



September 21, 2017

Robert Stein, Chairman  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

RE: 20-MW Solar Photo-voltaic Generating Facility  
Candlewood Solar, LLC  
New Milford, Connecticut  
Petition No. 1312

Dear Chairman Stein:

Staff of this department have reviewed the above-referenced petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need will be required for the construction of the proposed photo-voltaic generating facility to be constructed east of Candlewood Mountain Road in western New Milford. A field review of the site was conducted on September 13, 2017. Based on these efforts, the following comments are offered to the Council for your use in this proceeding.

Candlewood Solar LLC proposes to construct a 20-MW solar farm consisting of approximately 75,000 photo-voltaic panels, eight inverter stations to convert the power from direct current to alternating current, eight transformers to increase the voltage from 1.5 kV to 13.8 kV, and an interconnection line to connect the solar farm to Eversource's Rocky River Substation on the east side of U.S. Route 7.

#### New England Clean Energy Multi-State Project Solicitation

Candlewood Solar submitted this project into the New England Clean Energy Request for Proposals (RFP), a three state solicitation by DEEP, in conjunction with Massachusetts and Rhode Island. Connecticut solicited and selected renewable energy projects pursuant to Section 1(c) of Connecticut Public Act 15-107, *An Act Concerning Affordable and Reliable Energy* (P.A. 15-107) and Sections 6 and 7 of Connecticut Public Act 13-303, *An Act Concerning Connecticut's Clean Energy Goals* (P.A. 13-303). The RFP process represents an important step forward in the implementation of Governor Malloy's vision for a cheaper, cleaner, and more reliable energy future for the ratepayers of Connecticut. Bringing more grid-scale renewable energy projects on line is instrumental in furthering this vision as these resources help diversify the regional fuel mix, assist the state in meeting its commitment to procure 20% of its electricity from Class I renewable sources by 2020, and also, contribute to the state's goal of reducing carbon emissions by 80% below 2001 levels by 2050. After reviewing all the projects bid into the RFP process, DEEP did not select the Candlewood Solar LLC proposal as one of the projects authorized to enter into a

long-term power purchase agreement, however, the Commonwealth of Massachusetts, as another participant in the tri-state RFP process, did select this project.

### Site Description

The project site is atop Candlewood Mountain, a north-south oriented hill just east of Candlewood Mountain Road and west of the northern tip of Candlewood Lake. Though the northern and eastern flanks of Candlewood Mountain exhibit some very steep slopes, the grades on the project site are much gentler. Excepting the interconnection line, which is discussed later, the moderate slope of the access road is the steepest grade encountered within the project site. The project otherwise is situated mostly on flat or gently sloping ground. The northern portion of the northern hayfield is the other area where slopes exceed gentle grades.

The vernal pool just beyond the northern end of the project, and designated as Wetland V in the Petition's Wetland and Watercourse Delineation Report, is an interesting and atypical vernal pool located within a narrow cut between two granite outcrops. The spacing between the two outcrops varies from 15' to 25' wide and is covered by a very deep layer of leaf litter, mostly oak. Though the Petition speaks of much deeper water depths at other times of year, at the time of the DEEP field review on September 13, which is typically a drier time of year as it has been this year, standing water in this vernal pool was confined to an area roughly 18" by 24" and even this small pool was segmented by leaves protruding up through it. The Petition mentions outflow from the vernal pool occurring from the eastern end of the rock cut, which would imply a water depth of several feet being attained at the maximum ponding of the pool.

The DEEP Natural Diversity Data Base letter of July 10, 2017 found the proposed vernal pool buffer of 100' and the avoidance of disturbance in over 75% of the area within 750' of the vernal pool to be a satisfactory protective buffer for this resource.

Forest cover on the site is almost totally deciduous (three or four white pines being the observed exceptions) and consists primarily of red oak, white oak, black birch, sugar maple, hickory and some scattered tulip poplar and beech. The forest is very open, being largely devoid of any understory with the exception of the southwestern portion of the site which exhibits some shrub cover generally 2' in height or less. Ferns provide ground cover in areas of more light such as forest edges and openings and along roads. An extensive network of woods roads crosses the project area.

Also crossing the site is a network of stone walls. The Petition states that those walls not directly within the proposed project footprint will be preserved, however, unfortunately but understandably, those within the project footprint cannot be saved. The stone wall that separates the two hayfields is overgrown with a collection of invasives including Japanese barberry, bittersweet and multiflora rose, as well as poison ivy, and is interlaced with a line of shagbark hickory. The wall is interesting in that, in addition to the original wall, there are also some impressively large boulders which the previous landowner explained he had pushed over to the wall as a convenient means of disposing of them.

South of this wall, in the center of the southern hayfield, a wooden trailer with three 4' by 6' glass panels was present on the day of the DEEP site review. These appear to be someone's



attempt to visually simulate the proposed solar panels, though they were aligned facing east instead of south.

One noteworthy observation about the site is the fact that, with foliage on the trees, no homes or other off-site structures are seen from the project site. This lack of visual connection should operate in the other direction as well, from off-site to project site.

The road which will serve as the project access road offers an excellent line of sight in both directions off Candlewood Mountain Road. The latter is flat and straight for a considerable distance in both directions.

