Appendix I

Revised Ecological Reports (DEIS Appendix 9.7)

Habitat Assessment Report

Silo Ridge Country Club Golf Resort Community

State Route 22
Town of Amenia
Dutchess County, New York

May 2006
Revised: May 2008

THE Chazen COMPANIES®
Engineers / Surveyors
Planners
Environmental Scientists

Prepared for:

Higher Ground Country Club
Management Co., LLC
P.O. Box 86, Route 22
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Habitat Assessment Report

Silo Ridge Country Club Golf Resort Community

State Route 22
Town of Amenia
Dutchess County, New York

TCC Project #: 10454.02

THE Chazen COMPANIES®
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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. The project area is located on New York State Route 22, in the Town of Amenia, Dutchess County, New York. This project calls for the existing golf course to be redeveloped. The redesigned golf course will include approximately 64 acres of managed in-play area, and when combined with the proposed residential and commercial developments the site's development plan includes roughly 154 acres of new or redeveloped land. The proposed plan includes over 335 acres of preserved or enhanced forest habitats, 24 acres of preserved wetland habitat, and roughly 134 acres of preserved or enhanced grassland habitats (e.g., fields, meadows and re-vegetated lands). Roughly 21 acres of existing aquatic habitats (ponds, streams) and newly impounded waters (e.g., storm water management basins) round out the total acreage at the site.

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 New York Natural Heritage Program (NYNHP) to obtain information concerning the presence or absence of endangered, threatened, and/or rare species (ETR species).

This report presents the findings of the initial habitat assessment conducted by TCC in 2005/2006, and the results of additional ecological studies that were conducted on the property in 2007. The 2007 studies were completed upon request by the Town of Amenia Planning Board. These additional ecological studies include a Bog Turtle Phase I and Phase II study, Reptile and Amphibian Study, Breeding Bird Survey, Indiana Bat Mist Netting, and a Botanical Survey. The Botanical Survey was limited in scope and completed within the proposed development areas located along the base of the ridge.

Based upon all the studies conducted on the property, no Federally- or New York State-threatened or endangered flora or fauna were documented on the property. However, Hill's pondweed (*Potamogeton hillii*), a State threatened species, is documented within NYSDEC wetland AM-15. Wildlife and plant species documented on the project site are generally secure within New York State (NYS). However, several NYS Special Concern species and NYS Species of Greatest Conservation Need (SGCN) were observed at the site. To mitigate for potential adverse impacts to these species, TCC has developed a Habitat Management/Buffer Management Plan. The Plan identifies management recommendations for enhancing and protecting existing habitats and fish/wildlife populations on site. The Buffer Management Plan specifically addresses measures that will be taken to minimize and mitigate the effects of development and site land uses on sensitive natural resources at the site. These include wetlands and aquatic habitats that have the highest potential for impacts from development and site activities. The buffer plan identifies various types of vegetative plantings (e.g., species composition and planting areas/densities) that will be used to enhance existing aquatic and

terrestrial habitats while also functioning to attenuate degrading effects of nutrient and contaminant loading to these sensitive habitats.

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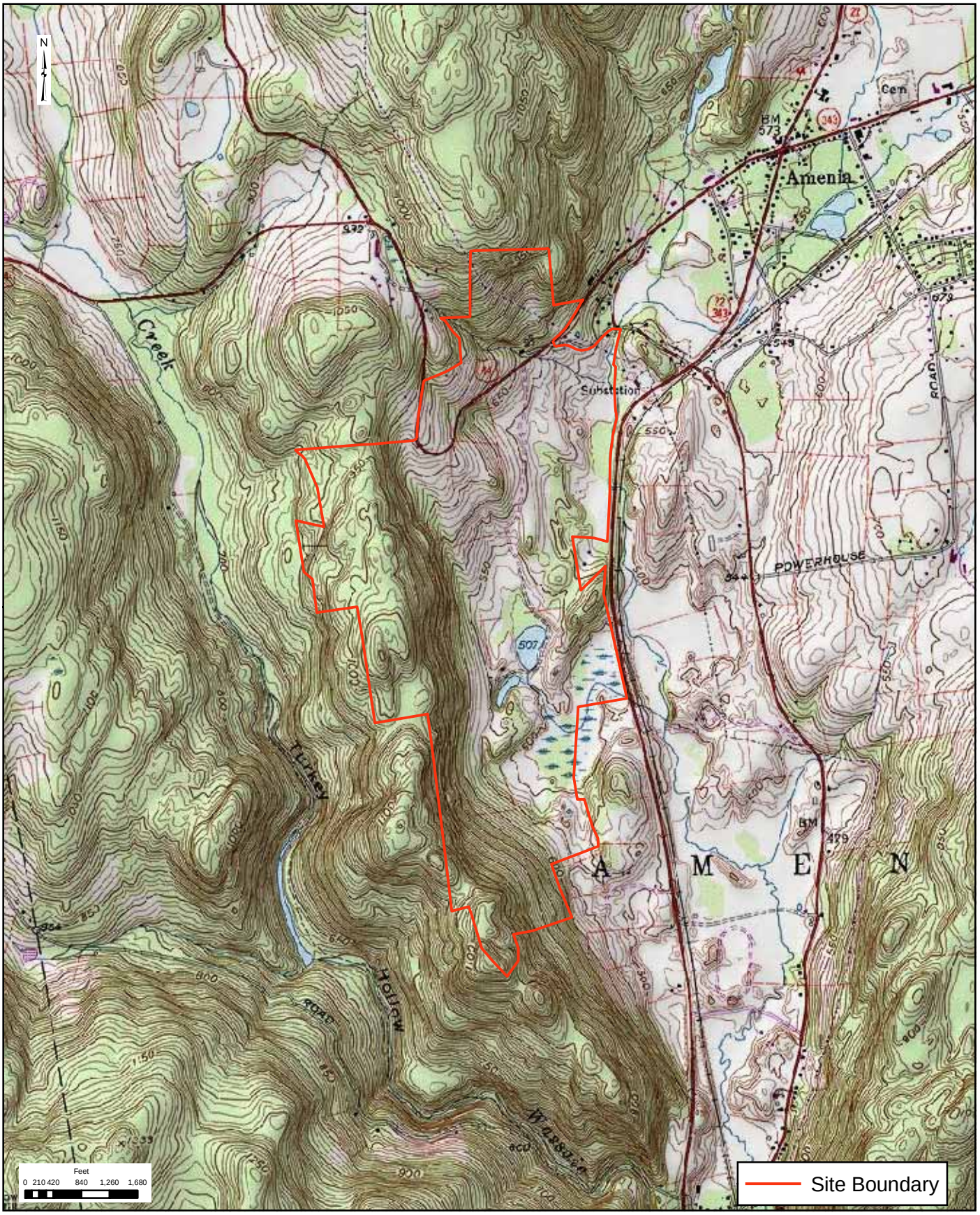
1.0 INTRODUCTION

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 findings of the initial habitat assessment work conducted by TCC in 2005/2006, and additional ecological studies that were conducted on the property in 2007, upon the request by the Town of Amenia Planning Board.

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

The Property currently consists of a 128-acre golf course along with a country club. Several maintenance facilities are also located at the Property. 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 southeast-central portion of the Property.

Work on this project was conducted by the Ecological Staff of TCC. This group consists of David Tompkins, Steven Finch, Jason Tourscher, and Auggie Ruggiero. TCC staff was assisted by Richard Stechart, a local herpetological consultant for issues regarding rattlesnakes and turtles; Norbert Quenzer, a USFWS qualified bog turtle surveyor; Dr. Charlie Smith, a prominent ornithologist in New York State. Resumes for these individuals are included in Appendix A.



THE Chazen COMPANIES

Silo Ridge Resort Community

Site Location Map

Town of Amenia, Dutchess County, New York

Source: USGS Topographic Map. 1958 (photorevised 1984). Amenia Quadrangle.

Drawn by: JFT

1 inch equals 2,000 feet

Fig. 1

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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 on-site field investigations. The field investigations were 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[1] 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 B, "Correspondence."

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 (*Clemmys muhlenbergii*), a Federally-threatened and State-endangered species, was documented by the NYSDEC to be found within a mile of the project site. Timber rattlesnakes (*Crotalus horridus*), a State-threatened species, were documented within 1.5 miles from the Property. Also Hill's pondweed (*Potamogeton hillii*), a State-threatened species was documented within NYSDEC wetland AM-15, a portion of which is located within the Property.

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- and State-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 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.

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

[1] April 13, 2005

2.2 Field Investigations

TCC staff biologists and support staff conducted numerous field investigations at the Property. These field investigations included habitat assessments, bog turtle surveys, breeding bird surveys, etc. It should be noted that during wetland-related activities (i.e., wetland delineation), incidental observations of wildlife were noted and ecological communities were characterized. Therefore, these wetland activities were included as part of the habitat assessment. The amount of person-hours dedicated to each specific task conducted during the field investigations are presented below in Table 1.

Table 1: Work Field Days

Dates	Staff	Search Hours (Person-hours)	Activity
4/20/2005	SF, DT, RS	23	Habitat Assessment
5/3/2005	SF, AR	10	Wetland Delineation
	SF, AR	9	Habitat Assessment
5/5/2005	SF, AR	12	Wetland Delineation
	SF, AR	5	Habitat Assessment
5/6/2005	SF, AR	8	Wetland Delineation
	SF, AR	10	Habitat Assessment
5/12/2005	SF, AR	20	Habitat Assessment
5/24/2005	SF, JT	5	Wetland Delineation
	SF, JT	10	Habitat Assessment
11/3/2005	SF, JT	4	Wetland Delineation
	SF, JT	10	Habitat Assessment
4/3/2007	NQ	5	Phase I Bog Turtle Survey
	SF, RS	12	Amphibian and Reptile Survey
4/19/2007	SF, JT	10	Amphibian and Reptile Survey
4/24/2007	NQ, RS, DT, SF	24	Phase II Bog Turtle Survey
5/4/2007	NQ, RS, DT, SF	22	Phase II Bog Turtle Survey
5/10/2007	NQ, DG, SF, JT	20	Phase II Bog Turtle Survey
5/14/2007	SF, DG	14	Amphibian and Reptile Survey
5/15/2007	JT	8	Botanical Survey
6/1/2007	NQ, DT, SF, JT	17.5	Phase II Bog Turtle Survey
6/11/2007	CS, SF, JT	25.5	Breeding Bird Survey
6/12/2007	CS, SF, JT	18	Breeding Bird Survey
6/20/2007	JT	8	Botanical Survey
6/21/2007	JT	8	Amphibian and Reptile Survey
6/25/2007	CS, DT, JT	22.5	Breeding Bird Survey
6/26/2007	CS, JT	13	Breeding Bird Survey
8/7/07	MF, MC, JT, SF	8	Indiana Bat Mist Net Survey
8/8/07	MF, MC, JT, SF	8	Indiana Bat Mist Net Survey
Total Field Days		23	
Total Man Hours		369.5	*Total man hours does not include drive time

Notes: AR-Auggie Ruggiero, CS-Dr. Charlie Smith, DT-David Tompkins, MC- Michael Cooper, MF-Michael Fishman, NQ-Norbert Quenzer, RS-Richard Stechert, SF- Steven Finch, JT-Jason Tourscher

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.[2] 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.

At the request of the Town of Amenia Planning Board, a botanical survey was conducted on a portion of forested area between the western edge of the existing golf course and the base of the steep ridge, with the proposed disturbance area as the primary survey area. This survey was conducted because the Town of Amenia Planning Board had recommended a review of the vegetative communities within this area and they had requested a list of species observed during the survey. There was a concern that this area, primarily a maple-beech community formed on calcareous rocks along the base of the ridge, may support rare plants.

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

[2] 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.

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 C.

2.2.3 Reptiles and Amphibians

Methods used to detect reptiles and amphibians included over-turning logs, debris, and large stones to reveal herptile species underneath. The project area was randomly traversed along stream corridors, wetlands, ponds, and upland areas (excluding the fairways and greens). Observations were noted by vocal calls, sight, and egg masses. Potential migration routes between aquatic systems were also surveyed.

2.2.3.1 Bog Turtles

To determine if suitable habitat for bog turtles exists onsite, a Phase I Bog Turtle Survey was conducted by Norbert Quenzer, who is recognized by the NYSDEC and USFWS as a qualified bog turtle surveyor. The Survey was conducted as outlined in the United States USFWS's Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan[3] and the Guidelines for Bog Turtle Surveys (revised April 2006)[4]. As a result of the Phase I survey, approximately 3-acres of suitable habitat (i.e., designated survey area") for bog turtles was identified.

A Phase II survey was led by Mr. Quenzer with assistance from TCC staff including Mr. David Tompkins, Mr. Steven Finch, Mr. Jason Tourscher, Mr. David Griggs, and Mr. Randy Stechert. The Phase II Survey was conducted from late April through early June (see Table 1). The site was surveyed using standard techniques recommended by the USFWS. These include traversing the site using visual and tactile search methods. The tactile search effort was enhanced by use of small hand-held rakes that helped facilitate searching under tussocks and other vegetation. During the field surveys, general observations of other wildlife species and habitat characteristics were recorded as well as other site characteristics were noted and recorded. The surveys started at approximately 1030 hours and concluded at approximately 1530 hours, with a total of approximately 20 man-hours per field visit. A total of 83.5 search-hours were spent surveying within the "designated survey area". According to the USFWS's recommendations, the required search time for this Phase II Survey is 48 to 72 person hours. This is based upon a minimum of 4-6 person hours/acre of designated habitat (i.e., 3-acres onsite)/visit, with 4 visits minimum. Therefore, the Phase II Survey effort exceeded the requirements set by the USFWS.

[3] U.S. Fish and Wildlife Service. 2001. Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan. Hadley, Massachusetts. 103 pp.
[4] U.S. Fish and Wildlife Service. 2006. Guidelines for Bog Turtle Surveys. 8 pp.

2.2.4 Mammals

Field methods to detect land 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.

To determine the presence/absence of Indiana bats at the Property and to identify and bat species which may be present, a mist netting survey was conducted in August 2007. The survey was conducted following federal protocols[5] established by the USFWS.

2.2.5 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. 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 map, 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 provides an illustration of the overall site topography.

[5] USFWS. 2007. Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision.

3.2 Soils

According to the 2002 *Dutchess County Soil Survey*,[6] 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 2, "Soils 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 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

[6] USDA. 2002. Soil map for Dutchess County, New York.

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.

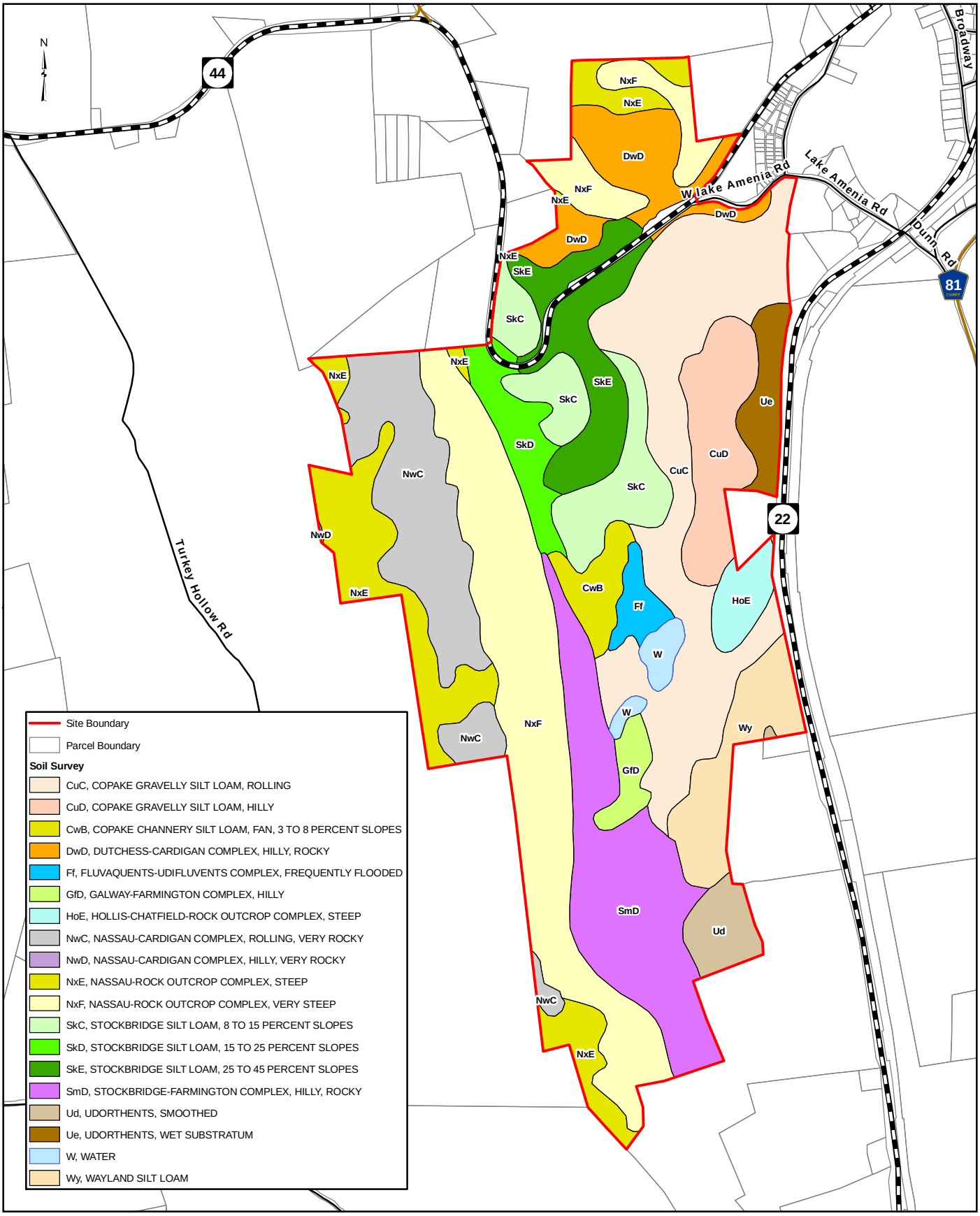
Stockbridge silt loam, 25 to 45 percent slopes (SkE) – This soil unit is located in the northern portions of the property. This mapping unit consists of very deep, sloping, and well drained Stockbridge soils that formed in glacial till deposits. Slopes are complex and range from 25 to 45 percent. Permeability 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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Silo Ridge Resort Community

Soils Map

Town of Amenia, Dutchess County, New York

Source: USDA Natural Resource Conservation Service, 2003.

Drawn by: CLC

1 inch equals 1,333 feet

Figure 2

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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[7] is for waters that support fisheries and are suitable for non contact activities. Table 2 below lists brief descriptions of each stream on-site and Table 3 provides a description of the on-site ponds.

Table 2: Stream Characteristics

Stream Name[8]	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

Table 3: 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,*[9] *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,

[7] 6 NYCRR 682.5

[8] 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.

[9] 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.

[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.

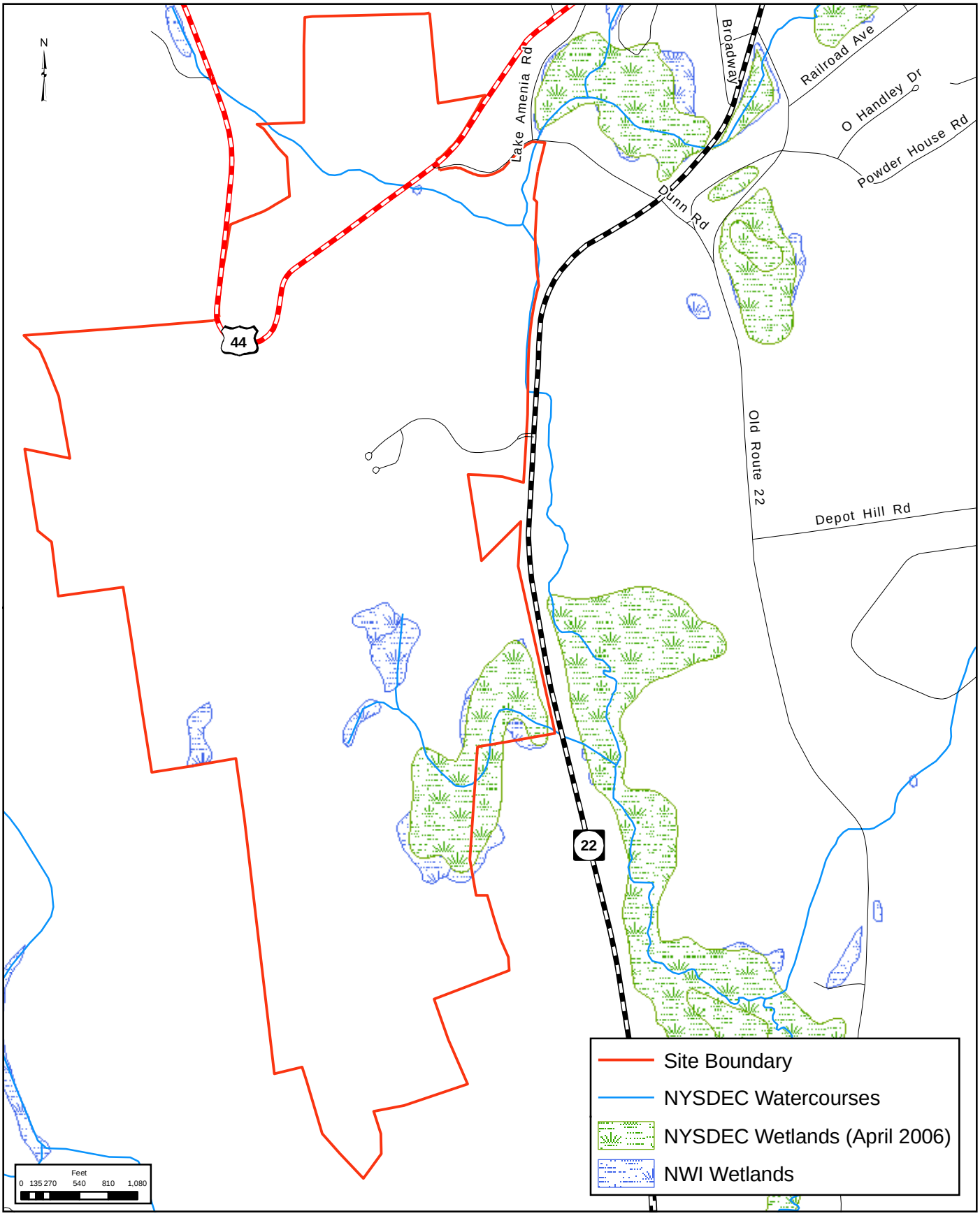
Table 4 "NWI Definitions" defines the terms used to describe these wetlands identified within the project area. Figure 3, "NWI and NYSDEC Wetland Mapping" provides an illustration of these wetland resources adjacent to the study area.

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 4: 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	



THE Chazen COMPANIES

Silo Ridge Resort Community

NWI and NYSDEC Wetland Mapping

Town of Amenia, Dutchess County, New York

Source: USGS Topographic Map. 1958 (photorevised 1984). Amenia Quadrangle.

Drawn by: JFT

1 inch equals 1,250 feet

Figure 3

Map Document: (N:\1\10400-10500\10454.00 silo Ridge\GIS\maps\Habitat Assessment Report\10454.02_NWI and NYSDEC Wetland Map_8x11.mxd)
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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

4.1.1 Ecological Communities

TCC staff identified over 276 plant species within ten vegetative communities as described in *Ecological Communities of New York.*[10] 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 C. This table provides a list of plants that were identified at the Property. Figure 4, "Vegetative Cover Map," illustrates the approximate location of each of the vegetative community types identified within the boundaries of the Property. A photographic log of the various communities located within the boundaries of the Property is also 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., 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. This area is noted on Figure 4.

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

[10] 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.

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 (as designated in the Wetland Delineation Report) 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 typically 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 were between 12 and 18 inches dbh. 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 (*Typha 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 is common in this area. 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.

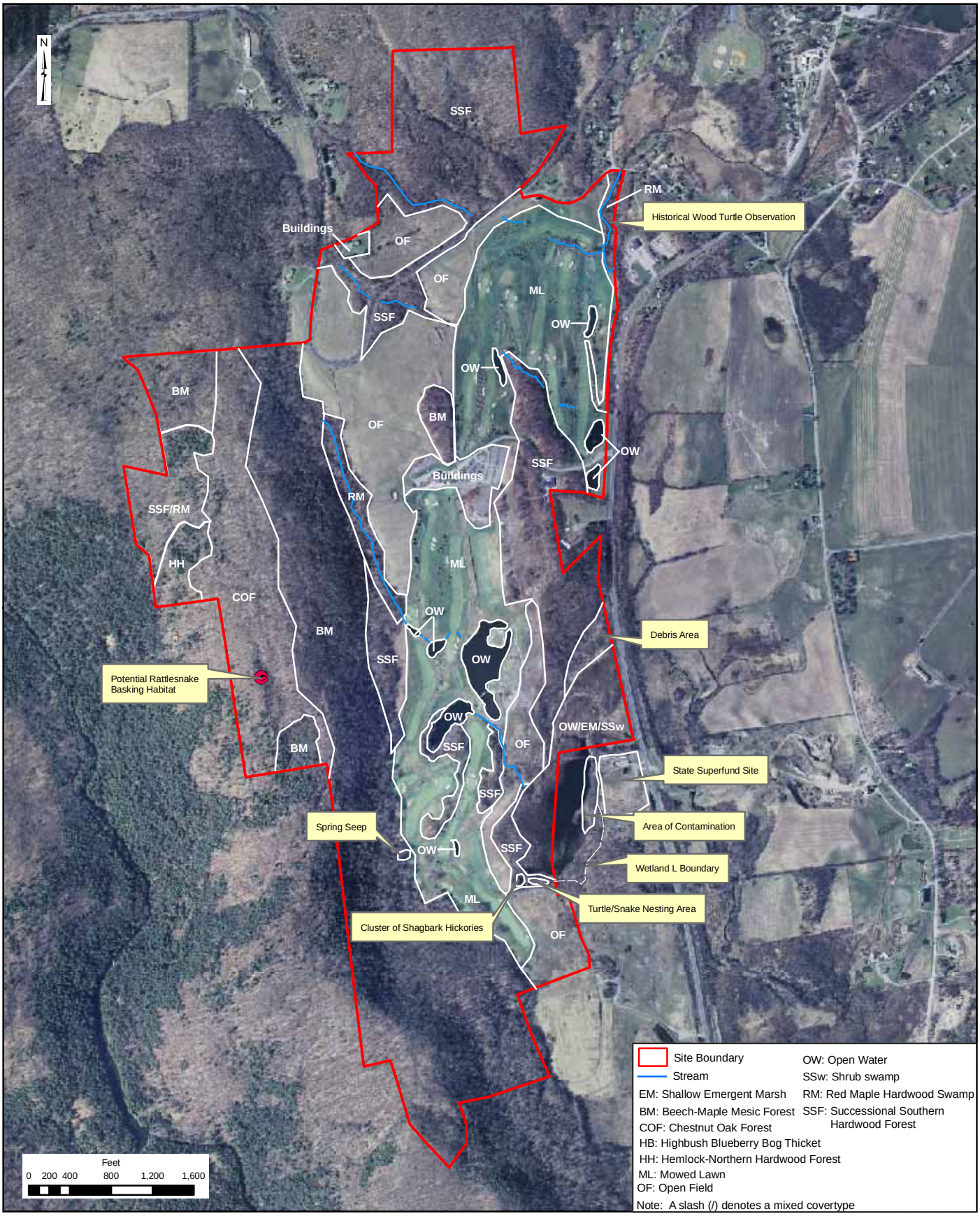
Shrub swamp – This community is an inland wetland dominated by tall shrubs that occurs along the shores of a lake or river, in a wet depression or valley not associated with lakes, or as a transitional zone between a marsh, fen, or bog and a swamp or upland community. This community is located along 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. 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 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.



THE Chazen COMPANIES

Silo Ridge Resort Community

Vegetative Cover Map

Town of Amenia, Dutchess County, New York

Source: NYS Office of Technology 2004 Orthophoto

Drawn by: JFT

1 inch equals 1,300 feet

Figure 4

Map Document: (N:\1\10400-10500\10454.00 silo Ridge\GIS\maps\Habitat Assessment Report\10454.02_Vegetative Cover Map_8x11.mxd)
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4.1.2 Botanical Survey (Base of Ridge)

The northern portion of the Botanical Survey area (see Figure 5) is primarily a mature successional hardwood forested community with red maple swamp communities associated with Wetland/Stream J. This area is dominated by sugar maples (*Acer saccharum*), red maples (*Acer rubrum*), and gray birch (*Betula populifolia*). The trees range in size from approximately 10 to 24 inches in diameter at breast height (dbh) with occasional larger trees. The understory is dominated by spicebush (*Lindera benzoin*) and tatarian honeysuckle (*Lonicera tatarica*). The ground layer consists of garlic mustard (*Alliaria petiolata*), field pansy (*Viola bicolor*), and Christmas fern (*Polystichum acrostichoides*). This mixed community type is common in New York State. This portion of the study area does not show recent human activities, except immediately adjacent to the golf course where multiflora rose and blackberry (*Rubus* sp.) dominate.

The central portion of the Botanical Survey Area contains more undulating topography. The community type within this section is a mature beech-maple mesic forest. This area is dominated primarily of sugar maples along with American beech (*Fagus grandifolia*), black cherry (*Prunus serotina*), and hophornbeam (*Ostrya virginiana*). The trees range in size from approximately 10 to 24 inches dbh with occasional larger trees. The understory is dominated by tatarian honeysuckle. The ground story consists primarily of garlic mustard and Christmas fern. Evidence of old stone walls was found in this area, suggesting that this area may have at one time been farmed or used for grazing.

The southern portion of the Botanical Survey Area is a young beech-maple/successional forest community that transitions into an older successional forest at the southern end of the property. The area is dominated by sugar maples, with a mixture of beech and oaks. The trees range in size from approximately 10 to 18 inches dbh with occasional larger trees. There are patches of forested area where trees are 8-12 inches in dbh. The understory is patchy containing honeysuckle and multiflora rose. The ground story is dominated garlic mustard. The forest in this section of the study area appears to have been impacted by old logging practices, primarily selective cutting. Old logging roads are also in this area and connect directly to the golf course. It appears that people still use these old logging roads for ATV use.

THE Chazen COMPANIES

Silo Ridge Resort Community

Botanical Survey

Town of Amenia, Dutchess County, New York

Source: NYS Office of Technology 2004 Orthophoto

Drawn by: JFT

1 inch equals 1,250 feet

Fig. 5

Map Document: (N:\11\10400-10500\10454.00 silo Ridge\GIS\maps\AdditionalStudies\Figure 5.3-3 Botanical Survey.mxd)
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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 throughout the site, no federally or state endangered or threatened plant species have been identified within the project area. Two plant species found within the study area, bloodroot (*Sanguinaria canadensis*) and red trillium (*Trillium erectum*) are listed by the NYSDEC, under the NYSDEC Protected Plant List, as species of exploitably vulnerable native plants. The NYSDEC defines these species of exploitably vulnerable native plants as "likely to become threatened in the near future throughout all or a significant portion of their ranges within the state if casual factors continue unchecked." Native ferns, excluding Christmas ferns (*Polystichum acrostichoides*), were also observed within the Property. These native ferns are also listed as exploitably vulnerable species.

