration

Certified Professional Wetland Scientist, NY, 267

Professional Experience

Ms. Beall has over 20 years of experience in all facets of environmental analysis, specializing in wetlands and waters identification, permitting and wetland design. In addition to her wetland and waters specialties, Ms. Beall is an experienced environmental analyst, having prepared numerous environmental impact statements for a wide range of projects. She has managed the approval processes for such diverse projects as housing subdivisions, retail developments, county jails, and cellular communications towers. Ms. Beall has lectured, published and taught extensively on environmental topics especially those related to wetlands. Ms. Beall prepared a wetland training manual for Niagara Mohawk Power Company and was a continuing education instructor on wetlands for the Golf Course Superintendents Association of America.

Prior to joining The Chazen Companies, Ms. Beall was an environmental scientist with the Regulatory Branch of the US Army Corps of Engineers. While with the Corps, Ms. Beall received training in Advanced Wetland Delineation/Expert Witness Preparation and received two citations for sustained superior performance. Ms. Beall's experience as a regulator makes her uniquely suited to assist clients with permitting and mitigation issues involving wetlands and stream disturbance. Ms. Beall's prior experience includes developing individual permit application packages for a number of complex, high profile projects including the significant expansion of the Golub Corporation's distribution facility in Rotterdam, New York, a major

shopping center in New Hartford, New York and a cogeneration plant in Plattsburgh, New York.

Ms. Beall has been responsible for the preparation of numerous Environmental Assessment Forms (EAF), Environmental Impact Statements (EIS) and Findings Statements under both the State Environmental Quality Review Act (SEQRA) and the National Environmental Policy Act (NEPA). Ms. Beall has completed SEQRA reviews for such projects as county jails, state college facilities, US Post Offices, and retail developments. Ms. Beall has conducted NEPA assessments for US Army Reserve Centers, and highway projects with federal funding. Ms. Beall has also conducted environmental analysis in a variety of focus areas including Consistency Determinations for State Listed Wild, Scenic and Recreational Rivers, Coastal Zone Consistency Assessments, Significant Fisheries Habitat Assessments, and Habitat Assessments for State-Listed Rare, Threatened and Endangered Plant species.

Representative Projects

US Department of Housing and Urban Development, Canal Corridor Initiative Regulatory Guidebook for Local Communities

Primary Author. Ms. Beall developed a regulatory/statutory guidebook for communities involved in waterfront revitalization in New York State, especially projects funded through the HUD Canal Corridor Initiative. The purpose of the Guidebook was to assist these communities, and their consultants, through the various state and federal regulatory review processes. The Guidebook provided an overview of these processes and how they would relate to waterfront revitalization projects. The Guidebook then had specific chapters various subject areas including wetlands and waters, contaminated sites, historic and cultural resources and other areas of review. These chapters detailed the applicable regulations, the regulatory review process, and provided tips on proceeding through the process. Appendices included a glossary, regional agency contact information, and specific statutes, information, and forms for each of the subject chapters.

Verizon Conduit Crossing of Hudson River, Town of Lloyd to City of Poughkeepsie, Ulster and Dutchess Counties, New York

Wetland Scientist. Developed Nationwide Permit 12 and Section 401 Water Quality Certificate permit applications for the installation of a conduit crossing of the Hudson River. Analyses included a Coastal Zone Program Consistency Determination Review, a Significant Deepwater Fisheries Assessment that discussed impacts to sturgeon, and a Sustainable Fisheries Assessment, required under federal law.

Constitution Marsh Nature Preserve Improvements (Nature Conservancy and NYS Office of Parks, Recreation and Historic Preservation), Hudson River, Cold Springs, Putnam County, New York

Project Manager. Ms. Beall prepared US Army Corps of Engineers Section 10 and New York State Department of Environmental Conservation permit application for construction of boardwalk, canoe launch, and educational displays at the Constitution Marsh Nature Preserve, located on the lower Hudson River in Cold Springs, New York. Prepared documentation regarding impacts to critical fisheries habitat under the Magnuson Fisheries Conservation and Management Act for review by the National Marine Fisheries Service (NMFS). Coordinated permit review process.

Waterfront Redevelopment Plan, City of Troy, Rensselaer County, New York

Environmental Scientist. Ms. Beall prepared US Army Corps of Engineers and New York State Department of Environmental Conservation joint permit application for construction of a bikepath along the City of Troy waterfront located along the upper Hudson River. Along with the US Army Corps of Engineers and New York State Department of Environmental Conservation approvals, other reviews included New York State Department of Transportation review under State Environmental Quality Review Act, review by Federal Highways Administration under the National Environmental Policy Act, review for cultural resources by NY State Historic Preservation Office, and review by New York State Office of General Services for ownership of underwater lands. Additionally, the potential for contamination was reviewed due to the location of a portion the bike path over a former petroleum distribution center. Coordinated permit review process.

Canandaigua Waterfront Redevelopment Plan, City of Canandaigua, Ontario County, New York

Environmental Scientist. Ms. Beall prepared US Army Corps of Engineers and New York State Department of Environmental Conservation joint permit application for renovation of the existing City of Canandaigua Park. Scope of work included beach restoration, shoreline stabilization, and dock renovation. Coordinated permit review process.

Whitehall Canal Corridor Improvements, Village of Whitehall, Washington County, New York

Environmental Scientist. Ms. Beall prepared ACOE, NYSDEC, and NYS Canal Corridor permit applications for installation of replacement section of a retaining wall along the historic Champlain Canal. Coordinated review by NY State Historic Preservation Office. Coordinated permit review process.

Cumberland Head Connector Road, Wetland Delineation, Plattsburgh, New York

Project Manager. Managed the delineation for a four lane by-pass highway and bikepath for a 5.3 km ROW (approximately 78 acres) for the Clinton County Highway Department in Plattsburgh, Clinton County. Provided wetland services in accordance with NYSDOT Consultant Scope of Services for Federal and NYS Department of Environmental Conservation jurisdictional wetlands. Conducted delineation, prepared delineation report and submitted to regulatory agencies. Conducted field inspections with US Army Corps of Engineers and NYS Department of Environmental Conservation personnel. Project right-of-way will also impact navigable waters of the U.S. Conducted review and coordination for state-listed species of concern. Prepared report evaluating the right-of-way and surrounding lands for potential mitigation sites. Due to size/complexity of project (5 to 10 acres wetland impact), the alternatives analysis/compensatory mitigation report is being prepared separately. All work done to NYS Department of Transportation specifications in the event state/federal funding is obtained.