On the day of the DEEP site visit, a very noticeable feature of the area was the prominence of the sound of small aircraft from the nearby Candlelight Airport. These were all propeller planes, with biplanes constituting a large portion of the transiting aircraft.

#### Core Forest Concerns

The Candlewood Solar project contemplates the clearing of 68 acres of currently forested land. Due to the location of the project, this forest land is part of a much larger block of contiguous, unfragmented forest, which totals 788 acres according to the Petition, mostly lying to the north of the project site. Such large, unfragmented forest blocks are a valuable and diminishing resource in Connecticut.

The University of Connecticut Center for Land Use Education and Research's (CLEAR) Forest Fragmentation Study indicates that a minimum of 250 acres of upland forest is needed to support sensitive edge-tolerant forest bird species (minimum 500 acres recommended). Core forest areas that provide optimal breeding areas for forest-interior birds are considered those greater than 300 feet away from non-forested areas. As depicted on Figure 14 of the Petition's accompanying Environmental Assessment, approximately 788 acres of contiguous forest is present on and adjacent to the Project Area, of which 443 acres are considered core forest and 345 acres are considered edge forest (within 300 feet of non-forested areas). The Project would reduce the area of core forest to 348 acres and will increase edge forest to 370 acres, as shown in Figure 15.

Putting this in context, the CLEAR study found that between 1985 and 2006, Connecticut lost 160,960 acres of core forest to housing, development and other uses. As noted in DEEP's *Connecticut Comprehensive Open Space Acquisition Plan (2016-2020)*, also known as the *Green Plan*, which is discussed below, if forest development continues at this pace, the landscape's ability to function will be dramatically reduced. For this reason, core forest land is targeted for preservation in the *Green Plan* and the *Forest Action Plan* by the State of Connecticut and its conservation partners such as land trusts, municipalities and water companies.

Connecticut's core forests have been severely impacted by development and fragmentation. The intent of PA 17-218 is to eliminate the apparent Agency policy conflict of encouraging low cost renewable energy and retaining large core forest blocks. DEEP's *Forest and Wildlife Action* plans as well as the *Green Plan* call for the retention and protection of core forests. PA 17-218's purpose is to not allow diminishment towards the minimum size considered to have

ecological value, that being 250 acres, but rather discourage fragmentation of forest blocks larger than 250 acres. The larger the core forest, the greater value and function of the many attributes of a core forest. Reducing the size of the forests block greater than 250 acres has a material effect on that core forest.

The functions and value of core forests are discussed in the *Green Plan*. The *Green Plan* is a statewide planning document developed by DEEP in partnership with municipalities and numerous conservation organizations to guide land acquisitions toward achieving the State's open space goals. The 2016-2020 version of the *Green Plan* presents a coordinated approach for land conservation by the State of Connecticut, through DEEP, and its conservation partners such as municipalities, land trusts and water companies.

Relative to large forest blocks, the *Green Plan* notes their value in highlighting that "Large-scale and intact forests provide key habitat linkages for common and declining wildlife species, such as thrushes and owls, bobcats, numerous insects, and newts and salamanders. In addition, forests add immensely to the quality of life for the state's residents. The ecosystem benefits this system provides are seemingly endless- forests absorb rainwater and slow runoff, reduce flooding, filter pollutants from the air, water and soil, regulate air temperatures, supply outdoor recreation opportunities, and more."<sup>1</sup>

Lastly, the DEEP Forestry Division updated the *Forest Action Plan* in 2015. As the *Forest Action Plan* describes, core forests are important for protecting biodiversity. While core forests provide habitat for many species including generalists that can also use non-core forest and non-forest habitats, some species need large, unbroken blocks of core forest to provide cover, forage, and breeding opportunities. Many threatened and endangered species prefer or need large areas of core forest to survive and, as this habitat type is reduced, it becomes harder to keep or reestablish these species. While the total amount of forest is declining in the state, core forest is declining much more rapidly because, in addition to core forest being developed or converted to non-forest, core forest is also being lost as nearby development turns it into edge or perforated forest, which in turn diminishes some of its value as habitat and its ability to protect biodiversity. Connecticut's development pattern continues to threaten core forest by encroaching on these important areas from all directions. Once core forest is lost, it is not easily or quickly regained or replaced in other areas so one of Connecticut's 10 Forest Vision Statements states that "in the future, Connecticut will increase the amount of forest protected from development following priority criteria based on core forest areas, Forest Legacy potential, and vulnerability." While still difficult, it is much easier to protect and conserve core forest than it is to create new core forest.

