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February 7, 2020

VIA ELECTRONIC MAIL:

Ms. Jenny Dickson
Connecticut Department of Energy & Environmental Protection
Natural Diversity Data Base
79 Elm Street
Hartford, CT 06106-5127
Email: deep.nddbrequest@ct.gov

Re: Revised Review Request
Candlewood Solar LLC
Candlewood Mountain Road, New Milford, CT
New Milford Assessor Map Parcels 26/67.1, 34/15, 9/6, and 34/31.1
NDDB Review No.: #2019-11-381

Dear Ms. Dickson:

This Revised Review Request and the enclosed attachments are being filed with the Connecticut Department of Energy & Environmental Protection (CT DEEP) Natural Diversity Data Base (NDDB) for the Candlewood Solar Project in response to various telephone discussions and the recent January 23, 2020 meeting regarding changes to the Project design and Project layout since issuance of the November 15, 2018 NDDB Final Determination (NDDB Final Determination No.: 201703524).

Should you have any questions regarding the enclosed Revised Review Request and associated attachments, please do not hesitate to contact Mr. Rob Bukowski at (978) 392-5307; rob.bukowski@woodplc.com or Ms. Tricia Foster at (508) 840-9609; tfoster@epsilonassociates.com.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc. and Epsilon Associates, Inc.

Robert J. Bukowski, P.E.
Project Manager

Tricia Foster
Senior Scientist

Attachments

Attachment 1: Candlewood Solar LLC, Revised Review Request Narrative

Attachment 2: State Threatened *Plethodon glutinosus* (slimy salamander) Mitigation Plan and Invasive Species Control Plan

Attachment 3: The Chazen Companies Habitat Assessment Report dated November 13, 2019

Attachment 4: Oxbow Associates, Inc. Habitat Survey and Mitigation Proposal Report dated December 13, 2019

Attachment 5: Connecticut Siting Council Development & Management Plan (D&M Plan) Approval dated April 26, 2019

cc: R. Jackson, Candlewood Solar LLC
M. Daigneault, Candlewood Solar LLC

Attachment 1

Candlewood Solar LLC

Revised Review Request Narrative

Revised Review Request Narrative

Candlewood Solar LLC
Candlewood Mountain Road
New Milford, CT

Prepared for:

Candlewood Solar LLC
111 Speen Street, Framingham, MA 01701

February 7, 2020

Revised Review Request Narrative

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New Milford, CT

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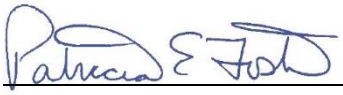

Patricia Foster
Senior Scientist

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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), electric interconnection corridor, and associated access roads in the Town of New Milford, Connecticut (the Project). The Facility, electric interconnection corridor, and existing access roads will be located on portions of three (3) adjacent parcels (New Milford Assessor Map parcels 26/67.1, 9/6, and 34/31.1) with the exception of one access road, which crosses two additional parcels to the north and east (New Milford Assessor Map parcels 34/15.1 and 34/15) (see **Figure 1**). The Facility 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 corridor will originate on the Facility Parcel, exit the Facility Parcel in the southeastern portion of the Solar PV Facility and then cross two adjacent parcels to the east (parcels 9/6, and 34/31.1) owned by FirstLight Hydro Generating Company (FirstLight) 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**). Four (4) existing access roads will be used for construction, operation and maintenance of the Project (see **Figure 1**). The existing access road off of Candlewood Mountain Road will provide access to the Solar PV Facility. Due to existing environmental constraints, three access roads (Eastern, Southern and Northern) will provide access to the electric interconnection corridor.

Natural Diversity Data Base (NDDB) Project Review

The Connecticut Department of Energy & Environmental Protection (CT DEEP) Natural Diversity Data Base (NDDB) initially reviewed the Project under NDDB Preliminary Assessment No.: 201703524. On November 15, 2018, a Final Determination was issued by 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 September 23, 2019, on behalf of Candlewood Solar, Wood Environment & Infrastructure Solutions, Inc. (Wood) filed a Request for NDDB State Listed Species Review describing the changes to the Project scope of work since the issuance of the November 15, 2018 Final Determination on the Project (2019 Review Request).

This Revised Review Request further describes the Project changes, the alternatives that have been considered, and the measures that will be implemented to avoid, minimize, and mitigate impacts to state-listed species.

Revised Electric Interconnection Corridor

The electric interconnection corridor has been modified from that which was included in the February 9, 2018 Incidental Take Report, based on further evaluation and consultation with FirstLight, the owner of the two adjacent parcels (9/6 and 34/31.1). FirstLight parcels 9/6 and 34/31.1 are associated with the Rocky River hydroelectric facility, which is part of the Housatonic River Hydroelectric Project (Project 2576). As a hydroelectric facility, the FirstLight parcels are regulated by the Federal Energy Regulatory Commission (FERC). In consultation with FirstLight's engineers, it was determined that the electric interconnection corridor can be located on and cross parcels 9/6 and 34/31.1, however, the corridor must be located a minimum of 300 feet from all hydroelectric facility infrastructure / hydroelectric facility operational lands (see March 27, 2019 FirstLight Hydro Generating Company, LLC Housatonic River Project - P-2576-139, 2019

Revised Shoreline Management Plan, Appendix A - Rocky River - Shoreline Land Designation Map at https://firstlightportal.myadept.com/pdf/Approved-Shoreline-Management-Plan.pdf) in order to meet FERC regulations and for the safety of the hydroelectric facility infrastructure and surrounding areas. The revised electric interconnection corridor will still exit the Facility parcel from the southeastern portion of the Solar PV Facility and cross the two adjacent Project Area parcels to the east (parcels 9/6, and 34/31.1); however, shortly after the electric interconnection corridor enters adjacent FirstLight parcel 9/6, the electric interconnection corridor heads north/northeast along the eastern side of Candlewood Mountain as opposed to directly east, parallel to Candlewood Lake (see **Figure 1**) to maintain the required 300 foot minimum buffer from FirstLight infrastructure. The revised electric interconnection corridor re-joins the electric interconnection corridor approved in NDDB's November 15, 2018 Final Determination, east of Wetland VIII where it follows an existing access road to Route 7 where it will interconnect with the Eversource Energy Rocky River Substation.

The portion of the electric interconnection corridor not previously reviewed and approved under NDDB Final Determination No.: 201703524 is approximately 2,665 feet in length and has a right-of-way (ROW) width of approximately 60 feet (New Segment) (see **Figure 1**). However, in order to minimize impacts along the entire length of the electric interconnection corridor, three different engineering methods (ground mount, overhead, and horizontal directional drill [HDD]) will be employed (see **Figure 2**). Specifically, the electric interconnection corridor will be constructed as follows:

- A Ground Mount Segment that extends from the Solar PV Facility to the Rocky River (approximately 1,285 feet).
- An Overhead Segment from the Rocky River to first Horizontal Directional Drilling (HDD) boring pit (approximately 1,550 feet).
- An HDD Segment (approximately 1,150 feet).
- An Overhead Segment from the second HDD boring pit to Route 7/Kent Road (approximately 2,435 feet) (Note, there are not changes to this segment from the approved design).

The topography in the area where the electric interconnection corridor exits the Solar PV Facility to just west of the first crossing with the Rocky River consists of steep rocky slopes (elevation change of approximately 320 feet over a distance of 1,500 feet). As such, the engineering options for the electric interconnection corridor include ground mount and overhead. For constructability reasons and in order to minimize ground disturbance and tree and vegetation clearing, this segment of the electric interconnection corridor will be installed via ground mount. The ground mount segment will be hand laid, conduit encased circuit, secured with raised above grade by structures. As this segment of the electric interconnection corridor will be hand laid, selected clearing will performed, approximately 10 – 15 feet on either side of the conduit, minimizing soil disturbance and the width and amount of clearing required. Additionally, as this segment will be raised above grade, continuous passage for species underneath the conduit and across the ROW will be maintained.

