

*Threatened and Endangered Species
Habitat Suitability Assessment Report*

World Olivet Assembly Site
145 Dover Furnace Road
Town of Dover, New York

April 18, 2017

Prepared by:

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

1.0 INTRODUCTION	3
1.....	4
2.....	4
2.0 HABITAT SUITABILITY ASSESSMENT/CONCLUSIONS	5
2.1 Timber Rattlesnake	5
2.2 Bog turtle	6
3.0 PHOTOGRAPH	8
4.0 REFERENCE	11
1.0 Location Map.....	12
2.0 Soils Map.....	13

1.0 INTRODUCTION

Ecological Solutions, LLC completed a threatened and endangered species habitat suitability assessment on a site owned by World Olivet Assembly (WOA) totaling 181.9 acres located at 145 Dover Furnace Road in the Town of Dover, Dutchess County, New York. WOA proposes to renovate and repurpose approximately 50 buildings on Dover Furnace and Ore Bed Roads for its religious use. These buildings were once used by the New York City Mission Society as a large summer camp. WOA's religious use will include various components including a chapel, conference center, administrative offices, 54 residential units (in 6 buildings), a 14-room hotel, 3 guest houses, and associated recreational and religious uses such as a children's bible camp, children's day care, equipment and maintenance shops, laundry building, playgrounds, basketball and tennis courts, a beach, an amphitheater, two dining halls, parking lots and access roads and utilities (collectively "WOA Center" or "Project").

One new building is proposed, an eight-unit residential hall containing approximately 2,500 square feet. Other than this structure, no new construction of buildings is proposed at the WOA Center, but instead, the Project will undertake major renovations and repairs to the existing structures on the Site keeping the same footprint for each structure.

The Project will repave Ore Bed Road (a private road), an existing gravel/paved road, two existing gravel-parking lots and an existing gravel access drive. The rest of the access drives on the Site will remain as gravel drives. In addition, new construction will be limited for new stormwater controls on the Site and certain recreational accessory including a new playground.

WOA anticipates that approximately 70 staff members and 120 attendees will use the WOA Center at any one time. Given the reuse of this former summer camp and the limited amount of new construction being proposed, the scale of the project is considered minimal.

Numbers 9 and 37 Cooperstown Road and another unnumbered parcel are also owned by WOA. The existing house at 37 Cooperstown Road will be undergo minor interior renovations. WOA will construct a new modular home, each approximately 2,500 sq.ft. on each of the other two parcels on Cooperstown Road.

In correspondence dated March 3, 2017 the New York State Department of Environmental Conservation (NYSDEC) requested an assessment of the impacts to potential habitat for the bog turtle (*Glyptemys muhlenbergii*) since this species and habitat has been documented at or very close to the site and timber rattlesnake (*Crotalus horridus*) because this species has been documented at or very close to the site. Habitat observed on the site is listed in Table 1.

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

1	Pond
2	Wetland Complex
3	Camp/Mowed Field
4	Mixed Upland Forest

Pond/Wetland Complex – There is pond located approximately at the center of the property. A wetland complex on the southeast and east side of the property contains shrub swamp, fen, and forested areas. Several springs and a spring house are located on the slope at the wetland boundary and soils are mucky with approximately 6 inches of muck associated with rivulets throughout the wetland.

Camp/Mowed Field – There are dozens of existing camp buildings and associated gravel roads and recreational areas with access from Dover Furnace Road.

Mixed Upland Forest - This forest occurs on the site but well north of the proposed redevelopment area. The species in the forest are white pine, maple, oak, and associated species.

2.0 HABITAT SUITABILITY ASSESSMENT/CONCLUSIONS

2.1 Timber Rattlesnake

The site was assessed to determine if any timber rattlesnake den sites or basking areas could potentially be found by traveling through and around the property. Requirements for timber rattlesnake dens generally include a southeast to southwest facing rock formation of either fractured ledge or talus with a nearby open basking area with sufficient rock cover for gestating females and post-emergence basking. Upon emerging from the den, timber rattlesnakes are very lethargic and basking area where the snakes can warm up is usually nearby. The western section of the site contains a ridge with steep slopes and open rocky summit areas with upland forest component that is characteristics of timber rattlesnake den and basking area. The field investigation confirmed the NYSDEC data from the Natural Heritage Program that timber rattlesnake habitat exists on the site – see figure 2 Soils Map.

Rattlesnake movements are dependent upon availability of suitable basking/gestating areas, successful foraging, and mating activity. It is known that timber rattlesnakes, particularly females, may move considerable distances overland (generally migrate from 1.3 to 2.5 miles (2 to 4 km) from their den each summer) and may utilize any upland mixed forest area during the summer season. In addition to potential den sites and associated basking area the property was assessed for potential foraging habitat. The property is forested and contains wetlands and small open field area adjacent to the existing developed areas and therefore has potential foraging characteristics because the habitat can offer shade, rest, and prey opportunities for this species and is located within several hundred feet of the ridge.

To reiterate, one new building is proposed, an eight-unit residential hall containing approximately 2,500 square feet. Other than this structure, no new construction of buildings is proposed at the WOA Center, but instead, the Project will undertake major renovations and repairs to the existing structures on the Site keeping the same footprint for each structure.