The vast forestlands of Connecticut are one of the defining features of the state's landscape and culture. While there is still a high percentage of existing forestland within the state, continued increases in population statewide are exerting more pressure on this valuable resource, and forest land is being lost at a continuous rate. The loss of both overall forestland and core forest land are of concern, as the remaining quantity of forestland does not always equate to quality forestland. The ability of Connecticut's forests to provide wildlife habitat, clean water, and economically viable forest products is at least partially dependent on our ability to maintain

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<sup>1</sup> Connecticut Comprehensive Open Space Acquisition Strategy (2016-2020), Connecticut Dept. of Energy and Environmental Protection, p. 121.

sizeable tracts of unfragmented forest. Furthermore, Connecticut's forests need to be balanced in size and age classes in order to perform many important functions including providing diverse habitats for wildlife, providing for an even flow of forest products, and being resistant to insect and disease outbreak. Despite these concerns, Connecticut's range of landscapes, waterscapes, and habitat diversity has continued to support a diverse set of wildlife species. Although much is known about the types of species found across the forestlands of Connecticut, and the key habitats associated with them, the data available regarding distribution and abundance of these groups is varied.

Relevant to the foregoing discussion is the Petition's note on page 14 that the solar farm developer plans to work with local non-profit conservation groups to establish a permanent conservation easement for those portions of the host parcel not used by the facility. This could be as much as 90 acres if the facility occupies 73 acres of the 163 acre parcel. Such an agreement would operate to preserve much of the forest resources of the site, both core and edge, from development. Though such an agreement would not compensate for all the forest acreage that would be lost should the solar farm be approved, it would certainly be an important step toward mitigating the impacts of the facility. The Council may wish to inquire further about discussions or steps that have taken place relative to implementing such a plan.

#### Construction Stormwater Management

Construction projects involving five or more acres of land disturbance require either an individual NPDES discharge permit from DEEP, or they may be eligible to register for coverage under the Department's General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (DEEP-WPED-GP-015). Though I may have overlooked it, I did not find any specific mention of the need for this permit within the Petition.

The large footprint of solar farm projects and the resultant large areas of land disturbance have occasioned some difficulties in both the review of permit submittals and the failure of stormwater control measures in the field. To address these problems, DEEP has recently developed additional direction to applicants to assist in achieving a successful outcome to both the permit process and the results on the ground. For the benefit of both the petitioner and the Council, attached to these comments please find the recently developed background information and recommended oversight measures for stormwater management at solar farm construction projects.

The petitioner has committed within its Payment in Lieu of Taxes (PILOT) Agreement with the Town of New Milford to obtain approval by the New Milford Inland Wetlands and Watercourses Commission for its stormwater management plan for the solar farm and the regulation of the wetlands impacts of the interconnection line to the Rocky River Substation. This coordination and cooperation with the municipality is commendable. However, while the Petitioner may agree in the PILOT agreement to make this commitment, it should recognize that the Siting Council retains final jurisdiction over the wetlands impacts of this project and DEEP retains final jurisdiction over stormwater management.

More importantly, the Petitioner should coordinate with the Town and DEEP to make sure that stormwater management plans ultimately approved by DEEP and the Town are consistent, or, at a minimum, not in conflict. Submittal of common stormwater management plans



would go a long way in this regard, and we assume the Petitioner would want to have DEEP and the Town work from a common starting point. Similarly, as the Town will require the posting of a performance bond to cover potential sedimentation and erosion damages and DEEP may require similar financial assurance, the Petitioner may wish to coordinate between DEEP and the Town to explore ways to avoid posting duplicate bonds.

Though the Petition does include a substantial amount of information on the Petitioner's plans for the management of stormwater from the site, DEEP prefers not to evaluate those plans at this time since we will be reviewing more complete plans at a later date and we wish to avoid any potential for inconsistencies either in the material we are reviewing at different stages of development or for misunderstanding of guidance or comments offered at this more preliminary stage.

#### Natural Diversity Data Base

DEEP's Natural Diversity Data Base program responded to the applicant's request of April 17, 2017 with a preliminary survey letter of July 10, 2017, which is attached. According to Data Base records, there are known extant populations of nine State-listed species that occur within or close to the boundaries of this project. These species are:

- Little brown bat (*Myotis lucifugus*) -State Endangered
- Golden-winged warbler (*Vermivora chrysoptera*) – State Endangered
- Slimy salamander (*Plethodon glutinosus*) – State Threatened
- Jefferson salamander “complex” (*Ambystoma jeffersonianum*) - State Special Concern
- Wood turtle (*Glyptemys insculpta*) – State Special Concern
- Eastern box turtle (*Terrapene carolina carolina*) - State Special Concern
- Red bat (*Lasiurus borealis*) – State Special Concern
- Silver-haired bat (*Lasionycteris noctivagans*) – State Special Concern
- Hoary bat (*Lasiurus cinereus*) – State Special Concern

The vernal pool protection strategies proposed by the applicant were deemed to be satisfactory. (Note: There is an apparent error in the size of the vernal pool habitat as listed in the attached letter.)

Surveys have been requested for the State-endangered golden-winged warbler and the State-threatened slimy salamander. Seasonal forest clearing restrictions are recommended to protect the three species of migratory, tree-roosting bats. Standard protection strategies are set forth for the eastern box turtle and the wood turtle. Further details on these recommendations are contained within the attached letter. DEEP has not yet received responses on the requested surveys.

#### Interconnection Line

An overhead interconnection line of 6,961' in length is proposed to link the Candlewood Solar Farm to the Rocky River Substation on U.S. Route 7. Placing this line underground would be extremely difficult and disruptive, particularly in the western portion crossing the undeveloped land between the Candlewood Lake embankment and the eastern edge of the solar farm where very steep grades and steep rock outcrops are encountered.