The electric interconnection corridor will transition from ground mount to overhead just before the first crossing with the Rocky River. This segment of the electric interconnection corridor will run overhead on utility poles in order to avoid impacts to wetlands (Wetland VI) and the Rocky River. Within the 60 foot wide ROW, clearing will be limited to approximately 30 feet, approximately 14 feet from the center of each utility pole. To further minimize clearing, notches will be made within the limit of work (LOW) to accommodate guy wires, where necessary.

After the second overhead crossing of the Rocky River, at the intersection of the proposed Southern Access Road extension and the electric interconnection corridor, the electric interconnection will be installed

underground, beneath Wetlands VIII using trenchless horizontal directional drill (HDD) technology from the proposed Southern Access Road to east of Wetland VIII (see **Figure 2**). HDD was selected in this location in order to avoid impacts to Wetland VIII and minimize the Project's total area of disturbance (soil and vegetation). The only areas of disturbance associated with HDD are two temporary boring work pads/pits (approximately 30 feet by 60 feet [1,800 square feet each]). A temporary boring work pad/pit will be located on either side of Wetland VIII at the same approximate horizontal and vertical alignment and will be used to install the conduit beneath Wetland VIII. During construction, excavated material associated with the temporary boring work pads/pits will be temporarily placed within upland areas within the proposed southern access road and eastern access road and protected by appropriate measures to prevent erosion and offsite migration of sediments. Once the electrical conduit is installed, two electrical vaults will be installed and the remaining portion of the boring work pads/pits will be backfilled and restored to pre-existing conditions. For additional information on HDD, see Section 1.0.c.v.

During construction, operation, and maintenance of the electric interconnection corridor, three access roads will be used (Eastern, Southern and Northern) (see **Figure 2**).

The eastern access road is an existing road, maintained by FirstLight,that extends from Route 7/Kent Road south to an intersection of another FirstLight access road that connects to an access road that runs along the top of the dam's berm (parcel 9/6, see **Figure 2**). An extension to the intersection of the existing is proposed that will head west for approximately 755 feet to the revised electric interconnection corridor. This extension road will be a gravel roadway, approximately 12 feet wide and will include a roadside swale in conformance with CT DEEP Stormwater Standards. The new access road extension will require approximately 47,215 square feet (1.08 acres) of tree clearing.

The southern access road located on the Solar Facility Parcel (parcel 26/67.1) is an old logging road that will be used to access the ground mount portion of the electric interconnection corridor. This road generally follows the southern boundary of the electric interconnection ROW (see **Figure 2)**. The southern access road may require improvements (i.e., brush clearing and tree trimming) to facilitate the passage of construction equipment.

The northern access road is comprised of old logging roads segments (see **Figure 2**). The northern access road generally follows the western boundary of Candlewood Clean Power parcel 34/15.1, west of the Rocky River. Segments of the northern access road cross FirstLight parcel 9/6 and parcel 34/15 owned by Candlewood Clean Power. The northern access road may require improvements (i.e., brush clearing and tree trimming) to facilitate the passage of construction equipment.

In summary, vegetation and tree clearing along the electric interconnection corridor has been minimized through the selection of three different engineering methods (ground mount, overhead, and HDD). Total clearing associated with each segment is as follows:

- Ground Mount: 38,550 square feet (0.88 acres)
- Overhead: 46,500 square feet (1.07 acres)
- HDD: 3,600 square feet (0.08 acres)
- Overhead: 141,570 (3.25 acres)

Within the electric interconnection corridor, to the extent that they do not interfere with construction or operation and maintenance, stumps will not be removed in order to minimize overall ground disturbance, minimize potential impacts on species including the slimy salamander, and reduce potential impacts associated with erosion. The electric interconnection corridor will be maintained in scrub-shrub and herbaceous cover types. See also **Attachment 2**, State Threatened *Plethodon glutinosus* (slimy salamander) Mitigation Plan for in ROW conservation measures.

The southern and northern access roads may require some improvements to facilitate the passage of construction equipment, however, large areas of clearing are not anticipated. The proposed eastern access road extension will require approximately 47,215 square feet of clearing (1.08 acres).

Table 1 below provides a summary of Project areas from the 2018 Final Determination to the current proposed design and layout.

Table 1. Project Areas 2018 – 2020

Component	Approved Total Area (Acres)	Approved Forested Area to be Cleared (Acres)	2019 Total Area (Acres)	2019 Forested Area to be Cleared (Acres)	2020 Total Area (Acres)	2020 Forested Area to be Cleared (Acres)
Solar Array Limit of Work	67.9	51.55	70.24	49.41	70.24	49.41
Solar Array	54.55	38.92	49.6	32.43	49.6	32.43
Additional Cleared Area (Shading and Stormwater Features)		12.63	20.64	16.98	20.64	16.98
Interconnect	4.83	4.52	10.80	7.09	7.56	6.36
Total Area of Disturbance	***78.16***	***56.07***	***81.04***	***56.50***	***77.80***	***55.77***

To visually screen the Solar PV Array, Candlewood Solar will employ a 7-foot high cedar screening fence and landscape plantings (trees and shrubs) in various locations along the western and southern sides of the Solar PV Facility (parcel 26/67.1) to aid in the screening of the solar facility from surrounding land uses. Where the 7-foot high cedar screening fence is installed, the cedar fence will be installed in place of the 7-foot high chain link fence. With the exception of the White Spruce and Western Red Cedar the following landscaping plantings are included in the CT DEEP Connecticut Native Tree and Shrub Availability List (rev 5/2005). These two species however are; native to North America, not a part of the Connecticut invasive species list and are plantings that are commonly used for landscape screening purposes.

The landscaping trees and shrubs selected include:

- Viburnum
- Red Maple
- Shadblow Serviceberry Multitrunk
- Alternate-leaved Dogwood
- Eastern Red Cedar

- White Spruce
- White Pine
- Western Red Cedar
- Canadian Hemlock

Additionally, lowbush blueberry sod will be used and the understory infill plantings will be New England roadside matrix upland seed mix by New England Wetlands Plants.

ii. Need for Project

The Project Need is consistent with the Need described in the Incidental Take Report dated February 9, 2018. The Project Need has not changed.

iii. Regional or State-wide Significance of the Project

The Project was selected 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. The Project benefits are summarized in the February 9, 2018 Incidental Take Report. The proposed Project changes noted herein will not result in any changes to these benefits locally or regionally.

b. Revised Electrical Interconnection Site Description

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

Current Usage

As noted above, the electric interconnection corridor will originate on the Facility Parcel (parcel 26/67.1) and cross two (2) adjacent 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 FirstLight and are associated with the Rocky River hydroelectric facility, which is part of the Housatonic River Hydroelectric Project (Project 2576) and regulated by FERC. The proposed Candlewood Solar electric interconnection corridor and easement agreement will be reviewed by FERC under a Prior Notice review of the use on property associated with a Hydroelectric Facility under FERC regulations, however, as noted above, the electric interconnection corridor and structures must be located a minimum of 300 feet from all hydroelectric facility infrastructure / hydroelectric facility operational lands.

Three access roads (Eastern, Southern and Northern) will provide access to the electric interconnection corridor for construction, operation, and maintenance of the electric interconnection. The access roads cross the one of the FirstLight parcels (9/6) and Candlewood Clean Power parcels (34/15 and 34/15.1). Historical uses on parcels 34/15 and 34/15.1 include an area of former quarry operations. These parcels are not currently in use.

Land Cover and Habitat-Types

A Habitat Assessment of the New Segment and the new access road extension was conducted on November 8, 2019 by The Chazen Companies (Chazen) and Kleinschmidt Associates. A report documenting the habitat within the New Segment and new access road extension is included as **Attachment 3**. As described in the Habitat Assessment Report, habitats and corresponding vegetation communities based on the Connecticut Wildlife Action Plan within the New Segment and new access road consist of:

- Mixed Hardwood Forest

- Hardwood-Conifer Wooded Wetland
- Upland Herbaceous – Mugwort
- Watercourse Crossings

It should be noted that the survey area also included an area north of Wetland VIII, which also included an area of coniferous forest – hemlock and an existing utility corridor.