The east facing slope of the ridge is forested and contains a number of calcareous rock outcrops. These rock outcrops contain plants that are typically found only within calcareous conditions. Some of these plants observed include walking fern (*Asplenium rhizophyllum*), maidenhair spleenwort (*Asplenium trichomanes*), lyre-leaved rockcress (*Arabis lyrata*), and wild columbine (*Aquilegia canadensis*). Walking fern is sparse within this region of New York and is listed, like most of the ferns of New York, as exploitably vulnerable. Because the proposed development is primarily along the base of the ridge, away from the rock outcrops, it is TCC's opinion that the

proposed development will have little adverse effects to the calcareous species growing on the slope. Most of these species can also be found in other portions of the property or in adjacent properties.

Hill's pondweed was not observed during a site observation conducted 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, 128 species of wildlife were observed during the site visit. It was documented during 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 breeding bird survey and field investigations, 87 species of birds were observed on or within the immediate vicinity of the Property. Bird species observed at the site either through sightings, calls, or nest evaluations are listed below (Table 5). Appendix E, "Breeding Bird Survey Report", provides a detailed description of the findings of the Breeding Bird Survey, as presented by Dr. Charles Smith.

Most of the birds found are species commonly found within the northeast deciduous forests. The birds found in each type of ecological communities within the property are species that are commonly associated with these habitat communities found on-site. The high species count is attributed to the size of the property and the number of community types and transition areas between each community. 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*).

No ETR species were observed within the property. Birds are highly mobile and the anticipated activities within the property should only cause only temporary disturbances to the birds. Most of the proposed open spaces which will include the ridge, some areas along the base of the ridge,

open fields in the northern and southern portions of the property, the existing upland "islands", and the wetlands and watercourses within the property will still accommodate most (if not all) of the species currently utilizing the Property. These proposed open spaces will still accommodate all of the existing habitat types currently existing within the Property.

Two NYSDEC species of Special Concern, which include a Cooper's hawk (*Accipiter cooperii*) and a red-shouldered hawk (*Buteo lineatus*), have been observed within the property in past site visits since April of 2005. The NYSDEC defines species of Special Concern as any native species for which a welfare concern or risk of endangerment has been documented in New York State. Although these species are documented by NYSDEC, there is no special NYSDEC protection given to these species.

Table 5: Bird Species Observed During Habitat Assessment

Common Name *Scientific Name*	Location			
	6/11/2007	6/12/2007	6/25/2007	6/26/2007
Cooper's Hawk[1,3] *Accipiter striatus*				
Red-winged Blackbird *Agelaius phoeniceus*	Wetland L (throughout)	Wetland L (throughout)	Old field	Golf course
Wood Duck *Aix sponsa*		Wetland L (southcentral)		
Mallard *Anas platyrhynchos*		Wetland L (southwestern)		
Ruby-throated Hummingbird *Archilochus colubris*		Golf course (Old Field)		
Great Blue Heron[3] *Ardea herodias*				
Tufted Titmouse *Baeolophus bicolor*	Golf course (SSF), Ridge (COF)	SFF north of Wetland L	Golf course (SSF)	Base of ridge
Cedar Waxwing *Bombycilla cedrorum*	Golf course (Mowed lawn)	Golf course (Mowed lawn)		Golf course, house
Canada Goose[4] *Branta canadensis*	Wetland L			
Great Horned Owl[3] *Bubo virginianus*				Golf course (feather)
Red-tail Hawk *Bueto jamaicensis*	Base of ridge (north end)	Base of ridge (north end)	Base of ridge (north end)	Base of ridge (north end)
Red-shouldered Hawk[1,3] *Buteo lineatus*				
Green Heron *Butorides virescens*	Golf course (Wetland N)	Golf course (Wetland L)		Wetland L

Common Name *Scientific Name*	Location			
	6/11/2007	6/12/2007	6/25/2007	6/26/2007
House Finch *Capodacus mexicanus*	Golf course (Club house)	Golf course	Golf course	Golf course
Northern Cardinal *Cardinalis cardinalis*	Base of ridge	House	Ridge	House
American Goldfinch *Carduelis tristis*	Golf course (Mowed lawn)	Golf course (Mowed lawn)	Old field	Golf course
Purple Finch *Carpodacus purpureus*			Base of ridge	
Turkey Vulture[4] *Cathartes aura*	Golf course (Mowed lawn)	Golf course	Golf course	Golf course
Veery *Catharus fuscescens*	Ridge	Ridge	Ridge	SSHF, Base of ridge
Hermit Thrush *Catharus guttatus*	Ridge (HH)		Ridge	
Belted Kingfisher *Ceryle alcyon*		Wetland L (southwestern)		Amenia Creek corridor
Chimney Swift *Chaetura pelagica*				Old silos on north end of golf course
Killdeer (and 2 eggs in nest) *Charadrius vociferous*	Golf course (Mowed lawn)	Golf course (Mowed lawn)	Golf course (Mowed lawn)	Golf course (Mowed lawn)
Northern Flicker *Colaptes auratus*	Base of ridge	Base of ridge	Ridge	Golf course, base of ridge
Eastern Wood-Pewee *Contopus virens*	Base of ridge	Ridge	Ridge	SSHF, golf course upland “islands”, WWTP
Rock Pigeon *Columba livia*	Golf course (Silo’s)	Golf Course	Golf course	Golf course (flyover)
Black Vulture[3,4] *Coragyps atratus*				
American Crow *Corvus brachyrhynchos*	Golf course	Golf course	Old field	Base of ridge, SSHF
Common Raven *Corvus corax*			Field	Field
Fish Crow[3] *Corvus ossifragus*	Golf course			
Blue Jay *Cyanocitta cristata*	Wooded “island” north of clubhouse	Base of ridge	Old field, golf course	Golf course
Prairie Warbler[2] *Dendroica discolor*	Golf course (Shrubland), Old Field	Golf course (Shrubland), Old Field	Shrubland	Golf course, house
Palm Warbler[3] *Dendroica palmarum*				

Common Name *Scientific Name*	Location			
	6/11/2007	6/12/2007	6/25/2007	6/26/2007
Chestnut-sided Warbler *Dendroica pensylvanica*	Golf course (Shrubland)	Golf course (Shrubland)		Base of ridge, house, WWTP
Yellow Warbler *Dendroica petechia*	Golf course (OF, SSF)	Golf course (OF, SSHF)		Golf course
Pileated Woodpecker *Dryocopus pileatus*	Base of ridge (SSF)		Base of ridge	Base of ridge
Gray Catbird *Dumetella carolinensis*	Golf course (Shrubland)	Golf course (Shrubland)	Ridge, base of ridge	Golf course, base of ridge,
Least Flycatcher *Empidonax minimus*	Golf course (SSF-islands)	Golf course (SSF-islands)	Golf course (SSHF-islands)	SSF, Golf course islands
Willow Flycatcher[2] *Empidonax traillii*		Wetland L (Northern)		
Common Yellowthroat *Geothlypis trichas*	Wetland L	Wetland L	Wetland L	Base of ridge
Worm-eating Warbler[2] *Helmitheros vermivorus*			Ridge	
Barn Swallow *Hirundo rustica*	Golf course			
Wood Thrush[2] *Hylocichla mustelina*	Golf course (SSF), Ridge (BM, COF)	Golf course (SSF), Ridge (BM, COF)	Ridge	Base of ridge, WWTP
Baltimore Oriole *Icterus galbula*	Golf Course (ML, SSF)	Golf Course (ML, SSF)	Golf course	House
Orchard Oriole *Icterus spurius*		Golf course (ML-trees)	Base of ridge	Base of ridge
Red-bellied Woodpecker *Melanerpes carolinus*	Base of ridge		Base of ridge	
Wild Turkey *Meleagris gallopavo*				SSHF
Swamp Sparrow *Melospiza georgiana*	Wetland L (throughout)	Wetland L (throughout)	Old field	Wetland L
Song Sparrow *Melospiza melodia*	Golf course (ML), SOF	Golf course (ML), SOF	Old field	Golf course, base of ridge, house
Common Merganser[4] *Mergus merganser*	Golf course (parking area)			
Northern Mockingbird *Mimus polyglottus*	Golf course (Mowed lawn)			SSHF
Black-and-White Warbler *Mniotilta varia*	Top of ridge (COF)	Top of ridge	Top of ridge	Top of ridge, house, WWTP
Brown-headed Cowbird *Molothrus ater*	Golf course (Mowed lawn)	Golf course (Mowed lawn)	Old field	Golf course, WWTP
Great crested Flycatcher *Myiarchus crinitus*	Top of ridge (COF)	Top of ridge	Ridge	
House Sparrow *Passer domesticus*	Golf course (Club house)	Golf course	Golf course	Golf course

Common Name *Scientific Name*	Location			
	6/11/2007	6/12/2007	6/25/2007	6/26/2007
Indigo Bunting *Passerina cyanea*	Golf course (OF), OF (N of Rt. 44)	Golf course (OF), OF (N of Rt. 44)	Field	SSHF, House
Black-capped Chickadee *Poecile atricapilla*	Golf course (Shrubland)	Golf course (Shrubland)	Ridge	Golf course (Shrubland)
Rose-breasted Grosbeak *Pheucticus ludovicianus*	Forest near maintenance building	Tree line north of Wetland L	Ridge	House, SSF
Downy Woodpecker *Picoides pubescens*	Upland "island" between holes 4 and 5	Ridge	Ridge	Stream, WWTP
Hairy Woodpecker *Picoides villosus*			Ridge	
Eastern Towhee *Pipilio erythrophthalmus*	Base of ridge	Ridge	Ridge	Base of ridge, SSF
Scarlet Tanager *Piranga olivacea*	Base of ridge	Tree line north of Wetland L	Ridge	Base of ridge, House, WWTP
Blue-gray Gnatcatcher *Polioptila caerulea*	Golf course (SSF)	Golf course (SSF)		
Common Grackle *Quiscalus quiscula*	Golf course (Mowed lawn)	Golf course (Mowed lawn)	Golf course	Golf course
Virginia Rail[3] *Rallus limicola*				
Bank Swallow *Riparia riparia*	Golf course (Mowed lawn)	Golf course (Mowed lawn)		Golf course
Eastern Phoebe *Sayornis phoebe*	Base of ridge	Golf course	Golf course	Golf course, House
American Woodcock[2] *Scolopax minor*		Golf course (SSF)		
Ovenbird *Seiurus aurocapillus*	Base of ridge, top of ridge	Base of ridge	Ridge	House, WWTP
American Redstart *Setophaga ruticilla*	Woods south of Wetland L	Woods south of Wetland L	Ridge, Base of ridge	SSHF, Base of ridge, WWTP
Eastern Bluebird *Sialia sialis*	Golf course (ML-trees)	Golf course		Golf course
White-breasted Nuthatch *Sitta carolinensis*		Ridge	Ridge	Ridge
Yellow-bellied Sapsucker *Sphyrapicus varius*	Ridge	Ridge	Ridge	House, WWTP
Chipping Sparrow *Spizella passerina*	Golf course (SSF)	Golf course (SSF)	Golf course (SSF), Old field, Base of ridge	Golf course (SSF), Old field, Base of ridge
Field Sparrow *Spizella pusilla*	Golf course (OF), OF (N of Rt. 44)	Golf course (OF), OF (N of Rt. 44)	Old field	SSF, House
European Starling *Sturnus vulgaris*	Golf course (Mowed lawn)	Golf course (Mowed lawn)	Golf course (Mowed lawn)	Golf course (Mowed lawn)

Common Name *Scientific Name*	Location			
	6/11/2007	6/12/2007	6/25/2007	6/26/2007
Tree Swallow *Tachycineta bicolor*	Golf course (Mowed lawn)	Golf course (ML), Wetland L		Golf course
Carolina Wren *Thryothorus ludovicianus*				Forest area south of Wetland L
Brown Thrasher *Toxostoma rufum*				Golf course
House Wren *Troglodytes aedon*	Residential lot (Bird house)	Residential lot (Bird house)		House
American Robin *Turdus migratorius*	Golf course	Golf course	Ridge	Golf course
Eastern Kingbird *Tyrannus tyrannus*	Base of ridge, golf course	Golf course	Old field	Golf course
Blue-winged Warbler[2] *Vermivora pinus*	House	House	Ridge	
Yellow-throated Vireo *Vireo flavifrons*	Golf course (SSF)	Golf course	Ridge	SSHF, House
Warbling Vireo *Vireo gilvus*	Golf course (SSF)	Golf course (SSF)	Golf course (SSF)	Golf course (SSF)
Red-eyed Vireo *Vireo olivaceus*	Ridge	Ridge	Ridge	SSF, Base of ridge, golf course "islands", WWTP
Mourning Dove *Zenaida macroura*	Clubhouse, golf course	Tree line north of Wetland L	Ridge	Golf course, Stream

Source: DeGraaf, RM, and M. Yamasaki. 2001. New England Wildlife: Habitat, Natural History, and Distribution. University Press of New England, Hanover, NH. 482 pgs.
[1] Denotes species is listed on the NYSDEC Species of Special Concerns list
[2] Denotes species is listed on the Audubon Watch List (note: all species observed at the site are listed as Category Yellow species)
[3] Denotes species observed during additional ecological studies conducted by The Chazen Companies, but not during the Survey
[4] Denotes species was observed flying over

4.3.2 Mammals

Twenty one species of mammals were either observed or recognized by their sign on or within the immediate vicinity of the Property (Table 6). 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 Property.

Table 6: Mammalian Species Observed

Scientific Name	Common Name	Habitat
Canis latrans	Coyote (calls, scat)	BMF
Castor canadensis	Beaver (lodge, tree cut)	EM/SS
Eptesicus fuscus	Big brown bat	SSHF
Glaucomys volans	Southern Flying Squirrel	SSHF
Lasiurus borealis	Red bat	SSHF
Marmota monax	Woodchuck	ML

Scientific Name	Common Name	Habitat
*Mephitis mephitis**	Striped skunk (egg predation)	OF
*Microtus pennsylvanicus**	Meadow vole	OF
Myotis lucifugus	Little brown bat	SSHF
Myotis septentrionalis	Northern long-eared bat	SSHF
*Napaeozapus insignis**	Woodland jumping mouse	SSHF
Odocoileus virginiana	White-tailed deer	BMF, SSHF
*Ondatra zibethica**	Muskrat	P
*Peromyscus leucopus**	White-footed mouse	OF
*Peromyscus maniculatus**	Deer mouse	SSFH
Pipistrellus subflavus	Eastern Pipstrel	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

Beech-Maple-mesic forest: BMF Emergent/scrub swamp: EM/SS Mowed lawn: ML Old field: OF
Pond: P Red maple swamp: RM Successional southern hardwood forest: SSHF
*Additional species observed during 2007 studies

4.3.3 Reptiles, Amphibians, and Fish

Seventeen species of reptiles/amphibians and three identifiable fish species were observed during the field investigation (Table 7). Some of these species include green frog (*Rana clamitans*), eastern garter snake (*Thamnophis sirtalis*), and green sunfish (*Leponis cyanellus*). No endangered, threatened, or special concern species were observed within the site.

Snake and turtle egg shells 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.

During the Phase II bog turtle survey conducted on four separate days from late April to early June, no bog turtles were observed within the approximately 3-acres of designated survey area. In addition, there are no records of bog turtles on the Site or in the immediate surrounding area. Other species noted during the survey are provided in the table below. The dominance of invasive species and highly degraded conditions in the surrounding area makes it highly unlikely that bog turtles are present at the Property. Although bog turtles were not observed during the Phase II Survey, there is still a minute chance that they could inhabit the wetland. A complete copy of the Phase II Bog Turtle Survey Report is included in Appendix F.

In addition, to the species listed below, a northern copperhead was reported on the golf course by ground crew on or about June 10, 2007. While this species is known to occur in the area it is not a common species in the golf course area. In addition, because the sighting was not confirmed by trained biologists, we have omitted it from the table, but mention it here for discussion purposes only.

Table 7: Reptiles, Amphibians, and Fish Species Observed

Scientific Name	Common Name	Habitat
Reptiles		
Chelydra serpentine	Snapping turtle	P
Chrysemys picta picta	Eastern painted turtle	P
*Clemmys insculpta**	Wood turtle*	RMS
Coluber constrictor	Northern black racer	OF
Nerodia sipedon	Northern water snake	CM/PL
Thamnophis sirtalis	Eastern garter snake	OF
Amphibians		
Bufo americanus	American toad	BMF
Desmognatuhus fuscus	Northern dusky salamander	RM/Stream J
Eurycea bislineata	Northern two-lined salamander	Stream
Hyla versicolor	Gray tree frog	RM
Notophthalmus viridescens viridescens	Red-spotted newt	BMF
Plethodon cinereus	Redback salamander ("red and leadback" phase)	BMF, RM
Pseudacris crucifer	Spring peeper	EM/SS
Rana catesbeiana	Bullfrog	P
Rana clamitans	Green frog	EM/SS
Rana palustris	Pickerel frog	RM
Rana sylvatica	Wood 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.

4.3.4 Endangered, Threatened, and Rare Wildlife Species

Two NYSDEC species of Special Concern, which include a Cooper's hawk (*Accipiter cooperii*) and a red-shouldered hawk (*Buteo lineatus*), have been observed within the Property in past site visits since April of 2005. These two species were not observed during the breeding bird surveys and most likely do not have nests within the Property. It should also be noted that these two species are not tolerant of human activity; however, following the completion of construction, these species are likely to return to the Property. No other ETR species were seen during the site investigations.

Indiana Bats

During the initial site visits, 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 Indiana bat with summer roosting habitat, was 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) were located in the southwestern corner of Wetland L. 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 was recommended. An Indiana bat mist netting survey was conducted in August 2007 following USFWS protocol. No Indiana bats were trapped during the survey. We believe that if appropriate habitat protection measures are taken to avoid certain trees (i.e., shagbark cluster), potential impact to bats will be avoided. 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 field visits in April 2005 and April 2007 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, and low to marginal quality habitat is located onsite, TCC concludes that bog turtles are not located onsite. A Phase II bog turtle survey conducted at the Property supports this assumption.

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.

While the Silo Ridge Golf Course in located in a diverse, rich ecological system, the Property does not provide significant habitat for any endangered or threatened species. The Property does provide habitat for a multitude of common species routinely found in the surrounding area at abundant population levels. No state or federally listed threatened or endangered fauna were observed during the field investigation. However, two NYS Special Concern species and several NYS Species of Greatest Conservation Need (SGCN) were observed at the site. To mitigate for potential adverse impacts to these species, TCC has developed a Habitat Management/Buffer Management Plan, which incorporates vegetated buffers around aquatic resources and enhancement recommendations for the existing habitats. Historical wood turtle sightings (a NYSDEC special concern species) have also been observed within the Cascade/Amenia Brook system near the Town of Amenia Highway Department located adjacently northeast of the Silo Ridge property.

Various historical land use activities, both onsite and offsite have significantly altered the landscape. This has resulted in a distinctly disturbed habitat type in some areas of the Property. This has decreased the habitat suitability of the Property for some species. Areas surrounding the gold course, especially to the west, provide vast undisturbed forested habitat that support a large variety of forest dwelling species. No development is proposed in this area.

Wetland L, a large wetland complex on the east end of the Property, which contains open water, emergent zones and forested wetland fringes, has been significantly altered by historical land use activities which have resulted in degradation of habitat quality, degradation of water quality and colonization by invasive species. This area has been determined to not contain bog turtles and to represent poor quality habitat for bog turtles.

Based on the results of the breeding bird survey, species utilizing the golf course and surrounding area are fairly common in New York State, as such the proposed development will not have significant impacts to the majority of bird species on the Property. Birds are highly mobile and will disperse from areas of proposed impacts during construction. No ETR species were found, thus it is likely that no ETR species will be affected by the construction activities. As a general recommendation to promote the recruitment of additional species, it is suggested that additional wildlife management opportunities, such as specific planting, construction of nest boxes, etc., be introduced into the site design, if desired.

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.

Overall, the results of the habitat assessment support TCC's position that the proposed redevelopment of the Silo Ridge golf course will not have an adverse impact on ecological resources both at the Property and in the surrounding area, especially if construction controls are in place to protect water quality, prevent erosion and sedimentation, and control invasion of exotic species. Disturbance to local population levels for many species will be temporarily experienced during construction. However, following construction and the complete re-vegetation and restoration of the golf course, significant habitat will remain in the area.

Appendix A: Resumes

Dave Tompkins, CWB, PWS

DIRECTOR, SENIOR ENVIRONMENTAL SCIENTIST

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.

EDUCATION

- MS, Wildlife Ecology West Virginia University, 1981
- BA, Environmental Science and Geography, State University of NY 1979

REGISTRATION

- Certified Wildlife Biologist/Wildlife Society
- Professional Wetland Scientist Soc. of Wetland Scientists #318
- Certified Subsurface Evaluator DEP, NJ

AFFLIATIONS

- Assoc. of State Wetland Managers
- SETAC-North Atlantic Chapter
- Society of Wetland Scientists
- National Registry of Environmental Professionals
- The Wildlife Society

TRAINING

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

PROJECT EXPERIENCE

WETLAND DELINEATION AND PERMITS

NYSDOT PIN 9804.17.101 CONTRACT D015617 PIN S082.00, WETLAND DELINEATION FOR BRIDGE REHAB/REPLACEMENT INTERSTATE BRIDGE #7, TOWN OF CALICOON, SULLIVAN COUNTY, NY

Mr. Tompkins directing TCC staff flagged the boundary of each onsite wetland in accordance with the Army Corps of Engineers Wetlands Delineation Manual. The work was preformed during the appropriate field season (i.e. growing season) and the limits of the delineation where 500 feet upstream of the proposed crossing "D" to 500 feet downstream of the proposed crossing "F". In addition to flagging the river bank, wetland areas surrounding proposed construction access roads were surveyed. Data points and representative photographs of the uplands and wetlands were taken for inclusion in the delineation report. The report consisted of the introduction of the area including discussion of site location, limits of study area, soils, hydrology, plant communities, and existing mapping resources. In addition, provided was the approximate total wetland area and approximate wetland area within the proposed road crossings, as well as an opinion on the regulatory status of the wetlands on site.

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 a 1.85 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.

THE Chazen COMPANIES®

DUTCHESS COUNTY AIRPORT LANDFILL, LANDFILL BOARD OF TRUSTEES, TOWN OF WAPPINGERS FALLS, NY

Remediation efforts at this site required the delineation of wetlands and ecological resources to minimize and compensate for impacts. Subsequently, 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 wetlands to be established after remediation was completed.

HABITAT/BIODIVERSITY EVALUATION

NATIONAL GRID - HABITAT CONSERVATION PLAN AND INCIDENTAL TAKE PERMIT

TCC has put together an outstanding project team to conduct this work for National Grid, which consists of many members of our staff who have successfully completed previous National Grid projects. Our team will be lead by David Tompkins, a Senior Director at TCC and a Certified Wildlife Biologist. Mr. Tompkins has previously interacted with National Grid on the 2007 Baseline Survey and reporting. Mr. Tompkins is a seasoned negotiator with regulatory agencies and has an excellent reputation with both the USFWS and the NYSDEC. He has previously interacting with both agencies on various wildlife issues including birds, reptiles, mammals and plants. Mr. Tompkins will serve as both client manager and technical manager on this project. Mr. Tompkins has been through the NEPA review process on approximately 6 former projects that were for a Federal Agency. All of these projects either required an EA or EIS, and resulted in the issuance of a FONSI.

NYSDOT PIN 9804.17.101– ENDANGERED SPECIES SURVEYS FOR BRIDGE REHAB/REPLACEMENT INTERSTATE BRIDGE #7, TOWN OF CALICOON, SULLIVAN COUNTY, NY

A Phase I Survey for the dwarf wedgemussel, yellow lampmussel, and brook floater was conducted in early summer. The study area was 300m long (100m upstream to 200m downstream of the chosen alignment centerline) and approximately 70m wide (river width at this location). The total size of the study area was approximately 21,000m^2. The study area was delineated into search cells measuring approximately 10m wide x 20m long using GPS (sub-meter accuracy) navigation and a rangefinder. The search cells were outlined with a series of transects lines weighted to the riverbed and buoys. The depth and relative substrate composition was visually assessed at a consistent location within each cell. Water velocity, temperature, dissolved oxygen, pH, conductivity, and water clarity was also recorded at various locations throughout the study area. Each cell was searched using visual and tactual (disturbing the substrate by hand and turning over rocks) methods. Dependent upon the water depth, either snorkeling (<1m deep) or SCUBA diving (>1m deep) was used for 15 minutes.

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, NY AND NJ

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 macro invertebrates (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, PUT. 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 EXPERIENCE

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 Hazardous Materials Inventories, US Postal Service, NY 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.

INDUSTRIAL SITE RESPONSIBILITY ACT INVESTIGATION, METAL PROCESSING PLANT, NJ

Managed a New Jersey ISRA investigation involving a galvanized metal processing plant. Environmental concerns at the site included underground storage tanks, historical dumping, groundwater contamination, chemical storage, storm water management and off-site versus on-site contamination issues.

Developed and managed programs designed for conducting chemical inventories at over 360 U.S. Postal Service facilities in New York State. Assembled inventory data into a centralized database for USPS management.

TANK MANAGEMENT, CONFIDENTIAL COMMERCIAL CLIENT, NY, NJ, MA, CT, MD, VA, TX

Instituted a tank management program for a 120-facility commercial client. Project included tank monitoring, upgrading, removal, remediation, and regulatory compliance.

ENVIRONMENTAL SURVEYS, TURNER CONSTRUCTION, PITTSBURGH, PA

Managed Phase I and II environmental surveys of eight buildings scheduled for demolition in downtown Pittsburgh. Environmental concerns included asbestos, lead paint, fuel tanks biohazards, PCBs and other potentially hazardous materials.

Jason Tourscher

WETLAND SCIENTIST, BIOLOGIST

Mr. Tourscher has over 5 years of experience conducting ecological assessments, natural resource inventories, and wetland consulting services. This work has included habitat evaluations, biodiversity assessments, endangered species surveys, wetland delineations, wetland mitigation projects, water quality monitoring, and radio telemetry monitoring of wildlife. Mr. Tourscher's area of expertise is habitat and biodiversity evaluations. Mr. Tourscher is also proficient with ArcGIS and GPS mapping. In addition to general ecological investigations, Mr. Tourscher has conducted specialized surveys for various wildlife species. Mr. Tourscher has conducted Phase I and II Bog Turtle Surveys, breeding bird surveys for grassland songbirds, Blanding's turtle trapping, eastern timber rattlesnake basking surveys, and Indiana bat habitat evaluations and roost tree counts. Mr. Tourscher has also conducted surveys for other species such as short-eared owls, bald eagles, northern cricket frogs, and a majority of the more common wildlife and plant species of the Northeast.

EDUCATION

- MS, Biology, Shippensburg University, 2005
- BS, Biology/Ecology and Environmental Biology, Shippensburg University, 2003

REGISTRATION

- Certified Associate Ecologist, Ecological Society of America

TRAINING

- Freshwater Grasses, Sedges, and Rushes ID, IWEER, Mount Holly, New Jersey
- Trimble Geo XH GPS Unit and Pathfinder Training, Maine Technical Source
- 29 CFR 1910.120 OSHA 40-hour Hazardous Waste Operations

AFFLIATIONS

- Ecological Society of America
- Society of Wetland Scientists

PROJECT EXPERIENCE

HABITAT/BIODIVERSITY EVALUATIONS

HABITAT ASSESSMENT AND ENDANGERED SPECIES SURVEYS
HAMLET ON THE HUDSON, TOWN OF COXSACKIE, GREENE COUNTY, NEW YORK

Conducted point count and visual surveys to determine the presence or absence of northern harriers and short-eared owls. Additionally, a habitat assessment was conducted within the boundaries of the approximately 500-acre project site to identify vegetative communities, and plant and wildlife species present at the project site.

HABITAT ASSESSMENT, BREEDING BIRD SURVEY, AND TIMBER RATTLESNAKE SURVEY
WOODSTONE LAKES DEVELOPMENT, TOWN OF BETHEL, SULLIVAN COUNTY, NEW YORK

Conducted a habitat assessment on a project site that was approximately 4,550 acres in size. Ecological resources within the site were cataloged and identified by visual and auditory surveys. For each vegetative plant community, descriptive measures such as species composition/dominance, size class, height, etc. were determined. Specialty wildlife services such as a breeding bird survey and timber rattlesnake survey were also conducted.

BREEDING BIRD SURVEY, PHASE II BOG TURTLE SURVEY, TREE SURVEY, AND BAT TRAPPING
SILO RIDGE GOLF RESORT, TOWN OF AMENIA, DUTCHESS COUNTY, NEW YORK

Conducted specialty ecological services on an approximately 670-acre project site. A breeding bird survey was conducted for four days with assistance from Dr. Charles Smith, a New York State renowned ornithologist. Assisted with conducting a Phase II Bog Turtle Survey and mist net trapping for Indiana bats. Identified and tagged over 700 trees in areas of proposed disturbance. Also conducted a botanical survey in an area proposed for development.

KARNER BLUE BUTTERFLY AND BLUE LUPINE SURVEYS
NATIONAL GRID, ALBANY, SARATOGA, AND WARREN COUNTIES, NEW YORK

Conducted endangered species surveys along utility right of ways (ROWs) in several counties surrounding the Albany area. Surveys consisted of transecting ROWs and mapping populations of blue lupine (*Lupinus perennis*), and any associated Karner blue butterflies (*Lycaeides Melissa smauelis*) or frosted elfins (*Callophrys irus*) using Trimble GPS units.

INDIANA BAT EVALUATIONS
HUDSON VALLEY, NEW YORK

Performed numerous habitat evaluations for Indiana bats. These evaluations have focused on identifying roost and maternity trees for nesting females. Project work is routinely reviewed by United States Fish and Wildlife Service and New York State Department of Environmental Conservation staff. Also performed exit counts and roost tree identification using radio telemetry as part of the Hudson Valley monitoring program

ENDANGERED SPECIES INVENTORIES
BRADFORD, COLUMBIA, & MONTOUR COUNTIES, PENNSYLVANIA

Conducted surveys to determine the presence of state-listed species throughout multiple counties in Pennsylvania. Visual observations were used to identify vegetative communities and plant species. Point count surveys were used to detect avian species, while Sherman, pitfall, and snap traps were used to detect small mammal species. Mist netting was employed to trap bat species.

THE Chazen COMPANIES®

WETLAND MITIGATION MONITORING

BEEKMAN COUNTRY CLUB, TOWN OF EAST FISHKILL, DUTCHESS COUNTY, NEW YORK

Conducted bi-monthly monitoring of an approximately 1.85 acre mitigation site. Vegetation within the entire mitigation site was identified, enumerated, and compared to the mitigation planting plan. Additionally, recruitment species were identified and enumerated. Percent cover was determined for each vegetative community, and wildlife within the mitigation site and surrounding area was identified. Groundwater levels were monitored in three monitoring wells. An annual monitoring report was written and submitted to the United States Army Corps of Engineers.

DUTCHESS COUNTY AIRPORT LANDFILL, DUTCHESS COUNTY, NEW YORK

Conducted vegetation monitoring, hydrologic monitoring, and documentation of wildlife utilization at an approximately at an on-site mitigation site.

SHELDON HILLS, TOWN OF HALFMOON, SARATOGA COUNTY, NEW YORK

Conducted a post-construction site investigation at an approximately 0.99 acre mitigation site. Vegetation within the entire mitigation site was identified, enumerated, and compared to the mitigation planting plan. Post construction grading was also compared to the mitigation design plan. A compliance letter was written and submitted to the United States Army Corps of Engineers.