The DEEP review of the interconnection line began at Route 7. The initial portion of the interconnection route follows a buried fiber optic cable corridor. This corridor is easily walkable but sufficiently narrow that, for most of its length, the adjacent forest cover on both sides produces an overhanging canopy completely closing off the overhead clearance. Construction of this interconnection line will require clearing and widening of this corridor.

From this fiber optic cable corridor, the interconnection line enters the First Light access road to the Candlewood Lake dam and will run along the north side of this road. According to Sheet E-201 of Attachment 3 of the Petition, the pole locations along this section of the line are sited to avoid the adjacent wetlands areas where possible, but approximately 10 of the structures will be in wetlands, according to this sheet. Shifting of some of the structure locations very slightly to remove two or three of them from the mapped wetlands looks like it may be precluded by the alignment of the access road but this may be an issue the Council wishes to follow-up on to confirm. In any event, the wetland impacts of the placement of these poles will be very minor.

The western portion of the interconnection line, shown on Sheet E-200 of Attachment C, traverses wooded, rocky and, especially at the westernmost portion, very steeply graded terrain. This portion of the line, from the end of the dam to the solar farm, is not marked in any way in the field and there is no map in the Petition sufficiently detailed to follow the alignment in the field. The route of the proposed line was approximated as best as possible in the field. After a moderate upward climb from the end of the First Light access road across the embankment, the line's alignment makes a steep ascent through the boulder-strewn oak forest, crossing a small talus slope and then making a very steep climb over the final 50 yards, including across rock outcrops constituting small cliffs. Other than Candlewood Lake, no development is seen from the wooded portion of the interconnection route, at least during the foliated portion of the year.

#### Site Clearing

DEEP notes the commitment on page 15 of the Environmental Assessment to hire a "State of Connecticut Certified Forester to review [the] Developer's tree removal and/or logging plans and formulate recommendations on the minimization of damage to natural and ecological resources located on the Property, and (ii) shall use commercially reasonable efforts to comply with all recommendations made by the retained Forester in conducting tree removal and/or logging operations on the Property..." While the approval of land clearing plans by a State-certified forester is not a requirement, it is a commendable step and will assure that best management practices are applied to the land clearing. As most larger land clearing contractors are also loggers, we assume and encourage that the merchantable saw timber on the property be harvested for its timber value. There is commercial size red and white oak on the property as well as some very large tulip poplar.

#### Decommissioning Plan

By past practice, the Siting Council has required the development and submission of decommissioning plans for solar farms. Pursuant to the PILOT agreement between the Petitioner and the Town of New Milford, the Petitioner has committed to developing and submitting a decommissioning plan to the Town and to posting a performance bond to cover the satisfactory completion of this work and the restoration of the site. It is in the Petitioner's obvious best interest to harmonize these two plans to the maximum extent to ensure, at a minimum, there are no conflicts



between the plans. In addition, if the facility decommissioning will cause a soil disturbance of five acres or more, the Petitioner may need a stormwater permit from DEEP for that work.

#### Miscellaneous Commentary

Two statements on page 19 of the Environmental Assessment require correction. In paragraph 1 of Section 3.6, the Assessment states “Upland herbaceous habitats would not be permanently altered as the portion of the Project Area they are in is within the area of the proposed solar array, which would continue to be upland herbaceous habitat following installation of the Project.” Installing panels which will shade the ground for the duration of the project life and replacing the existing herbaceous cover with a new grass mix designed to be shade tolerant will certainly alter the nature/ character of the existing pasture habitat. This statement in the Environmental Assessment is a gross overreach.

Similarly, the statement in the following paragraph that “other wildlife species would likely leave the immediate [project] area when these activities begin and relocate to similar nearby areas” assumes that these similar nearby areas are below their carrying capacity for the wildlife species involved. The food sources and other required habitat resources of the proximal areas may not be sufficient to support both the current inhabitants and the newcomers. This statement is also an overreach.

The shade tolerant grass mix to be planted under the solar panels (p. 13 of the Petition) will also need to be more drought tolerant than the current grasses on the site. Although larger precipitation events will produce runoff draining from the solar panels and onto the ground, very light events including mist and dew and light rain not generating any overland flow, which currently provide moisture to the resident grasses, will no longer serve this function as they will be intercepted by the panels and not provide runoff.

The discussion of the economic benefits of the project on page 24 of the Petition lists over 250 construction jobs and 30 operation jobs. Though the examples of ‘operation jobs’ clarifies the Petitioner’s use of this term, a more common understanding of operation jobs, especially as contrasted with construction jobs, could leave the impression that 30 permanent staff positions will be created at this site, which is clearly not the case.

A very minor discrepancy is noted between the Petition which stipulates on page 11 a 15° southward tilt to the photo-voltaic panels, and the Environmental Assessment, which speaks of a 12° tilt to the panels (p. 32).

Another discrepancy is noted in the amount of the 163 acre host parcel which will be occupied by the solar farm. On page 11 of the Petition and page 1 of the Environmental Assessment, the facility is said to occupy 73 acres, while on page 9 of the Petition, the facility is said to occupy 80 acres of the 163 acre host parcel.



