

**Bog Turtle Habitat Assessment at the Proposed Millerton
Overlook Development Site,
Village of Millerton, Dutchess County, New York**

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Introduction

Hudsonia Ltd was retained by the Village of Millerton planning board to conduct an independent review of environmental documents pertaining to the bog turtle in connection with the proposed Housing Resources “Millerton Overlook” development site on the west side of State Route 22 in Millerton, New York (Figure 1). The bog turtle (*Glyptemys* [= *Clemmys*] *muhlenbergii*) is listed by the State of New York as an Endangered species and by the federal government as a Threatened species.

This report is a collaboration between Hudsonia and J. Tesauro Ecological Consulting. Fieldwork for this assessment was conducted by Jason Tesauro, and Erik Kiviat participated in a field conference with the applicant’s biological consultant (Norbert Quenzer of Bagdon Environmental Associates) and engineer (Eric Bernard of Fuss & O’Neill). Hudsonia is a non-advocacy, nonprofit research institute that does not support or oppose land use projects; rather we develop scientific information and make recommendations for the use of decision makers.

Housing Resources proposes to construct low-income and senior citizen housing on an approximately 3.73 acre parcel adjacent to the northeastern edge of State Wetland MT-14 (Figure 2). According to the most current site plans, the entire footprint of the proposed development is to be located within upland portions of the parcel; no portion of MT-14 or other wetlands is proposed to be filled. MT-14 forms the southwestern boundary of the Millerton Overlook parcel. Land disturbance is to occur as close as 30 m (100 feet) to the wetland boundary of MT-14.

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 remains 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 bog turtle is listed as *Threatened* by the U.S. Fish and Wildlife Service (FWS) and *Endangered* by the State of New York.

We know of no reported bog turtle occurrences in MT-14 or other wetlands in the vicinity close to the project. Several bog turtle populations, however, do occur north and south of the Village. The closest known site is within 1.75 km of the project, on the east side of the Village. Bog turtles have been poorly inventoried in this portion of New York largely due to the lack of state or federal funding for surveys, private ownership of wetlands, and the elusive behavior of bog turtles which makes it difficult to detect their

presence. Most biologists concur that there are many undetected or unknown bog turtle populations in this region, as their preferred wetland habitat is fairly abundant. For example, Hudsonia conducted bog turtle surveys in southeastern New York for the Department of Environmental Conservation (DEC) in 1993 and found seven previously undocumented bog turtle sites in Dutchess and Putnam counties, including two sites in the Town of Northeast.

Methods

Initially we inspected several documents pertinent to the issue of the bog turtle, including a map showing the DEC Freshwater Wetlands, correspondence from Norbert Quenzer and the DEC, and Hudsonia's map of ecologically significant habitats in the Town of Northeast (including the Village of Millerton). We then visited accessible portions of Wetland MT-14 where we thought potential bog turtle habitat was likely to occur. Jason Tesauro conducted the field assessment on 8 June 2009, and Erik Kiviat participated in the field conference with the applicant's consultants on 19 June 2009. During the field conference, Kiviat inspected the plans for the proposed development including stormwater management and waste treatment infrastructure.

We used a characterization of bog turtle habitat promulgated by the U.S. Fish and Wildlife Service in "Guidelines for Bog Turtle Surveys (revised April 2006)" (<http://www.fws.gov/northeast/nyfo/es/btsurvey.pdf>) as well as our own extensive field experience with these habitats in the region. Potential bog turtle habitat is characterized by groundwater discharge, permanently saturated soft soils, and low open vegetation. All three habitat characteristics need not necessarily occur together throughout the potential habitat. In addition to those three characteristics, east of the Hudson River bog turtle wetlands also have a calcium-rich (calcareous) environment.

