

*Threatened and Endangered Species
Habitat Suitability Assessment Report*

850 Route 28, LLC Site
Town of Kingston
Ulster County, NY

October 14, 2017

Prepared by:

Michael Nowicki
Ecological Solutions, LLC
1248 Southford Road
Southbury, CT 06488
(203) 910-4716

1.0 INTRODUCTION	3
TABLE 1 COVER TYPES IDENTIFIED ON THE SITE.....	3
Figure 1 Location Map.....	4
Figure 2 Soils Map.....	5
2.0 HABITAT SUITABILITY ASSESSMENT/CONCLUSION	6
2.1 Indiana bats.....	6
2.2 Northern long-eared bat.....	7
2.3 Bog turtle.....	7
3.0 PHOTOGRAPHS	9
Attachment - NYSDEC Letter	11
Attachment - USFWS List.....	12

1.0 INTRODUCTION

Ecological Solutions, LLC completed a threatened and endangered species habitat assessment on a site totaling 109.96 acres located at 850 Route 28 in the Town of Kingston, New York (Figure 1). The proposed project is a 130 unit Senior Housing development.

The New York State Department of Environmental Conservation (NYSDEC) Natural Heritage Program correspondence dated October 12, 2017 indicates that there are no known occurrences of State regulated threatened or endangered species on the site but that an Indiana bat maternal roost exists approximately 2 miles from the site (Attached Letter).

A review of the US Fish and Wildlife Service (USFWS) list of federal threatened and endangered species for the site indicates that there is the potential for Indiana bat (*Myotis sodalis*), Northern long-eared bat (*Myotis septentrionalis*), and bog turtle (*Glyptemys muhlenbergii*) to be located on or in the vicinity of the site.

Field assessments were conducted on October 10 and 12, 2017 to determine whether suitable habitat for these species is present on the site. Habitat cover types were also observed and are described below.

**TABLE 1
COVER TYPES IDENTIFIED ON THE SITE**

NO.	DESCRIPTION
1	Wetlands/Ponds
2	Impacted Area
3	Mixed Upland Forest

Detailed descriptions of each natural cover type are outlined below.

Wetlands/Ponds - The wetlands delineated on the site are generally scrub/shrub wetland and associated open water ponds dominated by red maple, red-osier dogwood, red maple, swamp white oak, and green ash, as well as skunk cabbage, tussock sedge, reed grass, and reed canary grass. The site contains approximately 3 acres.

Impacted Area/Bedrock - There are several locations where previous activities including a quarry and other excavation has taken place. These areas total about 22 acres.

Mixed Upland Forest - The site contains a mixed upland forest with hemlock, white pine, oaks, maples, shagbark hickory, black cherry, red maple, white ash, crab apple, and understory species. Trees are mainly in the 8-15 inch dbh range with larger trees located throughout the site and some contain the deadwood, exfoliating bark, crevices, and holes. There are approximately 81.5 acres on the site.