Thank you for the opportunity to review this petition and to submit these comments to the Council. Should you, other Council members or Council staff have any questions, please feel free to contact me at (860) 424-4110 or at [frederick.riese@ct.gov](mailto:frederick.riese@ct.gov).

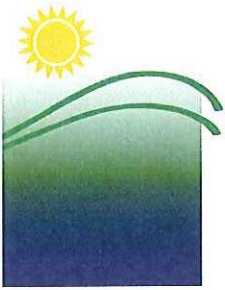
Respectfully yours,



Frederick L. Riese  
Senior Environmental Analyst

Attachments: (2)

cc: Dept. Commissioner Robert Kaliszewski  
Dept. Commissioner Susan Whalen  
Dept. Commissioner Mary Sotos



Connecticut Department of

**ENERGY &  
ENVIRONMENTAL  
PROTECTION**

July 10, 2017

Ryan Hale    AMEC Foster Wheeler  
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Project: Preliminary Comments and Recommendations for Proposed Candlewood Solar Project, between Candlewood Mountain Road and Kent Road in New Milford, Connecticut NDDB  
Preliminary Assessment No.: 201703524

Dear Ryan Hale,

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map provided for a proposed Candlewood Solar Project, between Candlewood Mountain Road and Kent Road in New Milford, Connecticut. This is not a final determination letter from our program as at least two of the species known from this area of New Milford will require further investigations before final comments can be prepared. This particular letter cannot be used with any state permit or registration since I will need to review either field survey reports generated from field investigations and/or protection strategies to ensure that state actions do not impact state-listed species.

According to our records there are known extant populations of State Listed Species known that occur within or close to the boundaries of this property. The species include:

**State Endangered**

*Myotis lucifugus* (Little brown bat)  
*Vermivora chrysoptera* (Golden-winged warbler)

**State Threatened**

*Plethodon glutinosus* (slimy salamander)

**State Special Concern**

*Ambystoma jeffersonianum* (Jefferson salamander "complex")  
*Glyptemys insculpta* (Wood turtle)  
*Terrapene carolina carolina* (eastern box turtle) *Lasiurus borealis* (Red bat)  
*Lasionycteris noctivagans* (Silver-haired bat)  
*Lasiurus cinereus* (Hoary bat)

Thank you for including the vernal pool protection strategies that you will implement. The state special concern Jefferson salamander "complex" will benefit from these conservation measures. I concur with the following conservation measures you submitted to protect the vernal pool. These conservation measures include:

- No impacts should occur to the vernal pool depression or 100-foot envelope.



- The total length of roads within the 750-foot critical terrestrial habitat (CTH) will be the minimum required to access the northern portion of the array for maintenance or emergency activities.
- Site clearing, grading, and construction activities will be limited to less than 25% of the entire vernal pool habitat (i.e., the vernal pool depression, envelope, and CTH), calculated as follows:
- Total area of vernal pool habitat: 48.5 acres (2,111,984.3 sq. ft.)
- Total area of proposed site clearing, grading, and construction: 11.3 acres (491,550.7 sq. ft.)
- Total percentage of impact to vernal pool habitat: 23.3%
- Any ruts or artificial depressions created as part of the project will be refilled to grade to avoid creation of decoy vernal pools.
- Erosion and sediment control BMPs will be implemented per the required Connecticut General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities.
- Impervious surfaces will be minimized within the vernal pool habitat.
- No lighting will be required for the project.

**State Endangered *Vermivora chrysoptera* (golden-winged warbler):**

In Connecticut, the golden-winged warbler breeds in old-field habitat generally 10 or more acres in size. Its breeding season is from May through July. During this time it is most susceptible to disturbances in its feeding and nesting habitat. Minimizing impacts to habitat during this time period will likewise minimize impacts to this species. To prevent impacts to this State-listed bird species, I recommend that surveys of the site be performed by a qualified ornithologist when this bird may be present. A report summarizing the results of such surveys should include:

- Survey date(s) and duration
- Site descriptions and photographs
- List of bird species within the survey area (including scientific binomials)
- Data regarding population numbers and/or area occupied by State-listed species
- Detailed maps of the area surveyed including the survey route and locations of state-listed species
- Statement/résumé indicating the biologist's qualifications

The site survey report should be sent to our NDDB email address ([deep.nddbrequest@ct.gov](mailto:deep.nddbrequest@ct.gov)) and it will be reviewed by our program biologists. Further evaluation and recommendations will be provided once we receive the results of this field investigation. If this bird is found to occupy this property please provide best management practices that will avoid or mitigate potential impacts to this bird species from this project.