The Project will repave Ore Bed Road (a private road), an existing gravel/paved road, two existing gravel-parking lots and an existing gravel access drive. The rest of the access drives on the Site will remain as gravel drives. In addition, new construction will be limited for new stormwater controls on the Site and certain recreational accessory including a new playground.

Conclusion - If practical the Applicant will construct the new 2,500 square foot building and pave the internal roads during the acceptable work period November 1st through March 31st. Also, if practical the Applicant will rebuild the residence on Number 9 Cooperstown Road and build a 2,500 square foot home on another unnumbered parcel are also owned by WOA. The existing house at 37 Cooperstown Road will undergo minor interior renovations. As a precaution the Applicant will incorporate the following mitigation measure if this work will occur outside this work period:

Temporary barrier

When disturbance is likely to occur from actions occurring outside of the acceptable work periods November 1st through March 31st, a temporary restrictive (Stechert, 2001) barrier may help to avoid

impacts if installed around the perimeter of the disturbance footprint of small projects (< 1 acre). The barrier should be: 1) installed before the end of the acceptable work period and maintained until the end of the construction phase of the project or until the beginning of the next acceptable work period, whichever occurs first, 2) inspected daily and, if necessary, repaired immediately to a fully functional condition*, and 3) constructed in accordance with the following design specifications:

- made of ¼ inch square hardware cloth or wire mesh;
- a minimum of 48" high;
- anchored into the ground with reinforcement bars placed on the "disturbance side" of the barrier and spaced between 6 – 8 feet apart;
- secured at the base (barrier/ground interface) with at least 6" of fence material covered with soil backfill.

* The effectiveness of the barrier will be diminished and snakes may be able to gain access to the disturbance area if debris (e.g. tree limbs, soil) is allowed to overtop or pile up along side of the barrier.

Timber Rattlesnake Handout

A timber rattlesnake education handout (NYSDEC fact sheet for Timber rattlesnakes) will be given to all contractors and workers on site describing rattlesnake ID, biology, non-aggressive behavior.

Timber Rattlesnake Biologist

If a timber rattlesnake is encountered on the site a biologist familiar with timber rattlesnake ecology and licensed by the NYSDEC to handle the species will be called to remove the snake from the work area or residential area was construction is complete. The biologist will be on call and retained by the project sponsor for each incident. In addition if a timber rattlesnake is encountered all work will cease until the NYSDEC is contacted. Work will resume once the biologist has removed the snake and contacted the NYSDEC.

Permanent Impacts: To avoid and minimize impacts that may occur from human/snake interaction in the area once the project is completed and occupied the project sponsor will provide educational materials for prospective residents to inform residents of the potential for timber rattlesnake encounters and what to do if a snake is encountered to ensure the animals are not persecuted. This material will include the NYSDEC fact sheet for timber rattlesnakes and the name/phone number of a biologist licensed to handle this species.

2.2 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 (Ernst et al. 1994). The U.S. Fish and Wildlife Service listed the bog turtle as *Threatened* in 1997 because of loss of habitat (USFWS 2001). It is listed as *Endangered* by the New York State Department of Environmental Conservation (NYSDEC).

The wetlands adjacent to the project area 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 large NYSDEC wetland (DP-22) delineated on the site is a wetland complex on the southeast and east side of the site that contains shrub swamp, fen, and forested wetland area. Several springs and a spring house are located on the slope at the wetland boundary and soils are mucky with approximately 6 inches of muck associated with rivulets throughout the wetland. The wetland contains groundwater seeps associated with soft mucky soils and upwellings and groundwater discharge areas and is suitable bog turtle habitat. No wetland impacts are proposed.

One new building is proposed on the site, an eight-unit residential hall containing approximately 2,500 square feet. Other than this structure, no new construction of buildings is proposed at the WOA Center, but instead, the Project will undertake renovations and repairs to the existing structures on the Site keeping the same footprint for each structure.

The Project will repave Ore Bed Road (a private road), an existing gravel/paved road, two existing gravel-parking lots and an existing gravel access drive. The rest of the access drives on the Site will remain as gravel drives. In addition, new construction will be limited for new stormwater controls on the Site and certain recreational accessory including a new playground.

No impacts will occur to the wetland (soils, hydrology) from the minor site renovation which will occur at the interior of the existing camp buildings. Although the proposed building and other site upgrades are located within 300 feet of the wetland boundary for DP-22 it is located well to the interior of the existing development footprint and will not impact the wetland or site hydrology or hydric soils. The development is inland from the top of a very steep slope that leads down to the wetland (DP-22) and this slope is wooded with no impacts proposed. No mitigation is proposed for the current proposal since there are no impacts that will occur to the wetland, hydrology, soils, or vegetation.

3.0 PHOTOGRAPH

Delineated wetland pocket at center of site.



NYSDEC Wetland adjacent to fen.



NYSDEC Wetland near spring house.



