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VIA ELECTRONIC MAIL: deep.nddbrequest@ct.gov

Connecticut Department of Energy & Environmental Protection Natural Diversity Data Base
79 Elm Street
Hartford, CT 06106-5127
Attn: Ms. Dawn McKay

Subject: Request for Natural Diversity Data Base (NDDB) State Listed Species Review
Candlewood Solar, LLC
20 MW Solar Photovoltaic Project
Candlewood Mountain Road
New Milford, CT
NDDB Final Determination No.: 201703524

Dear Ms. McKay:

On November 15, 2018, a Final Determination was issued by the Connecticut Department of Energy & Environmental Protection Natural Diversity Data Base ("DEEP NDDB") for the Candlewood Solar Project in New Milford, Connecticut (NDDB Final Determination No. 201703524) ("Final Determination"). In accordance with NDDB's Final Determination, on behalf of Candlewood Solar, LLC ("Candlewood Solar"), Wood Environment & Infrastructure Solutions, Inc. ("Wood") is filing this Request for NDDB State Listed Species Review as the scope of work has changed since the issuance of the November 15, 2018 Final Determination on the Project.

The completed, signed Request for Natural Diversity Data Base (NDDB) State Listed Species Review Form (DEEP-REQ-APP-007; Rev. 11/08/17) ("Form") is attached to this letter. The required supplemental information is included as **Attachments A through C** as outlined in Part VI of the Form**. Attachments A through C** include:

- Attachment A: Overview Map
- Attachment B: Detailed Site Map
- Attachment C, Section i. A.: Site Photographs
- Attachment C, Section i. B.: October 27, 2017 Amec Foster Wheeler Environment & Infrastructure, Inc. Filing
- Attachment C, Section i. C.: February 9, 2018 Incidental Take Report for the State Threatened *Plethodon glutinosus* (slimy salamander) ("Incidental Take Report")
- Attachment C, Section i. D.: July 8, 2019 Oxbow Pre-construction Survey Summary of Findings for the State Threatened *Plethodon glutinosus* (slimy salamander) including NDDB Special Animal Survey Form
- Attachment C, Section ii: Annotated Site Plans

Additionally, copy of the November 15, 2018 Final Determination is included as **Attachment D.**

In addition to the completed Form and required supplemental information, the purpose of this letter is to:

- Identify and describe all changes from the previously approved scope of work and why the changes are necessary, and
- Identify and describe any changes to potential impacts to known State Listed Species and their habitat and any changes to all mitigation measures included in the Final Determination including any new proposed mitigation measures.

Project Design and Layout Changes:

Since the issuance of the Final Determination for the Candlewood Solar Project in New Milford, Connecticut on November 15, 2018, there have been several updates to the Project design and changes to the Project layout. The following section summarizes the updates and changes to the Project design and layout since the issuance of the Final Determination ("approved design").

I. Candlewood Solar and Wood have been coordinating with the DEEP Water Permitting and Enforcement Division regarding the registration for the Project under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities ("General Permit"). Based on input from DEEP, Candlewood Solar re-evaluated the design to avoid construction of solar photovoltaic ("PV") panels on slopes of 15% or greater. The Project design approved in the November 15, 2018 Final Determination ("approved design") includes development on slopes of 15% or greater. Under the approved design, development areas containing slopes of 15% or greater are primarily located in the northwest area of the array. In order to reduce development in areas containing slopes that are 15% or greater, solar PV panels from the northwest will be relocated to the east side of the site, which provides flatter topography (see **Figure 1** and **Attachment C, Section ii**, Project Plans). The layout and associated stormwater design have been revised to avoid development of the array on slopes 15% or steeper.

II. Candlewood Solar has incorporated a 50-foot vegetated setback from the property lines to the proposed limit of work ("LOW") (see **Figure 1** and **Attachment C, Section ii**, Project Plans).

III. As a result of the changes to the solar PV panel layout, the northern access road within the array was shifted to the east by approximately 150 feet to allow for access to the solar PV panels within the northern quadrant of the Project site.

IV. Based on further evaluation and consultation with First Light Hydro Generating Company ("First Light"), owner of the two adjacent parcels (9/6 and 34/31.1), the electric interconnection route has been modified. The proposed electric interconnection route will exit the Facility parcel from the southeastern portion of the Solar PV Facility and cross the two adjacent Project Area parcels to the east, however, from the Solar PV Facility, the electric interconnection route heads northeast along the eastern side of Candlewood Mountain and ultimately leads to Route 7 where it will interconnect with the Eversource Energy Rocky River Substation. The revised linear electric interconnection route is approximately 6,425 feet in length, approximately 159 feet shorter than the route described in the Incidental Take Report (see **Figures 1 and 2**). The proposed electric interconnection will include an access road that will be used during construction and operation/maintenance. The majority of the revised electric interconnection route is undeveloped forest with wooded upland, wetlands, and watercourses. Natural features including wetlands, watercourses, wildlife habitat and floodplains where the interconnection is proposed to be located is described in the following sections and depicted on **Figures 1 - 3**.

As a result of the above noted changes to the Project design and layout, the number of panels has been reduced from approximately 60,000 to 57,240, of which the Facility will occupy approximately 49.6 acres of

the 163.5-acre Facility Parcel under the current design compared to 54.55 acres under the approved design. It should be noted that the LOW for the current design is 70.24 acres compared to 67.9 acres under the approved design. The increase in area under the current design is a result of area required for stormwater features. The Project includes tree clearing for the Facility, to eliminate shading around the Facility, for implementation of stormwater features, and for the electric interconnection route. Table 1 below outlines tree clearing under the approved design and layout and the current design and layout. The current design will result in an additional approximate 0.43 acres of tree clearing.

There have been no changes to the installation of the Facility aside from some re-grading of the site to avoid solar PV panel installation on slopes of 15% or steeper and stumps will be removed in the area between the fence line and the limits of work and tree clearing. Panel racking will consist of one-inch to two-inch diameter pilot holes to depths specified by the solar panel manufacturer will be augered into the soil for the installation of the Facility. Consistent with the approved design, the top height of the panels will be approximately 7 feet above ground and the bottom edge of the lowest panel will be approximately 2 to 3 feet above ground. Additionally, the Facility will be completely surrounded by a counter-sunk 7-foot high chain-link fence (see **Attachment C, Section i. C**, Incidental Take Report footnote 2 for additional information).

Table 1. Comparison of Impacts by Project Layout

Component	Approved Total Area (Acres)*	Approved Forested Area to be Cleared (Acres)**	Current Total Area (Acres)	Current Forested Area to be Cleared (Acres)
Solar Array Limit of Work (LOW)	67.9	51.55	70.24	49.41
Solar Array	54.55	38.92	49.6	32.43
Additional Cleared Area (Shading and Stormwater Features)		12.63	20.64	16.98
Interconnect	4.83	4.52	10.80	7.09
Total Area of Disturbance	***78.16***	***56.07***	***81.04***	***56.5***

* Revised Total Area (Acres) in Table 2 of Incidental Take Report.

** Revised Forested Area to be Cleared (Acres) in Table 2 of Incidental Take Report.

The following sections describe potential impacts to known State Listed Species and their habitat as a result of the design modifications described above.

Wetlands and Vernal Pools:

The Incidental Take Report notes:

> *The Project Area contains five (5) plant community types (a.k.a. key habitats) as classified in the 2015 Connecticut Wildlife Action Plan (WAP) and depicted on Figure 2; upland forest, upland herbaceous, forested inland swamp, shrub inland wetlands, and unique (vernal pool) and man-made habitats (utility corridors and access roads).*
>
> ***Facility Parcel:*** *As noted above, the Facility Parcel is undeveloped and partially wooded with four (4) hay fields/horse pastures in the southern portion of the Parcel. Five (5) wetlands and associated watercourses were delineated within the Facility Parcel (Wetlands I through V). Watercourses are*

associated with each of the wetlands except Wetlands II and III, all of which are intermittent. All delineated wetlands consist of at least a portion of forested inland wetland, the majority of which are the key sub-habitat red maple swamp. Wetlands I and II also contain shrub inland wetland and sub-habitat shrub swamp. One naturally occurring vernal pool (VP) which is also a forested inland wetland (Wetland V), was identified and delineated in the northeast portion of the Facility Parcel. Two (2) cryptic vernal pools were also delineated within Wetland I. Areas of steep slope and rock outcrops are primarily located in the northern and eastern portions of the Facility Parcel with a small area of steep slope and rock outcrops located in the southwestern portion of the Facility Parcel, north of the existing access road. See Figure 1.

***Electric Interconnection Route:** The electric interconnection route passes through forested areas down a steep slope to the east of the solar array, leading to forested areas adjacent to existing access roadways and an existing cleared fiber line ROW to its terminus at Kent Road/Route 7. Four (4) wetlands and associated watercourses were delineated within the two Project Area parcels crossed by the electric interconnection route (Wetlands VI through IX). Intermittent watercourses are associated with each of these wetlands except the Rocky River which flows out of Wetland VI. All delineated wetlands consist of at least a portion of forested inland wetland, the majority of which are the key sub-habitat red maple swamp.*

Electric Interconnection Route: As described above, the electric interconnection route will exit the Facility parcel from the southeastern portion of the Solar PV Facility and cross the two adjacent Project Area parcels to the east, however, from the Solar PV Facility, the electric interconnection route heads northeast along the eastern side of Candlewood Mountain and heads to Route 7 and the Eversource Energy Rocky River Substation (see **Figure 1**). A wetland delineation of the new areas crossed by the revised electric interconnection route was conducted in June and July 2019. The wetland delineation resulted in the identification of wetland areas, a perennial watercourse (the Rocky River), and intermittent watercourses. It should be noted that the 2019 wetland delineation extended previously delineated boundaries to account for the new study area and now identifies wetlands VII and VIII as a single, large wetland complex. Under the current design, the electric interconnection route crosses over the Rocky River in two locations (see **Figures 1 - 3**). Utility poles and guy wires will be sited to avoid impacts to the Rocky River. The electric interconnection route will continue to avoid impacts to wetlands and watercourses and no direct impacts to wetlands or watercourses will be required to install the utility poles and guy wires associated with the overhead electric interconnection. In addition, a portion of the electric interconnection route will be installed using a trenchless crossing technique (horizontal directional drilling ("HDD")) to install the line beneath wetlands to avoid wetland impacts. Under the approved design, approximately 2,322 sq. ft. (0.05 acres) of Wetlands VI, VII, VIII, and IX will be converted from forested wetlands to emergent and/or shrub wetlands to provide vertical clearance for the overhead utility lines. Under the current design, Wetlands VI, VII, VIII, and IX will be avoided and no wetlands will be converted from forested wetlands to emergent and/or shrub wetlands.

Vernal Pools: During the NDDB's initial review of the Project (NDDB No. 201703524), management goals pertaining to development within vernal pool depressions, 100-foot envelopes, and the critical terrestrial habitat (CTH), as well as potential impacts were presented and discussed. As described in Amec Foster Wheeler's Report, dated October 27, 2017 (see **Attachment C, Section i. B.**), two (2) cryptic vernal pools were identified in Wetland I and one (1) vernal pool was identified in Wetland V (see **Figure 1**). Wetland I is located east of the development area and Wetland V is located north/northeast of the development area.

The approved design included avoidance of the vernal pool depressions and the 100-foot vernal pool envelopes, along with development of 31.6% (29.91 acres) of the CTH area within a single combined CTH system associated with the two (2) cryptic vernal pools in Wetland I and the one (1) vernal pool in Wetland

V. Specifically, as noted in the DEEP NDDB filing dated October 27, 2017, "Based on the overlapping, continuous, unfragmented system between the CTHs, these areas likely function as a single, mutually supportive system and therefore, should be assessed together. As a single system, the CTH totals approximately 94.57 acres and the development area (tree clearing area and solar array development) within the single combined CTH system totals approximately 29.91 acres or 31.6 percent." It should further be noted that approximately two (2) percent of the CTH (1.36 acres) is currently altered field area and the proposed condition will largely mimic the existing condition in that area in that it will remain field. Additionally, "…unlike more conventional development (commercial, residential) when completed, the array field will not have many of the legacy mortality sources (to vernal pool wildlife) that result from conventional projects built in close proximity to vernal pools. Specifically, there will be no ongoing road mortality to frogs, toads or salamanders. Similarly, no animals will be captured in storm gutters and deep sump catch basins. Although the array field will not provide terrestrial habitat, it will impede, but not prevent movement by salamander species and will do little to impede nocturnal migration by wood frogs." (see **Attachment C, Section i. B.**)

As noted above, DEEP Water Permitting and Enforcement Division requested that Candlewood Solar re-evaluate the design to relocate the solar PV panels sited within areas of 15% or steeper slopes to flatter slopes. Based on Candlewood Solar's evaluation, in order to reduce development in areas containing slopes that are 15% or greater, solar PV panels from the northwest will be relocated to the east side of the site near Wetland I and the two cryptic vernal pools within Wetlands I (see **Figure 1** and **Attachment C, Section ii**, Annotated Project Plans). The proposed panel relocation and current design will increase development within the CTH from 31.6% (29.91 acres) to 32.0% (30.22 acres), which is an increase of 0.31 acres. The proposed revised design will have a minimal increase in development of the CTH over what was previously reviewed and approved by NDDB. Stormwater features to be located within the CTH include three (3) surface sand filters and an infiltration basin. Stormwater features are shown on **Figure 1** and on the Annotated Project Plans included in **Attachment C, Section ii**.

State Listed Species and Mitigation Measures:

In its Final Determination dated November 15, 2018, NDDB determined that there are extant populations of State Listed Species known to occur within or close to the boundaries of the project site. The species include:

Birds
Vermivora chrysoptera (Golden-winged warbler) – State Endangered

Mammals
Myotis lucifugus (Little brown bat) – State Endangered
Lasiurus borealis (Red bat) – State Special Concern
Lasionycteris noctivagans (Silver-haired bat) – State Special Concern
Lasiurus cinereus (Hoary bat) – State Special Concern

Reptiles
Plethodon glutinosus (slimy salamander) – State Threatened
Ambystoma jeffersonianum (Jefferson salamander "complex") – State Special Concern
Glyptemys insculpta (Wood turtle) – State Special Concern
Terrapene carolina (Eastern box turtle) – State Special Concern

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

As noted in the Final Determination, the habitat assessment completed for the Project by Oxbow Associates, Inc. ("Oxbow") in September 2017 "concluded that suitable breeding habitat for golden-winged warbler is wholly absent from the premises due to a lack of open canopy habitat in a suitable early to mid-successional seral stage to support the species, and no protective measures were needed." In the Final Determination, NDDB concurred with Oxbow's conclusion and noted that no further conservation actions are necessary (see **Attachment D**).

The project changes described above do not change the results of the habitat assessment completed by Oxbow (see **Attachment C, Section i. B**.). The results of the September 2017 assessment remain unchanged, no protective measures are needed, and no further conservation actions are necessary.

Tree Roosting Bat Protection:

Three tree roosting bat protection measures were outlined in NDDB's November 15, 2018 Final Determination. These measures included:

1. Tree clearing should be completed during the hibernation or winter range period for bats. Tree clearing should be limited to between November 1 and March 30.
2. Large diameter coniferous and deciduous trees and wooded buffers adjacent to wetland areas will be maintained whenever possible. Based on the site plan layout, forested buffer areas vary by wetland.
3. Bat houses should be installed in the area where trees will be removed and will help in the conservation of tree roosting bats. Candlewood Solar will mount between 20 and 30 bat houses on east facing, mature tree trunks, not less than 12 feet from the ground in areas where trees are removed.

Changes or alterations to these measures are summarized as follows:

1. Based on the revised Project design, the Project will require the clearing of approximately 56.5 acres of forest for the construction of the Project, an increase of 0.43 acres of forest over that which was approved. Table 1 above provides a summary of changes by Project component. For comparison purposes, Table 1 is consistent with Table 2 included in the Incidental Take Report dated February 9, 2018.

   As a result of delays to project permitting, construction of the Project has been delayed by more than one year and Candlewood Solar continues to work with the DEEP Water Permitting and Enforcement Division and the DEEP Dam Safety Program to obtain the required permits and approvals. These permits and approvals are required in advance of construction activities, including tree clearing. Tree clearing will commence as soon as possible following receipt of all required permits and approvals, however, depending on when all permits and approvals are received, Candlewood Solar proposes to extend the tree clearing window to August 1 to May 31 in order to meet the project schedule which requires completion of construction by September 30, 2020. To continue to be protective of bats, Candlewood Solar proposes to avoid tree clearing between June 1 and July 31, which will avoid the most critical time, the pup season. In order to do this, Candlewood Solar will implement the following additional conservation measures 1) install an additional 20 – 30 bat boxes in the 100-acre conservation easement area either on free standing poles or on east facing, mature tree trunks, not less than 12 feet from the ground before April to improve the chance of occupancy (DEEP: Bat Fact Sheet)[1] and 2) perform a post-construction bat

[1] https://www.ct.gov/deep/cwp/view.asp?a=2723&q=325964&deepNav_GID=1655

survey for eight (8) detector nights over the course of at least 2 calendar nights. This data will enhance the DEEP bat database in the area.

2. As described above, implementing a 50-foot setback from the property line to the limit of work and relocating PV panels from steep areas of the site to flatter areas of the site resulted in a revised solar array layout and limit of work. Consistent with conservation measure 2, large diameter coniferous and deciduous trees and wooded buffers adjacent to wetland areas will be maintained whenever possible. Based on the revised site plan layout and limit of work, a larger forested buffer area near wetland V will be maintained and a slightly smaller buffer area near wetland I will be maintained. Additionally, changes to the electric interconnection route will result in no impacts to Wetlands VI, VII, VIII, and IX and these wetlands will remain unchanged. Further, the electric transmission line will be installed beneath wetland VIII via HDD to avoid wetland impacts.
3. Consistent with conservation measure 3, bat houses will be installed in the area where trees will be removed and will help in the conservation of tree roosting bats. Candlewood Solar will mount between 20 and 30 bat houses on east facing, mature tree trunks, not less than 12 feet from the ground in areas where trees are removed.

State Special Concern Ambystoma jeffersonianum (Jefferson salamander "complex"):

As noted in the Final Determination, the state special concern Jefferson salamander "complex" will benefit from the vernal pool protection strategies that will be implemented. The revised design changes will not result in any changes to these conservation measures. The Project will adhere to and implement the following vernal pool protection strategies:

- No impacts will occur to the vernal pool depressions 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.
- 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 Best Management Practices (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 vernal pool habitat area.
- No artificial lighting will be installed for the Project.

Recommended Protection Strategies for Wood and Box Turtles:

As described in Section 3.0 i of the Incidental Take Report:

> *Eastern box turtles may inhabit the premises. However, this species typically occurs in rarefied numbers in montane habitats with shallow soils and pervasive bedrock. No persistent indicators (carapace remains, etc.), nor live animals were encountered during repeated site visits under suitable conditions. We therefore conclude that the species is either absent or at low detectable densities on the mountain. It is more probable that animals inhabit the mesic deciduous forest to the east in a portion of the electric interconnection corridor, where protective measures are proposed during the interconnection construction period (if during the active season).*

> *There is no supporting aquatic habitat for wood turtle within or adjacent to the Array Parcel. There is a small, intermittent drainage from the vernal pools in Wetland I that does not provide aquatic habitat. Near the northern terminus of the interconnection alignment, Rocky River comes within approximately 300 feet of the interconnection corridor. The interconnection is at the service road edge and we do not anticipate any impacts to the species, if present, due to the installation of poles and conductors in this area.*

As described above under Project Design and Layout Changes, solar PV panels will not be constructed on 15% or greater steep slopes, moving development away from typical Eastern box turtle habitat (montane habitats with shallow soils and pervasive bedrock).

Under the current design, from the Solar PV Facility, the electric interconnection route heads northeast along the eastern side of Candlewood Mountain and ultimately connects to the existing utility infrastructure on Route 7. Under the new design, the electric interconnection route avoids Area 1, the highest quality habitat observed for Eastern box turtle, as described in Oxbow Associates, Inc. report, included as Attachment E to Amec Foster Wheeler Environment & Infrastructure, Inc.'s October 27, 2017 Filing (see **Attachment C, Section i. B.** and **Figure 2**). A description of the area where the revised interconnection is proposed is discussed above. A portion of the electric interconnection route is in an area of extreme topography and as such, is not preferable for hibernation or provide preferable habitat. Protection measures are described below.

"Wood turtles rely on perennial streams with high to moderate water quality and a terrestrial summer range typically including old field habitat, open woodlands and area of exposed soils for nesting… The Rocky River lies east of Candlewood Mountain and emanates from seasonal outflow from Wetland 1 by way of a steep escarpment and the Candlewood Reservoir water control structure at the northwestern foot of the dam. The river meanders approximately 4000 feet to the north to a confluence with the Housatonic River after crossing Route 7. Along most of its run, the Rocky River is greater than 1000 horizontal feet from project activity. The exception is an elbow of the brook where it is approximately 300 feet west of the proposed interconnection alignment." (see Attachment E included in **Attachment C, Section i. B.**). Under the current design, the proposed electric interconnection route will cross the Rocky River in two new locations in areas of undeveloped forest (see **Figure 2**).

The Project will be constructed in accordance with all recommended measures included in NDDB's Final Determination for Wood and Box turtles. These measures include:

- Hiring a qualified herpetologist to be onsite to ensure these protection guidelines remain in effect and prevent turtles from being taken when moving heavy equipment. This is especially important in the month of June when turtles are selecting nesting sites.
- Exclusionary practices will be implemented to prevent any turtle access into construction areas. These measures will be installed at the limits of disturbance.
- Exclusionary fencing will be at least 20 inches tall and will 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 animals pass through. Plastic web or netted silt-fence will not be used.
- All staging and storage areas, regardless of the duration of time they will be utilized, will be reviewed to remove individuals and exclude them from re-entry.
- All construction personnel working within the turtle habitat will 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 will be carefully moved to an adjacent area outside of the excluded area and fencing will be inspected to identify and the remote access point.
- In areas where silt fence is used for exclusion, it will be removed as soon as the area is stable to allow for reptile and amphibian passage to resume.
- No heavy machinery or vehicles will be parked in any turtle habitat.
- Avoid degradation of wetland habitats including any wet meadows and seasonal pools.
- The Contractor and consulting herpetologist will search the work area each morning prior to any work being done.
- When felling trees adjacent to brooks and streams, trees will be cut to fall away from the waterway and trees will not be dragged across the waterway and stumps will not be removed from banks.
- Avoid and limit any equipment use within 50 feet of streams and brooks.
- Any confirmed sightings of box, wood or spotted turtles will be reported and documented with the NDDB (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)

Additionally, during operation of the Facility, the mowing schedule outlined in the October 27, 2017 Report will be adhered to (see **Attachment C, Section i. B.**).

State Threatened Plethodon glutinosus (slimy salamander):

The October 15, 2018 NDDB Final Determination No. 201703524 states:

> *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 habitat for the slimy salamander. With that in mind, on September 11, 2018 The Connecticut Office of Policy and Management (OPM), in consultation with The Connecticut Department of Energy and Environmental Protection (DEEP), determined that that the proposed Installation and Operation of a 20 Megawatt (MW) AC (MWac) Solar Photovoltaic (PV) Electric Generating Facility at 197 Candlewood Mountain Road (Candlewood Solar, LLC) in New Milford, Connecticut would result in an incidental taking of the State Threatened Plethodon glutinosus (slimy salamander) pursuant to Section 26-310 of the Connecticut General Statutes (CGS).*
>
> *Pursuant to CGS Sec. 26-310(d), the Commissioner of Energy and Environmental Protection is required to provide Candlewood Solar, LLC with specific feasible and prudent measures and alternatives that must be implemented as part of the proposed project in order to ensure that the action does not appreciably reduce the likelihood of the recovery of the species. The proposed actions have been planned to avoid, minimize and mitigate impacts to the "take" of northern slimy salamander. These specific measures include:*
>
> - *Limiting tree clearing impacts and the overall footprint of the project*
> - *Providing a 100-acre conservation easement*
> - *Three-year monitoring and reporting*
> - *Addition of grassy strips to roadways*

A discussion of each of these measures included in the NDDB Final Determination along with a description of changes to these measures as a result of the change in scope of work is provided below.

Limiting tree clearing impacts and the overall footprint of the project:

The October 15, 2018 NDDB Final Determination No. 201703524 states:

> *Tree clearing and grading are required as part of this Solar PV project. The revised plan configuration limits the impact to 1.3 acres (of the 49 +/-acres) of high quality forested salamander habitat. Furthermore, the overall footprint of the Solar PV project was reduced through an alternative design utilizing higher capacity solar panels. The changes to the panels and the reduction of the overall footprint of the project reduced the total amount of tree clearing and work within the prime northern slimy salamander habitat. In addition, the layout of the Solar PV array was shifted away from two wetlands and these changes netted further avoidance of undisturbed northern slimy salamander habitat. This will ultimately increase the size of the undisturbed buffer around cryptic vernal pools in this area as well.*

Tree clearing and grading will continue to be required as part of this Solar PV project. The currently proposed plan limits the impact to 1.3 acres (of the 49 +/-acres) of high quality forested salamander habitat, which equals the area of the project design approved in the November 15, 2018 Final Determination. As described above, DEEP Water Permitting and Enforcement Division requested that Candlewood Solar re-evaluate the design to move the PV panels sited within areas of 15% or steeper slopes to flatter slopes. As noted in the Incidental Take Report for the State Threatened *Plethodon glutinosus* (slimy salamander) dated February 9, 2018, "…the species is likely to persist at this locus, and particularly in the higher quality, older growth, steep rocky forested sections. Areas exhibiting both at least a 35% grade, rocky limestone slopes and mature, predominantly deciduous forest were mapped via a raster analysis in October 2017 (see Appendix D). These zones match the documented habitat preferences by this species at the extreme of its currently documented eastern range (excepting historic occurrence in southern New Hampshire)." The project design approved in the November 15, 2018 Final Determination includes development on slopes of 15% or greater. Development areas containing slopes of 15% or greater are primarily located in the northwest area of the array. Under the current design, panels from approximately 8.8 percent of the total array area have been removed from steep slopes (15% or greater) and relocated to flatter areas of the site. **Figure 1** depicts the approved project design and the current project design. **Figure 1** also includes the results of the raster analysis and shows that the current project design has been moved away from areas of steep slope and preferred slimy salamander habitat. Specifically, the current design will result in approximately 0.43 acres more of tree clearing and no change in the total area of work within prime northern slimy salamander habitat.

As described in more detail above, under the current design, solar PV panels were moved from areas of steep slope to flatter areas of the project site. The relocation of solar PV panels from areas of steep slope to flatter areas moved solar PV panels further away from Wetland V, but closer to Wetland I.

Providing a 100-acre conservation easement:

The October 15, 2018 NDDB Final Determination No. 201703524 states:

> *Candlewood Solar, LLC identified a 100-acre area that will be set aside for permanent conservation as mitigation for unavoidable impacts to the northern slimy salamander. Candlewood Solar, LLC will deed this 100-acre parcel to a local conservation trust or similar entity as permanently conserved land. The 100 acres includes contiguous, steep, sloping, mature forest. It also includes wetlands and vernal pools. The conservation easement will outline and limit the types of activities allowed within the mitigation area in order to protect its natural resource value especially for the northern slimy salamander.*

As described in the Incidental Take Report, a 100-acre, contiguous, steep slope, mature forest perpetual conservation parcel will be created to preserve slimy salamander habitat, conserve existing unfragmented

forest, and protect existing wetlands, vernal pools, and archaeological resources. The approved 100-acre conservation easement is depicted in Figure 1 in the Incidental Take Report (see **Attachment C, Section i. C.).** Based on updates to the Project design and changes to the Project layout, the current limits of work overlap portions of the approved 100-acre conservation easement to the northwest and along almost the entire eastern side of the Solar PV Facility. As depicted in **Figure 1**, the majority of the overlap is associated with the implementation of stormwater features. To compensate for the proposed areas within the approved 100-acre conservation easement to be removed from the conservation restriction (see **Figure 1**), Candlewood Solar proposes to include a portion of the northern tip, where solar PV panels were previously located, an additional area east of Wetland I that includes a portion of Wetland VI and the Rocky River, as well as the southeastern corner of the Facility parcel. The northern tip contains preferred slimy salamander habitat and based on the pre-construction monitoring survey that was completed in June 2019, multiple slimy salamander were identified in this area (see **Attachment C, Section i. D.** and **Figure 1**). As noted above, the area east of Wetland I includes a portion of Wetland VI and the Rocky River which provides habitat for a variety of species. Habitat in the southeastern corner of the Facility parcel is a continuation of the preferred slimy salamander habitat included in the approved 100-acre conservation easement to the north and west and provides for additional contiguous, steep slope, mature forest to preserve slimy salamander habitat. With the inclusion of these additional areas, the proposed conservation restriction area totals approximately 102 acres.

Section 5.0 n of the Incidental Take Report noted:

> *Course woody debris is an associated feature with the occurrences of slimy salamander in Connecticut. There is also the potential for microclimatological impacts (due to site clearing) permeating the remaining, intact bordering woodlands. In view of this potential, we propose to distribute approximately 125 5 to 8-inch diameter log sections, four feet in length, harvested from the Project area within the 100-foot zone beyond the shade management area. These course woody debris items will be distributed in the northern portion of the conservation area (north over Wetland 1 and to a similar point west of the Project) at an effective density of approximately 1 object per 2,500 square feet of bordering forested habitat. Distribution will be done using multiwheel, low-impact vehicles and by hand and the locations of all objects will be mapped using GPS.*

Based on discussions between Oxbow and DEEP during the course of obtaining the Permit to Collect Wildlife for Scientific & Educational Purposes ("Collection Permit"), DEEP noted that at this time, they were not interested in having course woody debris distributed within the 100-foot zone beyond the shade management area in the northern portion of the conservation area (north over Wetland 1 and to a similar point west of the Project). Candlewood Solar continues to be amenable to implementing this measure to mitigate for potential microclimatological impacts.

<u>Three-year monitoring and reporting:</u>

The October 15, 2018 NDDB Final Determination No. 201703524 states:

> *Candlewood Solar, LLC will also conduct three years of monitoring for the northern slimy salamander. Surveys will be conducted in the pre-construction period and continue post- construction for two additional years. Reporting will be made to CTDEEP NDDB within 7 days of field surveys and will include survey dates and duration; description and maps of surveyed areas; site photographs; species photographs; species lists; locations of salamanders identified and assessments. There will also be an annual summary report prepared and submitted. Candlewood Solar, LLC will ensure and be responsible for contracting with the qualified herpetologist and their reporting efforts. The qualified herpetologist will obtain and maintain a valid scientific collector's permit to work with northern slimy salamander populations.*

Following receipt of the Permit to Collect Wildlife for Scientific & Educational Purposes (Collection Permit) effective June 5, 2019 (Permit No. 1920004), pre-construction northern slimy salamander surveys were conducted between June 17 and June 26, 2019 consistent with the Collection Permit and the Protocol for Surveying Northern Slimy Salamander (*Plethodon glutinosus*) – Candlewood Solar LLC, New Milford, Connecticut by Oxbow Associates. The results of the surveys were submitted within 7 business days of field survey and a report was filed with DEEP (Ms. Carol Morris-Scata at carol.morris-scata@ct.gov) on July 8, 2018 (see **Attachment C, Section i. D.).** The inspection identified slimy salamanders within steep, rocky sloped areas (see **Figure 1** and **Attachment C, Section i. D.)**.

As depicted on **Figure 1**, slimy salamanders were not identified within the area of the proposed panel relocation area or within the current design array area or electric interconnection route covered by the surveys. A copy of the July 8, 2019 pre-construction northern slimy salamander survey report is attached to this Request for NDDB State Listed Species Review as **Attachment C, Section i. D**.

In accordance with the October 15, 2018 NDDB Final Determination, an annual summary report for 2019 will be prepared and submitted to CTDEEP NDDB. Additionally two (2) years of post-construction monitoring will be conducted. Post construction survey reporting will be made to CTDEEP NDDB within 7 business days of field surveys and will include survey dates and duration; description and maps of surveyed areas; site photographs; species photographs; species lists; locations of salamanders identified and assessments. Two annual post construction summary reports will also be prepared and submitted. Candlewood Solar, LLC will ensure and be responsible for contracting with the qualified herpetologist and their reporting efforts. The qualified herpetologist will obtain and maintain a valid scientific collector's permit to work with northern slimy salamander populations.

Addition of grassy strips to roadways:

The October 15, 2018 NDDB Final Determination No. 201703524 states:

> *The original proposal had many of the access roads being improved with crushed stone and gravel. However, these improved roads would be a barrier to migration or travel by northern slimy salamanders. Candlewood Solar, LLC has agreed to add grassed strips, approximately 20 feet wide, along the proposed project access roadways to mitigate for these improved access roads. The 20 foot wide grassed strips will replace the gravel for the full width of the roadway at the approximate locations. The locations of these grassed strips were based on proximity to forested habitat areas from where the salamanders would presumably be emanating.*

As discussed above under Project Design Updates and Layout Changes, III, to maintain access to all solar PV panels within the northern portion of the Solar PV Facility, the access road within this portion of the array was shifted to the east by approximately 150 feet (see **Figure 1**). Grassy strips along the northern access road are proposed in the same approximate location along its new alignment. The current location of the northern access road, approximately 150 feet to the east is closer to forested habitat areas from where the salamanders will presumably be emanating. The other access roads remain unchanged from the approved design. The grass strips will be 20 feet wide and will replace the gravel for the full width of the roadway at the approximate locations. **Figure 1** depicts the location of the approved access roads and grassy strips and the location of the revised northern access road and grassy strips.

State Special Concern Panax quinquefolius (American ginseng):

During the pre-construction northern slimy salamander surveys conducted between June 17 and June 26, 2019, Oxbow identified one occurrence of the state special concern *Panax quinquefolius* (American Ginseng) (see **Figure 1** and **Attachment C, Section i. D.**). The plant is located outside of the LOW. No additional occurrences of American ginseng were identified during the survey of the Facility site or Conservation

Easement area. As this was a single occurrence and the plant is located outside of the LOW, no protective measures are needed.

Candlewood Solar appreciates DEEP NDDB's review of this information. Should you have any questions, please contact Rob Bukowski at (978) 392-5307 or rob.bukowski@woodplc.com.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.

Robert J. Bukowski, P.E.
Project Manager

Danielle A. Ahern, P.E.
Associate Civil Engineer

Enclosures

Request for Natural Diversity Data Base (NDDB) State Listed Species Review Form
Figures
Attachments
Attachment A: Overview Map
Attachment B: Detailed Site Map
Attachment C, Section i. A. Site Photographs
Attachment C, Section i. B. October 27, 2017 Amec Foster Wheeler Environment & Infrastructure, Inc. Filing
Attachment C, Section i. C. February 9, 2018 Incidental Take Report for the State Threatened *Plethodon glutinosus* (slimy salamander) ("Incidental Take Report")
Attachment C, Section i. D. July 8, 2019 Pre-construction Survey Summary of Findings for the State Threatened Plethodon glutinosus (slimy salamander) including NDDB Special Animal Survey Form
Attachment C, Section ii: Annotated Site Plans
Attachment D: November 15, 2018 Final Determination

Request for Natural Diversity Data Base (NDDB) State Listed Species Review Form

Connecticut Department of
Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division

CPPU USE ONLY
App #:_____
Doc #:_____
Check #: No fee required
Program: Natural Diversity Database Endangered Species
Hardcopy _____ Electronic _____

Request for Natural Diversity Data Base (NDDB) State Listed Species Review

Please complete this form in accordance with the instructions (DEEP-INST-007) to ensure proper handling of your request.
There are no fees associated with NDDB Reviews.

Part I: Preliminary Screening & Request Type

Before submitting this request, you must review the most current Natural Diversity Data Base "State and Federal Listed Species and Significant Natural Communities Maps" found on the DEEP website. These maps are updated twice a year, usually in June and December.

Does your site, including all affected areas, fall in an NDDB Area according to the map instructions:

☒ Yes ☐ No **Enter the date** of the map reviewed for pre-screening: **June 2019**

This form is being submitted for a :

☒ *New* NDDB request ☐ *Renewal/Extension* of a NDDB Request, ***without*** *modifications and within* ***two years*** *of issued NDDB determination* (no attachments required) [*CPPU Use Only - NDDB-Listed Species Determination #* 1736]	☐ *New* **Safe Harbor Determination** (optional) must be associated with an application for a GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities ☐ *Renewal/Extension* of an existing Safe Harbor Determination ☐ With modifications ☐ Without modifications (no attachments required) [*CPPU Use Only - NDDB-Safe Harbor Determination #* 1736]
Enter NDDB Determination Number for Renewal/Extension:	Enter Safe Harbor Determination Number for Renewal/Extension:

Part II: Requester Information

If the requester is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, the name shall be stated **exactly as it is registered with the Secretary of State. Please note, for those entities registered with the Secretary of State, the registered name will be the name used by DEEP. This information can be accessed at the Secretary of the State's database CONCORD.* (www.concord-sots.ct.gov/CONCORD/index.jsp)

If the requester is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

If there are any changes or corrections to your company/facility or individual mailing or billing address or contact information, please complete and submit the Request to Change company/Individual Information to the address indicated on the form.

1. Requester*

Company Name: **Wood Environment & Infrastructure Solutions, Inc.**

Contact Name: **Rob Bukowski**

Address: **271 Mill Road**

City/Town: **Chelmsford** State: **MA** Zip Code: **01824**

Business Phone: **978-392-5307** ext.

E-mail: **rob.bukowski@woodplc.com

**By providing this email address you are agreeing to receive official correspondence from the department, at this electronic address, concerning this request. Please remember to check your security settings to be sure you can receive emails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes

a) Requester can best be described as:

☐ Individual ☐ Federal Agency ☐ State agency ☐ Municipality ☐ Tribal

☒ *business entity (* if a business entity complete i through iii):

i) Check type ☐ corporation ☐ limited liability company ☐ limited partnership ☐ limited liability partnership ☐ statutory trust ☒ Other: public limited company

ii) Provide Secretary of the State Business ID #: This information can be accessed at the Secretary of the State's database (CONCORD). (www.concord-sots.ct.gov/CONCORD/index.jsp)

iii) ☒ Check here if your business is **NOT** registered with the Secretary of State's office.

b) Acting as (Affiliation), pick one:

☐ Property owner ☒ Consultant ☐ Engineer ☐ Facility owner ☒ Applicant

☐ Biologist ☐ Pesticide Applicator ☐ Other representative:

2. List Primary Contact to receive Natural Diversity Data Base correspondence and inquiries, if different from requester.

Company Name: **Epsilon Associates, Inc.**

Contact Person: **Tricia Foster** Title: **Senior Scientist**

Mailing Address: **3 Mill & Main Place, Suite 250**

City/Town: **Maynard** State: **MA** Zip Code: **01754**

Business Phone: **978-461-6272** ext.

E-mail: **tfoster@epsilonassociates.com

Part III: Site Information

This request can only be completed for one site. A separate request must be filed for each additional site.

1. SITE NAME AND LOCATION

Site Name or Project Name: **Candlewood Solar Project**

Town(s): **New Milford**

Street Address or Location Description:
Between Candlewood Mountain Road and Kent Road, north of Candlewood Lake; parcels - off Candlewood Mountain Road (parcel 26/67.1); 221 Kent Road (parcel 9/6), and 201 Kent Road (parcel 34/31.1).

Size in acres, or site dimensions: **81.04 acres (see Table 1 in the attached letter).**

Latitude and longitude of the center of the site in decimal degrees (e.g., 41.23456 -71.68574):

Latitude: **41.57347** Longitude: **-73.452006**

Method of coordinate determination (check one):

☐ GPS ☐ Photo interpolation using CTECO map viewer ☒ Other (specify): **GIS**

2a. Describe the current land use and land cover of the site.

The proposed solar array (Facility) parcel (26/67.1) has a total area of 163.5 acres. The Facility parcel is undeveloped and partially wooded with four (4) hay fields/horse pastures on the southern portion of the Facility parcel. The existing access road leading from Candlewood Mountain Road to the solar array is dirt/gravel and partially overgrown with vegetation in some areas. Five (5) wetlands and associated watercourses were delineated within the Facility parcel (Wetlands I through V). One naturally occuring vernal pool was identified and delineated in the northeast portion of the Facility parcel within Wetland V. Two cryptic vernal pools were also delineated within Wetland I on the east side of the Facility parcel. Areas of steep slope and rock outcrops are primarily located in the northern and eastern portions of the Facility parcel with a small area of steep slope and rock outcrops located in the southwestern portion of the Facilty parcel, north of the existing access road.

The proposed electric interconnection route will cross two adjacent parcels to the east (parcels 9/6 and 34/31.1). The areas to be crossed by the electric interconnection route consist of undeveloped forest with wooded upland, wetlands, and watercourses. Four wetlands and associated watercourses were delineated within the two parcels crossed by the electric interconnection route (Wetlands VI through IX). Intermittent watercourses are associted with each of these wetlands except the Rocky River which flows out of Wetland VI.

Please see Section 1.0.b.iv. of Attachment C, Section i. C. (February 9, 2018 Incidental Take Report for the State Threatened Plethodon glutinosus (slimy salamander) ("Incidental Take Report")) for additional detail regarding current land use and land cover and habitat types.

b. Check all that apply and enter the size in acres or % of area in the space after each checked category.

☐ Industrial/Commercial _____	☐ Residential _____	☒ Forest 59.2 ac
☒ Wetland 0.8 ac	☐ Field/grassland _____	☒ Agricultural 18.7 ac
☐ Water _____	☒ Utility Right-of-way 0.1 ac	
☐ Transportation Right-of-way _____	☒ Other (specify): **2.2 ac access road**	

Part IV: Project Information

1. PROJECT TYPE:

Choose Project Type: Utility construction/modification , If other describe: _____

2. Is the subject activity limited to the maintenance, repair, or improvement of an existing structure within the existing footprint? ☐ Yes ☒ No If yes, explain.

Part IV: Project Information (continued)

3. Give a detailed description of the activity which is the subject of this request and describe the methods and equipment that will be used. Include a description of steps that will be taken to minimize impacts to any known listed species.

   Candlewood Solar, LLC (Candlewood Solar) intends to install a ground-mounted solar photovoltaic (PV) electric generating facility (Facility) and electrical interconnect. The Facility will be constructed entirely on an approximate 163.5 acre parcel (26/67.1). The electric interconnection route will exit the Facility parcel from the southeastern portion of the solar PV Facility and will be constructed on and cross two adjacent parcels to the east (parcels 9/6 and 34/31.1). The Facility will be accessed via an existing dirt access road off of Candlewood Mountain Road entirely on parcel 26/67.1. Improvements to the existing access road include minimal grading as needed and installing gravel. The solar PV panels will be installed on a screwed-in mounting system due to shallow bedrock conditions across the Facility site. The Facility will be surrounded by a 7-foot high countersunk chain-link fence. The Facility and electric interconnection route will be located between Candlewood Mountain Road and Kent Road in the Town of New Milford, Connecticut (the Project).

   The Project received a Final Determination from NDDB on November 15, 2018 (NDDB Final Determination No.: 201703524). Since the issuance of the Final Determination on the Project, there have been changes to the Project scope of work. The attached letter identifies and describes the changes to the Project Design and Layout, the reason(s) for the changes to the Project Design, any changes to potential impacts to known State Listed Species and their habitat, and any changes to the mitigation measures included in the Final Determination, including any new proposed mitigation measures.

   The construction methods and equipment that will be used remain unchanged from that included in NDDB File No. 201703524. Please see Section 1.0.c.v. of Attachment C, Section i. C. (February 9, 2018 Incidental Take Report for the State Threatened Plethodon glutinosus (slimy salamander) ("Incidental Take Report")) for a detailed description of proposed activities.

4. If this is a renewal or extension of an existing Safe Harbor request *with* modifications, explain what about the project has changed.

   Not applicable.

5. Provide a contact for questions about the project details if different from Part II primary contact.

   Name: **Same as Part II primary contact.**

   Phone:

   E-mail:

Part V: Request Requirements and Associated Application Types

Check *one* box from either Group 1, Group 2 *or* Group 3, indicating the appropriate category for this request.

Group 1. If you check one of these boxes, complete Parts I – VII of this form and submit the required attachments A and B.

- ☐ Preliminary screening was negative but an NDDB review is still requested
- ☐ Request regards a municipally regulated or unregulated activity (no state permit/certificate needed)
- ☐ Request regards a preliminary site assessment or project feasibility study
- ☐ Request relates to land acquisition or protection
- ☐ Request is associated with a *renewal* of an existing permit or authorization, with no modifications

Group 2. If you check one of these boxes, complete Parts I – VII of this form and submit required attachments A, B, *and* C.

- ☒ Request is associated with a *new* state or federal permit or authorization application or registration
- ☐ Request is associated with modification of an existing permit or other authorization
- ☐ Request is associated with a permit enforcement action
- ☐ Request regards site management or planning, requiring detailed species recommendations
- ☐ Request regards a state funded project, state agency activity, or CEPA request

☐ **Group 3.** If you are requesting a **Safe Harbor Determination**, complete Parts I-VII and submit required attachments A, B, and D. Safe Harbor determinations can only be requested if you are applying for a GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

If you are filing this request as part of a state or federal permit application(s) enter the application information below.

Permitting Agency and Application Name(s):
CT DEEP Stormwater Construction General Permit, CT DEEP Dam Safety Permit, CT Siting Council Petition for Declaratory Ruling

Related State DEEP Permit Number(s), if applicable: _____

State DEEP Enforcement Action Number, if applicable: _____

State DEEP Permit Analyst(s)/Engineer(s), if known: **Oswald Inglese, Water Permitting and Enforcement Division and Ivonne Hall, Dam Safety Program**

Is this request related to a previously submitted NDDB request? ☒ Yes ☐ No

If yes, provide the previous NDDB Determination Number(s), if known: **NDDB Final Determination No.: 201703524 dated November 15, 2018**

Part VI: Supporting Documents

Check each attachment submitted as verification that *all* applicable attachments have been supplied with this request form. Label each attachment as indicated in this part (e.g., Attachment A, etc.) and be sure to include the requester's name, site name and the date. **Please note that Attachments A and B are required for all new requests and Safe Harbor renewals/extensions with modifications.** Renewals/Extensions with no modifications do not need to submit any attachments. Attachments C and D are supplied at the end of this form.

☒ Attachment A:	**Overview Map:** an 8 1/2" X 11" print/copy of the relevant portion of a USGS Topographic Quadrangle Map clearly indicating the exact location of the site.
☒ Attachment B:	**Detailed Site Map:** fine scaled map showing site boundary and area of work details on aerial imagery with relevant landmarks labeled. (Site and work boundaries in GIS [ESRI ArcView shapefile, in NAD83, State Plane, feet] format can be substituted for detailed maps, see instruction document)
☒ Attachment C:	**Supplemental Information, Group 2 requirement (attached, DEEP-APP-007C)** ☒ Section i: Supplemental Site Information and supporting documents ☒ Section ii: Supplemental Project Information and supporting documents
☐ Attachment D:	**Safe Harbor Report Requirements, Group 3 (attached, DEEP-APP-007D)**

Part VII: Requester Certification

The requester *and* the individual(s) responsible for actually preparing the request must sign this part. A request will be considered incomplete unless all required signatures are provided.