Figure 1 Location Map

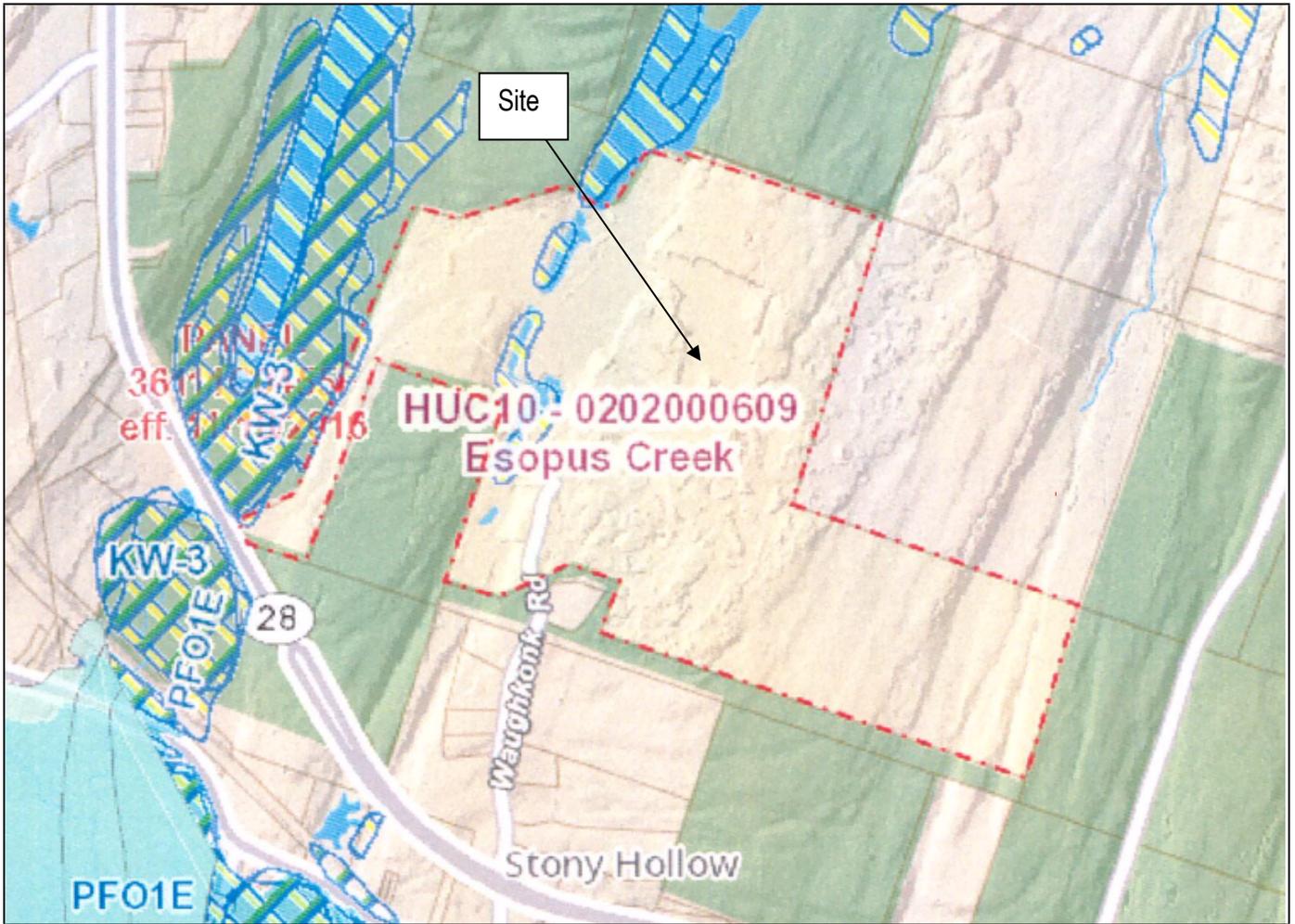
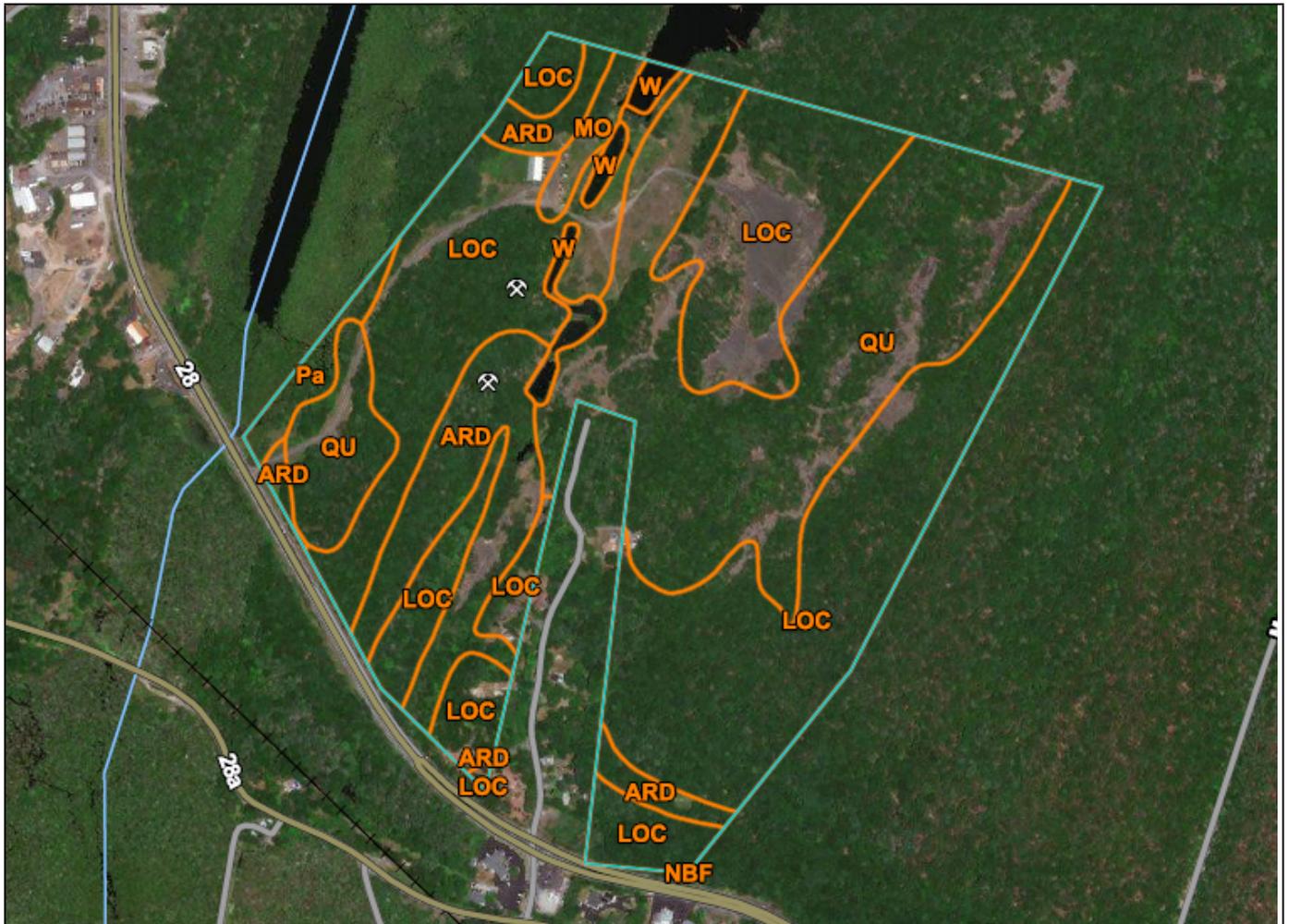