**State Threatened *Plethodon glutinosus* (slimy salamander):**

In Connecticut the state threatened slimy salamander is restricted to mature mesic forest habitat with rocky talus slopes, numerous fallen logs along with a thick layer of leaf litter and forest debris. The subject area (this property) was identified as providing suitable potential habitat for the slimy salamander in a field survey from 2010 which was a five year study to monitor the impacts of the U.S. Route 7 Bypass project on this state threatened salamander. I also reviewed the photographs you provided in your submitted NDDB request application and believe that this project site may provide suitable habitat for this salamander. To prevent impacts to this State-listed amphibian species, I recommend that surveys of the site be performed by a qualified herpetologist. A report summarizing the results of such surveys should include:

- Survey date(s) and duration
- Site descriptions and photographs
- List of species within the survey area (including scientific binomials)
- Data regarding population numbers and/or area occupied by State-listed species
- Detailed maps of the area surveyed including the survey route and locations of state-listed species

- Statement/résumé indicating the biologist's qualifications

The site survey report should be sent to our NDDDB email address ([deep.nddbrequest@ct.gov](mailto:deep.nddbrequest@ct.gov)) and it will be reviewed by our program biologists. Further evaluation and recommendations will be provided once we receive the results of this field investigation. If this salamander is found to occupy this property please provide best management practices that will avoid or mitigate potential impacts to this amphibian species from this project.

We also have several state listed bat species (listed above) and known from this area of New Milford.

#### **Tree-Roosting Bats:**

Hoary, Red and Silver-haired bats are found in Connecticut during the spring and summer seasons and migrate south to overwinter. They are all tree roosting bats. Their diet primarily consists of moths and beetles. These bats will roost high in large coniferous and deciduous trees. They typically do not roost on buildings. Female tree-roosting bats are solitary and give birth mid-May to late June. If work occurs outside this time frame, direct negative impacts to this species will be minimized. Long-term impacts can be minimized by retaining large diameter coniferous and deciduous trees whenever possible. Establishing this sort of wooded buffer adjacent to the wetland area, will help maintain potential roosting habitat.

#### **Bat Protection Recommendations:**

Given the known concentrated seasonal use of this area by bats, we recommend that tree cutting and other land-clearing activities be conducted during the hibernation period of these animals. Tree cutting should be conducted from November 1 through March 30 to ensure that bats are safely situated in their hibernacula. Retaining larger diameter trees (12-inch DBH and larger) wherever possible on-site, may additionally minimize the potential for negative impacts to bats. Trees with loose, rough bark such as maples, hickories, and oaks are more desirable than other tree species due to the increased cover that the loose bark provides. Large trees with cavities are also utilized by different bat species. Bat houses installed in the area where trees will be removed will help in the conservation of tree roosting bats. These best management practices for bats will also help conserve the state endangered little brown bat which is declining because of a disease (white nose syndrome which impacts this bat in its hibernaculum) and habitat loss.

We also have state special concern eastern box turtle and wood turtle in this area of New Milford.

**Eastern Box Turtle:** Eastern box turtles inhabit old fields and deciduous forests, which can include power lines and logged woodlands. They are often found near small streams and ponds. The adults are completely terrestrial but the young may be semiaquatic, and hibernate on land by digging down in the soil from October to April. They have an extremely small home range and can usually be found in the same area year after year. Eastern box turtles have been negatively impacted by the loss of suitable habitat. Some turtles may be killed directly by construction activities, but many more are lost when important habitat areas for shelter, feeding, hibernation, or nesting are destroyed. As remaining habitat is fragmented into smaller pieces, turtle populations can become small and isolated.

**Wood Turtle:** Wood Turtles are found within forested areas, they prefer areas that do not have a fully closed canopy cover. The greatest concern during projects occurring in wood turtle habitat are turtles being run over and crushed by mechanized equipment. Reducing the frequency that motorized vehicles enter wood turtle habitat would be beneficial in minimizing direct mortality of adults. Habitat destruction, degradation or alteration and fragmentation all threaten Wood Turtle populations. Turtles are also particularly vulnerable to any activity that consistently reduces adult survivorship. Disturbances to stream and riparian habitats and activities that change the hydrology of the stream, the physical habitat itself and water quality are all potentially detrimental activities for the Wood Turtle.



### **Recommended Protection Strategies for Wood and Box Turtles:**

The following recommendations will minimize potential impacts to the turtles. These recommendations should be implemented throughout the work area:

- Hiring a qualified herpetologist to be on site to ensure these protection guidelines remain in effect and prevent turtles from being run over when moving heavy equipment. This is especially important in the month of June when turtles are selecting nesting sites.
- 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.
- Exclusionary fencing must be at least 20 in 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. Do not use plastic web or netted silt-fence.
- All staging and storage areas, outside of previously paved locations, regardless of the duration of time they will be utilized, must be reviewed to remove individuals and exclude them from reentry.
- All construction personnel working within the turtle habitat must be apprised of the species description and the possible presence of a listed species, and instructed to relocate turtles found inside work areas or notify the appropriate authorities to relocate individuals.
- 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.
- 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.
- Avoid degradation of wetland habitats including any wet meadows and seasonal pools.
- The Contractor and consulting herpetologist must search the work area each morning prior to any work being done.
- When felling trees adjacent to brooks and streams please cut them to fall away from the waterway and do not drag trees across the waterway or remove stumps from banks.
- Avoid and limit any equipment use within 50 feet of streams and brooks.
- Any confirmed sightings of box, wood or spotted turtles should be reported and documented with the NDDB ([nddbrequestdep@ct.gov](mailto:nddbrequestdep@ct.gov)) on the appropriate special animal form found at ([http://www.ct.gov/deep/cwp/view.asp?a=2702&q=323460&depNav\\_GID=1641](http://www.ct.gov/deep/cwp/view.asp?a=2702&q=323460&depNav_GID=1641))

Please be advised that this is a preliminary review and not a final determination. A more detailed review will be necessary to move forward with any environmental permit applications submitted to DEEP for the proposed project. **This preliminary assessment letter cannot be used or submitted with your permit applications at DEEP.** This letter is valid for one year.