Square Dashnaw Road over Cold Brook, Wetland Delineation and Permitting, Town of Saranac, Clinton County, New York

Project Manager. Managed the delineation and permitting of a bridge/roadway replacement in federal and Adirondack Park Agency wetlands and waters for the Town of Saranac Highway Department. Provided wetland services in accordance with New York State Department of Transportation Consultant Scope of Services for Federal and Adirondack Park Agency jurisdictional wetlands. Delineated wetlands and prepared delineation report. Prepared permit application that discussed purpose, needs and benefits of the project, nature of impacts, avoidance and minimization, mitigation, and demonstration of compliance with Army Corps of Engineers Nationwide Permit 14 regulations, New York State Department of Environmental Conservation Section 608 regulations and Adirondack Park Agency regulations. Conducted field inspections of delineation and coordinated permit approvals with agency personnel. Developed wetland mitigation and restoration plans. All work done to New York State Department of Transportation specifications, in the event that state/federal funding is obtained.

Farm to Market and Smith Road Subdivisions, Wetland Permitting, Town of Halfmoon, Saratoga County, New York

Project Manager. Reviewed a wetland delineation on a 95.7 acre parcel, including identification of isolated waters under recent US Supreme Court decision in Solid Waste Authority of Northern Cook County v. US Army Corps of Engineers. Prepared wetland delineation report, and conducted a field inspection of the wetland delineation with the US Army Corps of Engineer personnel. Prepared permit applications for Nationwide Permit 39 and 14, and successfully obtained permits.

Mill Creek Development LLC, Town of East Greenbush, Rensselaer County, New York

Wetland Scientist. Project was the construction of a 96 acre / 470,000 square foot commercial park, with The Chazen Companies as the prime environmental and engineering consultant. Ms. Beall was responsible for the delineation of wetlands, conducting an isolated wetland review under the US Supreme Court decision of SWANCC v. US Army Corps of Engineers, and preparation of an individual permit application for 1.5 acres of federal wetland impacts. Ms. Beall developed an extensive Section 404(b)(1) Guidelines Alternatives Analysis and assisted other Chazen staff in the development of the mitigation plan. Negotiations with state and federal agencies were successful, and necessary permits were obtained.

Sleight Farm Wastewater Treatment Plant, Town of LaGrange, Dutchess County, New York

Wetland Scientist. Project was the construction of a new wastewater treatment plant in the Town of LaGrange. The Waste Water Treatment Plant required a combination of Nationwide Permits to permit road crossing, pipeline crossing and outfall structures in wetlands and waters for the sewage treatment plant. Ms. Beall developed the joint permit application to the US Army Corps of Engineers and the NYSDEC for the proposed project. Negotiations with state and federal agencies were successful, and necessary permits were obtained.

Hancock Airport (Federal Aviation Administration), Onondaga County, New York

Wetland Scientist. Completed comprehensive wetland identification, delineation and verification by ACOE and NYSDEC for a 900-acre site proposed for airport expansion in Syracuse, New York. Involved hydrology analysis, soils investigation, vegetation inventory, and classification of a variety of wetland types.

Taconic State Parkway (NYS Department of Transportation), Route 44 at Millbrook to Route 23 near Martindale Depot, Columbia and Dutchess Counties, New York

Wetland Scientist. Delineated federal and state wetlands and waters, classified wetland types, and determined functions and values along a 35-mile stretch of the Taconic State Parkway. The purpose of the delineation was to provide necessary information to the NYSDOT so wetlands could be avoided in the design process of highway safety improvements.

Saranac Cogeneration and Electric Distribution Facilities (Falcon Seaboard Energy Company), Plattsburgh, Clinton County, New York

Wetland Scientist and Project Manager. Completed federal and state wetland delineations and biological inventories for a 240 KW non-utility electric cogeneration facility, two substations, and eight miles of

electric transmission line corridor in Plattsburgh, New York. Also successfully completed Section 404 ACOE individual permit processing for the ACOE, and Article 24 NYSDEC Freshwater Wetlands Permit for the NYSDEC. Completed Section 404(b)(1) Guidelines alternatives analysis. Assisted in the preparation of a wetland mitigation plan for a 15-acre wetland mitigation site consisting of open water, shallow emergent marsh and shrub swamp habitat constructed from a cow pasture.

Route 28N Improvements (NYSDOT), Newcomb, Essex County, New York

Wetland and Environmental Scientist. Provided federal and state wetland delineation for improvements to a state highway alignment and bridge over the Hudson River in Newcomb, New York within the Adirondack Park. Assisted in the preparation of the Design Report for the New York State Department of Transportation, including reviews under the State Environmental Quality Review Act, National Environmental Policy Act, the Wild and Scenic Rivers Act, the Adirondack Park Agency regulations, and cultural resources review. Prepared permit applications to the US Army Corps of Engineers, New York State Department of Environmental Conservation and the Adirondack Park Agency. Assisted in the development of a small shrub swamp and forested wetland mitigation area adjacent to the highway alignment and the Hudson River, to replace wetland functions lost from the highway bridge realignment.

Golub Warehouse and Distribution Center Expansion (Golub Corporation), Town of Rotterdam, Schenectady County, New York

Project Manager. Project was the expansion of the existing Price Chopper distribution center. The project that was approved included 195,000 square feet of new warehouse facility space, and 407,000 square feet of new pavement for parking, with impacts to 5.98 acres of wetlands. Reviewed federal wetland delineation by another firm and prepared delineation report. Reviewed business needs with Client for expanding their existing Distribution Center in Rotterdam, New York. Prepared permit application that discussed the proposed project, the public interest review factors, the economic and logistical issues associated with off-site and on-site alternatives. The Section 404(b)(1) Guidelines Alternatives Analysis examined six off-site alternatives and over 25 on-site alternative layouts and designs to demonstrate compliance with the Section 404(b)(1) Guidelines. Coordinated the cultural and historic resources review. Prepared an individual Section 404 ACOE permit application package and individual Section 401 Water Quality Certificate permit application package. Permit application included an extensive discussion of the various alternatives. Reviewed a variety of on-site and off-site compensatory wetland mitigation options including preservation of critical habitat, off-site wetland creation, and restoration of a park area. Presented the options to the regulatory agencies for review and

consideration. Assisted in development of a wetland mitigation package to create 10 acres of on-site forested wetlands, and preserve 68 acres of on-site wetlands and uplands. Provided support to the Applicant during the 12-month permit review process with the ACOE and NYSDEC. Assisted in the coordination of the Town of Rotterdam's site plan approval and SEQRA process. New York State Department of Environmental Conservation and US Army Corps of Engineers Individual Permits were successfully obtained and the project was constructed.