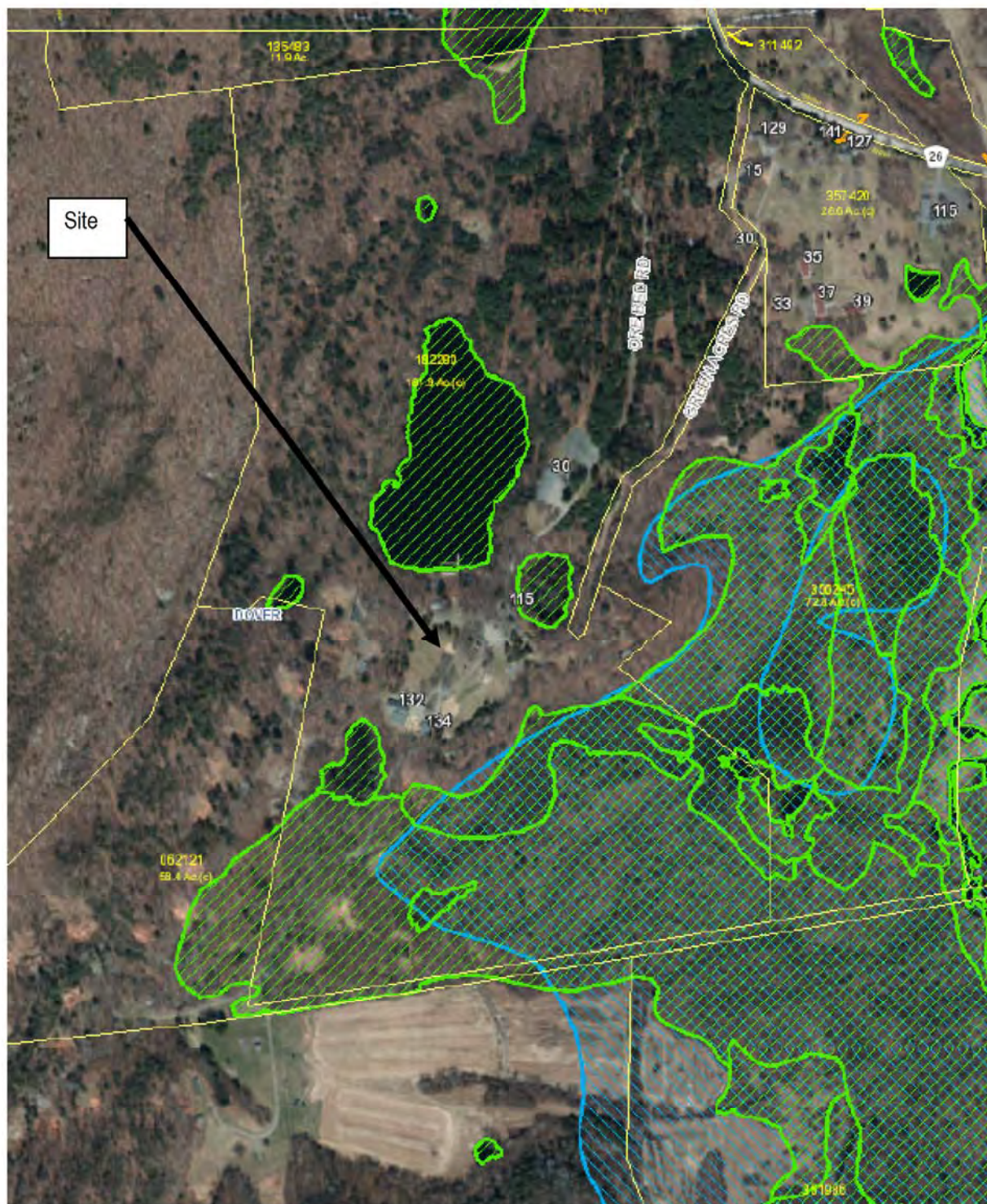
4.0 REFERENCE

Stechert, R. 2001. Effectiveness of an experimental timber rattlesnake (*Crotalus horridus*) exclusion fence at Schunemunk Mountain, Town of Woodbury, Orange County, New York. Report to the Eastern Chapter of the New York Natural Conservancy and the New York State Department of Environmental Conservation. 23p.

Ernst, C.H., R.W. Barbour and J.E. Lovich. 1994. Turtles of the United States and Canada. Smithsonian Institution Press, Washington DC. 578 p.

USFWS. 2001. Bog turtle (*Clemmys muhlenbergii*), northern population recovery plan. U.S. Fish and Wildlife Service, Hadley, MA. 103 p.

1.0 Location Map



2.0 Soils Map



Map Unit Symbol	Map Unit Name
Cc	Catden muck, 0 to 2 percent slopes
CtD	Chatfield-Hollis complex, 15 to 35 percent slopes, very rocky
CuA	Copake gravelly silt loam, nearly level
CuB	Copake gravelly silt loam, undulating
CuC	Copake gravelly silt loam, rolling
CuD	Copake gravelly silt loam, hilly
Fr	Fredon silt loam
HoE	Hollis-Chatfield-Rock outcrop complex, steep
HoF	Hollis-Chatfield-Rock outcrop complex, very steep
W	Water
Wy	Wayland silt loam