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief."

Robert J. Bukowski	**9/22/2019**
Signature of Requester (a typed name will substitute for a handwritten signature)	Date
Rob Bukowski	**Principal Engineer**
Name of Requester (print or type)	Title (if applicable)
Patricia E Foster	**9/22/2019**
Signature of Preparer (if different than above)	Date
Tricia Foster	**Senior Scientist**
Name of Preparer (print or type)	Title (if applicable)

Note: Please submit the completed Request Form and all Supporting Documents to:

CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

Or email request to: **deep.nddbrequest@ct.gov**

Attachment C: Supplemental Information, Group 2 requirement

Section i: Supplemental Site Information

1. Existing Conditions

Describe all natural and man-made features including wetlands, watercourses, fish and wildlife habitat, floodplains and any existing structures potentially affected by the subject activity. Such features should be depicted and labeled on the site plan that must be submitted. Photographs of current site conditions may be helpful to reviewers.

For a description of all natural and man-made features including wetlands, watercourses, fish and wildlife habitat, floodplains, and potential impacts to these features, please see: Part III.2.a. of this Form; section 1.0.b.iv. and Figure 2 of Attachment C, Section i. C. (February 9, 2018 Incidental Take Report for the State Threatened Plethodon glutinosus (slimy salamander) ("Incidental Take Report")), and Figures 1 - 3 attached to the letter that accompanies this Review Request.

See Attachment B for a Site Plan / sketch of existing conditions.

Site Photographs of the Project site are included in Attachment C, Section i. A. Additionally, ground cover photographs are included in Attachment F of Attachment C, Section i. B. (October 27, 2017 Amec Foster Wheeler Environment & Infrastructure, Inc. Filing).

☒ **Site Photographs (optional) attached**

☒ **Site Plan/sketch of existing conditions attached**

2. Biological Surveys

Has a biologist visited the site and conducted a biological survey to determine the presence of any endangered, threatened or special concern species ☒ Yes ☐ No

If yes, complete the following questions and submit any reports of biological surveys, documentation of the biologist's qualifications, and any NDDB survey forms.

Biologist(s) name: Brian Butler, Oxbow Associates, Inc.

Habitat and/or species targeted by survey: Cryptic vernal pool delineation - Sept. 30, 2017; Golden-winged warbler - Sept. 12 and 22, 2017; Slimy salamander - Sept. and Oct. 2017 and June 2019; Jefferson salamander (complex) - Sept. 30, 2017

Dates when surveys were conducted: See above.

☒ **Reports of biological surveys attached**

☒ **Documentation of biologist's qualifications attached**

☒ **NDDB Survey forms for any listed species observations attached**

Section ii: Supplemental Project Information

1. Provide a schedule for all phases of the project including the year, the month and/or season that the proposed activity will be initiated and the duration of the activity.

Construction will commence upon receipt of all permits and approvals.
Phase I - Access Road Upgrades (1 - 2 weeks)
Phase II - Tree clearing, stump removal, and limited grading (3 - 4 months): Depending upon receipt of permits and approvals, anticipated timeline is December 2019 - May 31, 2020.
Phase III - Perimeter Fence Installation (1 - 2 weeks)
Phase IV - Solar PV Array (Facility Installation) and Interconnection Route (5 - 6 months): Working concurrently with Phases II and III. Anticipated commercial operation date (COD) is September 30, 2020

2. Describe and quantify the proposed changes to existing conditions and describe any on-site or off-site impacts. In addition, provide an annotated site plan detailing the areas of impact and proposed changes to existing conditions.

Please see attached letter and Annotated Project Plans included as Attachment C, Section ii.

☒ **Annotated Site Plan attached**

Attachment D: Safe Harbor Report Requirements

Submit a report, as Attachment D, that synthesizes and analyzes the information listed below. Those providing synthesis and analysis need appropriate qualifications and experience. A request for a safe harbor determination shall include:

1. **Habitat Description and Map(s), including GIS mapping overlays, of a scale appropriate for the site, identifying:**

    - wetlands, including wetland cover types;
    - plant community types;
    - topography;
    - soils;
    - bedrock geology;
    - floodplains, if any;
    - land use history; and
    - water quality classifications/criteria.

2. **Photographs** - The report should include photographs of the site taken from the ground and also all reasonably available aerial or satellite photographs and an analysis of such photographs.

3. **Inspection** - A visual inspection(s) of the site should be conducted, preferably when the ground is visible, and described in the report. This inspection can be helpful in confirming or further evaluating the items noted above.

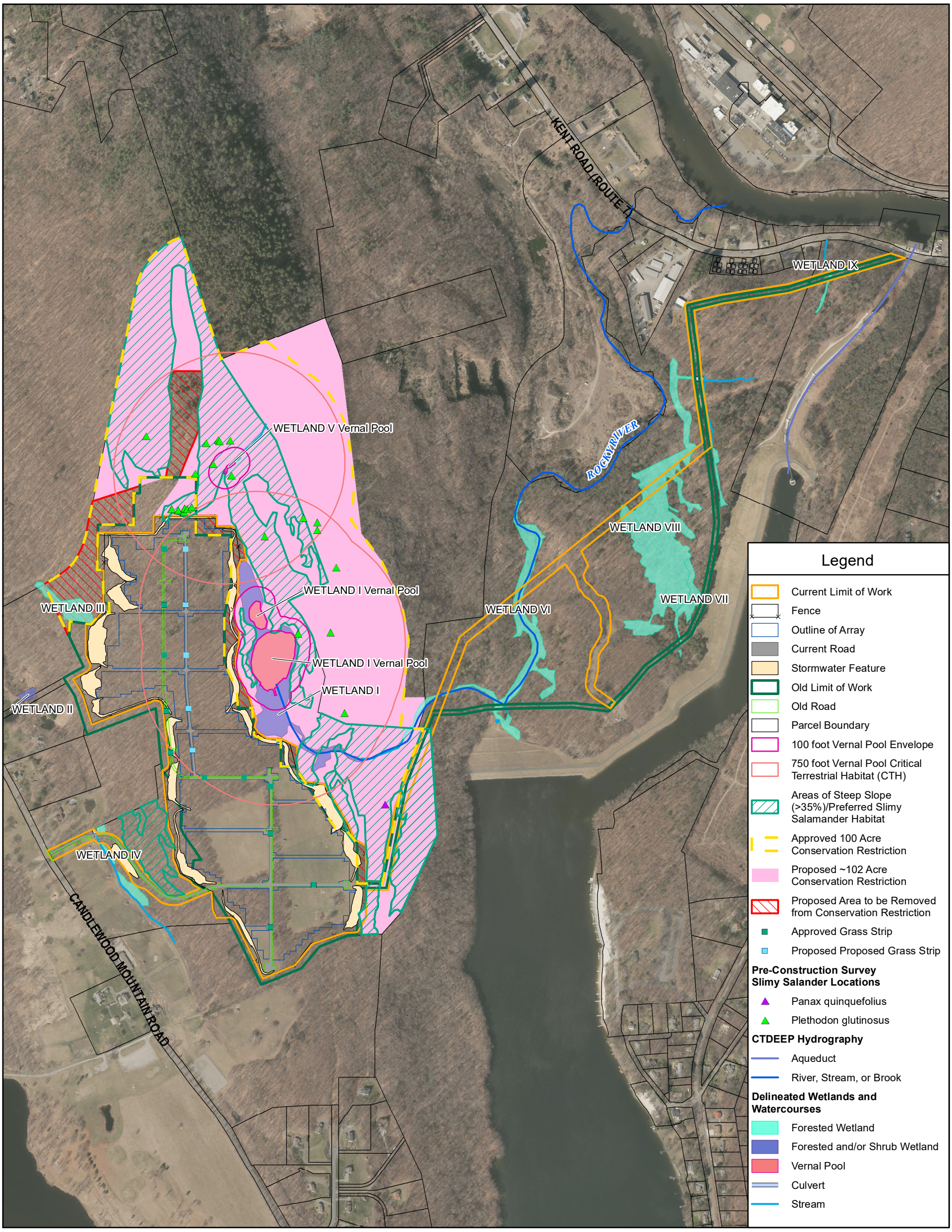
4. **Biological Surveys** - The report should include all biological surveys of the site where construction activity will take place that are reasonably available to a registrant. A registrant shall notify the Department's Wildlife Division of biological studies of the site where construction activity will take place that a registrant is aware of but are not reasonably available to the registrant.

5. **Based on items #1 through 4 above, the report shall include a Natural Resources Inventory of the site of the construction activity.** This inventory should also include a review of reasonably available scientific literature and any recommendations for minimizing adverse impacts from the proposed construction activity on listed species or their associated habitat.

6. **In addition, to the extent the following is available at the time a safe harbor determination is requested, a request for a safe harbor determination shall include and assess:**

    - Information on Site Disturbance Estimates/Site Alteration information
    - Vehicular Use
    - Construction Activity Phasing Schedules, if any; and
    - Alteration of Drainage Patterns

Figures



Location of Site

OVERALL SITE PLAN

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Notes & Sources

Basemap Source: 2016 Connecticut Orthophotography created by the University of Connecticut - Connecticut Environmental Conditions Online (UCONN CTECO), distributed by ArcGIS Online.

0 325 650
Feet

N

wood.
Wood Environment & Infrastructure Solutions, Inc.
271 Mill Road
Chelmsford, MA
Phone: (978) 692-9090

FIGURE 1

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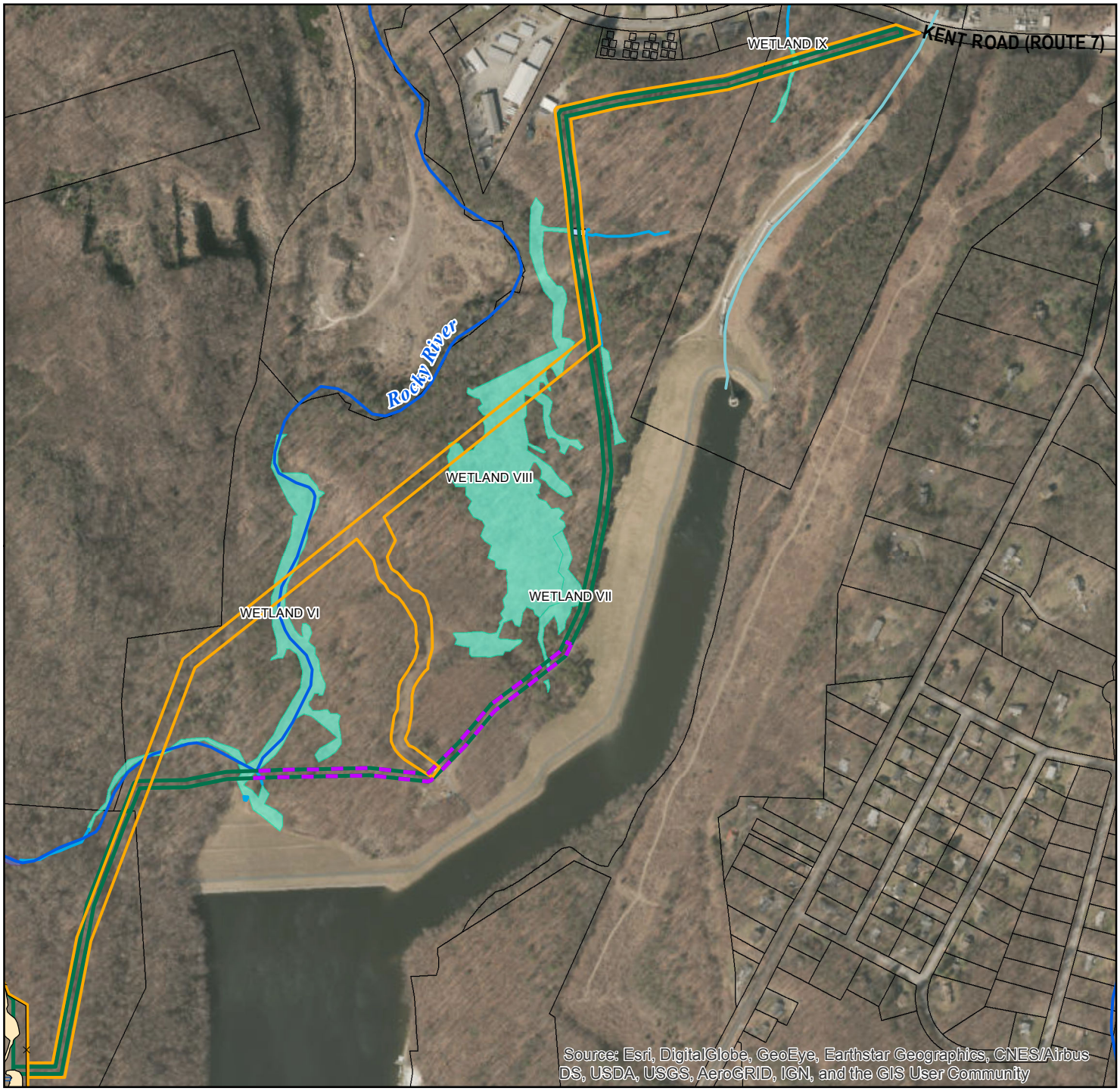


ELECTRIC INTERCONNECTION FIGURE

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Location of Site

Legend

- Area 1
- Old Limit of Work
- Current Limit of Work
- Fence
- Outline of Array
- Stormwater Feature
- Parcel Boundary

Delineated Wetlands and Watercourses

- Forested Wetland
- Forested and/or Shrub Wetland
- Culvert
- Stream

CTDEEP Hydrography

- Aqueduct
- River, Stream, or Brook

Notes & Sources

Basemap Source: 2016 Connecticut Orthophotography created by the University of Connecticut - Connecticut Environmental Conditions Online (UCONN CTECO), distributed by ArcGIS Online.

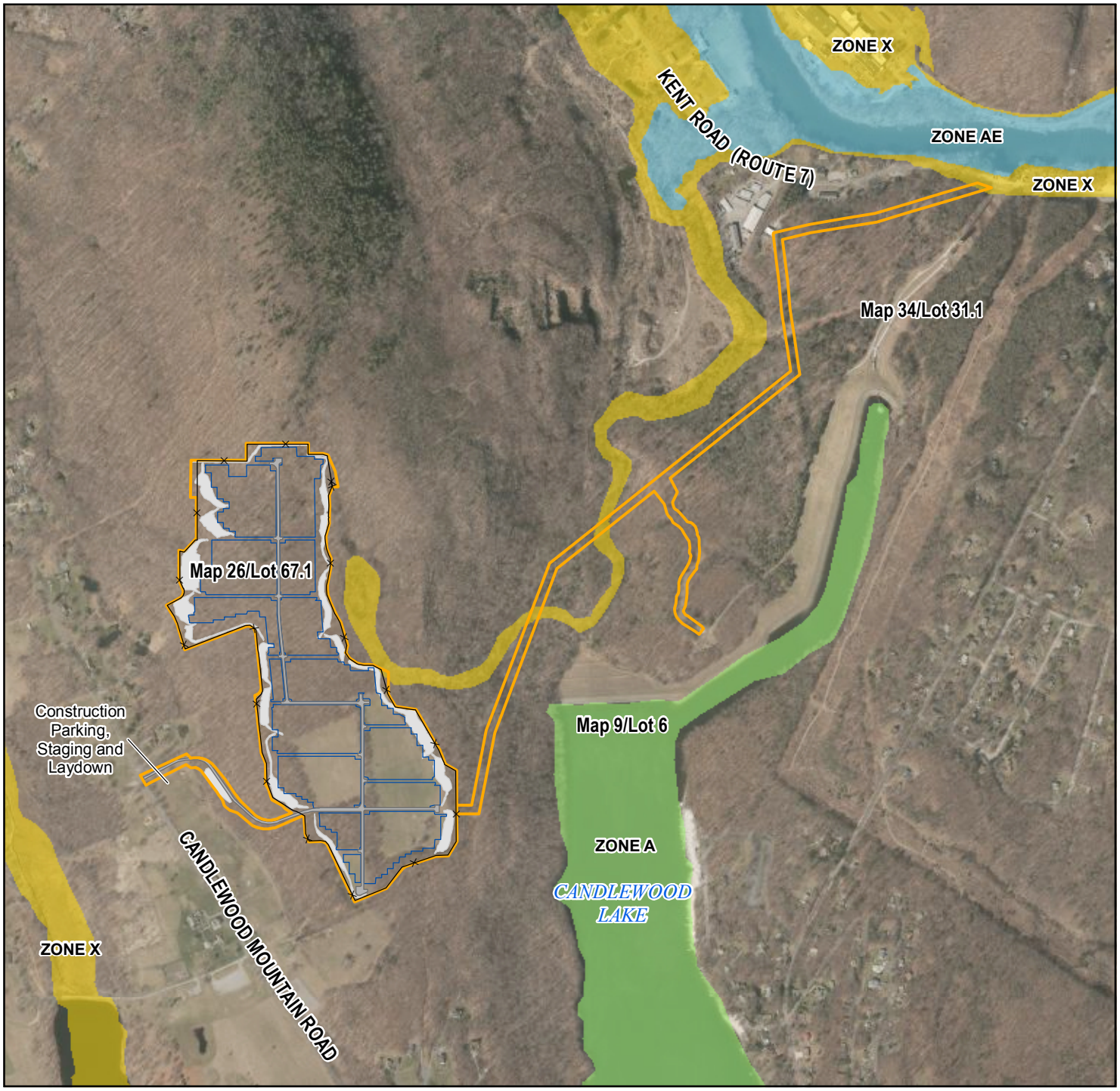
0 600 Feet

N

wood.
Wood Environment & Infrastructure Solutions, Inc.
271 Mill Road
Chelmsford, MA
Phone: (978) 692-9090

FIGURE 2

H:\Ameresco\NewMildford_CT\Task3\MXD\Fig2_Interconnect_Area1.mxd September 19, 2019 DWN: cynthia.hernandez CHKD: AKN



FEMA MAP

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Location of Site

Legend

- Current Limit of Work
- Fence
- Outline of Array
- Current Road
- Stormwater Feature
- ZONE A
- ZONE AE
- ZONE X

Notes & Sources

Note: FEMA datalayer approximated based on FEMA FIRM map numbers 0900490011D, 0900490016D, and 0900490017D effective 06/04/87.

Basemap Source: 2016 Connecticut Orthophotography created by the University of Connecticut - Connecticut Environmental Conditions Online (UCONN CTECO), distributed by ArcGIS Online.

0 1,000 Feet

N

wood.
Wood Environment & Infrastructure Solutions, Inc.
271 Mill Road
Chelmsford, MA
Phone: (978) 692-9090

FIGURE 3

H:\Ameresco\NewMildford_CT\Task3\MXD\Fig5_FEMA.mxd September 09, 2019 DWN: emily.gardiner CHKD: AKN

Attachments

Attachment A

Overview Map

New Milford Quadrangle 2018

OVERVIEW MAP

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Location of Site

Legend

Current Limit of Work

Notes & Sources

0 2,000 Feet

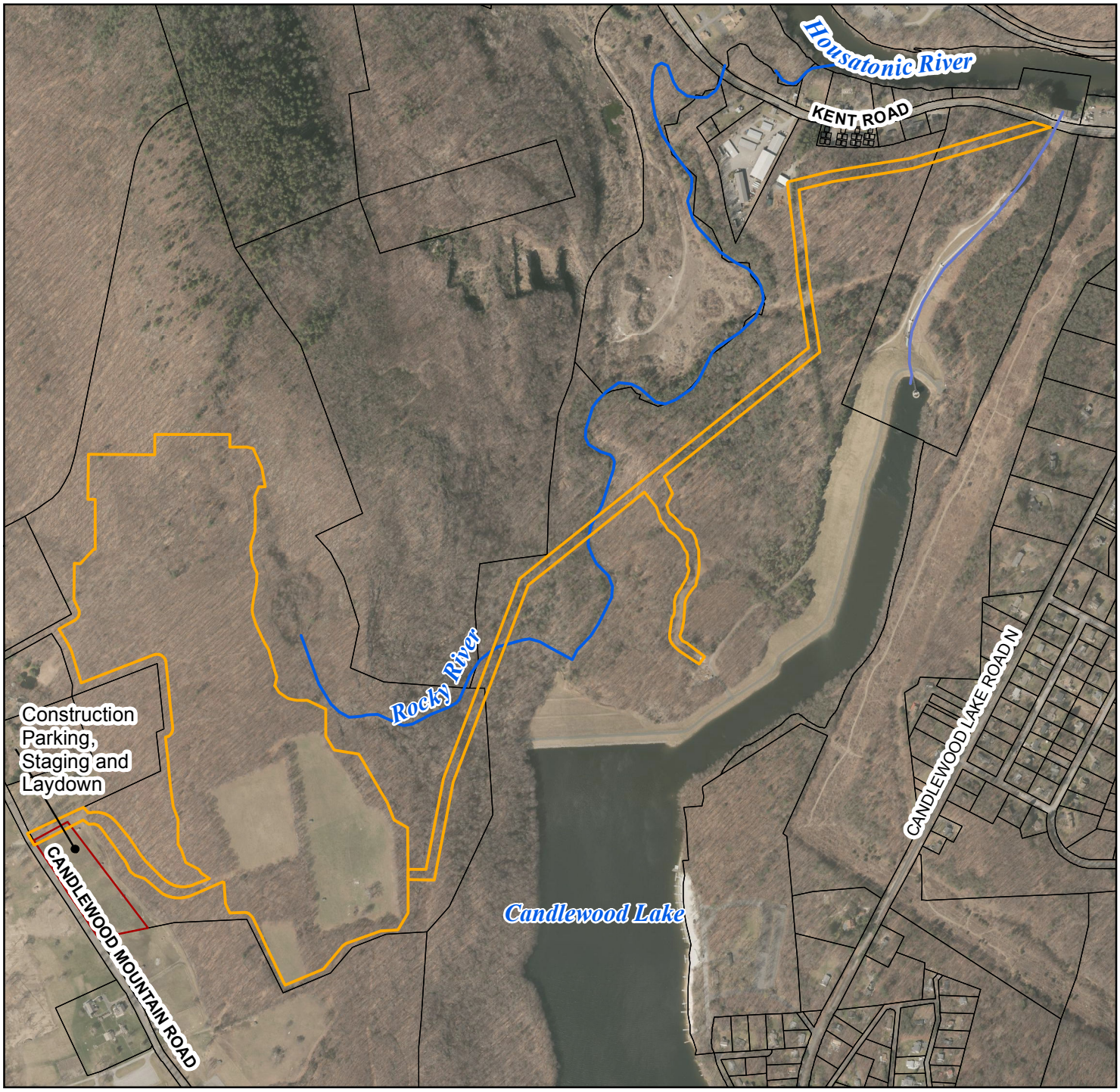
N

wood.
Wood Environment & Infrastructure Solutions, Inc.
271 Mill Road
Chelmsford, MA 01824
(978) 692-9090

Attachment A

Attachment B

Detailed Site Map



DETAILED SITE MAP

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Location of Site

Legend

- Current Limit of Work
- Construction Parking, Staging and Laydown
- Parcel Boundary

CTDEEP Hydrography

- Aqueduct
- River, Stream, or Brook

Notes & Sources

0 500 Feet

N

wood.
Wood Environment & Infrastructure Solutions, Inc.
271 Mill Road
Chelmsford, MA 01824
(978) 692-9090

Attachment B

H:\Ameresco\NewMildford_CT\Task4\MXD\Fig2_DetailedSiteMap.mxd September 20, 2019 DWN: cynthia.hernandez CHKD: AKN

Attachment C

Section i. A.

Site Photographs

Photograph 1: View facing southwest of the hay field on the southern portion of the Site.

Photograph 2: View facing south of the pasture on the southern portion of the Site.

Photograph 3: View facing east down the slope on the eastern portion of the Site near the proposed interconnect route.

Photograph 4: View facing west from the eastern side of the Site.

Photograph 5: View of a rock outcrop on the eastern edge of the Site, near the location of Photograph 4.

Photograph 6: View facing south from the northern edge of the proposed arrays location.

Attachment C

Section i. B.

October 27, 2017

Amec Foster Wheeler Environment & Infrastructure, Inc. Filing

Foster, Tricia

From: Foster, Tricia
Sent: Saturday, October 28, 2017 4:20 PM
To: 'dawn.mckay@ct.gov'; 'deepnddbrequest@ct.gov'
Cc: Lindsay, Joel; Bukowski, Rob
Subject: FW: Candlewood Solar Request for NDDB Review - NDDB Preliminary Assessment No.: 201703524 (Email 1 of 3)
Attachments: Candlewood NDDB Response_No C_F_10272017.pdf; Candlewood_Figure1 _ProposedConservationRestriction.pdf

Tracking:

Recipient	Delivery
'dawn.mckay@ct.gov'	
'deepnddbrequest@ct.gov'	
Lindsay, Joel	
Bukowski, Rob	Delivered: 10/28/2017 4:21 PM

Dear Ms. McKay,

On behalf of Candlewood Solar LLC (Candlewood Solar), attached please find a letter and associated attachments responding to Natural Diversity Data Base's preliminary comments and recommendations outlined in your July 10, 2017 letter regarding review of the above referenced project. The attached letter and associated attachments address the additional information requested by Natural Diversity Data Base along with information on further project developments.

Please note, due to file size, I am sending the letter and attachments in a series of three (3) emails. One (1) complete hard copy of the letter and attachments has also been sent via Federal Express to you at the address listed on the July 10th letter. The following summarizes the contents of the three (3) emails:

- Email 1 of 3: Letter; Attachments A, B, D and E, and Conservation Restriction Area Figure*
- Email 2 of 3: Attachment C
- Email 3 of 3: Attachment F

* It is noted in the attached letter that an approximate 100-acre contiguous, steep slope, mature forest perpetual conservation parcel will be created to preserve slimy salamander habitat, conserve existing unfragmented forest, and protect existing wetlands and vernal pools. A figure depicting the proposed approximate 100-acre conservation area was not called out and attached to the letter. As such, I am also attaching a figure depicting the proposed 100-acre Conservation Restriction Area (Figure 1). Please let me know if you would like me to mail you hard copies of this figure in addition to the electronic copy attached.

Thank you for your assistance on this Project. If you have any questions please do not hesitate to contact me.
Sincerely,

Tricia Foster
Senior 2 Planner
Environment & Infrastructure Solutions
Direct: +1 (978) 392 5345
Mobile: +1 (978) 761 2450
www.woodplc.com

-----Original Message-----
From: DEEP Nddbrequest [mailto:DEEP.Nddbrequest@ct.gov]
Sent: Monday, July 10, 2017 4:31 PM
To: Hale, Ryan <ryan.hale@amecfw.com>
Subject: Re: Candlewood Solar Request for NDDB Review

Ryan,

I have attached our DEEP-NDDB Program letter for this project in New Milford. These are only preliminary comments. This letter is not a final determination and so you cannot use it with any state permit or registration. You must first provide site survey results for two species that may be using habitat on this property. You must also agree to implement the best management practices I recommend for other state-listed species. Let me know if you have any questions.

Take care,

Dawn
Dawn M. McKay
Wildlife Division
Bureau of Natural Resources
Connecticut Department of Energy and Environmental Protection
79 Elm Street, Hartford, CT 06106-5127
P: 860.424.3592 | E: dawn.mckay@ct.gov<mailto:dawn.mckay@ct.gov>

_____

From: Hale, Ryan <ryan.hale@amecfw.com>
Sent: Monday, July 10, 2017 11:58 AM
To: DEEP Nddbrequest
Subject: RE: Candlewood Solar Request for NDDB Review

Hi Karen,
Just checking in to see if there are any updates on the status of the review for this project?
Thanks,

Ryan Hale, PWS
Senior Project Manager/Permitting Specialist Amec Foster Wheeler Environment & Infrastructure, Americas

271 Mill Road
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M +1 (401) 369-2480
ryan.hale@amecfw.com<mailto:ryan.hale@amecfw.com>
www.amecfw.com<http://www.amecfw.com/>

From: Zyko, Karen [mailto:Karen.Zyko@ct.gov] On Behalf Of DEEP Nddbrequest
Sent: Thursday, June 15, 2017 1:44 PM
To: Hale, Ryan <ryan.hale@amecfw.com>
Subject: RE: Candlewood Solar Request for NDDB Review

Thank you, I will add this updated information to the request.

Karen

From: Hale, Ryan [mailto:ryan.hale@amecfw.com]
Sent: Thursday, June 15, 2017 9:53 AM
To: DEEP Nddbrequest <DEEP.Nddbrequest@ct.gov<mailto:DEEP.Nddbrequest@ct.gov>>
Cc: McKay, Dawn <Dawn.McKay@ct.gov<mailto:Dawn.McKay@ct.gov>>; Lindsay, Joel <jlindsay@ameresco.com<mailto:jlindsay@ameresco.com>>; Bukowski, Rob <Rob.Bukowski@amecfw.com<mailto:Rob.Bukowski@amecfw.com>>; Chan, Pam M <Pam.Chan@amecfw.com<mailto:Pam.Chan@amecfw.com>>
Subject: RE: Candlewood Solar Request for NDDB Review

Hi Karen,
I apologize for the delay in getting back to you. Please find attached the most recent draft of the Proposed Conditions Map for the project showing the vernal pool location (Wetland V) relative to the rest of the project. Our original submittal did have a slightly different design and did not include the tree clearing line as that had not been determined yet. The design depicted herein and on the previous vernal pool figure I sent will be the final layout in the area of the vernal pool. Feel free to give me a call if you'd like to discuss further.
Thanks,

Ryan Hale, PWS
Senior Project Manager/Permitting Specialist Amec Foster Wheeler Environment & Infrastructure, Americas

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M +1 (401) 369-2480
ryan.hale@amecfw.com<mailto:ryan.hale@amecfw.com>
www.amecfw.com<http://www.amecfw.com/>

From: Zyko, Karen [mailto:Karen.Zyko@ct.gov] On Behalf Of DEEP Nddbrequest
Sent: Wednesday, June 07, 2017 10:11 AM
To: Hale, Ryan <ryan.hale@amecfw.com<mailto:ryan.hale@amecfw.com>>; DEEP Nddbrequest <DEEP.Nddbrequest@ct.gov<mailto:DEEP.Nddbrequest@ct.gov>>
Cc: McKay, Dawn <Dawn.McKay@ct.gov<mailto:Dawn.McKay@ct.gov>>
Subject: RE: Candlewood Solar Request for NDDB Review

Ryan, There are not enough landmarks on the map to tell where the vernal pool is located. Can you give me something with more context or coordinates for the pool? Have you changed the design or do you have a more detailed map/drawing than the general one provided in April? The proposed array boundary does not seem to match the one we had previously received.

Karen Zyko
Department of Energy & Environmental Protection Bureau of Natural Resources, Wildlife Division
79 Elm St, Hartford, CT 06106
860-424-3378

From: Hale, Ryan [mailto:ryan.hale@amecfw.com]
Sent: Tuesday, June 06, 2017 3:45 PM
To: DEEP Nddbrequest <DEEP.Nddbrequest@ct.gov<mailto:DEEP.Nddbrequest@ct.gov>>
Cc: Lindsay, Joel <jlindsay@ameresco.com<mailto:jlindsay@ameresco.com>>; Bukowski, Rob <Rob.Bukowski@amecfw.com<mailto:Rob.Bukowski@amecfw.com>>; Chan, Pam M <Pam.Chan@amecfw.com<mailto:Pam.Chan@amecfw.com>>
Subject: RE: Candlewood Solar Request for NDDB Review

Hi Karen,
Sorry for the delay in getting back to you regarding vernal pool protection measures at the proposed solar facility in New Milford referenced in your email from April below. The design has now been developed enough to where we can speak to the vernal pool protection measures. In summary, we will be adhering to recommended measures prescribed for Tier I vernal pools identified by Calhoun and Klemens (2002) to the extent practicable as follows:

* No impacts will occur to the vernal pool depression or 100-foot envelope (see attached figure).
* 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.

I'd be happy to set up a call between your office, Amec Foster Wheeler, and Ameresco to discuss the adequacy of these measures as well as the other listed species that are potentially present at the project site. I look forward to hearing from you.
Thanks,

Ryan Hale, PWS
Senior Project Manager/Permitting Specialist Amec Foster Wheeler Environment & Infrastructure, Americas

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M +1 (401) 369-2480
ryan.hale@amecfw.com<mailto:ryan.hale@amecfw.com>
www.amecfw.com<http://www.amecfw.com/>

From: Zyko, Karen [mailto:Karen.Zyko@ct.gov] On Behalf Of DEEP Nddbrequest
Sent: Tuesday, April 25, 2017 1:13 PM
To: Hale, Ryan <ryan.hale@amecfw.com<mailto:ryan.hale@amecfw.com>>
Subject: RE: Candlewood Solar Request for NDDB Review

Ryan, We received your NDDB Request for the Candlewood Solar Project in New Milford. Please provide me with more information on how will you be protecting the vernal pool that was identified on the property?

Karen Zyko
Department of Energy & Environmental Protection Bureau of Natural Resources, Wildlife Division
79 Elm St, Hartford, CT 06106
860-424-3378

From: Hale, Ryan [mailto:ryan.hale@amecfw.com]
Sent: Monday, April 17, 2017 2:55 PM
To: DEEP Nddbrequest <DEEP.Nddbrequest@ct.gov<mailto:DEEP.Nddbrequest@ct.gov>>
Subject: Candlewood Solar Request for NDDB Review

To whom it may concern,
Please find attached a request for NDDB review of a proposed ground-mounted solar array project and associated electrical interconnect route in New Milford, CT. Should you have any questions or require additional information, please call or email at the contact information below.
Sincerely,

Ryan Hale, PWS
Senior Project Manager/Permitting Specialist Amec Foster Wheeler Environment & Infrastructure, Americas

271 Mill Road
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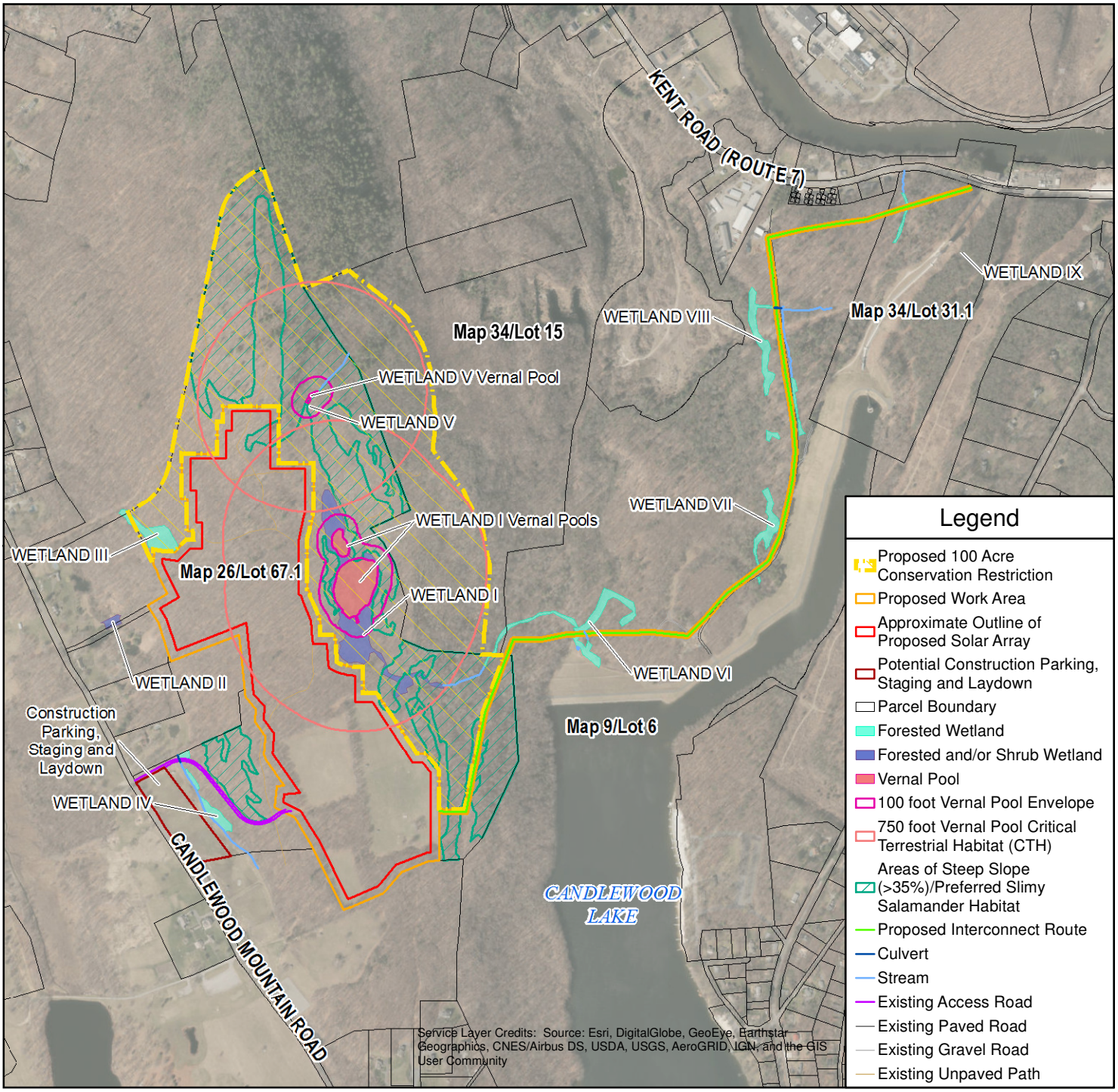
D +1 (978) 392-5370
M +1 (401) 369-2480
ryan.hale@amecfw.com<mailto:ryan.hale@amecfw.com>
www.amecfw.com<http://www.amecfw.com/>



PROPOSED CONSERVATION RESTRICTION

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Location of Site

Notes & Sources

0 1,000 Feet

N

amec foster wheeler
Amec Foster Wheeler
Environment & Infrastructure, Inc.
271 Mill Road
Chelmsford, MA 01824
(978) 692-9090

FIGURE 1

H:\Ameresco\NewMildford_CT\Task2\MXD\Fig1_ProposedConservationRestriction.mxd October 23, 2017 DWN: emily.gardiner CHKD: AKN

October 27, 2017

Connecticut Department of Energy & Environmental Protection
Natural Diversity Data Base
79 Elm Street
Hartford, CT 06106-5127
Attn: Ms. Dawn McKay

Re: Candlewood Solar LLC
20 MW Solar Photovoltaic Project
New Milford Assessor Map parcels 26/67.1, 9/6, and 34/31.1
Candlewood Mountain Road, New Milford, Connecticut
NDDB Preliminary Assessment No.: 201703524

Dear Ms. McKay:

This letter and associated attachments are being filed with Connecticut Department of Energy & Environmental Protection (CT DEEP) Natural Diversity Data Base (NDDB) in response to NDDB's letter dated July 10, 2017 regarding review of the above referenced project. Specifically, this letter and associated attachments address the additional information requested by NDDB along with information on further project developments.

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), Candlewood Solar LLC's (Candlewood Solar) environmental consultant subcontracted with Oxbow Associates, Inc. (Oxbow) to assist with the assessment of potential impacts to state-listed species, including conducting field survey activities for the slimy salamander, habitat assessments for the Golden-winged warbler and other species, and development of protection plans. **Attachment A** contains Oxbow's Statement of Qualifications and resumes of the lead biologists who performed work on the Project.

Vernal Pools

During a site visit on September 26, 2017, as part of the Connecticut Siting Council (CSC) proceedings, a review of Wetland complex 1 was conducted by Mr. Brian O. Butler, M.S. of Oxbow and Dr. Michael Klemens. During the subsequent CSC evidentiary hearings, it was concluded that a cryptic vernal pool is located within Wetland complex 1 based on this site visit.

On September 30, 2017, Mr. Butler of Oxbow completed a delineation of the cryptic vernal pool within Wetland 1 (see **Attachment B)**. The delineation resulted in the identification of two (2) cryptic vernal pools within Wetland 1. Figure 1 included in **Attachment B** shows the location and boundaries of the cryptic vernal pool depressions, 100 foot envelopes and 750-foot critical terrestrial habitat (CTH).

In response to this new information and to minimize potential impacts on vernal pools and slimy salamander habitat (see below), Candlewood Solar has revised the site plan layout. The revised

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overall site plan (Drawing E-100) and detailed site plan (Drawing E-101) are included in **Attachment C**. Maps of wetlands 1 and V showing the revised site plan, location of the vernal pools, 100 foot envelopes, and 750 foot CTHs are included in **Attachment D**. The revised layout avoids direct impacts to the vernal pools and 100 foot envelopes.

As noted above, the two cryptic vernal pools are part of a single wetland system (Wetland 1). As such, we have evaluated potential impacts to them together, as a single system and not in isolation. The CTH (area within 100-750 feet of the pool's edge, Calhoun and Klemens (2002) page 16) covers an area of approximately 63.08 acres. Development within the CTH (tree clearing area and solar array development) will cover approximately 26.14 acres or 41.4 percent of the CTH projected by the Wetland 1 vernal pools ("CVP" and "CVPx"). However, with the reduction of alteration of CTH projected by Wetland 5 vernal pool (17.3%), the aggregate alteration of CTH for the pools on the Site is 31.6%. It should be noted that approximately two (2) percent of the CTH associated with Wetland 1 vernal pools (1.36 acres) is currently altered field area and the proposed condition will largely mimic the existing condition in that area in that it will remain field.

As a result of revisions to the facility layout, there have been changes to the proposed impacts to CTH associated with the previously identified vernal pool associated with Wetland V. The proposed limits of disturbance completely avoid Wetland V, including the vernal pool depression and the 100-foot vernal pool envelope. The CTH covers an area of approximately 43.45 acres. Development under the reduced footprint design now under consideration within the CTH (tree clearing area and solar array development) will cover approximately 7.5 acres or 17.3 percent of the CTH. As depicted on Figures 1 - 3 in **Attachment D**, the CTH associated with the vernal pool in Wetland V overlaps with the CTH associated with the cryptic vernal pools in Wetland 1 (approximately 11.94 acres of overlap). Based on the overlapping, continuous, unfragmented system between the CTHs, these areas likely function as a single, mutually supportive system and therefore, should be assessed together. As a single system, the CTH totals approximately 94.57 acres and the development area (tree clearing area and solar array development) within the single combined CTH system totals approximately 29.91 acres or 31.6 percent.

While the post-development condition of the cryptic vernal pool in Wetland 1 exceeds the recommended less than 25% developed area guideline set forth in Table 3 on page 18 of Calhoun and Klemens (2002), nonetheless, the net impact to the aggregate, overlapping CTH associated with the three pools is 31.6% and, unlike more conventional development (commercial, residential) when completed, the array field will not have many of the legacy mortality sources (to vernal pool wildlife) that result from conventional projects built in close proximity to vernal pools. Specifically, there will be no ongoing road mortality to frogs, toads or salamanders. Similarly, no animals will be captured in storm gutters and deep sump catch basins. Although the array field will not provide terrestrial habitat, it will impede, but not prevent movement by salamander species and will do little to impede nocturnal migration by wood frogs.

The Project will adhere to the following recommended measures prescribed for Tier I vernal pools identified by Calhoun and Klemens (2002) to the extent practicable as follows:

- No impacts will occur to the vernal pool depression or 100-foot envelope (see **Attachment D**).
- The total length of roads within the 750-foot critical terrestrial habitat (CTH) will be the minimum required to access the northern and eastern portions of the array for maintenance or emergency activities.

- 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 Best Management Practices (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 vernal pool habitat.
- No lighting will be required for the Project.

Tree Roosting Bats and Bat Protection

Tree clearing will be completed during the hibernation or winter range period (Hoary, Red and Silver-haired) for bats and tree clearing will be limited to November 1 through March 30. The implementation of this measure would be protective of those species of bats identified as well as other bat species.

Additionally, large diameter coniferous and deciduous trees and wooded buffers adjacent to wetland areas will be maintained whenever possible. Based on the revised site plan layout, forested buffer areas vary by wetland.

Finally, as noted in NDDB's July 10, 2017 letter, "Bat houses installed in the area where trees will be removed will help in the conservation of tree roosting bats." As a conservation measure, Candlewood Solar will mount between 20 and 30 bat houses on east facing, mature tree trunks, not less than 12 feet from the ground in areas where trees are removed.

Eastern Box Turtle

Oxbow performed site examinations of the Project area for the eastern box turtle. As noted in Oxbow's report (see **Attachment E**), Oxbow "had no direct observations of the species during multiple days of suitable field conditions on the property. Similarly, no persistent indicators, such as carapaces or other durable indicators of the species' presence that are often encountered in areas of moderate or high-density habitation by box turtles were observed." However, Oxbow identified two areas of potential box turtle habitation that warrant some degree of protection related to construction. These two areas are Area 1. approximately 1,500 linear feet along the electrical interconnect route, east of Rocky River and northwest of the reservoir on a mesic forested slope that has well developed soils, leaf litter and understory vegetation and Area 2. the solar array field. See **Attachment E**, Eastern Box Turtle, *Terrapene c. carolina*: State Special Concern, for additional information.

In order to minimize potential impacts to turtles, Candlewood Solar, will commit to implementing the following best management practices (BMPs), protection measures, and mitigation:

- After tree clearing activities, but prior to April 15th, a perimeter of standard silt fence and haybales will be installed along the limit of work (LOW) to enclose the solar array field and active construction areas. A perimeter of standard silt fence and haybales will also be installed to enclose the 30-foot work corridor from Rocky River near the Candlewood Reservoir Dam east, and northeast to the intersection with the paved service road (approximately 1,500 feet) during construction and installation of the electric interconnection route. The perimeter, exclusionary barrier will be a minimum of 20 inches tall and will be secured to and remain in contact with the ground. The exclusion barrier will be maintained, and inspected weekly through the construction period to

secure any gaps or openings at ground level to exclude any box turtles that may seek the disturbed soils for nesting substrate, or random wanderings of extant mountain turtles. Plastic web or netted silt-fence will not be used. Silt fencing that is used for exclusion will be removed as soon as the area is stable to allow for reptile and amphibian passage to resume.

- Any turtles encountered within the immediate work area will be carefully moved to an adjacent area outside of the excluded area and fencing inspected to identify and remove access point.

- Any sightings of box, wood or spotted turtles will be reported and documented with the NDDB (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).

- No heavy machinery or vehicles will be parked beyond the LOW and exclusion barrier.

- If felling of trees adjacent to brooks and streams is required, they will be cut to fall away from the waterway and will not be dragged across the waterway and stumps will not be removed from banks.

- To the extent practicable, usage of equipment within 50 feet of streams and brooks will be avoided and limited.

- A qualified herpetologist will be hired to periodically be on site to ensure these protection guidelines remain in effect and prevent turtles from accessing the work area and incidental mortality. This is especially important in the month of June when turtles are selecting nesting sites.

- A designee of the Site Contractor will search the day's work area each morning prior to any work being done during the active season (Apr. 15 – Oct. 31).

- All staging and storage areas, outside of previously paved locations, regardless of the duration of time they will be utilized, will be reviewed to remove individuals and exclude them from re- entry.

- All construction personnel will be trained on the potential presence of listed threatened and endangered species likely to occur in the Project area. Training will include species descriptions, agency and project contacts if a species is identified, reporting and notification requirements, and instructions for relocation if a species is found inside work areas. Additionally, laminated, instructional posters will be placed at the construction trailer(s).