MFS Network Technologies Statewide Fiber Optic Network in the New York State Thruway Corridor, Rockland County to Canastota, Madison County; and the Berkshire Spur

Wetland Scientist. Project involved the installation of a 6 conduit fiber optic cable bundle, manholes and regeneration stations along the 561 mile New York State Thruway Corridor from the Bronks to Chautauqua, New York. Ms. Beall delineated federal and state wetlands and waters along the New York State Thruway corridor from the Tappan Zee Bridge to Canastoga, Madison County, and the Berkshire Spur for the installation of a fiber optic network. Maintained and tracked wetland and stream data changes associated with route changes. Ms. Beall reviewed potential for the presence of threatened and endangered species and critical habitat along entire corridor. Ms. Beall assisted in the review of the corridor for historic and cultural resources. Ms. Beall developed an Expanded Environmental Assessment Report under SEQRA and prepared applications for US Army Corps of Engineers Section 10 and 404 permits and New York State Department of Environmental Conservation Article 24 Freshwater Wetlands Permits and Section 401 Water Quality Certificate. Ms. Beall coordinated permitting review between two ACOE Districts and multiple regional offices of the NYSDEC. Ms. Beall assisted in the preparation of an Environmental Work Plan, and other documents necessary for maintaining compliance with permit conditions during construction. Ms. Beall coordinated permitting for numerous project alignment changes and added corridor sections during construction. Ms. Beall monitored construction for the project section between the Tappan Zee Bridge and Albany to assure permit compliance and quality of environmental restoration and remediation.

Benderson New Hartford Consumer Square, New Hartford, Oneida County, New York

Project Manager. Project involved the development of a 559,291 square foot commercial retail center impacting more than 5 acres of wetlands. Ms. Beall was contracted to assist in permit negations after permit applications had been submitted to the US Army Corps of Engineers and the New York State Department of Environmental Conservation. Ms. Beall developed a supplemental off-site and on-site alternatives analysis for the construction of a commercial retail center. The Alternatives Analysis described the proposed project, examined 11 on-site alternatives and provided a detailed economic

analysis of these alternatives. To obtain regulatory relief from a subsequent district permit decision, Ms. Beall participated in one of the first administrative appeals processes in the United States under the US Army Corps of Engineers Administrative Appeals process for permits. The request for appeal was upheld, and found to have merit in each of the four arguments made. The decision was remanded to the district for additional consideration. A permit was issued for the project, and the project was constructed.

Niagara Mohawk Power Company, Environmental Training Manual

Primary Author. Ms. Beall developed a training manual titled "Wetlands and Waters. Environmental Protection and Regulatory Compliance," for Niagara Mohawk Power Company. The purpose of this manual is to assist workers in the field in identifying the potential for a site to contain regulated wetlands and waters, and to increase their awareness of the regulations associated with undertaking work within those areas. The manual contains information about wetland identification, the various state and federal wetland and waters regulations, guidance about when to contact the Corporation's Headquarters for assistance with environmental issues, and information on Best Management Practices for construction such as soil erosion control and methods that can be implemented to avoid inadvertent wetland impacts. The manual has been incorporated into a slide show and video presentation and is part of the Niagara Mohawk Compliance Training for their workers.

Seneca County Jail, Environmental Impact Statement, Seneca County, New York

Project Manager. Ms. Beall led Seneca County through the procedural implementation of Lead Agency Coordination and SEQRA review process and participated in SEQRA public hearing process. Ms. Beall provided consulting services to Seneca County through the SEQRA review process for a new jail. Major issues included visual impact, noise, traffic and stormwater drainage. Ms. Beall prepared EIS and Findings Statement under SEQRA to review all environmental issues associated with construction of new 60,970 square foot public safety building housing jail, Sheriff's Office, E-911 center and Department of Probations. Ms. Beall developed SEQRA alternative siting analysis, utility analysis, and descriptions of proposed project. Ms. Beall conducted ecological survey, wetland delineations, visual impact assessments, land use reviews, noise analysis, and farmlands protection assessment.

Widewaters Commons Shopping Center, Town of Kinderhook, Columbia County, New York

Project Manager. Ms. Beall was responsible for the development of a Supplemental Environmental Impact Statement and a Final Environmental Impact Statement for an 11 acre retail shopping plaza at the intersection of Routes 9 and 9H in the Town of Kinderhook.

Major issues included the installation of a roundabout for traffic circulation at the intersection, potential impacts to groundwater, lighting, compliance with the comprehensive plan, zoning and associated design standards, and an organized local opposition. In developing the Final Environmental Impact Statement, which responded to comments from both the Draft Environmental Impact Statement and the Supplemental Environmental Impact Statement, Ms. Beall coordinated the input of 9 consulting firms on the project team.

Fort Oswego US Army Reserve Center, City of Oswego, Oswego County, New York

Environmental Scientist. Ms. Beall was responsible for preparation of the NEPA documentation for the US Army's proposed demolition and expansion of the US Army Reserve facility adjacent to historic Fort Ontario. The NEPA documentation included an Environmental Assessment and a Finding of No Significant Impact. Significant issues reviewed included a demonstration of compliance with the City of Oswego Local Waterfront Revitalization Plan and the NYSDOS Significant Fish Habitat in the Oswego River, a demonstration of compliance with historic issues associated with the adjacent Fort Ontario, a National Register site, and determining the most suitable alternative for expansion. An environmental justice assessment was completed as part of the Environmental Assessment. Ms. Beall was responsible for preparation of the NEPA documentation.