On December 5, 2019, Oxbow also conducted a site suitability habitat assessment for the slimy salamander along the revised segment of the electric interconnection corridor from the Solar Array to just east of Wetland VIII where the electric interconnection corridor rejoins the approved electric interconnection corridor. The results of the site suitability habitat assessment are documented in Oxbow's Habitat Survey and Mitigation Proposal Report dated December 13, 2019. Within the study area, Oxbow identified three sections of high-quality suitable slimy salamander habitat (Sections 1 – 3) (see **Attachment 4**).

c. Proposed Activities

v. Detailed Description of Proposed Activities

Construction of the electrical interconnection corridor will be broken up into several phases. The phases include:

- Phase I –Survey and stake the planned limits of work including structure locations, ROW boundaries, limits of clearing and refresh wetland flagging adjacent to planned work areas. Prior to the start of Phase II a preconstruction meeting will be held.
- Phase II – Upgrade Access Roads, as necessary, Clear and Construct access road extension
- Phase III – Electrical Interconnection ROW Area Clearing and Limited Grading, as required
- Phase IV – Groundmount, Pole and HDD Installation
- Phase V – Wire Stringing
- Phase VI – Site Clean-up and Restoration, as required

Work associated with Phases IV and V may overlap and run concurrently depending on the construction schedule. Note, erosion and sedimentation controls will be installed prior to work activities to minimize soil erosion. Soils removed during installation of utility poles will be placed in upland areas, upgradient of sedimentation controls, and will be stabilized by vegetative or non-vegetative measures.

Construction Staging and Laydown

Construction staging and laydown areas will be required for construction of the electric interconnection. Staging and laydown areas will be located within the 5-acre laydown area along Candlewood Mountain Road, at the entrance of the proposed solar array area within the laydown area limits. To limit the tree clearing area within the limits of the electric interconnection corridor and/or access roads material and equipment will be brought over as needed during installation. Cleared areas within the limits of work for the project will be used along the electric interconnection corridor. If the Contractor determines that an additional construction staging and laydown area is required, these areas will be evaluated for environmental permits and approvals and all environmental permits and approvals obtained prior to use.

Access Road Upgrades and Construction

As described above in Section 1.0.a.i. Description of Project Change, three access roads (eastern, northern and southern) will be used for construction, operation and maintenance of the electric interconnection route (see **Figure 2**).

Project Area Clearing, Stump Removal, and Limited Grading

The revised electric interconnection easement is approximately 60 feet wide, however, as described in Section 1.0.a.i. above, different engineering methods have been selected for the electric interconnection corridor in order to minimize tree and vegetation clearing, wetland impacts, habitat mitigation and soil disturbance. Vegetation clearing associated with each of the electric interconnection corridor segments and the three access roads is outlined above in Section 1.0.a.i. as noted above, within the electric interconnection corridor, to the extent that they do not interfere with construction or future operation and maintenance activities, stumps will not be removed, in order to minimize overall ground disturbance, minimize potential impacts on species including the slimy salamander, and reduce potential impacts associated with erosion. The electric interconnection corridor will be maintained in scrub-shrub and herbaceous cover types. See also **Attachment 2**, State Threatened *Plethodon glutinosus* (slimy salamander) Mitigation Plan for in ROW conservation measures.

Soil disturbance will be limited to excavations for the monopole structures, tree clearing/stump removal, surficial grading associated with the new access road, limited re-grading of existing access roads, and HDD boring pits. Minimal grading along the electric interconnection corridor may also be required.

Horizontal Directional Drill (HDD)

As noted above, in order to avoid impacts on Wetland VIII, the interconnection cables will be installed underground, beneath Wetlands VIII using trenchless HDD technology (see **Figure 2**). HDD boring pits (approximately 30 feet by 60 feet) will be located on both sides of the HDD route (see **Figure 2**).

The inadvertent return of drilling fluid through cracks or pathways through the fractured bedrock into the surrounding environment, is a potential concern when HDD is used under sensitive habitats and waterways, including in this instance wetlands and rare species habitat. The HDD procedure uses bentonite slurry, a fine clay material as a drilling lubricant.[1] The bentonite is non-toxic, but benthic invertebrates, aquatic plants, and fish and their eggs can be impacted by the fine particles if bentonite were discharged to wetlands and waterways. To minimize the potential for an inadvertent release the following steps have been or will be taken:

1) Candlewood is currently installing test borings to determine if the substrate is suitable for drilling and unlikely to have inconsistent density or pathways where preferential flow may lead to a release of drilling fluids,

2) Candlewood will only use a Contractor who specializes in HDD, and

3) the Contractor performing the HDD will be required to monitor for signs of a release (signs of a release include but are not limited to surface seepage or loss of drilling fluid circulation or pressure).

If a significant drop in pressure or reduction in recirculated slurry volume is observed, the Contractor will be required to stop drilling and an Environmental Inspector (EI) / Engineer will perform a visual inspection of the construction area until the pressure of the drilling fluid has stabilized, and the EI/Engineer has confirmed that surface seepage has not resulted. Based on continuous monitoring, a release may be able to be detected

[1] The slurry is used to lubricate the drill string; transport the drilled spoil (consisting of excavated soil or rock cuttings) to the staging area boring pit; cool and clean the drill cutters; reduce friction between the pipe and the wall of the hole; and stabilize the hole. In addition, the drilling fluid helps in turning the drill bit.

prior to occurring. In the event a release is observed, the following corrective actions will be taken immediately:

- The source/pumps will be stopped temporarily and/or the pressure will be decreased.
- The release will be contained immediately by installing straw wattle, straw bales or silt fence and/or constructing dikes or pits. If the release occurs in a wetland, it will be surrounded by straw wattle/straw bales/silt fence barrier installed by hand.
- The drilling mud will be removed from the ground surface to the extent possible and removed from the site using manual equipment such as shovels and wheel barrows or earth-moving equipment such as backhoes or small bulldozers, portable pumps and/or vacuum trucks. No mechanized work will occur in a wetland without notification and approval of applicable regulatory agencies.
- Following initial cleanup, a restoration plan will be prepared and submitted to regulatory agencies, if applicable and implemented as soon as work site conditions allow.

In addition, erosion and sedimentation controls (straw wattle, straw bales or silt fence) will be installed around the HDD boring pits on the resource side of the drilling area as depicted on **Figure 2**, and contractors will receive instruction on how to proceed in the event of a possible release and on preventing loss or migration of slurry or other work materials within or near sensitive habitats, including wetlands and protected species habitat.

Site Clean-Up and Restoration

Restoration efforts, including final grading will be completed following construction activities. All construction debris will be removed from the Project site and disposed of in accordance with applicable laws and regulations.

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.

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).

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
- Connecticut DEEP Dam Safety Permit Need & Hazard Classification Determination for Stormwater BMPs
- 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.** As noted in the February 9, 2018 Incidental Take Report, On December 21, 2017, the Connecticut Siting Council issued a Decision and Order stating that the Project, "…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 of the February 9, 2018 Incidental Take Report).

The Connecticut Siting Council approved the Development & Management Plan (D&M Plan) with two conditions at a public meeting on April 25, 2019. The two conditions included the following.

1. Pursuant to RCSA §16-50j-62, submit the applicable revisions including, but not limited to, the solar array layout, clearing limits, fence design and stormwater management plan for Council review and approval prior to the commencement of construction.
2. Submit a copy of the CT DEEP Construction Stormwater General Permit registration and CT DEEP-approved stormwater management plan prior to commencement of construction.

(see **Attachment 5**).