Results

Hudsonia's habitat map shows patches of fen habitat in the western and southern edges of Wetland MT-14. We focused our field assessment on the portions of MT-14 within 300 m of the project. We documented suitable bog turtle habitat in the southern and western fringes of MT-14 (Figure 2). This area of suitable bog turtle habitat consisted of a sloping, calcareous groundwater seepage fen that drained into a ponded emergent marsh, which comprised the bulk of the wetland habitat at MT-14. The vegetation within the calcareous seepage areas was indicative of a rich graminoid fen community, containing a variety of calcicoles (or limestone fen-indicator plants), e.g., shrubby cinquefoil (*Dasiphora fruticosa*), yellow sedge (*Carex flava*), alder-leaved buckthorn (*Rhamnus alnifolia*), stonewort (*Chara* sp.) lake sedge (*Carex lacustris*), and red osier dogwood (*Cornus sericea*). Other non-fen species included cattail (*Typha* sp.), blue flag (*Iris versicolor*), skunk cabbage (*Symplocarpus foetidus*), horsetail (*Equisetum* sp.), tussock sedge (*Carex stricta*), red maple (*Acer rubrum*), purple loosestrife (*Lythrum salicaria*), and various species of ferns. The soils throughout MT-14 were primarily organic with areas of mineral soil only near the drier portions of the wetland's perimeter. The soils within the fen were kept saturated by groundwater discharge. Rivulets, slow-moving

flowages, and shallow pools were present throughout the fen. The area downslope of the fen habitat was dominated by taller marsh-like vegetation including cattail, lake sedge, purple loosestrife, and duckweed (*Lemna*). The hydrology in this area was mostly ponded and appeared to have been altered by beavers. This ponded marsh community extended northward through MT-14 to the edge of the Millerton Overlook parcel boundary.

MT-14 is within potential bog turtle dispersal distance of other calcareous wetlands in which Hudsonia mapped fen habitats.

Discussion

An expert reconnaissance of New York State Wetland MT-14 within 300 m of the proposed Housing Resources Millerton Overlook development site identified a core area of suitable bog turtle habitat along the southwestern edges of MT-14. This area of suitable habitat consisted of a groundwater-fed calcareous fen that drained into a shallow emergent marsh. Emergent marsh with water depths ranging from 15 to 45 cm on the day of the survey occupied much of MT-14 and comprised the portion of the wetland adjacent to the edge of the Millerton Overlook parcel boundary. Bog turtles are generally dependent on open, calcareous wetlands with relatively stable water levels, short-stature vegetation, and soft, saturated soils. In New York these specific habitat conditions typically occur in patches within larger wetlands that contain a variety of wetland communities including marsh, swamp, and scrub-shrub habitats. Radio-telemetry research has demonstrated that bog turtles make frequent use of wetland areas contiguous with 'core' fen habitats for foraging, overwintering, and dispersal between patches of suitable fen (Ernst et al., 1994; USFWS 2001, Whitlock 2002). The flooded tall marsh community that occurs between the proposed project area and the fen habitat constitutes part of a 'bog turtle habitat complex' that could be used by bog turtles in various capacities. Large wetlands like MT-14 are very dynamic in nature as a result of beaver activity and may present bog turtles and other wetland wildlife with various ecological challenges and/or opportunities that may require dispersal to other patches of habitat within or beyond the wetland. Fen patches, and other habitats, in bog turtle wetlands are vulnerable to the impacts of sediment, nutrients, de-icing salt, and other pollutants from intensive land uses. Even though the fens in MT-14 are separated by cattail marsh from the proposed development site, offsite impacts of development could affect the fens during floods as well as affecting other habitats potentially used by bog turtles for, e.g., overwintering or summer foraging. Maintaining the integrity and quality of the entire wetland complex is critical to the conservation and protection of bog turtles over the long-term.

Recommendations

No development is proposed to occur within the wetland or the state-mandated 30 m (100 ft) buffer zone. The wetland, however, is vulnerable to potential offsite impacts of the proposed development. We recommend the following measures to reduce these impacts.

-Avoid the use of sodium chloride, calcium chloride, or urea de-icing compounds on the site. Plain sand, or calcium magnesium acetate (CMA) may be an acceptable substitute.

-Enlarge or deepen the stormwater pond next to the wetland boundary to increase its sediment-holding capacity during a storm greater than the ten-year storm for which the pond is currently designed. Incorporate an energy-dissipating feature at the outflow of the pond to avoid erosion at the edge of the wetland buffer zone.

-Incorporate nitrogen removal into the sewage treatment system for the development project.

-Ensure that all features necessary to protect the quality of the potential bog turtle habitat in MT-14, as well as other functions and values of this wetland, are fully maintained in perpetuity by means of appropriate provisions in the documents of the homeowners' association and federal, state, or local permit conditions, as appropriate.