SUNY Oswego, Oswego County, New York

Environmental Scientist. Ms. Beall was responsible for preparation of an Expanded Environmental Assessment Form to assist the SUNY Construction Fund in developing documentation supporting a negative determination for the Swetman/Poucher Halls project. The project involved the rehabilitation of Swetman and Poucher Halls and the construction of a new student activity center with associated hockey rink adjoining it. Major issues reviewed included archeology and cultural resources, and utility capacities.

Route 4/43 Corridor Study, Town of North Greenbush, Rensselaer County, New York

Environmental Scientist. Ms. Beall was responsible for preparing a Draft Generic Environmental Impact Statement for the Route 4/43 Corridor Study and presenting that the project at public hearings. The document evaluated potential development under existing zoning classifications as well under potential changes requested by property owners on lands surrounding the Route 4/43 intersection in the Town of North Greenbush. The DGEIS tracked the potential type and size of development under four major zoning alternatives being evaluated by the Town. The DGEIS reviewed potential impacts to the physical environmental, ecological resources, traffic, utility capacities, school children and fiscal resources. The DGEIS identified avoidance and mitigation measures.

Village of Valatie Post Office, Columbia County, New York

Project Manager. Ms. Beall assisted a private developer in the preparation of a SEQRA DEIS, FEIS and Findings Statement for the construction of a new Village of Valatie Post Office on NYS Route 9. Major issues reviewed included site design and layout, lighting, operations and traffic and impacts on adjoining landowners.

Training

Advanced Wetland Delineation and Expert Witness Preparation. ACOE WES. September 1988

Wetland Evaluation Technique (WET 2). Federal Highway Institute. June 1989

Environmental Review Process (SEQRA). Adirondack Community College. April 1990

Professional Organizations

Treasurer, Society of Wetland Scientists Certification Program
The Association of State Wetland Managers
Golf Course Superintendents Association of America
New York State Wetlands Forum, past Chairperson
Society of Wetland Scientists Mid-Atlantic Chapter

ENGINEERING | SURVEYING | ENVIRONMENTAL | PLANNING

MICHAEL RUBBO

Senior Environmental Scientist

Education

Bachelor of Science, Environmental Biology, SUNY College of Environmental Science and Forestry, 1995

Master of Science, Biology, The University of Louisiana at Lafayette, 2000

Doctor of Biology, Biology, The Pennsylvania State University, 2004

Professional Experience

Dr. Rubbo has over 8 years of experience conducting ecological assessments and natural resource inventories. This work has included wetland functional assessments, wetland delineations, mitigation projects, vernal pool evaluations, biodiversity assessments, habitat evaluations, stream surveys, water quality monitoring, and rare species studies. This work has been conducted throughout NY and the northeast. Dr. Rubbo has worked on residential, commercial, and industrial projects for both private and governmental clients.

Dr. Rubbo's area of expertise is with projects focusing on reptiles and amphibians. He has worked on a variety of projects that have focused on state-listed reptiles and amphibians. Dr. Rubbo has conducted independent surveys for species such as: ambystomatid salamanders, stream salamanders, bog turtles, Blanding's turtles, spotted turtles, box turtles, wood turtles, and a majority of the more common salamanders, frogs, turtles, and snakes of the area. These studies have incorporated techniques such as turtle trapping, radio telemetry, frog call surveys, drift-fence studies, amphibian trapping, and visual encounter surveys.

Representative Projects

Residential Subdivision, Town of Orange, Connecticut

This project included conducting an ecological evaluation, natural resource inventory, and functional evaluation of wetlands and watercourses. Additionally, wetlands on-site were evaluated for the quality as amphibian-breeding habitat. Potential impacts to the wetlands as a result of the proposed development were assessed and

mitigation measures developed. Represented client at town meetings and responded to comments from regulatory agencies.

Residential Subdivision, Town of Guilford, Connecticut
This project included conducting an ecological evaluation and a natural resource inventory of an approximately 200 acre property. State records indicated that the listed species, the vesper sparrow (*Pooecetes gramineus*) and the whip-poor-will (*Caprimulgus vociferous*) occurred on-site. Therefore, a survey for these species was designed and conducted. Potential impacts to these species as well as on-site communities were identified and mitigation measures developed.

Retail Development, Town of Newington, Connecticut
This project included conducting an ecological evaluation, natural resource inventory, and functional evaluation of wetlands and watercourses. Additionally, a federal wetland delineation was conducted, and a federal mitigation plan was developed to mitigate for wetland impacts associated with this project. Mitigation measures proposed included on-site wetland creation and enhancement as well as off-site enhancement.

Amphibian/Wetland Projects, Centre County, Pennsylvania

Designed and implemented several studies on wetland ecosystems that have included detailed biological surveys of wetlands along urbanization gradients and evaluations of restoration strategies for wetlands dominated by invasive plants. This work required the identification and sampling of amphibian eggs, larvae, and adults, aquatic invertebrates, and water chemistry analyses.

Ornithology Teaching Assistant, University of Louisiana
Teaching assistant for undergraduate/graduate level course in Ornithology

Tibor T. Polgar Fellow The Hudson River Foundation, New York
Designed, and directed a survey of the amphibians and reptiles in the tidal wetlands of the Hudson River Estuary. Responsibilities included: trapping turtles, frog call surveys, and extensive searches of the study sites. Quantified data and presented a report to the sponsoring committee at a research symposium.

Research Assistant Institute of Ecosystem Studies, Millbrook, NY
Responsible for the analysis of water quality samples associated with long-term ecological studies.

Fish and Wildlife Technician NYS DEC Gloversville, NY
Assisted with data collection associated with a study on the effects of pesticides on songbird reproductive success. Duties included

monitoring bird boxes in agricultural habitats to determine species assemblages and nestling survivorship, as well as quantification of spray patterns of pesticides.

Blanding's Turtle Studies, LaGrange, NY
Studied the effects of wetland mitigation on the Blanding's turtle (*Emydoidea blandingii*). Radio tracked gravid female turtles and observed nesting behavior. Tallied and measured hatchlings before release into mitigation wetlands.