WETLAND SERVICES

WETLAND DELINEATION
STONE RIDGE ORCHARDS, TOWN OF MARBLETOWN, ULSTER COUTY, NEW YORK

Conducted a wetland delineation on a project site that was approximately 153 acres in size. The delineation included several intermittent and perennial watercourses and federal and state wetlands. The delineation was conducted using the three-parameter approach as described in the 1987, US Army Corps of Engineers' Wetland Delineation Manual.

WETLAND DELINEATION
AMEDORE-TROY CONDOMINIUMS, CITY OF TROY, RENSSELAER COUTY, NEW YORK

Conducted a wetland delineation on a project site that was approximately 38 acres in size. The delineation included several federal wetlands and a perennial stream. The delineation was conducted using the three-parameter approach as described in the 1987, US Army Corps of Engineers' Wetland Delineation Manual.

WETLAND DELINEATION AND JOINT WETLANDS PERMIT
ROMEO-BANCROFT FARMS, TOWN OF WASHINGTON, DUTCHESS COUTY, NEW YORK

Conducted a wetland delineation on a project site that was approximately 138 acres in size. The delineation included several watercourses and federal and state wetlands. Following completion of the delineation, assisted with the development of a joint (federal and state) wetlands permit.

ENVIRONMENTAL SERVICES

GROUNDWATER MONITORING AND WATER QUALITY SAMPLING,
LANDMARK-CARVEL DEVELOPMENT, TOWNS OF MILAN AND PINE PLAINS, NEW YORK

Conducted bi-monthly groundwater monitoring of 15 monitoring wells. Water depth was measured and imputed into a database. Water quality sampling was conducted in a lake and streams within the project site. Ecological surveys including benthic sampling for macroinvertebrate and turtle trapping were conducted within the project site.

SOIL CONTAMINATION SAMPLING
STONE RIDGE ORCHARDS, TOWN OF MARBLETOWN, ULSTER COUNTY, NEW YORK

Conducted soil sampling at several locations within an active orchard. Soil samples were collected to detect possible pesticide contamination. Samples were collected at two and three foot depths.

Steven Finch

WETLAND SCIENTIST, BIOLOGIST

Mr. Finch has over 7 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. 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.

EDUCATION

- Bachelor of Technology, Wildlife Management, SUNY Cobleskill, 2000

TRAINING

- OSHA 40hr Hazardous Waste Operations
- New York State Asbestos Inspector, Initial Cert# 07-10859
- Stream Restoration Using Natural Channel Design, Georgia Center for Continuing Education, Athens Georgia
- Appling for Jurisdictional Determinations through the USACE, Goshen New York

PROJECT EXPERIENCE

WETLAND PROJECTS

SILO RIDGE COUNTRY CLUB, VILLAGE OF AMENIA, DUTCHESS COUNTY, NY

Conducted wetland delineation on an approximate 628-acre parcel.

TOWN OF WAWAYANDA, ORANGE COUNTY, NY

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, NY

Conducted a wetland delineation and report on an approximately 40-acre parcel.

WAPPINGERS CENTRAL SCHOOL DISTRICT, TOWN OF WAPPINGERS FALLS, DUTCHESS COUNTY, NY

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, NY

Conducted a wetland delineation and report on an approximately 2.42-acre parcel. Helped prepare NYSDEC Wetland Buffer Disturbance Permit Application.

WILD OAKS WASTEWATER TREATMENT PLANT, TOWN OF LEWISBORO, WESTCHESTER COUNTY, NY

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, GA

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.

THE Chazen COMPANIES®

HAMLET ON THE HUDSON - NORTHERN HARRIER AND SHORT-EARED OWL STUDY, TOWN OF COXSACKIE, GREENE COUNTY, NY

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, NY

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, NY

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, NY

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, NY

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, NY

Ecological study including studies on potential endangered, threatened, and rare species on a 40-acre parcel inventorying vegetation, birds, mammals, reptiles and amphibians.

NORBERT QUENZER JR.

EDUCATION

B.S., Forest Biology-Wildlife, 1979, State University of New York, College of Environmental Science and Forestry, Syracuse, NY.

A.S., Forest Management, 1977, Columbia-Greene Community College, Hudson, NY.

EMPLOYMENT HISTORY

Vice President/Senior Ecologist - Bagdon Environmental, Delmar, New York. January 1986 to present.

Mr. Quenzer is responsible for managing and conducting ecological and wetland studies at Bagdon Environmental. Duties include state and federal wetland delineation; mitigation and restoration plan development; permit application preparation; client/regulatory liaison; and expert testimony. As Senior Ecologist, Mr. Quenzer conducts and supervises ecological evaluations; wildlife/vegetation inventory and analysis; endangered species surveys; and habitat evaluations. Mr. Quenzer has been principal investigator and supervisor of hundreds of wetland and ecological projects during his tenure at Bagdon Environmental.

Interpretive Naturalist - New York State Department of Environmental Conservation, Albany, New York. 1985.

Developed and presented educational programs on the ecological, cultural and historic attributes of the New York State Forest Preserve.

Environmental Biologist - Jason M. Cortell and Associates, Inc., Gladstone, New Jersey. 1982 to 1985.

Primary responsibilities were wetland assessment and wildlife/vegetation inventory and analysis. Additional duties included: aquatic vegetation surveys, macroinvertebrate analysis, electrofishing, field monitoring and analysis of water quality, air quality, noise and meteorological data.

Wildlife Research Assistant - Cornell University, Department of Natural Resources, Highland, New York. 1980 to 1981.

Organized and directed field studies for pine vole (*Microtus pinetorum*) control project in Hudson Valley apple orchards.

PROFESSIONAL MEMBERSHIPS

Association of State Wetland Managers
Ecological Society of America
New York State Wetlands Forum - Chair (1994-1996) and Founding Member
Society of Wetland Scientists – Professional Certification Standards Committee
The Wildlife Society

PROFESSIONAL CERTIFICATION AND TRAINING

Certified Professional Wetland Scientist, Society of Wetland Scientists
Certified Ecologist, Ecological Society of America
Certified Wildlife Biologist, The Wildlife Society
Certified Habitat Evaluation Procedures, U.S. Fish and Wildlife Service
Federal Wetland Identification and Delineation Techniques

PROFESSIONAL LICENSES

New York State Department of Environmental Conservation

- Scientific Collectors License - #LCP01-183
- Endangered Species amendment for Bog Turtles (*Clemmys muhlenbergii)* in Dutchess, Orange, Putnam and Westchester Counties

Charles R. Smith, Ph.D.
crs6@cornell.edu
Biographical Summary

Charles R. ("Charlie") Smith is a naturalist, educator, and conservationist employed by Cornell University as a Senior Research Associate for the Department of Natural Resources and as a Senior Lecturer (summers only) for Cornell's Adult University. From August 2003 until July 2004, he served as Interim Director of Natural Areas for Cornell Plantations, the arboretum, botanical garden and natural areas of the University. He also holds an Adjunct Associate Professorship in the Biodiversity, Conservation, and Policy Program, Department of Biological Sciences, State University of New York at Albany. He received his Ph.D. in wildlife ecology from Cornell University and holds a B.S. (*cum laude*) for studies in botany, zoology, geology, physical geography, and meteorology from East Tennessee State University. Dr. Smith has more than 40 years of experience in teaching, research, and conservation related to plants, terrestrial vertebrates, butterflies, and odonates of eastern North America, including first-hand familiarity at the genus or species level with more than 85% of the vertebrate fauna of eastern North America, nearly 1000 species of vascular plants, and more than 120 species of North American and Caribbean butterflies.

At Cornell, he works with graduate students in avian ecology and science-based conservation and teaches undergraduate courses in field biology, conservation of birds, and characterization of ecoregions. Charlie has been active in research and conservation related to the birds of New York State and the Northeast for nearly 25 years. Since 1992, he has coordinated the New York State Gap Analysis Project at Cornell and manages a broadly based research program in avian conservation and ecology, currently exploring applications of satellite imagery for describing relationships of birds to landscape patterns across large land areas. Since 1992, he has managed more than $2.8 million in research grants and contracts, and directed more than 25 projects to successful completion. He is author of more than 100 technical and popular papers and book chapters relating to birds and other organisms. He contributed several species accounts and two chapters on conservation and bird habitats to the revision of *Birds of New York State*, published by Cornell University Press in 1998. Currently he is co-authoring a chapter and writing several species accounts for the *Second Atlas of Breeding Birds in New York State*, to be published by Cornell University Press in 2008. In 2005 he was invited to become Co-regional Editor for New York State for the Annual Counts of the North American Butterfly Association, published each year.

From 1977 through 1991, Dr. Smith worked for the Cornell Laboratory of Ornithology in a variety of capacities, including Acting Director, Director of Education and Information Services, and Director of Special Projects. He has served as chairman of the Northeast Working Group of the Neotropical Migratory Bird Conservation Program ("Partners in Flight"), twice as president of the New York Chapter of The Wildlife Society, and as president of the Federation of New York State Bird Clubs. He has been an advisor and collaborator on bird conservation and management issues for the U.S. Environmental Protection Agency, U.S. Geological Survey/Biological Resources Division, U.S. Fish and Wildlife Service, U.S. Forest Service, and to the Commissioners of the New York State Department of Environmental Conservation and the New York State Office of Parks, Recreation, and Historic Preservation. His studies of birds have taken him to more than 30 states and to Africa, Canada, England, Mexico, Costa Rica, Panama, Puerto Rico, Trinidad, and Ecuador (Galapagos Islands).

Charlie has been a member of the Tennessee Ornithological Society since 1963 (currently a Life Member) and the Wilson Ornithological Society (currently a Life Member) and American Ornithologists' Union since 1966. In 1994, he was named an Elective Member of the American Ornithologists' Union (the oldest professional ornithological society in the Western Hemisphere), an honor traditionally extended to less than 10% of the members of the Union, in recognition of their service to professional ornithology. In 2000, Charlie received 2 Certificates of Achievement from Patuxent Wildlife Research Center (USGS/Biological Resources Division), in recognition of 20 years of contributions and completion of more than 50 NY surveys as part of the North American Breeding Bird Survey (BBS); he has been coordinator of the BBS in NY since 1986. Over the past ten years, four Cornell students whom Charlie has helped to mentor have obtained graduate degrees from Oxford University in England; two of those students were Rhodes Scholars. His

hobbies include cooking, wines; studying odonates, butterflies, and vascular plants, and nature photography.

Résumé

Charles R. Smith, Ph.D.
crs6@cornell. edu
Department of Natural Resources, Cornell University, Ithaca, NY 14853-3001 607-255-3219

CURRENT POSITIONS AND RESPONSIBILITIES:

Senior Research Associate, Department of Natural Resources, Cornell University, January 1992-present; responsibilities include teaching 3 undergraduate courses (Introductory Field Biology, Conservation of Birds, Ecoregions: Ecology and Conservation), advising undergraduate majors in Natural Resources, and advising graduate students engaged in master's and doctoral research projects in avian ecology and management; research responsibilities include conceptualization, coordination, budgeting, and administration of a variety of projects involving the New York State Department of Environmental Conservation, the U.S. Environmental Protection Agency, the U.S. Forest Service, and the U.S. Department of the Interior (Coordinator for NY Gap Analysis Project); a goal of these projects is to collect and interpret information relating to the distributions, abundances, and conservation of the birds and other terrestrial vertebrates of New York State, as part of a broadly based, integrated, interdisciplinary, landscape-scale program in avian conservation and ecology.

Interim Director, Cornell Plantations Natural Areas, May 2006 - present; responsibilities included setting priorities, determining management objectives, and directing a staff 4-6 employees and interns involved in management and conservation of more than 4000 acres of natural preserves, distributed among nearly 50 sites, ranging in size from 3 to 300+ acres; Cornell's natural areas are maintained in support of the University's education and research activities.

Senior Lecturer, Cornell's Adult University, Cornell University, January 1992 - present; responsibilities include conceptualizing and leading experiential, life-long learning activities for adults, including travel outside the United States and to locations within the United States and on the Cornell Campus; focus is upon natural history subjects, including plants, butterflies, and birds and the ecological principles and conservation challenges and opportunities they represent.

Adjunct Associate Professor, Department of Biological Sciences, State University of New York at Albany, April 2002 - present; responsibilities include providing lectures and seminars and serving on graduate student advisory committees.

PAST POSITIONS AND RESPONSIBILITIES:

Interim Director, Cornell Plantations Natural Areas, August 2003-July 2004; responsibilities included setting priorities, determining management objectives, and directing a staff 4-6 employees and interns involved in management and conservation of more than 4000 acres of natural preserves, distributed among nearly 50 sites, ranging in size from 3 to 300+ acres; Cornell's natural areas are maintained in support of the University's education and research activities.

Director, Arnot Teaching and Research Forest, June 1995 - December 1999; responsible for developing management objectives, goals, priorities, and annual budgets for a 4,075-acre working forest, producing timber and maple products and providing research, extension, and education opportunities for the Department of Natural Resources and Cornell University.

Adjunct Associate Professor, Wildlife Science, Department of Natural Resources, Cornell University, July 1988 - December 1991.

Senior Extension Associate and Director of Special Projects, Cornell Laboratory of Ornithology, January 1987 - December 1991; left this position to accept an opportunity for increased teaching and research responsibilities in a Cornell academic department (Natural Resources).

Technical Editor, *The Living Bird Quarterly*, a popularly written, serial publication of the Laboratory of Ornithology, October 1981 - December 1991.

Assistant Professor, Wildlife Science (courtesy appointment), Department of Natural Resources, Cornell University, 1979 - 1988; promoted from this position to Adjunct Associate Professor.

Acting Executive Director, Cornell Laboratory of Ornithology, December 1979 - June 1981; responsibilities included all aspects of budgetary and personnel management, and program planning, development, and implementation for the Laboratory; coordination of activities with other departments of the University and with State and Federal agencies and private organizations; during that period the Laboratory included a staff of 25 people (including 2 PhDs), with an annual operating budget of nearly $500,000.

Extension Associate and Director for Education and Information Services, Cornell Laboratory of Ornithology. 1977 -1987; a full-time administrative position with no research or undergraduate teaching responsibilities; major responsibilities included coordination of a weekly public lecture series and a weekly radio program and supervision of a correspondence course, "Seminars in Ornithology"; extension responsibilities included answering questions received by mail and telephone about birds, speaking to visitors' groups about the Laboratory, its facilities, and programs, and teaching one-week, non-credit summer courses in field ornithology for adult audiences; responsible for managing a staff of 8 people and an annual operating budget (FY 1985/86) of nearly $400,000 (from a staff of I and an annual budget of nearly $40,000 in FY 1977/78); moved from this position to have more time for teaching and research.

Lecturer, Department of Natural Resources, Cornell University, 1976 - 1977; responsibilities included teaching and advising undergraduates; developed and taught a sophomore level introductory field biology course, not previously taught in the Department; lectured for an introductory ecology course, "Ecological Basis for Conservation," with an undergraduate enrollment of 500 students, and 10 graduate teaching assistants assigned to the course.

ADVISORY CAPACITIES TO STATE, FEDERAL, AND NONGOVERNMENTAL ORGANIZATIONS:

Member, *Ad Hoc* Advisory Committee on Pasture Management, January 2006 - present, for USDA/Forest Service, Finger Lakes National Forest.

Member, Preserve Management Committee, Finger Lakes Land Trust, 2005 - present.

Member, Technical Advisory Subcommittee, 2003/2004 Grassland Reserve Program, for USDA/Natural Resources Conservation Service, November 2003-present.

Member, Peer Review Panel for North American Breeding Bird Survey, USGS/Biological Resources Division, 1999 - February 2000.

Scientific Advisor, New York State Breeding Bird Atlas Steering Committee (a cooperative project of the Federation of New York State Bird Clubs, the New York State Department of Environmental Conservation, and Department of Natural Resources, Cornell University), 1998 -present.

Scientific Advisor to the National Audubon Society as a member of the NY Important Bird Areas Technical Advisory Committee, April 1996 - 1998.

Scientific Advisor to the Northeastern Forest Experiment Station, U.S. Forest Service, as a member of the Ecology Committee for the Northeast Decision Model (NED, an ecosystem-based model for forest management), May 1994 - present.

Scientific Advisor to Region 5, U.S. Fish and Wildlife Service, Migratory Bird Planning Team for the Conte National Wildlife Refuge, May 1994 - present.

Scientific Advisor to The Nature Conservancy as a member of the Lake Ontario Migratory Bird Study Advisory Committee, May 1993 - June 1995.

Scientific Advisor on bird conservation to the Commissioner of the New York State Office of Parks, Recreation and Historic Preservation as a member, and Chair, of the Birdlife Advisory Committee, July 1987 - November 1994.

Scientific Advisor to the Commissioner of the New York State Department of Environmental Conservation as a member of the Freshwater Wetlands Advisory Committee, May 1988 - November 1994.

Scientific Advisor to the Commissioner of the New York State Department of Environmental Conservation and to the U.S. Fish and Wildlife Service as a member of the Advisory Committee for the Northern Montezuma Wetlands Complex of the North American Waterfowl Management Plan, January 1989 - November 1994.

Scientific Advisor on Nongame and Endangered Species Management to the Commissioner of the New York State Department of Environmental Conservation, as a member of the Return A Gift To Wildlife Advisory Committee, September 1984 - September 1993.

HONORS AND AWARDS:

5 original photographs chosen to illustrate article, “Out There – Finger Lakes National Forest,” Forest Magazine, Fall 2002, pp. 25-28.

2 Certificates of Achievement from Patuxent Wildlife Research Center (USGS/Biological Resources Division), one in recognition of 20 years of contributions and a second for successful completion of 50 NY surveys as part of the North American Breeding Bird Survey, January 2000.

Selected as an Elective Member of the American Ornithologists' Union, an honor bestowed in recognition of outstanding contributions to professional ornithology, June 1994.

Recognition for Best Professional Paper Presentation at Annual Meeting of the New York Chapter of The Wildlife Society, January 1996.

Listed in *Who's Who in Science and Engineering*, 2nd edition, 1994/95.

COMMITTEE SERVICE FOR CORNELL:

Seminar Committee, Department of Natural Resources, 2005 - 2007
Teaching and Curriculum Committee, Department of Natural Resources, 1998 - 2002.
Graduate Admissions Committee, Graduate Field of Natural Resources, 1999 - 2001.
Cornell Plantations Natural Areas Committee, 1985 - present.
Curriculum Committee, College of Agriculture and Life Sciences, Cornell University, 2000 - 2002 (alternate member, representing the Department of Natural Resources)

OUTREACH, EXTENSION, AND PUBLIC SERVICE ACTIVITIES:

Chair, Conservation Affairs Committee, NY Chapter-The Wildlife Society, 2007- present.

Past-president, New York Chapter, The Wildlife Society, 2006-2007.

Co-regional Editor for New York State, North American Butterfly Association Annual Counts, 2005 -present.

President, New York Chapter, The Wildlife Society, 2004-2006.

President-elect, New York Chapter, The Wildlife Society, 2003-2004.

Member, Conservation Advisory Board, Town of Dryden, NY, November 2000 - present (third term).

Scientific Advisor, New York State Breeding Bird Atlas Steering Committee (a cooperative project of the NYS Ornithological Association, the New York State Department of Environmental Conservation, and Department of Natural Resources, Cornell University), 1998 -present.

Member, National Research Working Group of the Neotropical Migratory Bird Conservation Program, "Partners in Flight--Aves de Las Americas," 1991 - present.

Statewide Coordinator, New York State Breeding Bird Surveys (sponsored by USGS/Biological Resources Division Patuxent Wildlife Research Center), November 1986 - present.

Member, Executive Committee, Federation of New York State Bird Clubs, 1977 - 1998.

Faculty Fellow and Advisor to Ecology House, a Cornell Cooperative Living Unit, 1992 - 1996.

Member, Editorial Advisory Board, *The Migrant* (journal of the Tennessee Ornithological Society), September 1992 -December 1995.

Member, Board of Trustees, Central/Western New York Chapter, The Nature Conservancy, 1992 - 1995.

Member, Editorial Advisory Board, Wilson Bulletin (scientific journal of the Wilson Ornithological Society), 1992-1995.

Chairman, Northeastern Working Group of the Neotropical Migratory Bird Conservation Program, "Partners in Flight--Aves de Las Americas," 1992 - 1993.

President, New York Chapter, The Wildlife Society, 1992 - 1994.

Member and Chair of Research Subgroup of the Northeastern Working Group of the Neotropical Migratory Bird Conservation Program, "Partners in Flight," 1991 - 1992.
President-elect of New York Chapter, The Wildlife Society, 1991 - 1992.

Secretary, New York State Avian Records Committee of the Federation of New York State Bird Clubs, 1978 - 1981.

Associate Chairman, New York State Breeding Bird Atlas Steering Committee (a cooperative project of the Federation of New York State Bird Clubs, the New York State Department of Environmental Conservation, and the Cornell Laboratory of Ornithology), 1979 - 1988.
President, Federation of New York State Bird Clubs, September 1983 - October 1985.

Member, Board of Trustees, Central New York Chapter, The Nature Conservancy, October 1983 - October 1986.

Member, Editorial Advisory Committee for *The Atlas* of Breeding Birds *in New York* State, 1985 - 1988.

Chairman, North American Ornithological Atlas Committee (NORAC, April 1986 - June 1990.

Delegate to the International Council for Bird Preservation--United States Section, representing the Laboratory of Ornithology, 1981 - 1991.

SPECIAL SKILLS:

More than 40 years of experience in identification, research, teaching, and conservation related to plants ana terrestrial vertebrates of eastern North America, including first-hand familiarity, based on personal field experience, at the genus or species level, with nearly 85% of the vertebrate fauna of NY and eastern North America, nearly 20% of the 3000 species of NY vascular plants, and more than 50% of 110 or so species of NY butterflies; working knowledge of APL computer language; applied statistics and experimental design; photography and photographic darkroom techniques; field identification of vascular plants and vertebrates of eastern North America; experience in collecting, preserving, and curating vertebrate museum materials; have applied APL to develop interactive programs for analysis and simulation of animal population dynamics, primarily through the use of Leslie matrices; Federally licensed to use mist nets to capture and band birds; familiar with use of the Global Positioning System (GPS) and applications of IBM-compatible microcomputers in word processing, spreadsheets, statistical analysis and management of data, digital image processing, and geographic information systems (GIS).

PROFESSIONAL AFFILIATIONS:

American Ornithologists' Union (since 1966; Elective Member, 1994; Member Research Awards Committee, 1993 - 2000; Chair, Publicity Committee, 1994 - 1996)
Finger Lakes Native Plant Society (since 2002)
New York State Ornithological Association (since 1977)
North American Butterfly Association (since 1995)
Tennessee Ornithological Society (since 1963; Life Member)
The Lepidopterists' Society (since 2000)
The Wildlife Society (since 1979; member *ad hoc* Committee on Minority Affairs, 1995)
Wilson Ornithological Society (since 1966; Life Member; Chair, Audit Committee, 1993)

TECHNICAL, EXTENSION, AND POPULAR PUBLICATIONS:

Smith, C.R. In press. Acadian Flycatcher. In Second Atlas of the Breeding Birds of New York State. Cornell University Press, Ithaca, NY (scheduled for publication September 2008).

Smith, C.R. In press. Bobolink. In Second Atlas of the Breeding Birds of New York State. Cornell University

Press, Ithaca, NY (scheduled for publication September 2008).

Smith, C.R. In press. Carolina Wren. In Second Atlas of the Breeding Birds of New York State. Cornell University Press, Ithaca, NY (scheduled for publication September 2008).

Smith, C.R. In press. Clay-colored Sparrow. In Second Atlas of the Breeding Birds of New York State. Cornell University Press, Ithaca, NY (scheduled for publication September 2008).

Smith, C.R. In press. Dark-eyed Junco. In Second Atlas of the Breeding Birds of New York State. Cornell University Press, Ithaca, NY (scheduled for publication September 2008).

Smith, C.R. In press. Eastern Meadowlark. In Second Atlas of the Breeding Birds of New York State. Cornell University Press, Ithaca, NY (scheduled for publication September 2008).

Smith, C.R. In press. Eastern Screech-Owl. In Second Atlas of the Breeding Birds of New York State. Cornell University Press, Ithaca, NY (scheduled for publication September 2008).

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Smith, C.R. In press. Horned Lark. In Second Atlas of the Breeding Birds of New York State. Cornell University Press, Ithaca, NY (scheduled for publication September 2008).

Smith, C.R. In press. Prairie Warbler. In Second Atlas of the Breeding Birds of New York State. Cornell University Press, Ithaca, NY (scheduled for publication September 2008).

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Smith, C.R. In press. Worm-eating Warbler. In Second Atlas of the Breeding Birds of New York State. Cornell University Press, Ithaca, NY (scheduled for publication September 2008).

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Price, S.J., R.W. Howe, J. Hanowski, R.R. Regal, G.J. Niemi, and C.R. Smith. In press. Are anurans of Great Lakes coastal wetlands reliable ecological indicators of environmental condition? Journal of Great Lakes Research.

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Smith, C.R. 1966-70. Quarterly contributions to "The Season," first as a regional correspondent and later as editor for the section. In each issue of The Migrant 37(4) to 41(3), published four times yearly.

PROPOSALS CURRENTLY UNDER REVIEW:

2003-2005, New York State Department of Environmental Conservation, “Breeding Bird Atlas and Habitat Fragmentation Studies for the Hudson River Valley,” $300,000 (Co-PI with M. Richmond).

2003-2005, New York State Department of Environmental Conservation, “Establishing a Basis for Conservation by Enhancing Outreach to Communities through Natural History Education,” $185,000 (Co-PI with G.Goff, K. Sullivan, L. Buck, S. Smith, and M. Richmond.).

2003-2006, National Science Foundation, “Research Experiences for Undergraduates Site: Bermudez National Park, Dominican Republic,” $300,000 (Collaborator, not Co-PI, with T. Fahey, who is PI for the proposal).

GRANTS AND CONTRACTS IN PROGRESS OR COMPLETED:

2003-2006, New York State Department of Environmental Conservation, “Wildlife Resource Monitoring,” $75,000 (Co-PI with M. Richmond).

2003-2006, U.S. Geological Survey, Biological Resources Division, “Improving Resolution and Accuracy of Vegetation Classification to Refine Habitat Characteristics Associated with Distributions and Abundances of Breeding Birds,” $150,000 (Principle Investigator)

2001-2005, U.S. Environmental Protection Agency, in cooperation with University of Minnesota - Duluth (Natural Resources Research Institute) and University of Wisconsin - Green Bay, "Development of Environmental Indicators of Condition, Integrity and Sustainability in the Great Lakes Basin," $185,000 (Principle Investigator)

2001-2003. Hudson River Foundation, “Using Socioeconomic Variables to Quantify Habitat Vulnerability,” $244,920 (Co-PI with S. Smith, W. Brown, and M. Richmond).

2001-2003, New York State Department of Environmental Conservation, "Effects of Habitat Fragmentation on the Breeding Birds of the Hudson River Valley," $60,000 (Co-PI with M. Richmond).

1999-2002, New York State Department of Environmental Conservation, "Breeding Bird Atlas for the Hudson River Valley," $176,927 (Co-PI with M. Richmond).

1998-2000, U.S. Forest Service, "Monitoring Grassland Birds on Finger Lakes National Forest," $15,000 (Principle Investigator).

1997-2001, U.S. Department of Agriculture, "Technology Applications for Wildlife Ecology and Information Management," $25,000 (Hatch - Co-PI with A. Moen, P. Curtis, and M. Richmond)).

1996-2000, New York State Department of Environmental Conservation, "An Application of Gap Analysis Procedures to Facilitate Planning for Biodiversity Conservation in the Hudson River Valley," $750,000 (Co-PI with S. DeGloria and M. Richmond).

1997-1998, New York State Department of Environmental Conservation, "Use of Geographic Information Systems for the New York Important Bird Areas Project," $24,000 (Co-PI with M. Richmond).

1996-1998, University of Minnesota-Duluth and Great Lakes Protection Fund, "Forest Bird Biodiversity: Indicators

of Environmental Condition and Change in the Great Lakes Watershed," $30,000 (Principle Investigator).

1996/97, U.S. Forest Service, "Monitoring Grassland Birds on Finger Lakes National Forest," $3000 (Principle Investigator).

1996/97, College of Agriculture and Life Sciences, Cornell University, "Development of Instructional Materials for Introducing Global Positioning System (GPS) Concepts and Applications to Undergraduates," $12,000. Co-PI with S. DeGloria (Soils, Crops and Atmospheric Sciences) and T. Whitlow (Floriculture and Ornamental Horticulture).

1995-1997, USGS/National Biological Service, "Application of Gap Analysis in Planning for Conservation of Biodiversity in New York State - Phase II," $187,000 (Co-PI with S. DeGloria and M. Richmond).

1992-96, U.S. Fish and Wildlife Service and USGS/Biological Resources Division, "Application of Gap Analysis in Planning for Conservation of Biodiversity in New York State," $595,000 (Co-PI with S. DeGloria and M. Richmond).

1992-95, U.S. Fish and Wildlife Service and National Biological Service, "Biodiversity Monitoring: Breeding Productivity and Habitat of Nongame Birds in New York State," $95,000 (Co-PI with M. Richmond).

1992-95, U.S. Department of Agriculture Hatch Project, "Distributions of the Breeding Birds of New York State in Relation to Landscape Patterns and Agricultural Land Use," $20,000 (Principle Investigator)

1992/93, U.S. Forest Service, "Species Diversity and Habitat Associations for the Breeding Birds of the Finger Lakes National Forest (continued)," $15,000 (Principle Investigator).

1991-93, Broome County, New York, "An Assessment of Bird Hazards to Aircraft and Potential Mitigation Measures for Edwin A. Link Field and the Nanticoke Sanitary landfill, Broome County, New York," $51,385 (Co-PI with Paul Curtis).

1990/91, U.S. Forest Service, "Species Diversity and Habitat Associations for the Breeding Birds of the Finger Lakes National Forest (continued)," $11,995 (Principle Investigator).
1990/91, New York State Department of Environmental Conservation and U.S. Fish and Wildlife Service, "An Evaluation of Piping Plover *(Charadrius melodus)* Nest Success, Habitat Selection, and Management Needs on Long Island, NY," $32,083 (Principle Investigator).

1989/90, U.S. Forest Service, "Species Diversity and Habitat Associations for the Breeding Birds of the Finger Lakes National Forest," $6,000 (Principle Investigator).

1988/89, National Fish and Wildlife Foundation, "Relationship of Landscape Patterns to Summer and Species Diversity in New York State," $30,000 (Principle Investigator).

1988/89, New York State Department of Environmental Conservation and U.S. Fish and Wildlife Service, "An Evaluation of Piping Plover *(Charadrius melodus)* Nest Success, Habitat Selection, and Management Needs on Long Island, NY," $18,105 (Principle Investigator).

1988/91, U.S. Department of Agriculture Hatch Project, "Distributions of the Breeding Birds of New York State in Relation to Landscape Patterns and Agricultural Land Use." $12,000 (Principle Investigator).

1987/88, New York State Department of Environmental Conservation, "Population Trends Analysis of the Breeding Birds of New York State," $22,000 (Principle Investigator).

1987/88, New York State Department of Environmental Conservation, "Breeding Bird Atlas Publication Project Extension," $24,000 (Principle Investigator).

1986/87, New York State Department of Environmental Conservation, "Breeding, Bird Atlas Publication Project," $72,500 (Principle Investigator).