Candlewood will submit applicable revisions to the Council for review and approval prior to the commencement of construction.

- **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 of the February 9, 2018 Incidental Take Report)

  As a result of Project changes, Phase II National Register of Historic Places testing and evaluation were completed. The Phase II Report was filed with SHPO on October 9, 2019. In a letter dated November 14, 2019, the SHPO states, "With these precautions taken into consideration, the undertaking will have no adverse effects to Site 96-166."

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

- **Connecticut DEEP Dam Safety Permit Need & Hazard Classification Determination.** A letter was submitted to the DEEP Dam Safety Program on August 29, 2019 summarizing the Dam Hazard Analysis report containing dam breach inundation maps for 10 of the 16 stormwater BMPs proposed on the Solar Array Parcel and a request for determination by the Dam Safety Program for hazard classification as dam structures. The DEEP Dam Safety Program issued a Permit Need & Hazard Classification Determination letter on October 23, 2019 with notification that all 16 BMPs were assigned a hazard classification of "AA", which classifies the BMP structures as negligible hazard potential dams.

- **Connecticut General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities.** Registration to be filed with CT DEEP.

  A registration for coverage under the Construction Stormwater General Permit will be filed with CT DEEP and the Project will meet the requirements of the Construction Stormwater General Permit.

There will be no direct impacts to wetlands or watercourses associated with the installation of the utility poles and guy wires associated with the overhead portion of the electric interconnection. As noted in the September 23, 2019 Review Request, 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. With the implementation of the revised electric interconnection corridor, Wetlands VI, VII, VIII, and IX will be avoided and no wetlands will be converted from forested wetlands to emergent and/or shrub wetlands. The Project will not result in 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

No new federal or state endangered, threated or special concern species have been identified since the November 15, 2018 Final Determination and the filing of the September 23, 2019 Request for NDDB State Listed Species Review. The 2019 Review Request describes the potential impacts to known State Listed Species and their habitat as a result of the design modifications outlined in the September 23, 2019 Review Request. In summary, federally listed and state listed species include:

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 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 the following.

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

Plants

Additionally, 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 American ginseng *Panax quinquefolius* (see 2019 Review Request **Attachment 2**. Figure 1 and Attachment C, Section i. D.).

The following sections describe potential impacts to listed species as a result of the revised electrical interconnection corridor. It should be noted that the revised electrical interconnection route is not

anticipated to result in any new impacts to the golden-winged warbler and no protective measures are needed, and no further conservation actions are necessary.

Golden-winged warbler:

As described above, a habitat assessment was completed on November 8, 2019 for the revised segment of the electrical interconnection corridor, new Southern Access Road extension, and area north of Wetland VIII (see **Attachment 3).** As described in the Habitat Assessment Report, none of the habitats identified within the areas assess contain open canopy habitat in a suitable early to mid-successional seral stage to support the golden-winged warbler. As such, no protective measures are provided.

Tree Roosting Bat Protection:

As outlined above and in the 2019 Review Request, the revised electrical interconnection corridor will require tree clearing. The revised electrical interconnection corridor and access roads will require approximately 6.36 acres of tree clearing (Note, 6.36 acres of tree clearing is for the entire corridor, from the Solar PV Facility to Kent Road/Rt. 7) whereas the approved corridor required approximately 4.52 acres of tree clearing (see **Table 1** above).

The Project will implement tree roosting bat protection measures 2 and 3 outlined in NDDB's November 15, 2018 Final Determination; however, as described in the 2019 Review Request, Candlewood Solar proposes to extend the tree clearing window. Based on the January 23, 2020 meeting Candlewood Solar understands that CT DEEP has bat data for the Project area and is willing to work with Candlewood Solar on the tree clearing timeline in order to meet the project schedule which requires completion of construction and commercial operation by September 30, 2021. Specifically, Candlewood Solar understands that existing CT DEEP data for the Project Area, acoustic monitoring, or a combination of can be used if needed depending on when tree clearing will begin to be protective of bats.

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

The vernal pool protection strategies outlined in NDDB's November 15, 2018 Final Determination and the 2019 Review Request will be implemented. As described in the 2019 Review Request, a wetland delineation of the new areas crossed by the revised electric interconnection corridor was conducted in June and July 2019 (see 2019 Review Request Attachment 5). No vernal pools were identified during the wetland delineation conducted in June and July 2019. The revised design changes will not result in any changes to these conservation measures.

Recommended Protection Strategies for Wood and Box Turtles:

As described in Oxbow Associates, Inc. report, included as Attachment E to Amec Foster Wheeler Environment & Infrastructure, Inc.'s October 27, 2017 Filing (see 2019 Review Request Attachment C, Section i. B. and Figure 2), Area 1 has the highest quality habitat observed for eastern box turtle (see **Figure 2**). Oxbow states:

> 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 be routed along this moderately sloping woodland and field habitat to the point where it intercepts the service road.

As such, a perimeter of siltation fencing will be installed from an area just west of the existing open, cleared area east and northeast to the intersection with the paved service road during construction and installation of the electric interconnection corridor (see **Figure 2**). 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.

Based on additional consultation with the CT DEEP Water Permitting and Enforcement Division regarding the registration for the Project under the Construction Stormwater General Permit, CT DEEP has rejected the use of silt fence along the entire limits of work (LOW) and have requested silt fence to be installed parallel with site topography to prevent channelized flow. In order to be protective of turtles and minimize turtle entry into the solar array field and active construction area, Candlewood proposes to install standard silt fence parallel to site topography along the perimeter to comply with CT DEEP Water Permitting and Enforcement Division off-set, where breaks are required, two stacked and staked 12-inch straw wattle will be installed between the silt fencing to exclude turtles during active construction. Where straw wattles are installed to gap breaks between silt fence sections of the perimeter barrier, the qualified herpetologist will review these areas each morning prior to any work being done and any turtles encountered within the solar array field and active construction area will be carefully moved to an adjacent area outside of the solar array field and active construction area.

The Incidental Take Report notes that the Solar PV Facility will be completely surrounded by a counter-sunk 7-foot high chain link fence. Whereas the proposed fence is a single, large array enclosure utilized to exclude adult Box turtles from the 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. To visually screen the Solar PV Array, a 7-foot high cedar screening fence will be installed in various locations along the western and southern sides of the Solar PV Facility. A geotextile fabric will be counter-sunk in areas where the cedar screening fence is employed. Additionally, where gates are proposed within the chain link or cedar fencing, a geotextile fabric will be counter-sunk to prevent entrance into the array area and mowing mortality.

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

Slimy Salamander Protection, Conservation and Mitigation:

Revisions to 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 the Project Area. Based on consultation with NDDB, it is understood that CT DEEP regards revisions to the Project to represent an unavoidable "take" of the slimy salamander. The Mitigation Plan included in **Attachment 2** has been developed to identify those measures which will be implemented to avoid, minimize and mitigate potential impacts to the slimy salamander.

x. Species Targeted for Field Surveys

The CT DEEP 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)

The results of these field surveys are discussed in the February 9, 2018 Incidental Take Report.

As described in the 2019 Review Request, pre-construction northern slimy salamander surveys were conducted between June 17 and June 26, 2019 by Oxbow. The results of the pre-construction northern slimy salamander surveys are discussed in the 2019 Review Request and the report filed with CT DEEP on July 8, 2019 (see 2019 Review Request Attachment C, Section i. D.).

Additionally, while not a field survey for a targeted species, as noted above, a habitat assessment of the electric interconnection corridor was completed on November 8, 2019, (see **Attachment 3**).

Further, on December 5, 2019, Oxbow Associates, Inc. (Oxbow) conducted a site suitability habitat assessment for the slimy salamander along the revised segment of the electric interconnection corridor from the Solar Array to just east of Wetland VIII where the electric interconnection route rejoins the approved electric interconnection corridor. The results of the site suitability habitat assessment are documented in Oxbow's Habitat Survey and Mitigation Proposal Report dated December 13, 2019 (see **Attachment 4**).