Professional Organizations

Ecological Society of America
Society of Wetland Scientists

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STEVEN FINCH

Wetland Scientist/Biologist

Education

Bachelor of Technology, Wildlife Management, SUNY Cobleskill, 2000

Professional Experience

Mr. Finch has over 6 years of experience providing ecological consulting services to private and governmental clients. His experience includes wetland delineations and mitigations, ecological investigations, endangered, threatened, and rare species investigations, bat surveys, turtle trapping, wildlife management, and water quality sampling.

Mr. Finch as conducted numerous delineations, functional assessments, impact assessments, permitting efforts for wetland and stream disturbances and mitigation designs on many development projects in both Georgia and New York State.

Recent development projects have included the assessment of impacts to ETR species. Species of concern have included vascular plants, cricket frogs, Indiana bats, turtles (bog, Blanding's, spotted, box, and wood), and migratory birds. Specific tasks have included nesting evaluations, mist-netting, and habitat assessments. He has also conducted numerous ecological surveys to identify resident and migratory wildlife species, including fish surveys (electroshocking) and benthic sampling in streams, lakes, and rivers.

Mr. Finch has participated in numerous ornithology studies over the years. Studies have ranged from waterfowl and game birds, to migratory shorebirds and song birds. Studies have included population counts, collar identification, species inventorying, and mist netting

Wetland Projects

Silo Ridge Country Club – Village of Amenia, Dutchess County, New York – Conducted a wetland delineation on an approximate 628-acre parcel.

Town of Wawayanda – Orange County, New York – Conducted wetland inspections for the Town of Wawayanda under the supervision of the Town Planning Board Engineer.

Ben Crane Property – Town of Philipstown, Putnam County, New York - Conducted a wetland delineation and report on an approximately 40-acre parcel.

Wappingers Central School District – Town of Wappingers, Dutchess County, New York – Conducted wetland delineations and reports at the Fishkill Plains Elementary School and Van Wyck Junior High School. Prepared a NYSDEC Wetland Buffer Disturbance Permit Application for work at the Fishkill Plains Elementary School. Conducted wetland delineation on proposed 32-acre school site off of State Route 52 in Fishkill.

Chelsea Cove Wastewater Treatment Plant – Town of Beekman, Dutchess County, New York -
Conducted a wetland delineation and report on an approximately 2.42-acre parcel. Helped prepare NYSDEC Wetland Buffer Disturbance Permit Application.

Wild Oaks Waster Treatment Plant – Town of Lewisboro, Westchester County, New York -
Conducted a wetland delineation and report on an approximately 2.63-acre parcel. Helped prepare Joint NYSDEC/Town of Lewisboro Wetland Buffer Disturbance Permit Application.

Ecological Projects

Bobwhite Quail and Songbird Studies – Georgia University, Waynesboro, Georgia – Bobwhite Quail Initiative Program: Conducted count studies by sight and sound of Bobwhite quail coveys and songbirds on over 20 farmland locations in eastern Georgia.

Migratory Bird Studies – U.S. Fish and Wildlife Service, Rainwater Basin District, Kearney, Nebraska – Conducted collar identification on geese. Estimated population counts of waterfowl and sandhill cranes on multiple waterfowl management areas throughout south-central Nebraska. Conducted whooping crane surveys by sight and sound. Conducted shorebird surveys on several management areas.

Hamlet on the Hudson - Northern Harrier and Short-eared Owl Study – Town of Coxsackie, Greene County, New York – Northern harrier and short-eared owl study on an approximately 500-acre parcel and the surrounding area. The study includes point counts of raptors using sight and sound. Owl surveys conducted by sight, callbacks, and spotlighting.

Lake Carvel – Town of Pine Plains/Milan, Dutchess County, New York – Ecological studies including Blanding's turtle trapping using round nets and Indiana bat surveys using mist nets. Conducted fish inventory of streams using electroshocking technique. Conducted stream and lake water quality, macroinvertebrate, and phytoplankton sampling.

Esopus Lake Property, Town of Esopus, Ulster County, New York – Ecological study on a 361-acre site on northern cricket frogs using sight and sound and Indiana bats using mist nets.

Hudson Heritage Ecological Study – City of Poughkeepsie, Dutchess County, New York – Ecological study including studies on potential endangered, threatened, and rare species on a 158-acre parcel inventorying vegetation, birds, mammals, reptiles and amphibians.

Silo Ridge Ecological Study – Village of Amenia, Dutchess County, New York – Ecological and wetland study including studies on potential endangered, threatened, and rare species on a 628-acre parcel inventorying vegetation, birds, mammals, reptiles and amphibians.

Vikings Industries Ecological Study – Town of New Paltz, Ulster County, New York – Ecological study including studies on potential endangered, threatened, and rare species on a 40-acre parcel inventorying vegetation, birds, mammals, reptiles and amphibians.

Training

Stream Restoration Using Natural Channel Design, Georgia Center for Continuing Education, Athens, Georgia

Applying for Jurisdictional Determinations through the USACE, Goshen, New York

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AUGGIE RUGGIERO
Wetland Biologist

Education

Bachelor of Science, Zoology, Kent State University, 1996

Professional Experience

Mr. Ruggiero has three years experience in many facets of wetlands/ecological consulting specializing in wetland delineation, wetland and stream qualitative assessments, Section 404 permit preparation, GPS mapping, and map preparation using AutoCAD.

Prior to joining Chazen, Mr. Ruggiero was an environmental scientist with a multi-discipline engineering company and oversaw to completion many residential and commercial development projects with regards to Section 404/401 of the Clean Water Act. Mr. Ruggiero's experience as an environmental scientist makes him suited to assist clients with identification, analysis and mapping of habitat types, ecological community evaluations, permitting and various issues involving wetlands, stream and upland community disturbance and impact evaluations.

Representative Projects

Wetland Scientist, Wetland Delineations, Various Locations
Performed wetland delineations for properties located throughout Ohio, Indiana, Illinois, Kentucky, and West Virginia for various private and public entities. Surveyed wetland boundaries using a Trimble® GPS unit and subsequently prepared wetland delineation maps using AutoCAD.

Wetland Scientist, Residential Subdivision, Wetland Delineation and Section 404 Nationwide Permitting, Painesville, Ohio
Performed the delineation on a 178-acre property for a private developer. Since an area of the property was substantially disturbed and in violation of Section 404 of the Clean Water Act, Mr. Ruggiero performed an atypical delineation on the disturbed portion and assisted with the Section 404 permit application that has since been

issued.