1985/86, New York State Department of Environmental Conservation, "Breeding Bird Atlas Publication Project," $67,000 (Principle Investigator).

1984/85, New York State Department of Environmental Conservation, "Breeding Bird Atlas Field Surveys," $15,000 (Principle Investigator).

1983/84, New York State Department of Environmental Conservation, "Breeding Bird Atlas Field Surveys," $10,000 (Principle Investigator).

MEMBER OF THE FOLLOWING GRADUATE STUDENT ADVISORY COMMITTEES:

Cecelia Moore (Chair, Richard Fischer), Graduated-1979, Field of Science and Environmental Education, M.S. Thesis Title: "Comparison of Three Breeding Bird Census Methods in Two Successional Habitats."

Michael P. Hamilton (Chair, James P. Lassoie), Graduated-1983, Field of Natural Resources, Ph.D. Thesis Title: "A Floristic Basis for the Management of Rare Plants and Their Communities in the San Jacinto Mountains, California."
Deanna K. Dawson (Chair, Tom Gavin), Graduated-1984, Field of Natural Resources, M.S. Thesis Title: "Factors Affecting the Distribution of Ovenbirds *(Seiurus aurocapillus)* in 'Forest Islands' in Central New York."

Karl Von Berg (Chair, James P. Lassoie), Graduated-1984, Field of Natural Resources, M.S. Thesis Title: "Wildlife Cavity Trees and Avian Foraging Trees in a Hardwood Forest: Their Characteristics and Economic Impact on Timber Production."

Anita M. Gabalski (Chair, Richard Fischer), Graduated-1986, Field of Science and Environmental Education, Thesis Title: "New York State Parks and Historic Sites Avifaunal Study."

Thomas S. Litwin (Chair, Richard Fischer), Graduated- 1986, Field of Science and Environmental Education, Ph.D. Thesis Title: "Factors Affecting Avian Diversity in a Northeastern Woodlot."

Mark S. Lindberg (Chair, Richard Malecki), Graduated-1991, Field of Natural Resources, M.S. Thesis Topic: "Ecology of a Non-migratory Population of the Canada Goose *(Branta canadensis)* in Northwestern Pennsylvania."

Robert Houston (Chair, Richard Malecki), Graduated-1992, Field of Natural Resources, M.S. Thesis Topic: "Nesting Biology of Dabbling Ducks (Tribe Anatini) in Bottomland Hardwoods in Western New York."

Kenneth Kudrak (Chair, Naomi Altman), Graduated-1992, Field of Statistics and Biometry, M.S. Thesis Topic: "Mathematical Modeling of Habitat Use by Piping Plover on Long Island During the Breeding Season."

Heather Robertson (Chair, Robert Cook), Graduated-1992, Field of Ecology and Evolutionary Biology, Ph.D. Thesis Topic: "A Life History Approach to the Study of Plant Species Rarity: *Gentianopsis crinita* in New York State."

Jeffrey V. Wells (Chair, Aaron Moen), Graduated-1992, Field of Natural Resources. M. S. Thesis Topic: "Feasibility and Usefulness of Reanalysis of an Historic Ruffed Grouse *(Bonasa umbellus)* Database."

Hsiao-Wei Yuan (Chair, Tom Gavin), Graduated-1993, Field of Natural Resources, Ph.D. Thesis Topic: "Demography, Dispersal, and Population Structure of Common Terns *(Sterna hirundo)* at Oneida Lake, New York."

Andrew Weik (Chair, Richard Malecki), Graduated-1994, Field of Natural Resources, M.S. Thesis Topic: "Survival and habitat Use of Mallard Broods in Western New York."

Stephen Brown (Chair, Barbara Bedford), Graduated-1995, Field of Natural Resources, Ph.D. Thesis Topic: "Wetland Restoration: Factors Controlling Plant Community Response and Avifaunal Habitat Value."

Sara R. Morris (Chair, Milo Richmond), Graduated-1993, Field of Zoology, M.S. Thesis Topic: "Patterns of Stopover by Migratory Passerines on Appledore Island, Maine: An Analysis of Banding Records from 1983-199 1.

Saphida Wairimu (Chair, Milo Richmond), Graduated-1996, Field of Natural Resources, Ph.D. Thesis Topic: "Utilizing Geographic Information Systems (GIS) in the Development of White-tailed Deer Management Models."

Jeffrey V. Wells (Chair, Milo Richmond), Graduated-1996, Field of Ecology and Evolutionary Biology, Ph.D. Thesis Topic: "Dispersal, Site Fidelity, and Mortality Rates in Isolated Populations of Grassland Birds."

Sara R. Morris (Chair, Milo Richmond), Graduated-1996, Field of Zoology, Ph.D. Thesis Topic: "The Migration and Stopover Ecology of Neotropical Migrants on Appledore Island, Maine."

Rachel Mazur (Chair, Brian Underwood, SUNY-ESF), Graduated -1996, Field of Environmental and Forest Biology, SUNY/CESF, MS Thesis Topic: "Implications of Field Management for Henslow's Sparrow Habitat at Saratoga National Historical Park, New York."

Steven F. Kahl (Chair, Guy Baldassarre, SUNY-ESF), Graduated - 1998, Field of Environmental and Forest Biology, SUNY?CESF, MPS. Thesis Topic: "Human Use and Wildlife of the El Dorado Nature Preserve, a Natural Area on Eastern Lake Ontario."

Scott Boomer (Chair, Aaron Moen), Graduated - 1998, Field of Natural Resources, M.S. Thesis Topic: "Modeling Ruffed Grouse Population Dynamics with a Reconstruction Approach."

Laura Mitchell, (Chair, Richard Malecki), Graduated - 2000, Field of Natural Resources, M.S. Thesis topic: "Use of Prescribed Fire for Management of Old Fields in the Northeast."

Heather Moore, (Co-chairs, Charles Smith and Milo Richmond), Graduated - 2000, Field of Natural Resources, M.S. Thesis topic: "Nesting Biology and Population Ecology of Yellow Wagtails at Cape Romanzof, Alaska."

Socheata Lor, (Chair, Richard Malecki), Graduated 2000, Field of Natural Resources, M.S. Thesis topic: "Population Status and Breeding Biology of Marsh Birds in Western New York."

Scott Boomer (Chair, Aaron Moen), Graduated 2001, Field of Natural Resources, Ph.D. Thesis topic: "Reconstruction of Wild Turkey Populations from Harvest Information."

Brian Beachy, SUNY/Albany (Biodiversity, Conservation, and Policy Program),Graduated 2002, M.S. Thesis topic: “Effects of Invasive Woody Plants on Avian Diversity in the Albany Pine Bush.”

Amielle Dewan, SUNY/Albany (Biodiversity, Conservation, and Policy Program), Graduated 2002, M.S. Thesis topic: “The Ecological Effects of Carnivore Loss on Small Mammals and Seed Predation in the Albany Pine Bush.”

Ximena Garcia (Chair, David Pimentel), Graduated 2006, Field of Natural Resources, MPS Thesis Topic: “Ecological Services and Economic Benefits of Shade-grown Coffee.”

CURRENT MEMBER OF THE FOLLOWING GRADUATE STUDENT ADVISORY COMMITTEES:

Amielle DeWan, (Chair, Milo Richmond), Field of Natural Resources, Ph.D. Thesis Topic: Hudson River Estuary Wildlife Monitoring.

Melissa C. Peterson (Chair, George R. Robinson), SUNY/Albany, M.S. (Biodiversity, Conservation, and Policy Program). Thesis Topic: “Twenty-year Trends in Avian Biodiversity in the Hudson River Valley Ecozone.”

Benjamin Zuckerberg (Chair, William Porter), SUNY/CESF, Ph.D. Thesis Topic: “Long-term Changes in the Distributions of Breeding Birds in Response to Regional Reforestation and Climate Change in New York State.”

Caroline B. Spellman (Chair, C.R. Smith), Field of Natural Resources, Ph.D. Thesis Topic: "An Evaluation of Piping Plover *(Charadrius melodus)* Nest Success, Habitat Selection, and Management Needs on Long Island, NY" (currently on extended leave for medical reasons).

REFEREE AND REVIEWER FOR THE FOLLOWING PUBLISHERS OR PUBLICATIONS:

Colonial Waterbirds

Conservation Biology
Ecological Applications
Ecology
Journal of Wildlife Management
North American Bird Bander
The Kingbird (journal of the New York State Ornithological Association)
Wilson Bulletin
Cornell University Press, Ithaca, NY
University of Tennessee Press, Knoxville, TN
University of Wisconsin Press, Madison, WI

EDUCATION:

Cornell University, Ithaca, New York Doctor of Philosophy, Thesis title: "Comparative Aggressive Behavior of the Pine Vole *(Pitymys pinetorum)* and the Meadow Vole *(Microtus pennsylvanicus):* An Information Theoretic Study with Reference to the Ecological Correlates of Microtine Sociobiology"

East Tennessee State University, Johnson City, Tennessee Bachelor of Science, *cum laude,* Major: Botany and Zoology Minor: General Sciences (physical geography, meteorology, geology, photography). Graduated with 3.5 QPA on 4.0 scale, 16 in a class of 389.

RICHARD RANDALL STECHERT

Herpetologist

Education

Ridgewood High School, Ridgewood, NJ, Graduated 1970

Employment

1999-2000 - Contract with ERS Consultants, Inc. to survey potential bog turtle (*Clemmys muhlenbergii*) habitat ca. 0.5 miles north of a known site in Orange County, New York.

1998-2000 - Annual contract with Emcon/It/The Chazen Companies (through David Tompkins, Project Manager) to survey rattlesnake dens and surrounding basking habitat, and radio track rattlesnakes on private and public land in southern Rockland County, New York.

1994-2000 - Annual Contracts with USMA Natural Resource Branch West Point, New York; NYSDEC Endangered Species Unit; and Natural Heritage Program to provide a general herpetological survey of southern New York, radio track spotted turtles (*Clemmys guttata*) and wood turtles (*Clemmys insculpta*) and research timber rattlesnakes habitat, population movements through mark/recapture and radiotelemetry, and demographics.

1995 - Second year of 3-year contract with Natural Resources Branch, United States Military Academy, West Point, New York for mark/recapture and radio telemetry study of timber rattlesnakes (*Crotalus horridus*) from West Point Border Line den, Brooks Hollow den, and Crows Nest den to determine critical habitat, home range parameters, population size estimates, causes of attrition and recovery program for West Point Border Line rattlesnake population.

Annual contract (1981 to present) with New York State Department of Environmental Conservation (NYSDEC), Delmar, New York to determine rattlesnake den locations, critical habitat, population size estimates, and threats to individual populations.

Contract with New York Natural Heritage Program (Nature Conservancy), Latham, New York to conduct field surveys for timber rattlesnakes and other endangered and threatened species in western New York, and the Lake George-Lake Champlain Valley in northeastern New York.

Contract with New Jersey Department of Environmental Protection to identify and update timber rattlesnake den locations and population size estimates in northern New Jersey.

October 31, 1995 - Courtroom consultation for The Chazen Companies, Montgomery, New York, and subsequent letters on the possible impact of a proposed mining operation to a population of timber rattlesnakes located on the Fishkill Ridge in Dutchess County, New York. Field surveys scheduled for spring of 1996

Contract with New Jersey Department of Environmental Protection to determine timber rattlesnake den locations in Picatinny Arsenal, Hibernia, New Jersey.

June 26, 1994 - Field survey of Central Hudson pipeline project in Orange County, New York for Phenix Environmental, Inc., and development of mitigation plan for rattlesnakes encountered and habitat restoration.

1993 - Contract with USMA, West Point, New York to determine den locations, critical habitat, and causes of attrition on West Point Military Reservation.

Annual contract (1981 to 1993) with Dr. William S. Brown, Associated Professor of Biology, Skidmore College, Saratoga, New York to provide lab and field assistance and instruct Dr. Brown in locating den sites, transient rocks, and summer basking habitat for rattlesnake populations in the Lake George region.

1989 to 1992 - Contract with LMS Environmental Engineers, Pearl River, New Jersey to determine den locations, summer ranges, and population size estimates of rattlesnake populations in Sterling Forest, New York.

1992 - Contract with New York Natural Heritage Program (Nature Conservancy), Latham, New York to conduct field surveys for timber rattlesnakes and other endangered and threatened species in the Mongaup River Wildlife Management Area.

August 18, 1992 - Field survey for Bob Zappalorti, Herpetological Associates, Forked River, New Jersey of the Sterling Forest, New Jersey rattlesnake den and summer basking habitat.

1992 - Contract with the New York State Museum, Albany, New York to conduct field surveys for timber rattlesnakes, bog turtles, and general reptile and amphibian populations on West Point Military Reservation.

May 8, 1991 - Field survey for Steve Hill, developer, Glen Spey, New York of the glen Spey and Rock Hill rattlesnake dens.

May 7, 1991 - Field survey for Bob Zappalorti, Herpetological Associates of the Sterling Forest, New Jersey rattlesnake den.

April 18, May 2, 1991 - Field surveys for Bob Zappalorti, Herpetological Associates of the Mt. Rushmore rattlesnake den sites in Highland Mills, New York.

October 8,1990 - Field survey for Steve Hill, Glen Spey, New York of the Glen Spey and Rock Hill rattlesnake dens.

1990, 1991 - Contract with Bob Zappalorti, Herpetological Associates, for Phenix Environmental to conduct field surveys along the Iroquois Gas Pipeline on West Mt. and near Dogtail Corners, New York, and Candlewood Lake, Connecticut.

1990 - Contract with Bob Zappalorti, Herpetological Associates, for Phenix Environmental to conduct rattlesnake surveys near the proposed Jug End development in South Egremont, Massachusetts.

1988 - Contract with Bagdon Environmental Associates, Delmar, New York to conduct a survey of the Cat Rocks rattlesnake den near Amenia, New York.

1987 - Contract with NYSDEC, Delmar, New York to survey historic northern cricket frog (*Acris crepitans*) sites to determine if populations are extirpated or extant and potential threats to extant populations.

June 10, 1987 - Consultation with Carmel McGill and Raymond Heimbuch, Clarke and Rapuano, Inc., New York, New York on the potential impact of the proposed Mt. Rushmore development to the Schunemunk Mt. Rattlesnake dens in Highland Mills, New York.

1986 - Contract with NYSDEC, Delmar, New York to survey historic bog turtle (*Clemmys muhlenbergi*) sites to ascertain which populations are still extant and potential threats to those populations.

September 15, 1985 - Field survey for New York Power Authority, March, New York along proposed transmission lines near Harvard, New York to determine possible existence of timber rattlesnake populations in the area.

August 31, 1983 - Survey for the Nature Conservancy, Eastern New York Chapter, near Cooperstown, New York to determine possible existence of timber rattlesnakes on property for sale.

Special Licenses

Annual licenses from New York State DEC, New Jersey DEP, Sterling Forest Corporation and Palisades Interstate Park Commission to conduct Endangered and Threatened Species research in New York and New Jersey.

Community Service

Volunteer for NYSDEC Endangered Species Unit and NJDEP Endangered and Non-game Species Program when not working under contract.

Volunteer field surveys done for Georgia Gopher Tortoise Council, Georgia Nature Conservancy, South Carolina Wildlife and Marine Resources, Arizona-Sonora Desert Museum.

Appendix B: 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

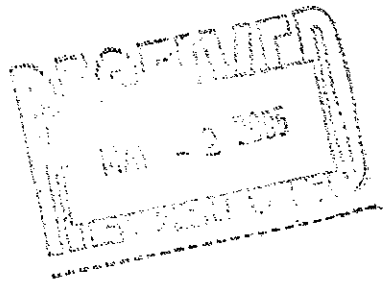
Routes 44 and 22
Town of Amenia
Dutchess County, New York

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

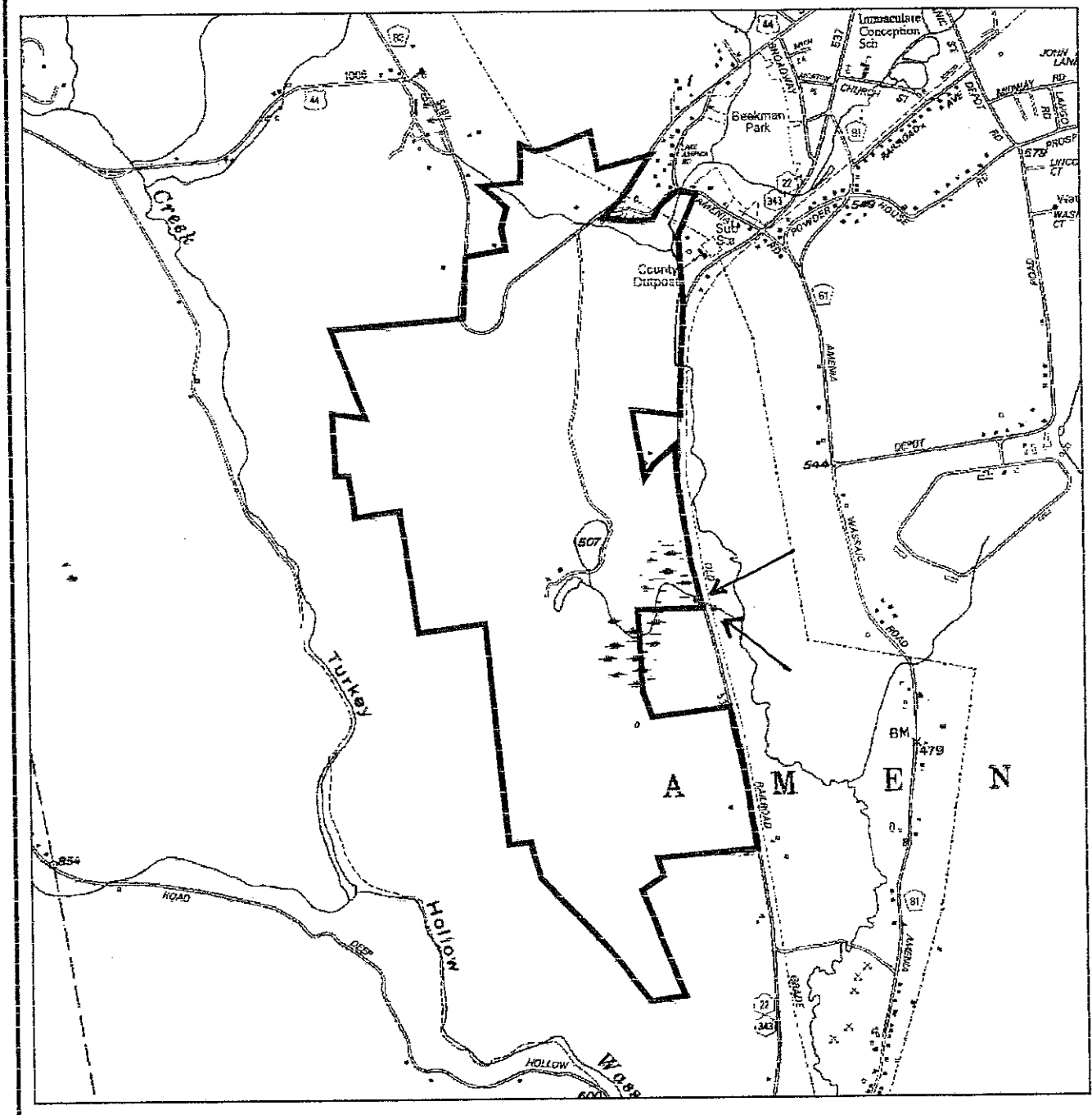
Hill's Pondweed

NY Legal Status:	Threatened	**NYS Rank:**	; Imperiled	1289
		Global Rank:	; Vulnerable	
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

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

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.

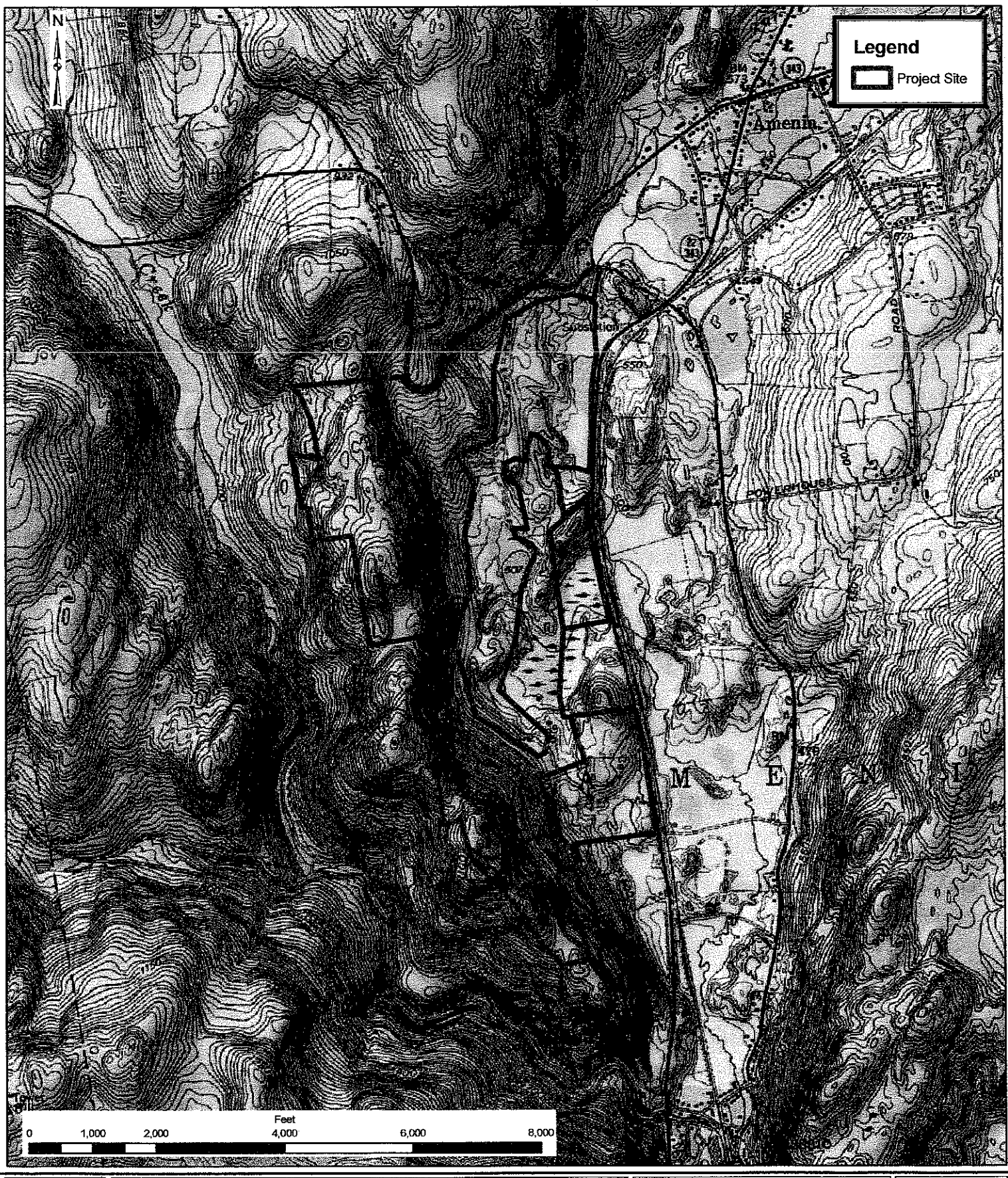
If at all possible, please fax the requested information to me at (845) 454-4026. Please do not hesitate to contact me at (845) 486-1517 if you have any questions.

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
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

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

Randy Stechert
Herptological Consultant
30 School Street
Narrowsburg, NY 12764
845-252-3517

May 30, 2007

Mr. George Fenn, Chairman
Town of Amenia Town Hall
366 Mechanic Street
Amenia, NY 12501

Re: Evaluation of Timber Rattlesnakes (Crotalus horridus) habitat at the Silo Ridge Resort.

Dear Mr. Fenn:

By way of introduction, I am a professional herpetologist who has worked as an independent contractor and as a timber rattlesnake consultant for the NYSDEC Endangered Species Unit (ESU) since 1981. I have also performed in a similar capacity for a number of environmental engineering companies, including the Chazen Companies, under the direction of David Tompkins, Senior Director of Environmental and Ecological services.

On April 20, 2005, Dave Tompkins and I initiated the Phase I timber rattlesnake habitat assessment component of the Silo Ridge biodiversity survey by driving back into the deeply shaded ravine known as Deep Hollow – Turkey Hollow. As described in my timber rattlesnake survey protocol guidelines submitted to the New York Natural Heritage Program (NYHER, Stechert, 2005), the initial phase of the surveys consist of identifying potential denning habitat by aspect (e.g. from 95 degrees east – southeast around the southern arc to 270 degrees due west, with rare exceptions) on topographic maps, looking for exposed rock within these directional parameters, and interviewing full-time local residents that have lived in the area for more than ten years. Based on our conversations with local residents, none of the interviewed residents had any anecdotal rattlesnake reports, despite the presence of an interesting southwest-facing exposed ledge system ca. 0.6 mi. (1km) north of the road and ca. 1.0 mi. west-southwest of the project site on Amenia Preserve property. Additional interviews with Silo Ridge employees failed to disclose any rattlesnake reports during the approximate 30 year existence of the resort. In contrast, most of

the local residents were aware of the Murphy Den (DU-6, NYSDEC database) located on the east side of the ridge east of Rt. 22 and Powerhouse Rd., ca. 1.3 mi. from Silo Ridge, and separated by bisecting roads and residential development.

At the request of Dave Tompkins, I re-visited the Silo Ridge Resort on April 2, 2007, for the purpose of re-evaluating the potential for timber rattlesnake basking and denning habitat on the ridge immediately west of the golf course. After checking the stream and seeps at the base of the ridge for salamander presence and breeding activity, Steve Finch from The Chazen Companies and I ascended the steep east slope to the rim. Immediately west of the rim and north of a small highbush blueberry – dominated wetland is a small rocky spur that provides a limited amount of exposed potential basking and denning habitat, but the proximity of the spur to the golf course (within 500 m distance) and the absence of reported rattlesnake sightings from local residents, Amenia Reserve members, Silo Ridge groundskeepers, and golfers, contraindicates the potential presence of this species. However, the aforementioned wetland does support a breeding population of wood frogs, spring peepers, eastern newts, and probably spotted turtles, as observed by Steve Finch (pers. comm.) during his surveys conducted in 2006.

A peripheral critique of Dr. Eric Kiviat's letter to the Amenia Town Planning Board warrents a further explanation regarding timber rattlesnake phenology and spatial distribution. Interestingly, Dr. Kiviat states "with regard to the timber rattlesnake, habitat changes on the steep slopes (see above) could improve or create potential den and basking habitat for this species." While Dr, Kiviat has had admirable success with restoring or creating habitat for the state-listed threatened blanding's turtle, habitat requirements for the threatened timber rattlesnake, specifically the den sites, are considerably more difficult to emulate; e.g. internal hibernaculum temperature gradients (>35° F [Stechert, unpub. data]), sufficient moisture to prevent dessication, aspect aiding the winter thermal regime, etc. Currently, only two edificarian (i.e. man-made) timber rattlesnake dens have been verified as successful, one in central North Carolina, and one in northeast Virginia (Z. Orr, W.H. Martin, pers. comm..), both in regions with much shallower frost lines. As for Dr. Kiviat's statement that "snakes are generally cryptic in their appearance and behavior, and a low density snake population can go undetected by local resident and biologists", some small fossorial species such as worm snakes, ringneck snakes, and red-bellied snakes may indeed go unnoticed by locals, but numerous other species, e.g. garter snakes, water snakes, milk snakes, black racers, black rat snakes, copperheads, and particularly timber rattlesnakes, are often favored topics of conversation between farmers, builders, loggers, quarry workers, and hunters. Due to the fact that current rattlesnake populations in New York have been in continual existence for several hundred to several thousand years, it is unlikely that even a low density population of this wide-ranging seasonally migratory high profile species could remain undetected even in rural areas. In over forty years of personal research involving intensive field studies throughout New York State, northern New Jersey,

and northeast Pennsylvania, I have frequently found previously unknown den sites, but rarely found an unknown rattlesnake population. In my opinion, the proposed expansion of the Silo Ridge Resort does not represent a threat to the nearest population of this particular species.

Sincerely,

Randy Stechert

Randy Stechert
Herpetological Consultant

cc: Dave Tompkins, The Chazen Companies

Appendix C:
Vegetative Species List

Appendix C. Vegetative Species List

Scientific Name	Common Name	Habitat
Trees		
Acer negundo	Box elder	SSHF
Acer palmatum	Japanese maple	ML (golf course)
Acer rubrum	Red maple	RMS
Acer saccharum	Sugar maple	SSHF
Aesculus hippocastanum	Horse chestnut	SSHF
Ailanthus altissima	Tree-of-heaven	SSHF
Betula alleghaniensis	Yellow birch	RMS, SSHF
Betula lenta	Sweet birch	SSHF
Betula papyrifera	Paper birch	SSHF
Betula pendula	European white birch	SSHF
Betula populifolia	Gray birch	SSHF
Carpinus caroliniana	Ironwood	SSHF
Carya cordiformis	Bitternut hickory	SSHF
Carya glabra	Pignut hickory	SSHF
Carya ovata	Shagbark hickory	SSHF
Carya tomentosa	Mockernut hickory	COF
Castanea dentata	American chestnut	COF
Catalpa speciosa	Northern catalpa	SSHF
Fagus grandifolia	American beech	SSHF
Fraxinus americana	White ash	SSHF
Fraxinus pennsylvanica	Green ash	RMS
Juglans nigra	Black walnut	SSHF
Juniperus virginiana	Eastern red cedar	OF, SSHF
Liriodendron tulipifera	Tuliptree	SSHF
Malus spp.	Apple	OF
Ostrya virginiana	Eastern hop-hornbeam	SSHF
Picea glauca	White spruce	ML
Picea pungens	Blue spruce	ML (golf course)
Pinus strobus	White pine	SSHF
Pinus sylvestris	Scots pine	ML (golf course)
Platanus occidentalis	Sycamore	RM
Populus deltoides	Eastern cottonwood	RMS, SSHF
Populus grandidentata	Bigtooth aspen	BMF
Populus tremuloides	Quaking aspen	SSHF
Prunus serotina	Black cherry	SSHF
Quercus alba	White oak	SSHF, COF
Quercus palustris	Pin oak	RMS, SSHF
Quercus prinus	Chestnut oak	COF
Quercus rubra	Red oak	SSHF, COF
Quercus velutina	Black oak	SSHF
Robinia pseudoacacia	Black locust	ML (golf course), SSHF

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.