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

Please refer to the February 9, 2019 Incidental Take Report and the November 15, 2018 Final Determination.

h. Slimy Salamander Species' Abundance and Distribution at the Site

xii. Site Surveys, Species' Abundance, and Distribution

Based on the pre-construction monitoring survey that was completed in June 2019 for the solar array and conservation area, multiple slimy salamanders were identified within these areas and a report was filed with CT DEEP within seven business days (see 2019 Review Request Attachment C, Section i. D. and Figure 1). Additionally, the results of the pre-construction survey are documented in Oxbow's Annual 2019 Northern Slimy Salamander Field Survey Report dated December 31, 2019.

As documented in Oxbow's Habitat Survey and Mitigation Proposal Report dated December 13, 2019, three sections of high-quality suitable slimy salamander habitat (Sections 1 – 3) exist within the revised segment of the electric interconnection corridor from the Solar Array to just east of Wetland VIII where the electric interconnection corridor rejoins the approved electric interconnection corridor. Based on consultation with NDDB, it is understood that CT DEEP regards revisions to the Project to represent an unavoidable "take" of the slimy salamander.

Site Surveys

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 seven business days of field survey and a report was filed with CT DEEP (Ms. Carol Morris-Scata) on July 8, 2018 (see 2019 Review Request Attachment C, Section i. D.). The field surveys identified slimy salamanders within steep, rocky sloped areas (see 2019 Review Request Figure 1 and Attachment C, Section i. D.). As noted above,

the results of the pre-construction survey are also documented in Oxbow's Annual 2019 Northern Slimy Salamander Field Survey Report dated December 31, 2019. Note, the pre-construction survey did not include the FirstLight parcels (9/6 and 34/31.1).

Species' Abundance and Distribution

As noted above, on December 5, 2019, Oxbow conducted a site suitability habitat assessment for the slimy salamander along the revised segment of the electric interconnection corridor from the Solar Array to just east of Wetland VIII where the electric interconnection corridor rejoins the approved electric interconnection corridor segment. The results of the site suitability habitat assessment are documented in Oxbow's December 13, 2019 Habitat Survey and Mitigation Proposal Report. Oxbow's December 13, 2019 Report identifies three sections of high-quality suitable slimy salamander habitat (Sections 1 – 3) based on the presence, abundance and connectivity among habitat features identified as suitable to support Slimy Salamander. Oxbow further states:

> Potential core habitat *of P. glutinosus* is defined as those areas with an abundant variety of deep crevices, and other hiding spaces associated with cover objects including exposed bed-rock, more or less interconnected rock outcrops, slabs of rocks and boulders varying in size, as well as fallen tree trunks and stumps, which all provide cover features critical for *P. glutinosus*. More often than not such rocky areas, and especially outcrops occur on steep slopes (> 35°). However, these salamanders were observed by us in the vicinity, on less steep sites rich in cover objects as well. Therefore, such sites, if not isolated from the more typical steep slope habitat should be presumed to likely support the species in an area contiguous with documented occurrences.

Based on the revised electric interconnection corridor and design, preferred habitat within the revised electric interconnection corridor on FirstLight parcels 9/6 and 34/31.1 (Sections 1 – 3, highest and high suitability, identified by Oxbow) is approximately 0.8 acres. Based on the CTECO 2016 Digital Elevation Model (DEM), areas exhibiting at least a 35% grade are depicted on **Figure 2** and the total area of the revised electric interconnection corridor that overlaps preferred slimy salamander habitat (≥ 35% slope) is approximately 1.2 acres.

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

See Section 2.0.g above for a description of potential impacts to state-listed species other than the slimy salamander.

Potential Impacts to State-Listed slimy salamander

As described in Section 1.0.a.i. above, three different engineering methods (ground mount, overhead, and HDD) will be employed to minimize impacts along the entire length of the electric interconnection corridor. The portion of the electric interconnection corridor not previously reviewed and approved under NDDB Final Determination No.: 201703524 is approximately 2,665 feet in length and has an easement width of approximately 60 feet with variable clearing widths depending upon the engineering design (New Segment) (see **Figure 1**). Specifically, the electric interconnection corridor will be constructed as follows (see **Figure 2**):

- A Ground Mount Segment that extends from the Solar PV Facility to the Rocky River.
  - Approximately 1,285 feet in length
  - 10 – 15 feet of selective clearing on each side
  - 38,550 square feet (0.88 acres) of total selective clearing
- An Overhead Segment from the Rocky River to first Horizontal Directional Drilling (HDD) boring pit.
  - Approximately 1,550 feet in length
  - 14 feet selective clearing from center of pole on each side
  - 46,500 square feet (1.07 acres) of total selective clearing
- An HDD Segment
  - Approximately 1,150 feet in length
  - 3,600 square feet (0.08 acres) of total clearing (temporary soil disturbance for bore pads/pits)
- An Overhead Segment from the second HDD boring pit to Route 7/Kent Road
  - Approximately 2,435 feet in length. (Note, there are not changes to this segment from the approved design).

Based on the revised electric interconnection corridor and design, the revised electric interconnection corridor on FirstLight parcels 9/6 and 34/31.1 overlaps approximately 0.8 acres of highest and high suitability habitat (Sections 1 – 3) identified by Oxbow.

Tree clearing, excavation for utility pole installation, surficial grading associated with the new access road, limited re-grading of existing access roads, and HDD boring pad/pit installation are required for construction of the revised electric interconnection corridor. Clearing and grading will reduce wildlife

cover and foraging habitat. Additionally, some individuals, if located in the area of work, may be inadvertently impacted by construction activities.

As noted in the February 9, 2018 Incidental Take Report, artificial lighting will not be used during construction or operation of the Project.

In summary, the presumed, aggregate impact to slimy salamander will be the loss of approximately 0.8 acres of highest and high suitability habitat, and potential secondary impacts to forested habitat within 100 to 300 horizontal feet where microclimate conditions may have subtle effects upon primary habitat.

Based on consultation with NDDB, it is understood that the Project area contains the most significant population of northern slimy salamanders in the State of Connecticut and that CT DEEP regards revisions to the Project to represent an unavoidable "take" of the slimy salamander. As such, Candlewood Solar has developed a Mitigation Plan to identify those measures which will be implemented to avoid, minimize and mitigate potential impacts to the slimy salamander (see **Attachment 2**).

j. Estimated Area of State-Listed Taxa Impacted

As described above, the electric interconnection layout was modified in consultation with FirstLight, owner of the two adjacent parcels (9/6 and 34/31.1) that will be crossed by the electric interconnection corridor. Approximately 0.8 acres (see **Figure 2**) of the revised electric interconnection corridor overlaps approximately 0.8 acres of highest and high suitability habitat (Sections 1 – 3) identified by Oxbow.

4.0 Feasible and Prudent Alternatives'

k. Alternatives

No Build

The electrical interconnect is required to transmit the power generated from the Solar PV Array to the Eversource Energy Rocky River substation for input of clean energy into the Independent System Operator New England (ISO-NE) grid, thereby producing clean renewable energy for use on the local electric grid while decreasing dependence on non-renewable sources of electric power.

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 renewable 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.

Electric Interconnection Corridor

The electric interconnection corridor must run from the Solar PV Facility to the interconnection point on Route 7. No other interconnection points are available for this Project. Additionally, in October of 2016, the Candlewood Solar Project was one of six bidders selected by the Tri-State Clean Energy RFP (the RFP) selection committee to move ahead with 20-year power purchase agreement (PPA) negotiation. PPA negotiations have been completed and the PPA has been executed between Candlewood Solar LLC and the participating utilities—Eversource Energy, National Grid, and Unitil.