We recommend that a copy of this report be submitted by the Planning Board to the Endangered Species Biologist, Robyn Niver, in the U.S. Fish and Wildlife Service Ecological Field Office in Cortland, New York. The U.S. Fish and Wildlife Service (hereinafter 'the Service') is the lead agency in bog turtle conservation and recovery efforts in New York and throughout the range of the species. As part of the DEC project review process, submitted land-use proposals that are proximate to potential bog turtle habitat are forwarded to the Service for their comment and review. Since the applicant's report to DEC was incomplete regarding the issue of potential bog turtle habitat (i.e., the potential core bog turtle habitat shown in Figure 2 was not described), the Service has not been given an opportunity to comment. As independent consultants in these matters, Hudsonia and J. Tesauro Ecological Consultants are obligated to share our findings on a federally listed species with the Service. It is in the best interest of the applicant and the Planning Board to provide this information with the Service at an early stage in the process, and this communication may prevent delays later.

References

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

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

Whitlock, A.L. 2002. Ecology and status of the bog turtle (*Clemmys muhlenbergii*) in New England. PhD thesis, University of Massachusetts, Amherst, MA. 147 p.

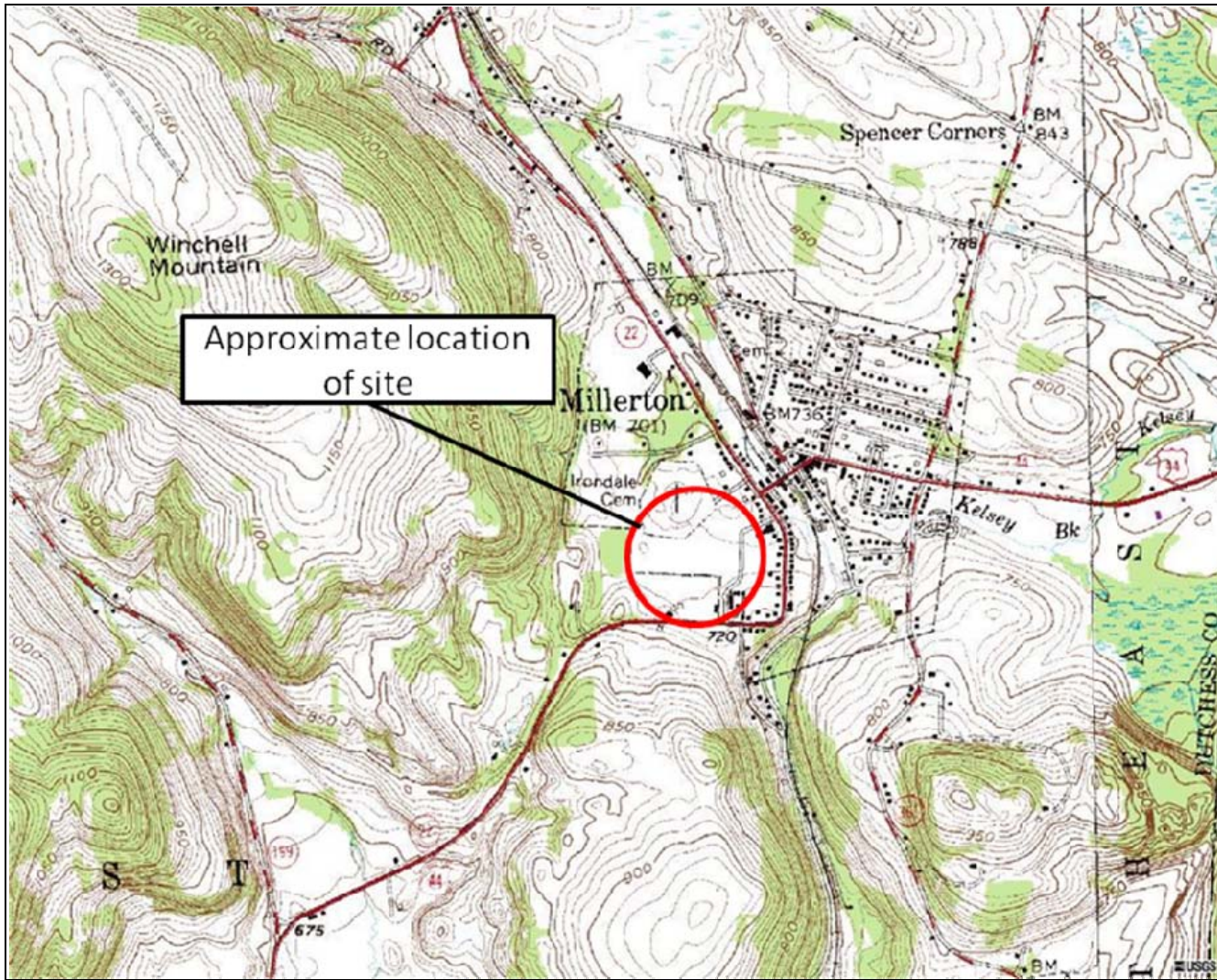


Figure 1. General location of the proposed Housing Resources development site.