The solar array facility will be completely surrounded by a 7-foot high chain link fence. Box turtles will be excluded from the fenced in array field by a counter-sunk fence. The secured fence is intended to avoid the potential for mowing mortality to turtles that would access the array with a raised fence configuration. However, the shade aprons, outside the fence, that will be maintained not more than twice annually and only between November 1 and April 15, will be available for feeding, thermoregulation, and possibly nesting.

Finally, an approximate 100-acre contiguous, steep slope, mature forest perpetual conservation parcel will be created to preserve slimy salamander habitat, conserve existing unfragmented forest, and protect existing wetlands and vernal pools.

Wood Turtle

Based on Oxbow's site examinations and examination of orthophotography and USGS topographic mapping of the Project area, Oxbow concluded that protective measures beyond contractor education are not applicable to this species relative to this Site. See **Attachment E**, Eastern Box Turtle, *Terrapene c. carolina*: State Special Concern, for additional information.

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

A habitat assessment of the four (4) existing pastures located within the array parcel was conducted on September 12 and 22, 2017 by Mr. Butler of Oxbow. The four (4) existing pastures / fields both within the proposed Solar Array area and adjacent to Candlewood Mountain Road were examined for characters potentially compatible with golden-winged warbler breeding habitat. A report summarizing the results of the habitat assessment is included in **Attachment E** (Species Account Responses to NDDB Preliminary Comment Letter (7/10/17); (non-Chiropteran species), dated October 20, 2017).

Based on Oxbow's examination of the fields, Oxbow concluded that suitable breeding habitat for golden-winged warbler is wholly absent from the premises due to a lack of open canopy habitat in a suitable early to mid-successional seral stage to support the species, and no protective measures are provided.

Candlewood Solar does not propose any BMPs to avoid or mitigate potential impacts to the species from the Project, however, as discussed above regarding bat protection measures, tree clearing will be conducted between November 1 and March 30. Following tree cutting, the Site will continue to be an active construction area through Project completion, which will deter birds seeking nest sites from locating within the Project Site.

State Threatened *Plethodon glutinosus* (slimy salamander):

Site surveys dedicated to assessing habitat and documenting individual salamanders were undertaken on September 12, 22, 30 and October 4, 2017. A report summarizing the results of the site surveys is included in **Attachment E** (Species Account Responses to NDDB Preliminary Comment Letter (7/10/17); (non-Chiropteran species), dated October 20, 2017).

It should be noted, that while the results of the site surveys conducted on September 12, 22, 30 and October 4, 2017 did not identify any individuals, a dark, blackish salamander was observed when a decaying log was turned during a site visit on September 26th as part of the Connecticut Siting Council (CSC) proceedings. The individual exhibited rapid movements and in consultation with Dr. Michael Klemens, the individual is thought to have been either a lead-back salamander or potentially a juvenile slimy salamander. As noted, the specimen escaped capture and as such, the species was not confirmed.

Despite the absence of direct observation at the Site, the habitat quality, dimensions and adjacency to other occurrences suggests the species is likely to persist at this locus, and particularly in the higher quality, older growth, steep, rocky forested sections. These areas, exhibiting a 35% grade, rocky limestone slopes and mature, predominantly deciduous forest were

mapped via a raster analysis by Dr. Tigran Tadevosyan, Oxbow Associate Scientist. These zones match the documented habitat preferences by this species at the extreme of its currently documented eastern range (excepting historic occurrence in southern New Hampshire). On October 4, 2017, Mr. Smyers and Oxbow Environmental Scientist, Kyle Cormier (B.S.) examined the site to collaborate slope raster analysis conducted by Dr. Tadevosyan. A map of the raster analysis along with a log of documentary ground photos is included in **Attachment F**.

Attachment F to these responses contains maps of all areas identified as prime or preferred slimy salamander habitat on the Site. These areas of prime habitat were determined based on the presence of mature deciduous woodland with slopes greater than 35%. However, the entire site is potential habitat for the slimy salamander. Photographs documenting these findings keyed to the maps included in **Attachment F** are also included in **Attachment F**.

The solar array site totals approximately 163.5 acres. Of this approximately 20.9 acres (12%) are pasture land that is unsuitable habitat for slimy salamander. Oxbow mapped 32 acres (19.5%) of steeply sloped, high quality habitat for *P. glutinosus* in the northerly portion of the site, including areas east of the cryptic vernal pools (Wetland 1). An additional 15.6+/- acres (9.5%) of similar, high-quality habitat is southeast of the cryptic pools and bisected by Wetland 1 and its outfall stream to Rocky River. Finally, an area of qualitatively suitable high-quality habitat in the southwestern portion of the property is 2.8+/- acres (1.7%). In total, 50.4+/- acres (30%) of high quality slimy salamander habitat has been mapped for the property. See **Attachment E,** Appendices A and B.

Approximately 0.45+/- acre of high quality habitat will be altered by the realigned interconnection route. However, whereas the alignment is thirty (30) feet wide there will be secondary habitat effects, but this narrow cut is unlikely to preempt long-term movement by slimy salamander or other herpetozoan species.

The following table summarizes the previously identified high quality (HQ) slimy salamander habitat that will be lost through the proposed tree clearing and solar array development.

Habitat Zone	**Steep Forest**	**0 - 100 foot buffer**	**100 - 200 foot buffer**	**200 - 300-foot buffer**
Acres	1.0 (1.4)*	2.9	6.4	7.1
% of HQ Habitat Impact	2 (2.8)*	0	0	0
% HQ Habitat Impact inclusive of additional approximate 27 acres	1 (1.8)*	0	0	0

(X.X)* Includes work within the interconnection corridor.

Based upon the tabular data above, 2% of on-site high quality slimy salamander habitat will be directly altered. Using a denominator value inclusive of the additional, out-of-property land to be conserved, 1% of the available high-quality habitat will be altered. The values derived inclusive of the interconnection corridor are included parenthetically.

The currently proposed limit of work will, in large part avoid the encumbrance of steeply sloped forested habitat, with a concentration of the condensed solar array occupying the less significant,

low-slope mesic forest and pasture land habitats. Additionally, the reduced panel field footprint will result in a concomitant reduction in tree clearing north and east of the array; contributing to the protection of potential or actual habitat for slimy salamander and other species.

Work within steep rocky forest for the interconnection alignment has been modified to take advantage of a relict haul road feature therein, thus reducing the number of trees to be cut and the ground surface disturbance necessary for pole installation.

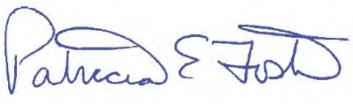
A total or one (1) acre of steeply sloped woodland will be occupied within the limit of work for the arrays. Approximately 0.45 acre will be altered within the revised interconnection alignment.

The conservation of 100 acres of contiguous forested habitat, approximately 75% of which is steeply sloped, mature forest will preserve slimy salamander habitat in perpetuity. Any direct loss of habitat cannot readily be mitigated against, with the exception of additional land protection as proposed. However, whereas there are numerous literature citations relating the quality and quantity of downed course woody debris (DCWD) to the density of plethodontid and other terrestrial salamanders, the careful distribution of small bore (< 6" diameter) logs cut from the site into the 35m/115 ft. zone between array activity and steeply sloped woodland may provide a mitigating effect against buffer impacts to forested salamander habitat.

Finally, proposed protective measures targeting other species including the installation of a perimeter siltation fence exclusion barrier may reduce incidental mortality to slimy salamanders wandering from intact woodland to the array project area.

Should you have any questions regarding the information presented in this letter or its attachments, please do not hesitate to contact Ms. Tricia Foster at (978) 761-2450; tricia.foster@woodplc.com or Mr. Rob Bukowski at (978) 392-5307; rob.bukowski@woodplc.com.

Sincerely,
Amec Foster Wheeler Environment & Infrastructure, Inc.



Tricia Foster
Senior 2 Planner

Rob Bukowski, PE
Project Manager

Attachments

Attachment A: Oxbow Associates, Inc. Statement of Qualifications and Resumes
Attachment B: Oxbow Associates, Inc., Site Visit Summary – Cryptic Vernal Pool Delineation – September 30, 2017
Attachment C: Revised Overall Site Plan Layout and Revised Detailed Site Plan Layout
Attachment D: Vernal Pool Mapping
Attachment E: Oxbow Associates, Inc., Species Account Responses to NDDB Preliminary Comment Letter (7/10/17); (non-Chiropteran species), October 20, 2017
Attachment F: Oxbow Associates, Inc., Log of Documentary Ground Photos

cc: J. Lindsay, Candlewood Solar LLC
B. Butler, Oxbow Associates, Inc.

Attachment A

Oxbow Associates, Inc.
Statement of Qualifications and Resumes

Qualifications and Representative Project Experience

Oxbow Associates, Inc. (OA) is a Massachusetts based wetlands and wildlife consulting company providing **Environmental Permitting** services to clients in Massachusetts and adjacent states. OA conducts **Wetland Delineations** and **Wildlife Evaluations**, provides **Wetland Replication and Restoration** services, and offers **Sound Permitting Strategies** for diverse projects ranging from private clients to transportation, photovoltaic generation, water development, gas and electrical transmission and government.

OA specializes in evaluating habitat for regulated species, whether plant or animal, and finding solutions to match projects with the applicable performance standards applicable to the project. We were able to gain approvals for a 9 MW wind generation project located on a property with 23 state-listed plant and animal species along with hundreds of other successful permitting accomplishments.

OA integrate our full GIS and drone capabilities into our wetlands related services as well as our rare and endangered species work as applicable. Our greater than 50 years combined experience studying the behavior and ecology of rare and endangered wildlife species, with peer reviewed publications and cooperative work with government agencies provides us with a reputation for understanding the ecology of the subject species and an ability to provide tenable solutions to potentially fatal conflicts between project needs and regulatory requirements.

OA's wildlife services include site habitat evaluations, preparation of formal habitat assessment documents and client representation. We conduct dedicated field studies for salamanders, frogs, turtles, snakes, rare vascular plants and terrestrial and aquatic invertebrates. Our rare species work incorporates some projects include field surveys, live trapping and drift-fence surveys, and/or radio-telemetry in order to facilitate project approvals. In addition to our regular Massachusetts wildlife studies and permitting, we have conducted field studies and permitting for rare wildlife projects in Rhode Island, New Hampshire, Vermont, Connecticut, and New York.

Wildlife

OA has extensive, first-hand field experience assessing habitats for and working with state and federally protected vascular plant, invertebrate, reptile, and amphibian species. These skill sets allow us to efficiently obtain regulatory approvals under the applicable regulatory requirements. OA permitted more than 85 linear miles of access road improvements, all without the need for issuance of a permit ("no take" determinations) on behalf of a major utility from 2009 through 2014.

OA also obtained full approvals for a mountain, 9 MW wind generation project on a site supporting 23 State-Listed plants and animals in Massachusetts. We have also provided consulting services for numerous solar projects within rare species habitat including various rare amphibians, reptiles, and plants.

Amphibians and Reptiles

OA's experience working with a wide range of reptiles and amphibians that are associated with unique habitat features enables us to provide our clients with realistic expectations and creative solutions, whether dealing with mountain ridges inhabited by timber rattlesnakes (*Crotalus horridus*) or diamondback terrapins (*Malaclemys t. terrapin*) within coastal rivers, salt marsh creeks, and shorelines.

OA was the lead biological consultant on the oversight and monitoring of the construction of specialized amphibian habitat for the Norumbega Reservoir Covered Storage Tank Project, Weston, MA. This project was the first of its kind in Massachusetts and required a Regulatory Variance from the Massachusetts DEP. Our work included using drift fences to collect data on pre-construction amphibian community, collecting baseline data on amphibian communities at nearby reference (control) ponds, overseeing the construction of a new seasonal pond (vernal pool), importing amphibian eggs and invertebrates to the new pond, and monitoring the new pond and reference ponds for two seasons following construction. The project resulted in the establishment breeding populations of four amphibian species and a diverse community of invertebrates within the created habitat.

We completed a multi-year mortality avoidance plan for eastern box turtles (*Terrapene c. carolina*) at the New Bedford Airport (MA) in association with runway and approach improvements at the facility. This work also included construction oversight for 3 years during construction of new turtle nesting areas as mitigation (3 areas, 2-5 acres each) and periodic telemetric monitoring of 25-30 eastern box turtles that were equipped with radio-transmitters.

We provided field studies and permitting services for two solar arrays within habitat for eastern box turtle and several state-listed moth species in the SouthCoast area of Massachusetts.

OA has conducted surveys for eastern worm snakes (*Carphophis amoenus*) and eastern box turtles for a utility project involving construction of a new substation in western MA. Our survey methods and level of effort was approved by the NHESP and we were able to confirm that worm snakes would not be impacted. Similarly, OA developed an eastern box turtle protection plan (including radio-telemetry tracking of turtles) that was approved by the NHESP and completed late 2015.

Invertebrates

OA staff also has extensive experience working with rare invertebrates. Whereas many rare invertebrates require specific host plants, we often conduct botanical surveys targeting host plants to determine the likelihood of habitat for rare invertebrates. Some of these projects are relatively acute, requiring preliminary research of ecological requirements of the targeted rare species, followed by limited hours in the field assessing the botanical community and identifying areas containing specific larval host plant species.

As an example of a smaller scale project, OA conducted a habitat assessment for two rare moths at a proposed solar site in Chicopee, MA. At this property two state-listed moth species had been documented to occur near the project site. OA conducted an assessment of the vegetation cover in and around the work area and reviewed the

scientific literature in reference to these species' habitat requirements and submitted a habitat assessment and impact analysis to the NHESP. The project was approved with a vegetative management plan that will maintain a diverse community of dense herbaceous groundcover.

In a more complicated project involving 14 state-listed invertebrates (1 beetle and 13 moths) at a 54-acre property in Edgartown, MA, OA conducted site inspections, literature reviews, prepared a habitat assessment and impact analysis, and negotiated with the NHESP. We obtained a Conservation and Management Permit for the residential, bayside subdivision, now under construction.

In other projects, we have conducted extensive field searches for rare aquatic invertebrates such as the coastal amphipod (*Synurella chamberlaini*). This species only occurs in two municipalities of MA and one of the known populations is on a municipal property used for air transportation. OA was responsible for implementing a monitoring plan using standardized sampling.

Botanical

OA has conducted vegetation cover type mapping throughout much of New England and has performed species specific botanical surveys within a wide variety of habitats. OA has experience working with dozens of regionally rare plants and has a library of technical botanical keys including the most recent publications on regional plant taxa.

OA conducted seasonal surveys for climbing fern (*Lygodium palmatum*) throughout a 97 acre parcel with two intersecting electric transmission ROWs that was being evaluated for equipment upgrades, reconductoring, and construction of a new substation. We found over 100 patches of climbing fern and developed a plant avoidance plan including monitoring and post-construction evaluations. Our plan was approved by NHESP and construction is now complete.

OA conducted an emergency, out-of-season review and survey for an endangered plant species and prepared a Conservation and Management Permit for the benefit of the Town of Aquinnah in 2015 to allow the planned displacement of the historic Gay Head Lighthouse to proceed within the preferred schedule.

OA conducted field surveys for two rare plants [New England Blazing Star (*Liatris noveae-angliae*) and bushy rock-rose (*Crocanthemum dumosum*); for an electric transmission line project in Barnstable, MA requiring an increase in ground-to-conductor separation. Some of the plants occurred within an area targeted for earth excavation and grading. OA prepared a mitigation plan and a transplant protocol, worked with engineers and construction managers to develop a construction methodology, implemented the mitigation plan to avoid known specimen locations wherever possible, and transplanted specimens from within the work area. This plan included close oversight by OA's botanical specialist, with monitoring for rare plant survival/condition and invasive plants. The NHESP-approved transplant work was completed in late 2012 and monitoring was completed in 2016 in accordance with the permit.

Abbreviated Client List (not necessarily included above)

Holyoke Gas & Electric Dept., other confidential, regional natural gas and electric clients, NextSun Energy, SunBug Solar, Framingham Conservation Commission, Acton Natural Resources Dept., Friends of the Herring River (Wellfleet), Pioneer Valley Energy Center, A. Duie Pyle, The Berkshire School, US Army Corps of Engineers, US Fish and Wildlife Service, MA Division of Fisheries and Wildlife, MASS DCR, Massport/ Logan Int. Airport, New Bedford Regional Airport, Barnstable Airport, Dept. of the Army, Onset Water and Fire District, Borrego Solar, Melink Corp, TRC Solutions, Tighe & Bond, Epsilon Associates, Inc. , VHB, Inc., BSC, Inc., Grafton& Upton Railroad, City of Quincy, Manchester Sand & Gravel, as well as numerous other commercial, residential and municipal clients.

OXBOW ASSOCIATES, INC.

Wetlands Delineation and Permitting • Wildlife Studies • Herpetology • Vernal Pool Ecology

BRIAN O. BUTLER

PROFESSIONAL SUMMARY

Mr. Butler is the President of Oxbow Associates, Inc., a wetlands and wildlife consulting company providing a broad range of ecological, permitting and design services and specializing in rare and herpetofaunal wildlife study and mitigation. He is also Past President of the AMWS (Assoc. Mass. Wetlands Scientists). He has studied the ecology of herpetozoan species, and in particular turtles, native to the Northeast for more than twenty-five years. He has conducted field research with nine of the ten turtle species native to southern New England and has conducted studies and field investigations of timber rattlesnakes, copperheads, rare salamanders and a variety of vernal pool taxa. Mr. Butler has also conducted taxon-specific and general habitat and impact assessments for development projects in Massachusetts and surrounding states.

Mr. Butler has consulted on projects with potential impacts to rare wetlands wildlife species ranging from subdivisions, to highway expansion, utility rights-of-way, military base conversions and solar, wind and natural gas energy facilities.

Mr. Butler conducts wetlands delineations, permitting and design of wetland restoration and mitigation plans and reviews wetland delineations for conservation commissions in Massachusetts and has completed the forty-hour federal wetland delineation course and was certified by the State of New Hampshire as a Wetland Scientist (Cert. #115, no longer maintained). He sits on advisory committees for state wildlife regulations and policies and review of individual herpetozoan listing status and testifies as an expert witness in legal proceedings and before the Mass. State Legislature on environmental legislation. Mr. Butler is an approved Primary Rattlesnake Monitor for construction projects in New Jersey.

EDUCATION

M.S., Biology, Worcester State College, 1991. Thesis: "Early Post-Emergent Behavior of Hatchling Blanding's Turtles".

B.S., Marine Biology, Southampton College, 1980 Senior Project: "Spatial Partitioning Among Juvenile Rockfishes (genus *Sebastes)* in a California Kelp Forest Community".

PUBLICATIONS, Peer Reviewed

Tadevosyan, T., J. Lorch, **B. O. Butler**. (in press) *Lampropeltis triangulum Triangulum* (Eastern Milk Snake). Snake Fungal Dermatitis. Herpetological Review.

Buhlmann, K. A., S. L. Koch, ***B. O. Butler***, T. D. Tuberville, V. J. Palemo, B. A. Bastarache, and Z. A. Cava. 2015. Reintroduction and Head-starting: Tools for Blanding's Turtle (*Emydoidea blandingii*) Conservation. Herpetological Conservation and Biology 10 (Symposium):436-454.

Smyers, S. D., B. A. Trowbridge and ***B. O. Butler*** 2011. Leaf Diet Affects Growth of a Shredder, *Limnephilus indivisis,* From a Seasonal New England Pond. *Northeast Naturalist* 18(1) pp.27-36.

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Rhodin, A. G. J. and ***B. O. Butler*** 1997. The Painted Turtles (*Chrysemys picta*) of New England: Taxonomy, Morphometrics, and Reproduction. *In*: Status and Conservation of Turtles of the Northeastern United States. T. F. Tyning, ed. Serpent's Tale, Lanesboro, Minn. 53 pp.

Butler, B. O. and T. E. Graham. 1995. Early Post-Emergent Behavior and Habitat Selection in Hatchling Blanding's Turtles, *Emydoidea blandingii*, in Massachusetts. *Chelonian Conservation and Biology*. 1:187-196.

Butler, B. O. and T. E. Graham. 1993. Tracking Hatchling Blanding's Turtles with Fluorescent Pigments. *Herpetological Review*. 24:21-22.

Graham, T. E. and ***B. O. Butler.*** 1993. Metabolic Rates of Wintering Blanding's turtles. *Comparative Biochemistry and Physiology A*. 106A:663-665.

Linck, M. H., J. A. DePari, ***B. O. Butler***, and T. E. Graham. 1989. Nesting Behavior of the Turtle *Emydoidea blandingii*, in Massachusetts, *Journal of Herpetology* 4:442-444.

PUBLICATIONS, Popular Press

Butler, B. O. 1996-1999. **Wildlife Watch**. Biweekly natural history column for *Worcester Telegram and Gazette, Montachusett Section.*

Butler, B. O. and D. M. Carroll. 1995. Sculpted Shadows: Massachusetts' Wood Turtles. *Massachusetts Wildlife* 45:17-20, 30-31.

Butler, B. O. 1992. Bay State Blanding's Turtles. *Massachusetts Wildlife*. 42:17-25.

CONSERVATION & MANAGEMENT PERMITS (Pursuant to MA Endangered Species Act) – Examples

- ***Communication and LIDAR Tower***. *Holyoke, MA*- 21 State Listed Species associated with mountain site. **Marbled and Jefferson Salamander, Timber Rattlesnake, N. Copperhead, Black Rat Snake, et al.**
- **Richmond Nantucket.** Nantucket Blue-eyed Grass, Nantucket, MA
- **Pocomo Rd., Nantucket.** St. Andrews Cross (End.), Nantucket Bl-eyed Grass, N. E. Blazing Star.
- ***Pioneer Valley Energy Center***, Westfield, MA. 400MW Electr. Generation Plant – E. Box Turtle
- ***Lowes Flatbed Distribution/Transloading Facility***, *Westfield, MA* - Eastern Box Turtle
- ***Pine Hill*** *Rare Plant Translocation – Cape Cod, MA NSTAR Utility.*
- ***The Berkshire School***, *$100,000,000 Capital Improvements Project* 2007 - 2013 Timber Rattlesnake
- ***HiRock YMCA***, Mt. Washington, MA – Timber Rattlesnake
- ***Avalon Acton*** – 400 Unit Residential Development, Blue-Spotted Salamander (complex)
- ***Oceanfront Home***, *Truro, MA*- Broom Crowberry, Box Turtle, Spadefoot Toad, N. Harrier.
- ***Connet Woods***, *Rochester, MA* – Eastern Box Turtle
- ***The Bay Club at Mattapoisett***, *Mattapoisett, MA* – Eastern Box Turtle, *et al.*
- ***New Bedford Business Park***, *Dartmouth & New Bedford, MA* - Eastern Box Turtle
- ***Groton/Ayer, MA*** - *Residential Projects.* Four projects/900 acres, 5 species.
- ***Sugarloaf Estates***, *Douglas, MA* – Marbled Salamander

PRESENTATIONS and ABSTRACTS

"Tenets and Tactics for Linear Project Permitting: Rare and Endangered Species. NECA Environmental Conference, June 15, 2017, Marlborough, MA.

"Ecology and Assessment of Massachusetts Vernal Pools". Assoc. of Mass. Wetlands Scientists, Berlin, MA. ***Butler, B. O.*** and S. D. Smyers. April, 2016 and April 2017.

"Establishment of a Population of Blanding's Turtle (*Emydoidea blandingii*) at Assabet River National Wildlife Refuge: Headstarting and Translocation". **B. Butler**, et al., Northeast Natural History Conference, Apr. 13-15, 2013, Springfield, MA.

"Reintroduction as a Conservation Tool for Blanding's Turtles". K. Buhlmann, T. Tuberville, S. Koch, Brian Butler, V. Palermo, J. St. Sauver, and E. McGourty. **Joint Meeting of Ichthyologists and Herpetologists**, July 12, 2010. Providence, RI.

"Preliminary Biological Monitoring Results From a Created **Vernal Pool**: Using Supplemental Benthic Material and Amphibian Eggs / Larvae to "Jumpstart" the Establishment of Functioning Vernal Pool Habitat". Society of Wetlands Scientists, New England Conference, Nov. 14, 2002, Worcester, MA.

A Four-Year Study of the Efficacy of Barriers for the Prevention of Road Mortality to **Spotted Turtles** (*Clemmys guttata*), A species of "Special Concern" in Massachusetts. Society of Wetlands Scientists, New England Conference, Oct. 19, 2001, Worcester, MA.

Abstract: "Population Structure in a Nest Site-Subsidized Population of **Blanding's Turtle**". Blanding's Turtle Workshop. Bell Museum of Natural History. May, 1998.

Abstract: "Impacts of Military Activities - **Blanding's Turtles** at Fort Devens, Massachusetts, USA", presented at Conservation, Restoration, and Management of Tortoises and Turtles: An International Conference. State University of New York, Purchase, 1993.

"Status and Conservation of the **Blanding's Turtle** in Massachusetts", Mass. Audubon Conference on Conservation of Turtles of the Northeast, Worcester State University, 1993.

EMPLOYMENT

Principal, **Oxbow Associates, Inc.**, 1991 - present.
Boston University, 1986-1991.
VA Research Facility, 1981-1986.

AFFILIATIONS & CERTIFICATIONS

Association of Massachusetts Wetlands Scientists – **President 2011-13, Vice President, 2009-11**
Certified NH Wetland Scientist – Cert. No. 115 (Certification no longer maintained)
40 hr. USACOE Federal Wetland Delineation
Blanding's Turtle Working Group
Massachusetts Herpetological Working Group
Mass. Vernal Pool Technical Advisory Committee
Mass. Endangered Species Act Regulatory Revision Advisory Committee
Belmont (MA) Cons. Comm., Assoc., 1990-92.
Lunenburg, MA Cons. Comm., Assoc. 1994-96.
Society of Wetlands Scientists
Society for the Study of Amphibians & Reptiles
Chelonian Research Foundation - Reviewer of submitted papers.
10hr. OSHA Construction

CURRENT USFW PROJECT: 2007- Present
Translocation of Blanding's Turtles to Assabet River NWR – Using 20 years of field study from a Blanding's turtle donor site, a multi-year cooperative project with USFWS, Savannah River Ecology Labs, Bristol Agricultural High School and Oxbow Associates, Inc., intended to found and accelerate establishment of a Blanding's turtle population at a newly acquired eastern Massachusetts National Wildlife Refuge, now in its 10th year with more than 1,000 hatchlings translocated to date.

Professional References

1. Stephanie Koch, PhD
   U.S Fish and Wildlife
   73 Weir Hill Road, Sudbury, MA 01776
   (978)-579-4036
   Stephanie_koch@fws.gov

2. Matthew A. Waldrip, PWS, CESSWI
   Eversource
   247 Station Drive, SE270, Westwood, MA 02090
   (781)-866-1014
   Matthew.waldrip@eversource.com

3. Andrea Desilets Agostino
   National Grid
   40 Sylvan Road, E3.687
   (781)-907-3649
   Andrea.agostino@nationalgrid.com

Brian Butler, MS – Qualifications and Experience Summary

Contact Information:

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President, Oxbow Associates, Inc.
P.O. Box 971, Acton, MA 01720 (mail)

629 Massachusetts Avenue, Suite 201
Boxborough, MA 01719 (FedEx/physical address)

Professional Experience:

- **Founder and Partner of Oxbow Associates, Inc.**
- **Master of Science Degree, Worcester State University**
- **Eight peer-reviewed publications**
- **Twenty-five (25) years Ecological and Environmental Consulting Experience**
- **Designs and conducts field studies of rare and endangered species for energy, commercial,government and residential development in New England**

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SCOTT D. SMYERS

PROFESSIONAL SUMMARY

Scott Smyers is a Senior Scientist at Oxbow Associates, Inc. specializing in rare amphibian and reptile study and mitigation. He received his M.S. from the University of Louisiana and has studied the behavior and ecology of amphibian and reptile species native to the eastern United States for more than 20 years. He has conducted field research on five species of turtles in southern New England including radio-telemetry on four state-listed species of turtle in Massachusetts including the Blanding's turtle (*Emydoidea blandingii*), eastern box turtle (*Terrapene carolina carolina*), wood turtle (*Glyptemys insculpta*), and spotted turtle (*Clemmys guttata*: formerly listed). Mr. Smyers has also worked on habitat studies and surveys for snakes including rare species such as timber rattlesnake (*Crotalus horridus*), copperhead (*Agkistrodon contortrix*), and eastern worm snake (*Carphophis amoenus*). He has also worked with rare amphibians such as the marbled salamander (*Ambystoma opacum*), Jefferson and blue-spotted salamander (*A. jeffersonianum X laterale*), and identified new locations of a rare plant, the climbing fern (*Lygodium palmatum*)

In addition, Mr. Smyers has assisted with amphibian and reptile studies on different state land managed by the Department of Conservation and Recreation, as well as land managed by private organizations such as The Nature Conservancy, and The Nantucket Conservation Foundation. Much of his research efforts have focused on Wachusett Mountain State Reservation where he works with volunteers from the Friends of Wachusett Mountain and the island of Nantucket where he works on ecological projects as part of the Nantucket Biodiversity Initiative.

Mr. Smyers has provided consultation services for projects such as residential developments, utility easements, roadway improvements, airport expansions, and development within military facilities with potential impacts to wetlands and rare wildlife. He also conducts wetland delineations, permit preparation, and designs wetland mitigation and restoration areas. He is also active in research associated with the ecology of organisms that inhabit ephemeral ponds, specifically amphibians, reptiles, and insects.

EDUCATION

M.S. Biology, University of Louisiana at Lafayette, 2000. Thesis: *Behavioral Interactions Within and Between Species of Juvenile Pond-Breeding Salamanders*.
B.A. Environmental Science, University of Massachusetts at Lowell, 1993.

PUBLICATIONS

Smyers, S.D. A. Mckenna-Foster, and J.D. Shuster. 2014. Quantification of color pattern variation in the common garter snake (Thamnophis sirtalis) from two coastal islands and mainland, Massachusetts, USA. Herpetological Review 45(1) 8-12.

Smyers, S.D., Trowbridge, B.A., Butler, B.O. 2011. Leaf diet affects growth of a shredder, *Limnephilus indivisus*, from a seasonal New England pond. Northeastern Naturalist 18(1):27-36.

McKenna-Foster, A. and **Smyers, S.D.** 2010. *Hemidactylium scutatum* (Four-toed Salamander) USA: Massachusetts: Nantucket Co. Range extension. Herpetological Review 41(2): 240-241.

Jones, M.J. and **Smyers, S.D.** 2010. Occurrence of pond-breeding amphibians at alpine ponds in the White Mountains, New Hampshire. Northeastern Naturalist 17(1):161-166.

Rubbo, M.J., Townsend, V.R., **Smyers, S.D.,** and Jaeger, R.G. 2003. An experimental assessment of invertebrate/vertebrate predation: the interaction between wolf spiders (*Gladicosa pulchra*) and terrestrial salamanders (*Ambystoma maculatum*). Journal of Zoology 261:1-5. **Cover Photo**

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Smyers, S.D., Rubbo, M.J., Townsend, V.R., and Swart, C.C. 2002. Intra- and interspecific characterization of burrow use and defense by juvenile ambystomatid salamanders. Herpetologica 58:422-429.

Smyers, S.D., Rubbo, M.J., and Jaeger, R.G. 2001. Behavioral interactions of juvenile ambystomatid salamanders in a laboratory experiment. Copeia 101:1017-1025.

Smyers, S.D. and Rubbo, M.J. 2001. Using a water bath to rear eggs of the marbled salamander, *Ambystoma opacum*. Herpetological Review 32:96-97.

Rubbo, M.J., Townsend, V.R., Jr., **Smyers, S.D.**, and Jaeger, R.G. 2001. The potential for invertebrate-vertebrate intraguild predation: the predatory relationship between wolf spiders (*Gladicosa pulchra*) and ground skinks (*Sincella lateralis*). Canadian Journal of Zoology 79:1465-1471.

SELECTED INDEPENDENT RESEARCH

Comprehensive Snake Survey of Nantucket Island (2007-present). Designed and directed a mark-recapture snake survey at five locations across Nantucket Island. The survey resulted in confirming the presence of smooth green snake, which had not been confirmed for many years as well as marking hundreds of garter snakes as well as other common species (ring neck, eastern ribbon, milk snake, and northern water snake), as part of an anticipated long-term study.

Alpine Pond Ecological Monitoring of the White Mountains, NH (2007-present). Mr. Smyers is working with Beyond Ktaadn on long-term ecological monitoring of mountain ponds and comparing these systems with other seasonal ponds in other parts of New England.

GRANTS, AWARDS and RESEARCH SUPPORT

Nantucket Biodiversity Initiative, 2007-2013: Snake Ecological Study: Nantucket, Massachusetts

Nantucket Biodiversity Initiative, 2009 ($1,500): Amphibian call monitoring using digital recording research program on Nantucket Island

Appalachian Mountain Club, Worcester Chapter, 2009 ($1,500): Amphibian call monitoring using digital recording at Wachusett Mountain (funding to Friends of Wachusett Mountain)

Nantucket Biodiversity Initiative, 2008 ($300): Proposed Invertebrate Identification and Collection Preparation: Nantucket, Massachusetts

Healey Public Service Grant, University of Massachusetts at Lowell, 2007($10,000.00): Public outreach and field research activities at Wachusett Mountain State Reservation: Developing an incubator of ideas (Principal Investigator: Brian Bettenourt, Ph.D. UMass Lowell, **Field Coordinator: Scott Smyers** Friends of Wachusett Mountain)

Nantucket Biodiversity Initiative, 2007 ($300): Proposed Ant Identification and Collection Preparation: Nantucket, Massachusetts

OTHER FUNDING FOR MISCELLANEOUS RESEARCH

Oxbow Associates, Inc., 2000-present – funded multiple research endeavors; University of Louisiana, Graduate Student Organization, 1998, 1999, 2000; Silvio O. Conte National Wildlife Refuge, 1996; Towermarc Corporation, 1996; The Nature Conservancy, 1995; Fugro East, Inc., 1995

PROFESSIONAL AFFILIATIONS

American Society of Ichthyologists and Herpetologists
Chelonian Conservation Foundation
Maine Entomological Society
Society for the Study of Amphibians and Reptiles
The Herpetologist's League
The Cambridge Entomological Club
Vermont Entomological Society

EMPLOYMENT

Oxbow Associates, Inc. (2000-present)
University of Louisiana (1998-2000)
Lelito Environmental Consultants (1993-1995)
ENSR Consulting and Engineering (1995-1998)
Fugro East, Inc. (currently AECOM)

Attachment B

Oxbow Associates, Inc.
Site Visit Summary – Cryptic Vernal Pool Delineation –
September 30, 2017

Site Visit Summary – Cryptic Vernal Pool Delineation – September 30, 2017

Site conditions: Overcast, with about 45 min of heavy rain with thunder 1100-1200h. Had rained previous overnight as well. Temps 68F initially, 64F at departure ca. 2000h.

Methods: An area of palustrine forested wetland constituting the headwaters of an intermittent stream drainage located in the easterly portion of the proposed solar array parcel associated with the Candlewood Solar Photovoltaic Project were surveyed for the purpose of mapping the horizontal extent of functional vernal pool habitat within an area identified as "cryptic" vernal pool habitat per Calhoun and Klemens (2002) criteria. The "cryptic" descriptor refers to functional areas meeting the physical and biological criteria for vernal pools in the northeast, but which are not necessarily distinct "pools". In this instance an area of forested wetland drained by a historic farmer's ditch within a jurisdictional wetland was found to implicitly provide a suitable hydroperiod and other attributes to function as vernal pool(s).

The headwater wetland was examined for features indicative of persistent standing water likely to provide aquatic habitat for egg deposition and development, or shallows for submerged basking and feeding by amphibian larvae. In general, these areas have sparse or no vegetation, except on hummocks, or have annual or otherwise adapted plant species, such as skunk cabbage, *Sphagnum* and other semi-aquatic mosses, nettles and cordgrass. Horizontal moss lines, and moderately deep organic muck are additional criteria used to establish the probable horizontal extent of functional vernal pool habitat.

Flags were hung in vegetation at the boundary deemed to be the upland limit of vernal pool (seasonally aquatic) habitat. Whereas two distinct areas of cryptic vernal pool habitat were found to occur, separated by a poorly defined intermittent stream, two alpha-numeric flag series were placed in the field. The southerly basin was termed: CVP1 through CVP45 (with intermediate flags CVP 29A and 29B making a total of 47 boundary flags). The northerly basin was labeled as CVPx1 through CVPx20.

Approximately four (4) field hours were spent within and among the two above referenced pool features. The flags were placed according to the self-prescribed criteria described above and recovered using a hand held Trimble GEO XH device with sub-foot accuracy. Not all flags recovered were within the one-foot accuracy threshold due to satellite constellation availability, particularly with steep adjacent topography, but all flags appear to be within less than two feet accuracy.

Cover objects were turned within the pools and within the adjacent upland. Red and lead-back salamanders (*Plethodon cinereus*), post-metamorphic and adult Ambystomatid salamanders were also noted. Persistent vernal pool indicators (caddis fly larval cases, Pisid clams) were searched for casually, however whereas other compelling indicators of vernal pool status were apparent, this was not a focal effort.

Notations on the extant, in-pool vegetation were taken as were representative photographs and photographs linked to particular flag locations.

Observations: Whereas both CVP and CVPx are of similar general character and derivation, they are described jointly below.

The cryptic vernal pools examined have characteristics of having been manipulated during agricultural use of the land. Neither basin is a classic, parabolic pool. Rather, both have a subtle, mote-like band over most of their perimeters suggesting historic ditching to facilitate their drainage to an intermittent stream that drains south-southeast from "CVP", to a steep escarpment northeast of a large pasture and ultimately off the subject property to Rocky River.

The two pools are joined by a subtle stream located between the vicinity of CVPx flag 19 and flags 6 and 7 of CVP. The interior of the pools both have elevated areas that though jurisdictional wetland, do not appear to experience regular or prolonged flooding. Neither pool exhibits significant depth, owing to the invert outlet of the famer's ditch on the south limit of CVP. Nonetheless, the hydroperiod of both basins appears to be protracted, presumably flooding in mid-fall and drying in late July or August of most years. The presence of marbled salamanders (*Ambystoma opacum*) within and adjacent to the basins as well as an observation of four-toed salamander (*Hemidactylium scutatum*) [9/26/17] within CVP and post-metamorphic spotted salamander (*Ambystoma maculatum*) near the pools all support the presumption of function and productivity of these pools.

In addition to the mole salamanders referenced above, additional indicators of vernal pool function were observed during the Connecticut Siting Council (CSC) site review on September 26, 2017. Post metamorphic wood frogs (*Lithobates sylvaticus*), an eft stage eastern newt (*Notopthalmus viridescens*), and sub-adult American toads (*Anaxyrus americanus*) were also observed within CVP during the CSC site review.

Both pools have an estimated maximum depth of approximately one (1) foot; the majority of the inundated zones being significantly shallower. However, as stated above, the average annual hydroperiod appears protracted within both pools, and may be caused by an aquaclude of underlying bedrock or the dense organic muck that belies both basins.

Whereas the two vernal pools are almost immediately adjacent to one another, and are confluent during periods of seasonally high surface water, they have been merged in the drawing of the VPE and CTH polygons associated with them.

Figure 1, showing the relative locations of the two pools is attached herewith.

Photo 1. Southern portion of pool CVP showing decaying woody debris, mosses, hummocks and barren areas of extended inundation.

Photo 2. Cordgrass (*Spartina pectinata*), nettles, mosses and hummocks in the interior of CVP.

Photo 3. CVPx near flag CVPx3 showing hummocks, downed logs, shrub islets and areas of persistent standing water.

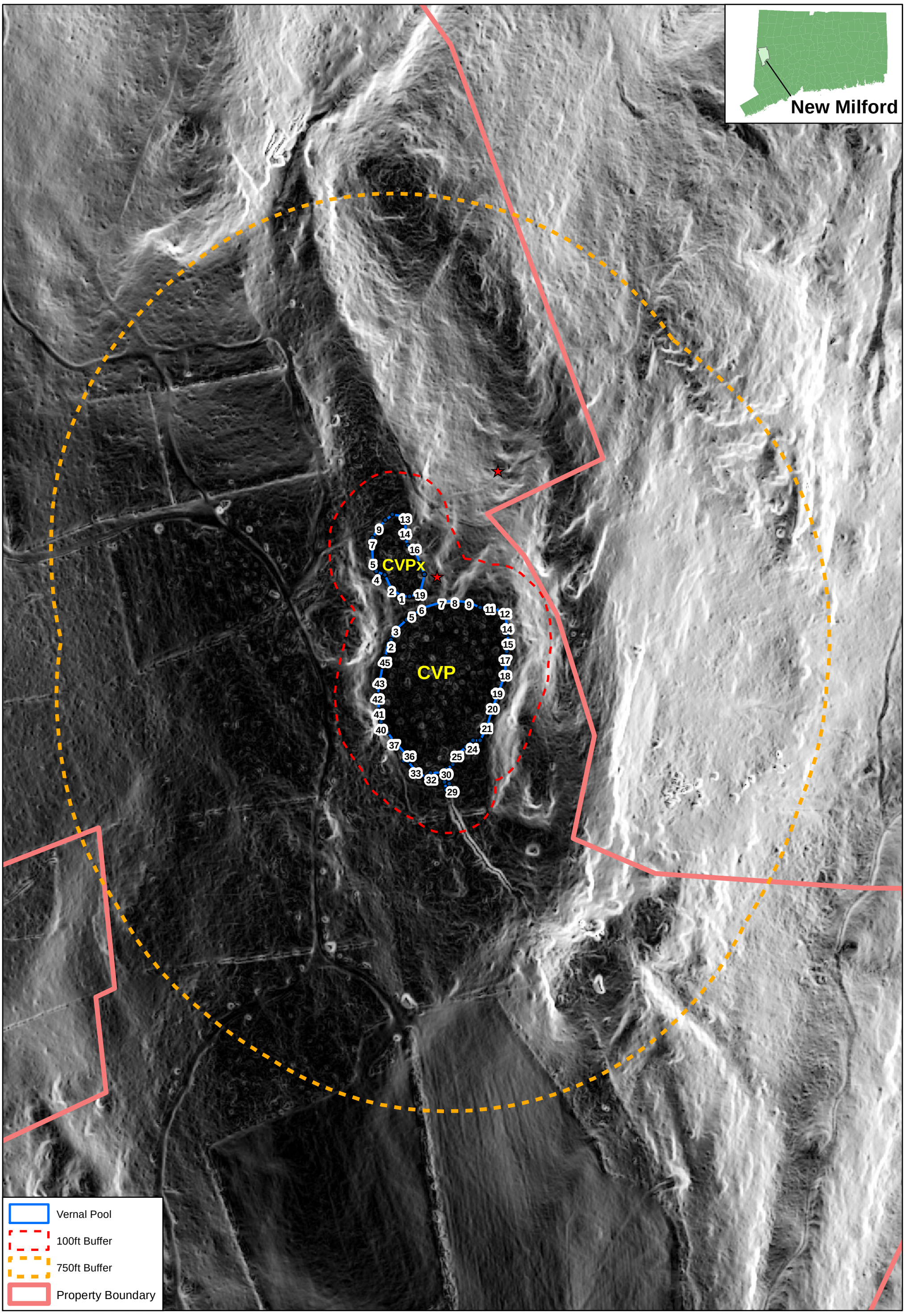
Photo 4. Northwest portion of CVPx.

Citations:

Calhoun, A. J. K. and M. W. Klemens. 2002. Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, NY. 57 pp.

Attachments:

Figure 1. Cryptic Vernal Pool Delineation, Orthophotographic, enhanced slope raster figure, Oct. 5, 2017



Oxbow Associates, Inc.
Wetlands Delineation and Permitting
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WEB: www.oxbowassociates.com

N
W E
S

1:2,400

1 inch = 200 feet

0 200 400
Feet

Figure 1. Cryptic Vernal Pool Delineation
Candlewood Mtn. PV
Candlewood Mtn. Rd
New Milford, CT
October 5, 2017

Attachment C

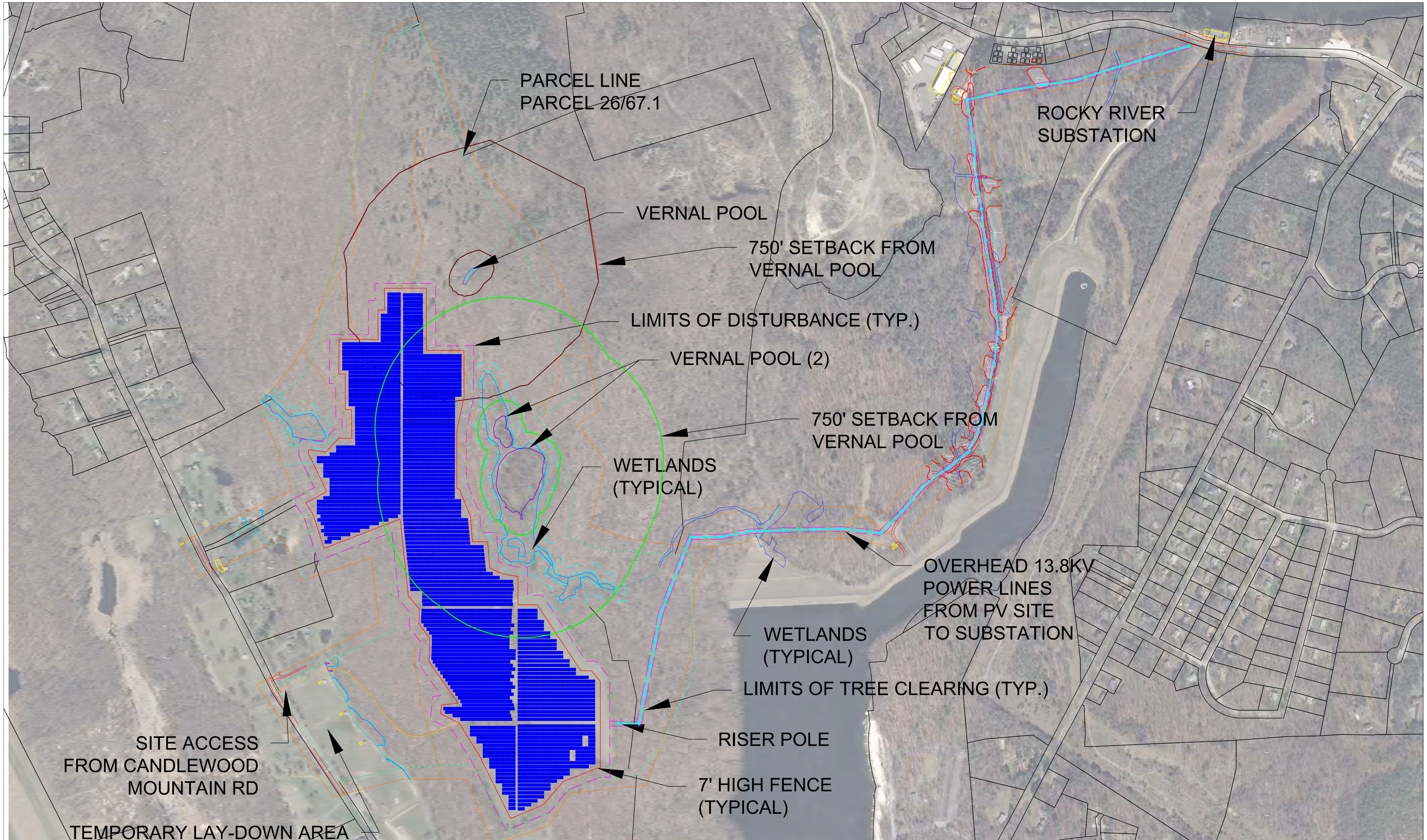
Revised Overall Site Plan and Revised Detailed Site Plan

POWER TABLE														
ARRAY				MOUNT			INVERTER					TRANSFORMER		
LOCATION	# OF MODULES	MODULE TYPE	kWp	AZIMUTH	TILT	TYPE	TYPE	SIZE (kW)	QTY	EFFICIENCY	kW AC	TYPE	QTY	RATING
ARRAY 1	60,000	LG400N2W-A5	24,000.00	180	12	GROUND-MOUNT	EATON POWERXPERT	2500	8	98.0%	20,000	PAD MOUNT	8	(8) 2500KVA 570V/13.8kV

NOT FOR CONSTRUCTION

NOTES:

1. SHADING PATTERN IS CALCULATED BASED ON JUNE 21ST FROM 7:30AM TO 4:30PM, FEBRUARY 21ST FROM 9AM TO 3PM, AND DECEMBER 21ST AT NOON, TAKING INTO ACCOUNT SITE LATITUDE AND LONGITUDE.
2. GROUND SNOW LOAD = 35 PSF, ASCE 7-10 BASIC WIND SPEED = 105 MPH (RISK CATEGORY 1), EXPOSURE TYPE C.