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Scientific Name	Common Name	Habitat
Trees (cont.)		
Salix babylonica	Weeping willow	RM
Sassafras albidum	Sassafras	SSHF
Tilia americana	Basswood	SSHF
Tsuga canadensis	Eastern hemlock	COF, SSHF
Ulmus americana	American elm	RMS, SSHF
Ulmus rubra	Slippery elm	RMS, SSHF
Shrubs		
Acer pensylvanicum	Striped maple	COF, SSHF
Alnus incana	Speckled alder	RMS, SEM
Amelanchier arborea	Common serviceberry	SSHF
Berberis thunbergii	Japanese barberry	SSHF
Cornus alternifolia	Alternate-leaved dogwood	SSHF
Cornus amomum	Silky dogwood	SEM
Cornus racemosa	Gray dogwood	SSHF
Cornus sericea	Red-osier dogwood	RM
Elaeagnus umbellata	Autumn olive	OF
Euonymus atropurpureus	Burning bush	SSHF
Hamamelis virginiana	American witchhazel	SSHF
Kalmia latifolia	Mountain laurel	COF
Ligustrum vulgare	Privet	SSHF
Lindera benzoin	Spicebush	RMF
Lonicera tatarica	Tartarian honeysuckle	SSHF, RMF
Morus rubra	Red mulberry	ML (Golf course), SSHF
Rhamnus cathartica	Common buckthorn	SSHF
Rhus glabra	Smooth sumac	OF
Rhus typhina	Staghorn sumac	OF
Rosa blanda	Smooth rose	SSHF
Rosa multiflora	Multiflora rose	SSHF, OF
Rosa palustris	Swamp rose	REM, SSHF
Rubus allegheniensis	Allegheny blackberry	SSHF, OF
Rubus occidentalis	Black raspberry	SSHF, OF
Salix discolor	Pussy willow	RM
Sambucus nigra	Common elderberry	SSHF
Staphylea trifolia	American bladdernut	SSHF
Vaccinium angustifolium	Lowbush blueberry	SSHF, COF
Vaccinium corymbosum	Highbush blueberry	RM, EM/SSS, HBB
Vaccinium vacillans	Late low blueberry	COF
Viburnum acerifolium	Mapleleaf viburnum	SSHF
Viburnum dentatum	Northern arrowwood	RMF
Viburnum recognitum	Southern arrowwood	RMF
Herbs		
Achillea millefolium	Common yarrow	OF
Actaea pachypoda	White baneberry	SSHF

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Scientific Name	Common Name	Habitat
Herbs (cont.)		
Alliaria petiolata	Garlic mustard	SSHF
Allium ascalonicum	Wild onion	OF, SSHF
Ambrosia artemisiifolia	Common ragweed	OF
Anaphalis margaritacea	Pearly everlasting	COF
Anemone quinquefolia	Wood anemone	RMS
Apocynum androsaemifolium	Spreading dogbane	OF
Aquilegia canadensis	Wild columbine	SSHF
Arabis glabra	Tower mustard	OF
Arabis lyrata	Lyre-leaved rock cress	SSHF
Aralia nudicaulis	Wild sarsaparilla	COF, SSHF
Arctium minus	Lesser burdock	SSHF
Arisaema triphyllum	Jack-in-the-pulpit	SSHF
Asarum canadense	Wild ginger	SSHF
Asclepias syriaca	Common milkweed	OF
Berteroa incana	Hoary alyssum	OF
Bidens frondosa	Devil's beggartick	OF
Brassica nigra	Black mustard	OF
Caltha palustris	Yellow marsh marigold	RM, HBBT
Capsella bursa-pastoris	Shepherd's purse	OF
Cardamine dyphylla	Toothwort	SSHF
Centaurea sp.	Knapweed	OF
Chelidonium majus	Celandine	SSHF
Cichorium intybus	Chicory	OF
Cirsium arvense	Canada thistle	OF, SSHF
Cirsium vulgare	Bull thistle	OF
Comptonia peregrina	Sweet fern	COF
Coptis groenlandica	Goldthread	SSHF
Coreopsis lanceolata	Lance-leaved coreopsis	ML (golf course)
Coronilla varia	Purple crownvetch	OF
Cryptotaenia canadensis	Honewort	SSHF
Daucus carota	Queen Anne's lace	OF
Desmodium glutinosum	Pointed-leaved tick trefoil	SSHF
Dianthus armeria	Deptford pink	OF
Dianthus deltoides	Maiden pink	OF
Dicentra cucullaria	Dutchman's breeches	BMF
Echinocystis lobata	Wild cucumber	OF
Equisetum palustre	Marsh horsetail	RM
Erigeron philadelphicus	Common fleabane	OF
Erythronium americanum	Trout lily	SSHF
Eupatorium perfoliatum	Boneset	SEM
Eupatorium rugosum	White snakeroot	SSHF
Euphorbia cyparissias	Cypress spurge	COF, OF

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Scientific Name	Common Name	Habitat
Herbs (cont.)		
Eurybia divaricata	White wood aster	SSHF
Fragaria vesca	Wood strawberry	SSHF
Galium aparine	Cleavers	SSHF
Galium boreale	Northern bedstraw	SSHF
Galium asprellum	Rough bedstraw	SSHF
Galium mollugo	Wild madder	OF
Gaultheria procumbens	Eastern teaberry	COF
Geranium maculatum	Wild geranium	SSHF
Geranium robertianum	Herb Robert	SSHF
Geum canadense	White avens	SSHF
Hepatica nobilis	Roundlobe hepatica	SSHF
Hesperis matronalis	Dame's violet	OF
Hieracium aurantiacum	Orange hawkweed	OF
Hieracium flagellare	Large mouse ear	OF
Hieracium pretense	Field hawkweed	OF
Hieracium venosum	Rattlesnake Weed	COF
Hieracium vulgatum	Common hawkweed	OF
Hypericum perforatum	Common St. Johnswort	OF
Hypoxis hirsuta	Yellow stargrass	COF
Impatiens capensis	Jewelweed	RMS, SEM
Iris versicolor	Harlequin blueflag	HBB
Lathyrus pratensis	Yellow vetchling	OF
Lemna spp.	Duckweed	RM
Leonurus cardiaca	Motherwort	OF
Lepidium campestre	Field peppergrass	OF
Lespedeza virginica	Slender bush clover	OF
Leucanthemum vulgare	Oxeye daisy	OF
Lobelia spicata	Spike lobelia	OF
Lotus corniculatus	Birdsfoot trefoil	OF
Lupinus polyphyllus	Garden lupine	ML (golf course)
Lycopodium spp.	Clubmoss	BMF
Lycopus americanus	American water horehound	SEM
Lysimachia quadrifolia	Whorled loosestrife	OF
Lythrum salicaria	Purple loosestrife	SEM
Maianthemum canadense	Canada mayflower	SSHF
Melampyrum lineare	Cowwheat	COF
Melilothus alba	White sweet clover	OF
Melilotus officinalis	Yellow sweet clover	OF
Mentha arvensis	Wild Mint	OF
Mitchella repens	Partridge berry	COF
Mitella diphylla	Miterwort	SSHF
Monarda fistulosa	Wild bergamot	OF

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Scientific Name	Common Name	Habitat
Herbs (cont.)		
Monotropa uniflora	Indian pipe	SSHF
Myosotis scorpioides	True forget-me-not	COF
Myosotis verna	Spring forget-me-not	COF
Osmorhiza claytoni	Sweet cicely	SSHF
Oxalis stricta	Common yellow oxalis	SSHF
Pedicularis canadensis	Wood betony	RMS
Penstemon digitalis	White beardstongue	SEM
Phytolacca americana	American pokeweed	OF
Plantago lanceolata	English plantain	OF
Plantago major	Broadleaf plantain	OF
Polygonatum biflorum	True Solomon's seal	SSHF
Polygonum pensylvanicum	Pinkweed	SSHF
Polygonum saggitatum	Arrowleaf tearthumb	RM
Potenilla recta	Sulphur cinquefoil	SSHF
Potenilla simplex	Common cinquefoil	OF, SSHF
Prenanthes alba	White lettuce	SSHF
Pyrola elliptica	Shinleaf	SSHF
Ranunculus acris	Tall buttercup	OF
Rudbeckia hirta	Black-eyed Susan	RMS, SEM
Rumex crispus	Curly dock	OF
Rumex obtusifolius	Bitter dock	OF
Sanguinaria canadensis	Bloodroot	SSHF
Silene latifolia	Bladder campion	OF
Sisymbrium officinale	Hedge mustard	OF
Sisyrinchium angustifolium	Stout blue-eyed grass	OF
Sisyrinchium montanum	Common blue-eyed grass	OF
Smilacina racemosa	False Solomon's seal	SSHF
Solidago canadensis	Canada goldenrod	OF
Solidago canadense	Golden-rod	OF
Sonchus oleraceus	Common sowthistle	OF
Sphagnum spp.	Sphagnum	HBB, RM
Symplocarpus foetidus	Skunk cabbage	RMS, SEM
Tanacetum vulgare	Tansy	SSHF
Taraxacum officinale	Common dandelion	OF
Thalictrum dioicum	Early meadow rue	SSHF
Thalictrum polygamum	Tall meadow rue	SSHF
Thalictrum thalictroides	Rue anemone	SSHF
Tiarella cordifolia	Heart-leaf foamflower	SSHF
Tovara virginiana	Virginia knotweed	SSHF
Trientalis borealis	Starflower	SSHF
Trifolium agrarium	Hop clover	OF
Trifolium campestre	Field clover	OF
Trifolium pretense	Red clover	OF

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Scientific Name	Common Name	Habitat
Trifolium procumbens	Low hop clover	OF
Trifolium repens	White clover	OF
Trillium erectum	Red trillium	SSHF
Tussilago farfara	Coltsfoot	OF
Typha latifolia	Broad-leaved cattail	EM/SS
Uvularia perfoliata	Bellwort	COF, SSHF
Veratrum viride	False hellebore	RM
Verbascum blattaria	Moth mullein	OF
Verbascum thapsus	Common mullein	OF
Vicia cracca	Cow vetch	OF
Viola bicolor	Field pansy	SSHF
Viola macloskeyi	Small white violet	SSHF
Viola pensylvanica	Smooth yellow violet	SSHF
Viola sororia	Common blue violet	SSHF
Ferns		
Adiantum pedatum	Northern maidenhair	SSHF
Asplenium platyneuron	Ebony spleenwort	SSHF
Asplenium rhizophyllum	Walking fern	SSHF
Asplenium trichomanes	Maidenhair spleenwort	SSHF
Athyrium filix-femina	Lady fern	SSHF
Botrychium virginianum	Rattlesnake fern	SSHF
Dennstaedtia punctilobus	Eastern hayscented fern	COF, SSHF
Dryopteris carthusiana	Spinulose woodfern	SSHF
Dryopteris intermedia	Evergreen woodfern	SSHF
Dryopteris marginalis	Marginal woodfern	SSHF
Matteucchia struthiopteris	Ostrich fern	HBBT, RM
Onoclea sensibilis	Sensitive fern	RMS, SEM
Osmunda cinnamomea	Cinnamon fern	RMS, SEM
Osmunda claytoniana	Interrupted fern	SSHF
Osmunda regalis	Royal fern	RMS
Phegopteris hexagonoptera	Broad beechfern	SSHF
Polypodium virginianum	Rock polypody	COF, SSHF
Polystichum acrostichoides	Christmas fern	SSHF
Pteridium aquilinum	Bracken fern	COF
Thelypteris noveboracensis	New York fern	SSHF
Thelypteris palustris	Marsh fern	EM/SS, HBB, RM
Woodsia obtusa	Bluntlobe cliff fern	SSHF
Vines		
Amphicarpaea bracteata	Hog peanut	SSHF
Celastrus orbiculatus	Asiatic bittersweet	OF, SSHF
Celastrus scandens	Climbing bittersweet	SSHF
Echinocystis lobata	Wild cucumber	SSHF

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Scientific Name	Common Name	Habitat
Ipomoea purpurea	Common morning glory	OF
Lathyrus latifolius	Everlasting pea	OF
Parthenocissus quinquefolia	Virginia creeper	SSHF
Toxicodendron radicans	Poison ivy	OF
Vitis aestivalis	Summer grape	OF, SSHF
Vitis labrusca	Fox grape	OF
Grasses and Sedges		
Andropogon spp.	Broomsedge	OF
Carex crinita	Fringed sedge	SEM
Carex echinata	Star sedge	SEM
Carex laevivaginata	Smoothsheath sedge	SEM
Carex lurida	Lurid sedge	SEM
Carex pensylvanica	Pennsylvania sedge	SSHF
Carex stricta	Tussock sedge	RMS, SEM
Carex vulpinoidea	Fox sedge	SEM
Dactylis glomerata	Orchardgrass	OF
Eleocharis spp.	Spikerush	EM/SS, RM
Juncus effusus	Soft rush	SEM
Juncus tenuis	Poverty rush	SSHF
Microstegium vimeneum	Nepalese browntop	SSHF
Phalaris arundinacea	Reed canarygrass	EM/SS
Phargmites australis	Common reed	SEM
Phleum pratense	Timothy	OF
Poa spp.	Bluegrass	OF
Schizachyrium scoparium	Little bluestem	OF
Scirpus atrovirens	Green bulrush	SEM
Scirpus cyperinus	Woolgrass	SEM
Setaria pumila	Yellow foxtail	OF

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Appendix D:
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.

Appendix E:
Breeding Bird Survey Report

Breeding Bird Survey Report
Silo Ridge Country Club
Town of Amenia, Dutchess County, New York

Prepared for:

The Chazen Companies
356 Meadow Avenue
Newburgh, New York

Contact: David B. Tompkins
Director/Senior Biologist

Prepared by:

Charles R. Smith, Ph.D.
449 Irish Settlement Road
Freeville, NY 13068
(607) 255-3219

September 2007

Breeding Bird Survey Report
Silo Ridge Country Club
Town of Amenia, Dutchess County, New York

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Figures

1.0 Introduction

At the request of The Chazen Companies (TCC), I was contracted to assist TCC biologists in conducting a breeding bird survey on the properties of the Silo Ridge Country Club. The purpose of the breeding bird survey was to detect, identify, and inventory actually or potentially breeding bird species located at the existing golf course and areas which are proposed to be affected, and to determine if any endangered, threatened, and/or special concern species are located at the site. Birds were identified either visually, or by their songs or calls, or by both methods. The site is located in the Town of Amenia, Dutchess County, New York, as shown on the attached location map (Figure 1).

The bird inventory was conducted over a period of four days in June 2007 (see Table 1). During the survey, the area search method was employed and all land-cover types and habitats on the site were visited. The land-cover and habitat types which were searched at the site included forested areas (e.g., successional hardwood forest, beech-maple mesic forest, and chestnut oak forest), wetlands (e.g., shallow emergent marsh, red maple swamp, shrub swamp, highbush blueberry bog thicket, common reed/purple loosestrife marshes, and created ponds), open areas (e.g., mowed lawn/golf course and successional old fields), and transition zones among these habitats. Brief descriptions of these habitat types are presented in section 1.1, Habitat Descriptions.

Table 1
Breeding Bird Survey Effort Summary

Search Dates	Surveyors [1]	Search Times	Search Hours (Person Hours)
6-11-07	CS, SF, JT CS	5:15 – 13:15 16:00 – 17:30	8.0 X 3 = 24.0 hrs 1.5 X 1 = 1.5 hrs
6-12-07	CS, SF, JT	5:15 – 11:15	6.0 X 3 = 18 hrs
6-25-07	CS, DT, JT	5:15 – 12:45	7.5 X 3 = 22.5 hrs
6-26-07	CS, JT	5:15 – 11:45	6.5 X 2 = 13 hrs
			Total Search Hours = 79.0

[1] CS = Dr. Charlie Smith DT = David Tompkins JT = Jason Tourscher
SF = Steven Finch

Table 2
Breeding Bird Survey Weather Summary

Date	Air Temp	Cloud Cover	Wind Speed
6-11-07	60 – 75°F	< 50%	0-10 mph
6-12-07	60 – 75°F	< 50%	0-10 mph
6-25-07	60 – 70°F	< 25%	0-5 mph
6-26-07	70 – 85°F	>75%	0-5 mph

1.1 Habitat Descriptions

Forested Habitats

Successional hardwood forest – This habitat type is located in the northern and central portions of the site. The dominant species observed within this forested community includes sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), red oak (*Quercus rubra*), and white oak (*Quercus alba*) in the overstory; tartarian honeysuckle (*Lonicera tatarica*) and multiflora rose (*Rosa multiflora*) in the understory; and garlic mustard (*Alliaria petiolata*) as ground cover.

Beech-maple mesic forest – This habitat type is located in the western portion of the site, along the base of the ridge, and north of the clubhouse. The dominant vegetative species observed within this forested community includes sugar maple, paper birch (*Betula papyrifera*), American beech (*Fagus grandifolia*), mixed oaks, red trillium (*Trillium erectum*) and wild columbine (*Aquilegia canadensis*).

Chestnut oak forest – This habitat type is located on the top of the ridge in the western portion of the site. The dominant vegetative species observed within this forested community includes chestnut oaks (*Quercus montana*) and mixed oaks in the overstory, and mountain laurel (*Kalmia latifolia*) and low bush blueberry (*Vaccinium angustifolium*) in the understory.

Wetland Habitats

Common reed/purple loosestrife marsh – This habitat type is located throughout Wetland L and along a drainage swale located approximately 200 feet north of the entrance road. The dominant vegetative species observed includes common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), and cattail (*Typha latifolia*).

Highbush blueberry bog thicket – This habitat type is located along the ridge located in the western portion of the property. The dominant vegetative species includes highbush blueberry (*Vaccinium corymbosum*), mountain laurel (*Kalmia latifolia*), cinnamon fern (*Osmunda cinnamomea*), and sphagnum moss (*Sphagnum* spp.).

Red maple swamp – This habitat type is scattered throughout the site. It was primarily located along the northeastern site boundary, base of the ridge, and in the western portion of Wetland L. The dominant vegetative species includes red maple, eastern cottonwood (*Populus deltoides*), red osier dogwood (*Cornus sericea*), silky dogwood (*Cornus amomum*), skunk cabbage (*Symplocarpus foetidus*), and marsh fern (*Thelypteris palustris*).

Shallow emergent marsh – This habitat type is scattered throughout several small areas within the golf course in the south-central portion of the site and throughout portions of

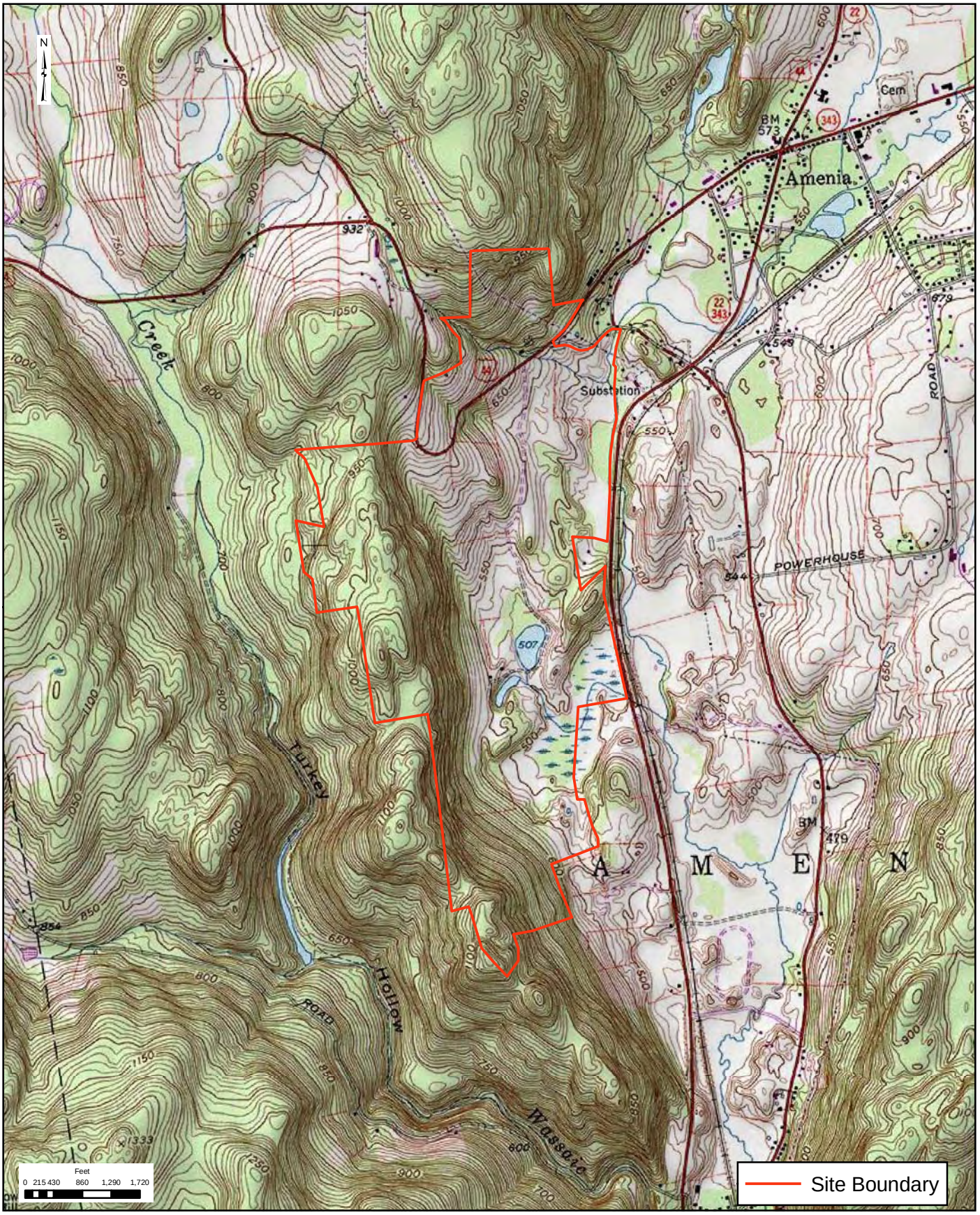
NYSDEC wetland AM-15, which is located in the eastern portion of the site. The dominant vegetative species includes broadleaf cattail, purple loosestrife, and skunk cabbage.

Shrub swamp – This habitat type is located along the western edge of Wetland L. The dominant vegetative species includes includes tartarian honeysuckle, silky dogwood, red osier dogwood, marsh fern, and skunk cabbage.

Open Habitats

Mowed lawn – This habitat type consists of the golf course lawns. Mixed grasses were located throughout this community. The majority of the vegetation is less than six inches tall.

Successional old field – This habitat type is located throughout the northern and southern portions of the site. The dominant vegetative species observed includes bluegrass (*Poa* spp.), panicgrass (*Panicum* spp.), clover (*Trifolium* spp.), and Queen Anne's lace (*Daucus carota*). The herbaceous vegetation is approximately 2-3 feet tall.



THE Chazen COMPANIES

Silo Ridge Resort Community

Site Location Map

Town of Amenia, Dutchess County, New York

Source: USGS Topographic Map. 1958 (photorevised 1984). Amenia Quadrangle.

Drawn by: JFT

1 inch equals 2,000 feet

Figure 1

Map Document: (N:\11\10400-10500\10454.00 silo Ridge\GIS\maps\Breeding Bird Survey Report\Figure 1 Site Location Map.mxd)
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2.0 Evaluation and Search Methods

2.1 Breeding Bird Survey Methodology

In conducting this survey, the area search method was employed and all land-cover types and habitats on the site were visited. Randomly walked transects were used to search each area (see Figure 2). A digital pedometer was used to measure the distance traversed. Random listening stations, within each habitat type, were also used to increase the chances of detecting species. Each bird species detected and their associated habitat type were recorded. All site visits were conducted by myself and at least one TCC biologist. These methods are the same as typically employed in breeding bird atlases (NYSDEC 2007, Smith 1990). Atlas procedures have been extensively peer-reviewed, both in North America and around the world.

It should be noted that an effort of eight hours in the field for a breeding bird atlas block of nine square miles is typical. Furthermore, for a Breeding Bird Survey Route, which is an automobile roadside survey of 24.5 miles in length, an investment of 2.5 observation hours is typical. During the Survey conducted at the site, 79.5 hours of effort (25.5 hours by me) were expended and 27 miles were walked. For an area the size of the Silo Ridge Country Club Project, the effort expended in inventorying breeding birds was both intensive and extensive, compared to other breeding bird inventory methods.

2.2 Resource Review

Several resources were reviewed prior to conducting the survey. These resources include the following:

- Site map, USGS Topographic Map, and 2004 Aerial orthophoto
- New York Breeding Bird Atlas Data (1980-1985 and 2000-2005)
- Audubon WatchList

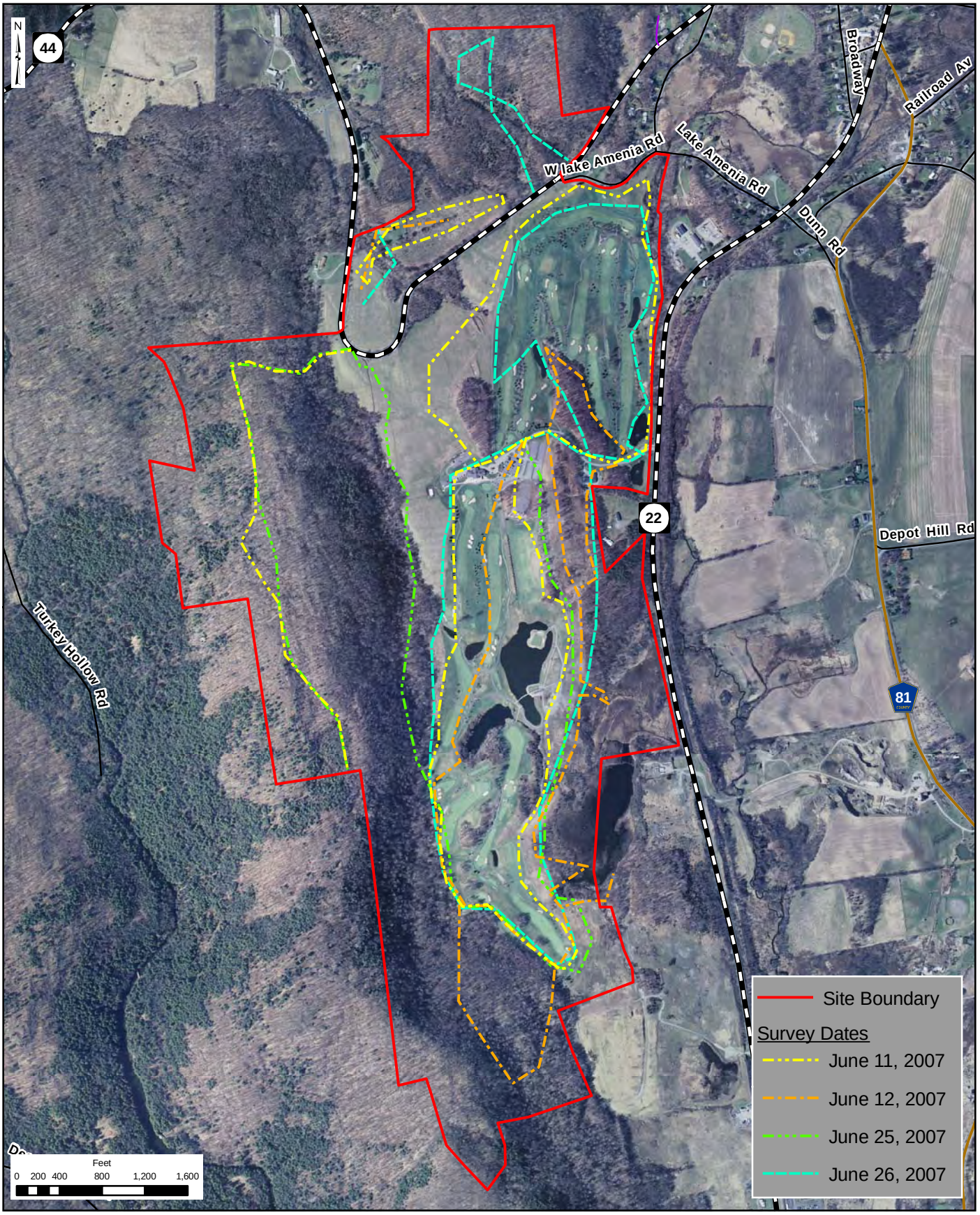
2.3 Breeding Bird Survey Personnel

Charles R. Smith, Ph.D. – Cornell University
Senior Research Associate, Ornithologist – Supervising Surveys

David B. Tompkins, MS. – The Chazen Companies
Senior Director, Environmental & Ecological Services
Certified Wildlife Biologist – The Wildlife Society

Jason F. Tourscher, MS. – The Chazen Companies
Biologist/Wetland Scientist
Certified Associate Ecologist – Ecological Society of America

Steven A. Finch – The Chazen Companies
Wetland Scientist/Biologist



THE Chazen COMPANIES

Silo Ridge Resort Community

Breeding Bird Survey

Town of Amenia, Dutchess County, New York

Source: NYS Office of Technology 2004 Orthophoto

Drawn by: JFT

1 inch equals 1,250 feet

Figure 2

Map Document: (N:\11\10400-10500\10454.00 silo Ridge\GIS\maps\Breeding Bird Survey Report\Figure 2 Breeding Bird Survey.mxd)
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3.0 Literature Review

Prior to conducting the Survey, New York State Breeding Bird Atlas data were researched to determine if any ETS bird species were reported in the vicinity of the site. Based on the Second New York Breeding Bird Atlas (2000-2005), 89 species were reported from Block 6163C, an area of nine square miles, within which the site is located. None of the species reported are classified in New York as an ETS species. It should be noted that during the First New York Breeding Bird Atlas (1980-1985), one ETS bird species, a Northern Goshawk, was detected within Block 6163. As the exact locations of species are not reported in the Atlas, it is not known if this species was reported at the site.

Following the Survey, the 2002 Audubon WatchList (National Audubon Society 2007) was reviewed to determine if any watch list species were recorded at the site. At least 31 species on the watch list are known to occur in New York as breeders, winterers, or migrants. Several watch list species were recorded at the site. These species are discussed in the following sections.

4.0 Findings

During the Survey, seventy-nine species of birds were detected and identified at the site. These species were detected within several different habitats, including mowed lawns, open water, wetlands, secondary forest, shrublands, riparian corridors, old fields, and transition zones between these habitats. Most of the species are common; however, six species listed on the Audubon WatchList 2002 (National Audubon Society 2007) were recorded at the site. These watchlist species include American Woodcock (*Scolopax minor*), Blue-winged Warbler (*Vermivora pinus*), Prairie Warbler (*Dendroica discolor*), Willow Flycatcher (*Empidonax traillii*), Wood Thrush (*Hylocichla mustelina*), and Worm-eating Warbler (*Helmitheros vermivorus*). A list of species that have been detected during the Survey, along with the habitat where they were predominantly observed, is presented below.

<u>*Mowed Lawn*</u> (*denotes a flyover)

A total of 19 species were detected within the mowed lawn habitat (e.g., golf course and lawn of home located in the northern portion of the site). These species include Cedar Waxwing (*Bombycilla cedrorum*), Turkey Vulture* (*Cathartes aura*), Killdeer (*Charadrius vociferous*), American Crow (*Corvus brachyrhynchos*), Barn Swallow (*Hirundo rustica*), Baltimore Oriole (*Icterus galbula*), Orchard Oriole (*Icterus spurius*), Common Merganser* (*Mergus merganser*), Northern Mockingbird (*Mimus polyglottus*), Brown-headed Cowbird (*Molothrus ater*), Common Grackle (*Quiscalus quiscula*), Bank Swallow (*Riparia riparia*), Eastern Bluebird (*Sialia sialis*), European Starling (*Sturnus vulgaris*), Tree Swallow (*Tachycineta bicolor*), House Wren (*Troglodytes aedon*), American Robin (*Turdus migratorius*), Eastern Kingbird (*Tyrannus tyrannus*), and Mourning Dove (*Zenaida macroura*). It should be noted that the Fish Crow was detected by a TCC biologist during a supplemental ecological assessment.

In addition, five species were detected around the clubhouse, silos, and accessory buildings. House Finches (*Capodacus mexicanus*) and House Sparrows (*Passer domesticus*) were observed at the clubhouse; Rock Pigeon (*Columba livia*) and Chimney Swift (*Chaetura pelagica*) were observed in the immediate vicinity of the Silos located in the northern portion of the site, and at least three Eastern Phoebe (*Sayornis phoebe*) nests were observed at the accessory buildings.