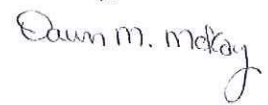
If you do not intend to do site surveys to determine the presence or absence of state-listed species, please let us know how you will protect the state-listed species from being impacted by this project. You may submit these best management practices or protection plans with a new request for an NDDB review. Please confirm with your new NDDB request how you will actually protect the species described above.

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 Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes 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 into the Data Base as it becomes available. The result of this review does not preclude the possibility

that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits.

Please contact me if you have further questions at (860) 424-3592, or [dawn.mckay@ct.gov](mailto:dawn.mckay@ct.gov) . Thank you for consulting the Natural Diversity Data Base.

Sincerely,

A handwritten signature in cursive script that reads "Dawn M. McKay". The signature is written in black ink and is positioned below the word "Sincerely,".

Dawn M. McKay  
Environmental Analyst 3



## **Stormwater Management at Solar Farm Construction Projects September 8, 2017**

Solar farms are on-the-ground installations of arrays of photovoltaic cell panels, supporting structures and related equipment for the production of electricity. As with other types of construction projects, the construction of solar farms can involve land clearing, grading, excavation, trenching, dewatering and similar activities that create land disturbances which potentially result in soil erosion and sediment discharges polluting wetlands, streams and other surface waters. Construction-related land disturbances of 0.5 acres or larger are regulated in Connecticut pursuant to the Connecticut Soil Erosion and Sediment Control Act under Sections 22a-325 to 22a-329, inclusive, of the Connecticut General Statutes (“CGS”). Construction related land disturbances of one (1) acre or larger are also regulated under CGS Section 22a-430 and under Section 402(p) of the federal Clean Water Act and the National Pollutant Discharge Elimination System (“NPDES”) program. Prior to the start of such regulated activities, authorization is required from local authorities and, for larger projects, the Connecticut Department of Energy and Environmental Protection (“Department”). Construction projects involving five (5) or more acres of land disturbance require an individual NPDES discharge permit from the Department, or may be eligible to register for coverage under the Department’s NPDES General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (general permit).

The Department has encountered repeated problems associated with solar farm construction projects covered under the general permit, from the registration process through construction activities. Although in no way an exhaustive list, the following are common problems associated with solar farm general permit registration applications and ways to address such problems:

- Applicants have been submitting registration applications that lack the requisite information or the requirements necessary for authorization under the general permit. The Department requires a complete and sufficient application when a registration application is filed, and may reject any registration application it deems to be incomplete or insufficient.
- Applicants are not adhering to the sixty (60) day/ninety (90) day time frame for Department review as required by Section 3(c) of the general permit. While the Department has on occasion shortened the review timeframe, Applicants are expected to allocate no less than the requisite time frame for the registration application review process and must plan accordingly.
- Registration applications for solar farm projects often fail to identify the project’s contractor and sub-contractors. Section 5(b)(1)(viii) of the general permit mandates that this information be included in the registration application.
- Applicants have been repackaging the Siting Council submittal, which is not acceptable. Section 3(c)(2)(D) of the general permit mandates that the application submittal include only materials required to support the Stormwater Pollution Control Plan (“SWPCP”). This information must be up-to-date and accurate. Any superfluous information delays the registration application review process.
- SWPCPs for solar farm projects are often lacking sufficient detail and information. An approvable SWPCP shall include, but not be limited to, the location of all erosion, sediment and

stormwater control measures including detailed design cut sheets with supporting calculations, construction means and methods, project phasing (i.e., site planning, pre-construction, construction, and post-construction stabilization, etc.), construction sequencing and a construction schedule.

- The Applicant's design professional must be well-versed in the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control ("E&S Guidelines"), specifically the techniques found in Chapter 4, Large Construction Sites, the 2004 Connecticut Stormwater Quality Manual, as well as *current* best management practices (BMPs) recognized by the International Erosion Control Association (IECA), provided such BMPs are equal to or better than the E&S Guidelines.
- From the Department's perspective, an approvable SWPCP will include methods for avoiding compaction of soils, disconnection and reduction of runoff associated with solar panel arrays, avoidance of concentration of stormwater, and other measures necessary to maintain or improve pre-construction hydrologic conditions.
- Applicants need to follow the SWPCP review checklist when preparing the SWPCP, giving specific attention to post-construction stormwater controls and the development of a detailed long-term maintenance plan to ensure that the SWPCP meets the terms and conditions of the general permit.