NEW MILFORD CANDLEWOOD SOLAR - OVERALL SITE PLAN

SCALE: 1"=300' WHEN PRINTED 36" x 24"

1" = 300' 0 300 600 900 1200 1500 1800

N

SCALE: 1" = 300' WHEN PRINTED 36" x 24"
DRAWN BY: PD
CHECKED BY:
DATE: 10/20/2017
REVISIONS:

NEW MILFORD SOLAR PV
197 CANDLEWOOD MOUNTAIN RD
NEW MILFORD, CT

GROUNDMOUNT PV ARRAY
24,000 kWp DC STC PV ARRAY INSTALLATION

PHOTOVOLTAIC ARRAY LAYOUT

AMERESCO
111 Speen Street, Suite 410
Framingham, Massachusetts 01701
(508) 661-2200

E-100

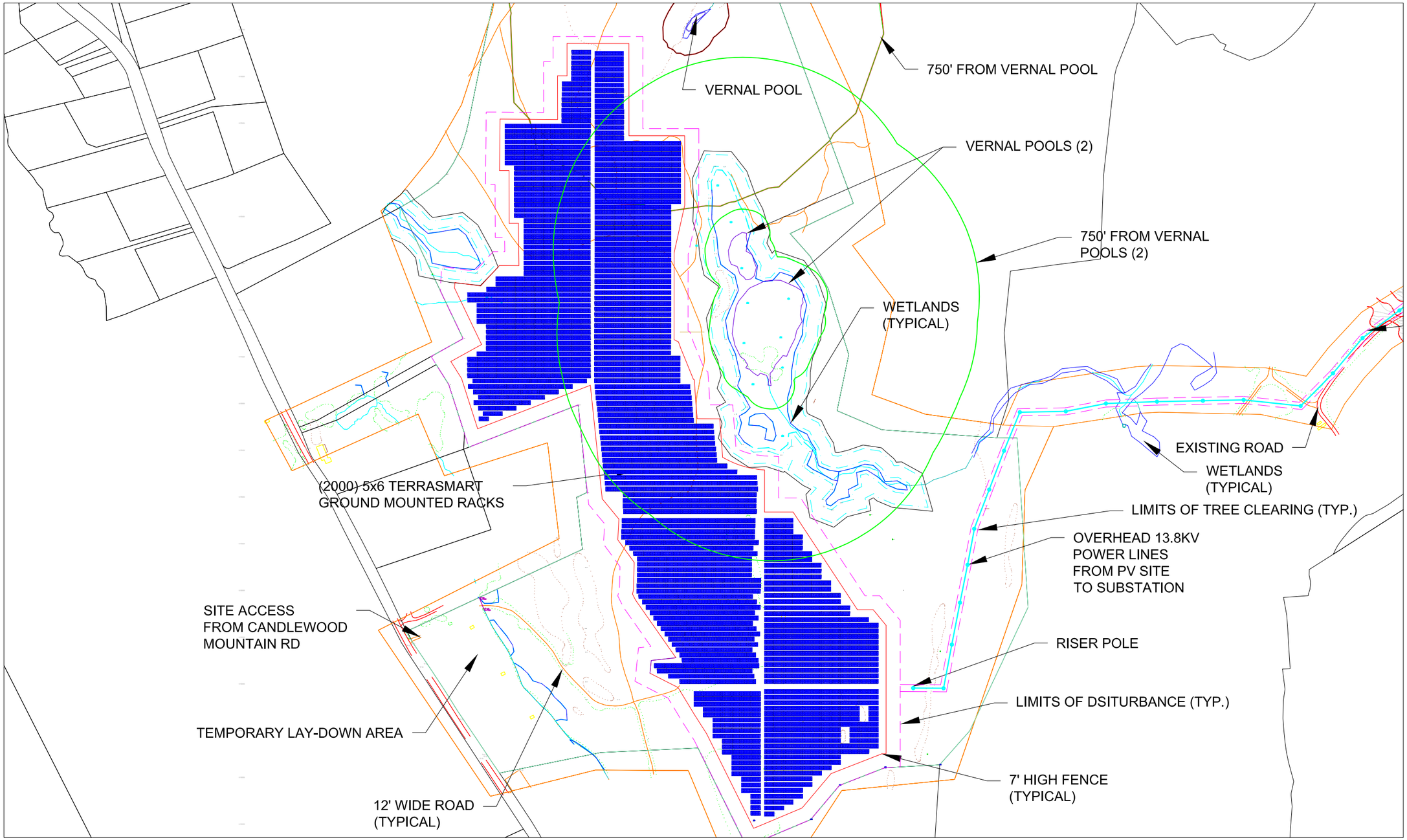
NOT FOR CONSTRUCTION

POWER TABLE														
ARRAY				MOUNT			INVERTER					TRANSFORMER		
LOCATION	# OF MODULES	MODULE TYPE	kWp	AZIMUTH	TILT	TYPE	TYPE	SIZE (kW)	QTY	EFFICIENCY	kW AC	TYPE	QTY	RATING
ARRAY 1	60,000	LG400N2W-A5	24,000.00	180	12	GROUND-MOUNT	EATON POWERXPERT	2500	8	98.0%	20,000	PAD MOUNT	8	(8) 2500KVA 570V/13.8kV

NOTES:

1. SHADING PATTERN IS CALCULATED BASED ON JUNE 21ST FROM 7:30AM TO 4:30PM, FEBRUARY 21ST FROM 9AM TO 3PM, AND DECEMBER 21ST AT NOON, TAKING INTO ACCOUNT SITE LATITUDE AND LONGITUDE.
2. GROUND SNOW LOAD = 35 PSF, ASCE 7-10 BASIC WIND SPEED = 105 MPH (RISK CATEGORY 1), EXPOSURE TYPE C.

SCALE: 1" = 200' WHEN PRINTED 36" x 24"
DRAWN BY: PD
CHECKED BY:
DATE: 10/19/2017
REVISIONS:



NEW MILFORD CANDLEWOOD SOLAR - DETAILED SITE PLAN - SOLAR ARRAY
SCALE: 1"=200' WHEN PRINTED 36" x 24"

1" = 200'
0 200 400 600 800 1000 1200

N

NEW MILFORD SOLAR PV
197 CANDLEWOOD MOUNTAIN RD
NEW MILFORD, CT

GROUNDMOUNT PV ARRAY
24,000 kWp DC STC PV ARRAY INSTALLATION

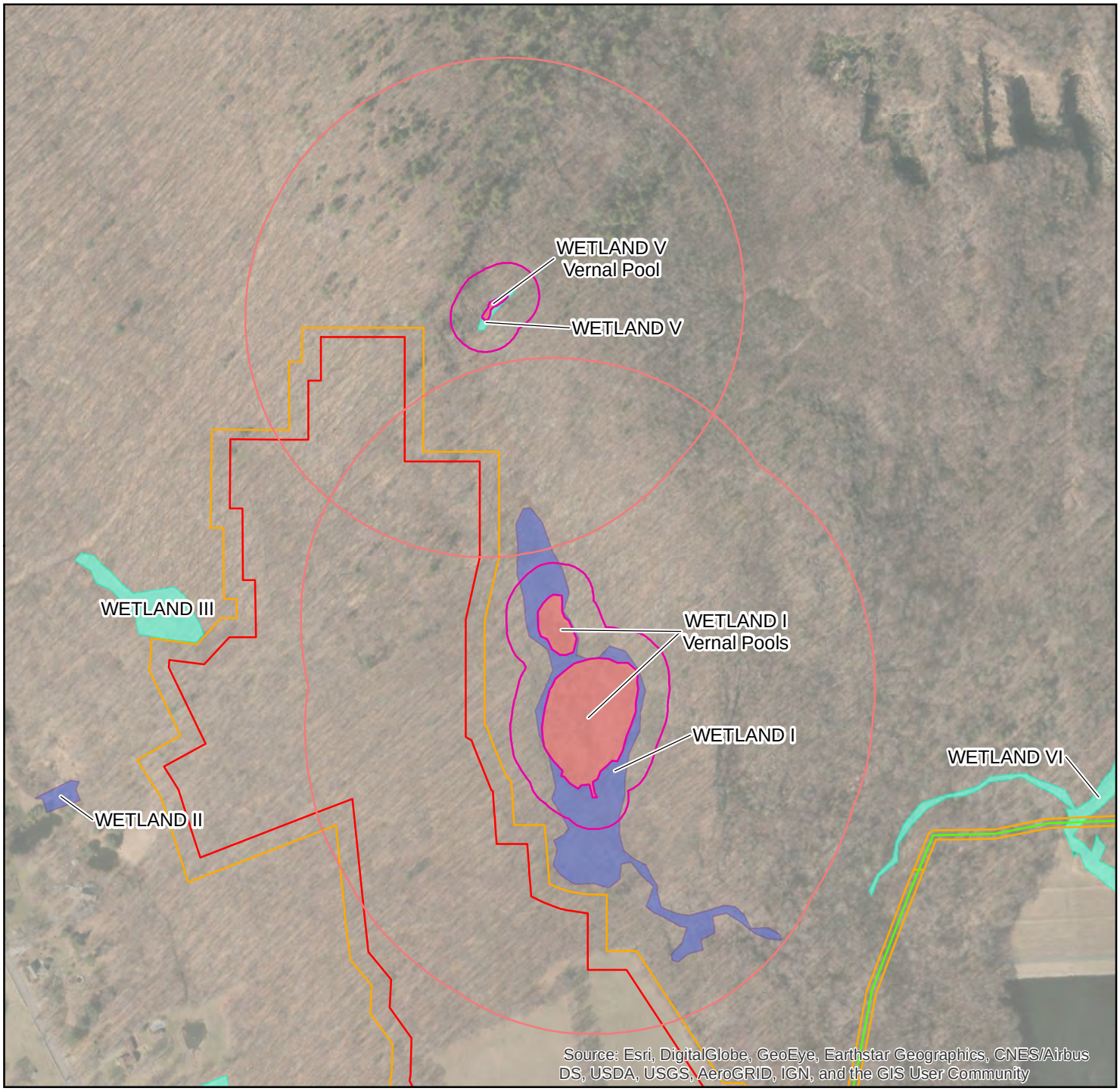
PHOTOVOLTAIC ARRAY LAYOUT

AMERESCO
111 Speen Street, Suite 410
Framingham, Massachusetts 01701
(508) 661-2200

E-101

Attachment D

Vernal Pool Mapping



VERNAL POOL ANALYSIS MAP

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Location of Site

Legend

- Proposed Interconnect Route
- Approximate Outline of Proposed Solar Array
- Proposed Work Area
- Forested Wetland
- Forested and/or Shrub Wetland
- Vernal Pool
- 100 foot Vernal Pool Envelope
- 750 foot Vernal Pool Critical Terrestrial Habitat (CTH)

Notes & Sources

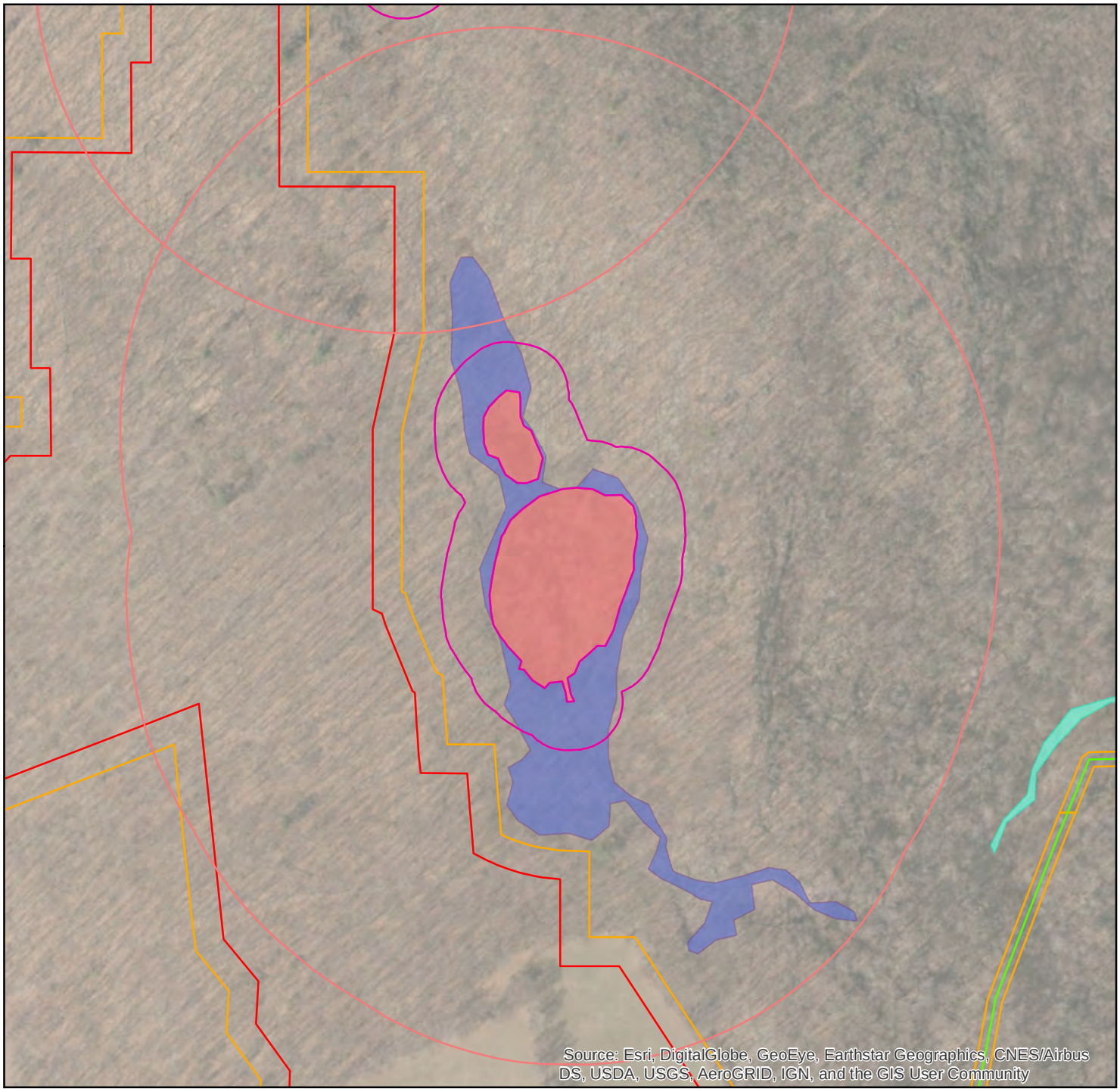
0 460 Feet

N

amec foster wheeler
Amec Foster Wheeler
Environment & Infrastructure, Inc.
271 Mill Road
Chelmsford, MA 01824
(978) 692-9090

FIGURE
1

H:\Ameresco\NewMildford_CT\Task2\MXD\VP_Fig1_VernalPoolAnalysisMap.mxd October 23, 2017 DWN: emily.gardiner CHKD: AKN



WETLAND I VERNAL POOL ANALYSIS MAP

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Location of Site

Legend

- Proposed Interconnect Route
- Approximate Outline of Proposed Solar Array
- Proposed Work Area
- Forested Wetland
- Forested and/or Shrub Wetland
- Vernal Pool
- 100 foot Vernal Pool Envelope
- 750 foot Vernal Pool Critical Terrestrial Habitat (CTH)

Notes & Sources

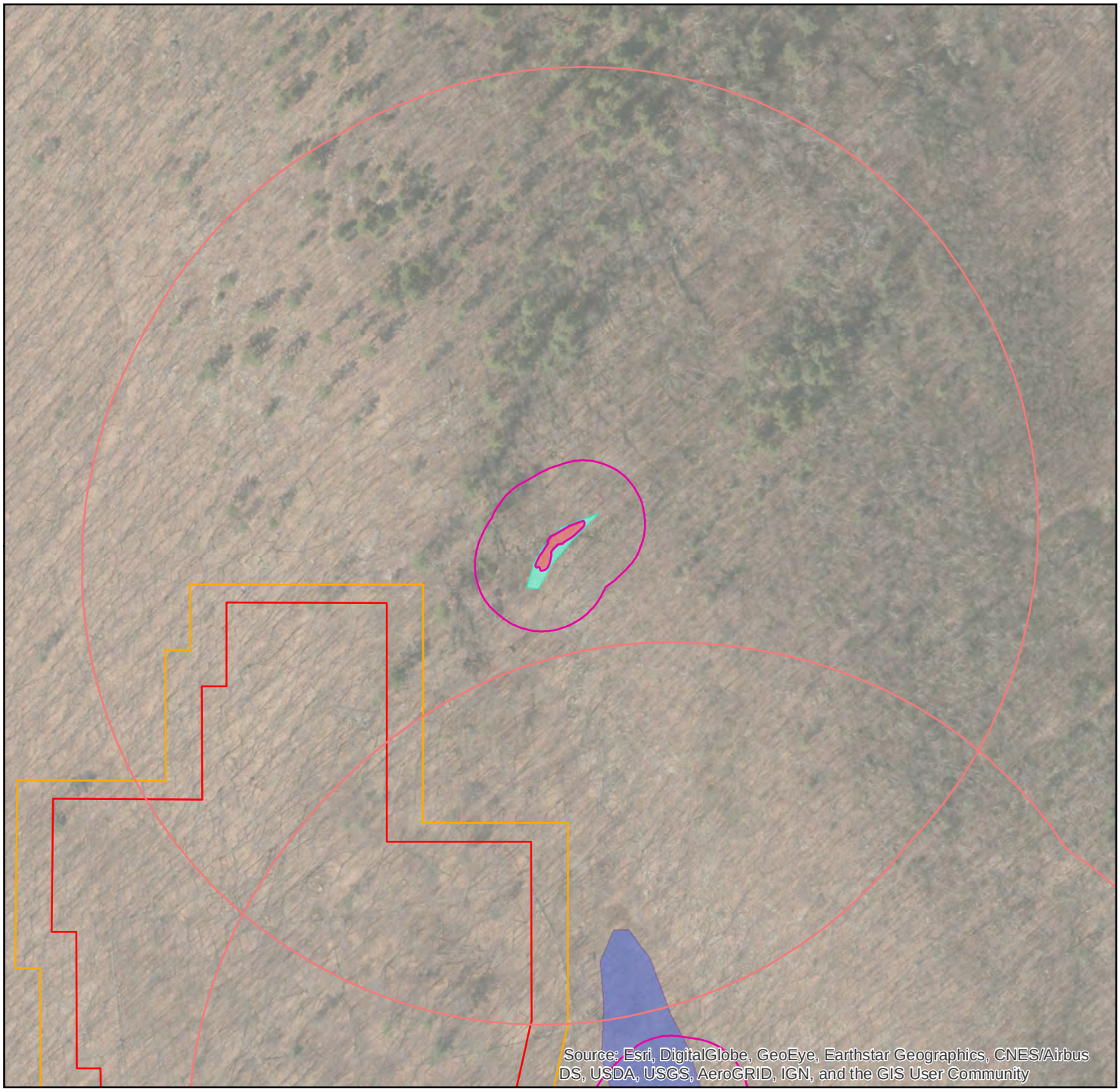
0 300 Feet

N

amec foster wheeler
Amec Foster Wheeler
Environment & Infrastructure, Inc.
271 Mill Road
Chelmsford, MA 01824
(978) 692-9090

FIGURE 2

H:\Ameresco\NewMildford_CT\Task2\MXD\VP_Fig2_VernalPoolAnalysisMap_WetlandI.mxd October 23, 2017 DWN: emily.gardiner CHKD: AKN



WETLAND V VERNAL POOL ANALYSIS MAP

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Location of Site

Legend

- Approximate Outline of Proposed Solar Array
- Proposed Work Area
- Forested Wetland
- Forested and/or Shrub Wetland
- Vernal Pool
- 100 foot Vernal Pool Envelope
- 750 foot Vernal Pool Critical Terrestrial Habitat (CTH)

Notes & Sources

0 240 Feet

N

amec foster wheeler
Amec Foster Wheeler
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FIGURE 3

H:\Ameresco\NewMildford_CT\Task2\MXD\VP_Fig3_VernalPoolAnalysisMap_WetlandV.mxd October 23, 2017 DWN: emily.gardiner CHKD: AKN

Attachment E

Oxbow Associates, Inc.
Species Account Responses to NDDB Preliminary Comment Letter (7/10/17); (non-Chiropteran species),
October 20, 2017

OXBOW ASSOCIATES, INC.

Wetlands Delineation and Permitting • Wildlife Studies • Herpetology • Vernal Pool Ecology

Species Account Responses to NDDB Preliminary Comment Letter (7/10/17)
(non-Chiropteran species)

October 20, 2017

Golden-winged Warbler, *Vermivora chrysoptera*: State Endangered

Introduction

Correspondence from NDDB (July 10, 2017) indicated the potential for habitat suitable for breeding by the golden-winged warbler may be present on the Site. Specifically, three areas of pastures are located within the southern Solar Array area totaling approximately 15.9 acres, and a fourth area of pasture approximately 5 acres in size is located within the Site property, bordering Candlewood Mountain Road. Available aerial imagery does not conclusively define the specific, current seral stages of these fields, which apparently led the NDDB to speculate as to whether there is suitably advanced old-field habitat extant, and therefore the potential for golden-winged warbler to be seasonally present on the premises.

There is an abundance of field habitat within two miles of Candlewood Mountain, including the Candlewood Airport; much of this cover type occurs in expanses of greater than fifty (50) contiguous acres. In that regard, there may be recent occurrences of breeding by golden-winged warbler in the township area that we are not specifically aware of. A quarter century ago two of about two dozen documented or probable breeding sites for golden-winged warbler were documented from New Milford (Bevier, 1994).

Habitat Features and Species Ecology

Golden-winged warblers are migratory forest dwelling birds with rigid requirements for breeding habitat. Breeding occurs exclusively in areas that have typically been disturbed and abandoned for a period of two, to less than twenty years. The species' preferences are also compounded by their inclination toward wet successional meadows and scrub habitat and the fact that breeding habitat typically borders on mature deciduous forest where the species spends its non-breeding summer foraging period. Scrub-shrub habitat areas greater than five (5) acres are typically selected, though transmission rights-of-ways are also utilized (Confer, 1992) for placement of nests on or near the ground.

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The broadest causal agent for the species rarity in Connecticut and New England is the regression of farms and field to forest habitat following the post-colonial agricultural period. Forbush (1929) characterized the species as already uncommon in Connecticut nearly a century ago: "*Connecticut*: Uncommon to rare migrant and summer resident, very local."

The species was drawn to southern New England by the post-colonial agricultural landscape changes that created preferable habitat. Very little of that ecotype remains and that remaining does not persist without anthropogenic intervention; deliberate or otherwise.

Secondarily, as golden-winged warbler habitat succeeds or is otherwise lost in Connecticut, drier and otherwise more marginally suitable habitat is used, by necessity, by golden-winged warblers, thus encouraging hybridization with the less stenecious blue-winged warbler. This production of fertile intergrades between the two species further diminishes the presence of golden-winged warbler in the region.

Figure 1A. View of northwest upland pasture and treed windrow. Figure 1B. View of northeast upland pasture. 9/12/17.

Site Status

These fields both within the proposed Solar Array area and adjacent to Candlewood Mountain Road were examined on September 12, and 22, 2017 for characters potentially compatible with golden-winged warbler breeding habitat, with the intent that the finding of even marginally suitable breeding habitat may necessitate empirical surveys as suggested by NDDB. Brian O. Butler, M.S. of Oxbow Associates, Inc. conducted the field examinations on both September 12 and September 22, 2017. Field hours spent examining the fields totaled approximately three (3) hours. The fields are forthcoming environments to survey. No other State-listed bird species were observed at the property.

All four subject areas were found to be of upland character and actively hayed and/or pastured. With the exception of field margins and windrows, the vegetation in the fields is dominated by pasture grasses with virtually no tall growing forbs (*e.g.*, goldenrods, horseweed) or shrubs and tree seedlings (gray birch, yellow birch, poplars); two plant types that are typically associated with inhabited golden-winged warbler breeding habitat.

Two of the pasture areas had horses contained by an electric fence; the animals are presumably rotated through the various fields over the course of the season.

Protective Measures

Whereas we conclude that suitable breeding habitat for golden-winged warbler is wholly absent from the premises due to a lack of open canopy habitat in a suitable early to mid-successional seral stage to support the species, no protective measures are provided.

Although formal breeding surveys were suggested to be executed by a credentialed ornithologist (NDDB, July 10, 2017) it is my opinion (B. Butler) that the character of the landscape, having now been critically examined, obviates the need for formal, breeding season surveys at the Site.

Slimy Salamander, *Plethodon glutinosus*: State Threatened

Introduction

The slimy salamander occurs at the northeastern terminus of its global range in Litchfield and Fairfield Counties. Although considered a woodland habitat generalist in the bulk of its eastern North American range, in Connecticut the species' current distribution appears to be restricted to mature deciduous woodland underlain by steeply sloped exfoliating bedrock surfaces (Klemens, 1993). The propensity for steep, forested habitats is probably more a result of prior land use history in the region than specific physiological requirements of the species.

The majority of the thirty (30) museum records for the state (AMNH Herpetology Collection) are from Fairfield County, with two specimens collected from Litchfield County. Collection dates range from May 7 to October 8. The species is known to occur in the vicinity of Candlewood Mountain including in adjacent Brookfield to the south (Cronkite, *et al*., 2011) and in Sherman and New Fairfield to the west and southwest, respectively (Klemens, 1993). Habitat in Sherman and New Fairfield has similar physiographic attributes to the project Site, though historic aerial photography from 1934 (CT State Library) indicates that much of the project area was cleared of forest vegetation at that time (one easterly walled field near Wetland 1 appears to have young woodland copse growth in 1934), while Sherman and New Fairfield localities appear with largely intact forest cover.

Site Surveys – Slimy Salamander

Site surveys dedicated to assessing habitat and documenting individual salamanders were undertaken on September 12, 22, 30 and October 4, 2017. Observers on 9/12 and 9/22 were Brian O. Butler, M.S. and Scott D. Smyers, M.S. On September 30, B. Butler examined and documented cryptic vernal pool

habitat and also examined terrestrial habitat in the southwest area of the Site and east of Wetland 1. On October 4, Scott D. Smyers and Environmental Scientist, Kyle Cormier (B.S.) of Oxbow Associates examined the site to collaborate slope raster analysis conducted by Dr. Tigran Tadevosyan, Oxbow Associates, Associate Scientist. Additionally, cover objects were examined for a period of about 40 minutes within Wetland 1 and the adjacent (west and southwest) upland during the CSC Site Walk on September 26. A total of 45.5 field hours, predominantly focused on examination of the premises for slimy salamander and habitat were executed during September and early October, 2017.

At least twenty-three (23) field hours were dedicated to searching expressly for slimy salamander with more or less continuous turning of natural cover objects during September. Cover objects were also routinely examined during other Site activities with greater than 1000 objects examined.

Cover objects examined include coarse woody debris from deadfalls, log piles and cut-and-dropped timber, stones and slabs lying on organic matter and accumulations of leaf litter and duff in hollows between rock features. The density or availability of downed woody matter, typically more abundant within mature forests probably influences the quality of the habitat both on a large and fine scale for slimy salamander. (Grover, 1998)

Salamanders encountered in terrestrial conditions include red- and lead-backed morphs of the redback salamander(s) (*Plethodon cinereus*), marbled salamander(s) (*Ambystoma opacum*), post-metamorphic spotted salamander(s) (*Ambystoma maculatum*) and eastern newt(s), [eft stage] (*Notopthalmus viridescens*). Additionally, excepting spotted salamander, the above were also observed within jurisdictional wetland habitat (Wetland 1) with a single four-toed salamander (*Hemidactylium scutatum*) also observed.

Figures 2, 3 & 4: Post-metamorphic spotted salamander from SW area, Sept. 30, 2017 and, four-toed salamander and marbled salamander from Wetland 1, Sept. 26, 2017.

No slimy salamanders were observed over the course of five (5) full, or partial field days on site between September 12 and October 4, 2017, during which virtually all suitable coarse woody or loose stony material found under foot was turned. During the CSC site walk a rotted log less than 1 yard off a cart road was turned to expose a writhing, small, black Plethodontid salamander. It was not able to be captured without risking injury and we speculated it could be a juvenile slimy salamander. On September 30, B. Butler spent considerable time turning cover material following both an over-night rain and significant mid-day rains. *P. cinereus* were found to be more readily found than during prior visits with ten (10) red morphs and seven (7) lead morphs observed. Several of the salamanders reacted much like the unidentified animal found on September 26, but each was captured and the ventral surface was examined for quick verification of species. A video was taken of one such individual gesticulating.

Despite the absence of direct observation at the Site, the habitat quality, dimensions and adjacency to other occurrences suggests the species is likely to persist at this locus, and particularly in the higher quality, older growth, steep rocky forested sections. These areas, exhibiting both a 35% grade, rocky limestone slopes and mature, predominantly deciduous forest were mapped via a raster analysis as indicated in Appendix A. These zones match the documented habitat preferences by this species at the extreme of its currently documented eastern range (excepting historic occurrence in southern New Hampshire).

Figure 5. Steeply sloped rocky deciduous forest east of the proposed array field to be conserved.

Impact Avoidance and Protective Measures

Whereas slimy salamander has no rigid physiological requirement for steeply sloped rocky woodland the species has apparently self-relegated to this habitat type in southwestern Connecticut due to its population dynamics, home range traits and local land use history. Little is known about home ranges among individuals of the species but published (Merchant, 1972) and anecdotal information suggests a diminutive annual home range within the heart of the range of the species. Further south, considerably larger home range values have

been documented (Wells and Wells, 1976). It is likely that animals in the limital zone of its range are prone to smaller, vs. larger home ranges.

The photovoltaic project had been designed to occupy predominantly lower elevation, low-slope forested areas (and pastures) exhibiting predominantly moderate to absent surface rock exposures. Subsequent to the September 26, 2017 CSC hearing, slope raster analysis for the property was completed (Appendix A) and was field verified and supported with geo-referenced field photographs ("Log of Documentary Ground Photos, October 4, 2017 submitted separately).

Appendix A shows those areas within the property found to exhibit both moderately steep slope (>35%) belying a predominantly mature, deciduous forest, with significant exposed or exfoliating rock. Subsequent to this assessment the project layout has been modified and compressed in accommodation of supporting terrestrial habitat for two cryptic vernal pools and additional avoidance of steeply sloped forest. The currently proposed limit of work will, excepting approximately one (1) acre, largely avoid the encumbrance of steeply sloped forested habitat, with a concentration of the condensed panel field occupying the less significant, low-slope mesic forest and pasture land habitats. An assessment of impacts to preferred slimy salamander habitat is provided in Appendix B and in Table 1, below.

Table 1. Impacts to Preferred Slimy Salamander Habitat.

LOW Impact Area	Acres
35% Slope Area	1.0
0-100 ft. Buffer	2.9
100 – 200 ft. Buffer	6.4
200 – 300 ft. Buffer	7.1

Additionally, the reduced panel field footprint will result in a concomitant reduction in tree clearing north and east of the array; contributing to the protection of potential or actual habitat for slimy salamander and other species.

Work within steep rocky forest for the interconnection alignment east of the solar field has been modified to take advantage of a relict haul road feature therein, thus reducing the number of trees to be cut and the ground surface disturbance necessary for pole installation.

Also integrated into the current site plan, the proponent has secured the ability to place into permanent conservation restriction 100+/- contiguous acres of predominantly steeply sloped, mature forest habitat.

During the construction phase, measures to reduce the project's influence upon the adjacent wildlife, including slimy salamander include the installation of a perimeter siltation (style) exclusion barrier. This feature will be installed following

the winter timber removal within the array field and occur prior to April 15, 2018. This barrier will discourage the entry of slimy salamanders, if present and other wildlife that might wander into the work zone where soil chemistry from recently exposed mineral soils may be deleterious to amphibians. Similarly, construction materials may function as attractive cover features for meandering amphibians, reptiles and small mammals. The exclusion of these species during the construction phase will reduce the opportunities for incidental mortality to animals acclimatized to the pre-construction site conditions.

Table 2. List of herpetozoan species observed September – October, 2017.

Species	Binomial	Comments
Marbled Salamander	*Ambystoma opacum*	Terrestrial and in Wetl. 1
Spotted Salamander	*Ambystoma maculatum*	Metamorphs only
Four-toed Salamander	*Hemidactylium scutatum*	Single individual CVP/Wetl. 1
Redback Salamander	*Plethodon cinereus*	Red and leadback morphs
Red-spotted Newt	*Notopthalmus viridescens*	2 efts obs.; 1 in wetland 1 upland
Eastern American Toad	*Anaxyrus americanus*	Several near summit
Gray Treefrog	*Hyla versicolor*	Autumnal calling near Wetl. 1
Spring Peeper	*Pseudacris c crucifer*	Calling and on ground
Bullfrog	*Lithobates catesbeiana*	Reservoir spillway
Green Frog	*Lithobates clamitans melanota*	Wetland 1 streambed and Reservoir
Pickerel Frog	*Lithobates palustris*	Reservoir spillway
Wood Frog	*Lithobates sylvatica*	Wetl 1. *et al.*
Northern Ringneck Snake	*Diadophis punctatus edwardsii*	Near summit
Eastern Garter Snake	*Thamnophis s. sirtalis*	Skin fragment, east steep slopes

.

Summary of Avoidance and Protective Measures – Slimy Salamander

- **The array field has been reduced for increased habitat protection.**

- **The interconnection alignment has been adjusted in steep forest habitat.**

- **An approximate 100-acre area of contiguous, steep slope, mature forest, including Lookout Point, will be placed into perpetual restriction to*conserve* slimy salamander habitat, existing unfragmented forest, and protect existing wetlands and cryptic vernal pools.**

- **The solar array field will be surrounded with an exclusion barrier during the construction period to exclude trespass and incidental mortality by herptiles. See Impact Avoidance and Protective**

Measures under Eastern box turtle below for additional detail regarding the exclusion barrier.

Jefferson Salamander (complex), *Amybystoma jeffersonianum*: State Special Concern

The July 10, 2017 preliminary comments from NDDB lists the Jefferson salamander complex among the species of concern. This species has not been observed at the site although a relatively complete list of potentially co-occurring vernal pool amphibians has been observed: Spotted salamander, marbled salamander, four-toed salamander, wood frog.

The distribution of this hybrid mole salamander appears to be spotty within the southwestern portion of the State, whereas it is more widely distributed in the northwestern part of Connecticut and adjacent Massachusetts and New York.

If *A. jeffersonianum* is extant at the Site, its breeding would be associated with the localities identified as Wetland 5 and portions of Wetland 1 ("CVP" and "CVPx"). In the absence of direct observation it can be assumed that protective measures applied to the Critical Terrestrial Habitat [CTH] (Calhoun and Klemens, 2002) and construction isolation (see below, E. Box Turtle), are applicable to this species' potential habitation therein.

Wood Turtle, *Glyptemys insculpta*: State Special Concern

During the course of site examinations listed above, but in particular on September 22, 2017, the premises, including the proposed interconnection alignment from the southeastern limit of work to Route 7 was examined for potential functional wood turtle habitat. Wood turtles rely on perennial streams with high to moderate water quality and a terrestrial summer range typically including old field habitat, open woodlands and areas of exposed soils for nesting.

We observed no tenable aquatic habitat (perennial stream) within or within 1000 feet of the proposed solar array based on field observations, and examination of orthophotography and USGS topographic mapping.

The Rocky River lies east of Candlewood Mountain and emanates from seasonal outflow from Wetland 1 by way of a steep escarpment and the Candlewood Reservoir water control structure at the northwestern foot of the dam. The river meanders approximately 4000 feet to the north to a confluence with the Housatonic River after crossing Route 7. Along most of its run, the Rocky River is greater than 1000 horizontal feet from project activity. The exception is an elbow of the brook where it is approximately 300 feet west of the proposed interconnection alignment.

However, the interconnection in this area is within that part of the alignment that is along the existing paved Candlewood Reservoir Service Road. In that regard, if the lower reaches of the Rocky River do support wood turtles we see no hazard to this species associated with work adjacent to a paved service road. We therefore do not believe that protective measures beyond contractor education are applicable to this species relative to this Site.


Figure 6 (L). Outfall of Candlewood Reservoir where Rocky River begins and is regulated by water controls and a series of weirs located downstream from the outfall. Figure 7 (R). The upper portion of Rocky River, shaded by hemlocks and less than 1m wide.

Eastern Box Turtle, *Terrapene c. carolina*: State Special Concern

Eastern box turtles occur within terrestrial woodlands and fields in the vicinity of the project. Populations of box turtles on mountainous terrain are generally rarified in comparison with bottomland mesic forest and meadows. It is probable that a major deterrent to achieving moderate to high population density is the limited availability of suitable hibernation substrates in an area underlain by shallow soils and bedrock, and the presence of poorly drained soils and pervasive shaded (north, northeast, northwest facing) slopes. Box turtles must undergo hibernation successfully each winter for a period of fifty to one hundred years to maintain population stability. Mountainous landscapes can diminish the average annual survivorship of hibernating individuals due to the limited distribution of optimal hibernation microhabitat. Although box turtles typically show significant fidelity to hibernation sites, they must also choose a site or vicinity that is functional across the range of winter conditions, and, occasionally, animals are forced to choose an *ad hoc* location due to erratic weather conditions.

We had no direct observations of the species during multiple days of suitable field conditions on the property. Similarly, no persistent indicators, such as carapaces or other durable indicators of the species' presence that are often encountered in areas of moderate or high density habitation by box turtles were observed.

We would expect that box turtles are present at a low, undetermined density in the vicinity of the Site. Based on telemetric field study of hundreds of box turtles by Oxbow Associates, Inc., documenting their seasonal behavior and habitat utilization, we believe there are two areas of potential box turtle habitation that warrant some degree of protection related to construction (Area 1 and Area 2). Areas 3 and 4, as noted below do not provide high quality or preferred habitat and do not warrant protective measures.

Figure 8. Area of interconnection path to be isolated during active box turtle season; approximately 1,500 linear feet.

Area 1. The highest quality habitat observed, is adjacent to the interconnection alignment, east of Rocky River and northwest of the reservoir on a mesic forested slope that has well developed soils, leaf litter and understory vegetation (Figure 8). This area also intercepts some old field areas used for dock storage where potential nesting and spring foraging habitat may be found. The run of approximately 1,500 linear feet of interconnection will bisect this moderately sloping woodland and field habitat to the point where it intercepts the service road.

Area 2. The array field within the Site has moderate potential to support box turtles, though the species may be of minute occurrence or absent. Although pastures are within this zone, hay cutting and other activities may have historically had greater negative than positive effects on the local occurrence of box turtles. Isolation of the construction zone will discourage entry by nest site seeking animals, or other wandering animals from the area.

Area 3. The area of woodland south of Route 7 where the interconnection departs the paved road and goes cross country for approximately 1,500 feet is suitable mesic woodland. However, its adjacency to residential lots, prior disturbance from fiber optic installation and proximity to Route 7 suggest the functional quality of this habitat is low.

Area 4. Where the interconnection exits the array field in the southeast is an area of significant bedrock exposure and extreme topography in places. This 1,500 foot run of interconnection partly overlies areas of severe topography and abundant exposed bedrock. In that regard, there is little probability of the species being able to hibernate in this zone, nor does it provide preferable habitat.

Impact Avoidance and Protective Measures

In order to accommodate seasonal restrictions for protection of bats, the array field will be cleared of trees during the winter months (November 1 – March 30). After tree clearing, a perimeter of siltation fencing should be installed along the limit of work (LOW) to enclose the solar array field and active construction areas. A perimeter of siltation fencing should also be installed to enclose the 30-foot work corridor from Rocky River near the Candlewood Reservoir Dam east, and northeast to the intersection with the paved service road (app. 1,500') during construction and installation of the electric interconnection route. The perimeter exclusionary fencing will be a minimum of 20 inches tall and will be secured to and remain in contact with the ground. The exclusion barrier will be maintained, and inspected weekly through the construction period to secure any gaps or openings at ground level to exclude any box turtles that may seek the disturbed soils for nesting substrate, or random wanderings of extant mountain turtles. Plastic web-backed, or netted silt-fence **will not be used**. Silt fencing that is used for exclusion will remain in place for the duration of any construction during the growing season.

All construction personnel will be trained on the potential presence of listed threatened and endangered species. Training will include species descriptions, agency and project contacts if a species is identified, reporting and notification requirements, and instructions for relocation if a turtle is found inside work areas. Additionally, laminated, instructional posters will be placed at the construction trailer(s).

Any turtles encountered within the immediate work area will be carefully moved to an adjacent area outside of the excluded area and fencing should be inspected to identify and remove access point.

Any sightings of box, wood or spotted turtles will be reported and documented with the NDDB (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.

In addition to the above and as outlined in NDDB's July 10, 2017 letter, the following protection strategies for Box Turtles will be implemented:

- Hiring a qualified herpetologist to be periodically on site to ensure these protection guidelines remain in effect and prevent turtles from accessing the work area and incidental mortality. This is especially important in the month of

June when turtles are selecting nesting sites.

- A designee of the Site Contractor must search the day's work area each morning prior to any work being done during the active season (Apr. 15 – Oct. 31).
- 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 re- entry.

Vernal Pool Habitat

There are currently three (3) areas of functional vernal pool habitat documented on the Site. These are Wetland 5, located northeast of the project area and two adjacent, "cryptic" (Calhoun and Klemens, 2002) vernal pools located within the headwaters of the Wetland 1 system and nominally referred to as "CVP" and "CVPx". The latter systems are not distinct, parabolic pool depressions, but are functional vernal pools located internal to a palustrine wetland. The latter pools show evidence of agricultural period manipulations, including a moat like configuration around the perimeter of CVP and an excavated ditch to the south facilitating drainage and moderating the hydroperiod of both basins.

The cryptic vernal pools within Wetland 1 are described in the October 5, 2017 document prepared by Brian Butler and included in the testimony submittals.

The basins are connected by a subtle channel allowing drainage from north (CVPx) to south (CVP) and thereafter to Rocky River at a considerably lower elevation than the perched wetland containing the cryptic vernal pools.

Impact Avoidance and Protective Measures

Measures have been integrated into the Site plan to address the terrestrial habitat guidance of Calhoun and Klemens (2002). The two cryptic pools were mapped on September 30, 2017 based on evidence of seasonal standing water and functional vernal pool habitat. In response to these data, the solar array has been reconfigured so as to minimize the array footprint and provide greater buffering between the pools and the site clearing required to reduce shading on the array.

Additionally, a contiguous area of approximately 100 acres will be secured for permanent protection of the 100-foot vernal pool envelopes (Wetland 5 and Wetland 1) and portions of the CTH zone as well as terrestrial habitat for slimy salamander.

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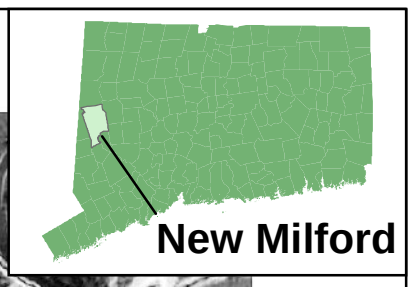
Appendix A –

Steep Slope Raster Analysis, showing areas of >35% slope with predominantly mature deciduous forest and underlying bedrock and exfoliating rock. Oxbow Associates, Inc., October 20, 2017

Appendix B –

Alteration of Preferred Slimy Salamander Habitat. Oxbow Associates, Inc., October 20, 2017.