Wetland Scientist, Commercial Development, Wetland Delineation and Section 404 Nationwide Permitting, Wadsworth, Ohio Performed the delineation for a property and prepared the wetland permitting figures using AutoCAD for a private resident. Since wetlands located on-site were determined to be "adjacent", Mr. Ruggiero coordinated permitting options with the client and the US Army Corps of Engineers. Delineation map has been subsequently affirmed and permit was issued.

Wetland Scientist, Commercial Development, Wetland Delineation and Wetland Permitting, Plymouth, Indiana Performed the delineation for a property and prepared the wetland permitting figures using AutoCAD for a private resident. Since wetlands located on-site were determined to be "isolated", Mr. Ruggiero coordinated permitting options with the client and the Indiana Department of Environmental Management. Delineation map has been subsequently affirmed and development commenced in adherence to Indiana laws concerning isolated wetlands.

Wetland Scientist, Private Residence, Wetland Delineation and Section 404 Nationwide Permitting, Medina, Ohio Performed the delineation for a property and prepared the wetland permitting figures using AutoCAD for a private resident. Since wetlands located on-site were determined to be "adjacent", Mr. Ruggiero coordinated permitting options with the client and the US Army Corps of Engineers. Delineation map has been subsequently affirmed and permit was issued.

Wetland Scientist, Private Residence, Wetland Delineation and Section 404 Nationwide Permitting, Akron, Ohio Performed the delineation for a 5 acre property and prepared the wetland permitting figures using AutoCAD for a private resident. Since wetlands located on-site were determined to be "adjacent" and the nature of the project was that of a linear transportation project, Mr. Ruggiero coordinated permit and mitigation options with the client and the US Army Corps of Engineers for the application for Nationwide Permit 14. Delineation map has been subsequently affirmed and permit was issued.

Wetland Scientist, Local Municipality, Wetland Delineation and Section 404 Nationwide Permitting, Willoughby Hills, Ohio Performed the delineation for a property and prepared the Section 404 permit application for the construction of a community center. Delineation map has been subsequently affirmed and permit was issued.

Wetland Scientist, Commercial Development, Wetland Delineation and Section 404 Nationwide Permitting, Richfield, Ohio Performed the delineation for a 10 acre property and prepared

the wetland permitting figures using AutoCAD for a private developer. Since wetlands located on-site were determined to be “adjacent”, Mr. Ruggiero coordinated permit and mitigation options with the client and the US Army Corps of Engineers.

Wetland Scientist, Religious Institution, Wetland Delineation and Section 404/401 Individual Permitting, Pepper Pike, Ohio Performed the delineation for the proposed construction of a Synagogue. Coordinated with representatives of the US Army Corps of Engineers and the Ohio Environmental Protection Agency to ensure compliance with guidelines set forth by the State of Ohio’s Section 401 Individual Water Quality Certification which included a detailed alternatives analysis as well as conceptual compensatory mitigation plan for unavoidable wetland and stream impacts.

Wetland Scientist, Residential Subdivision, Wetland Delineation and Ohio Isolated Wetland Permitting, Swanton, Ohio Performed the delineation for a 16 acre property and prepared the wetland delineation map using AutoCAD which was subsequently affirmed by the US Army Corps of Engineers for a private developer. Conducted field inspection with US Army Corps of Engineers personnel. Since wetlands located on-site were determined to be “isolated”, Mr. Ruggiero coordinated permit and mitigation options with the client and the Ohio Environmental Protection Agency.

Tree Survey, Commercial Development, Twinsburg, Ohio As a requirement of a local ordinance, Mr. Ruggiero assisted in the identification, the measuring the diameter at breast height, and the subsequent mapping using a GPS unit of 4000+ trees on a 60 acre parcel located in Twinsburg, Ohio.

Stream Monitoring, Commercial Development, Parma, Ohio As part of a Section 401 settlement agreement, Mr. Ruggiero assisted in performing the baseline biological assessment of a stream that was subject to restoration activities. This included the identification and enumeration of captured fish and benthic macroinvertebrates. This information was then reported to the Ohio Environmental Protection Agency.

Stream Monitoring, Munson, Ohio As part of a plan associated with the construction of a wastewater treatment plant and at the request of the Ohio Environmental Protection Agency, Mr. Ruggiero assisted in performing the baseline biological assessment of a stream that was subject to effluent discharge from the WWTP. This included the identification and enumeration of captured fish and benthic macroinvertebrates.

Wetland Mitigation Site Monitoring and Reporting, Various Sites Located throughout Northeastern Ohio Mr. Ruggiero prepared various site-specific wetland mitigation monitoring reports as well

performed the yearly monitoring of two MBRT approved mitigation banks located in northeastern Ohio.

Indiana Bat Habitat Analysis, Various Locations Throughout Ohio Mr. Ruggiero analyzed various undeveloped parcels to determine if the habitats on site had any potential to serve as Indiana Bat roosting areas.

Eastern Massasauga Habitat Analysis, Swanton, Ohio
Mr. Ruggiero analyzed a 15 + acre parcel to determine if the habitats on site had any potential to serve as burrows for the federally threatened Eastern Massasauga rattlesnake and coordinated his efforts with the United States Fish and Wildlife Service.