Open Water

A total of five species were detected within open water habitat. This habitat includes portions of Wetland L and the created golf course ponds. The species observed within this habitat include Wood Duck (*Aix sponsa*), Mallard (*Anas platyrhynchos*), Canada Goose (*Branta canadensis*), Green Heron (*Butorides virescens*), and Belted Kingfisher (*Ceryle alcyon*).

Emergent Wetlands

Two species were detected within onsite emergent wetlands. This habitat is primarily located within portions of Wetland L. It includes shallow emergent marsh and common reed/purple loosestrife wetlands. The species detected within this community type include Red-winged Blackbird (*Agelaius phoeniceus*) and Swamp Sparrow (*Melospiza georgiana*).

Forested Wetlands

Two species were detected within this community type. This community type includes red maple hardwood swamps and shrub swamps, which were primarily located in the vicinity of Wetland L. The species detected within this community type include Willow Flycatcher (*Empidonax traillii*) and Common Yellowthroat (*Geothlypis trichas*).

Secondary Forests

A total of 34 species were detected within the secondary forests which are located along the ridge, "forested islands" within the golf course, and in the northern and eastern portions of the site. Ecological communities such as beech-maple mesic forest, chestnut-oak forest, and successional hardwood forest are included within this habitat description. For a more detailed description of each species general location (e.g., Top of Ridge, Forested Islands, etc.), please review TCC's Supplemental Ecological Assessment Report, dated August 23, 2007. The species detected within this habitat include Tufted Titmouse (*Baeolophus bicolor*), Red-tail Hawk (*Buteo jamaicensis*), Northern Cardinal (*Cardinalis cardinalis*), Purple Finch (*Carpodacus purpureus*), Veery (*Catharus fuscescens*), Hermit Thrush (*Catharus guttatus*), Northern Flicker (*Colaptes auratus*), Eastern Wood-Pewee (*Contopus virens*), Blue Jay (*Cyanocitta cristata*), Pileated Woodpecker (*Dryocopus pileatus*), Least Flycatcher (*Empidonax minimus*), Worm-eating Warbler, Wood Thrush, Red-bellied Woodpecker (*Melanerpes carolinus*), Wild Turkey (*Meleagris gallopavo*), Black-and-white Warbler (*Mniotilta varia*), Great Crested Flycatcher (*Myiarchus crinitus*), Rose-breasted Grosbeak (*Pheucticus ludovicianus*), Downy Woodpecker (*Picoides pubescens*), Hairy Woodpecker (*Picoides villosus*), Eastern Towhee (*Pipiio erythrophthalmus*), Scarlet

Tanager (*Piranga olivacea*), Black-capped Chickadee (Poecile atricapilla), Blue-gray Gnatcatcher (*Polioptila caerulea*), American Woodcock, Ovenbird (*Seiurus aurocapillus*), American Redstart (*Setophaga ruticilla*), White-breasted Nuthatch (*Sitta carolinensis*), Yellow-bellied Sapsucker (*Sphyrapicus varius*), Carolina Wren (*Thryothorus ludovicianus*), Brown Thrasher (*Toxostoma rufum*), Yellow-throated Vireo (*Vireo flavifrons*), Warbling Vireo (*Vireo gilvus*), and Red-eyed Vireo (*Vireo olivaceus*).

Shrublands

A total of nine species were recorded within this habitat type. This habitat was generally located along the eastern border of the golf course, in the southern portion of the site, and along the southern portion of the forested area located in the northern portion of the site. The species detected within this habitat include American Goldfinch (*Carduelis tristis*), Prairie Warbler (*Dendroica discolor*), Chestnut-sided Warbler (*Dendroica pensylvanica*), Yellow Warbler (*Dendroica petechia*), Gray Catbird (*Dumetella carolinensis*), Indigo Bunting (*Passerina cyanea*), Chipping Sparrow (*Spizella passerina*), Field Sparrow (*Spizella pusilla*), and Blue-winged Warbler (*Vermivora pinus*).

Old Fields

A total of three species were recorded within the old field habitat. This habitat is located primarily north of the golf course and immediately north of Route 44. The species detected within this habitat include Ruby-throated Hummingbird (*Archilochus colubris*), Common Raven (*Corvus corax*), and Song Sparrow (*Melospiza melodia*).

According to TCC's previous ecological assessment and their work conducted during a supplemental ecological assessment, Cooper's Hawk (*Accipiter striatus*), Great Blue Heron (*Ardea herodias*), Red-shouldered Hawk (*Buteo lineatus*), Great Horned Owl (*Bubo virginianus*), Black Vulture (*Coragyps atratus*), Fish Crow (*Corvus ossifragus*), Palm Warbler (*Dendroica palmarum*), and a Virginia Rail (*Rallus limicola*) were also detected at the site. Cooper's Hawk and Red-shouldered Hawk are listed as special concern species in New York State and it is probable that the Palm Warbler was a late migrant.

5.0 Conclusions

In total, 79 species of birds were recorded at the site during the breeding bird survey. The mix of habitats observed on the site contributes to the variety of summer bird species (breeding status was not confirmed) detected during the Survey. During the Survey, no New York State listed ETS species were detected within the site. However, TCC biologists have previously observed Cooper's Hawk and Red-shouldered Hawk onsite during an ecological assessment conducted in 2005/2006. These species are listed as special concern species in New York. It should be noted that New York State listed special concern species are given no special NYSDEC protection. As these species were not detected during this survey, they most likely do not have nests within the site.

During the survey, six Audubon WatchList (National Audubon Society 2007) species were identified at the site. They include American Woodcock, Blue-winged Warbler, Prairie

Warbler, Willow Flycatcher, Wood Thrush, and Worm-eating Warbler. Audubon WatchList species are separated into three categories: red, yellow, and green, with "red" species facing the greatest conservation threats. All the WatchList species recorded at the site are listed as category "yellow" species, which means their populations are declining but at a rate slower than category red species. Audubon also notes that their category yellow species are based upon species already identified as moderate to moderate high priority by Partners in Flight. Partners in Flight is a cooperative conservation group involving partnerships among federal, state, and local government agencies, philanthropic foundations, professional organizations, conservation groups, industry, the academic community, and private individuals. However, one should use caution in interpreting the Audubon WatchLIst. It is important to note that the extent to which the Audubon WatchLlist has been peer-reviewed by professional scientists not affiliated with National Audubon is not reported on their web site. The Audubon WatchList web site also does not describe in detail sufficient for reproduction by independent scientists the methods used in developing their WatchList. Further, the methods used by Partners in Flight to develop their list of species, which Audubon includes in their category yellow, have been peer-reviewed by a team of professionals and found deficient in several respects (Beissinger et al. 2000).

Among the Audubon WatchList species detected on the site, American Woodcock, Blue-winged Warbler, Prairie Warbler, and Willow Flycatcher are species of late successional oldfields, where some invasion by shrubs and saplings has occurred. Wood Thrush and Worm-eating Warbler are species of forested habitats (successional hardwood forest, beech-maple mesic forest, and chestnut oak forest on this site). All of these species were detected relatively infrequently on the site, with only one or two singing males detected or observed in all cases.

Among the WatchList species, Wood Thrush and Worm-eating Warbler are species of interior forested habitats and are unlikely to be measurably affected by construction activities at the interface between forested habitats and the golf course. It is possible that some of the Audubon WatchList species associated with early to mid-successional habitats could be adversely affected if the areas of those habitats were reduced. However, it also is important to realize that some of the Audubon WatchList species could disappear from the site simply as a result of random events (e.g. mortality during migration, predation, disease, or other factors), because of their rarity on the site relative to other bird species. If their disappearance were coincident with construction on the site, it would not be possible to determine whether their absence was related to habitat modification resulting from construction or not, or from a lack of detectability by inexperienced observers. Also, some reviewers have expressed concern about the extent to which "edge species" may proliferate on the site. As our studies of birds and their habitats have advanced, we need to modify or possibly even discard older concepts of habitat associations for some species. For example, many ornithologists long have considered the Ovenbird (*Seiurus aurocapillus*) to be the quintessential area-sensitive, forest interior species (Van Horn and Donovan 1994). However, recently published work (Morton 2005) showed that more

complex forces, such as predation, require our perceptions of a forest interior species to be contextually qualified. Morton's work showed successful use of forest edges for nesting when Ovenbirds are confronted with forest interior predator pressure from eastern chipmunk (*Tamias striatus*). In settings where chipmunk densities and predation on eggs and nestlings were higher in the forest interior than at the forest edge, Morton (2005) reported more Ovenbirds nesting at the forest edges, with greater productivity of young. In this context, the Ovenbird was a successful "edge species." Birds are perhaps more adaptable than we fully understand, and some studies (O'Connor 1986) also have demonstrated that bird species will occupy a wider range of habitats, including some types judged to be sub-optimal, at higher population densities than at lower densities. These studies show clearly that the effects of changing patterns of land-use and patterns of ecological succession have to be evaluated both temporally and spatially in a more complicated landscape.

During the construction of the proposed golf course and accompanying facilities, wildlife species (including birds) in the surrounding area will be disturbed. These highly mobile species will likely avoid construction areas and will most likely relocate to other areas of suitable habitat nearby. Due to the rural nature of the surrounding community, many areas of potential suitable habitat are available for these displaced species. Following construction, a full compliment of avifauna is expected to recolonize the golf course area. In fact, if vegetated buffers are provided around open water areas, there is the potential to increase the number of species which utilize the golf course area.

There also may be cost-effective opportunities to increase species variety by enhancing use of the site by birds and other wildlife. Avoiding the use of invasive, non-native shrubs as landscaping plants could benefit a number of species of shrub-nesting birds (e.g. Gray Catbird, Northern Cardinal, Song Sparrow). Many invasive plant species respond to disturbances which result from human activities, often in the contexts of land-use changes, plant succession, habitat fragmentation, and the associated habitat changes at local scales and ecoregional scales. Managing invasive, non-native plants is one of the great conservation challenges of the Twenty-first century. Only a few studies of the effects of invasive, non-native plants on birds have been published, and none of them based on studies done in New York. A study in Illinois (Schmidt and Whelan 1999) concluded that nests of American Robin (*Turdus migratorius*) placed in a non-native Amur honeysuckle (*Lonicera maackii*) and in buckthorn (Rhamnus cathartica) experienced greater nest predation than robin nests in native shrubs (*Crataegus* spp. and *Viburnum* spp.) or native trees. Schmidt and Whelan (1999) believed that the higher predation resulted from a combination of lower nest height, an absence of sharp thorns on the non-native species, and a branching structure that facilitated predator movement within the non-native species.

Borgman and Rodewald (2004), based upon their work in Ohio, reported that nests of Northern Cardinal (*Cardinalis cardinalis*) and American Robin (*Turdus migratorius*) placed in exotic shrubs, including honeysuckles (*Lonicera maackii* and *L. tatarica*) and multiflora

rose (*Rosa multiflora*), experienced greater predation than nests in native plant species. Borgman and Rodewald (2004) concluded that the lower height and branching structure of those shrub species make nests especially vulnerable to climbing mammalian predators, like raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), eastern chipmunk (*Tamias striatus*), and possibly even mice (*Peromyscus spp.*) and snakes, which can climb such shrubs more easily.

Other, cost-effective ways to enhance opportunities for birds and other wildlife include the following:

- The landscaping around buildings on the site could be designed to incorporate use of native, herbaceous plants and shrubs that are attractive to both birds and butterflies. If non-native, invasive shrubs are avoided and removed (e.g., Tartarian honeysuckle, multiflora rose), nesting and foraging opportunities for birds could be improved. Planting perennials attractive to hummingbirds and butterflies easily could enhance opportunities for viewing those animals.

- Adding suitably designed nest boxes for Eastern Bluebird and American Kestrel could enhance the presence of these species on the site. At this time, Eastern Bluebird already occurs on the site, but American Kestrel was not detected during the Survey.

- If possible, the golf course should be redesigned to add an unmowed buffer around open water. Emergent aquatic plants should be encouraged and opportunities for enhancement of dragonfly and damselfly variety could be incorporated into the design. Dragonflies have the added advantage of feeding upon mosquitoes and black flies, among other insects.

Incorporation of these and other simple, cost effective landscape design considerations into redesigning the golf course also could contribute to advertising and promotion of the site as ecologically friendly and providing amenities for its patrons that other courses do not provide.

Overall, as currently conceived, it is unlikely that the redesign of the Silo Ridge Country Club will affect directly, in any clearly measurable way, the variety of breeding birds detected on the site. Following development, open space areas such as the ridge, open fields in the northern and southern portions of the site, forested "islands" within the golf course, and the wetlands and watercourse likely still will accommodate most of the species currently using the Site.

6.0 References

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Appendix A:
New York State Breeding Bird Atlas Data

NEW YORK STATE
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

NYS Breeding Bird Atlas

ATLAS 2000

Block 6163C

2000-2005

Navigation Tools
Perform Another Search
Show All Records
Sort by Field Card Order
Sort by Taxonomic Order
View 1985 Data

Block 6163C Summary	
Total Species:	89
Possible:	31
Probable:	14
Confirmed:	44

Click on column heading to sort by that category.

List of Species Breeding in Atlas Block 6163C

Common Name	Scientific Name	Behavior Code	Date	NY Legal Status
Spotted Sandpiper	*Actitis macularia*	X1	7/18/2001	Protected
Red-winged Blackbird	*Agelaius phoeniceus*	FY	6/3/2004	Protected
Wood Duck	*Aix sponsa*	FL	7/20/2004	Game Species
Mallard	*Anas platyrhynchos*	X1	6/3/2004	Game Species
Ruby-throated Hummingbird	*Archilochus colubris*	X1	7/12/2000	Protected
Great Blue Heron	*Ardea herodias*	X1	7/12/2000	Protected
Tufted Titmouse	*Baeolophus bicolor*	FL	7/12/2000	Protected
Cedar Waxwing	*Bombycilla cedrorum*	NE	7/3/2002	Protected
Canada Goose	*Branta canadensis*	FL	5/17/2004	Game Species
Great Horned Owl	*Bubo virginianus*	NE	4/20/2005	Protected
Red-tailed Hawk	*Buteo jamaicensis*	FL	7/16/2003	Protected
Northern Cardinal	*Cardinalis cardinalis*	FL	7/14/2004	Protected
American Goldfinch	*Carduelis tristis*	X1	7/12/2000	Protected
House Finch	*Carpodacus mexicanus*	FL	7/20/2004	Protected
Purple Finch	*Carpodacus purpureus*	X1	5/29/2004	Protected
Turkey Vulture	*Cathartes aura*	X1	7/12/2000	Protected
Veery	*Catharus fuscescens*	NY	7/18/2001	Protected
Belted Kingfisher	*Ceryle alcyon*	S2	7/20/2004	Protected
Chimney Swift	*Chaetura pelagica*	X1	7/18/2001	Protected
Killdeer	*Charadrius vociferus*	DD	6/3/2004	Protected
Black-billed Cuckoo	*Coccyzus erythropthalmus*	X1	7/18/2001	Protected
Northern Flicker	*Colaptes auratus*	X1	7/18/2001	Protected
Rock Pigeon	*Columba livia*	X1	6/3/2004	Unprotected
Eastern Wood-Pewee	*Contopus virens*	X1	7/12/2000	Protected
Black Vulture	*Coragyps atratus*	X1	7/14/2004	Protected
American Crow	*Corvus brachyrhynchos*	B2	3/14/2004	Game Species
Common Raven	*Corvus corax*	FL	6/13/2001	Protected
Blue Jay	*Cyanocitta cristata*	X1	7/12/2000	Protected
Prairie Warbler	*Dendroica discolor*	X1	6/3/2004	Protected

Blackburnian Warbler	*Dendroica fusca*	FL	7/12/2000	Protected
Chestnut-sided Warbler	*Dendroica pensylvanica*	X1	6/3/2004	Protected
Yellow Warbler	*Dendroica petechia*	P2	5/17/2004	Protected
Black-throated Green Warbler	*Dendroica virens*	FY	7/14/2004	Protected
Bobolink	*Dolichonyx oryzivorus*	T2	6/3/2004	Protected
Pileated Woodpecker	*Dryocopus pileatus*	X1	7/16/2003	Protected
Gray Catbird	*Dumetella carolinensis*	FY	6/8/2004	Protected
Least Flycatcher	*Empidonax minimus*	FY	7/14/2004	Protected
Willow Flycatcher	*Empidonax traillii*	X1	7/18/2001	Protected
Acadian Flycatcher	*Empidonax virescens*	S2	7/20/2004	Protected
American Kestrel	*Falco sparverius*	X1	7/20/2004	Protected
Common Yellowthroat	*Geothlypis trichas*	FY	7/12/2000	Protected
Worm-eating Warbler	*Helmitheros vermivorus*	X1	7/16/2003	Protected
Barn Swallow	*Hirundo rustica*	FL	7/20/2004	Protected
Wood Thrush	*Hylocichla mustelina*	FY	7/14/2004	Protected
Baltimore Oriole	*Icterus galbula*	P2	5/17/2004	Protected
Dark-eyed Junco	*Junco hyemalis*	FY	7/14/2004	Protected
Red-bellied Woodpecker	*Melanerpes carolinus*	X1	7/12/2000	Protected
Swamp Sparrow	*Melospiza georgiana*	X1	5/17/2004	Protected
Song Sparrow	*Melospiza melodia*	P2	5/17/2004	Protected
Northern Mockingbird	*Mimus polyglottos*	FL	7/20/2004	Protected
Black-and-white Warbler	*Mniotilta varia*	X1	7/14/2004	Protected
Brown-headed Cowbird	*Molothrus ater*	FL	8/11/2001	Protected
Great Crested Flycatcher	*Myiarchus crinitus*	X1	7/14/2004	Protected
House Sparrow	*Passer domesticus*	FL	7/20/2004	Unprotected
Savannah Sparrow	*Passerculus sandwichensis*	T2	6/3/2004	Protected
Indigo Bunting	*Passerina cyanea*	FL	7/20/2004	Protected
Ring-necked Pheasant	*Phasianus colchicus*	X1	6/3/2004	Game Species
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	FL	7/20/2004	Protected
Downy Woodpecker	*Picoides pubescens*	X1	7/12/2000	Protected
Eastern Towhee	*Pipilo erythrophthalmus*	X1	7/18/2001	Protected
Scarlet Tanager	*Piranga olivacea*	S2	7/14/2004	Protected
Black-capped Chickadee	*Poecile atricapillus*	FL	7/14/2004	Protected

Blue-gray Gnatcatcher	*Polioptila caerulea*	X1	5/17/2004	Protected
Common Grackle	*Quiscalus quiscula*	FY	6/3/2004	Protected
Bank Swallow	*Riparia riparia*	NY	5/29/2004	Protected
Eastern Phoebe	*Sayornis phoebe*	NY	7/18/2001	Protected
Ovenbird	*Seiurus aurocapilla*	FY	7/18/2001	Protected
Louisiana Waterthrush	*Seiurus motacilla*	FY	7/18/2001	Protected
American Redstart	*Setophaga ruticilla*	FL	7/12/2000	Protected
Eastern Bluebird	*Sialia sialis*	FY	5/29/2004	Protected
White-breasted Nuthatch	*Sitta carolinensis*	X1	7/18/2001	Protected
Yellow-bellied Sapsucker	*Sphyrapicus varius*	ON	5/17/2004	Protected
Chipping Sparrow	*Spizella passerina*	NY	6/13/2001	Protected
Field Sparrow	*Spizella pusilla*	S2	7/20/2004	Protected
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	ON	6/3/2004	Protected
Eastern Meadowlark	*Sturnella magna*	S2	6/3/2004	Protected
European Starling	*Sturnus vulgaris*	FY	6/3/2004	Unprotected
Tree Swallow	*Tachycineta bicolor*	FL	7/20/2004	Protected
Carolina Wren	*Thryothorus ludovicianus*	X1	7/14/2004	Protected
House Wren	*Troglodytes aedon*	FL	7/20/2004	Protected
Winter Wren	*Troglodytes troglodytes*	FL	7/13/2005	Protected
American Robin	*Turdus migratorius*	NY	8/11/2001	Protected
Eastern Kingbird	*Tyrannus tyrannus*	FL	7/20/2004	Protected
Blue-winged Warbler	*Vermivora pinus*	X1	5/17/2004	Protected
Yellow-throated Vireo	*Vireo flavifrons*	P2	5/17/2004	Protected
Warbling Vireo	*Vireo gilvus*	S2	6/3/2004	Protected
Red-eyed Vireo	*Vireo olivaceus*	FY	7/14/2004	Protected
Blue-headed Vireo	*Vireo solitarius*	FY	6/12/2002	Protected
Mourning Dove	*Zenaida macroura*	P2	6/3/2004	Protected

NEW YORK STATE
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

NYS Breeding Bird Atlas

ATLAS 2000

Block 6163C

1980-1985

Navigation Tools
Perform Another Search
Sort by Field Card Order
Sort by Taxonomic Order
View 2000 Data

Block 6163C Summary	
Total Species:	81
Possible:	13
Probable:	26
Confirmed:	42

Click on column heading to sort by that category.

List of Species Breeding in Atlas Block 6163C

Common Name	Scientific Name	Behavior Code	Date	NY Legal Status
Northern Goshawk	*Accipiter gentilis*	NY	1983	Protected-Special Concern
Red-winged Blackbird	*Agelaius phoeniceus*	NY	1983	Protected
Wood Duck	*Aix sponsa*	FL	1984	Game Species
Mallard	*Anas platyrhynchos*	FL	1983	Game Species
Ruby-throated Hummingbird	*Archilochus colubris*	X1	1983	Protected
Great Blue Heron	*Ardea herodias*	NY	1985	Protected
Tufted Titmouse	*Baeolophus bicolor*	S2	1983	Protected
Cedar Waxwing	*Bombycilla cedrorum*	X1	1983	Protected
Ruffed Grouse	*Bonasa umbellus*	FL	1981	Game Species
Canada Goose	*Branta canadensis*	NE	1983	Game Species
Red-tailed Hawk	*Buteo jamaicensis*	NE	1983	Protected
Green Heron	*Butorides virescens*	FL	1985	Protected
Northern Cardinal	*Cardinalis cardinalis*	T2	1984	Protected
American Goldfinch	*Carduelis tristis*	X1	1983	Protected
House Finch	*Carpodacus mexicanus*	FY	1983	Protected
Turkey Vulture	*Cathartes aura*	X1	1985	Protected
Veery	*Catharus fuscescens*	S2	1984	Protected
Brown Creeper	*Certhia americana*	X1	1985	Protected
Belted Kingfisher	*Ceryle alcyon*	X1	1983	Protected
Chimney Swift	*Chaetura pelagica*	D2	1983	Protected
Killdeer	*Charadrius vociferus*	FL	1983	Protected
Yellow-billed Cuckoo	*Coccyzus americanus*	S2	1983	Protected
Black-billed Cuckoo	*Coccyzus erythropthalmus*	S2	1983	Protected
Northern Flicker	*Colaptes auratus*	FY	1983	Protected
Rock Pigeon	*Columba livia*	ON	1985	Unprotected
Eastern Wood-Pewee	*Contopus virens*	S2	1984	Protected
American Crow	*Corvus brachyrhynchos*	NE	1981	Game Species
Blue Jay	*Cyanocitta cristata*	X1	1983	Protected

Prairie Warbler	*Dendroica discolor*	S2	1983	Protected
Chestnut-sided Warbler	*Dendroica pensylvanica*	S2	1983	Protected
Yellow Warbler	*Dendroica petechia*	NE	1982	Protected
Black-throated Green Warbler	*Dendroica virens*	S2	1985	Protected
Gray Catbird	*Dumetella carolinensis*	FY	1983	Protected
American Kestrel	*Falco sparverius*	T2	1983	Protected
Wilson's Snipe	*Gallinago delicata*	X1	1983	Game Species
Common Yellowthroat	*Geothlypis trichas*	FY	1983	Protected
Barn Swallow	*Hirundo rustica*	NY	1983	Protected
Wood Thrush	*Hylocichla mustelina*	NE	1981	Protected
Baltimore Oriole	*Icterus galbula*	NY	1981	Protected
Dark-eyed Junco	*Junco hyemalis*	X1	1985	Protected
Eastern Screech-Owl	*Megascops asio*	S2	1983	Protected
Wild Turkey	*Meleagris gallopavo*	FL	1984	Game Species
Swamp Sparrow	*Melospiza georgiana*	S2	1983	Protected
Song Sparrow	*Melospiza melodia*	NY	1983	Protected
Northern Mockingbird	*Mimus polyglottos*	T2	1984	Protected
Black-and-white Warbler	*Mniotilta varia*	X1	1983	Protected
Brown-headed Cowbird	*Molothrus ater*	X1	1983	Protected
Great Crested Flycatcher	*Myiarchus crinitus*	S2	1984	Protected
House Sparrow	*Passer domesticus*	NY	1983	Unprotected
Indigo Bunting	*Passerina cyanea*	D2	1981	Protected
Ring-necked Pheasant	*Phasianus colchicus*	FL	1984	Game Species
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	FL	1981	Protected
Downy Woodpecker	*Picoides pubescens*	N2	1983	Protected
Hairy Woodpecker	*Picoides villosus*	FY	1983	Protected
Eastern Towhee	*Pipilo erythrophthalmus*	FY	1983	Protected
Scarlet Tanager	*Piranga olivacea*	NE	1981	Protected
Black-capped Chickadee	*Poecile atricapillus*	FL	1981	Protected
Blue-gray Gnatcatcher	*Polioptila caerulea*	S2	1985	Protected

Purple Martin	*Progne subis*	ON	1981	Protected
Common Grackle	*Quiscalus quiscula*	B2	1985	Protected
Bank Swallow	*Riparia riparia*	ON	1985	Protected
Eastern Phoebe	*Sayornis phoebe*	NY	1981	Protected
American Woodcock	*Scolopax minor*	X1	1983	Game Species
Ovenbird	*Seiurus aurocapilla*	NE	1980	Protected
Louisiana Waterthrush	*Seiurus motacilla*	FY	1984	Protected
American Redstart	*Setophaga ruticilla*	S2	1983	Protected
Eastern Bluebird	*Sialia sialis*	T2	1984	Protected
White-breasted Nuthatch	*Sitta carolinensis*	ON	1984	Protected
Chipping Sparrow	*Spizella passerina*	FY	1983	Protected
Field Sparrow	*Spizella pusilla*	S2	1983	Protected
Eastern Meadowlark	*Sturnella magna*	S2	1983	Protected
European Starling	*Sturnus vulgaris*	FL	1981	Unprotected
Tree Swallow	*Tachycineta bicolor*	NY	1983	Protected
Brown Thrasher	*Toxostoma rufum*	T2	1984	Protected
House Wren	*Troglodytes aedon*	NY	1984	Protected
American Robin	*Turdus migratorius*	FL	1981	Protected
Eastern Kingbird	*Tyrannus tyrannus*	P2	1983	Protected
Blue-winged Warbler	*Vermivora pinus*	FY	1981	Protected
Warbling Vireo	*Vireo gilvus*	NE	1983	Protected
Red-eyed Vireo	*Vireo olivaceus*	S2	1983	Protected
Mourning Dove	*Zenaida macroura*	X1	1983	Protected

NEW YORK STATE
DEPARTMENT OF
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NYS Breeding Bird Atlas

ATLAS 2000

2000-2005

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Breeding Bird Atlas Behavior Code Key

Behavior Code	Description	Behavior Category
X1	Species seen in possible nesting habitat or singing male(s) present in breeding season.	Possible
S2	Singing male present on more than one date in the same place.	Probable
P2	Pair observed in suitable habitat in breeding season.	Probable
T2	Bird (or pair) apparently holding teritory.	Probable
D2	Courtship and display, agitated behavior. Includes copulation, well developed brood patch, or cloacal protuberance.	Probable
N2	Visiting probable nest site.	Probable
B2	Nest building or excavation of a nest hole.	Probable
DD	Distraction display or injury-feigning.	Confirmed
UN	Used nest found.	Confirmed
FE	Female with egg in the oviduct.	Confirmed
FL	Recently fledged young.	Confirmed
ON	Adults(s) entering or leaving nest site indicating occupied nest.	Confirmed
FS	Adult carrying fecal sac.	Confirmed
FY	Adult(s) with food for young or feeding young.	Confirmed
NE	Nest and eggs, bird on nest or egg, or eggshells beneath nest.	Confirmed
NY	Nest with young.	Confirmed

NEW YORK STATE
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NYS Breeding Bird Atlas

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New York State Legal Status Definitions

Endangered Species	Endangered Species are determined by the New York State Department of Environmental Conservation (DEC) to be in imminent danger of extinction or extirpation in New York State, or are federally listed as endangered. All such species are fully protected under New York State ECL 11-0535.
Threatened Species	Threatened Species are determined by the DEC as likely to become endangered within the foreseeable future in New York State, or are federally listed as threatened. All such species are fully protected under the New York State ECL 11-0535.
Special Concern Species	Special Concern Species are those native species which are not yet recognized as endangered or threatened, but for which documented evidence exists relating to their continued welfare in New York State. The Special Concern category exists within DEC rules and regulations, but such designation does not in itself provide any additional protection. However, Special Concern species may be protected under other laws.
Game Species	Game Species are defined as "big game", "small game" or "game bird" species in ECL 11-0103. For some species, there are seasons set when they may be legally hunted. For other species, there are no seasons set and the species may not be hunted or taken at any time in New York.
Protected Species	Protected Species are defined in ECL 11-0103 as all wild birds except those named as unprotected. Some of these birds, such as waterfowl and gallinaceous birds, are also listed as game species with seasons set, while others may not be taken at any time.
Unprotected Species	Unprotected species are those that may be taken at any time without limit. However, a license to take may be required.