Subsequent to authorization for coverage under the general permit, the Registrant is responsible for ensuring compliance with all terms and conditions of the general permit and the approved SWPCP once construction has been initiated. However, for solar farm projects, Registrants often fail to comply with the terms and conditions of the general permit, including the approved SWPCP. In particular, Department staff have observed the following issues that a routine inspection protocol and proper oversight, as required under the general permit, would have prevented, including but not limited to:

- pre-construction site planning and management deficiencies (e.g., existing vegetation, scheduling, training, phasing/sequencing, tree protection, etc.)
- ineffective placement, maintenance, and/or repair of administrative/procedural, vegetative, and structural BMPs (e.g., erosion, sediment and stormwater runoff controls, good housekeeping, materials management, and training)
- lack of thorough inspections
- ineffective or untimely corrective action
- ineffective stabilization practices
- ineffective permanent post-construction controls (i.e., store, treat and direct stormwater quality and quantity to pre-construction levels)

Such issues at solar farm construction projects raise concerns, since such projects often create areas of land disruption larger than the generally accepted BMPs of five (5) acres anticipated under the general permit. As a result, any applicant seeking coverage under the general permit for a solar farm construction project should take care to address the issues noted above. While by no means exclusive, some recommendations that should be incorporated into a SWPCP to address these issues include:

- Ensuring that only a Professional Engineer and/or Landscape Architect, as defined in Section 2 of the general permit, who meets the qualifications described in Section 5(b)(4)(A)(ii) and who has been approved in writing by the Commissioner, serve as the Commissioner's agent to inspect the site and also serve as the qualified inspector for the purposes of Section 5(b)(4) of the general permit ("authorized professional"). Such authorized professional must remain in good standing with the Connecticut Department of Consumer Protection and be technically and ethically qualified to inspect the site and be retained for the duration of the construction project until the Notice of Termination acceptable to the Commissioner has been filed as described below.



- Ensuring that the authorized professional prepare a proposed inspection checklist to assure the construction project is being conducted in compliance with the terms and conditions of the general permit, and the approved SWPCP is implemented in accordance with the general permit. The inspection checklist shall comply with Section 5(b)(4)(B)(iii) of the general permit, and include a space for the authorized professional's signature and professional stamp.
- Ensuring that the credentials for the authorized professional proposed by the Applicant and the proposed inspection checklist prepared by such authorized professional be submitted for the review and approval of the Commissioner and be included with the registration application for the general permit. No other professional may serve as the authorized professional without the prior submittal of relevant credentials and inspection checklist for the Commissioner's review and written approval.
- Ensuring that the authorized professional personally perform all pre-construction, construction, and post-construction site inspections; perform inspections at the end of any storm event whether or not such storm generates a discharge; and prepare and submit all inspection reports including the supporting inspection checklists in compliance with Sections 5(b)(4)(A) and 5(b)(4)(B) of the general permit.
- Ensuring that the authorized professional report any violations of the terms and conditions of the general permit or the SWPCP to the Commissioner's designee within two (2) hours of becoming aware of such violation, or at the start of the next business day of becoming aware of such violation outside normal business hours and shall, within five (5) days, prepare and submit a signed and stamped written report, which documents the cause of the violation, duration including dates and times, and corrective action taken or planned to prevent future occurrences.
- Ensuring that if circumstances necessitate a revision to the SWPCP, the authorized professional works with the Permittee's design professional to ensure compliance with the terms and conditions of the general permit, and any such change to the SWPCP shall be submitted for the review and written approval of the Commissioner.
- Ensure that the authorized professional reviews all stormwater monitoring reports to evaluate the effectiveness of the SWPCP and to document any adverse impacts that any stormwater controls on the construction site or discharges from the construction site may have on wetlands, streams, any other receiving waterbodies. Such evaluation shall be documented in the inspection reports and inspection checklists performed pursuant to Section 5(b)(4) of the general permit.
- Ensuring that, in the event the authorized professional identifies a violation of the terms and conditions of the general permit, the SWPCP, or otherwise identifies adverse impacts on wetlands, streams or any other receiving waterbodies, that construction activity shall immediately cease and the site stabilized until such violation or adverse impacts have been corrected.
- Ensuring that reporting and record-keeping of all inspection checklists and inspection reports comply with the requirements of Section 5(d) of the general permit, except that a copy shall also be submitted electronically to the Department within ten (10) days from the date such inspection was performed.
- Ensuring that all inspection checklists and inspection reports comply with the requirements for Certification of Documents in Section 5(i) of the general permit, including the requirement that such checklists and reports shall also be prepared, stamped and signed by the authorized professional.
- After completion of a construction project, ensuring that a Notice of Termination is filed in compliance with Section 6 of the general permit, including the requirement that such Notice of Termination be stamped and signed by the authorized professional certifying that such authorized professional has personally inspected and verified that the site has been stabilized following the first full growing season (i.e., April through October) in the year following completion of the construction project.
- Ensuring that any transfer of the registration comply with the requirements of Section 5(m) of the general permit.

These recommendations are by no means intended to be exclusive. To help address the issues noted above, the Commissioner will also be considering the posting of a performance bond or other security, in accordance with Section 22a-6(a)(7) of the Connecticut General Statutes, to assure the solar farm construction project maintains compliance with the terms and conditions of the general permit and the SWPCP.