Property Boundary

Est. Plethodon Habitat

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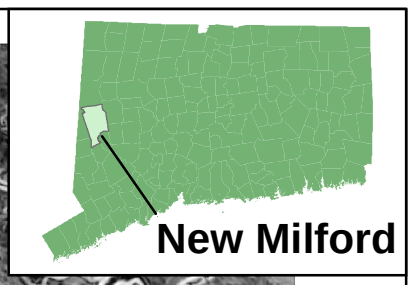
N W E S

1:4,200

1 inch = 350 feet

0 350 700
Feet

Appendix A
Estimated P. glutinosus Habitat
Forested Rocky Slopes >35%
Candlewood Solar LLC
Candlewood Mtn. Rd, New Milford, CT
October 20, 2017



Adjusted Work Area

Layer

- Prop. Limit of Work
- Interconnect Clearing - New
- Interconnect Clearing - Old

P.g. Habitat & Buffers

Notes

- Estimated Habitat Impact
- 100ft Disturbance
- 200ft Disturbance
- 300ft Disturbance
- Est. Plethodon Habitat

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N W E S

1:4,000

1 inch = 333.333333 feet

0 350 700
Feet

Appendix B
Work w/in 300' of Preferred P.g. Habitat
Candlewood Solar LLC
Candlewood Mtn. Rd, New Milford, CT
October 20, 2017

Attachment F

Oxbow Associates, Inc.
Log of Documentary Ground Photos

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LOG OF DOCUMENTARY GROUND PHOTOS

Photographs taken by Kyle Cormier and Scott Smyers on October 4, 2017 using a Trimble GeoExplorer 6000 Series (GPS) and a DSLR Camera during sunny conditions (approximately 60°F)
(See time, date, position, and azimuth bearings in table below)
(See attached figures 1-8)

Series	Number	Northing	Easting	Azimuth
A	1	769351.517	807565.286	341
A	2	769420.863	807505.581	313
A	3	769464.626	807557.877	89
A	4	769503.624	807505.164	43
A	5	769508.874	807402.003	21
A	6	769551.789	807512.075	72
A	7	769608.798	807499.966	50
A	8	769612.057	807373.329	334
A	9	769634.113	807474.299	79
A	10	769741.137	807476.893	68
A	11	769811.68	807486.853	94
A	12	769927.016	807451.225	18
A	13	769623.997	807286.153	125
A	14	769557.662	807351.559	146
B	1	769076.775	808956.029	285
B	2	769150.019	808949.749	54
B	3	769295.319	808986.917	324
B	4	769375.565	809006.617	304
B	5	769411.669	808996.057	132
B	6	769505.072	809005.131	6
B	7	769605.88	809030.831	352
B	8	769710.513	809030.147	339
B	9	769819.765	809060.681	329
B	10	769906.159	809059.906	295
B	11	769955.416	809049.231	300
B	12	770072.981	809018.77	5
B	13	770067.676	808943.057	323
B	14	770201.002	808827.919	307
B	15	770245.113	808773.202	293
C	1	769943.353	809367.651	201
C	2	769807.946	809362.797	202

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C	3	769676.637	809319.682	220
C	4	769548.851	809286.496	211
C	5	769446.236	809265.356	217
C	6	769287.025	809269.705	199
C	7	770054.098	809373.395	307
C	8	770166.725	809352.651	22
C	9	770250.872	809333.303	2
D	1	770321.066	808588.133	7
D	2	770374.114	808653.777	161
D	3	770515.422	808713.175	358
D	4	770323.177	808555.149	224
E	1	770975.454	808038.406	86
E	2	771000.605	808083.644	6
E	3	771037.231	808103.962	355
F	1	770785.847	806895.314	168
F	2	770667.452	806933.015	166
F	3	770530.555	806974.514	167
G	1	771951.46	807539.351	126
G	2	771926	807608.087	110
G	3	771918.518	807713.676	61
G	4	772027.895	807839.974	38
G	5	772103.024	807860.596	41
G	6	772173.064	807900.54	42
G	7	772258.588	807942.874	39
G	8	772373.387	807977.708	320
G	9	772467.655	807997.833	335
G	10	772563.314	808059.522	10
H	1	772402.676	808097.1	185
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H	4	772279.355	807959.23	180
H	5	772152.586	807930.547	162
H	6	772068.954	807953.781	169
H	7	771958.905	807958.043	159
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H	9	771699.75	808089.898	163
H	10	771590.914	808115.128	120
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I	1	771298.793	808367.665	149
I	2	771235.812	808422.907	168
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J	2	772943.647	807391.518	97
J	3	772977.086	807354.646	39
J	4	773009.989	807335.899	18

Documentary ground photographs

Photopoint A-1

Photopoint A-2

Photopoint A-3

Photopoint A-4

Photopoint A-5

Photopoint A-6

Photopoint A-7

Photopoint A-8

Photopoint A-9

Photopoint A-10

Photopoint A-11

Photopoint A-12

Photopoint A-13

Photopoint A-14

Photopoint B-1

Photopoint B-2

Photopoint B-3

Photopoint B-4

Photopoint B-5

Photopoint B-6

Photopoint B-7

Photopoint B-8

Photopoint B-9

Photopoint B-10

Photopoint B-11

Photopoint B-12

Photopoint B-13

Photopoint B-14

Photopoint B-15

Photopoint C-1

Photopoint C-2

Photopoint C-3

Photopoint C-4

Photopoint C-5

Photopoint C-6

Photopoint C-7

Photopoint C-8

Photopoint C-9

Photopoint D-1

Photopoint D-2

Photopoint D-3

Photopoint D-4

Photopoint E-1

Photopoint E-2

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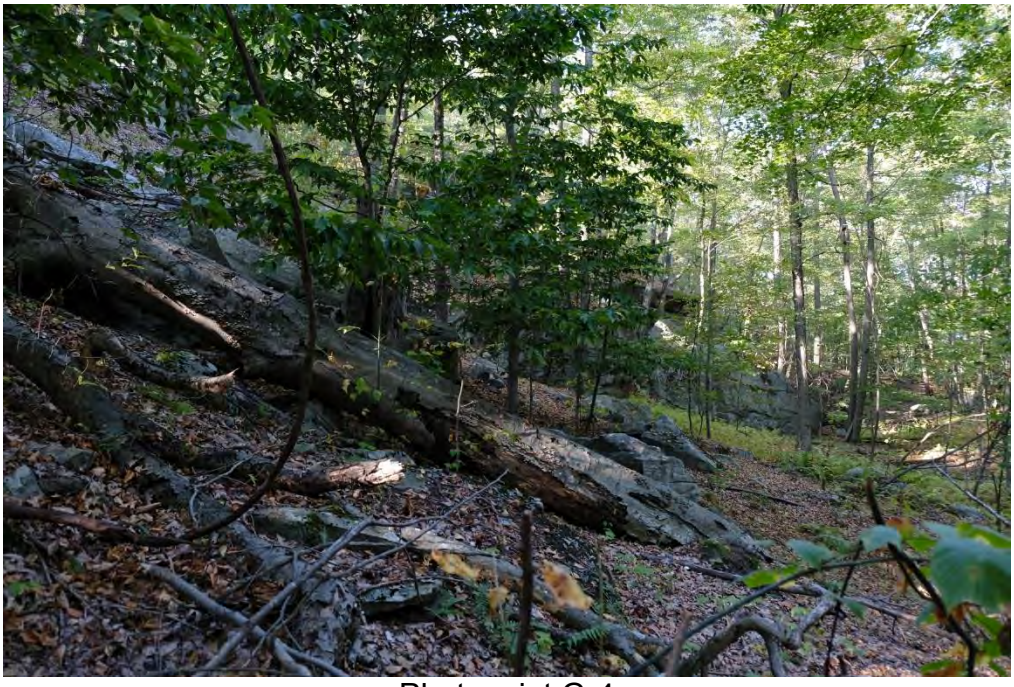
Photopoint G-1

Photopoint G-2

Photopoint G-3



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Photopoint H-2

Photopoint H-3

Photopoint H-4

Photopoint H-5

Photopoint H-6

Photopoint H-7

Photopoint H-8

Photopoint H-9

Photopoint H-10

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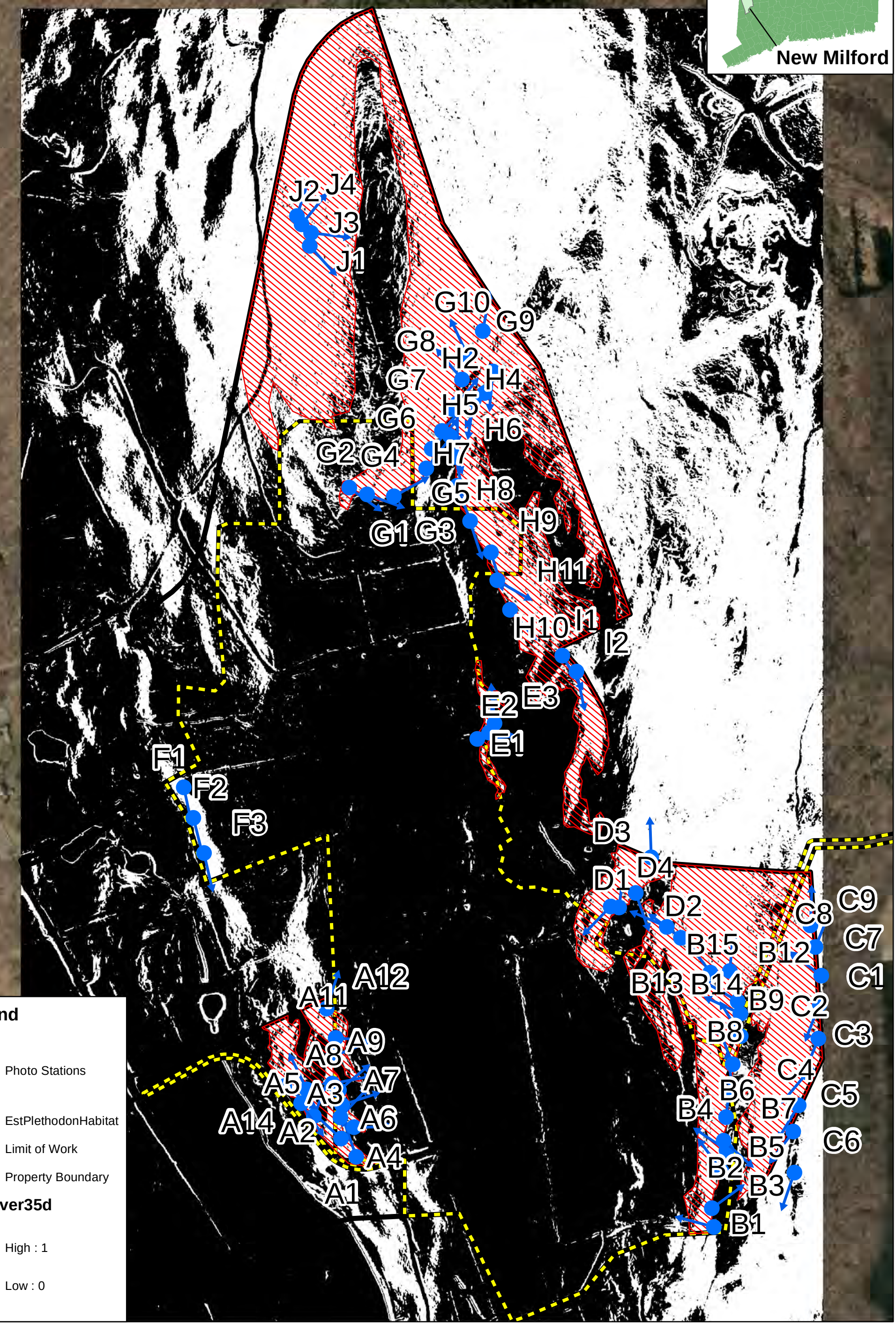
Photopoint J-3

Photopoint J-4



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N
W
E
S

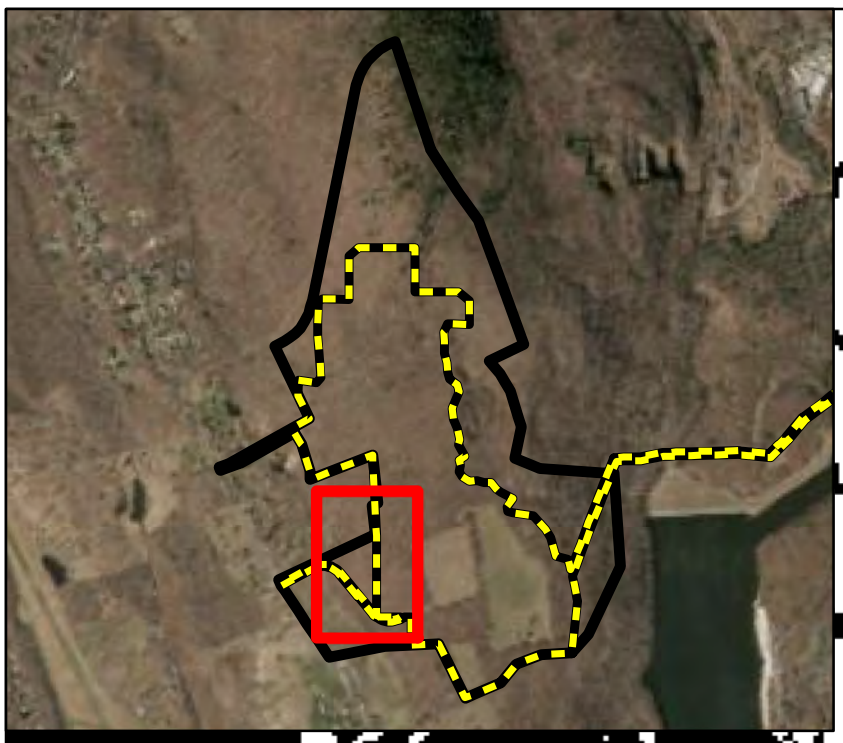
1:4,200

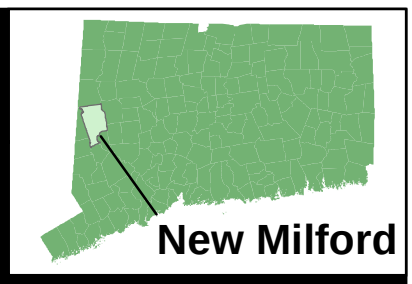
1 inch = 350 feet

0 350 700

Feet

Photo Stations
Candlewood Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017





A12
A11
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A7
A14
A6
A5
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A2
A1

Legend

Photo Stations

EstPlethodonHabitat

Limit of Work

Property Boundary

slopover35d

Value

High : 1

Low : 0

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N
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S

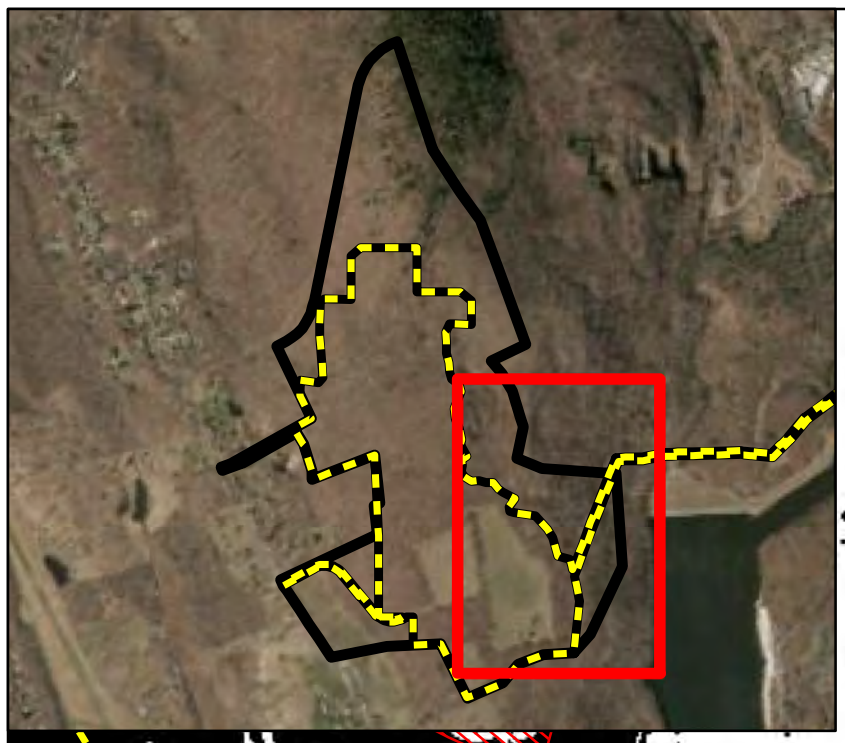
1:900

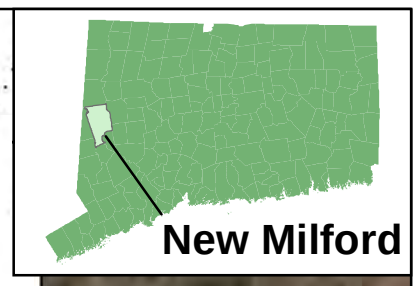
1 inch = 75 feet

0 75 150

Feet

Photo Stations - A Series
Candlewood Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017





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D2
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D1
B15
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B11
B10
B9
B8
B7
B6
B5
B4
B3
B2
B1
C9
C8
C7
C1
C2
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C4
C5
C6

Legend

Photo Stations

EstPlethodonHabitat

Limit of Work

Property Boundary

slopover35d

Value

High : 1

Low : 0

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N
W
E
S

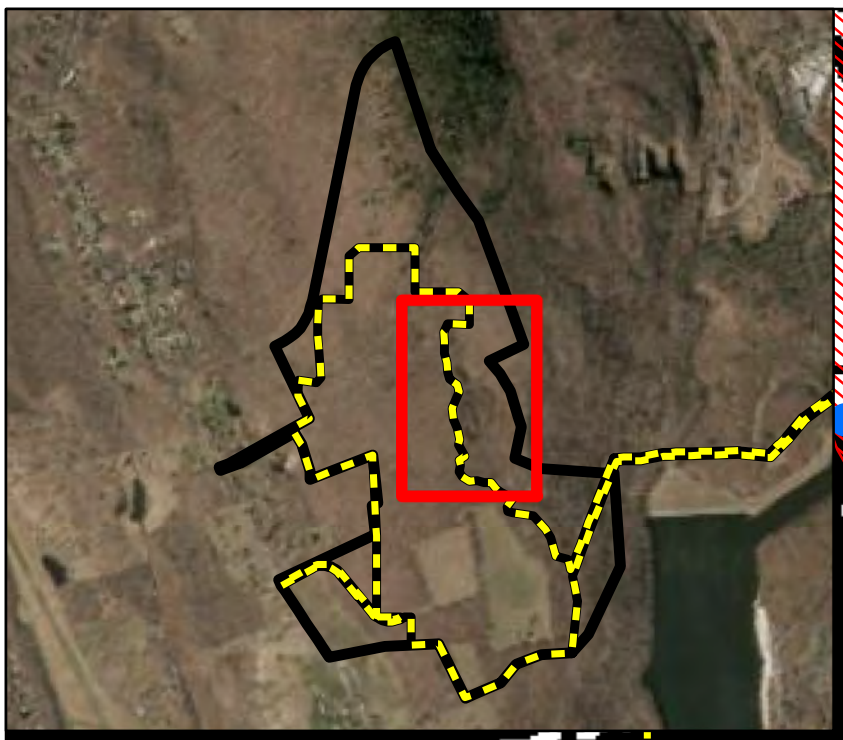
1:1,800

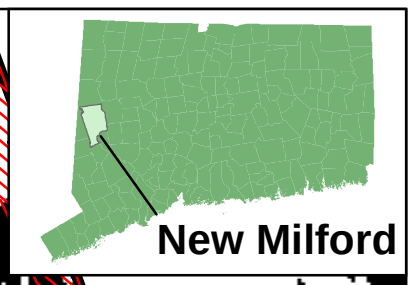
1 inch = 150 feet

0 150 300

Feet

Photo Stations - B, C & D Series
Candlewood Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017





H9

H10

H11

I1

I2

E3

E2

E1

D3

D2

D4

D1

Legend

Photo Stations

EstPlethodonHabitat

Limit of Work

Property Boundary

slopover35d

Value

High : 1

Low : 0

Oxbow Associates, Inc.
Wetlands Delineation and Permitting
Wildlife Studies • Herpetology
Vernal Pool Ecology
P.O. BOX 971
ACTON, MASSACHUSETTS 01720
PHONE: (978) 929-9058
FAX: (978) 635-1892
WEB: www.oxbowassociates.com

N W E S

1:1,200

1 inch = 100 feet

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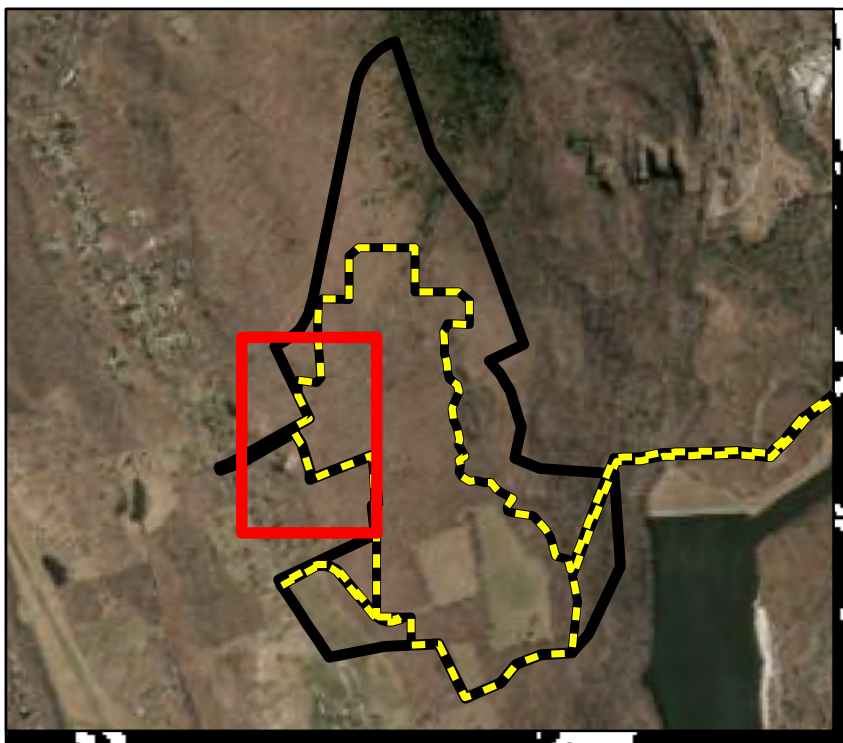
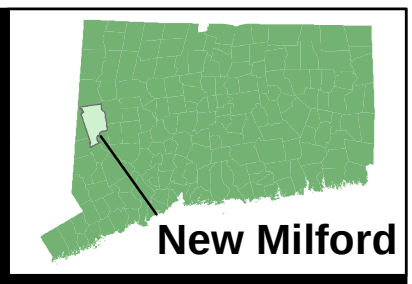
Feet

Photo Stations - I & E Series
Candlewood Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017





F1

F2

F3

Legend

Photo Stations

EstPlethodonHabitat

Limit of Work

Property Boundary

slopover35d

Value

High : 1

Low : 0

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1 inch = 100 feet

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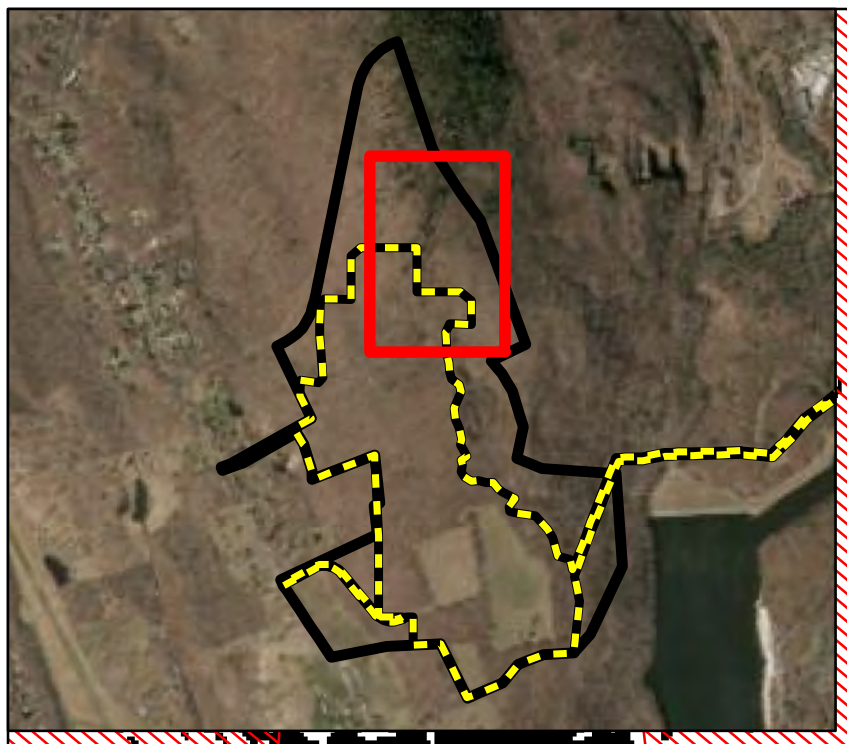
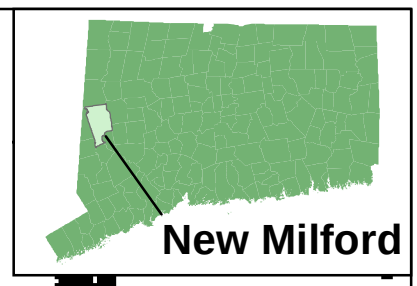
Feet

Photo Stations - F Series
Candlewood Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017





G10
G9
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G7
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G2
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H7
H8
H9
H10
H11

Legend

Photo Stations

EstPlethodonHabitat

Limit of Work

Property Boundary

slopover35d

Value

High : 1

Low : 0

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1 inch = 100 feet

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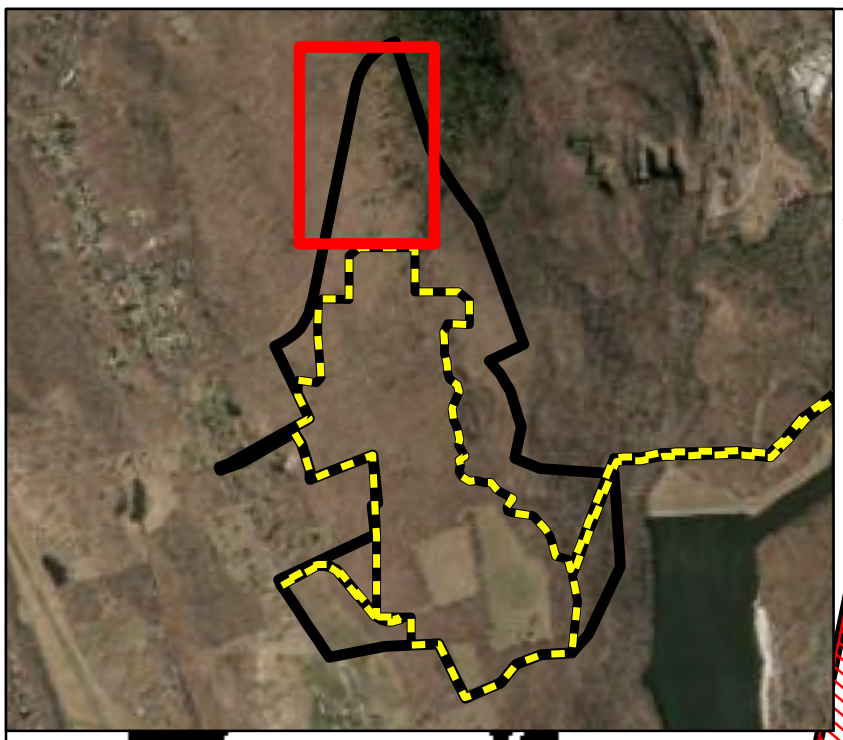
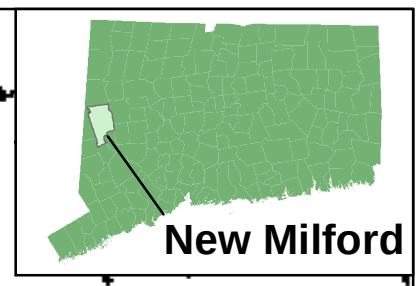
Feet

Photo Stations - G & H Series
Candlewood Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017





J4
J3
J2
J1

Legend

Photo Stations

EstPlethodonHabitat

Limit of Work

Property Boundary

slopover35d

Value

High : 1

Low : 0

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1:1,200

1 inch = 100 feet

0 100 200
Feet

Photo Stations - J Series
Candlewood Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017

Attachment C

Section i. C.

February 9, 2018

Incidental Take Report for the State Threatened Plethodon glutinosus (slimy salamander) ("Incidental Take Report")

Via electronic mail - deep.nddbrequest@ct.gov

February 9, 2018

Connecticut Department of Energy & Environmental Protection
Natural Diversity Data Base
79 Elm Street
Hartford, CT 06106-5127
Attn: Ms. Dawn McKay

Re: Incidental Take Report for the State Threatened *Plethodon glutinosus* (slimy salamander)
Candlewood Solar LLC
20 MW Solar Photovoltaic Project
New Milford Assessor Map Parcels 26/67.1, 9/6, and 34/31.1
Candlewood Mountain Road, New Milford, CT
NDDB Preliminary Assessment No.: 201703524

Dear Ms. McKay:

This letter and the enclosed Incidental Take Report (**Attachment 1**) are being filed with Connecticut Department of Energy & Environmental Protection (CTDEEP) Natural Diversity Data Base (NDDB) in response to your email dated January 10, 2018 regarding review of the above referenced project (**Attachment 2**). Specifically, as stated in your email, "…the Candlewood Solar Project will result in a direct impact to a population of State Threatened *Plethodon glutinosus* (slimy salamander) that is known to occur in this project footprint. It looks like the impact of this solar project will result in an unavoidable "take" of the slimy salamander." The enclosed Incidental Take Report is hereby being filed with CTDEEP NDDB in order to assist NDDB with the "Incidental Take" review process. Additionally, the Incidental Take Report follows the template provided in your email to make the review as efficient as possible.

The enclosed Incidental Take Report provides the required information for which a determination and allowance of taking can be made for the Candlewood Solar Project.

Should you have any questions regarding the enclosed Incidental Take Report, please do not hesitate to contact Ms. Tricia Foster at (978) 761-2450; tricia.foster@woodplc.com or Mr. Rob Bukowski at (978) 392-5307; rob.bukowski@woodplc.com.

Amec Foster Wheeler
Environment & Infrastructure, Inc.
271 Mill Road, 3rd Floor
Chelmsford, MA 01824
+1 978-692-9090
amecfw.com

Sincerely,

Amec Foster Wheeler Environment & Infrastructure, Inc.

Tricia Foster
Senior 2 Planner

Robert J. Bukowski, PE
Project Manager

Attachments

Attachment 1: Candlewood Solar LLC, Incidental Take Report for the State Threatened *Plethodon glutinosus* (slimy salamander)

Attachment 2: CTDEEP NDDB Email from Ms. Dawn McKay dated January 10, 2018

cc: J. Lindsay, Candlewood Solar LLC

B. Butler, Oxbow Associates, Inc.

Attachment 1

Candlewood Solar LLC, Incidental Take Report for the
State Threatened *Plethodon glutinosus* (slimy salamander)

Incidental Take Report for the State Threatened *Plethodon Glutinosus* (slimy salamander)

Candlewood Solar LLC
Candlewood Mountain Road, New Milford, CT

Prepared for:

Candlewood Solar LLC
111 Speen Street
Framingham, MA 01701

Prepared by:

Amec Foster Wheeler
Environment & Infrastructure, Inc.
271 Mill Rd, 3rd Floor
Chelmsford, MA 01824

And

Oxbow Associates, Inc.
P.O Box 971
Acton, MA 01720

February 2018

Oxbow Associates, Inc.

B. Butler

Candlewood Solar LLC
20 MW Solar Photovoltaic Project
New Milford Assessor Map Parcels 26/67.1, 9/6, and 34/31.1
Candlewood Mountain Road, New Milford, CT

Prepared for:
Candlewood Solar LLC
111 Speen Street
Framingham, MA 01701

Submitted to:
Connecticut Department of Energy & Environmental Protection,
Natural Diversity Database
79 Elm Street
Hartford, CT 06106

Prepared by:
Amec Foster Wheeler Environment & Infrastructure, Inc.
271 Mill Road, 3rd Floor
Chelmsford, MA 01824
And
Oxbow Associates, Inc.
P.O Box 971
Acton, MA 01720

February 9, 2018

TABLES

FIGURES

APPENDICES

1.0 PROJECT NARRATIVE

a. Project Background

i. Description of Project

Candlewood Solar LLC (Candlewood Solar) is proposing to install and operate a 20 megawatt (MW) AC (MWac), solar photovoltaic (PV) electric generating facility (the Solar PV Facility or the Facility) in the Town of New Milford, Connecticut. The Facility and associated access roads and electric interconnection route (the Project) will be located on portions of three (3) adjacent parcels (New Milford Assessor Map parcels 26/67.1, 9/6, and 34/31.1) (see **Figure 1**). The Facility and access roads will be located entirely on parcel 26/67.1 (197 Candlewood Mountain Road) located on the southern flank of Candlewood Mountain in west central New Milford, northwest of Candlewood Lake, east of Candlewood Mountain Road, and southwest of Route 7 (the Facility Parcel). The electric interconnection route will originate on the Facility Parcel, exit the Facility Parcel in the southeastern portion of the Solar PV Facility and then follow existing cleared access road and existing cleared fiber line right-of-way (ROW) to the extent practicable within the two adjacent parcels to the east (parcels 9/6, and 34/31.1) and interconnect at the Eversource Energy Rocky River substation on Route 7, located approximately 4,800 feet to the northeast of the Facility (see **Figure 1**). The portion of the parcels the Project will occupy on the three parcels together are referred to as the "Project Area".

The Facility will consist of approximately 60,000 solar PV panels and eight (8) inverters each with a combined output of 2.5 MWac. The total Facility system size is 24 MWDC, with a total rated nameplate AC generating capacity of 20 MWac. The solar panels will be installed on a screwed-in mounting system due to shallow bedrock conditions across the Project Area. The Facility will be completely surrounded by a 7-foot high chain-link fence. The inverters will consist of pad-mounted inverters which will convert the DC power generated by the panels to AC power that can be fed to the regional electric grid. The power will be fed from the inverters to transformers which will step up the voltage from 1,500 Volts (V) to 13,800 V, upon which the power will be routed through two (2) 13.8 kilovolt (kV) conductors across parcels 9/6, and 34/31.1 to Route 7, whereupon they will connect with Eversource Energy conductors at the Rocky River substation on Route 7. See **Figure 1** and **Appendix A.**

The Facility Parcel has a total area of 163.5-acres, of which the Facility will occupy approximately 54.55 acres. The Project includes the clearing of approximately 56.07 acres of forest, of which 38.92 acres will be for the Facility itself, 12.63 acres will be cleared to eliminate shading around the Facility, and 4.52 acres will be cleared for the electric interconnection route.

With some improvements, the existing access road off of Candlewood Mountain Road will provide access to the Solar PV Facility area both during construction and operation. Access road improvements will include minimal grading as needed and installing gravel. The 12-foot wide dirt access road will be the only vehicular access way to the Project Area during construction and operation of the Facility.

Construction parking, staging, and laydown will be within the Facility parcel, either within the defined limit-of-work (LOW) associated with the solar PV array or the approximate 5-acre hay/horse pasture located along Candlewood Mountain Road.

See Section 4.I. for a discussion on how the Project has been altered to minimize impacts on the natural and human environment.

ii. Need for Project

The Project was developed by Candlewood Solar in response to the Tri-State Clean Energy RFP (the RFP) issued by the states of Connecticut, Massachusetts and Rhode Island in October 2015. The RFP was a cooperative effort of all three states and the investor owned utilities within them to procure clean energy for input into the Independent System Operator New England (ISO-NE) grid, thereby decreasing dependence on non-renewable sources of electric power within the region. According to the Tri-State RFP, the procuring states, Connecticut, Massachusetts and Rhode Island, (together referred to as the "Procuring States") sought to "meet their clean energy goals in a cost-effective manner consistent with their Procurement Statutes." Furthermore, "the [evaluation] parties from all three of the Procuring States will collaborate to determine whether together they can create a portfolio of projects that would reduce the cost to customers in each of the three states and still comply with each state's requirements and clean energy goals." [RFP Section 1.1]

In October of 2016, Ameresco's Candlewood Solar Project was one of six bidders selected by the RFP selection committee to move ahead with 20-year power purchase agreement (PPA) negotiation. Currently, PPA negotiations have completed and the PPA has been executed between Candlewood Solar LLC and the participating utilities – Eversource Energy, National Grid, and Unitil. Community outreach, coordination with local government officials and departments, and associated development activities including interconnection studies have proceeded in parallel with PPA negotiations. The Candlewood Solar Project is located less than one mile from the Eversource Energy Rocky River substation, which is a pool transmission facility (PTF)[1] node on the ISO-NE grid system. The Project will interconnect at the Rocky River substation on Route 7 in New Milford, Connecticut.

iii. Regional or State-wide Significance of the Project

Eversource Energy selected the Project because it will provide benefits to rate payers in accordance with the stated goals of the Tri-State RFP. The Project will cost effectively provide economic, environmental, and grid infrastructure benefits that will accrue both locally and regionally. Specifically, the Project will provide:

1 New England's PTFs are those facilities owned by participating transmission owners that meet the criteria specified in the Open Access Transmission Tariff and over which the ISO has operating authority. Generally, PTFs are those rated 69 kV or above required to allow energy from significant power sources to move freely on New England's transmission system.

- **Emission Free Power and CO2 Offset** - The Project will generate approximately 34 million kilowatt hours per year of clean, emission free electricity that will be fed directly into the ISO-NE grid. This generated power will offset the equivalent of over 25 million pounds of coal being burned for electricity production. Alternatively, it is equivalent to the sequestering of CO2 by over 22,000 acres of forest land.
- **Reduced Need for Fossil Fuel-Based Power generation** - The Project will contribute to reducing the need to add additional fossil fuel generation capacity to the ISO-NE grid to meet electricity demand in the future, thereby further reducing the region's dependence on fossil fuels, and improving air and water quality in the state of Connecticut and the New England region.
- **Benefits to the ISO-NE Grid in Connecticut** - The Project will provide benefits to the ISO-NE grid in Connecticut by providing deliveries into the ISO-NE forward capacity market, thus standing ready to provide energy during constrained periods in the western Connecticut region. The ability to deliver energy during constraints is due to its location and interconnection to the 345 kV high voltage transmission line.

b. Site Description

iv. Current Usage, Land Cover, and Habitat-Types

Current Usage

Facility Parcel: The 163.5-acre parcel (New Milford Assessor Map parcel 26/67.1) on which the Facility and access roads will be installed are located on the southern flank of Candlewood Mountain in west central New Milford, Litchfield County, northwest of Candlewood Lake, east of Candlewood Mountain Road, and southwest of Route 7. The Facility Parcel is undeveloped and partially wooded with four (4) hay fields/horse pastures in use on the southern portion of the Facility Parcel. Fencing and structures associated with the hay fields/horse pastures are located within these areas. No buildings or other structures are present in forested areas; however, stone walls are present in several locations.

The existing access road leading east from Candlewood Mountain Road is dirt/gravel, and partially overgrown with vegetation in some areas. The existing access road provides access to the 4 existing hay fields/horse pastures, the solar PV array area, as well as some limited access to the northern portion of the Facility Parcel (summit of Candlewood Mountain).

The northern portion of Candlewood Mountain is part of the Housatonic Range Trail, a 6.2-mile footpath that starts in Gaylordsville, Connecticut and ends at the top of Candlewood Mountain in New Milford, north of the Facility location. The Trail is part of Connecticut's Blue Trail system and the trail approaches the top of Candlewood Mountain from the north. The trail is entirely to the north and outside of the Project Area.

Electric Interconnection Route: As noted above, the electric interconnection route will originate on the Facility Parcel and cross the other two (2) Project Area parcels (parcels 9/6 and 34/31.1) that are located on the eastern flank of Candlewood Mountain. Parcels 9/6 and 34/31.1 are owned by First Light Hydro Generating Company (First Light) and include existing utility corridors.

Land Cover and Habitat-Types

The Project Area contains five (5) plant community types (a.k.a. key habitats) as classified in the 2015 Connecticut Wildlife Action Plan (WAP) and depicted on **Figure 2**; upland forest, upland herbaceous, forested inland swamp, shrub inland wetlands, and unique (vernal pool) and man-made habitats (utility corridors and access roads).

Facility Parcel: As noted above, the Facility Parcel is undeveloped and partially wooded with four (4) hay fields/horse pastures in the southern portion of the Parcel. Five (5) wetlands and associated watercourses were delineated within the Facility Parcel (Wetlands I through V). Watercourses are associated with each of the wetlands except Wetlands II and III, all of which are intermittent. All delineated wetlands consist of at least a portion of forested inland wetland, the majority of which are the key sub-habitat red maple swamp. Wetlands I and II also contain shrub inland wetland and sub-habitat shrub swamp. One naturally occurring vernal pool (VP) which is also a forested inland wetland (Wetland V), was identified and delineated in the northeast portion of the Facility Parcel. Two (2) cryptic vernal pools were also delineated within Wetland I. Areas of steep slope and rock outcrops are primarily located in the northern and eastern portions of the Facility Parcel with a small area of steep slope and rock outcrops located in the southwestern portion of the Facility Parcel, north of the existing access road. See **Figure 1.**

Electric Interconnection Route: The electric interconnection route passes through forested areas down a steep slope to the east of the solar array, leading to forested areas adjacent to existing access roadways and an existing cleared fiber line ROW to its terminus at Kent Road/Route 7. Four (4) wetlands and associated watercourses were delineated within the two Project Area parcels crossed by the electric interconnection route (Wetlands VI through IX). Intermittent watercourses are associated with each of these wetlands except the Rocky River which flows out of Wetland VI. All delineated wetlands consist of at least a portion of forested inland wetland, the majority of which are the key sub-habitat red maple swamp.

c. Proposed Activities

v. Detailed Description of Proposed Activities

During construction, the Project will be broken up into five phases, per the 2002 Connecticut Erosion and Sediment Control Guidelines for large construction Project Areas. The phases include:

- Phase I – Access Road Construction
- Phase II – Project Area Clearing, Stump Removal, and Limited Grading
- Phase III – Solar PV Array (Facility) Installation
- Phase IV – Electric Interconnection Route
- Phase V – Perimeter Fence Installation

The intent of phasing is to minimize the amount of surface soil exposed at any one time during construction of the Project. Phase III will include several sub-phases, which will allow the contractors to work from areas of higher elevation to lower elevation, stabilizing surface soils as work progresses, and minimizing

the discharge of stormwater run-off onto newly stabilized areas. Additionally, erosion and sedimentation controls will be installed prior to work activities to minimize soil erosion.

Access Road Construction

Access to the Facility and electric interconnection route will be via an existing 12-foot wide dirt road / driveway off of Candlewood Mountain Road. The existing dirt road will be improved for use during construction and operation of the Project through minimal grading as needed and installing graded gravel. An anti-tracking pad will also be installed at the entrance / exit onto Candlewood Mountain Road during construction. The 12-foot wide dirt road will provide the only vehicular access to the Project Area during construction and operation of the Facility. The existing dirt road provides current access to the existing hay fields/horse pastures both along Candlewood Mountain Road and in the southern portion of the Project Area and some limited access to the northern portion of the Facility Parcel (summit of Candlewood Mountain).

Project Area Clearing, Stump Removal, and Limited Grading

As part of the Connecticut Siting Council (CSC) process, in order to minimize impacts on the natural and human environment, modifications to the Solar PV Facility design and its layout were made. As revised and currently designed, the Project proposes the clearing of 56.07 acres of forest, of which 38.92 acres will be for the Facility itself, 12.63 acres will be cleared to eliminate shading around the Facility, and 4.52 acres will be cleared for the electric interconnection route.

Stumps will be removed from the area which the Facility will encompass, however, in the area between the fence line and the LOW / limit of tree clearing, stumps will not be removed, in order to minimize potential impacts on species including the slimy salamander, reduce potential impacts associated with erosion, and lessen the potential impact to undisturbed archaeological resources.

Once vegetative clearing activities are completed (removal of trees, stumps, and other vegetation as needed), the minimum grading required to construct the array, access roads, and electrical interconnection would be performed. No deep soil intrusions are planned as part of the Project.

Solar PV Array (Facility) Installation

The Facility will be installed within an approximate 54.55-acre area within the Facility Parcel. Approximately 60,000 solar panels will be installed at a 12-degree tilt angle. As noted above, no deep soil intrusions are planned as part of the Project. It is expected that one-inch to two-inch diameter pilot holes to depths specified by the solar panel manufacturer will be augered into the soil for the installation of the Facility. The top height of the panels will be between 6 and 7 feet above ground and the bottom edge of the lowest panel will be approximately 2 to 3 feet above ground.

Following the installation of the Facility, the area around the Facility and the areas cleared for the electric interconnection route to the Facility will be allowed to return to herbaceous and/or shrub growth. The existing access roadways and cleared fiber line right-of-way along the interconnection route are not

anticipated to change from current conditions following the installation of the interconnection with the exception of upgrades to the surface of the access road.

Electric Interconnection Route

The route of the electric interconnection is planned to exit the Facility parcel from the southeastern portion of the Solar PV Facility and follow existing cleared access road and utility corridors to the extent practicable across the two adjacent Project Area parcels to the east. The linear electric interconnection route is approximately 7,100 feet in length and runs down the southeastern side of Candlewood Mountain and crosses north of Candlewood Lake to Route 7.

The electric interconnection route passes through forested areas down a steep slope to the east of the Facility, leading to forested areas adjacent to existing access roadways and an existing cleared fiber line ROW to its terminus at Kent Road/Route 7.

The electric interconnection route to the Facility has been redesigned from the initial concept to avoid and minimize impacts to wetlands and watercourses to the extent practicable. Overhead utility poles will be installed to accommodate the electrical interconnection. No direct impacts to wetlands or watercourses will be required to install the utility poles and guy wires associated with the overhead electric interconnection, however, approximately 2,322 sq. ft. (0.05 acres) of Wetlands VI, VII, VIII, and IX will be converted from forested wetlands to emergent and/or shrub wetlands to provide vertical clearance for the overhead utility lines.

Perimeter Fence Installation

The Solar PV Facility will be completely surrounded by a counter-sunk 7-foot high chain link fence.[2]

Construction Staging and Laydown

Tree clearing activities and installation of the Solar PV Facility will be phased in a manner to maximize construction parking, staging and laydown within the Facility footprint, however, Candlewood Solar is considering potentially utilizing the existing hay/horse pasture located along Candlewood Mountain Road for parking and equipment and material storage during construction. The existing hay/horse pasture located along Candlewood Mountain Road is part of the approximate 163.5-acre parcel of property (26/67/1) and is approximately 5-acres in size. There is existing access to the hay/horse pasture from the existing 12-foot wide dirt road / driveway off of Candlewood Mountain Road. No work (grading, etc.) to the hay/horse pasture will be required for construction parking and material/equipment storage, no additional tree clearing will be required for its use, and no alteration to existing stone walls will occur. As required by the Connecticut State Historic Preservation Office (SHPO), construction matting will be used to lessen the potential for impact to

[2] Whereas the proposed is a single, large array enclosure in order to exclude adult Box turtles from the fenced in Solar PV Facility, the fence will be counter-sunk. The secured fence is intended to avoid the potential for mowing mortality to turtles that would access the array with a raised fence configuration (see documents provided NDDB on October 28, 2017, not attached to this Incidental Take Report).

undisturbed resources should they be present at the site. As currently proposed, the construction parking and staging area will only be used during construction of the Project and will be temporary in nature (see Section 4.k., Alternatives for additional information). Upon completion of construction, the hay/horse pasture will be seeded/mulched as necessary and allowed to return to existing conditions.

In accordance with the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities for which coverage is required for the Project, all disturbed areas will be re-vegetated and erosion and sedimentation controls removed once all disturbed areas have been permanently stabilized. No alteration of the macrotopography of the Project Area will occur.

d. Status of Environmental Impact Evaluation

vi. Existing Environmental Impact Evaluations (EIE)

The Project does not require an Environmental Impact Evaluation (EIE) under the Connecticut or National Environmental Policy Act (CEPA or NEPA). No EIE has been prepared for the Project.

e. Permit Status

vii. State Permits and Approvals

The following State permits and reviews are required for the Project.

- Connecticut Siting Council Review and Declaratory Ruling
- Connecticut State Historic Preservation Office Review
- Connecticut Endangered Species Act Review
- Coverage under the Connecticut General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

viii. Status of State Permits, Approvals and Applications

- **Connecticut Siting Council.** Declaratory Ruling issued December 21, 2017.