Figure 4 depicts the previously approved Electric Interconnection Corridor (2018), the Revised Electric Interconnection Corridor and corridor alternatives analyzed by Candlewood Solar. A description of each of the corridors is provided below. It should be noted that with the exception of the Candlewood Mountain Road Alternative, all of the electric interconnection corridors including the approved electric interconnection corridor, follow the same corridor for approximately 1,240 feet from the Solar PV Facility east and then only vary slightly within the FirstLight Parcel. As such, the following alternatives analysis focuses on each corridor alternative once it exits the Solar PV Facility Parcel with the exception of the Candlewood Mountain Road Alternative.

Approved Electric Interconnection Corridor

- Width = 30 feet
- 7,086 Linear feet
- 212,580 Square feet (4.88 acres)

The Approved Electric Interconnection Corridor is the corridor included in the February 9, 2018 Incidental Take Report. As described above, based on further consultation with FirstLight, this alternative does not meet FirstLight's 300 foot setback requirement with respect to hydroelectric facility infrastructure / hydroelectric facility operational lands (see March 27, 2019 FirstLight Hydro Generating Company, LLC Housatonic River Project - P-2576-139, 2019 Revised Shoreline Management Plan, Appendix A - Rocky River - Shoreline Land Designation Map at https://firstlightportal.myadept.com/pdf/Approved-Shoreline-Management-Plan.pdf). As such, this alternative was not selected.

Revised Electric Interconnection Corridor

- Width = 60 foot easement with selective clearing (approximately 0 – 30 feet)
- 6,576 Linear feet
- 329,228 Square feet (7.55 acres) easement (selective clearing along ROW 0 -30 feet wide, see Table 1)

This corridor is the subject of this Revised Review Request and is the preferred alternative.

FirstLight Alternative 1

- Width = 70 feet
- 8,870 (6,017 Linear ft. + 2,846 Linear ft. along Route 7)
- 424,869 Square feet (9.75 acres)

As noted above, this corridor begins by following the Approved Electric Interconnection Corridor from the Solar PV Facility for the first approximately 1,240 feet and then heads north to the west of the Rocky River and then continues to Route 7. The corridor then follows Route 7 for approximately 2,846 feet to the Eversource Energy Rocky River substation. FirstLight Alternative 1 is approximately 2,000 feet (1/3) longer than the Approved and preferred Revised Electric Interconnection Corridors. While a portion of this corridor would follow an existing old forest/woods road, improvements along this corridor would still be required to facilitate the passage of construction equipment and installation of utility poles. FirstLight Alternative 1 would impact four (4) residential properties and six (6) business properties along the west side of Route 7/Kent Road, cross 2,846 feet of mapped state and federal listed species along Route 7/Kent Road, and result in additional temporary traffic impacts. In order to further pursue this option, a new interconnection study would be required, along with additional permitting, which would add approximately one year to the project timeline making it infeasible to permit and construct the Project by the September 30, 2021 Commercial Operation Date (COD) required by the Power Purchase Agreement (PPA). As such, this alternative was not selected as it does not meet the Project schedule.

FirstLight Alternative 2

- Width = 70 feet
- 8,159 Linear ft.
- 565,284 Square feet (12.98 acres)

FirstLight Alternative 2 follows a portion of the Approved corridor but crosses the Rocky River farther north where the terrain is flatter. The corridor then utilizes old forest roads east of the river between the Approved Corridor and the Revised Corridor before joining the Approved corridor along the main access road to the dam. This corridor reduces the distance from the Solar PV Facility to the Eversource Energy Rocky River substation compared to FirstLight Alternative 1, however, this alternative does not meet FirstLight's 300-foot setback requirement with respect to hydroelectric facility infrastructure. As such, this alternative was not selected.

FirstLight Alternative 3

- Width = 70 feet
- 8,312 Linear feet
- 582,009 Square feet (13.36 acres)

FirstLight Alternative 3 follows a similar path to FirstLight Alternative 2, but crosses the Rocky River farther north where it joins with the forest/woods road utilized by FirstLight Alternative 1. This river crossing has steeper slopes than FirstLight Alternative 2, including ledge on the western bank. After crossing the Rocky River, there is one additional 90 degree turn to the south before joining with the Approved Corridor, which eventually terminates at the Eversource Energy Rocky River substation. The last leg of this corridor, prior to arriving at the Eversource Energy Rocky River substation runs concurrently with an existing buried fiber optic cable. While this corridor utilizes an existing woods road and an existing fiber optic ROW, it is more than 1,500 feet longer than the Revised Electric Interconnection Corridor and does not meet FirstLight's 300-foot setback requirement from hydroelectric facility infrastructure. As such, this alternative was not selected.

Candlewood Mountain Road Alternative

- 21,980 Linear feet

The Candlewood Mountain Road Alternative begins on the Solar PV Array Parcel at the same location as the other routes, and then traverses the southern limit of work to the existing access road that leads to Candlewood Mountain Road. The corridor follows Candlewood Mountain Road north to the intersection of Sherman Road/Rt. 37 and follows Sherman Road/Rt. 37 to Kent Road/Rt. 7 to the Eversource Energy Rocky River Substation. As noted above, the Candlewood Mountain Road Alternative is approximately 21,980 linear feet in length, approximately three (3) times the length of the Revised Electric Interconnection Corridor. Additionally, Candlewood Mountain Road lacks 3-phase power. As such, a new circuit requiring new poles within a new easement would be required. This corridor would result in land disturbance and tree clearing within the new easement, would impact approximately 91 more residential properties and 28 business properties, cross approximately 12,874 feet (2.4 miles) of mapped state and federal listed species from Bullymuck Road to the Eversource Energy Rocky River Substation (see **Figure 3**), cross or intersect 3 more roadways, and result in additional traffic impacts. The Candlewood Mountain Road Alternative would also require additional permits and approvals, a new interconnection study by the utility (adding approximately one year to the project schedule) and cost approximately 10 times more than the preferred Revised Electric Interconnection Corridor. As such, this alternative was not selected.

Note, the property information is based on CT DEEP parcels, the Town of New Milford, CT mapping tool website (https://newmilfordct.mapgeo.io/), the Town of New Milford, CT online assessor database (http://gis.vgsi.com/NewMilfordCT), and Google Maps aerial/street view.

Conclusion

Based on the alternatives considered, the Revised Electric Interconnection Corridor is the alternative that best meets the identified need, the Project schedule and reflects a balancing of environmental criteria and cost.

I. Modification of Project Plans to Minimize Impacts

In order to reduce impacts along the entire length of the electric interconnection corridor, three different engineering methods (ground mount, overhead, and horizontal directional drill) will be employed and tree and vegetation will be limited to that required for the construction and operation of each segment as described above.

Additionally, Candlewood Solar has developed a Mitigation Plan to identify those measures which will be implemented to avoid, minimize and mitigate potential impacts to the slimy salamander (see **Attachment 2**).

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.

Potential impacts to the 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 as discussed in the Mitigation Plan included in **Attachment 2**. Avoidance and minimization measures during the construction period are outlined in Section 7 of the Mitigation Plan included in **Attachment 2**.

n. Mitigation Area Description

Candlewood Solar developed a Mitigation Plan to avoid, minimize and mitigate potential impacts to the slimy salamander (see **Attachment 2**).

o. Timeline for Site Preparation and Transplant Activities

Site preparation will start with surveying the limits of work, installation of erosion and sedimentation controls and then tree clearing. This will be followed by installation of stormwater best management practices (BMPs) and grading activities, conducted in a sequence in accordance with the Construction Stormwater General Permit requirements. We anticipate that the electric interconnection will be constructed in parallel with the Solar PV Facility and construction of both the Solar PV Facility and the electric interconnection will commence upon receipt of all necessary permits and approvals.

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—installation of bat houses within the conservation area.

p. Conservation/Restrictive Easements

The status of the information pertaining to Conservation/Restrictive Easements is consistent with that described in the Incidental Take Report dated February 9, 2018. See also **Attachment 2**.