Figure 2 Soils Map



Map Unit Symbol	Map Unit Name
ARD	Amot-Lordstown-Rock outcrop complex, moderately steep
LOC	Lordstown-Amot-Rock outcrop complex, sloping
MO	Menlo very bouldery soils
NBF	Nassau-Bath-Rock outcrop complex, very steep
Pa	Palms muck
QU	Quarry
W	Water

2.0 HABITAT SUITABILITY ASSESSMENT/CONCLUSION

2.1 Indiana bats

The Indiana bat typically hibernates in caves/mines in the winter and roosts under bark or in tree crevices in the spring, summer, and fall. Suitable potential summer roosting habitat is characterized by trees (dead, dying, or alive) or snags with exfoliating or defoliating bark, or containing cracks or crevices that could potentially be used by Indiana bats as a roost. The minimum diameter of roost trees observed to date is 2.5 inches for males and 4.3 inches for females. However, maternity colonies generally use trees greater than or equal to 9 inches dbh. Overall, roost tree structure appears to be more important to Indiana bats than a particular tree species or habitat type. Females appear to be more habitat specific than males presumably because of the warmer temperature requirements associated with gestation and rearing of young. As a result, they are generally found at lower elevations than males may be found. Roosts are warmed by direct exposure to solar radiation, thus trees exposed to extended periods of direct sunlight are preferred over those in shaded areas. However, shaded roosts may be preferred in very hot conditions. As larger trees afford a greater thermal mass for heat retention, they appear to be preferred over smaller trees.

Streams associated with floodplain forests, and impounded water bodies (ponds, wetlands, reservoirs, etc.) where abundant supplies of flying insects are likely found provide preferred foraging habitat for Indiana bats, some of which may fly up to 2-5 miles from upland roosts on a regular basis. 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. While Indiana bats appear to forage in a wide variety of habitats, they seem to tend to stay fairly close to tree cover.