  On December 21, 2017, the Connecticut Siting Council issued a Decision and Order stating, " Pursuant to Connecticut General Statutes (CGS) § 16-50k(a), CGS §4-176 and the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the construction, maintenance, and operation of a 20 MW Solar Photovoltaic Project on a 163 acre parcel at 197 Candlewood Mountain Road and associated electrical interconnection to Eversource Energy's Rocky River Substation on Kent Road in New Milford, Connecticut would not have a substantial adverse environmental effect, would meet all applicable U.S. Environmental Protection Agency and Connecticut Department of Energy and Environmental Protection (DEEP) Air and Water Quality Standards, and therefore, the Council will issue a declaratory ruling for the proposed solar photovoltaic electric generating project." (see **Appendix B**)

- **Connecticut State Historic Preservation Office**. Letter of No Adverse Effect issued November 28, 2017.

  In the SHPO's November 28, 2017 letter, the SHPO states, "With these precautionary measures taken into consideration, the proposed development of the solar farm would have no adverse effect to cultural resources." (see **Appendix B)**

- **Connecticut Endangered Species Act.** Subject of this Incidental Take Report.

  The subject of this Incidental Take Report is the Slimy Salamander. It should be noted that in the Connecticut Department of Energy & Environmental Protection (CTDEEP) Natural Diversity Data Base's (NDDB) email dated January 10, 2018, CTDEEP NDDB states, "The additional impact avoidance and protection measures outlined in the October 28, 2017 correspondence (with attachments) to protect the State Endangered golden-winged warbler, Special Concern Jefferson salamander "complex", wood turtle and eastern box turtles are all acceptable and no further protection measures for these species are required." (see **Attachment 2**)

- **Connecticut General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (General Permit).** Application to be filed with CTDEEP.

  An application for coverage under the General Permit will be filed with CTDEEP and the Project will meet the requirements of the General Permit.

Additionally, tree clearing in wetland areas in order to provide the required vertical clearance for overhead utility lines will be performed from upland areas and without any direct soil impacts, excavation, or discharge of fill material in wetlands. As such, authorization from the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act is not required.

f. Funding Sources

Candlewood Solar LLC is a wholly owned subsidiary of Ameresco Inc. (Ameresco). Ameresco is the lead project developer responsible for: providing construction financing, in-house engineering, local distribution company interconnection agreement(s), equipment procurement, construction management and oversight, system commissioning, and operations and maintenance. Ameresco, as sole owner of Candlewood Solar LLC, has the capital and bank credit lines to immediately start construction upon completion of permitting using its in-place construction financing facilities.

ix. State of Connecticut Funding Sources

The Project will not be funded by any State of Connecticut funding sources.

2.0 FEDERALLY AND STATE ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

g. Species Information

Federally Listed Species

The Northern long-eared bat (NLEB; *Myotis septentrionalis*) is the only federally listed species identified as potentially being present in the Project Area by the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) online project planning tool.

State Listed Species

In its letter dated July 10, 2017, the CTDEEP NDDB identifies the following State Listed Species as known that occur within or close to the boundaries of the Project area based on its records:

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 (eastern box turtle)
Lasiurus borealis (Red bat)
Lasionycteris noctivagans (Silver-haired bat)
Lasiurus cinereus (Hoary bat)

As noted above, in an email dated January 10, 2018, the CTDEEP NDDB states, "The additional impact avoidance and protection measures outlined in the October 28, 2017 correspondence (with attachments) to protect the State Endangered golden-winged warbler, Special Concern Jefferson salamander "complex", wood turtle and eastern box turtles are all acceptable and no further protection measures for these species are required" (see **Attachment 2**). The Project will also implement protective measures and conservation measures for bats (see Section 2.g.x. below).

The subject of this Incidental Take Report is the State Threatened *Plethodon glutinosus* (slimy salamander).

x. Species Targeted for Field Surveys

The CTDEEP NDDB July 10, 2017 letter requested the following field surveys be conducted for State listed species:

- State Endangered *Vermivora chrysoptera* (Golden-winged warbler)
- State Threatened *Plethodon glutinosus* (slimy salamander)

In September and October 2017, Oxbow Associates, Inc. (Oxbow) conducted site examinations and field surveys for the Golden-winged warbler, Wood turtle, eastern box turtle, and slimy salamander. The results of these surveys were filed with CTDEEP NDDB on October 28, 2017. In CTDEEP NDDB's email dated January 10, 2018 from Ms. Dawn McKay, it is noted, "The additional impact avoidance and protection measures outlined in the October 28, 2017 correspondence (with attachments) to protect the State Endangered golden-winged warbler, Special Concern Jefferson salamander "complex", wood turtle and eastern box turtles are all acceptable and no further protection measures for these species are required." (see **Attachment 2**)

No bat surveys were completed; however, it should be noted that in the October 28, 2017 filing, Candlewood Solar committed to the following protection measures with respect to bats:

> *Tree clearing will be completed during the hibernation or winter range period (Hoary, Red and Silver-haired) for bats and tree clearing will be limited to November 1 through March 30. The implementation of this measure would be protective of those species of bats identified as well as other bat species.*
>
> *Additionally, large diameter coniferous and deciduous trees and wooded buffers adjacent to wetland areas will be maintained whenever possible. Based on the revised site plan layout, forested buffer areas vary by wetland.*
>
> *Finally, as noted in NDDB's July 10, 2017 letter, "Bat houses installed in the area where trees will be removed will help in the conservation of tree roosting bats." As a conservation measure, Candlewood Solar will mount between 20 and 30 bat houses on east facing, mature tree trunks, not less than 12 feet from the ground in areas where trees are removed.*

xi. General Species' Biology, Ecology, Range, Site Requirements, etc. for the Slimy Salamander

Biology

The northern slimy salamander is medium to large in size, wholly terrestrial Plethodontid (lungless N. American salamander family) salamander. Adults are black or blueish black ground color with white or metallic speckling and a pallid ventral surface. Being non-aquatic, the tail is circular as opposed to flattened in cross section. Adults range between 4.5 to 8 inches in total length (TL); typically 5 to 6 inches (TL). Juvenile slimy salamanders look similar to adults with less pronounced maculations. See **Appendix C** for photographs of the target species. As discussed in more detail below, the photographs included in **Appendix C** are not photographs of slimy salamanders found in the Project Area as no slimy salamanders were identified during the field surveys conducted on the Facility Parcel.

Slimy salamander is part of an endemic North American species complex that has undergone episodes of separation and reconvergence through time leading to speciation and regional morphs that are capable of interbreeding, but which may exhibit different adult sizes, coloration or other traits.

Habitat, Range and Site Requirements

The slimy salamander's range covers much of the east coast of the United States from New York and southwestern Connecticut south to Florida and west to Louisiana and eastern Oklahoma. A historic collection from southern New Hampshire remains of limited certainty. The species is a common component of the herpetofauna in suitable habitats over much of its range, but its distribution is very much rarefied east of the Hudson River in the northeast.

Oxbow, in their report titled, Species Account Responses to NDDB Preliminary Comment Letter (7/10/17), (non-Chiropteran species), October 20, 2017, states:

> *The slimy salamander occurs at the northeastern terminus of its global range in Litchfield and Fairfield Counties. Although considered a woodland habitat generalist in the bulk of its eastern North American range, in Connecticut the species' current distribution appears to be restricted to mature deciduous woodland underlain by steeply sloped exfoliating bedrock surfaces (Klemens, 1993). The propensity for steep, forested habitats is probably more a result of prior land use history in the region than specific physiological requirements of the species.*
>
> *The majority of the thirty (30) museum records for the state (AMNH Herpetology Collection) are from Fairfield County, with two specimens collected from Litchfield County. Collection dates range from May 7 to October 8. The species is known to occur in the vicinity of Candlewood Mountain including in adjacent Brookfield to the south (Cronkite, et al., 2011) and in Sherman and New Fairfield to the west and southwest, respectively (Klemens, 1993). Habitat in Sherman and New Fairfield has similar physiographic attributes to the project Site though historic aerial photography from 1934 (CT State Library) indicates that much of the project area was cleared of forest vegetation at that time (one easterly walled field near Wetland 1 appears to have young woodland copse growth), while Sherman and New Fairfield localities appear with largely intact forest cover.*

As noted in CTDEEP NDDB's letter dated July 10, 2017, "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." Additionally, the CTDEEP Northern Slimy Salamander Fact Sheet states, "The slimy salamander is restricted to old second growth deciduous or hemlock forests with steep, rocky slopes. It hides under rotten logs and thick duff layers on the forest floor."

Reproduction

Slimy salamanders require moist areas beneath cover objects or forest duff for breeding purposes. Mating in the northeast probably occurs opportunistically in fall or spring with egg deposition in May or late April. Females in the northern range probably clutch in alternate years after maturation owing to the limited seasonal opportunities for foraging. Similarly, maturation by both males and females is delayed in northern populations. Clutch size is positively correlated with adult female body size and ranges from about 12 to 25 eggs. Females typically tend their egg clutches through or beyond hatching.

Behavior

Slimy salamanders are active on the surface during suitable temperatures and humidity conditions and may climb upon shrubs while surface foraging (Hartzell, 2015), predominantly at night. They may be active on the surface diurnally under suitable conditions. Their adhesive skin secretions suggested by their common and Latin names provide a discouragement to predation, but not an absolute defense, and juveniles are less capable of rapidly generating large amounts of slime than are adults.

Much of the time individuals are fossorial, both for predator avoidance and for maintenance of a suitably moist microenvironment to facilitate their transcutanesous respiration. They remain below ground through the winter hibernation season and probably do not feed during this period in the northeast.

Animals do not typically stray far from burrows or cover features they are associated with and the annual home range for many individuals may be extremely limited (Merchant, 1972, Wells and Wells, 1976) and may contribute to their fragmented distribution in Connecticut and their inability to exploit the reforestation of the region as has been done by other, more common northeast amphibians.

h. Species' Abundance and Distribution at the Site

xii. Site Surveys, Species' Abundance, and Distribution

Portions of the property and adjacent areas fit the habitat model (Klemens, 1993) generally accepted as being capable of supporting this species at its northeastern range limit. Specifically, steeply sloped, rocky slopes with mature deciduous and/or mixed hemlock forest within western Fairfield and Litchfield Counties. Anecdotally, we are aware of a recent observation to the east of the Project area at Lookout Point, a minor promontory feature and local trail destination.

We have surmised that the species is present, predominantly in association with this cover type in and around the Project area. In view of this, the Project dimensions were amended from the initial configuration in order to minimize alteration of high quality slimy salamander habitat.

Site Surveys

Oxbow conducted site surveys dedicated to assessing habitat and documenting individual salamanders on three separate days in September and one day in October (September 12th, 22nd, and 30th and October 4, 2017). Additionally, cover objects were examined for a period of approximately 40 minutes within Wetland I and the adjacent (west and southwest) upland during the CSC site walk on September 26, 2017. The October site visit examined the site to collaborate the slope raster analysis performed to qualitatively assess habitat. A total of 45.5 field hours, predominantly focused on examination of the premises for slimy salamander and habitat were executed during September and early October 2017. At least 23 field hours were dedicated to searching expressly for slimy salamander with more or less continuous turning of natural cover objects during September. Cover objects were also routinely examined during other Site activities with greater than 1,000 objects examined. Cover objects examined include coarse woody debris from deadfalls, log piles and cut-

and-dropped timber, stones and slabs lying on organic matter and accumulations of leaf litter and duff in hollows between rock features. The density or availability of downed woody matter, typically more abundant within mature forests, probably influences the quality of the habitat both on a large and fine scale for slimy salamander (Grover, 1998).

Salamanders encountered in terrestrial conditions during the above noted site investigations include red- and lead-backed morphs of the redback salamander(s) (*Plethodon cinereus*), marbled salamander(s) (*Ambystoma opacum*), post-metamorphic spotted salamander(s) (*Ambystoma maculatum*) and eastern newt(s), [eft stage] (*Notopthalmus viridescens*). Additionally, excepting spotted salamander, the above were also observed within jurisdictional wetland habitat (Wetland I) with a single four-toed salamander (*Hemidactylium scutatum*) also observed.

No slimy salamanders were observed over the course of five (5) full, or partial field days on site between September 12th and October 4, 2017, during which virtually all suitable coarse woody or loose stony material found under foot was turned. During the CSC site walk on September 26, 2017, a rotted log less than 1 yard off a cart road was turned to expose a writhing, small, black Plethodontid salamander. It was not able to be captured without risking injury and it was speculated it could be a juvenile slimy salamander, however this could not be confirmed. On September 30, 2017, an Oxbow scientist spent considerable time turning cover material following both an over-night rain and significant mid-day rains. *P. cinereus* were more readily found than during prior visits with ten (10) red morphs and seven (7) lead morphs observed. Several of the salamanders reacted much like the unidentified animal found on September 26, 2017, but each was captured and the ventral surface was examined for quick verification of species.

Species' Abundance and Distribution

Despite the absence of direct observation of slimy salamander on the Facility Parcel, the habitat quality, dimensions and adjacency to other occurrences suggests the species is likely to persist at this locus, and particularly in the higher quality, older growth, steep rocky forested sections. Areas exhibiting both at least a 35% grade, rocky limestone slopes and mature, predominantly deciduous forest were mapped via a raster analysis in October 2017 (see **Appendix D**). These zones match the documented habitat preferences by this species at the extreme of its currently documented eastern range (excepting historic occurrence in southern New Hampshire).

Based on the raster analysis, estimated prime slimy salamander habitat on the Project Site includes approximately 49.0 acres, including a 2.9+/- acre area in the southwest (outside of work area), 16+/- acres east/southeast of the Facility and 30.6+/- acres east and north of the Facility (see **Figures 3a and 3b**).

This habitat is adjacent and contiguous with abundant off-site habitat of similar character and with forested, moderate slope habitat on site to be conserved. Much of the habitat to be conserved shows considerable horizontal buffering from any site disturbance and can be presumed to fully retain its supporting functions with regard to this species and the guild of associated taxa.

At this time, there is no reasonable population estimate or estimate of animal density on this or other landscapes in this part of the state. *P. glutinosus* is a significant component of many mesic temporal forests elsewhere in its range, but its stenecious habits in Connecticut forests defies population estimation in the absence of a systematic assessment of one or more current occurrences. Given the age and qualitative aspects of the habitat adjacent to the work area it could be expected that the density of animals extant is near carrying capacity for the habitat.

3.0 POTENTIAL IMPACTS TO STATE LISTED SPECIES

i. Potential Impacts to State-Listed Species

Potential Impacts to State-Listed Species Other Than slimy salamander

As provided in CSC submittals we do not anticipate significant impacts to other taxa and have worked to minimize the potential impact to slimy salamander.

In brief, we found that although New Milford has recent records, the seral stages suitable for supporting golden-winged warbler are wholly absent from the premises. We therefore do not anticipate impact to any life stage of this species.

Eastern box turtles may inhabit the premises. However, this species typically occurs in rarefied numbers in montane habitats with shallow soils and pervasive bedrock. No persistent indicators (carapace remains, etc.), nor live animals were encountered during repeated site visits under suitable conditions. We therefore conclude that the species is either absent or at low detectable densities on the mountain. It is more probable that animals inhabit the mesic deciduous forest to the east in a portion of the electric interconnection corridor, where protective measures are proposed during the interconnection construction period (if during the active season).

There is no supporting aquatic habitat for wood turtle within or adjacent to the Array Parcel. There is a small, intermittent drainage from the vernal pools in Wetland I that does not provide aquatic habitat. Near the northern terminus of the interconnection alignment, Rocky River comes within approximately 300 feet of the interconnection corridor. The interconnection is at the service road edge and we do not anticipate any impacts to the species, if present, due to the installation of poles and conductors in this area.

No bat surveys were completed; however, Candlewood Solar has committed to the following protection measures with respect to bats:

> *Tree clearing will be completed during the hibernation or winter range period (Hoary, Red and Silver-haired) for bats and tree clearing will be limited to November 1 through March 30. The implementation of this measure would be protective of those species of bats identified as well as other bat species.*
>
> *Additionally, large diameter coniferous and deciduous trees and wooded buffers adjacent to wetland areas will be maintained whenever possible. Based on the revised site plan layout, forested buffer areas vary by wetland.*
>
> *Finally, as noted in NDDB's July 10, 2017 letter, "Bat houses installed in the area where trees will be removed will help in the conservation of tree roosting bats." As a conservation measure, Candlewood Solar will mount between 20 and 30 bat houses on east facing, mature tree trunks, not less than 12 feet from the ground in areas where trees are removed.*

Potential Impacts to State-Listed slimy salamander

Tree clearing and grading are required for construction of the Project. The revised plan configuration limits this impact to approximately 1.3 acres of the 49+/- acres of high quality forested salamander habitat. This impact is distributed as approximately 0.9 acre in the extreme north of the limit of work and approximately 0.4 acre within the electric interconnection route (see **Figures 3a and 3b**).

Clearing of vegetation will directly remove the plant community and moderate site grading will remove other materials (i.e. rocks, logs, leaf litter, forest debris, etc.) from the forest floor making the interior habitat unsuitable for slimy salamander. As such, clearing and grading for construction of the Project will reduce wildlife cover and foraging habitat. Additionally, some individuals, if located in the area of work, could be injured or killed by construction activities.

As a result, there will be an acute loss of approximately 1.3 acres of steeply sloped mature (deciduous) woodland. Although the southwestern 2.8+/- acres will be separated from the larger, contiguous high quality slimy salamander habitat, the species is not known to make extended movements on par with pond breeding species (Merchant, 1972; Wells and Wells, 1976). We do not view the separation of these two, already disjunct areas as being a direct impediment to the species, though admittedly, mature, low slope forest (extant) is less of an impediment than grassland habitat to occupy the Project area.

It is not certain if or what effects artificial lighting might have on the non-migratory slimy salamander, its behavior or predation vulnerability. In any case, the completed project will not disburse artificial lighting so will not impact animals living beyond the array boundaries within intact forested habitat.

The mowing schedule has been devised outside the active period for box turtles so as to avoid adult mortality of box turtles in the external (to the fence) shade apron. Whereas grassland and scrub habitat is avoided by slimy salamander we do not anticipate mowing maintenance of the shade aprons to result in any mortality to members of the species.

In summary, the presumed, aggregate impact to slimy salamander will be the loss of approximately 1.3 acres of prime, mature steeply sloped habitat, and potential secondary impacts to forested habitat within 100 to 300 horizontal feet (see **Figure 3b**) where microclimate conditions may have subtle effects upon primary habitat. As assurance of the enduring presence of the slimy salamander, 100 acres of land, including 30 off-site acres will be placed into perpetual conservation. This includes nearly 80 acres of steep, second growth woodland habitat to the benefit of slimy salamander as well as three vernal pools and their 100 foot vernal pool envelopes and additional areas of woodland totaling approximately 20 acres.

j. Estimated Area of State-Listed Taxa Impacted

The original project layout was modified and compressed to further avoid steeply sloped prime slimy salamander habitat, supporting terrestrial habitat for two cryptic vernal pools, and to minimize potential impacts to archaeological resources. The currently proposed limit of work will, excepting approximately 1.3 acres (see **Figure 3b**), largely avoid the encumbrance of steeply sloped forested habitat, with a concentration of the condensed panel field occupying the less significant, low-slope mesic forest and pasture land habitats. An assessment of impacts to preferred slimy salamander habitat is provided in Table 1, below and depicted on **Figures 3a and 3b**.

Table 1. Impacts to Preferred Slimy Salamander Habitat	
Limit of Work (LOW) Impact Area	**Acres**
35% Slope Area	1.3
0 – 100 ft. Buffer to Prime Habitat	2.9
100 – 200 ft. Buffer to Prime Habitat	6.4
200 – 300 ft. Buffer to Prime Habitat	7.1

As discussed in more detail in Section 4.l. below, the reduced Facility footprint will result in a concomitant reduction in tree clearing north and east of the solar PV array; contributing to the protection of potential or actual habitat for slimy salamander and other species. Additionally, work within steep rocky forest for the electric interconnection route east of the solar PV array has been modified to take advantage of a relic haul road feature therein, thus reducing the number of trees to be cut and the ground surface disturbance necessary for pole installation.

4.0 'FEASIBLE AND PRUDENT ALTERNATIVES'

k. Alternatives

No Build

Under the No Build Alternative, Candlewood Solar would not pursue the construction and operation of the proposed solar photovoltaic electric generating facility to address the input of clean energy into the ISO-NE grid, and associated reduction in dependence on non-renewable sources of electric power within the region.

Because the No Build Alternative does not meet the need of the Tri-State Clean Energy Request for Proposals issued by the states of Connecticut, Massachusetts and Rhode Island in October 2015, the No Build Alternative was not considered.

Solar Panel Array Site Alternatives

The following sites were considered by Candlewood Solar and Candlewood Solar's land development partner, New England Clean Power. Note that Candlewood Solar focused on sites within the New Milford area due to proximity to the Rocky River substation, which is a PTF node on the ISO-NE grid. This node is interconnected to a 345 kV high voltage transmission line. Connecting at this location allows a generation facility to provide benefits to the ISO-NE grid in Connecticut by providing deliveries into the ISO-NE forward capacity market, thereby standing ready to provide energy during constrained periods in the western Connecticut region.

Kimberly Clarke Property, Route 7, New Milford

The Kimberly Clarke Property consists of a closed landfill and adjacent unused farm and forest area. The site is located on the northeast flank of Candlewood Mountain and was not large enough to accommodate 20 MWac. Part of the site is also mapped as Prime Farmland and State Important Farmland Soils. Additionally, based on the most recent NDDB mapping dated June 2017, all of Candlewood Mountain is within a shaded area for State and Federal Listed Species and Significant Natural Communities and therefore a potential concern with a listed species. Further, the site would have required significant site work, clearing and grading, with the presence of extensive wetland areas. Lastly, building an array at this location would be highly visible to Route 7 traffic, and potentially to abutters.

Private Farmland, New Milford

This working farm consisted of a total of over 122 acres, but was surrounded by single family homes with steep grades facing east with significant wetlands. Buildable area was determined to be less than 40 acres, which cannot accommodate a minimum 20 MWac project. A solar array at this site would be visible to abutters.

Parcel on Pickett District Road, New Milford

A parcel of property located on Pickett District Road, under contract with an affiliate of New Milford Clean Power, Candlewood Solar's land development partner was reviewed and assessed for project development. At only approximately 40 acres in size, the parcel cannot accommodate a minimum 20 MWac solar facility and as such was not considered further. Additionally, the parcel is also valued too high to be economical for solar development.

Candlelight Valley Country Club - 401 Danbury Road, New Milford

The Candlelight Valley Country Club parcel located at 401 Danbury Road in New Milford consists of approximately 129 acres. Much of the Candlelight Valley Country Club parcel is located within 100-year floodplain and/or contains mapped wetlands. The buildable area outside of floodplain and mapped wetlands on the parcel is less than 40 acres, which is not large enough to accommodate a 20 MWac solar facility. A solar array facility on this parcel would also likely be visible to abutters. Additionally, purchase cost would also make the parcel uneconomical for solar.

Century Brass Site, New Milford

One brownfields site was considered, the Century Brass site, however, at 72-acres with significant wetland areas, the site is not large enough to accommodate a 20 MWac solar array and avoid direct wetland impacts. At the time of site screening, this site was also under contract to Panda Power, Inc. who proposed a 500 MW gas powered electric plant.

Electric Interconnection Route

The electric interconnection route must run from the Solar PV Facility to the interconnection point on Route 7. No other interconnection points are available at this location. The electric interconnection route has undergone more than one redesign. Specifically, the alignment of the electric interconnection route was reconfigured to minimize the crossings of wetlands and to maximize the extent that the route follows existing cleared corridors. The electric interconnection route was redesigned to follow existing cleared access road (First Light) and a utility corridor (existing fiber-optic line corridor). Further, in October 2017, in advance of the filing that was received by CTDEEP NDDB on October 28, 2017, the location of the electric interconnection route immediately east of the Facility was altered slightly to better take advantage of an existing old haul road cut thereby reducing environmental impacts in this area.

Variation to Proposed Project

During Project hearings held as part of the CSC process, installation of solar panels on the approximate 5-acre hay field/horse pasture along Candlewood Mountain Road was discussed. In the CSC's Decision and Order dated December 21, 2017, the CSC directed that, as part of the Development and Management Plan (D&M) for the Project, Candlewood Solar shall consider "locating a portion of the solar panels within the approximately 5-acre open field area and associated visual screening of such panels as necessary." (Decision and Order 1.b.)

The existing hay field/horse pasture located along Candlewood Mountain Road is part of the approximate 163.5-acre parcel of property (26/67/1) and is approximately 5 acres in size. There is existing access to the hay field/horse pasture from the existing access road off of Candlewood Mountain Road. Installation of solar panels within this area is not expected to require any grading and no tree clearing would be required.

Installation of panels in this area would require an electric interconnection with the main Solar PV Facility on Candlewood Mountain. It is assumed that this interconnection route would follow the existing access road.

As noted above, the hay field/horse pasture is located along Candlewood Mountain Road. There are existing residential homes and an Inn located along Candlewood Mountain Road, north and south of the hay field/horse pasture. To visually screen the panels, plantings (mature trees) of a minimum 7 to 8 feet in height would be required

along the north, west, and south sides of the hay field/horse pasture, along with a visual screening fence.

A Phase IB cultural resources assessment (Phase IB) of this area was completed. The Phase IB report filed with the SHPO, determined that this area lacks research potential and the qualities of significance as defined by the National Register of Historic Places (NRHP) criteria for evaluation and no further archaeological examination of this area was recommended prior to usage of this area for temporary construction parking and material and equipment storage. However, in its determination, the SHPO suggests construction matting be used to lessen the potential impact to undisturbed resources, if present. Further consultation with SHPO would be required for use of this area for solar panels.

In consideration of using the existing hay field/horse pasture located along Candlewood Mountain Road for parking and equipment and material storage during construction, Oxbow conducted a habitat assessment for the golden-winged warbler, on the approximate 5-acre hay field/horse pasture located along Candlewood Mountain Road. The results of Oxbow's assessment that, "…suitable breeding habitat for golden-winged warbler is wholly absent from the premises due to a lack of open canopy habitat in a suitable early to mid-successional seral stage to support the species, no protective measures are provided."

While mature trees can be planted for visual screening purposes, the hay field/horse pasture located along Candlewood is less than 200 feet from the existing residence to the north and approximately 330 to 390 feet from existing structures associated with Candlelight Farms Inn located southwest of the hay field/horse pasture. Additionally, a second electric interconnection line would be required to connect the panels located along Candlewood Mountain Road to the main Solar PV Facility on Candlewood Mountain. At this time, it is presumed that the electric interconnection between the panels located along Candlewood Mountain Road and the main Solar PV Facility would follow the route of the existing access road. In order to accommodate this electric interconnection route, the wires would either be run overhead using utility poles and guy wires requiring the access road or portions of it to be widened or some of the poles and guy wires potentially installed within wetlands, areas of mature forest, and/or areas of steep slope and mature forest. Alternatively, the electric conduit could be run underground, below the access road requiring the road to be thicker than currently proposed, resulting in additional grading and a wider access road corridor, again potentially requiring work within wetlands, areas of mature forest, and/or areas of steep slope and mature forest. Further, the additional costs associated with bifurcating the Solar PV Facility and second electrical interconnect would increase project costs by approximately5-10 percent. Due to the proximity of the hay field/horse pasture to existing residences and facilities along Candlewood Mountain Road, potential impacts to wetlands, prime slimy salamander habitat, and archaeological resources, and the additional costs, this variation to the Project is not deemed prudent, nor preferable to the proposed Solar PV Facility layout and location.

I. Modification of Project Plans to Minimize Impacts

In October 2017, during CSC review, the Project was revised to reduce the overall footprint of the Solar PV Facility, shift the layout of the Solar PV Facility to reduce impacts, and alter a portion of the electric interconnection route to follow existing areas of disturbance.

The overall footprint of the Solar PV Facility was reduced through an alternative design utilizing higher capacity panels. This change resulted in the reduction in the number of panels from approximately 75,000 to approximately 60,000 panels, a reduction of approximately 20%. Additionally, the panel tilt was adjusted from a 15-degree tilt angle to a 12-degree tilt angle. The change in tilt height allowed for closer panel placement, further reducing the overall Facility footprint. Also, at a 12-degree tilt angle, the top height of the panels is approximately 7 feet above the ground surface, which is lower than the previously proposed panels at a tilt angle of 15-degrees. However, the bottom edge of the lowest panel remained unchanged at approximately two to three (2 to 3) feet above ground. The changes to the panels and the reduction in the overall footprint of the Facility, reduced the amount of clearing required by approximately 16.52 acres (solar array limit of work) and the area of work within prime slimy salamander habitat. The following table provides a summary of changes by Project component.

Table 2. Comparison of Impacts by Project Layout

Component	Previous Total Area (Acres)	Previous Forested Area to be Cleared (Acres)	Revised Total Area (Acres)	Revised Forested Area to be Cleared (Acres)
Solar Array Limit of Work (LOW)	84.42	68.52	67.9	51.55
Fenced Solar Array	67.04	57.1	54.55	38.92
Additional Cleared Area		11.4		12.63
Interconnect	4.57	4.3	4.83	4.52
Total Area of Disturbance	***89.42***	***72.8***	***78.16***	***56.07***

While the changes to the panels resulted in a reduction in the overall facility footprint, the output of the Facility was also reduced due to the reduction in kW size. The original design had an annual projected output of 34,000,000 kWh whereas the revised Facility output on an annual basis is projected at 31,000,000 kWh. The original size of the array was 26.5 MW DC and the revised array is approximately 24 MW DC. A 24 MW DC array is the minimum size that can be coupled with 20 MWac of inverter capacity, which is the minimum required AC capacity under Candlewood Solar's PPA with the participating Tri-State RFP Utilities. As the project was bid into the Tri-State RFP competitively, 24 MW DC is also a lower limit of Facility size below which project economics become highly unfavorable, and make the project unfinanceable.

In addition to reducing the overall footprint, the layout of the Solar PV Array was also shifted to further reduce potential impacts. Specifically, the Solar Array was pulled away from Wetland I to the east and Wetland V to the north. These changes allow the Project and associated area of disturbance to further avoid areas of undisturbed

prime slimy salamander habitat and to increase the size of undisturbed buffer around the cryptic vernal pools located in Wetland I and V.

Further, the location of the electric interconnection route immediately east of the Facility has also been altered slightly to better take advantage of an existing old road cut, thereby reducing environmental impacts in this area.

Finally, as part of this effort, an approximate 100-acre area was identified to be set aside for permanent conservation as mitigation for unavoidable impacts to prime slimy salamander habitat. See Section 5.n. for information on the proposed mitigation area.

5.0 AVOIDANCE/MITIGATION

m. Design and Work Methodology

Construction sequencing is an important aspect of the project to ensure avoidance and minimization of impacts to natural resources, environmental compliance, and meeting the project schedule for construction completion.

As noted above, despite the absence of direct observation of slimy salamander on the Facility Parcel, the habitat quality, dimensions and adjacency to other occurrences suggests the species is present at this locus, and particularly in the higher quality, older growth, steep rocky forested sections. Potential impacts to slimy salamander, where present, will be avoided and minimized to the extent practicable during the construction period. Where avoidance of construction impacts is not feasible, impacts will be mitigated for, as discussed in the Project Mitigation section of this report. Avoidance and minimization measures during the construction period will include the following:

- Installation of a perimeter siltation (style) exclusion barrier. This feature will be installed following the winter timber removal within the array field and occur prior to April 15th. The perimeter, exclusion barrier will be a minimum of 20 inches tall and will be secured to and remain in contact with the ground. The exclusion barrier will be maintained, and inspected weekly through the construction period to secure any gaps or openings at the ground level. This barrier will discourage the entry of slimy salamanders, if present and other wildlife that might wander into the work zone where soil chemistry from recently exposed mineral soils may be deleterious to amphibians. Similarly, construction materials may function as attractive cover features for meandering amphibians, reptiles and small mammals. The exclusion of these species during the construction phase is designed to reduce the opportunities for incidental mortality to animals acclimatized to the pre-construction site conditions.
- No heavy machinery or vehicles will be parked beyond the LOW and exclusion barrier.
- The area between the LOW / limit of tree clearing and the fence line will be cleared of trees to eliminate shading, however, the stumps will not be removed in this area, further reducing potential impacts.
- All construction personnel will be trained on the potential presence of listed threatened and endangered species likely to occur in the Project area. Training will include species descriptions, agency and project contacts if a species is identified, reporting and notification requirements, and instructions for relocation if a species is found inside work areas. Additionally, laminated, instructional posters will be placed at the construction trailer(s).
- Any sightings of slimy salamander, will be reported to the CTDEEP Wildlife Division at 860-424-3011 or deep.ctwildlife@ct.gov and the appropriate NDDB animal survey form located on the CTDEEP's website at http://www.ct.gov/deep/cwp/view.asp?a=2702&q=323460&depNav_GID=1641.

n. Mitigation Area Description

The proposed slimy salamander mitigation area consists of an approximate 100-acre predominantly contiguous, steep slope, mature forest area on portions of the Facility Parcel and an adjacent parcel (New Milford Assessor Map parcel 34/15) under the

control of the developer of the parcel hosting the Project, New Milford Clean Power, LLC. The area to be set aside is shown in **Figure 1**. Approximately 70 acres of the mitigation area is located on the Facility Parcel and approximately 30 acres is located on the adjacent parcel.

The slimy salamander mitigation area was selected to encompass prime, contiguous slimy salamander habitat as well as the majority of the CTH associated with three vernal pools. Specifically, contiguous areas identified through the raster analysis on the Facility Parcel and adjacent parcel which exhibit steeply sloping, mature unfragmented forested characteristics were identified. The 100-acre mitigation area size was deemed appropriate to provide a meaningful mitigation area of landscape scale, nearly twice the size of the overall forest impacts of the Project and more than 75 times the area of the direct impacts (1.3 acres) to prime slimy salamander habitat.

It should be further noted that the proposed mitigation area, targeted primarily as slimy salamander habitat will also provide protection to other critical resources, including existing wetlands, vernal pools and associated critical terrestrial habitat. The conservation measure will also potentially protect the landscape for eastern box turtle and preserved access to Lookout Point. Also, beneficiary to this measure is the preservation of an archaeologically sensitive area; unfragmented forest area, and the summit of Candlewood Mountain (terminus of the Blue Trail). This permanent protection may further provide a seed effect and encourage acquisition and protection of adjacent areas of Candlewood Mountain.

The conservation of approximately 100-acres of contiguous forested habitat (see **Figure 1**), approximately 75% of which is steeply sloped, mature forest will preserve prime slimy salamander habitat in perpetuity. Direct alteration or loss of slimy salamander habitat cannot readily be mitigated with translocation measures or habitat manipulation for reasons described above. For this reason, we conducted the raster analysis shown in **Appendix D** and used this data to guide design amendments so as to reduce the direct impact to highest quality slimy salamander habitat to the extent practicable. With a minimized impact scheme we concluded that perpetual protection of high quality habitat is the most meaningful long-term conservation measure to be implemented at this site. Anything short of perpetual land protection is a poor guarantee of real conservation and can only be viewed as a potential deferral of impacts at a later time. The proposed conservation measure assures all parties that long after the decommissioning of the Project, the conserved land will remain in its natural state, supportive of slimy salamander.

Course woody debris is an associated feature with the occurrences of slimy salamander in Connecticut. There is also the potential for microclimatological impacts (due to site clearing) permeating the remaining, intact bordering woodlands. In view of this potential, we propose to distribute approximately 125 5 to 8-inch diameter log sections, four feet in length, harvested from the Project area within the 100-foot zone beyond the shade management area. These course woody debris items will be distributed in the northern portion of the conservation area (north over Wetland 1 and to a similar point west of the Project) at an effective density of approximately 1 object per 2,500 square feet of bordering forested habitat. Distribution will be done using multiwheel, low-impact vehicles and by hand and the locations of all objects will be mapped using GPS.

o. Timeline for Site Preparation and Transplant Activities

Site preparation will start with surveying and then tree clearing in both the array and interconnect areas. This will be followed by installation of stormwater best management practices (BMPs) and then grading activities, conducted in a sequence in accordance with stormwater permit requirements. We anticipate that site preparation activities will commence in November 2018, consistent with the hibernation or winter range period (Hoary, Red and Silver-haired) for bats, and will continue for approximately 3 to 4 months (tree clearing will be limited to November 1 through March 30), not accounting for stoppage for winter conditions.

The mitigation area does not involve any site preparation or transplant activities. The mitigation area will be conserved in its natural state. The only amelioration will be that described immediately above – course woody debris enhancement in the adjacent bordering forest within the conservation area.

p. Conservation/Restrictive Easements

At this time, no Conservation/Restrictive Easements have been placed over the mitigation area. Upon receipt of all final environmental permits and approvals, Candlewood Solar and its land development partner, New Milford Clean Power, LLC, will select a qualified local land conservation organization or group with which to convey the parcel under a conservation easement. The conservation easement will allow named, passive and non-destructive activities and exclude development, mineral extraction, timber harvesting (except for habitat management) and other alterations of its natural state. The completion of the transaction to deed the subject conservation parcel to a local trust or similar entity will be accomplished once the Project is fully entitled and permitted.

The developer of the parcel hosting the Project, New Milford Clean Power, LLC, in cooperation with Candlewood Solar will deed approximately 100-acres (located on the Facility parcel [approximately 70-acres] as well as on an adjacent parcel [approximately 30-acres] also controlled by the developer) to a local land conservation trust or similar entity as permanently conserved land. The area to be set aside is shown in **Figure 1**, and encompasses prime, contiguous slimy salamander habitat.

The approximate 100-acre contiguous, steep slope, mature forest perpetual conservation parcel will be created to preserve slimy salamander habitat, conserve existing unfragmented forest, and protect existing wetlands, vernal pools, and archaeological resources. As explained in section 5 n. above, approximately 75% of the conserved 100-acre area is steeply sloped, mature forest prime slimy salamander habitat. The restricted parcel will also permanently conserve and protect wetlands, vernal pools and associated critical terrestrial habitat, provide terrestrial habitat for box turtles and deciduous habitat for diverse forest vertebrates, invertebrates and native plants as well as providing recreational benefits by the protection of the Candlewood Mountain summit and its feature as the terminus of the Blue Trail.

The conservation easement will outline the types of uses allowed and those prohibited on the mitigation area. Specifically, allowed uses will be limited to passive recreation that will have minimal environmental impact on the mitigation area such as walking, hiking, and nature observation, and picnicking at the summit of Candlewood Mountain, which is also the terminus of the “Blue Trail”. Prohibited uses will include tree clearing and timber harvesting, land alteration, mineral extraction, other alterations of its natural

state, hunting, and motorized vehicles such as all-terrain vehicles (ATVs) and snowmobiles.

6.0 LONG-TERM MAINTENANCE

q. Management Measures to Protect Mitigation Area

As described above, the developer of the parcel hosting the Project, New Milford Clean Power, LLC, will deed approximately 100 acres (located on the Facility Parcel as well as adjacent parcel 34/15 also controlled by the developer) to a qualified local land conservation organization or group as permanently conserved land. The area to be set aside is shown in **Figure 1**, and encompasses prime slimy salamander habitat immediately to the north and east of the area to be used for the Solar PV Facility.

The conservation easement will outline the types of uses allowed and prohibited on the mitigation area (see Section 5.p.). The conservation easement will limit the type of activities allowed within the mitigation area in order to permanently protect its natural resource values. No maintenance or management measures are proposed to protect the mitigation area.

A brief Baseline Documentation Survey will be provided to NDDB and the Conservation entity responsible for future conservation of the land. This will consist of:

1. A narrative describing the current conditions of the premises.
2. Approximately 25 geo-located photographs exemplary of the current conditions.
3. An ortho-mosaic figure of the premises obtained via UAS (unmanned aerial system), showing the limits of the conserved area.

During construction and for two years thereafter, Candlewood Solar (or successor, etc.) will conduct annual documentation of static conditions of the conserved area. This will be accomplished by an individual walking the bounds (guided by GPS) and composite or ortho-rectified aerial images flown at similar elevation as the baseline. Thereafter, the Conservation entity may elect to continue such monitoring program at less frequent intervals (e.g. 3-5 year).

r. Mitigation Area Responsible Party

Candlewood Solar and its land development partner, New England Clean Power will work together to identify a qualified local land conservation organization or group. To date, Candlewood Solar and New England Clean Power are in discussions with the following organizations and groups:

- Weantinoge Land Trust
- Roxbury Land Trust
- Steep Rock Association
- Housatonic Valley Association

Candlewood Solar will inform NDDB as soon as a Conservation Entity has been selected.

7.0 MONITORING

s. Monitoring and Reporting

We propose three (3) years of monitoring consisting of the following components:

1. Slimy Salamander Survey of the forested Project Area – 2018 only.
2. Slimy Salamander Surveys of the on-site (~ 70 acres) portion of the 100-acre mitigation area – 2018-2020.
3. Survey and documentation of the approximately 125 course woody debris cover objects placed in the 100-foot forest buffer as described in Section 5.n. above – 2019-2020.

xiii. Annual Field Surveys

Project Site – Preconstruction Survey.

One (1) Annual Field Survey with the objective of demonstrating presence or absence of slimy salamander within the forested Project Area will be conducted during the spring and early summer of 2018. This will consist of three (3) field days and two (2) field nights of survey (approximately 120 field hours) within the 64+/- acre forested Project Area and adjacent on-site woodlands. A Scientific Collection Permit and specific protocol approvals will be obtained prior to commencement of field work.

Diurnal surveys will consist of systematic traverses across the Project Area guided by hand-held Trimble GEO XH or similar device. Observers will turn all suitable cover objects, record a generic data point and note all vertebrates observed beneath cover objects in the Project Area. If preferred by NDDB, slimy salamanders encountered, if any can be displaced to an area outside the Project Area. Although disorienting, and possibly moderately disruptive to resident animals, this may be preferable to leaving them in place during construction.

Cover types (steep mature forest or conventional forest) will be determined for all encounters. All animals will be field processed (sexed measured [SVL, TL, mass] and photographed) so as to provide an index of unique individuals based on patternation within a standardized portion of the integument. No toe-clipping will be conducted unless NDDB wishes a collection of genetic materials to be preserved and deposited at a suitable institution.

A brief summary will be provided within seven (7) business days of each site walk with an end-of-year comprehensive report including GIS graphics, animal photographs and empirical demographic data tabularized. Any animal disposition or displacement will also be recorded and reported per the preferences of NDDB.

Conservation Parcel – Annual Slimy Salamander Surveys.

Approximately 70 of the 100 acres to be conserved are on the Facility Parcel. Approximately 20% is wetland or low gradient forest. The 70+/- acre portion of the mitigation area will be treated in a similar fashion as the Project Area for surveys over the course of three (3) seasons (2018-2020).

Whereas the intent of the Project Site Preconstruction Survey is to glean the fit of the presumptive steep rocky forest ecotype – to essentially answer the question, "Are there slimy salamanders significantly outside steep mature forest?", this effort is intended to glean occurrence, distribution and population estimation (with individual seasons serving as replicates, *n* = 3).

Presuming a significant number of captures can be made annually in the conserved mitigation area forest, a general demographic profile can be obtained including mean body mass, SVL, sex ratio and estimate of population/density. These data have significant value toward the conservation of the species in Connecticut, and can potentially be merged with other recently collected observations and data (Rte. 202 Bypass Field Studies) on slimy salamander to better inform habitat parameters and criteria in the two counties currently supporting this species.

Surveys will be conducted in the pre-construction period (2018) and continue post-construction for an additional two years. Field effort will consist of a standardized, 120 field hours distributed over three (3) days or day equivalents in May and June, and two (2) nocturnal surveys conducted under post-rain or high-humidity conditions.

Additionally, the 125 cover objects distributed into the adjacent undisturbed forest will be turned not more than two times per season and any adoption of the displaced cover objects by slimy salamander will be noted, and compared with observations for naturally occurring materials in the same 100-foot threshold zone.

Prior to performing field surveys, the qualified herpetologist(s) will obtain, if not already in possession of a Scientific Collection Permit to allow for manipulation and measurement of animals.

The approximate 30-acre easement area located on the adjacent parcel, which will be included in the 100-acre mitigation area is not included in the annual field survey area. This area is located east of the prime slimy salamander habitat located within the Facility parcel, will not be directly or indirectly impacted by the Project, and is significantly buffered from the Project area with the exception of a short segment of the electric interconnection route.

t. Reporting

Brief reports will be submitted to CTDEEP NDDB within seven (7) business days of all field surveys. If field surveys extend beyond one day, reports will be submitted within seven (7) business days of the last field day. Field surveys / site visits reports will include:

- Survey dates and duration;
- Description and map(s) of areas surveyed;
- Site photographs;
- Species photographs;
- List of species identified;
- Location of any slimy salamanders identified, and
- Assessments of all recommended actions.

An Annual Summary Report will also be submitted to CTDEEP NDDB prior to December 31st of that year.

u. Organization or Individuals Responsible for Monitoring and Reporting

Candlewood Solar will be responsible for contracting the monitoring and reporting work. Candlewood Solar will retain a qualified herpetologist(s) to conduct the required monitoring, survey, and reporting efforts in accordance with Project permits and approvals.

8.0 REFERENCES

CTDEEP. Northern Slimy Salamander, *Plethodon glutinosus*, Fact Sheet. http://www.ct.gov/deep/cwp/view.asp?a=2723&q=326086

Connecticut Herpetology. https://www.ctherpetology.com/slimy-salamander

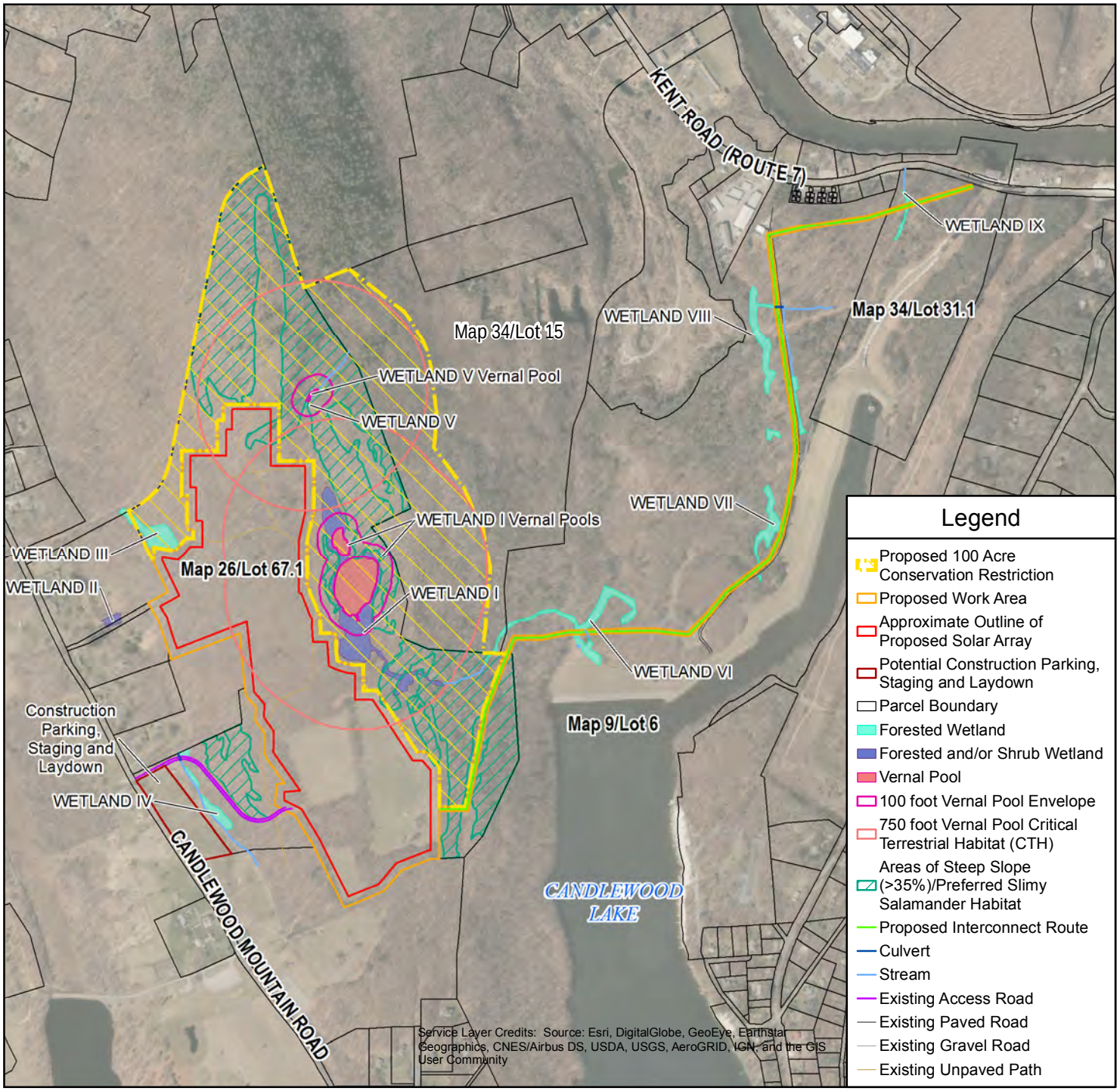
Hartzel, S. M. 2015. Unusual Diurnal Activity of a Northern Slimy Salamander (*Plethodon glutinosus*, Green 1818) in Pennsylvania. Collinsorum (4) 2, p. 2.