Appendix C:
Flora Species List

List of Identified Flora of Silo Ridge and Habitat Association

Scientific Name	Common Name	Habitat
Trees		
Acer negundo	Boxelder	SSHF
Acer pensylvanicum	Striped maple	BMF
Acer rubrum	Red maple	RM, SSHF
Acer saccharum	Sugar maple	BMF
Aesculus hippocastanum	Horse chestnut	SSHF
Betula papyrifera	Paper birch	SSHF
Betula pendula	European birch	SSHF
Betula populifolia	Gray birch	SSHF
Carya ovata	Shagbark hickory	SSHF
Castanea dentata	American chestnut	BMF
Crataegus spp.	Hawthorn	SSHF
Fagus grandifolia	American beech	BMF
Fraxinus americana	White ash	SSHF
Fraxinus pennsylvanica	Green ash	RM
Juniperus virginiana	Eastern red cedar	SSHF
Malus spp.	Apple	OF
Picea glauca	White spruce	ML
Pinus strobus	White pine	BMF
Platanus occidentalis	Sycamore	RM
Populus deltoides	Eastern cottonwood	BMF
Populus grandidentata	Bigtooth aspen	SSHF
Populus tremuloides	Quaking aspen	SSHF
Prunus serotina	Black cherry	BMF
Quercus alba	White oak	SSHF
Quercus prinus	Chestnut oak	SSHF
Quercus rubra	Red oak	SSHF
Rhus hirta	Staghorn sumac	SSHF
Salix babylonica	Weeping willow	RM
Ulmus americana	American elm	SSHF
Tsuga canadensis	Eastern hemlock	H
Shrubs		
Amelanchier spp.	Serviceberry	BMF
Berberis thunbergii	Japanese barberry	BMF
Betula lenta	Sweet birch	BMF
Carpinus caroliniana	American hornbeam	BMF
Cornus amomum	Silky dogwood	BMF
Cornus sericea	Red-osier dogwood	RM
Euonymus atropurpureus	Burning bush	SSHF
Hamamelis virginiana	Witch-hazel	BMF

Scientific and common names and wetland indicator categories are from Reed (1988) and Tiner et al. (1995).
Newcomb, Lawrence. 1977. Newcomb's Wildflower Guide. Little, Brown and Company. Boston.
Reschke, Carol. 2002. Ecological Communities of New York State. 2nd ed. New York Natural Heritage Program. New York State Department of Environmental Conservation. Albany, NY.
Beech-Maple-mesic forest: BMF Common reed/Purple loosestrife: CR/PL Emergent/scrub swamp: EM/SS
Hemlock: H Mowed lawn: ML Old field: OF……. Highbush blueberry bog thicket…..HBBT
Pond Red maple swamp: RM Southern successional hardwood forest: SSHF

List of Identified Flora of Silo Ridge and Habitat Association (cont.)

Scientific Name	Common Name	Habitat
Shrubs (cont.)		
Kalmia latifolia	Mountain Laurel	BMF
Lindera benzoin	Spicebush	BMF
Lonicera tatarica	Tatarian honeysuckle	OF
Rosa multiflora	Multiflora rose	OF
Rubus occidentalis	Black raspberry	OF
Rubus spp.	Blackberry	OF
Salix discolor	Pussy willow	RM
Vaccinium corymbosum	Highbush blueberry	RM, EM/SS, HBBT
Viburnum dentatum	Northern arrow-wood	BMF
Herbs		
Aquilegia canadensis	Red columbine	BMF
Alliaria petiolata	Garlic mustard	OF, BMF, SSHF
Anemone quinquefolia	Wood anemone	SSHF, BMF
Apocynum androsaemifolium	Spreading dogbane	OF
Arctium minus	Common burdock	OF
Arisaema triphyllum	Jack-in-the-pulpit	BMF
Asarum canadense	Canadian wildginger	BMF
Brassica nigra	Black mustard	OF
Caltha palustris	Yellow marsh marigold	RM, HBBT
Cichorium intybus	Chicory	OF
Coptis groenlandica	Goldthread	SSHF
Coronilla varia	Purple crownvetch	OF
Daucus carota	Queen Anne's lace	OF
Dicentra cucullaria	Dutchman's breeches	BMF
Echinocystis lobata	Wild cucumber	OF
Equisetum palustre	Marsh horsetail	RM
Euphorbia cyparissias	Cypress spurge	SSHF
Fragaria spp.	Strawberry	OF
Galium aparine	Cleavers	SSHF
Hepatica americana	Round-lobed Hepatica	SSHF, BMF
Hypericum spp.	St. John's wart	SSHF, BMF
Impatiens capensis	Jewelweed	RM
Lemna spp.	Duckweed	RM
Lycopodium spp.	Clubmoss	BMF
Lythrum salicaria	Purple loosestrife	CR/Pl
Phytolacca americana	American pokeweed	OF
Plantago major	Common plantain	OF, ML
Polygonum sagittatum	Arrowleaf tearthumb	RM
Potentilla spp.	Cinquefoil	RM
Ranunculus spp.	Buttercup	OF

Scientific and common names and wetland indicator categories are from Reed (1988) and Tiner et al. (1995).
Newcomb, Lawrence. 1977. Newcomb's Wildflower Guide. Little, Brown and Company. Boston.
Reschke, Carol. 2002. Ecological Communities of New York State. 2nd ed. New York Natural Heritage Program. New York State Department of Environmental Conservation. Albany, NY.
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Pond Red maple swamp: RM Southern successional hardwood forest: SSHF

List of Identified Flora of Silo Ridge and Habitat Association (cont.)

Herbs (cont.)		
Rudbeckia hirta	Black-eyed Susan	OF
Sanguinaria canadensis	Bloodroot	BMF
Sisymbrium officinale	Hedge mustard	OF
Smilacina racemosa	False solomon's seal	BMF
Solidago canadensis	Canada goldenrod	OF
Sphagnum spp.	Sphagnum	HBBT
Symplocarpus foetidus	Skunk cabbage	RM
Taraxacum officinale	Common dandelion	OF, ML
Thalictrum spp.	Meadow-rue	OF
Thalictrum thalictroides	Rue anemone	BMF
Trifolium campestre	Field clover	OF
Trifolium pratense	Red clover	OF
Trifolium repens	White clover	OF
Tussilago farfara	Coltsfoot	RM
Trillium erectum	Red trillium	SSHF
Viola macloskeyi	Small white violet	RM
Veratrum viride	False hellebore	RM
Ferns		
Adiantum pedatum	Northern maidenhair fern	BMF
Athyrium filix-femina	Common ladyfern	BMF
Dryopteris marginalis	Marginal woodfern	BMF
Matteucchia struthiopteris	Ostrich fern	RM, HBBT
Onoclea sensibilis	Sensitive fern	RM
Osmunda cinnamomea	Cinnamon fern	RM, HBBT
Polypodium vulgare	Common polypody	BMF
Polystichum acrostichoides	Christmas fern	BMF
Pteridium aquilnum	Brackenfern	BMF
Thelypteris noveboracensis	New York fern	BMF, SSHF
Thelypteris palustris	Marsh fern	RM, EM/SS, HBBT
Vines		
Toxicodendron radicans	Poison ivy	BMF, SSHF
Vitis spp.	Grapevine	BMF
Grasses and Sedges		
Andropogon spp.	Broomsedge	OF
Carex pensylvanica	Pennsylvania sedge	SSHF
Carex stricta	Upright sedge	EM/SS, RM, HBBT
Eleocharis spp.	Spikerush	EM/SS, RM
Juncus effusus	Soft rush	EM/SS, RM
Phalaris arundinacea	Reed canarygrass	EM/SS
Phragmites australis	Common reed	CR/PL
Poa spp.	Bluegrass	OF
Scirpus cyperinus	Woolgrass	EM/SS
Typha latifolia	Broad leaved cattail	EM/SS