Appendix B:
Audubon Watch List Species

Audubon's WatchList 2002-2006 in taxonomic order by geographic region

Red List Species - Continental U.S. & Alaska

Common Name	Latin Name	Population
Yellow-billed Loon	*Gavia adamsii*	23,500
Black-footed Albatross	*Phoebastria nigripes*	278,000
Short-tailed Albatross	*Phoebastria albatrus*	1,840
Bermuda Petrel	*Pterodroma cahow*	180
Black-capped Petrel	*Pterodroma hasitata*	10,500
Pink-footed Shearwater	*Puffinus creatopus*	70,500
Black-vented Shearwater	*Puffinus opisthomelas*	235,335
Ashy Storm-Petrel	*Oceanodroma homochroa*	5,200-10,000
Red-faced Cormorant	*Phalacrocorax urile*	200,000
California Condor	*Gymnogyps californianus*	270 (125 in wild)
Emperor Goose	*Chen canagica*	84,500
Steller's Eider	*Polysticta stelleri*	220,000
Spectacled Eider	*Somateria fischeri*	360,000
Gunnison Sage-Grouse	*Centrocercus minimus*	3,500
Greater Prairie-Chicken	*Tympanuchus cupido*	690,000
Lesser Prairie-Chicken	*Tympanuchus pallidicinctus*	20,000
Black Rail	*Laterallus jamaicensis*	Unknown
Whooping Crane	*Grus americana*	475 (340 in wild)
Snowy Plover	*Charadrius alexandrinus*	370,000
Piping Plover	*Charadrius melodus*	6,410
Mountain Plover	*Charadrius montanus*	9,000
Eskimo Curlew	*Numenius borealis*	<50
Bristle-thighed Curlew	*Numenius tahitiensis*	10,000
Long-billed Curlew	*Numenius americanus*	20,000
Buff-breasted Sandpiper	*Tryngites subruficollis*	15,000
Heermann's Gull	*Larus heermanni*	525,000
Red-legged Kittiwake	*Rissa brevirostris*	168,000
Elegant Tern	*Sterna elegans*	70,500
Marbled Murrelet	*Brachyramphus marmoratus*	617,500
Kittlitz's Murrelet	*Brachyramphus brevirostris*	13,000-35,000
Xantus's Murrelet	*Synthliboramphus hypoleucus*	9,750
Craveri's Murrelet	*Synthliboramphus craveri*	17,500
Green Parakeet	*Aratinga holochlora*	200,000
Thick-billed Parrot	*Rhynchopsitta pachyrhyncha*	2,500
Red-crowned Parrot	*Amazona viridigenalis*	<5,000
Spotted Owl	*Strix occidentalis*	15,000
Nuttall's Woodpecker	*Picoides nuttallii*	290,000
Arizona Woodpecker	*Picoides arizonae*	200,000
Red-cockaded Woodpecker	*Picoides borealis*	20,000
Ivory-billed Woodpecker	*Campephilus principalis*	At least one!
Bell's Vireo	*Vireo bellii*	1,500,000
Black-capped Vireo	*Vireo atricapillus*	8,000
Florida Scrub-Jay	*Aphelocoma coerulescens*	8,000
Island Scrub-Jay	*Aphelocoma insularis*	9,000
California Gnatcatcher	*Polioptila californica*	77,000
Bicknell's Thrush	*Catharus bicknelli*	40,000

Common Name	Latin Name	Population
Bendire's Thrasher	*Toxostoma bendirei*	170,000
Sprague's Pipit	*Anthus spragueii*	870,000
Bachman's Warbler	*Vermivora bachmanii*	Likely Extinct
Golden-winged Warbler	*Vermivora chrysoptera*	210,000
Colima Warbler	*Vermivora crissalis*	25,000
Golden-cheeked Warbler	*Dendroica chrysoparia*	9,600-32,000
Kirtland's Warbler	*Dendroica kirtlandii*	2,830
Cerulean Warbler	*Dendroica cerulea*	560,000
Swainson's Warbler	*Limnothlypis swainsonii*	84,000
Rufous-winged Sparrow	*Aimophila carpalis*	74,000
Bachman's Sparrow	*Aimophila aestivalis*	250,000
Five-striped Sparrow	*Aimophila quinquestriata*	200,000
Baird's Sparrow	*Ammodramus bairdii*	1,200,000
Henslow's Sparrow	*Ammodramus henslowii*	79,000
Nelson's Sharp-tailed Sparrow	*Ammodramus nelsoni*	510,000
Saltmarsh Sharp-tailed Sparrow	*Ammodramus caudacutus*	250,000
McCown's Longspur	*Calcarius mccownii*	1,100,000
McKay's Bunting	*Plectrophenax hyperboreus*	6,000
Audubon's Oriole	*Icterus graduacauda*	200,000
Brown-capped Rosy-Finch	*Leucosticte australis*	45,000
Lawrence's Goldfinch	*Carduelis lawrencei*	150,000

Red List Species - Hawaii/Pacific U.S. Territories

Hawaiian Petrel	*Pterodroma sandwichensis*	3,000
Newell's Shearwater	*Puffinus auricularis*	43,800
Tristram's Storm-Petrel	*Oceanodroma tristrami*	16,500
Hawaiian Goose	*Branta sandvicensis*	1,050
Hawaiian Duck	*Anas wyvilliana*	2,200-2,525
Laysan Duck	*Anas laysanensis*	375-500
Hawaiian Hawk	*Buteo solitarius*	2,150
Hawaiian Coot	*Fulica alai*	3,000
Hawaiian Crow	*Corvus hawaiiensis*	50 in captivity (ext.in wild)
'Elepaio	*Chasiempis sandwichensis*	237,000
Millerbird	*Acrocephalus familiaris*	31-731
Kama'o	*Myadestes myadestinus*	Likely extinct
Oloma'o	*Myadestes lanaiensis*	Likely extinct
Oma'o	*Myadestes obscurus*	170,000
Puaiohi	*Myadestes palmeri*	200-300
Laysan Finch	*Telespiza cantans*	12,500
Nihoa Finch	*Telespiza ultima*	1,500-3,200
'O'u	*Psittirostra psittacea*	<50
Palila	*Loxioides bailleui*	3,635
Maui Parrotbill	*Pseudonestor xanthophrys*	500
O'ahu 'Amakihi	*Hemignathus chloris*	40,000
Kaua'i 'Amakihi	*Hemignathus kauaiensis*	17,500
'Anianiau	*Hemignathus parvus*	44,359
Nukupu'u	*Hemignathus lucidus*	<50
'Akiapola'au	*Hemignathus munroi*	1163
'Akikiki	*Oreomystis bairdi*	1,472
Hawaii Creeper	*Oreomystis mana*	6,250
O'ahu 'Alauahio	*Paroreomyza maculata*	Likely extinct
Maui 'Alauahio	*Paroreomyza montana*	17,100
'Akeke'e	*Loxops caeruleirostris*	20,657
'Akepa	*Loxops coccineus*	14,000
'I'iwi	*Vestiaria coccinea*	350,000

Common Name	Latin Name	Population
'Akohekohe	*Palmeria dolei*	3,750-3,800
Po'o-uli	*Melamprosops phaeosoma*	3
Red List Species - Puerto Rico/U.S. Virgin Islands		
West Indian Whistling-Duck	*Dendrocygna arborea*	15,000
Caribbean Coot	*Fulica caribaea*	Unknown
Plain Pigeon	*Columba inornata*	1,750
Puerto Rican Parrot	*Amazona vittata*	44
Puerto Rican Nightjar	*Caprimulgus noctitherus*	1,700
Elfin-woods Warbler	*Dendroica angelae*	600
Yellow-shouldered Blackbird	*Agelaius xanthomus*	1,250
Yellow List Species - Continental U.S. & Alaska		
Laysan Albatross	*Phoebastria immutabilis*	874,000
Buller's Shearwater	*Puffinus bulleri*	2.5 million
Black Storm-Petrel	*Oceanodroma melania*	3 million
Least Storm-Petrel	*Oceanodroma microsoma*	1 million
Reddish Egret	*Egretta rufescens*	45,000
Brant	*Branta bernicla*	544,400
Trumpeter Swan	*Cygnus buccinator*	23,647
American Black Duck	*Anas rubripes*	910,000
Mottled Duck	*Anas fulvigula*	660,000
Harris's Hawk	*Parabuteo unicinctus*	390,000
Swainson's Hawk	*Buteo swainsoni*	490,000
Ferruginous Hawk	*Buteo regalis*	23,000
Greater Sage-Grouse	*Centrocercus urophasianus*	150,000
Blue Grouse	*Dendragapus obscurus*	2.6 million
Mountain Quail	*Oreortyx pictus*	160,000
Montezuma Quail	*Cyrtonyx montezumae*	1.5 million
Yellow Rail	*Coturnicops noveboracensis*	17,500
American Golden-Plover	*Pluvialis dominica*	150,000
Pacific Golden-Plover	*Pluvialis fulva*	195,000
Wilson's Plover	*Charadrius wilsonia*	6,000
American Oystercatcher	*Haematopus palliatus*	72,000
Black Oystercatcher	*Haematopus bachmani*	8,850
Whimbrel	*Numenius phaeopus*	1,550,000
Hudsonian Godwit	*Limosa haemastica*	50,000
Bar-tailed Godwit	*Limosa lapponica*	1,085,000
Marbled Godwit	*Limosa fedoa*	172,500
Black Turnstone	*Arenaria melanocephala*	80,000
Surfbird	*Aphriza virgata*	70,000
Red Knot	*Calidris canutus*	1.1 million
Purple Sandpiper	*Calidris maritima*	195,000
Rock Sandpiper	*Calidris ptilocnemis*	165,000
Short-billed Dowitcher	*Limnodromus griseus*	320,000
American Woodcock	*Scolopax minor*	5 million
Wilson's Phalarope	*Phalaropus tricolor*	1.5 million
Yellow-footed Gull	*Larus livens*	60,000
Whiskered Auklet	*Aethia pygmaea*	100,000
White-crowned Pigeon	*Columba leucocephala*	550,000
Band-tailed Pigeon	*Columba fasciata*	3.9 million
Flammulated Owl	*Otus flammeolus*	37,000
Whiskered Screech-Owl	*Otus trichopsis*	200,000
Elf Owl	*Micrathene whitneyi*	190,000
Short-eared Owl	*Asio flammeus*	2.4 million
Antillean Nighthawk	*Chordeiles gundlachii*	200,000

Common Name	Latin Name	Population
Black Swift	*Cypseloides niger*	150,000
White-throated Swift	*Aeronautes saxatalis*	410,000
Buff-bellied Hummingbird	*Amazilia yucatanensis*	2 million
Lucifer Hummingbird	*Calothorax lucifer*	200,000
Costa's Hummingbird	*Calypte costae*	3.6 million
Calliope Hummingbird	*Stellula calliope*	1 million
Rufous Hummingbird	*Selasphorus rufus*	6.5 million
Allen's Hummingbird	*Selasphorus sasin*	530,000
Lewis's Woodpecker	*Melanerpes lewis*	130,000
Red-headed Woodpecker	*Melanerpes erythrocephalus*	2.5 million
White-headed Woodpecker	*Picoides albolarvatus*	72,000
Gilded Flicker	*Colaptes chrysoides*	1.1 million
Olive-sided Flycatcher	*Contopus cooperi*	1.2 million
Willow Flycatcher	*Empidonax traillii*	3.3 million
Thick-billed Kingbird	*Tyrannus crassirostris*	2 million
Gray Vireo	*Vireo vicinior*	410,000
Pinyon Jay	*Gymnorhinus cyanocephalus*	4.1 million
Yellow-billed Magpie	*Pica nuttalli*	180,000
Tamaulipas Crow	*Corvus imparatus*	200,000
Oak Titmouse	*Baeolophus inornatus*	900,000
Brown-headed Nuthatch	*Sitta pusilla*	1.5 million
Black-capped Gnatcatcher	*Polioptila nigriceps*	200,000
Wood Thrush	*Hylocichla mustelina*	14 million
Wrentit	*Chamaea fasciata*	1.5 million
Curve-billed Thrasher	*Toxostoma curvirostre*	2.3 million
California Thrasher	*Toxostoma redivivum*	220,000
Le Conte's Thrasher	*Toxostoma lecontei*	190,000
Blue-winged Warbler	*Vermivora pinus*	390,000
Virginia's Warbler	*Vermivora virginiae*	410,000
Lucy's Warbler	*Vermivora luciae*	1.2 million
Hermit Warbler	*Dendroica occidentalis*	2.4 million
Grace's Warbler	*Dendroica graciae*	2 million
Prairie Warbler	*Dendroica discolor*	1.4 million
Bay-breasted Warbler	*Dendroica castanea*	3.1 million
Prothonotary Warbler	*Protonotaria citrea*	1.8 million
Worm-eating Warbler	*Helmitheros vermivorus*	750,000
Kentucky Warbler	*Oporornis formosus*	1.1 million
Canada Warbler	*Wilsonia canadensis*	1.4 million
Red-faced Warbler	*Cardellina rubrifrons*	430,000
Abert's Towhee	*Pipilo aberti*	230,000
Botteri's Sparrow	*Aimophila botterii*	2 million
Brewer's Sparrow	*Spizella breweri*	16 million
Black-chinned Sparrow	*Spizella atrogularis*	390,000
Seaside Sparrow	*Ammodramus maritimus*	110,000
Harris's Sparrow	*Zonotrichia querula*	3.7 million
Painted Bunting	*Passerina ciris*	4.5 million
Dickcissel	*Spiza americana*	22 million
Tricolored Blackbird	*Agelaius tricolor*	250,000
Rusty Blackbird	*Euphagus carolinus*	2 million
Black Rosy-Finch	*Leucosticte atrata*	20,000

Appendix F:
Phase II Bog Turtle Survey Report

Phase 1 & 2 Bog Turtle Surveys
Silo Ridge Country Club – Portions of Wetland "L"
Town of Amenia, Dutchess County, New York

Prepared for:

The Chazen Companies
356 Meadow Avenue
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Contact: David B. Tompkins
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July 2007

Phase 1 & 2 Bog Turtle Surveys
Silo Ridge Country Club – Portions of Wetland "L"
Town of Amenia, Dutchess County, New York

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1.0 Introduction

Bagdon Environmental was retained by The Chazen Companies to conduct Phase 1 and Phase 2 Surveys for the State listed *Endangered* and Federally listed *Threatened* bog turtle (*Clemmys muhlenbergii*) on Wetland "L" of the Silo Ridge Country Club site. The site is located in the Town of Amenia, Dutchess County, New York, as shown on the attached location map (Figure 1).

A Phase I habitat assessment of the site was conducted on April 3, 2007 pursuant to the "Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan" (dated May 15, 2001) and revisions dated April 2006 (attached as Appendix B). The purpose of the habitat assessment was to determine the suitability of the habitat onsite to support bog turtles.

The conditions of the site and vicinity are described in this report, relative to the quality of existing habitat and known occurrences of bog turtles in the area. The Phase I survey results were discussed with the New York State Department of Environmental Conservation (NYSDEC) Endangered Species Unit and Dr. Michael Klemens, consultant for the Town of Amenia and author of the "Recovery Plan" referenced above prepared for the U. S. Fish and Wildlife Service (USFWS). The results of the Phase 1 survey indicated that a relatively small area of the wetland (approximately 3 acres) was potentially suitable for bog turtles necessitating a Phase 2 survey.

2.0 Evaluation and Search Methods

2.1 Phase 1 Habitat Evaluation Methodology

The identification and evaluation of potential bog turtle habitat on the site was based on specific physical, biological and chemical characteristics described in the USFWS Recovery Plan and Section 3 of this report. In general, wetlands that are contiguous to or near known occupied sites should be evaluated thoroughly to determine bog turtle presence and potential use. A field survey conducted by a qualified biologist is required for a thorough site evaluation. The key components of bog turtle habitat are suitable hydrology, soils and vegetation. Habitat assessments should focus on emergent and mixed emergent/scrub-shrub wetlands due to the propensity of bog turtles to utilize open canopy wetlands in the spring. Adjacent forested wetlands are also evaluated if they contain suitable soils and hydrology.

In conducting this assessment, a Bagdon Environmental biologist traversed the site wetlands to determine if suitable bog turtle habitat conditions were present. Vegetation cover types and plant species composition were documented along with observed soil and hydrological conditions.

2.2 Resource Review

Resources reviewed prior to conducting the fieldwork (in addition to resources listed in the Reference Section) include the following:

- New York Natural Heritage Program (NYNHP) records of rare wildlife, plants, and significant habitats in the vicinity of the site.
- Site map and topographic survey (1"=100').
- Aerial photo (2004 True Color – Digital ortho-corrected)
- National Wetland Inventory maps
- Dutchess County Soil Survey
- NYSDEC Freshwater Wetland maps
- U.S.G.S. topographic map
- Endangered, Threatened, and Special Concern Species of NYS (ECL Section 11-0535)
- Federal Endangered and Threatened Wildlife and Plants (50 CFR 17.11 and 17.12).

2.3 Agency Contacts

The following people were contacted to discuss the potential for bog turtles to occur onsite:

- Alvin A. Breisch, NYSDEC - Senior Wildlife Biologist (Endangered Species Unit Reptile and Amphibian Specialist)
- Dr. Michael Klemens - consultant for the Town of Amenia and author of the USFWS Recovery Plan.

Bagdon Environmental met with Alvin Breisch of the NYSDEC Endangered Species Unit on April 13, 2007 to discuss the known records of bog turtles in the area and to review Phase I site assessment of the site. Site conditions were discussed in detail including approximately 40 site photos, aerial photographs and topographic maps. The approximate limits of the Phase 2 survey were discussed during this meeting and also by telephone with Dr. Klemens.

2.4 Phase 2 Search Protocol and Methodology

The following search protocol was utilized for completing the bog turtle surveys in the designated survey area identified in the Phase I bog turtle assessment:

- Conduct searches on at least four (4) separate site visits within the period of April 15 to June 15. Surveys conducted in May will be done at least three days apart.
- Each site visit will entail four (4) biologists searching (random and transect search) over a 1-day period with an average search effort of 18 person hours/day (4 days) for a total search effort of approximately 72 person hours. (Note: Required search time is 48 to 72 person hours, based upon a minimum of 4-6 person hours/acre of designated habitat/visit with 4 visits minimum.)

- Searches will be conducted under favorable weather conditions (air temperature >55° F to maintain the validity of the survey effort. Surveys may be done when it is sunny or cloudy. Surveys can be conducted during and after light rain, provided air temperatures are>65° F.
- Surveys will be conducted within the period of one hour after sunrise and one hour prior to sunset.
- Searches will be supervised by Senior Ecologist Norbert Quenzer, possessor of a NYSDEC Scientific Collector License for bog turtles.
- The site contains approximately 3.0± acres of emergent and mixed emergent scrub-shrub wetland along with suitable forested wetland that constitutes potential bog turtle habitat for nesting and thermoregulation. Based on the Phase I bog turtle assessment, most of the project wetlands do not constitute suitable habitat. Therefore, most of the search effort will focus on the areas of the site identified as potential bog turtle habitat. Forested wetlands adjacent to the proposed search area on the site will be searched to a lesser degree due to the propensity of bog turtles to utilize open canopy areas in the spring.
- Transect and random search methods will be utilized with GPS tracking during all searches (to facilitate a documented record of search).
- Any bog turtle found during the surveys will be appropriately documented including photographed, marked (shell-notch) and pertinent information recorded (sex, age, carapace length and width, weight and abnormalities). All locations of observed turtle(s) will be mapped using a sub-meter hand-held GPS.

The site was surveyed using standard techniques in the Recovery Plan and 2006 Revisions. These include traversing the site using visual and tactile search methods. The tactile search effort was enhanced by use of small hand-held rakes that helped facilitate searching under tussocks and other vegetation. These rakes also proved useful in exploring exposed muck areas, sediments and algae pools.

2.5 Phase 2 Search Personnel

Norbert Quenzer Jr.- Bagdon Environmental
Vice President/Senior Ecologist – Supervising Phase 2 Surveys

David B. Tompkins – The Chazen Companies
Senior Director, Environmental & Ecological Services

Steven A. Finch – The Chazen Companies
Wetland Scientist/Biologist

Jason F. Tourscher – The Chazen Companies
Biologist/Wetland Scientist

David J. Griggs - The Chazen Companies

Randy Stechert – The Chazen Companies

3.0 Bog Turtle Status and Habitat Requirements

Bog turtle fact sheets, prepared by the NYSDEC and USFWS, are attached as Appendix A. These fact sheets present some of the basic information on the bog turtle including its description, distribution, seasonal activities and habitat requirements. More specific information is contained in the references listed at the end of this report.

In summary, the bog turtle is considered by many to be the rarest turtle species in North America. It is currently listed as endangered in New York State and threatened throughout its range by the U.S. Fish and Wildlife Service. Extant populations in New York State occur principally in Dutchess, Columbia, Putnam and Orange Counties.

Habitat destruction and illegal collecting have decimated many historical bog turtle sites. These factors, combined with a disjunct distribution in many areas and a low reproductive capacity, threaten the bog turtle with extinction throughout its range. The USFWS has prepared a *Bog Turtle Recovery Plan* that aids agency personnel in protecting known sites throughout the New York State and other portions of its range. Cooperative agreements with landowners through conservation easements or land purchase are paramount to protecting the bog turtle.

The New York Natural Heritage Program (NYNHP) assigns the rarity rank of G3S2 with the following explanation of ranks:

> 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.
>
> 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.

Bog turtles are usually found in association with fens. Fens are wetlands dominated by herbaceous vegetation that receive calcareous groundwater discharge through seepage and small streams (rivulets). These wetlands typically contain deep muck soils needed for predator escape, aestivation during hot weather and winter hibernation. Equally important is the presence of elevated hummocks of sphagnum moss or emergent vegetation, such as tussock sedge (*Carex stricta*), for thermoregulation, egg laying and incubation in the spring. Other habitats where bog turtles are found include wet meadows, cow pastures, shrub swamps and forested wetlands with emergent wetland

openings. As with fens, these wetlands usually have small rivulets fed by groundwater, deep muck soils and emergent vegetation with exposure to the sun.

4.0 Site Description

Bog turtles have been documented in the general area of the site by the NYSDEC, however no bog turtles are known to occur on or adjacent to the site. Due to the potential for illegal collection and destruction of bog turtle habitat, the exact location of known sites reviewed with the NYSDEC Endangered Species Unit is not presented in this report.

Much of the site is developed as an existing golf course with undeveloped areas of mature forest, successional forest, old-field, mowed areas and wetland. Wetlands onsite include Palustrine (USFWS Classification, Cowardin, et. al.) forested wetland, emergent wetland (*Phragmites australis*/*Lythrum salicaria* dominated), shrub/scrub wetland and open water. A composite list of plant and wildlife species observed in the wetland during Bagdon Environmental's field surveys is attached as Appendix C. Photographs of the site are included as Appendix D.

It appears that the study area (wetland "L") has been disturbed extensively by water level alterations, nutrient loading and possible contamination. Sources of these disturbances include construction and maintenance Route 22; storm water runoff from Route 22; former quarry operations; periodic beaver impoundment; historical ditching of the wetland; golf course runoff and an adjacent Superfund site which is known to have discharged PCBs into Wetland L.

The results of the Phase 1 survey indicated that a crescent shaped area along the northern and western edges of the wetland contained some of the components of bog turtle habitat including mucky soils, spring-fed rivulets and open emergent and scrub-shrub cover types. Several small open water areas are present along the edge of the wetland with *Chara* sp. indicating calcareous seepage. A few clumps of shrubby cinquefoil (*Potentilla fruiticosa*) were observed, however, there were no other strong calciphites present that are typical of fens. A fen in the Amenia area, known to contain bog turtles, was visited on April 3, 2007 to observe the condition of calciphites such as grass-of-parnassus (*Parnassia glauca*) and shrubby cinquefoil. These species were easily recognized at the time. Even though some of the calcareous plants were present, the overall character of the wetland complex onsite is not representative of a calcareous fen, the optimal habitat of bog turtles.

The forested wetland in the western portion of the wetland complex has some openings in the canopy and deep mucky soils with hummocks and extensive groundwater discharge (seepage). Sphagnum covered hummocks were also common throughout the forested wetland. These areas were included in the search area shown in Figure 2.

Beyond the edge of the crescent shaped study area, the water levels increase significantly and most of the interior wetland is dominated by *Phragmites australis* and *Lythrum salicaria*. Several large areas of open water are present with dense growths of filamentous algae. These areas were not deemed suitable habitat and were excluded from the Phase 2 search.

Common woody species in the forested wetland include red maple, American elm (*Ulmus americana*), red ash (*Fraxinus pennsylvanicus*), highbush blueberry (*Vaccinium corymbosum*), spicebush (*Lindera benzoin),* winterberry holly (*Ilex verticillata)*, and northern arrowwood (*Viburnum recognitum*). Examples of herbaceous species in the forested wetlands include cinnamon fern (*Osmunda cinnamomea*), sensitive fern (*Onoclea sensibilis*), tussock sedge (*Carex stricta*), calico aster (*Aster lateriflorus*), rough-stemmed goldenrod (*Solidago patula*), turtlehead (*Chelone glabra*) and skunk cabbage.

The scrub-shrub wetland is characterized by silky dogwood, gray dogwood, northern arrowwood, speckled alder (*Alnus rugosa*), elderberry (*Sambucus canadensis*), and willow (*Salix* sp.).

The emergent wetlands contain purple loosestrife, cattail (*Typha* sp.), reed canary grass (*Phalaris arundinacea*), Phragmites, sedges (*Carex stipata, C. crinita*, *C. stricta*, and *C. vulpinoidea*), soft rush (*Juncus effusus*), green bulrush (*Scirpus atrovirens*), giant goldenrod (*Solidago gigantea*), sensitive fern, arrowwood, and iris (*Iris versicolor*). Phragmites and purple loosestrife are present in most of the emergent areas in the form of dense, monotypic stands.

5.0 Summary of Findings and Conclusions

Only a small portion of the wetland complex has potentially suitable habitat for bog turtles. Most of the wetland complex appears to be disturbed as a result of a variety of surrounding land uses both onsite and off-site, as evidenced by the dominance of invasive plant species. The dominance of invasive species severely reduces the overall habitat suitability for bog turtles due to the height and density of the plants. The canopy created by these species shades out sunlight and the plant density restricts movement. Given the highly degraded conditions and low habitat suitability of most of the wetland complex, bog turtles are very unlikely to be present.

Based on Phase 1 and Phase 2 surveys and discussions with NYSDEC personnel, Bagdon Environmental presents the following conclusions and observations:

- Most of the wetland complex contiguous with the site consists of emergent wetlands dominated by dense stands of invasive species (*Phragmites australis* and *Lythrum salicaria*) that developed following hydrological alteration and nutrient enrichment

from storm water and other sources noted in this report. These areas do not constitute suitable bog turtle habitat.

- A crescent shaped area in the north and western edge of the wetland contains some of the habitat components for bog turtles, however it does not represent fen conditions known to be the optimal bog turtle habitat. This area constituted the primary search area of the Phase 2 survey.

- No bog turtles were found during the Phase 2 surveys, nor is there any record of bog turtles on or adjacent to the site. It is very unlikely that bog turtles inhabit the site based on the habitat assessment and extensive searches conducted this spring. However, on the remote chance that bog turtles do inhabit the wetlands it is important to avoid further degrading the wetland hydrology and water quality, especially in the areas comprising the Phase 2 search area.

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Table 1
Phase 2 Search Effort Summary

Search Dates	Surveyors [1]	Search Times	Search Hours (Person Hours)
4-24-07	NQ, DT, SF, RS	10:45 – 4:45	6.0 X 4 = 24 hrs
5-4-07	NQ, DT, SF, RS	10:15 – 3:45	5.5 X 4 = 22 hrs
5-10-07	NQ, SF, JT, DG	10:45 – 3:45	5.0 X 4 = 20 hrs
6-1-07	NQ, DT, SF, JT, MK	10:00 – 1:30	3.5 X 5 = 17.5 hrs
			Total Search Hours = 83.5

[1] NQ = Norbert Quenzer
DT = David Tompkins
SF = Steven Finch
DG = David Griggs
RS = Randy Stechert
JT = Jason Tourcher
MK = Michael Klemens

Table 2
Weather Conditions - Phase 2

Date	Air Temp	Water Temp	Substrate Temp	Cloud Cover	Wind Speed
4-24-07	65 - 70°F	51 - 53°F	47°F	< 25%	5-10 mph w/20 mph gusts
5-4-07	60 – 70°F	54°F	48°F	< 25%	5-15 mph
5-10-07	77 – 80°F	66°F	54°F	< 25%	0-10 mph
6-1-07	77 – 89°F	75°F	65°F	< 25%	0-5 mph

NEW YORK STATE
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

Bog Turtle Fact Sheet

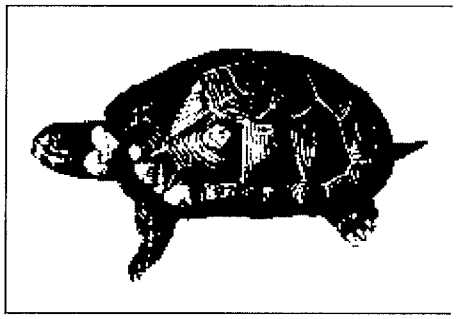
Bog Turtle

Clemmys muhlenbergii

New York Status: Endangered

Federal Status: Threatened

Description



The bog turtle is New York's smallest turtle, reaching a maximum length of 4.5 inches. It is one of seventeen species of turtles found in New York State, including marine turtles. A bright yellow or orange blotch on each side of its head and neck are a distinctive feature of this species. The body color is dark with an orange-red wash on the inside of the legs of some individuals. The carapace (upper shell) is domed and somewhat rectangular, often with prominent rings on the shell plates (scutes). In some older individuals, or those that burrow frequently in coarse substrates, the shell may become quite smooth and polished. Although generally black, the carapace is sometimes highlighted by a chestnut sunburst pattern in each scute. The plastron (lower shell) is hingeless, with a pattern of cream and black blotches. As with most turtles, the plastron of the male is slightly concave while the female's is flat.

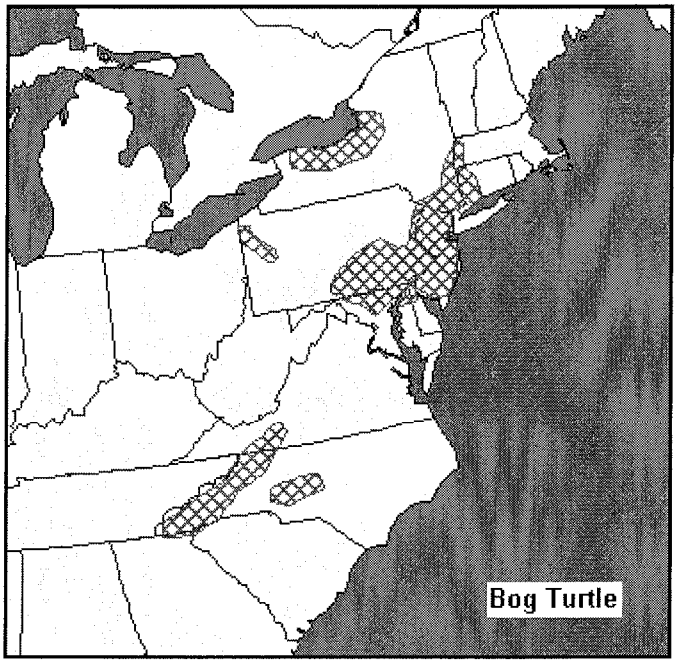
Life History

In New York, the bog turtle emerges from hibernation, often spent in an abandoned muskrat lodge or other burrow, by mid-April. In New York bog turtles often hibernate communally with other bog turtles and with spotted turtles (*Clemmys guttata*). Generally both the air and water temperature must exceed 50 degrees F for the turtle to become active. Mating occurs primarily in the spring but may also occur in the fall and may be focused in or near the hibernaculum (winter shelter). In early to mid-June, a clutch of two to four eggs is laid in a nest which is generally located inside the upper part of an unshaded tussock. The eggs hatch around mid-September. Some young turtles spend the winter in the nest, emerging the following spring. The adults enter hibernation in late October. Sexual maturity may be reached at eight years or as late as eleven. A bog turtle may live for more than 30 years.

Although generally very secretive, the bog turtle can be seen basking in the open, especially in

the early spring just after emerging from hibernation. It is an opportunistic feeder, eating what it can get, although it prefers invertebrates such as slugs, worms, and insects. Seeds, plant leaves, and carrion are also included in its diet.

Distribution and Habitat



The bog turtle is found in the eastern United States scattered in disjunct colonies from New York and Massachusetts south to southern Tennessee and Georgia. This is a semi-aquatic species, preferring habitat with cool, shallow, slow-moving water, deep soft muck soils, and tussock-forming herbaceous vegetation. In New York, the bog turtle is generally found in open, early successional types of habitats such as wet meadows or open calcareous boggy areas generally dominated by sedges (*Carex spp.*) or sphagnum moss. Like other cold-blooded or ectothermic species, it requires habitats with a good deal of solar penetration for basking and nesting. Plants such as purple loosestrife (*Lythrum salicaria*) and reed (*Phragmites australis*) can quickly invade such areas resulting in the loss of basking and nesting habitat.