Klemens, M.W. 1993. *Amphibians and Reptiles of Connecticut and Adjacent Regions.* Hartford, CT: State Geological and Natural History Survey of Connecticut Bulletin 112. 318 pp.

Merchant, H. 1972. Estimated Population Size and Home Range of the Salamanders *Plethodon jordani* and *Plethodon glutinosus.* Journal of the Washington Academy of Science, V 62/3, 248-257.

Wells, K. D. and R. A. Wells. 1976. Patterns of Movement in a Population of the Slimy Salamander, *Plethodon glutinosus*, with Observations on Aggregations. Herpetologica 32:156-162.

Figures



Legend

- Proposed 100 Acre Conservation Restriction
- Proposed Work Area
- Approximate Outline of Proposed Solar Array
- Potential Construction Parking, Staging and Laydown
- Parcel Boundary
- Forested Wetland
- Forested and/or Shrub Wetland
- Vernal Pool
- 100 foot Vernal Pool Envelope
- 750 foot Vernal Pool Critical Terrestrial Habitat (CTH)
- Areas of Steep Slope (>35%)/Preferred Slimy Salamander Habitat
- Proposed Interconnect Route
- Culvert
- Stream
- Existing Access Road
- Existing Paved Road
- Existing Gravel Road
- Existing Unpaved Path

PROPOSED CONSERVATION RESTRICTION

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Location of Site

Notes & Sources

0 1,000 Feet

N

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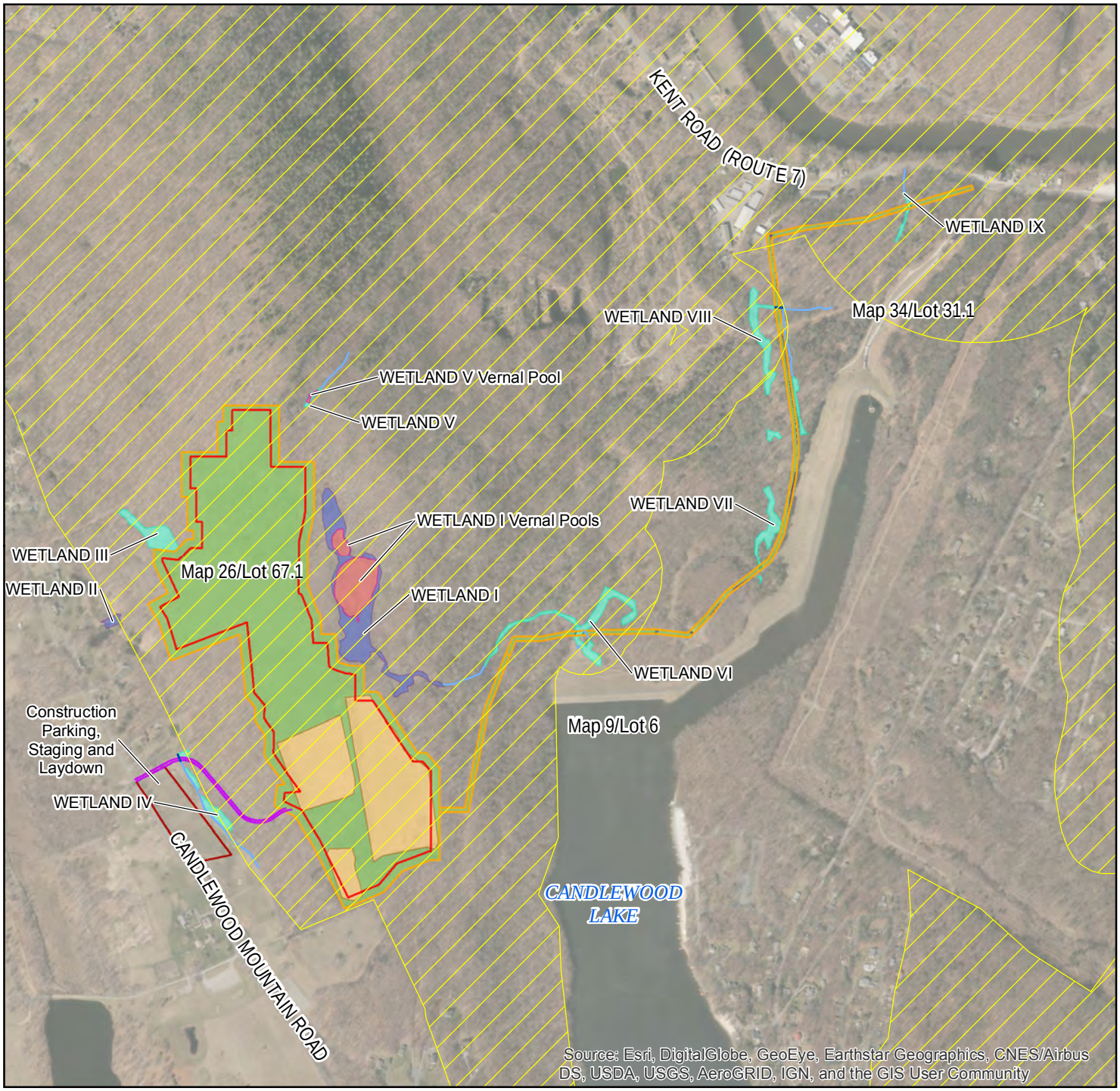
Environment & Infrastructure, Inc.
271 Mill Road
Chelmsford, MA 01824
(978) 692-9090

FIGURE 1



WAP
KEY HABITATS

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Location of Site

Legend

- Approximate Outline of Proposed Solar Array
- Proposed Work Area
- Potential Construction Parking, Staging and Laydown
- Existing Access Road
- Culvert
- Stream
- Natural Diversity Area
- Upland Forested
- Upland Herbaceous
- Man-Made Habitat
- Forested Wetland
- Forested and/or Shrub Wetland
- Vernal Pool

Notes & Sources

Source: Natural Diversity Area datalayer updated June 2017 obtained from CTDEEP GIS website.
Notes: Critical Habitats datalayer updated 07/01/2009 obtained from CTDEEP GIS website is not visible within the current extent.

0 1,000 Feet

N

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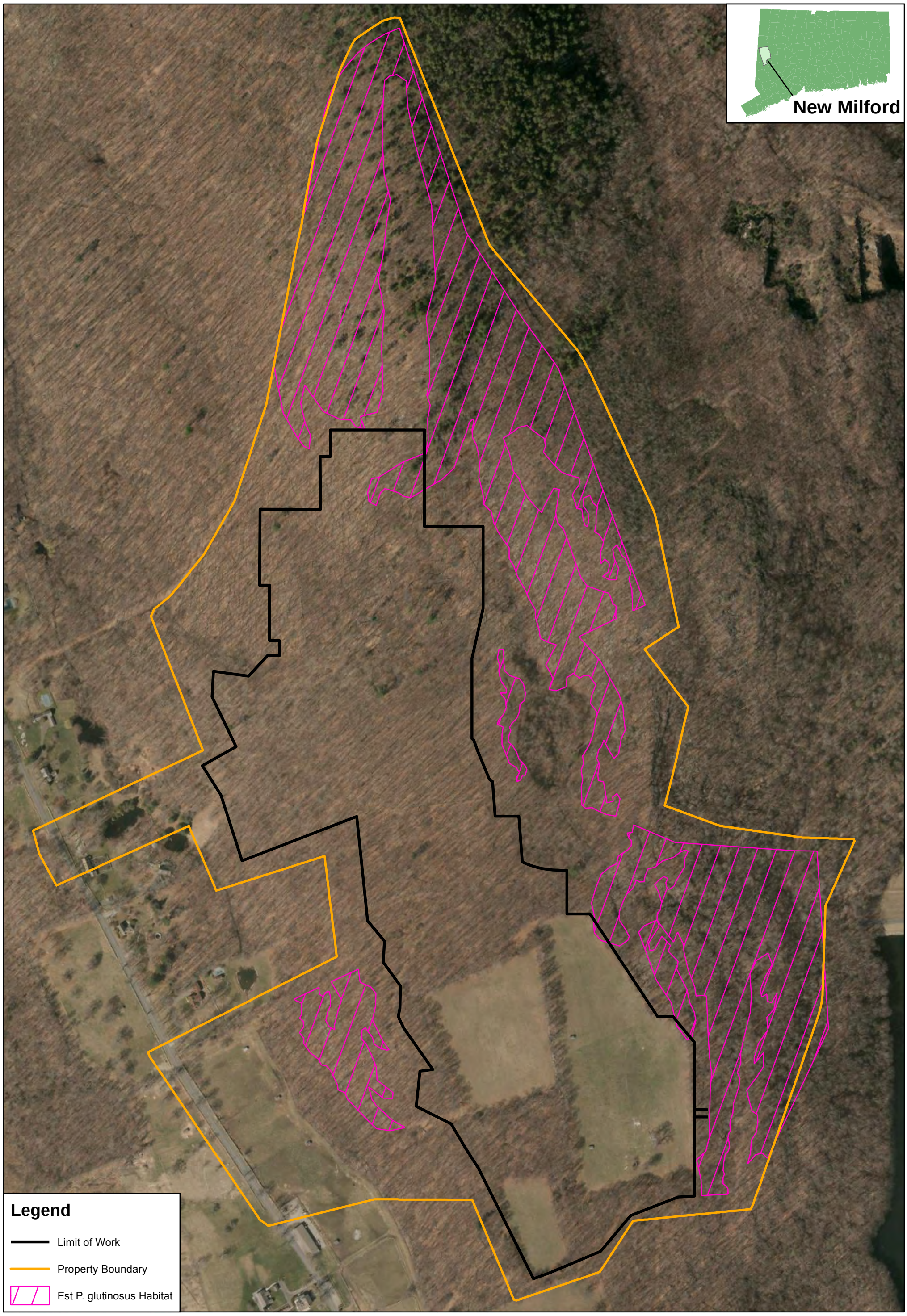
Amec Foster Wheeler
Environment & Infrastructure, Inc.
271 Mill Road
Chelmsford, MA 01824
(978) 692-9090

FIGURE 2

H:\Ameresco\NewMildford_CT\Task2\MXD\Fig2_WAPKeyHabitats.mxd January 25, 2018 DWN: emily.gardiner CHKD: AKN



Oxbow Associates, Inc.
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Wildlife Studies • Herpetology
Vernal Pool Ecology
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ACTON, MASSACHUSETTS 01720
PHONE: (978) 929-9058
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WEB: www.oxbowassociates.com

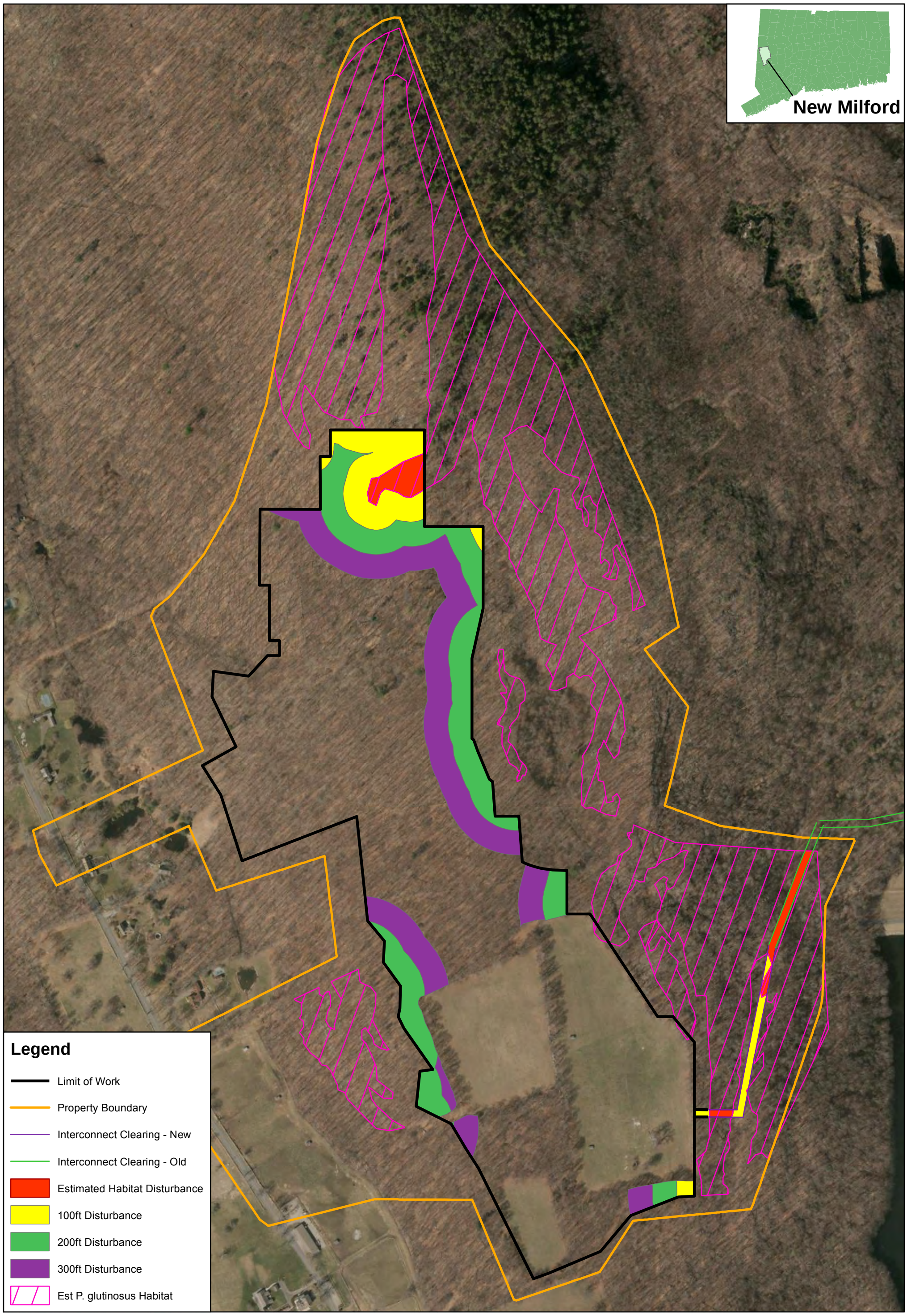
N
W E
S

1:4,200

1 inch = 350 feet

0 350 700
Feet

Figure 3.a
Existing Cond.
Candlewood Mtn. PV
Candlewood Mtn. Rd
New Milford, CT
February, 2018



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N
W E
S

1:4,200

1 inch = 350 feet

0 350 700
Feet

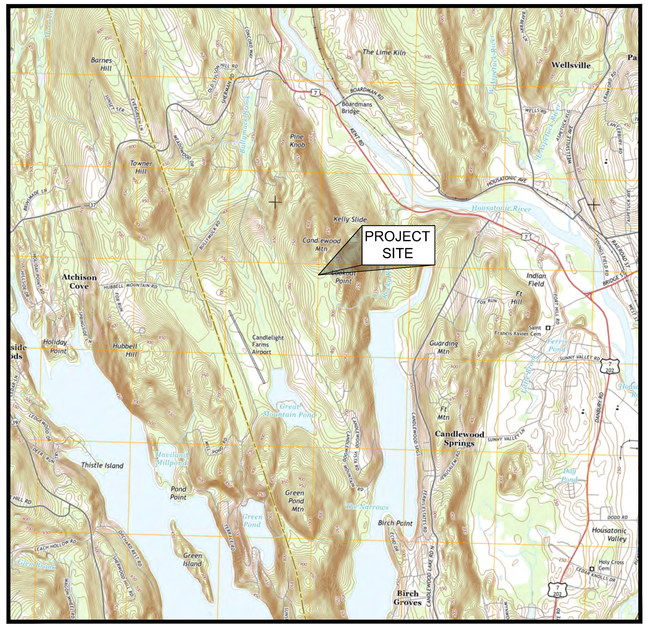
Figure 3.b
Proposed Impacts
Candlewood Mtn. PV
Candlewood Mtn. Rd
New Milford, CT
February, 2018

Appendix A

Simplified, Fully Labeled Engineering Plans Overlaid on Aerial Maps

CANDLEWOOD SOLAR

20 MW (AC) SOLAR PV DEVELOPMENT
CANDLEWOOD MOUNTAIN ROAD
NEW MILFORD, CONNECTICUT
SEPTEMBER, 2017
ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION



LOCUS MAP
NOT TO SCALE

AERIAL IMAGE
NOT TO SCALE

DRAWING INDEX

SHEET NUMBER	DRAWING TITLE	DRAWING NUMBER
1	COVER SHEET	G-001
2	GENERAL NOTES AND LEGEND	G-002
3	EXISTING CONDITIONS PLAN AND KEY MAP	C-101
4	OVERALL SITE LAYOUT PLAN	C-102
5	SITE LAYOUT PLAN	C-103
6	SITE LAYOUT PLAN	C-104
7	SITE LAYOUT PLAN	C-105
8	SITE LAYOUT PLAN	C-106
9	GRADING AND DRAINAGE PLAN	C-107
10	GRADING AND DRAINAGE PLAN	C-108
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12	GRADING AND DRAINAGE PLAN	C-110
13	EROSION AND SEDIMENT CONTROLS - OVERVIEW AND PHASING PLAN	C-111
14	EROSION AND SEDIMENT CONTROLS - INTERCONNECT ROUTE	C-112
15	EROSION AND SEDIMENT CONTROLS - INTERCONNECT ROUTE	C-113
16	EROSION AND SEDIMENT CONTROLS - INTERCONNECT ROUTE	C-114
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21	EROSION AND SEDIMENT CONTROLS - NOTES AND DETAILS 1	C-301
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23	CIVIL DETAILS	C-303
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25	TRANSFORMER, INVERTER AND PAD DETAILS (PROVIDED BY OWNER)	C-305
26	SOLAR ARRAY RACK ELEVATIONS (PROVIDED BY OWNER)	C-306

DEVELOPED BY

CANDLEWOOD SOLAR LLC
AMERESCO
Green • Clean • Sustainable
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FRAMINGHAM, MA 01701

PREPARED BY

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REVISION	DATE	ISSUE / REVISION DESCRIPTION	APPROVED
1	09/29/17	UPDATED STORMWATER DESIGN	RJB

PROJECT: CANDLEWOOD SOLOR PROJECT
CANDLEWOOD MT. ROAD AND KENT ROAD
NEW MILFORD, CONNECTICUT

TITLE: GENERAL
COVER SHEET

CLIENT: CANDLEWOOD SOLAR LLC
AMERESCO Green • Clean • Sustainable

SEAL: DRAFT

DESIGNED BY: TM/DP	DRAWN BY: RR
CHECKED BY: MP	SCALE: AS SHOWN
PROJECT NUMBER: 3652160082	
DRAWING NUMBER: G-001	
SHEET NUMBER: 1 OF 26	

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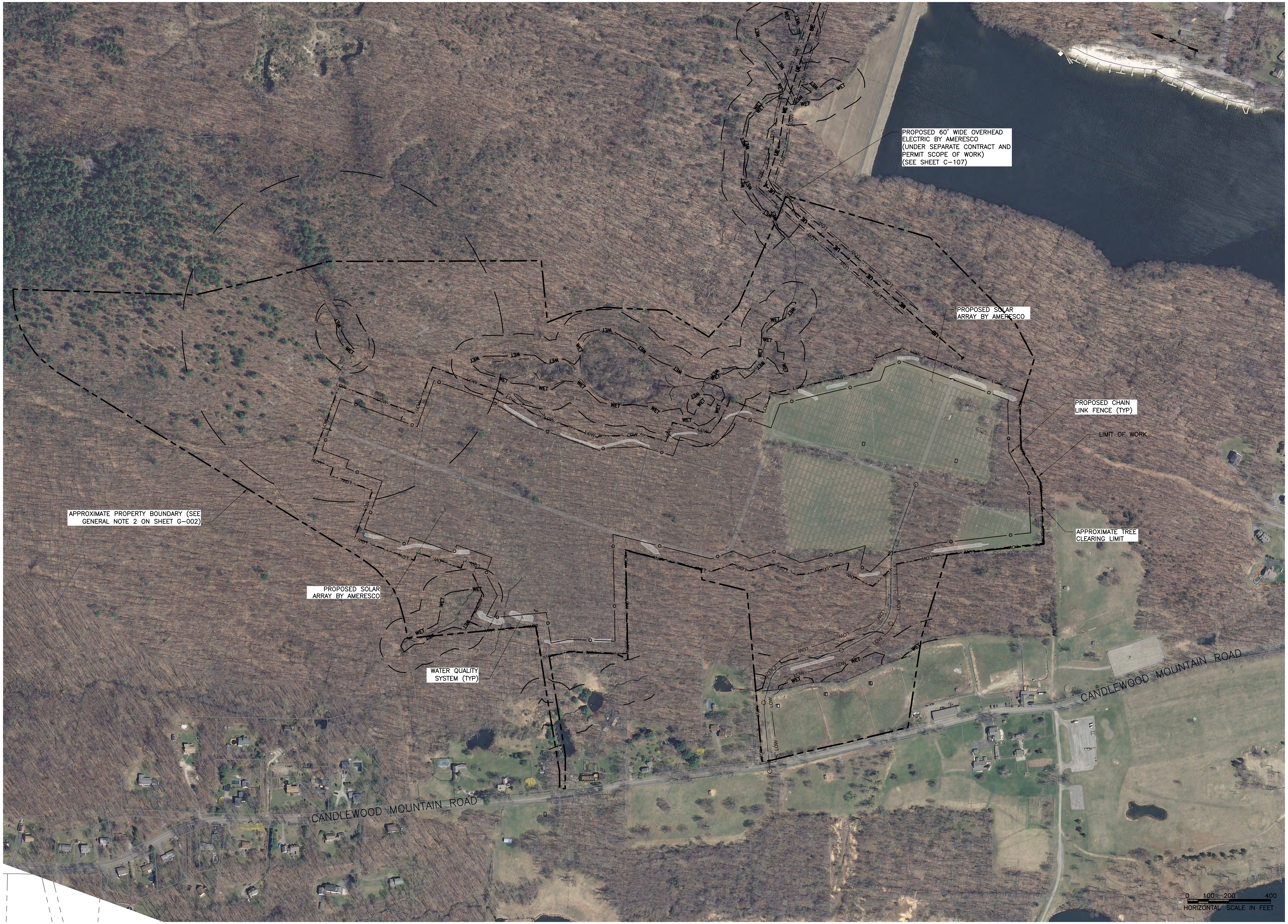

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REVISION	DATE	ISSUE / REVISION DESCRIPTION	APPROVED
1	09/29/17	UPDATED STORMWATER DESIGN	RJB

PROJECT: CANDLEWOOD SOLOR PROJECT
CANDLEWOOD MT. ROAD AND KENT ROAD
NEW MILFORD, CONNECTICUT

CIVIL

TITLE: OVERALL SITE LAYOUT PLAN

CLIENT: CANDLEWOOD SOLAR LLC

AMERESCO Green • Clean • Sustainable

SEAL:

DRAFT

DESIGNED BY: TM/DP	DRAWN BY: RR
CHECKED BY: MP	SCALE: AS SHOWN
PROJECT NUMBER: 3652160082	
DRAWING NUMBER: C-102	
SHEET NUMBER: 4 OF 26	

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REVISION	DATE	ISSUE / REVISION DESCRIPTION	APPROVED
0	09/29/17	UPDATED STORMWATER DESIGN	RJB

PROJECT:
CANDLEWOOD SOLOR PROJECT
CANDLEWOOD MT. ROAD AND KENT ROAD
NEW MILFORD, CONNECTICUT

CIVIL
TITLE:
SITE LAYOUT PLAN

CLIENT:
CANDLEWOOD SOLAR LLC
AMERESCO Green • Clean • Sustainable

SEAL:
DRAFT

DESIGNED BY: TM/DP	DRAWN BY: RR
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DRAWING NUMBER: C-103	
SHEET NUMBER: 5 OF 26	

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MATCH LINE SHEET C-106

MATCH LINE SHEET C-103

PROPOSED FLUSH GRAVEL ROAD (TYP)

PROPOSED PERIMETER FENCE (TYP)

WATER QUALITY SYSTEM (TYP)

LEVEL SPREADER (TYP)

EXISTING LEDGE/ROCK OUTCROP (TYP)

EXISTING TREE LINE (TYP)

EXISTING GRAVEL ROAD/PATH

EXISTING STONE WALL (TYP)

LIMIT OF WORK

APPROXIMATE TREE CLEARING LIMIT (TYP)

PROPOSED SOLAR ARRAY (TYP) (PROVIDED BY OWNER)

100' WETLAND BUFFER (TYP)

DELINEATED WELTANDS (TYP)

APPROXIMATE PROPERTY BOUNDARY (SEE GENERAL NOTE 2 ON SHEET G-002)

CANDLEWOOD MOUNTAIN ROAD

0 30 60 120
HORIZONTAL SCALE IN FEET

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REVISION	DATE	ISSUE / REVISION DESCRIPTION	APPROVED
1	09/29/17	UPDATED STORMWATER DESIGN	RJB

PROJECT:
CANDLEWOOD SOLOR PROJECT
CANDLEWOOD MT. ROAD AND KENT ROAD
NEW MILFORD, CONNECTICUT

TITLE:
CIVIL
SITE LAYOUT PLAN

CLIENT:
CANDLEWOOD SOLAR LLC

AMERESCO
Green • Clean • Sustainable

SEAL:
DRAFT

DESIGNED BY: TM/DP	DRAWN BY: RR
CHECKED BY: MP	SCALE: AS SHOWN
PROJECT NUMBER: 3652160082	
DRAWING NUMBER: C-104	
SHEET NUMBER: 6 OF 26	

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amec foster wheeler
AMEC FOSTER WHEELER ENVIRONMENT & INFRASTRUCTURE, INC.
271 MILL ROAD
CHELMSFORD MASSACHUSETTS 01824
TELEPHONE: (978) 692-9090
FAX: (978) 692-6633
WEB: WWW.AMECFW.COM

REVISION	DATE	ISSUE / REVISION DESCRIPTION	APPROVED
1	09/29/17	UPDATED STORMWATER DESIGN	RJB

PROJECT:
CANDLEWOOD SOLOR PROJECT
CANDLEWOOD MT. ROAD AND KENT ROAD
NEW MILFORD, CONNECTICUT

TITLE:
CIVIL
SITE LAYOUT PLAN

CLIENT:
CANDLEWOOD SOLAR LLC
AMERESCO Green • Clean • Sustainable

SEAL:
DRAFT

DESIGNED BY: TM/DP	DRAWN BY: RR
CHECKED BY: MP	SCALE: AS SHOWN
PROJECT NUMBER: 3652160082	
DRAWING NUMBER: C-105	
SHEET NUMBER: 7 OF 26	

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amec foster wheeler
AMEC FOSTER WHEELER ENVIRONMENT & INFRASTRUCTURE, INC.
271 MILL ROAD
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REVISION	DATE	ISSUE / REVISION DESCRIPTION	APPROVED
1	09/29/17	UPDATED STORMWATER DESIGN	RJB

PROJECT:
CANDLEWOOD SOLOR PROJECT
CANDLEWOOD MT. ROAD AND KENT ROAD
NEW MILFORD, CONNECTICUT

TITLE:
CIVIL
SITE LAYOUT PLAN

CLIENT:
CANDLEWOOD SOLAR LLC
AMERESCO
Green • Clean • Sustainable

SEAL:
DRAFT

DESIGNED BY: TM/DP	DRAWN BY: RR
CHECKED BY: MP	SCALE: AS SHOWN
PROJECT NUMBER: 3652160082	
DRAWING NUMBER: C-106	
SHEET NUMBER: 8 OF 26	

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AMEC FOSTER WHEELER ENVIRONMENT & INFRASTRUCTURE, INC.
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WEB: WWW.AMECFW.COM

REVISION	DATE	ISSUE / REVISION DESCRIPTION	APPROVED
1	09/29/17	UPDATED STORMWATER DESIGN	RJB

PROJECT:
CANDLEWOOD SOLOR PROJECT
CANDLEWOOD MT. ROAD AND KENT ROAD
NEW MILFORD, CONNECTICUT

TITLE:
CIVIL
GRADING AND DRAINAGE PLAN

CLIENT:
CANDLEWOOD SOLAR LLC
AMERESCO
Green • Clean • Sustainable

SEAL:
DRAFT

DESIGNED BY:	DRAWN BY:
TM/DP	RR
CHECKED BY:	SCALE:
MP	AS SHOWN

PROJECT NUMBER: 3652160082
DRAWING NUMBER: C-107
SHEET NUMBER: 9 OF 26

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Appendix B

Permits and Approvals

PETITION NO. 1312 - Candlewood Solar LLC petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed construction, maintenance and operation of a 20 megawatt AC (26.5 megawatt DC) solar photovoltaic electric generating facility located on a 163 acre parcel at 197 Candlewood Mountain Road and associated electrical interconnection to Eversource Energy's Rocky River Substation on Kent Road in New Milford, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		December 21, 2017

Decision and Order

Pursuant to Connecticut General Statutes (CGS) § 16-50k(a), CGS §4-176 and the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the construction, maintenance, and operation of a 20 MW Solar Photovoltaic Project on a 163 acre parcel at 197 Candlewood Mountain Road and associated electrical interconnection to Eversource Energy's Rocky River Substation on Kent Road in New Milford, Connecticut would not have a substantial adverse environmental effect, would meet all applicable U.S. Environmental Protection Agency and Connecticut Department of Energy and Environmental Protection (DEEP) Air and Water Quality Standards, and therefore, the Council will issue a declaratory ruling for the proposed solar photovoltaic electric generating project.

Unless otherwise approved by the Council, the facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and is subject to the following conditions:

1. The Petitioner shall prepare a Development and Management Plan (D&M) for this site in compliance with Sections 16-50j-60 through 16-50j-62 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Towns of New Milford, Brookfield and New Fairfield for comment and all parties and intervenors on the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:

    a. A final site plan including, but not limited to, the solar array, fence design, and the electrical interconnection line and corridor;
    b. Consideration of locating a portion of the solar panels within the approximately 5-acre open field area and associated visual screening of such panels as necessary;
    c. Construction hours and days of the week;
    d. Construction traffic measures;
    e. Erosion and sedimentation control plan consistent with the *2002 Connecticut Guidelines for Erosion and Sedimentation Control* including, but not limited to, seeding the site for stabilization purposes prior to installation of racking systems and panels;
    f. Site clearing, grubbing, stabilization, and stormwater controls phasing plan;
    g. A stormwater management plan consistent with the *2004 Connecticut Stormwater Quality Manual*, including an analysis on the potential impact of driveways on stormwater flows, including but not limited to, potential diversion of stormwater away from wetlands;
    h. Plans to comply with the recommendations from DEEP outlined in "Stormwater Management at Solar Farm Construction Projects" dated September 8, 2017;
    i. FAA marking/lighting plan, as necessary;
    j. Vegetation Management Plan including, but not limited to, provisions for frequency of mowing and vegetation maintenance that incorporate any DEEP-required seasonal restrictions, post-construction site inspections on a quarterly basis, and removal of any accumulated sediment and debris that could affect stormwater patterns;
    k. Decommissioning plan;
    l. Plans to comply with the SHPO's recommended precautionary measures as specified in the letter dated November 28, 2017; and

m. Final wildlife protection measures and/or seasonal restriction timelines for all DEEP-identified Natural Diversity Database species except for golden-winged warbler.

2. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed within three years from the date of the mailing of the Council's decision, this decision shall be void, and the facility owner/operator shall dismantle the facility and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The facility owner/operator shall provide written notice to the Executive Director of any schedule changes as soon as is practicable;

3. Any request for extension of the time period to fully construct the facility shall be filed with the Council not later than 60 days prior to the expiration date of this decision and shall be served on all parties and intervenors;

4. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;

5. The facility owner/operator shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v;

6. This Declaratory Ruling may be transferred, provided the facility owner/operator/transferor is current with payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v and the transferee provides written confirmation that the transferee agrees to comply with the terms, limitations and conditions contained in the Declaratory Ruling, including timely payments to the Council for annual assessments and invoices under Conn. Gen. Stat. §16-50v; and

7. If the facility owner/operator is a wholly owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer.

We hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed in the Service List, dated December 12, 2017, and notice of issuance published in The Danbury News Times.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

Connecticut
still revolutionary

Department of Economic and Community Development

State Historic Preservation Office

November 28, 2017

Ms. Tricia Foster
Senior 2 Planner
Amec Foster Wheeler Environment and Infrastructure, Inc.
271 Mill Road, 3rd Floor
Chelmsford, MA 01824

Subject: Phase IB Cultural Resource Reconnaissance Survey
20 MW Solar Photovoltaic Project
Parcels 26/67.1, 9/6, and 34/31.1
Candlewood Mountain Road
New Milford, Connecticut

Dear Ms. Foster:

The State Historic Preservation Office (SHPO) has reviewed the archeological survey report prepared by Heritage Consultants, LLC (Heritage), dated October 2017. The fieldwork was completed at the request of this office in a letter dated June 21, 2017. The proposed activities are under the jurisdiction of the Connecticut Siting Council and are subject to review by this office pursuant to the Connecticut Environmental Policy Act (CEPA). The proposed facility is located on portions of three adjacent parcels, totaling 163.5 acres; the solar array will occupy approximately 54.55 acres. The reconnaissance survey consisted of subsurface testing of areas deemed to have moderate to high archaeological sensitivity, and that would be subject to ground disturbing impacts as part of the proposed undertaking. A total of 8 cultural resources loci were identified, and 446 shovel tests were excavated within the areas considered to be archeologically sensitive based on the results of the Phase IA survey completed by Heritage. The submitted report is well-written, comprehensive, and meets the standards set forth in the *Environmental Review Primer for Connecticut's Archaeological Resources*.

During the archeological reconnaissance survey, shovel tests were excavated at 15 and 30-meter intervals; in areas where cultural materials were identified, shovel tests were reduced to 7.5 and 3.75-meter intervals. During survey, Locus 1, 3, and 4 contained small prehistoric flake scatters, indicative of single-use areas for stone sharpening, while failing to produce additional artifacts or evidence of cultural features, and as such, are not considered eligible for listing on the National Register of Historic Places applying the criteria for evaluation (36 CFR 60.4 [a-d]). This office concurs that additional archeological investigations of these areas are not warranted.

Locus 2 contained a single Early Archaic Period Bifurcate projectile point, an artifact type rarely identified in Connecticut. No other cultural materials for evidence of cultural features were identified within Locus 2.

Examination of the proposed solar facility also resulted in the identification of Locus 7, a prehistoric lithic workshop. Multiple shovel tests conducted in the area produced lithic material from undisturbed soil contexts, and is potentially eligible for listing on the National Register of Historic Places under Criterion D. SHPO will assign a state archaeological site number to Locus 7 once it has been requested by the consultant.

In response to the results of the survey, an avoidance and construction management plan has been developed by the project sponsor. Revisions to the previously submitted site plan include a buffer of approximately 69 feet that will separate the limit of work (LOW) and limit of tree clearing from the area of archeological sensitivity. Additionally, a fence line that will surround the facility is proposed to be located approximately 129 feet from Locus 7. Though tree clearing is proposed between the LOW and the fence line, the tree stumps will not be removed. An exclusion barrier consisting of standard silt fencing will be installed along the limit of the LOW. Further, a 100-acre area of the site, which includes Locus 7, is proposed for permanent conservation restriction. Area 4, anticipated as a staging area for construction parking and material/equipment storage, will not be graded, no additional tree clearance would occur, and no stone walls would be altered. SHPO suggests construction matting be used in Area 4 to lessen the potential impact to undisturbed resources. With these precautionary measures taken into consideration, the proposed development of the solar farm would have no adverse effect to cultural resources.

SHPO appreciates the cooperation of all interested parties in the professional management of Connecticut's cultural resources. We look forward to additional consultation if or when additional portions of the parcel are scheduled for development. These comments are provided in accordance with the Connecticut Environmental Policy Act. For additional information, please contact Marena Wisniewski, Environmental Reviewer, at (860) 500-2357 or marena.wisniewski@ct.gov.

Sincerely,

Mary B. Dunne

Mary B. Dunne
Deputy State Historic Preservation Officer

Appendix C

Photographs of Target Species

Appendix C – Photographs of Target Species

Photograph 1: Slimy Salamander. Source: Oxbow Associates, Inc. B. Butler

Photograph 2: Slimy Salamander. Source: Oxbow Associates, Inc. B. Butler

Appendix D

Site Raster Analysis and Photographs of Site Conditions

OXBOW ASSOCIATES, INC.
Wetlands Delineation and Permitting • Wildlife Studies • Herpetology • Vernal Pool Ecology

LOG OF DOCUMENTARY GROUND PHOTOS

Photographs taken by Kyle Cormier and Scott Smyers on October 4, 2017 using a Trimble GeoExplorer 6000 Series (GPS) and a DSLR Camera during sunny conditions (approximately 60°F)
(See time, date, position, and azimuth bearings in table below)
(See attached figures 1-8)

Series	Number	Northing	Easting	Azimuth
A	1	769351.517	807565.286	341
A	2	769420.863	807505.581	313
A	3	769464.626	807557.877	89
A	4	769503.624	807505.164	43
A	5	769508.874	807402.003	21
A	6	769551.789	807512.075	72
A	7	769608.798	807499.966	50
A	8	769612.057	807373.329	334
A	9	769634.113	807474.299	79
A	10	769741.137	807476.893	68
A	11	769811.68	807486.853	94
A	12	769927.016	807451.225	18
A	13	769623.997	807286.153	125
A	14	769557.662	807351.559	146
B	1	769076.775	808956.029	285
B	2	769150.019	808949.749	54
B	3	769295.319	808986.917	324
B	4	769375.565	809006.617	304
B	5	769411.669	808996.057	132
B	6	769505.072	809005.131	6
B	7	769605.88	809030.831	352
B	8	769710.513	809030.147	339
B	9	769819.765	809060.681	329
B	10	769906.159	809059.906	295
B	11	769955.416	809049.231	300
B	12	770072.981	809018.77	5
B	13	770067.676	808943.057	323
B	14	770201.002	808827.919	307
B	15	770245.113	808773.202	293
C	1	769943.353	809367.651	201
C	2	769807.946	809362.797	202

P.O. Box 971 • Acton, Massachusetts 01720-0971
Telephone: 978.929.9058 • E-mail: oxbow@oxbowassociates.com

C	3	769676.637	809319.682	220
C	4	769548.851	809286.496	211
C	5	769446.236	809265.356	217
C	6	769287.025	809269.705	199
C	7	770054.098	809373.395	307
C	8	770166.725	809352.651	22
C	9	770250.872	809333.303	2
D	1	770321.066	808588.133	7
D	2	770374.114	808653.777	161
D	3	770515.422	808713.175	358
D	4	770323.177	808555.149	224
E	1	770975.454	808038.406	86
E	2	771000.605	808083.644	6
E	3	771037.231	808103.962	355
F	1	770785.847	806895.314	168
F	2	770667.452	806933.015	166
F	3	770530.555	806974.514	167
G	1	771951.46	807539.351	126
G	2	771926	807608.087	110
G	3	771918.518	807713.676	61
G	4	772027.895	807839.974	38
G	5	772103.024	807860.596	41
G	6	772173.064	807900.54	42
G	7	772258.588	807942.874	39
G	8	772373.387	807977.708	320
G	9	772467.655	807997.833	335
G	10	772563.314	808059.522	10
H	1	772402.676	808097.1	185
H	2	772318.589	808064.38	209
H	3	772293.827	808023.384	189
H	4	772279.355	807959.23	180
H	5	772152.586	807930.547	162
H	6	772068.954	807953.781	169
H	7	771958.905	807958.043	159
H	8	771820.828	808009.348	162
H	9	771699.75	808089.898	163
H	10	771590.914	808115.128	120
H	11	771476.422	808165.115	139
I	1	771298.793	808367.665	149
I	2	771235.812	808422.907	168
J	1	772891.839	807385.501	138
J	2	772943.647	807391.518	97
J	3	772977.086	807354.646	39
J	4	773009.989	807335.899	18

Documentary ground photographs

Photopoint A-1

Photopoint A-2

Photopoint A-3

Photopoint A-4

Photopoint A-5

Photopoint A-6

Photopoint A-7

Photopoint A-8

Photopoint A-9

Photopoint A-10

Photopoint A-11

Photopoint A-12

Photopoint A-13

Photopoint A-14

Photopoint B-1

Photopoint B-2

Photopoint B-3

Photopoint B-4

Photopoint B-5

Photopoint B-6

Photopoint B-7

Photopoint B-8

Photopoint B-9

Photopoint B-10

Photopoint B-11

Photopoint B-12

Photopoint B-13

Photopoint B-14

Photopoint B-15

Photopoint C-1

Photopoint C-2

Photopoint C-3

Photopoint C-4

Photopoint C-5

Photopoint C-6

Photopoint C-7

Photopoint C-8

Photopoint C-9

Photopoint D-1

Photopoint D-2

Photopoint D-3

Photopoint D-4

Photopoint E-1

Photopoint E-2

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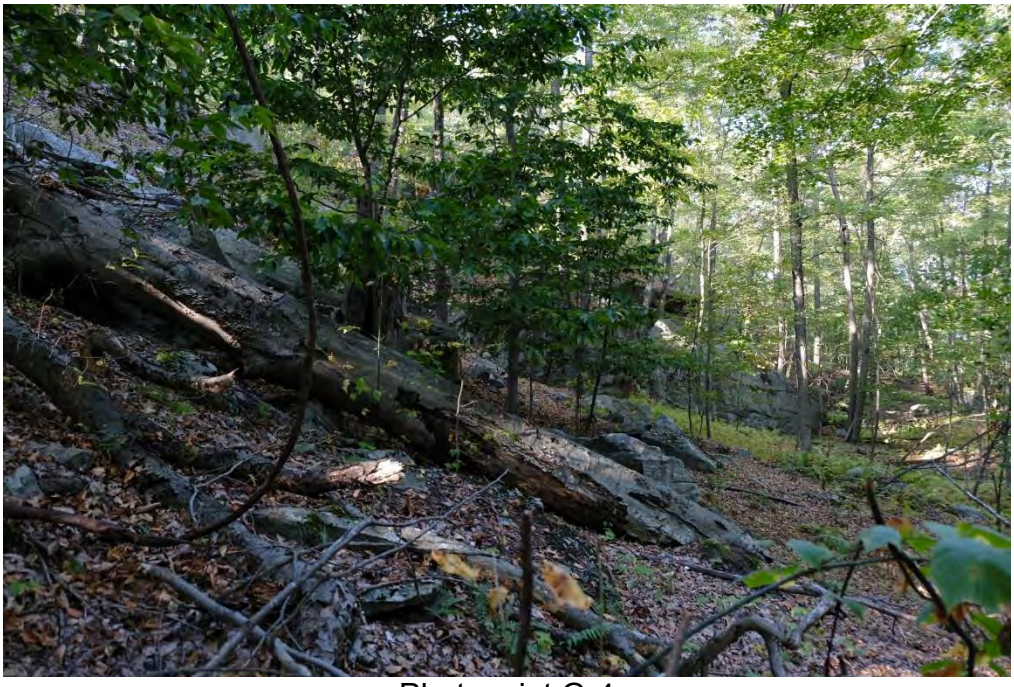
Photopoint G-1