Scientific and common names and wetland indicator categories are from Reed (1988) and Tiner et al. (1995).
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Reschke, Carol. 2002. Ecological Communities of New York State. 2nd ed. New York Natural Heritage Program. New York State Department of Environmental Conservation. Albany, NY.
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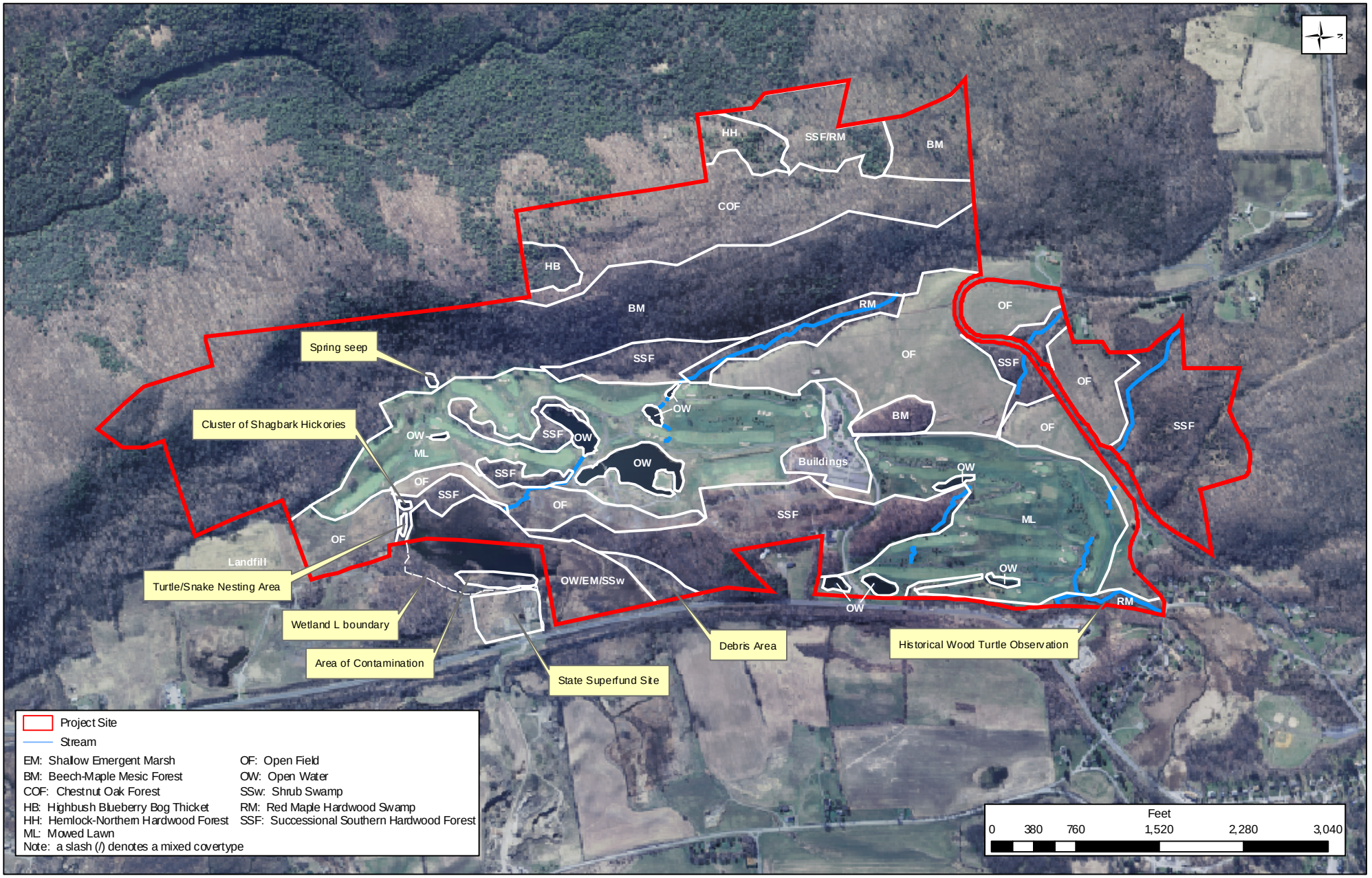
Hemlock: H Mowed lawn: ML Old field: OF……. Highbush blueberry bog thicket…..HBBT
Pond Red maple swamp: RM Southern successional hardwood forest: SSHF

Appendix D:
Vegetative Cover Map



THE Chazen COMPANIES
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North Country Office:
100 Glen Street
Glens Falls, New York 12801
Phone: (518) 812-0513

Silo Ridge Resort Community

Vegetative Cover Map

Town of Amenia
Dutchess County, New York

Drawn:	J.F.T.
Date:	02/07/2007
Scale:	1:14,339
Project:	10454.00
Figure:	SP1

Appendix E:
Photographic Log

Photo #1
Overview of Wetland L from the southwest corner of the wetland.

Photo #2
Large oak trees along edge of slope northwest of Wetland L.

Photo #3
Edge of forest and golf course located in the south central portion of the site.

Photo #4
Facing south at Wetland L along northern wetland line.

Photo #5
Overview of golf course near Pond Z.

Photo #6
Overview of golf course and ridge near the southern boundary of the golf course.

Photo #7
Amenia/Cascade Brook along State Route 22.

Photo #8
Facing downstream on Stream S. Area surrounded by mixed successional hardwood forest.

Photo #9
An open mowed field in the northwest portion of the property.

Photo #10
A chestnut oak forest community on top of the ridge in the western portion of the property.