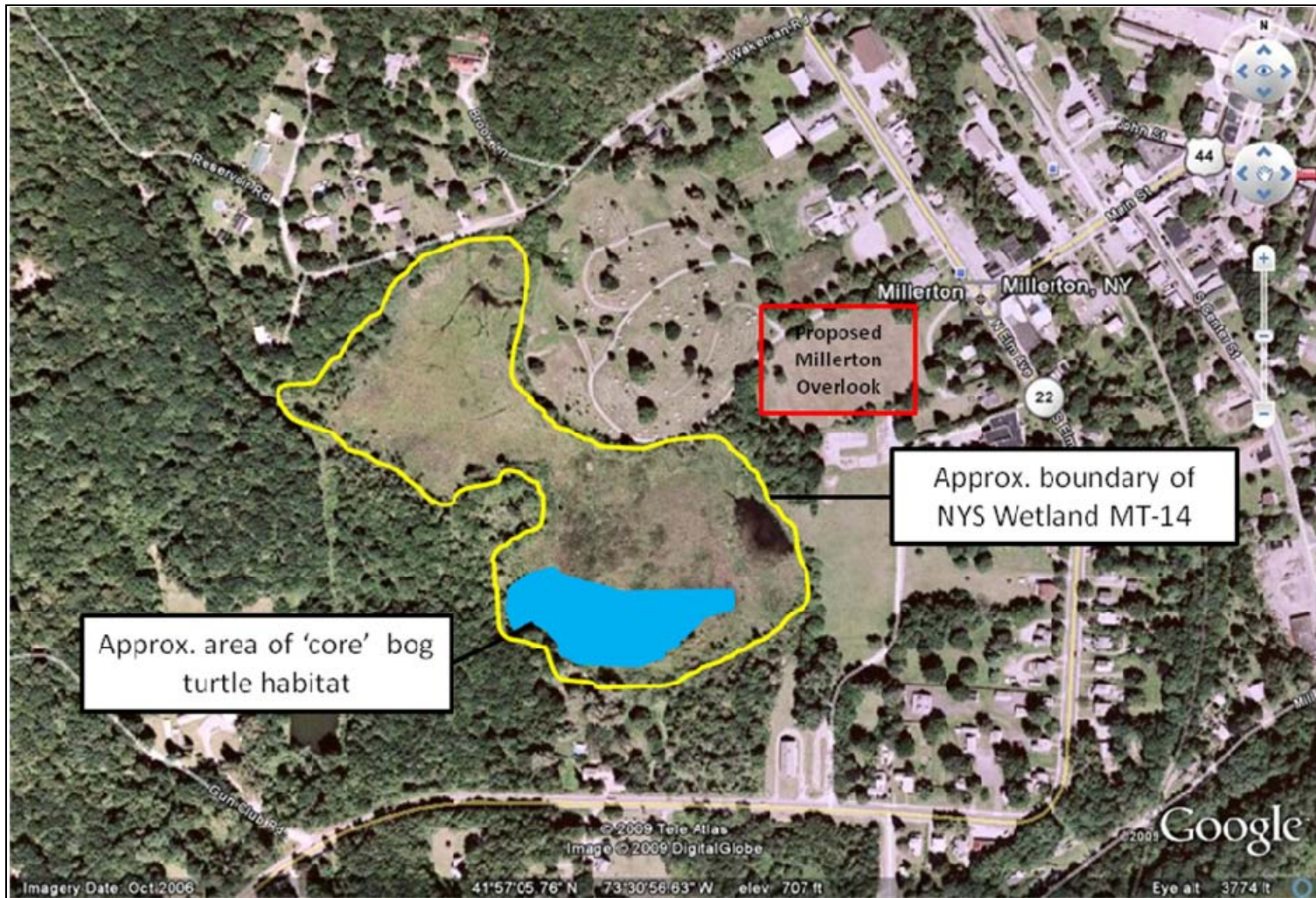


Figure 2. Survey area and location of suitable bog turtle habitat in Wetland MT-14.