Photopoint G-2

Photopoint G-3



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Photopoint H-1

Photopoint H-2

Photopoint H-3

Photopoint H-4

Photopoint H-5

Photopoint H-6

Photopoint H-7

Photopoint H-8

Photopoint H-9

Photopoint H-10

Photopoint H-11

Photopoint I-1

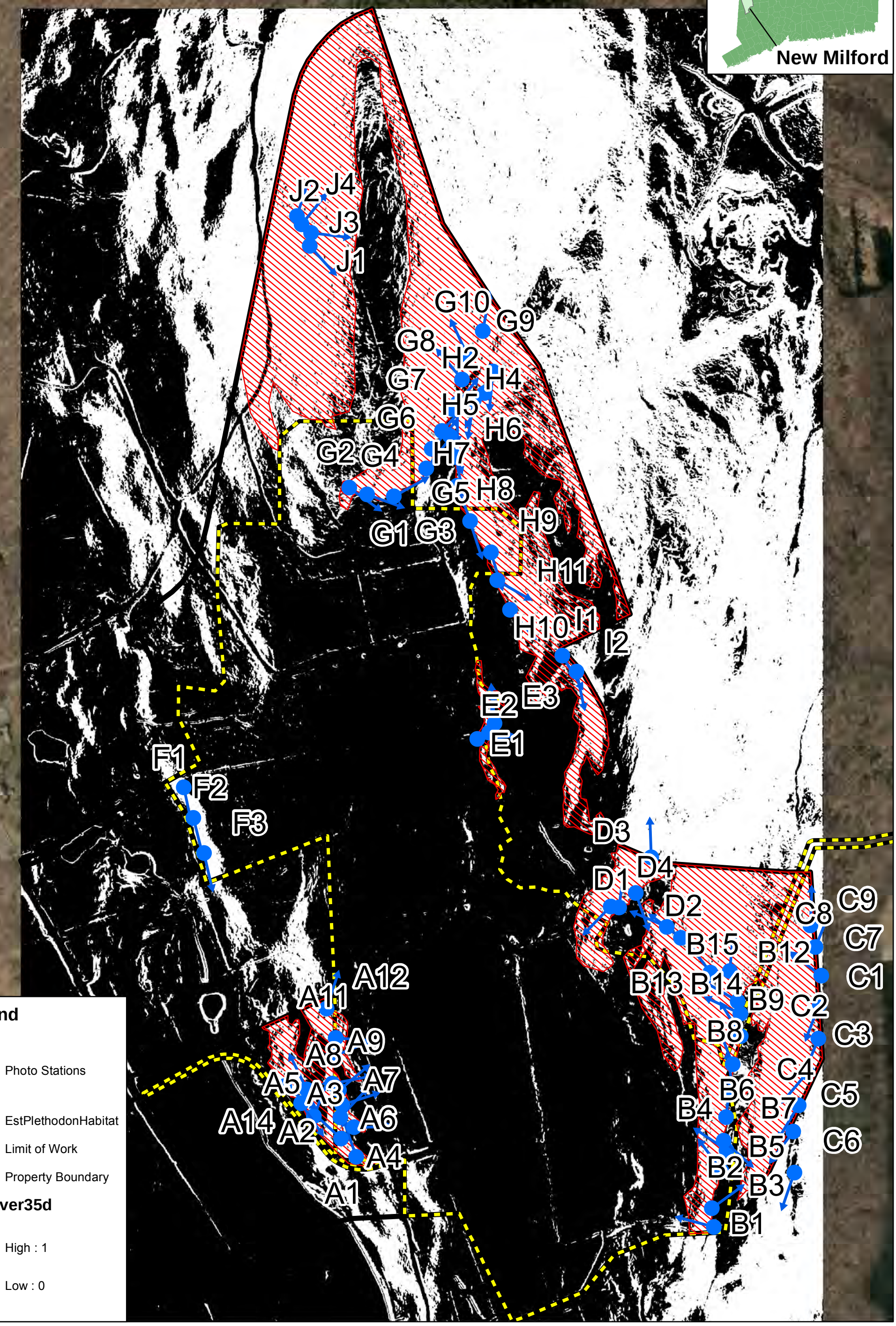
Photopoint I-2

Photopoint J-1

Photopoint J-2

Photopoint J-3

Photopoint J-4



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Wetlands Delineation and Permitting
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ACTON, MASSACHUSETTS 01720
PHONE: (978) 929-9058
FAX: (978) 635-1892
WEB: www.oxbowassociates.com

N
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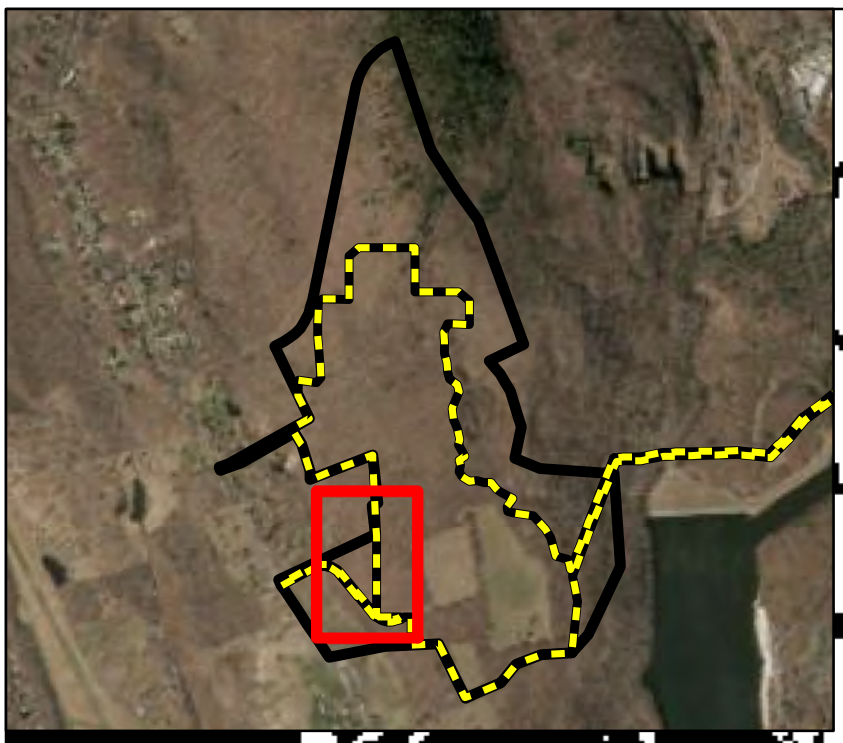
1:4,200

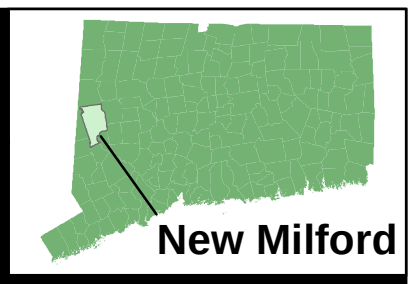
1 inch = 350 feet

0 350 700

Feet

Photo Stations
Candlewood
Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017





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Legend

Photo Stations

EstPlethodonHabitat

Limit of Work

Property Boundary

slopover35d

Value

High : 1

Low : 0

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N W E S

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Feet

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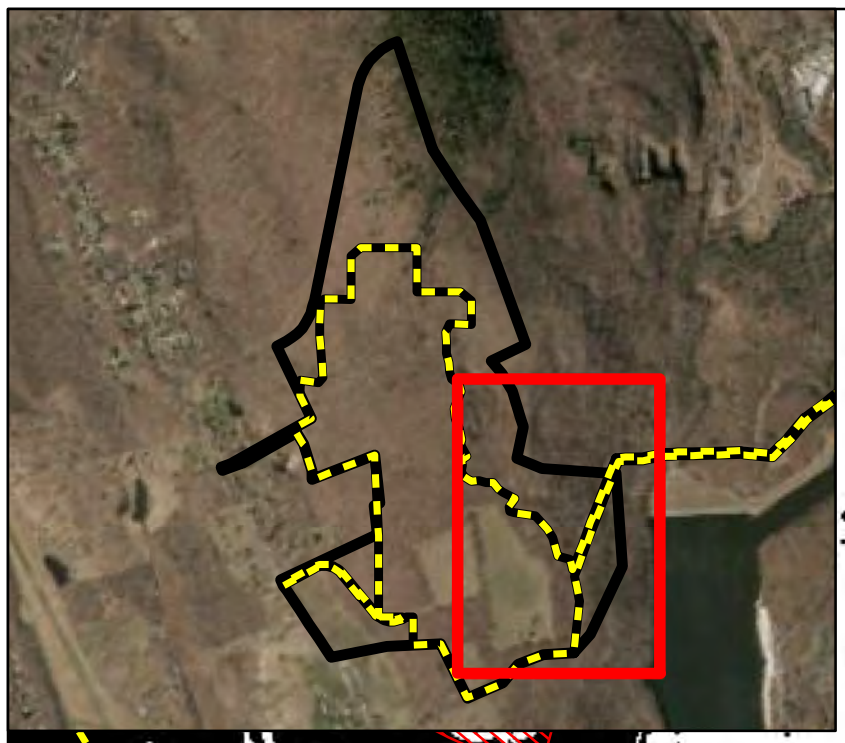
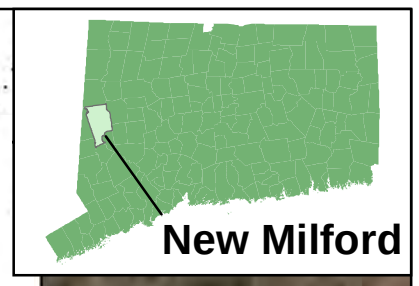
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017





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Legend

Photo Stations

EstPlethodonHabitat

Limit of Work

Property Boundary

slopover35d

Value

High : 1

Low : 0

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1 inch = 150 feet

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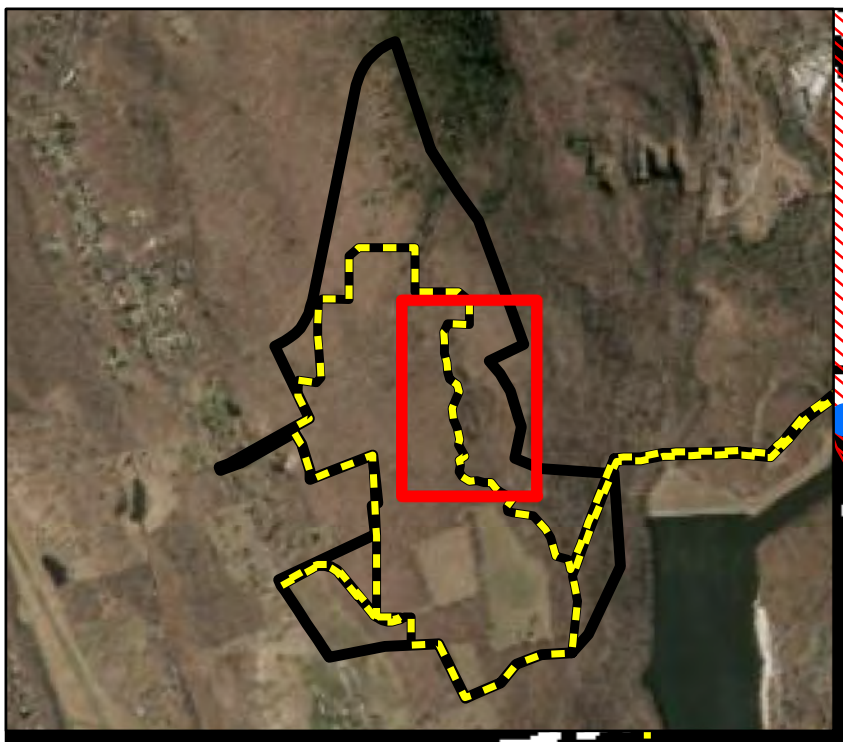
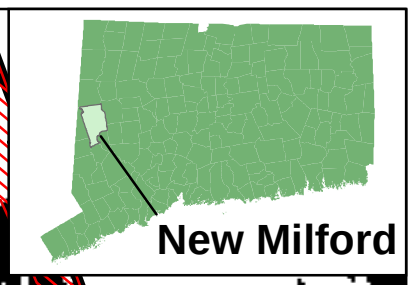
Photo Stations - B, C & D Series
Candlewood Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017





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H10

H11

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I2

E3

E2

E1

D3

D2

D4

D1

Legend

Photo Stations

EstPlethodonHabitat

Limit of Work

Property Boundary

slopover35d

Value

High : 1

Low : 0

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N W E S

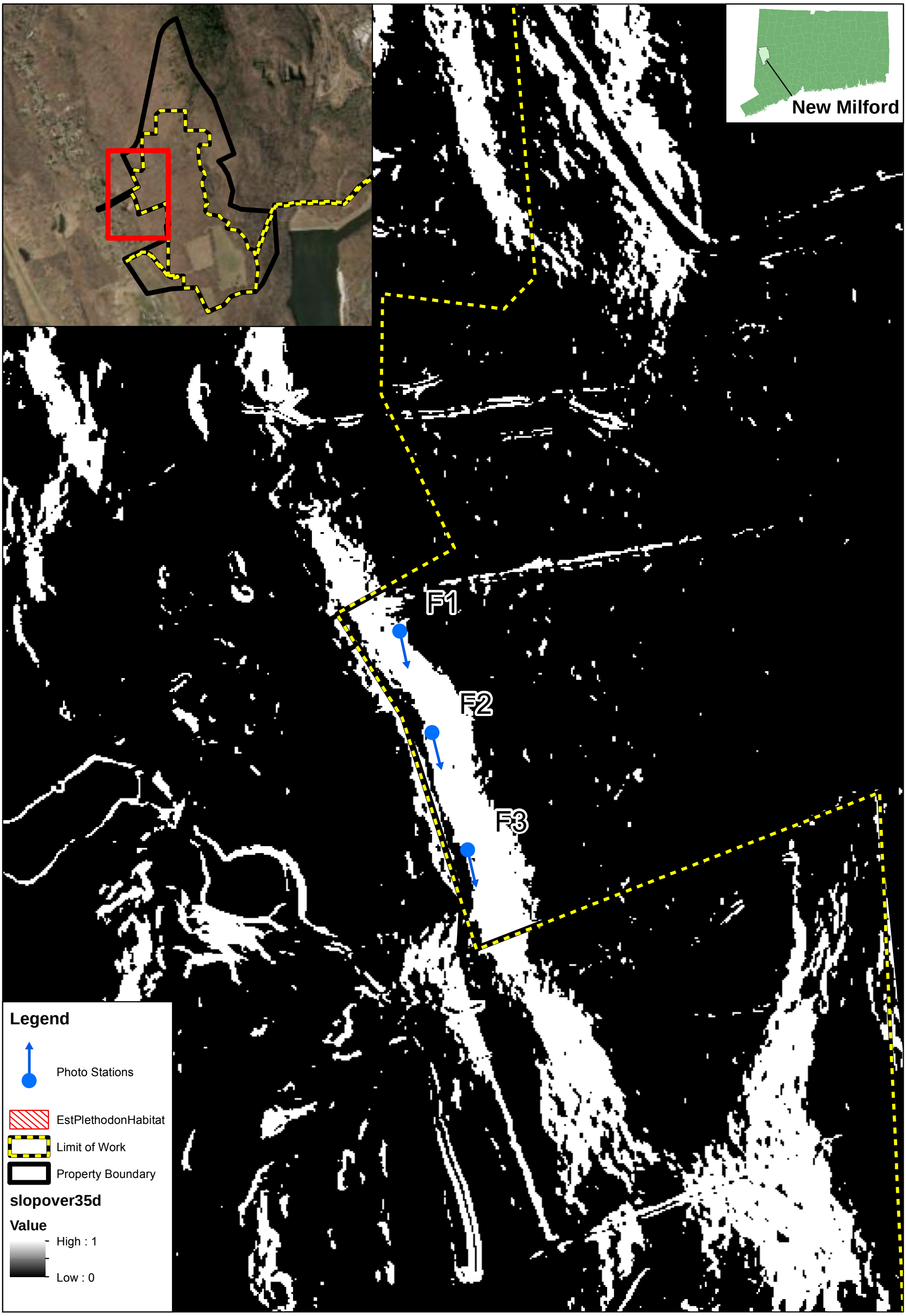
1:1,200

1 inch = 100 feet

0 100 200

Feet

Photo Stations - I & E Series
Candlewood Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017



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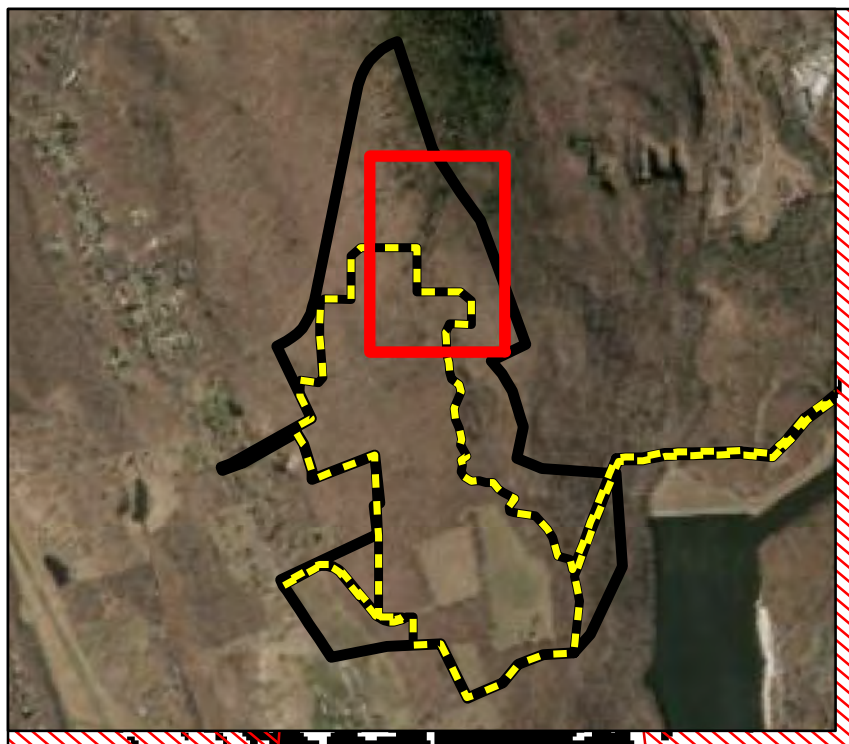
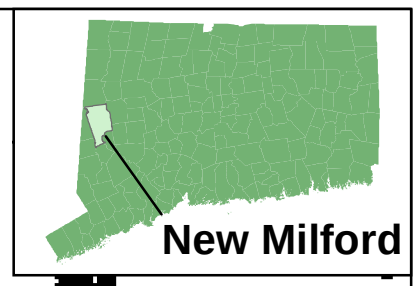
1 inch = 100 feet

0 100 200
Feet

Photo Stations - F Series
Candlewood Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017





G10
G9
G8
H1
H2
H3
G7
H4
G6
H5
G5
H6
G4
G1
G2
G3
H7
H8
H9
H10
H11

Legend

Photo Stations

EstPlethodonHabitat

Limit of Work

Property Boundary

slopover35d

Value

High : 1

Low : 0

Oxbow Associates, Inc.
Wetlands Delineation and Permitting
Wildlife Studies • Herpetology
Vernal Pool Ecology
P.O. BOX 971
ACTON, MASSACHUSETTS 01720
PHONE: (978) 929-9058
FAX: (978) 635-1892
WEB: www.oxbowassociates.com

N
W
E
S

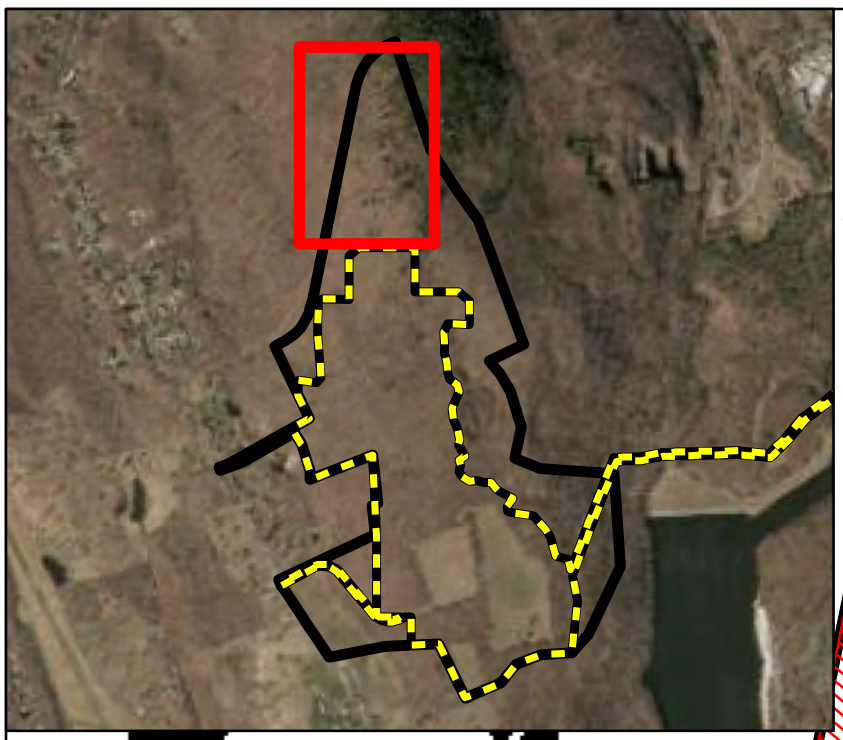
1:1,200

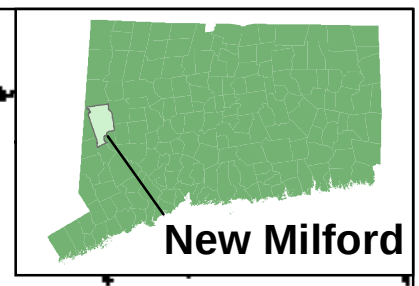
1 inch = 100 feet

0 100 200

Feet

Photo Stations - G & H Series
Candlewood Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017





J4
J3
J2
J1

Legend

Photo Stations

EstPlethodonHabitat

Limit of Work

Property Boundary

slopover35d

Value

High : 1

Low : 0

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N
W
E
S

1:1,200

1 inch = 100 feet

0 100 200

Feet

Photo Stations - J Series
Candlewood Solar Project
Candlewood Mtn. Rd
New Milford, CT
October 10, 2017

Attachment 2

CTDEEP NDDB Email from Dawn McKay dated January 10, 2018

Foster, Tricia

From: McKay, Dawn <Dawn.McKay@ct.gov>
Sent: Wednesday, January 10, 2018 6:07 PM
To: 'Foster, Tricia'
Cc: Lindsay, Joel; Bukowski, Rob; deepnddbrequest@ct.gov
Subject: RE: Candlewood Solar Request for NDDB Review # 201703524

Tricia,
As we discussed back in November 2016, the Candlewood Solar Project will result in a direct impact to a population of State Threatened *Plethodon glutinosus* (slimy salamander) that is known to occur in this project footprint. It looks like the impact of this solar project will result in an unavoidable "take" of the slimy salamander. This process is described under the CT Endangered Species Act (C.G.S Chapter 495, Sec. 26-310).

I have reviewed all your submitted materials on the project and recognize that the project includes a proposed conservation restriction of "approximately 100 acre contiguous, steep slope, mature forest perpetual conservation parcel that will be created to preserve slimy salamander habitat, conserve existing un-fragmented forest, and protect existing wetlands and vernal pools." as written in your email and provided in documents we received on October 28, 2017.

In order to move through the "Incidental take" process that involves CT DEEP (CTDEEP) and CT Office of Policy and Management (CTOPM) I will need your office to provide additional material for us to review. The additional material is referred to as an Incidental Take Report and it will be used to help the two agencies (CTDEEP and CTOPM) review the material in an efficient way.

The Incidental Take Report should include:

1. Project Narrative

a. Project Background

i. Brief description of project
ii. Identify need for project
iii. Identify the regional or state-wide significance of the project

b. Site Description

iv. Identify current usage, land cover, and habitat-types present

c. Proposed Activities

v. Provide a more detailed description of proposed activities, highlighting those which may require State permits.

d. Status of Environmental Impact Evaluation (EIE)

vi. Identify whether the proposed actions require an EIE under the Connecticut or National Environmental Policy Act (CEPA or NEPA, respectively). Cite existing EIE's for the project.

e. Permit Status

vii. Identify State permit(s) required to perform the proposed actions.
viii. Identify the current status of the permit application(s)?

f. Funding Sources

ix. Highlight funding sources administered by the State of Connecticut.

2. Federally and State Endangered, Threatened, and Special Concern Species

g. Species Information

x. Identify species targeted for field surveys
xi. General species' biology, ecology, range, site requirements, etc.

h. Species' abundance and distribution at the site

xii. Include text descriptions and maps

3. Potential Impacts to State-Listed Species

i. Discuss how proposed actions will impact State-listed species.
j. Estimate the number, percentage, or area of State-listed taxa that will be impacted.

4. Discussion of 'feasible and prudent alternatives'

k. Identify alternatives, including a 'no build' option, and why these were not selected.
l. If plans have already been altered to minimize impacts, state how this was accomplished

5. Avoidance/Mitigation

m. Describe how proposed design and work methodology will avoid or reduce impacts to State-listed species (this includes protection measures during the course of construction). Provide maps as appropriate.
n. Describe mitigation areas and provide detailed methodologies for site preparation and transplant activities (if available, include citations regarding successful transplantation of the State-listed species or related taxa)
o. Provide a tentative timeline for site prep (i.e. invasive control) and transplant activities.
p. Reference and include appendices for any and all Conservation/Restrictive Easements placed over the mitigation area.

6. Long- Term Maintenance

q. Describe measures to be taken to manage and protect mitigation areas, including fencing, invasive species control, and maintenance schedules.
r. Identify the organization, group, or individuals responsible for

7. Monitoring

s. Minimum of three years of monitoring and reporting to CT Natural Diversity Data Base.

xiii. Annual field surveys for the next three years (visit during typical periods of salamander activity)

t. Brief reports should be submitted to DEEP within 7 days of all visits and should include assessments of the and any recommended actions. An annual summary should also be submitted prior to December 31st of that year.
u. Identify the organization or individuals responsible for conducting or contracting the monitoring and reporting work.

This document should also include the following maps and engineering plans, at a minimum:

1. Overview map of site
2. Engineering plans overlaid on aerial maps. Attempt to simplify these and label items fully.
3. Map of State-listed species distribution overlaid on proposed plans.
4. Map identifying proposed mitigation areas and protective features.
5. Photos of target species and site conditions.

This report can be sent to our NDDB email address at deep.nddbrequest@ct.gov . Please (if possible) use the template I have provided above to make the review as efficient as possible. Once we receive the Incidental Take Report (most of this material has already been compiled by your office) for the Candlewood Solar Project our Agency will confer with The State Office of Policy and Management. I can be reached at 860-424-3592 or dawn.mckay@ct.gov if you have any questions.

The additional impact avoidance and protection measures outlined in the October 28, 2017 correspondence (with attachments) to protect the State Endangered golden-winged warbler, Special Concern Jefferson salamander "complex", wood turtle and eastern box turtles are all acceptable and no further protection measures for these species are required.
Take care,
Dawn M. McKay

Dawn M McKay
Environmental Analyst 3
Natural Diversity Data Base Program
Wildlife Division
Bureau of Natural Resources
Connecticut Department of Energy and Environmental Protection
79 Elm Street, Hartford, CT 06106-5127
P: 860.424.3592 E: dawn.mckay@ct.gov

Connecticut Department of
ENERGY & ENVIRONMENTAL PROTECTION

www.ct.gov/deep

Conserving, improving and protecting our natural resources and environment;
Ensuring a clean, affordable, reliable, and sustainable energy supply.

Attachment C

Section i. D.

July 8, 2019

Pre-construction Survey Summary of Findings for the State Threatened Plethodon glutinosus (slimy salamander) including NDDB Special Animal Survey Form

Connecticut Department of ENERGY & ENVIRONMENTAL PROTECTION

Natural Diversity Database
Special Animal Survey Form

This form is to be used to report a personal field sighting of an Endangered, Threatened, or Special Concern animal species tracked by the CT Natural Diversity Database (www.ct.gov/deep/endangeredspecies). Please provide a map indicating where the animal was observed and a photograph to confirm the identification of the animal. Only verifiable reports will be added to the database. For migratory species, breeding locations or concentration area records are preferred.

Species Name :	Plethodon glutinosus		
Date of Observation (month/day/year):	2019 - June 17, 18, 20, 21, 22, 23, 25, 26, (240 field-hours)	Time of Observation:	Day/Night
Name of Observer (s):	B. Butler, R. Strohsahl, K. Cormier, J. Shuster, T. Tadevosyan, M. Charpentier, S. Smyers		
Affiliation:	Oxbow Associates. Inc.		
Address:	629 Massachusetts Ave., Boxborough, MA 01720		
Telephone:	978-929-9058 x4	E-mail Address:	butler@oxbowassociates.com

Location Information: In addition to the information below, please attach a map indicating the precise location where the species was observed. Be sure to include and label other landmarks to aid in identifying the site location. There is space below to draw a detailed sketch of the site.

Town:	New Milford		
Site Name:	Candlewood Mountain/197 Candlewood Mtn. Road	Approx. Acres of Potential Habitat:	150 acres

Directions to Site: Include parking options and best site access points.
see attached figure; access from ~ 197 Candlewood Mountain Road

Coordinates (Optional) WGS84, Decimal Degrees

(Using CTECO Simple Map Viewer, Search for site and zoom to a scale where desired features are clearly visible, use +XY tool and click on site to get coordinates)

Lat: N 41°34'16.5"N Long: W 73°27'20.5"W

Source of Coords (GPS or other map source): Coordinates are for site entrance from Candlewood Mtn. Rd.- Google Maps Source.

Property Ownership: If known, please provide landowner name, address, and phone number.

CANDLEWOOD CLEAN POWER LLC

111 SPEEN ST

SUITE 410

FRAMINGHAM, MA 01701

Detailed Site Sketch:

GIS figures (2) of animal (P.g.) locations, as well as shape file data are provided herewith. Representative animal and habitat photos are also included; a comprehensive report will be submitted in accordance with Collection Permit conditions under separate cover.

Population Information:

Number of Individuals Observed/Estimated: Include sex and age class if known	24 (22 adult; 2 sub-adults). Captured animals were processed/sexed/measured/photographed and released at capture point. Distributional, demographic and metamorphic details to be provided in subsequent summary report. No animals were injured or salvaged during the surveys.
Has this species been observed on site previously?	Yes, reportedly by others; not by current permittee.

Nature of Observation:

☒ Sight	☒ Capture*/Release+	☐ Dead
☐ Specimen Collected+	Repository:	
☒ Photograph Taken	☐ Other (Specify)	

*Method of Capture (net, pit-fall trap, hand collected, dip net/seine, trap, etc.): Hand capture by cover obj. turning diurnally; direct obs. nocturnally.

+DEEP Scientific Collection Permit is needed for capture, marking, salvage, release or disturbance of animals.

Biology/Behavior:

Evidence of Reproduction:	No; excepting capture of two, sub-mature (est. 2-3 yr.) individuals indicating ongoing recruitment.
Feeding	Foraging nocturnally.
Other Behavior	Diurnal, and some nocturnal observations were of static animals beneath cover objects.

Habitat/Site Description: (topography, plant communities, associated species, current land use)
All captures/observations were made w/in steep, ledgy mature forest(see GIS figure). No captures/obs. were made in rich mesic mature deciduous woodland of lesser grades and with less exposed bedrock and flakes.
Disturbance and Threats: (describe any potential threats to the population or habitat)
NA
Conservation/Management Needs:
NA

Please send the completed form to: CT Department of Energy & Environmental Protection, Natural Diversity Database-Wildlife Division, 79 Elm Street, 6th Floor, Hartford, CT 06106. Or email: deep.nddbrequest@ct.gov

Addendum to NDDB Special Animal Survey Form

Regarding Collection Permit No. 7920004 , Issued June 5, 2019

Candlewood Mountain Road, New Milford, CT

July 8, 2019

1. Native Herpetozoan Species Observed: 6/17-6/26, 2019

Common Name	Latin Name	Comments	Notes
American Toad	***Anaxyrus americanus***	**Common**	**Yearlings most common**
Spring Peeper	***Pseudacris crucifer***	**Common**	
Gray Treefrog	***Hyla versicolor***	**Occasional***	***Abundant tadpoles obs. in VP #5**
Green Frog	***Lithobates c. melanota***	**Infrequent**	
Wood Frog	***Lithobates sylvatica***	**Common**	**Metamorphs & Adults**
Red Eft/E. Red-Spotted Newt	***Notophtlamus viridescens***	**Common**	**Eft Stage only**
Spotted Salamander	***Ambystoma maculatum***	**Occasional**	
Marbled Salamander	***Ambystoma opacum***	**Occasional**	
Red-Backed Salamander	***Plethodon c. cinereus***	**Occasional**	**Atypically low encounter rates for this site.**
N. Dusky Salamander	***Desmognathus fuscus***	**Infrequent**	Larval, in stream
N. Ringneck Snake	***Diadophis p. punctatus***	**Occasional**	Often paired or multiple animals under objects.
Garter Snake	***Thamnophis s. sirtalis***	**Infrequent**	

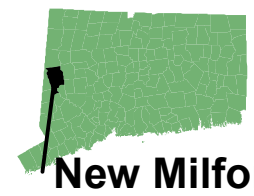
Representative photographs of animals captured (Fig. 1) early and late during the June survey period (6/17-6/26, 2019) are provided below. Similarly, representative habitat photographs of supportive and non-supportive habitat are found in Figure 2. A GIS figure of *P. glutinosus* locations and *.shp* files are also provided herewith, in advance of a comprehensive field report to be provided in accordance with Collection Permit conditions.

Figure 1. Top: Female *P. glutinosus* captured 6/17/19 , 11:55h, near 41.577603, -73.452969; and (Bottom) juvenile *P. g*., showing tail regeneration captured 6/26/19 , 0155h near 41.578720, -73.452359.

Figure 2. Top: Typical steep rocky mature forest where *P. glutinosus* was encountered. Below: Pervasive moderate slope, rich mesic deciduous forest where no target animals were encountered.

Species

- Plethodon glutinosus
- Panax quinquefolius
- Conservation Restriction
- Limit of Work
- Property Boundary



Oxbow Associates, Inc.
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ACTON, MASSACHUSETTS 01720
PHONE: (978) 929-9058
FAX: (978) 635-1892
WEB: www.oxbowassociates.com

N
W E
S

1:3,600

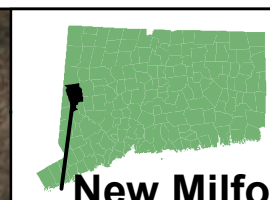
1 inch = 300 feet

0 250 500
Feet

Survey Results
Project Site & Interconnect
Candlewood Mtn. Rd.
New Milford, CT
June, 2019
NDDB File No. 201703524

Species

- Plethodon glutinosus
- Panax quinquefolius
- Conservation Restriction
- Limit of Work
- Property Boundary



Slte Entrance near 197 Candlewood Mtn. Road

Oxbow Associates, Inc.
Wetlands Delineation and Permitting
Wildlife Studies • Herpetology
Vernal Pool Ecology
P.O. BOX 971
ACTON, MASSACHUSETTS 01720
PHONE: (978) 929-9058
FAX: (978) 635-1892
WEB: www.oxbowassociates.com

N W E S

1:4,200

1 inch = 350 feet

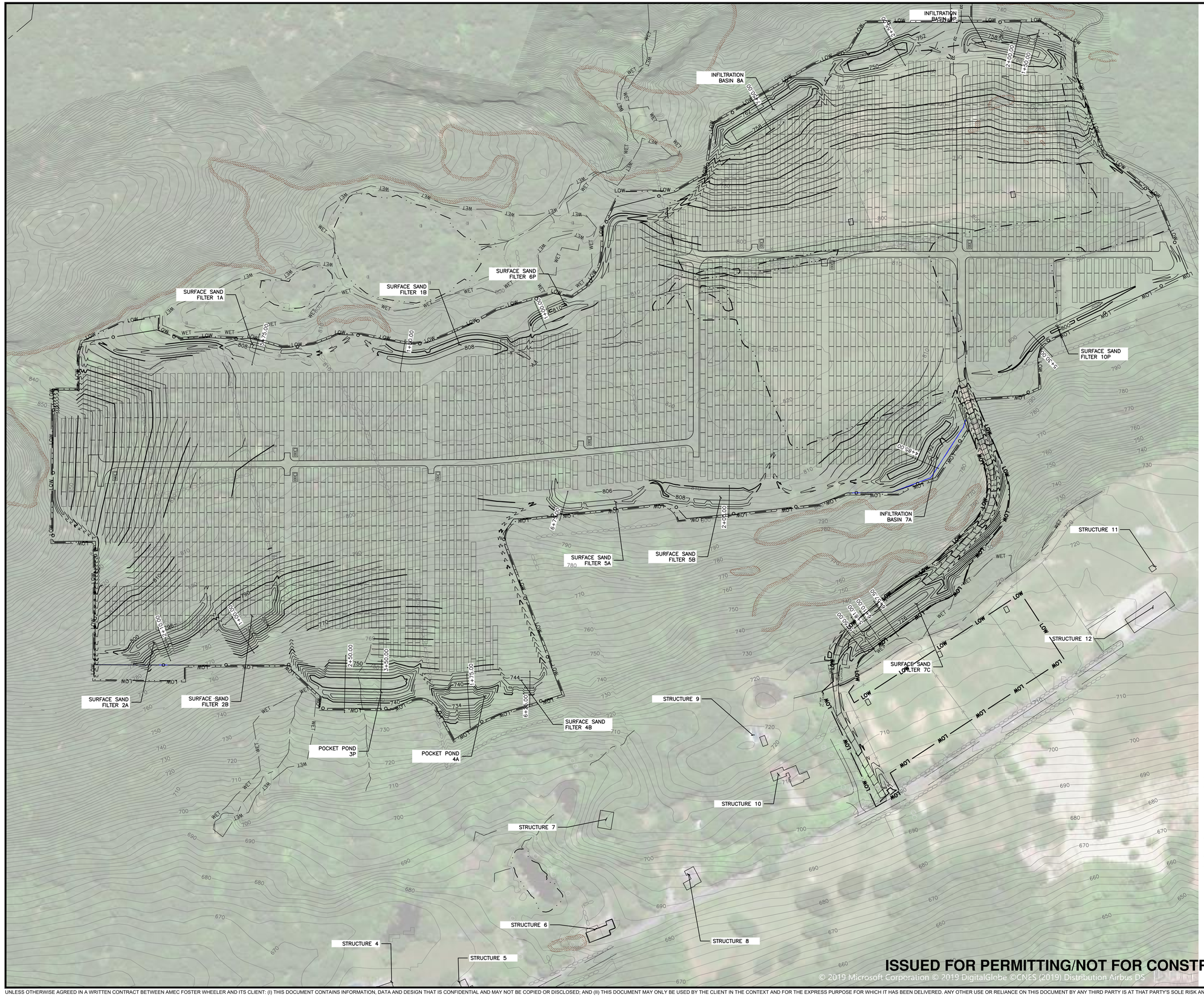
0 250 500
Feet

Survey Results
Project Site & Interconnect
Candlewood Mtn. Rd.
New Milford, CT
June, 2019
NDDB File No. 201703524

Attachment C

Section ii:

Annotated Site Plans



wood.
Environment & Infrastructure Solutions, Inc.
271 Mill Road, Chelmsford MA 01824
P: (978) 692-9090 F: (978) 692-6633
WEB: www.woodplc.com

REVISION	DATE	ISSUE / REVISION DESCRIPTION	ISSUED BY	APPROVED
A	09/16/19	ISSUED TO CT DEEP NDDB	MRF	DAA

PROJECT:
CANDLEWOOD SOLAR PROJECT
CANDLEWOOD MT. ROAD AND KENT ROAD
NEW MILFORD, CONNECTICUT

TITLE:
CANDLEWOOD SOLAR PROJECT
PROPOSED LAYOUT AND DESIGN

CLIENT:
CANDLEWOOD SOLAR LLC
AMERESCO
Green • Clean • Sustainable

SEAL:

DESIGNED BY: MRF	DRAWN BY: RJR
CHECKED BY: DAA	SCALE: AS SHOWN
PROJECT NUMBER: 3652160082	
DRAWING NUMBER: DS-101	
SHEET NUMBER: 1 OF 2	

T:\AMERESCO\New Milford CT, Moved To Chelmsford\Stormwater\DS-101 Site Grading.dwg - Layout1 - Sep. 16, 2019 1:48pm - roger.rojuler

SURFACE SAND FILTER UTIL

1+50.00

4+55.00

LEGEND

1+50.00	SECTION LINE
1090	PROPOSED CONTOUR
1090	EXISTING CONTOUR
	PROPERTY LINE
LOW	REVISED LIMIT OF WORK
	LEDGE/ROCK OUTCROP
	EXISTING STONE WALL
	PROPOSED LEVEL SPREADER
	EXISTING TREE LINE
WET	WETLAND DELINEATION

0' 100' 200' 400'
1" = 200'

ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

wood.
Environment & Infrastructure Solutions, Inc.
271 Mill Road, Chelmsford MA 01824
P: (978) 692-3090 F: (978) 692-8633
WEB: www.woodplc.com

REVISION	DATE	ISSUE / REVISION DESCRIPTION	ISSUED BY	APPROVED
A	09/16/19	ISSUED TO CT DEEP NDDB	MRF	DAA

PROJECT:
CANDLEWOOD SOLAR PROJECT
CANDLEWOOD MT. ROAD AND KENT ROAD
NEW MILFORD, CONNECTICUT

TITLE:
CANDLEWOOD SOLAR PROJECT
PROPOSED LAYOUT AND DESIGN

CLIENT:
CANDLEWOOD SOLAR LLC
AMERESCO
Green • Clean • Sustainable

SEAL:

DESIGNED BY: MRF	DRAWN BY: RJR
CHECKED BY: DAA	SCALE: AS SHOWN
PROJECT NUMBER: 3652160082	
DRAWING NUMBER: DS-102	
SHEET NUMBER: 2 OF 2	

T:\AMERESCO\New Milford CT- Moved To Chelmsford\Stormwater\DS-101 Site Grading-INTER CONN.dwg - Layout1 - Sep. 16, 2019 1:54pm - roger.ripley

Attachment D

Section ii:

Final Determination

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

November 15, 2018

Tricia Foster
Wood Environment & Infrastructure Solutions, Inc.
271 Mill Road, 3rd Floor
Chemsford, MA 01824
Tricia.foster@woodplc.com

Project: Proposed Candlewood Solar Project, between Candlewood Mountain Road and Kent Road in New Milford, Connecticut
NDDB Final Determination No.: 201703524

Dear Tricia Foster,

I have re-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. As you are aware, according to our records there are extant populations of State Listed Species known to occur within or close to the boundaries of this property. The species include:

Birds
Vermivora chrysoptera (Golden-winged warbler) – State Endangered

Mammals
Myotis lucifugus (Little brown bat) – State Endangered
Lasiurus borealis (Red bat) – State Special Concern
Lasionycteris noctivagans (Silver-haired bat) - State Special Concern
Lasiurus cinereus (Hoary bat) - State Special Concern

Reptiles
Plethodon glutinosus (slimy salamander) – State Threatened
Ambystoma jeffersonianum (Jefferson salamander "complex") - State Special Concern
Glyptemys insculpta (Wood turtle) - State Special Concern
Terrapene carolina carolina (Eastern box turtle) - State Special Concern

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. The habitat assessment your firm completed concluded that suitable breeding habitat for golden-winged warbler is wholly absent from the premises due to a lack of open canopy habitat in a suitable early to mid-successional seral stage

to support the species, and no protective measures were needed. I concur with your conclusion and no further conservation actions is necessary.

Tree Roosting Bat Protection
Tree clearing should be completed during the hibernation or winter range period for bats. Tree clearing should be limited to between November 1 and March 30. The implementation of this measure would be protective of those species of bats identified as well as other bat species. Additionally, large diameter coniferous and deciduous trees and wooded buffers adjacent to wetland areas will be maintained whenever possible. Based on the revised site plan layout, forested buffer areas vary by wetland.

Bat houses should be installed in the area where trees will be removed and will help in the conservation of tree roosting bats. Candlewood Solar will mount between 20 and 30 bat houses on east facing, mature tree trunks, not less than 12 feet from the ground in areas where trees are removed.

State Special Concern *Ambystoma jeffersonianum* (Jefferson salamander "complex")
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:

- No impacts should occur to the vernal pool depressions 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.
- 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 area.
- No artificial lighting should be installed for the project.

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 re-entry.
- 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) on the appropriate special animal form found at (http://www.ct.gov/deep/cwp/view.asp?a=2702&q=323460&depNav_GID=1641)

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 habitat for the slimy salamander. With that in mind, on September 11, 2018 The Connecticut Office of Policy and Management (OPM), in consultation with The Connecticut Department of Energy and Environmental Protection (DEEP), determined that that the proposed Installation and Operation of a 20 Megawatt (MW) AC (MWac) Solar Photovoltaic (PV) Electric Generating Facility at 197 Candlewood Mountain Road (Candlewood Solar, LLC) in New Milford, Connecticut would result in an incidental taking of the State Threatened *Plethodon glutinosus* (slimy salamander) pursuant to Section 26-310 of the Connecticut General Statutes (CGS).

Pursuant to CGS Sec. 26-310(d), the Commissioner of Energy and Environmental Protection is required to provide Candlewood Solar, LLC with specific feasible and prudent measures and alternatives that must be implemented as part of the proposed project in order to ensure that the action does not appreciably reduce the likelihood of the recovery of the species. The proposed actions have been planned to avoid, minimize and mitigate impacts to the "take" of northern slimy salamander. These specific measures include:

- Limiting tree clearing impacts and the overall footprint of the project
- Providing a 100-acre conservation easement

- Three-year monitoring and reporting
- Addition of grassy strips to roadways

Tree clearing and grading are required as part of this Solar PV project. The revised plan configuration limits the impact to 1.3 acres (of the 49 +/-acres) of high quality forested salamander habitat. Furthermore, the overall footprint of the Solar PV project was reduced through an alternative design utilizing higher capacity solar panels. The changes to the panels and the reduction of the overall footprint of the project reduced the total amount of tree clearing and work within the prime northern slimy salamander habitat. In addition, the layout of the Solar PV array was shifted away from two wetlands and these changes netted further avoidance of undisturbed northern slimy salamander habitat. This will ultimately increase the size of the undisturbed buffer around cryptic vernal pools in this area as well.

Candlewood Solar, LLC identified a 100-acre area that will be set aside for permanent conservation as mitigation for unavoidable impacts to the northern slimy salamander. Candlewood Solar, LLC will deed this 100-acre parcel to a local conservation trust or similar entity as permanently conserved land. The 100 acres includes contiguous, steep, sloping, mature forest. It also includes wetlands and vernal pools. The conservation easement will outline and limit the types of activities allowed within the mitigation area in order to protect its natural resource value especially for the northern slimy salamander.

Candlewood Solar, LLC will also conduct three years of monitoring for the northern slimy salamander. Surveys will be conducted in the pre-construction period and continue post-construction for two additional years. Reporting will be made to CTDEEP NDDB within 7 days of field surveys and will include survey dates and duration; description and maps of surveyed areas; site photographs; species photographs; species lists; locations of salamanders identified and assessments. There will also be an annual summary report prepared and submitted. Candlewood Solar, LLC will ensure and be responsible for contracting with the qualified herpetologist and their reporting efforts. The qualified herpetologist will obtain and maintain a valid scientific collector's permit to work with northern slimy salamander populations.

The original proposal had many of the access roads being improved with crushed stone and gravel. However, these improved roads would be a barrier to migration or travel by northern slimy salamanders. Candlewood Solar, LLC has agreed to add grassed strips, approximately 20 feet wide, along the proposed project access roadways to mitigate for these improved access roads. The 20 foot wide grassed strips will replace the gravel for the full width of the roadway at the approximate locations. The locations of these grassed strips were based on proximity to forested habitat areas from where the salamanders would presumably be emanating.

The details of these conservation actions (above) are outlined in the 'Incidental Take Report for the State Threatened *Plethodon glutinosus* (northern slimy salamander)' prepared by AMEC Foster Wheeler dated February 9, 2018 and amended with email and maps to include mitigation (adding grass strips) to proposed improved access roads on June 15, 2018. In addition, Candlewood Solar, LLC will work with CTDEEP to ameliorate any problems that may arise.

Failure to comply with conditions set forth in 'Incidental Take Report for the State Threatened *Plethodon glutinosus* (slimy salamander)' prepared by AMEC Foster Wheeler dated February 9,

2018 and amended with email and maps to include mitigation to proposed improved access roads on June 15, 2018 or within this document may result in permit revocation and/or civil penalties levied against the responsible party.

This determination is good for two years. Please re-submit a new NDDB Request for Review if the scope of work changes or if work has not begun on this project by November 15, 2020.

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 .
Thank you for consulting the Natural Diversity Data Base.
Sincerely,

Dawn M. McKay

Dawn M. McKay
Environmental Analyst 3