6.0 Long-Term Maintenance

q. Management Measures to Protect Mitigation Area

There are no updates or changes to this section of the Incidental Take Report dated February 9, 2018. See also **Attachment 2**.

r. Mitigation Area Responsible Party

There are no updates or changes to this section of the Incidental Take Report dated February 9, 2018. Candlewood Solar will inform NDDB as soon as a Conservation Entity has been selected.

7.0 Monitoring

s. Monitoring and Reporting

See Attachment 2 (Mitigation Plan and Invasive Species Control Plan).

xiii. Annual Field Surveys

See **Attachment 2** (Mitigation Plan and Invasive Species Control Plan).

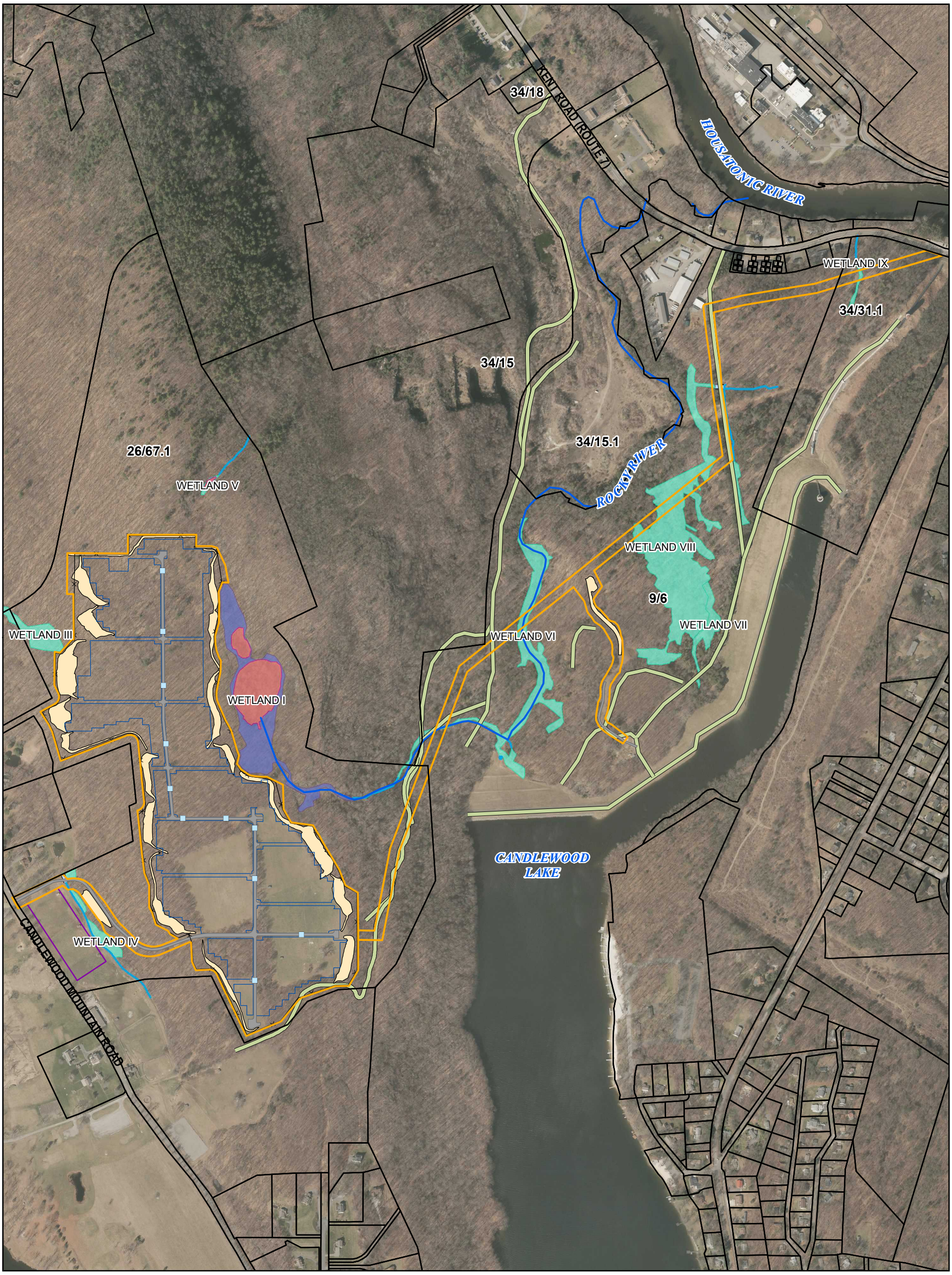
t. Reporting

See **Attachment 2** (Mitigation Plan and Invasive Species Control Plan).

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) and botanist(s) to conduct the required monitoring, survey, and reporting efforts in accordance with Project permits and approvals.

Figures



SITE PLAN AND PARCEL MAP

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Legend

- 2020 Project Area
- Fence
- Outline of Array
- Proposed Road
- Stormwater Feature
- Staging Area
- Parcel Boundary
- Existing Road
- Grass Strips

CTDEEP Hydrography

- River, Stream, or Brook

Delineated Wetlands and Watercourses

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

Location of Site

Notes & Sources

Basemap Source: 2016 Connecticut Orthophotography created by the University of Connecticut - Connecticut Environmental Conditions Online (UCONN CTECO), distributed by ArcGIS Online.
Datalayer Sources: Parcel Boundary from CTDEEP GIS website.

0 300 600 Feet

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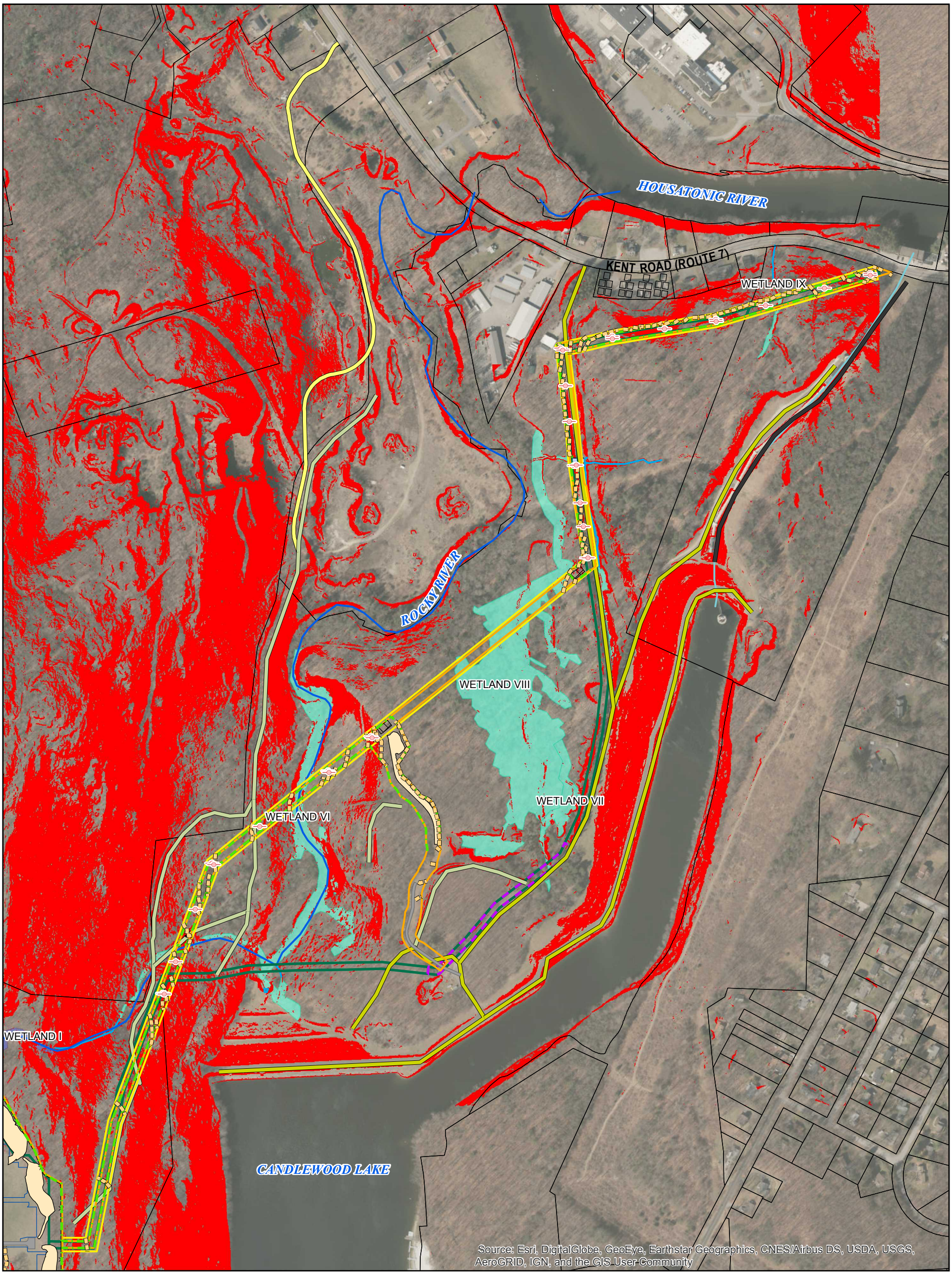
wood.
Wood Environment & Infrastructure Solutions, Inc.
271 Mill Road
Chelmsford, MA
Phone: (978) 692-9090