Conclusion – The mixed upland forest on the site provide suitable foraging habitat for the Indiana bat. Since there is a known maternal colony roost about 2 miles from the site the Applicant will incorporate the following conservation measures to ensure no impact occurs to this species. If tree removal will occur as part of a proposed project the Applicant will avoid, minimize, and mitigate impacts to this species by:

- Implementing tree clearing for site activities during timeframes when bats are not resident on the site November 1 – to March 31;
- Prior to clearing, the limits of proposed clearing will be clearly demarcated on the site with orange construction fencing (or similar) to prevent inadvertent overclearing of the site;
- If necessary, street lighting or site lighting will use Town of Kingston Planning Board approved light fixtures that have tops that direct light down to minimize light pollution and not interfere with potential bat foraging activities;
- Preserving the wetlands on the site to the maximum extent possible which can potentially be used by bats as travel corridors;

- Implementing soil conservation and dust control best management practices, such as watering dry disturbed soil areas to keep dust down, and using staked, recessed silt fence and anti tracking pads to prevent erosion and sedimentation in surface waters on the site, and;
- Stormwater pond/s will not be maintained with any chemicals that might adversely affect bats or insect populations on which they may feed.

These measures will result in minimizing potential adverse effects to Indiana bats as well as Northern long-eared bats that have a similar niche as the Indiana bat.

2.2 Northern long-eared bat

Winter Habitat: Same as the Indiana bat northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They typically use large caves or mines with large passages and entrances; constant temperatures; and high humidity with no air currents. Specific areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur. Within hibernacula, surveyors find them in small crevices or cracks, often with only the nose and ears visible.

Summer Habitat: During summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds.

Feeding Habits: Northern long-eared bats emerge at dusk to fly through the understory of forested hillsides and ridges feeding on moths, flies, leafhoppers, caddisflies, and beetles, which they catch while in flight using echolocation. This bat also feeds by gleaning motionless insects from vegetation and water surfaces.

Conclusion - The northern long eared bat requires/occupies practically the same habitat niche as the Indiana bat. Impacts to habitat and mitigation would be consistent with the recommendations for the Indiana bat.

2.3 Bog turtle

The bog turtle is a semi-aquatic freshwater turtle that prefers open, shallow wetlands with soft soils that are saturated by perennial groundwater discharge. Habitat and associated flora vary throughout the bog turtle's range; however, in the northern part of its range (Connecticut, Massachusetts, New York, New Jersey, Pennsylvania) the bog turtle exhibits a strong preference for fens fed by calcium-rich groundwater from limestone, marble or other calcareous material. These palm-sized, secretive turtles spend much of their lives hidden in soft soils or under plant material, which serves as a refuge and aids in thermoregulation. The bog turtle is one of the few turtles that remain within its core wetland habitat to nest, typically selecting hummock-forming plants on which to deposit its eggs. Bog turtles living in groundwater-fed, calcareous wetland habitats with low open vegetation may use areas of apparently less suitable habitat seasonally.

Bog turtles are omnivorous and can live more than 50 years. The U.S. Fish and Wildlife Service listed the bog turtle as *Threatened* in 1997 because of loss of habitat. It is listed as *Endangered* by the New York State Department of Environmental Conservation (NYSDEC).

The wetlands on the property were surveyed and the wetland communities were assessed for the presence of habitat characteristics consistent with the bog turtle federal recovery plan (U.S. Fish and Wildlife Service, 2001): 1) soft, saturated organic and/or mineral soil; 2) hydrologic regime derived from perennial groundwater discharge; 3) plant community represented by a predominance of low-growing, native flora including sedges, rushes, grasses, forbs, mosses, and sometimes low shrubs; 4) tree canopy cover less than 50% allowing adequate sunlight to reach the ground, and 5) Fen indicator plants (calcicoles) including, shrubby cinquefoil (*Pentaphylloides floribunda*), grass-of-parnassus (*Parnassia glauca*), and tamarack (*Larix laricina*).

Conclusion – The wetlands on the site are a complex of habitat types and include open marsh wetland and associated ponds. The marsh community features a few tussock sedge (*Carex stricta*), cattail (*Typha* sp.), reed grass (*Phragmites* spp.) reed canary grass (*Phalaris arundinaceae*), and a scrub-shrub/swamp community which includes red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*) and various shrubs (*Cornus*, *Salix*, *Viburnum*). The hydrology in the wetland complex ranged from dry to inundated with water levels ranging between 30-60 cm in the ponded areas and dry areas within the marsh. Soils within the wetland are Palms muck and are deep organic soil. Hydrology is generally surface from the ponds and beaver activity may further impact the site hydrology. The site does not contain bog turtle habitat but offsite areas associated with Onteora pond offers potential generic habitat. No mitigation measures are proposed for any site work.

3.0 PHOTOGRAPHS

Wetland/Pond



Mixed Upland Forest – center of site



Attachment - NYSDEC Letter

Attachment - USFWS List