

March 1, 2022

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NDDB DETERMINATION NUMBER: 202201541

Project: Construction & installation of a 1.6 MW photovoltaic generating facility on approximately 12 acres; NORTH HAVEN SOLAR ONE, 122 MILL RD., NORTH HAVEN, CT

Expiration: March 1, 2024

I have reviewed Natural Diversity Data Base (NDDB) maps and files regarding this project. According to our records, there are State-listed species (RCSA Sec. 26-306) documented nearby the proposed project area.

- **Box turtle (*Terrapene carolina carolina*)- State Special Concern**
 - In Connecticut, these turtles are found in well-drained forest bottomlands and a matrix of open deciduous forests, early successional habitat, fields, gravel pits, and or powerlines. Turtles are dormant between November 1 and April 1 and hibernate in only a few inches from the surface in forested habitat.
 - The greatest threat to this species is habitat loss, fragmentation, and degradation due to development. This species is very sensitive to adult mortality because of late maturity (10 years old) and long life span (50-100years). Vehicular traffic, heavy equipment used for farming, and ATV use in natural areas are implicated specifically in adult mortality through collisions. Illegal collection by the pet trade and unknowing public for home pets exacerbates mortality rates and removes important individuals from the population. Predation rates are also unnaturally high because of increased predator populations (e.g. skunks, foxes, raccoons, and crows) that surround developed areas..
- **Wood turtle (*Glyptemys insculpta*)- State Special Concern**
 - Individuals of this species are riverine and riparian obligates, overwintering and mating in clear, cold, primarily sand-gravel and rock bottomed streams and foraging in riparian zones, fields and upland forests during the late spring and summer. They hibernate in the banks of the river in submerged tree roots between November 1 and March 31. Their summer habitat focuses within 90m (300ft of rivers) and they regularly travel 300m (0.2 mile) from rivers during this time. During summer they seek out early successional habitat: pastures, old fields, woodlands, powerline cuts and railroad beds bordering or adjacent to streams and rivers. Their habitat in Connecticut is already severely threatened by fragmentation of riverine, instream, riparian, and upland habitats, but is exacerbated by heavy adult mortality from machinery, cars, and collection. This is compounded by the species late maturity, low reproductive potential, and high nest and hatchling depredation rates.

Construction protection measures:

Land disturbance activities that will crush adult turtles or unearth hibernating turtles or turtle nests need to consider local habitat features and apply fencing and/or time of year restrictions as appropriate. We recommend you consult with a herpetologist familiar with preferred habitats to assist you with proper techniques to ensure the best protection strategies are employed for your site.

If land disturbance will occur in open fields, early successional habitat you may need to take precautions to prevent active turtles from entering work area and setting up nests. This fencing would need to be in place before May 15.

If land disturbance will occur in forested habitat you will need to take precautions to avoid crushing hibernating adults.

- Restrict your land disturbance activities in forested habitat to the turtle active season (conduct land disturbance activities between April 1- November 1).
- Land disturbance and excavation of grasslands is most safe for turtles if conducted during the turtle dormant season (November 1- March 31).

For land disturbance work that must occur in the upland between April 1- October 31:

- Exclusionary practices will be required to prevent any turtle access into construction areas. These measures will need to be installed at the limits of disturbance as shown on the plans.
- Exclusionary fencing be at least 20 inches tall and must be secured to and remain in contact with the ground and be regularly maintained (at least bi-weekly and after major weather events) to secure any gaps or openings at ground level that may let animal pass through.
- Prior to construction, all turtles occurring within fencing work area will be relocated to suitable habitat outside disturbance area. This should be performed by a qualified professional familiar with habitat requirements and behavior of the species.
- The Contractor must search the work area each morning prior to any work being done.
- All construction personnel working within the turtle habitat must be apprised of the species description and the possible presence of a listed species.
- Any turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside of the excluded area and fencing should be inspected to identify and remove access point. These animals are protected by law and no turtles should be relocated from the site.
- In areas where silt fence is used for exclusion, it shall be removed as soon as the area is stable to allow for reptile and amphibian passage to resume.
- No heavy machinery or vehicles may be parked in any turtle habitat.
- Special precautions must be taken to avoid degradation of wetland habitats including any wet meadows and seasonal vernal pools.

Site Management protection measures:

Mowing is major source of human induced adult turtle mortality.

- Avoid mowing or vehicular traffic during peak use by this species (May 15-Sept 15)

Use these additional techniques to minimize impact, especially if you need to mow during peak use times:

- Mowing style: Avoid flail mower heads with guide bars that ride along the ground. Sickle bar mowers will have the least impact if mowing every 1-5 years. In areas with more woody vegetation >1-2" diameter Brontosaurus-style mower will likely have the least impact on turtles.
- Mowing height: If mowing during active season, retention of mowing stubble to 7-12 inches will reduce mortality, reduce blade wear, and will leave important cover for animals.
- Directionality - If mowing during the active season is necessary, start mowing from the center of the field and use a back-and-forth approach, or large circular pattern, to avoid concentrating fleeing animals where they may be killed or stranded. In addition, leave an unmowed 30 ft strip around the perimeter of the field and mow this area last. Most turtles are found in these areas and this provides time for them to react to the mowing activity and move out of the area.
 - If field is near stream: start mowing the side furthest from stream and work towards stream.
 - If field is bordered by woodland: start mowing side furthest from woodland and work towards woodland.
 - If field is bordered by road, start mowing next to the road and work your way across field.
- Mower Speed – Mowing in low gear or at slow speeds will allow turtles to react and move out of the field.
- Unmowed Edge - Leaving an unmowed field edge in high turtle use areas until after September 15th.

Site Design Recommendations:

If planned properly, you can increase the value of the habitat for wildlife and state listed species with your development.

- **Create a site management plan to promote native vegetation growth in the area under the solar panels.** Restoring native vegetation will attract pollinators and avoid the need for constant mowing. Reduced need for mowing will reduce the risk for turtles.
- Provide habitat for wildlife and allow for connectivity for wildlife movement. Use wildlife-friendly fencing to allow movement through the solar development.

This is determination is valid for two years.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Bureau of Natural Resources and cooperating units of DEEP, independent conservation groups, and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the NDDB should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated in the NDDB as it becomes available.

Please contact me if you have any questions (shannon.kearney@ct.gov). Thank you for consulting with the Natural Diversity Data Base and continuing to work with us to protect State-listed species.

Sincerely,

/s/ Shannon B. Kearney
Wildlife Biologist