Status

More than half of the 74 historic bog turtle locations in New York still contain apparently suitable habitat. Only one quarter of these sites, however, are known to support extant populations, primarily in southeastern New York.

The primary threats to this species are loss or degradation of habitat and illegal collecting. In New York, development and natural succession are the major threat to bog turtle habitat. As sites deteriorate, bog turtles normally move out of their old sites to new areas where fire, beavers agriculture or other causes have created an open wet meadow type habitat. Development, especially roads, residential, commercial and reservoir construction inhibits the species' ability to move to new, potential habitat. Consequently new populations are not being established as old sites deteriorate.

Collection of the bog turtle without a permit is prohibited in all states where it occurs. It was listed as threatened in 1997 by the U. S. Fish and Wildlife Service, and has been listed in

CITES Appendix I, (Convention of International Trade in Endangered Species) since 1975. Unfortunately, illegal collection still goes on threatening this long-lived, slow reproducing turtle.

Contamination by pesticides, agricultural run-off and industrial discharge may negatively affect the bog turtle and its habitat directly. Contaminates may also accumulate in or adversely affect the turtle's invertebrate food supply.

Management and Research Needs

Since 1976, the New York State Department of Environmental Conservation has been conducting field surveys of historic and potential bog turtle sites to document current populations and habitat suitability. Some currently inhabited bog turtle sites and some historic sites are under the ownership of the State or conservation organizations. Many of the best remaining sites are still in private ownership and efforts continue to acquire or otherwise protect theses areas.

Information is being gathered on reproductive potential, daily and seasonal movements, nesting and hibernation areas, and habitat use through the tracking of animals tagged with radio transmitters. Since the bog turtle is sensitive to habitat changes that are the result of natural succession, studies are underway that will monitor the responses of a bog turtle population to habitat manipulations.

Techniques for breeding and raising bog turtles in captivity have been developed and a study has begun to investigate the effectiveness of releasing young or adult turtles into the wild.

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Map adapted from Conant and Collins (1998),Ernst, Lovich and Barbour (1994) and Harding (1997)

Bog Turtle Project Review Fact Sheet
Hudson/Housatonic Recovery Unit
New York Field Office
February 2006

The following fact sheet is intended to provide information to assist with the review of projects which occur within the likely range of the bog turtle (*Clemmys muhlenbergii*) (within the Hudson/Housatonic Recovery Unit) within State of New York. The bog turtle is Federally-listed as threatened and State-listed as an endangered species.

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.).

The U.S. Fish and Wildlife Service (Service) recommends that an evaluation be completed of any existing wetland habitat that would be disturbed, directly or indirectly, by the project, and its potential to support the bog turtle (Phase 1 survey). Information on surveys can be found at http://www.fws.gov/northeast/nyfo/es/btsurvey.pdf.

The Service and New York State Department of Environmental Conservation (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. 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://www.fws.gov/northeast/nyfo/es/btconszone.pdf. If impacts cannot be avoided, a Phase 2 survey should be completed. The purpose of the Phase 2 survey is to determine the likely presence of bog turtles at the site in potentially suitable habitat. Please see detailed instructions regarding survey protocols at http://www.fws.gov/northeast/nyfo/es/btsurvey.pdf. Also, please contact this office before conducting any Phase 2 surveys.

Please note that the New York Field Office is currently developing a list of surveyors whom we have determined are capable of conducting both Phase 1 and Phase 2 surveys in New York. You can contact our office for a copy of the list in spring 2006.

The project's environmental documents should identify project activities that might result in adverse impacts to the bog turtle or their habitat. Information on any potential impacts and the results of any recommended habitat analyses or surveys for the bog turtle should be provided to this office and they will be used to evaluate potential impacts to the 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*.).

References:

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

GUIDELINES FOR BOG TURTLE SURVEYS[1]

(revised April 2006)

RATIONALE

A bog turtle survey (when conducted according to these guidelines) is an attempt to determine presence or probable absence of the species; it does not provide sufficient data to determine population size or structure. Following these guidelines will standardize survey procedures. It will help maximize the potential for detection of bog turtles at previously undocumented sites at a minimum acceptable level of effort. Although the detection of bog turtles confirms their presence, failure to detect them does not absolutely confirm their absence (likewise, bog turtles do not occur in all appropriate habitats and many seemingly suitable sites are devoid of the species). Surveys as extensive as outlined below are usually sufficient to detect bog turtles; however, there have been instances in which additional effort was necessary to detect bog turtles, especially when habitat was less than optimum, survey conditions were less than ideal, or turtle densities were low.

PRIOR TO CONDUCTING ANY SURVEYS

If a project is proposed to occur in a county of known bog turtle occurrence (see attachment 1), contact the U.S. Fish and Wildlife Service (Service) and/or the appropriate State wildlife agency (see attachment 2). They will determine whether or not any known bog turtle sites occur in or near the project area, and will determine the need for surveys.

< If a wetland in or near the project area is *known* to support bog turtles, measures must be taken to avoid impacts to the species. The Service and State wildlife agency will work with federal, state and local regulatory agencies, permit applicants, and project proponents to ensure that adverse effects to bog turtles are avoided or minimized.

< If wetlands in or adjacent to the project area are *not* known bog turtle habitat, conduct a bog turtle habitat survey (Phase 1 survey) if:

1. The wetland(s) have an emergent and/or scrub-shrub wetland component, or are forested with suitable soils and hydrology (see below), *and*

2. Direct and indirect adverse effects to the wetland(s) cannot be avoided.

   See *Bog Turtle Conservation Zones*[2] for guidance regarding activities that may affect bog turtles and their habitat. In addition, consult with the Fish and Wildlife Service and/or appropriate State wildlife agency to definitively determine whether or not a Phase 1 survey will be necessary.

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[1] These guidelines are a modification of those found in the final "Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan" (dated May 15, 2001). Several minor revisions were made to facilitate survey efforts and increase searcher effectiveness. As additional information becomes available regarding survey techniques and effectiveness, these survey guidelines may be updated and revised. Contact the Fish and Wildlife Service or one of the state agencies listed in Attachment 1 for the most recent version of these guidelines.

[2] See Appendix A of the "Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan" (dated May 15, 2001).

BOG TURTLE HABITAT SURVEY (= Phase 1 survey)

The purpose of this survey is to determine whether or not the wetland(s) are *potential* bog turtle habitat. These surveys are performed by a recognized, qualified bog turtle surveyor (contact the Service or the appropriate State wildlife agency to receive a list of recognized, qualified bog turtle surveyors). The following conditions and information apply to habitat surveys.

< Surveys can be performed any month of the year (except when significant snow and/or ice cover is present). This flexibility in conducting Phase 1 surveys allows efforts during the Phase 2 survey window to be spent on wetlands most likely to support bog turtles (*i.e.*, those that meet the criteria below).

< Potential bog turtle habitat is recognized by three criteria *(not all of which may occur in the same portion of a particular wetland*):

1. **Suitable hydrology**. Bog turtle wetlands are typically spring-fed with shallow surface water or saturated soils present year-round, although in summer the wet area(s) may be restricted to near spring head(s). Typically these wetlands are interspersed with dry and wet pockets. There is often subsurface flow. In addition, shallow rivulets (less than 4 inches deep) or pseudo-rivulets are often present.

2. **Suitable soils**. Usually a bottom substrate of permanently saturated organic or mineral soils. These are often soft, mucky-like soils (this does not refer to a technical soil type); you will usually sink to your ankles (3-5 inches) or deeper in muck, although in degraded wetlands or summers of dry years this may be limited to areas near spring heads or drainage ditches. In some portions of the species' range, the soft substrate consists of scattered pockets of peat instead of muck.

3. **Suitable vegetation**. Dominant vegetation of low grasses and sedges (in emergent wetlands), often with a scrub-shrub wetland component. Common emergent vegetation includes, but is not limited to: tussock sedge (*Carex stricta*), soft rush (*Juncus effusus*), rice cut grass (*Leersia oryzoides*), sensitive fern (*Onoclea sensibilis*), tearthumbs (*Polygonum* spp.), jewelweeds (*Impatiens* spp.), arrowheads (*Saggitaria* spp.), skunk cabbage (*Symplocarpus foetidus*), panic grasses (*Panicum* spp.), other sedges (*Carex* spp.), spike rushes (*Eleocharis* spp.), grass-of-Parnassus (*Parnassia glauca*), shrubby cinquefoil (*Dasiphora fruticosa*), sweet-flag (*Acorus calamus*), and in disturbed sites, reed canary grass (*Phalaris arundinacea*) or purple loosestrife (*Lythrum salicaria*). Common scrub-shrub species include alder (*Alnus spp*.), red maple (*Acer rubrum*), willow (*Salix spp*.), tamarack (*Larix laricina*), and in disturbed sites, multiflora rose (*Rosa multiflora*). Some forested wetland habitats are suitable given hydrology, soils and/or historic land use. These forested wetlands include red maple, tamarack, and cedar swamps.

Suitable hydrology and soils are the critical criteria (*i.e.*, the primary determinants of potentially suitable habitat).

< Suitable hydrology, soils and vegetation are necessary to provide the critical wintering sites (soft muck, peat, burrows, root systems of woody vegetation) and nesting habitats (open areas with tussocky or hummocky vegetation) for this species. It is very important to note,

however, that one or more of these criteria may be absent from portions of a wetland or wetland complex supporting bog turtles. Absence of one or more criteria does not preclude bog turtle use of these areas to meet important life functions, including foraging, shelter and dispersal.

< If these criteria (suitable soils, vegetation and hydrology) are present in the *wetland*, then the *wetland* is considered to be potential bog turtle habitat, regardless of whether or not that portion of the wetland occurring within the project boundaries contains all three criteria. If the *wetland* is determined to be potential habitat and the project will directly or indirectly impact *any portion* of the wetland (see *Bog Turtle Conservation Zones*), then either:

  < Completely avoid all direct and indirect effects to the wetland, in consultation with the Service and appropriate State wildlife agency, OR

  < Conduct a Phase 2 survey to determine the presence of bog turtles.

< The Service and appropriate State wildlife agency (see list) should be sent a copy of survey results for review and comment including: a USGS topographic map indicating location of site; project design map, including location of wetlands and stream and delineation of wetland type (PEM, PSS, PFO, POW) and "designated survey areas"[3]; color photographs of the site; surveyor's name; date of visit; opinion on potential/not potential habitat; a description of the hydrology, soils, and vegetation. A phase 1 report template and field form are available from the States and Service.

BOG TURTLE SURVEY (= Phase 2 survey)

If the wetland(s) are identified as potential bog turtle habitat (see Phase 1 survey), and direct and indirect adverse effects cannot be avoided, conduct a bog turtle survey in accordance with the specifications below. Note that this is *not* a survey to estimate population size or structure; a long-term mark/recapture study would be required for that.

Prior to conducting the survey, contact the appropriate State agency (see attached list) to determine whether or not a scientific collector's permit valid for the location and period of the survey will be required.

The Phase 2 survey will focus on the areas of the wetland that meet the soils, hydrology and vegetation criteria, as defined under the Phase 1 survey guidelines. Those areas that meet the criteria are referred to as "designated survey areas" for Phase 2 and Phase 3 survey purposes.

1. Surveys should only be performed during the period from April 15-June 15. For the Lake Plain Recovery Unit (see Recovery Plan), surveys should only be performed during the period from May 1 to June 30. This coincides with the period of greatest annual turtle activity (spring emergence and breeding) and before vegetation gets too dense to accurately survey. While turtles may be found outside of these dates, a result of no turtles would be considered inconclusive. Surveys beyond June also have a higher likelihood of disruption or destruction of nests or newly hatched young.

[3] "Designated survey areas" are those areas of the wetland that meet the soils, hydrology and vegetation criteria for potential bog turtle habitat. These areas may occur within the emergent, scrub-shrub or forested parts of the wetland.

2. Ambient air temperature at the surface in the shade should be ≥ 55° F.

3. Surveys should be done during the day, at least one hour after sunrise and no later than one hour before sunset.

4. Surveys may be done when it is sunny or cloudy. In addition, surveys may be conducted during and after light rain, provided air temperatures are ≥ 65° F.

5. At least one surveyor must be a recognized qualified bog turtle surveyor[4], and the others should have some previous experience successfully conducting bog turtle surveys or herpetological surveys in wetlands. To maintain survey effort consistency and increase the probability of encountering turtles, the same surveyors should be used for each wetland.

6. A minimum of four (4) surveys per wetland site are needed to adequately assess the site for presence of bog turtles. At least two of these surveys must be performed in May. From April 15 to April 30, surveys should be separated by six or more days. From May 1 to June 15, surveys should be separated by three or more days. The shorter period between surveys during May and June is needed to ensure that surveys are carried out during the optimum window of time (*i.e.*, before wetland vegetation becomes too thick).

   Note that bog turtles are more likely to be encountered by spreading the surveys out over a longer period. For example, erroneous survey results could be obtained if surveys were conducted on four successive days in late April due to possible late spring emergence, or during periods of extreme weather because turtles may be buried in mud and difficult to find.

   Because this is solely a presence/absence survey, survey efforts at a particular wetland may cease once a bog turtle has been found.

7. Survey time should be at least four (4) to six (6) person-hours per acre of designated survey area per visit. Additional survey time may be warranted in wetlands that are difficult to survey or that have high quality potential habitat. The designated survey area includes all areas of the wetland where soft, mucky-like soils are present, regardless of vegetative cover type. This includes emergent, scrub-shrub, and forested areas of the wetland.

   If the cover is too thick to effectively survey using Phase 2 survey techniques alone (*e.g.*, dominated by multiflora rose, reed canary grass, *Phragmites*), contact the Service and State wildlife agency for guidance on Phase 3 survey techniques (trapping) to supplement the Phase 2 effort. In addition, Phase 3 (trapping) surveys may also be warranted if the site is in the Lake Plain-Prairie Peninsula Recovery Unit. Check with the Service or State wildlife agency for further guidance.

[4] Searching for bog turtles and recognizing their habitat is a skill that can take many months or years of field work to develop. This level of expertise is necessary when conducting searches in order to ensure that surveys are effective and turtles are not harmed during the survey (*e.g.*, by stepping on nests). Many individuals that have been recognized as qualified to conduct bog turtle surveys obtained their experience through graduate degree research or employment by a state wildlife agency. Others have spent many years actively surveying for bog turtles as amateur herpetologists or consultants.

8. Walk quietly through the wetland. Bog turtles will bask on herbaceous vegetation and bare ground, or be half-buried in shallow water or rivulets. Walking noisily through the wetland will often cause the turtles to submerge before they can be observed. Be sure to search areas where turtles may not be visible, including under mats of dead vegetation, shallow pools, underground springs, open mud areas, vole runways and under tussocks. Do not step on the tops of tussocks or hummocks because turtle nests, eggs and nesting microhabitat may be destroyed. Both random opportunistic searching and transect surveys should be used at each wetland.

   The following survey sequence is recommended to optimize detection of bog turtles:

   - Semi-rapid walk through the designated survey area using visual encounter techniques.

   - If no bog turtles are found during visual survey, while walking through site identify highest quality habitat patches. Within these highest quality patches, begin looking under live and dead vegetation using muddling and probing techniques.

   - If still no bog turtles are found, the rest of the designated survey area should be surveyed using visual encounter surveys, muddling and probing techniques.

9. Photo-documentation of each bog turtle located will be required; a macro lens is highly recommended. The photos should be in color and of sufficient detail and clarity to identify the bog turtle to species and individual. Therefore, photographs of the carapace, plastron, and face/neck markings should be taken of each individual turtle. Do not harass the turtle in an attempt to get photos of the face/neck markings; if gently placed on the ground, most turtles will slowly extend their necks if not harassed. If shell notching is conducted, do the photo-documentation after the notching is done.

10. The following information should be collected for each bog turtle: sex, carapace length-straight line and maximum length, carapace width, weight, and details about scars/injuries. Maximum plastron length information should also be collected to differentiate juveniles from adults as well as to obtain additional information on recruitment, growth, and demography.

11. Each bog turtle should be marked (*e.g.*, notched, PIT tagged) in a manner consistent with the requirements of the appropriate State agency and/or Service. Contact the appropriate State wildlife agency prior to conducting the survey to determine what type of marking system, if any, should be used.

12. All bog turtles must be returned to the point of capture as soon as possible on the same day as capture. They should only be held long enough to identify, measure, weigh, and photograph them, during which time their exposure to high temperatures must be avoided. No bog turtles may be removed from the wetland without permission from the Service and appropriate State agency.

13. The Fish and Wildlife Service and appropriate State agency should be sent a copy of survey results for review and concurrence, including the following: dates of site visits; time spent

per designated survey area per wetland per visit; names of surveyors; a site map including wetlands and delineations of designated survey areas; a table indicating the size of each wetland, the designated survey area within each wetland, and the survey effort per visit; a description of the wetlands within the project area (*e.g.*, acreage, vegetation, soils, hydrology); an explanation of which wetlands or portions of wetlands were or were not surveyed, and why; survey methodology; weather per visit at beginning and end of survey (air temperature, wind, and precipitation); presence or absence of bog turtles, including number of turtles found and date, and information and measurements specified in item 10 above; and other reptile and amphibian species found and date.

ADDITIONAL SURVEYS / STUDIES

Proper implementation of the Phase 2 survey protocol is usually adequate to determine species presence or probable absence, especially in small wetlands lacking invasive plant species. Additional surveys, however, may be necessary to determine whether or not bog turtles are using a particular wetland, especially if the Phase 2 survey results are negative but the quality and quantity of habitat are good and in a watershed of known occurrence. In this case, additional surveys (Phase 2 and/or Phase 3 (trapping) surveys), possibly extending into the following field season, may be recommended by the Service or appropriate State agency.

If bog turtles are documented to occur at a site, additional surveys/studies may be necessary to characterize the population (*e.g.*, number, density, population structure, recruitment), identify nesting and hibernating areas, and/or identify and assess adverse impacts to the species and its habitat, particularly if project activities are proposed to occur in, or within 300 feet of, wetlands occupied by the species.

Attachment 1

CONTACT AGENCIES - BY STATE

(April 2006)

STATE	FISH AND WILDLIFE SERVICE	STATE AGENCY
Connecticut	U.S. Fish and Wildlife Service New England Field Office 22 Bridge Street, Unit #1 Concord, NH 03301	Department of Environmental Protection Env. & Geographic Information Center 79 Elm Street, Store Floor, Hartford, CT 06106 *(info about presence of bog turtles in or near a project area)* Department of Environmental Protection Wildlife Division, Sixth Floor 79 Elm Street, Store Floor, Hartford, CT 06106 *(to get a Scientific Collectors Permit or determine what type of marking system to use)*
Delaware	U.S. Fish and Wildlife Service Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401	Nongame & Endangered Species Program Delaware Division of Fish and Wildlife 4876 Hay Point Landing Road Smyrna, DE 19977
Maryland	U.S. Fish and Wildlife Service Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401	Maryland Department of Natural Resources Wildlife & Heritage Division PO Box 68, Main Street Wye Mills, MD 21679
Massachusetts	U.S. Fish and Wildlife Service New England Field Office 22 Bridge Street, Unit #1 Concord, NH 03301	Division of Fisheries and Wildlife Dept. Fisheries, Wildlife and Env Law Enforcement Rt. 135 Westboro, MA 01581
New Jersey	U.S. Fish and Wildlife Service New Jersey Field Office 927 North Main Street, Bldg. D-1 Pleasantville, NJ 08232	New Jersey Division of Fish and Wildlife Endangered and Nongame Species Program 143 Van Syckels Road Hampton, NJ 08827
New York	U.S. Fish and Wildlife Service 3817 Luker Road Cortland, NY 13045	New York Natural Heritage Program Department of Environmental Conservation 700 Troy-Schenectady Road Latham, NY 12110-2400 *(info about presence of bog turtles in or near a project area)* NY Department of Environmental Conservation Special Licenses Unit 50 Wolf Road, Albany, NY 12233 *(for endangered species permit applications)*
Pennsylvania	U.S. Fish and Wildlife Service Pennsylvania Field Office 315 South Allen Street, Suite 322 State College, PA 16801	Natural Diversity Section Pennsylvania Fish and Boat Commission 450 Robinson Lane Bellefonte, PA 16823

Attachment 2

BOG TURTLE COUNTIES OF OCCURRENCE OR LIKELY OCCURRENCE[1]
(April 2006)

STATE	COUNTY	
Connecticut	Fairfield	Litchfield
Delaware	New Castle	
Maryland	Baltimore Carroll	Cecil Harford
Massachusetts	Berkshire	
New Jersey	Burlington Gloucester Hunterdon Middlesex Monmouth Morris	Ocean Salem Somerset Sussex Union Warren
New York	Albany Columbia Dutchess Genesee Orange Oswego Putnam	Seneca Sullivan Ulster Wayne Westchester
Pennsylvania	Adams Berks Bucks Chester Cumberland Delaware Franklin	Lancaster Lebanon Lehigh Monroe Montgomery Northampton Schuylkill York

[1] *This list is valid for one year from the date indicated. It may, however, be revised more frequently if new counties of occurrence are documented. Updates to this list are available from the Service upon request.*

Information was not supplied

Information was not supplied

BAGDON
environmental

NORBERT QUENZER JR.

EDUCATION

B.S., Forest Biology-Wildlife, 1979, State University of New York, College of Environmental Science and Forestry, Syracuse, NY.

A.S., Forest Management, 1977, Columbia-Greene Community College, Hudson, NY.

EMPLOYMENT HISTORY

Vice President/Senior Ecologist - Bagdon Environmental, Delmar, New York. January 1986 to present.

Mr. Quenzer is responsible for managing and conducting wetland studies at Bagdon Environmental. Duties include state and federal wetland delineation; mitigation and restoration plan development; permit application preparation; client/regulatory liaison; and expert testimony. As Senior Ecologist, Mr. Quenzer conducts and supervises ecological evaluations; wildlife/vegetation inventory and analysis; endangered species surveys; and habitat evaluations. Mr. Quenzer has been principal investigator and supervisor of hundreds of wetland and ecological projects during his tenure at Bagdon Environmental.

Interpretive Naturalist - New York State Department of Environmental Conservation, Albany, New York. 1985.

Developed and presented educational programs on the ecological, cultural and historic attributes of the New York State Forest Preserve.

Environmental Biologist - Jason M. Cortell and Associates, Inc., Gladstone, New Jersey. 1982 to 1985.

Primary responsibilities were wetland assessment and wildlife/vegetation inventory and analysis. Additional duties included: aquatic vegetation surveys, macroinvertebrate analysis, electrofishing, field monitoring and analysis of water quality, air quality, noise and meteorological data.

Wildlife Research Assistant - Cornell University, Department of Natural Resources, Highland, New York. 1980 to 1981.

Organized and directed field studies for pine vole (*Microtus pinetorum*) control project in Hudson Valley apple orchards.

PROFESSIONAL MEMBERSHIPS

Association of State Wetland Managers
Ecological Society of America
New York State Wetlands Forum - Chair (1994-1996) and Founding Member
Society of Wetland Scientists – Professional Certification Standards Committee
The Wildlife Society

PROFESSIONAL CERTIFICATION AND TRAINING

Certified Professional Wetland Scientist, Society of Wetland Scientists
Certified Ecologist, Ecological Society of America
Certified Wildlife Biologist, The Wildlife Society
Certified Habitat Evaluation Procedures, U.S. Fish and Wildlife Service
Federal Wetland Identification and Delineation Techniques

PROFESSIONAL LICENSES

New York State Department of Environmental Conservation

- Scientific Collectors License - #LCP01-183
- Endangered Species amendment for Bog Turtles (*Clemmys muhlenbergii)* in Dutchess, Orange, Putnam and Westchester Counties

New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources - Special Licenses Unit
625 Broadway
Albany, NY 12233-4752
Phone Number (518) 402-8985
Fax Number: (518) 402-8925

NEW YORK STATE FISH AND WILDLIFE LICENSE

License Type: Endangered/Threatened Species: General

License Number: 117

Licensee:

NORBERT QUENZER, JR.
BAGDON ENVIRONMENTAL
25 DELAWARE AVENUE
DELMAR, NY 12054

Fee Amount: $.00
Effective Date: 03/28/2007
Expiration Date: 03/31/2008
Region: 4 County: ALBANY
Home Phone Number: (518) 475-0252
Business Phone Number: (518) 439-8588

DOB: 4/23/1957

Statutory Authority:

ECL 11-0535 6NYCRR Part 182 6NYCRR Part 175

Conditions:

1. A. Please read all license conditions BEFORE conducting any activity pursuant to this license.

B. The licensee assumes all liability and responsibility for any activities conducted under the authority of this license or any actions resulting from activities authorized by the license.

C. This license may be revoked for any of the following reasons:
i. licensee provided materially false or inaccurate statements in his or her application, supporting documentation or on required reports;
ii. failure by the licensee to comply with any terms or conditions of this license;
iii. licensee exceeds the scope of the purpose or activities described in his or her application for this license;
iv. licensee fails to comply with any provisions of the NYS Environmental Conservation Law, any other State or Federal laws or regulations of the Department directly related to the licensed activity;
v. licensee submits a check, money order or voucher for this license or application for this license that is subsequently returned to the Department for insufficient funds or nonpayment after the license has been issued.

D. The renewal of this license is the responsibility of the licensee. This license is deemed expired on the date of expiration listed on the license unless otherwise notified by the Department.

E. Direct all questions concerning this license to the Special Licenses Unit (518) 402-8985.

New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources - Special Licenses Unit
625 Broadway
Albany, NY 12233-4752
Phone Number (518) 402-8985
Fax Number: (518) 402-8925

NEW YORK STATE FISH AND WILDLIFE LICENSE

Conditions:

2. A. The licensee and/or designated agents are authorized to collect and possess bog turtles (Clemmys muhlenbergii), for scientific purposes. Collected turtles are to be released at the point of capture as soon as possible following collection of biological information. Turtles may not be removed from the field without prior permission from the Endangered Species Unit (ESU) at (518)-402-8855.

B. Turtles may be captured by hand capture or by use of turtle traps in the New York counties of Dutchess, Orange, Putnam, and Westchester. If fixed traps are employed in the capture of turtles, they must be checked no less frequently than once each 24 hours while in operation. Fixed traps must be tagged with the name and address of the licensee.

C. Turtles may be marked in the field by file notching of marginal scutes. If notch codes are to be applied to collected turtles, the licensee will first discuss with the ESU the system of codes to be used. All notch codes actually applied to turtles by the licensee are to be reported to the ESU. The licensee will take care to avoid obscuring any prior/existing markings on previously marked turtles.

D. The licensee may designate agents to conduct activities authorized by this license. Such designations must be in writing and the licensee must maintain an accurate list of agents designated pursuant to this license and such list must be on file with the NYS DEC Special Licenses Unit. The licensee is responsible for all actions taken by designated agents under this license.

E. This license is not a license to trespass and the licensee and/or designated agents must obtain permission from the appropriate landowner prior to conducting activities authorized pursuant to this license.

F. The licensee and/or designated agents shall notify the appropriate Regional Environmental Conservation Officer at least 48 hours prior to any collecting activity.

G. The licensee shall file with the department on or before the expiration date of this license a report of all activities conducted pursuant to this license during the preceding calendar year.


SRCC
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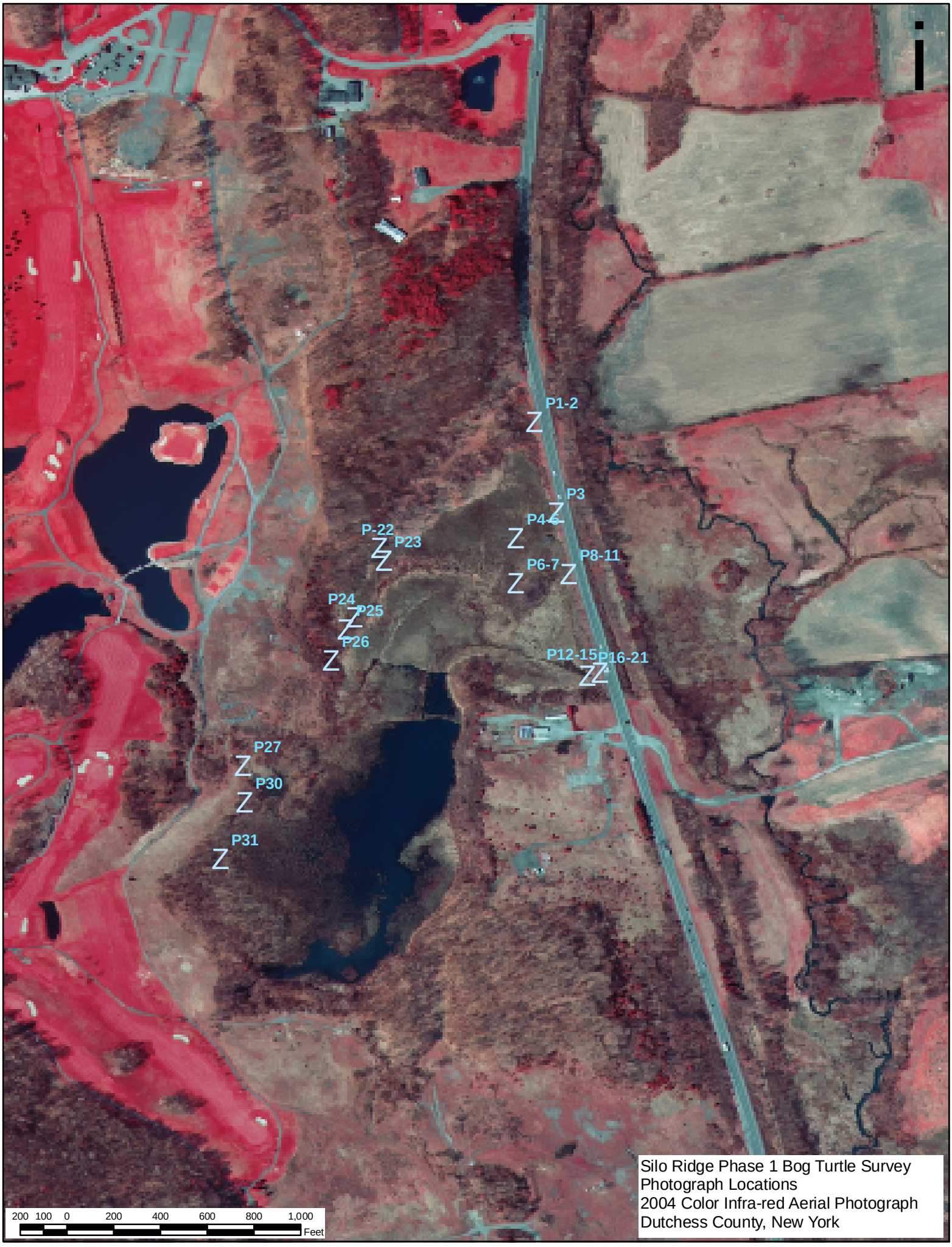
Feet
Phase 2 Bog Turtle Search Area
2004 True Color Aerial Photograph
Dutchess County, New York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Feet
Silo Ridge Phase 1 Bog Turtle Survey
Photograph Locations
2004 Color Infra-red Aerial Photograph
Dutchess County, New York

Silo Ridge Phase 1 Bog Turtle Survey
Photograph Locations
2004 Color Infra-red Aerial Photograph
Dutchess County, New York