FIGURE 1

H:\Ameresco\NewMildford_CT\Task4\MXD\Fig1_SitePlan_ParcelMap.mxd February 07, 2020 DWN: emily.gardiner CHKD: AKN



ELECTRICAL INTERCONNECTION PRELIMINARY STRUCTURE LOCATIONS

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Legend

- 2020 Limit of Work
- Lease Area
- Fence
- Outline of Array
- Current Road
- Stormwater Feature
- Old Limit of Work
- Area 1
- Parcel Boundary
- HDD Boring Pits
- Areas with Slopes ≥ 35% (CTECO 2016 DEM)
- Utility Poles
- Straw Wattle
- Tree Clearing Line
- Proposed Access Road
- Public Road
- Existing Access Road
- Old Road

CTDEEP Hydrography

- Aqueduct
- River, Stream, or Brook

Delineated Wetlands and Watercourses

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

Location of Site

Notes & Sources

Basemap Source: 2016 Connecticut Orthophotography created by the University of Connecticut - Connecticut Environmental Conditions Online (UCONN CTECO), distributed by ArcGIS Online.
Datalayer Sources: Parcel Boundary from CTDEEP GIS website. Areas with Slopes ≥ 35% datalayer derived from the CTECO 2016 DEM.

0 200 400 Feet

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wood.
Wood Environmental & Infrastructure Solutions, Inc.
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Phone: (978) 692-9090

FIGURE 2

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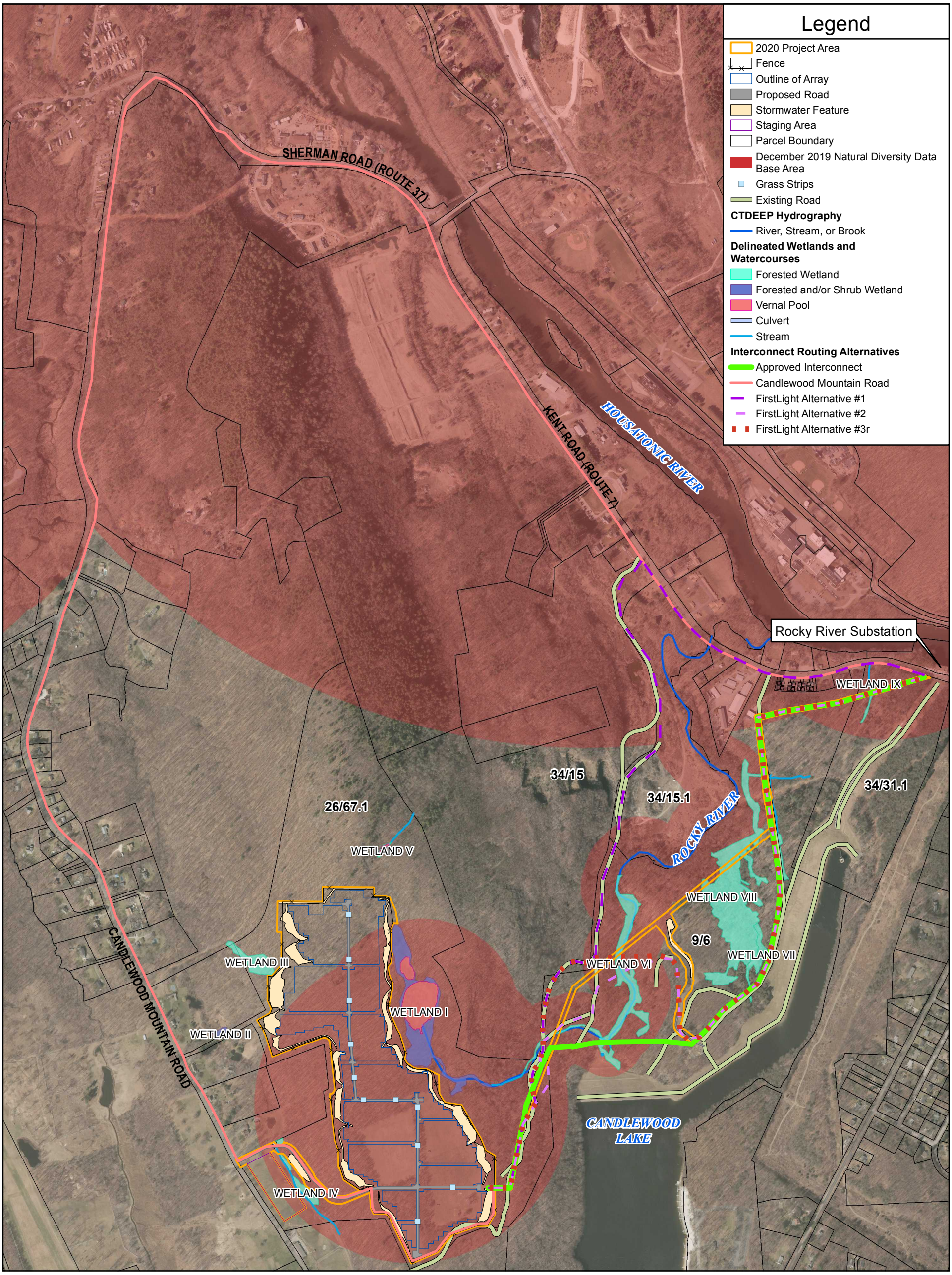

Legend

- 2020 Project Area
- Fence
- Outline of Array
- Proposed Road
- Stormwater Feature
- Staging Area
- Parcel Boundary
- December 2019 Natural Diversity Data Base Area
- Grass Strips
- Existing Road

CTDEEP Hydrography

- River, Stream, or Brook

Delineated Wetlands and Watercourses

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

Interconnect Routing Alternatives

- Approved Interconnect
- Candlewood Mountain Road
- FirstLight Alternative #1
- FirstLight Alternative #2
- FirstLight Alternative #3r

Location of Site

ELECTRIC INTERCONNECTION CORRIDOR ALTERNATIVES

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.
Datalayer Sources: Parcel Boundary datalayer from CTDEEP GIS website.

0 400 800 Feet

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

FIGURE 3

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Attachment 2

State Threatened *Plethodon glutinosus* (slimy salamander)
Mitigation Plan and Invasive Species Control Plan

State Threatened *Plethodon glutinosus* (slimy salamander) Mitigation Plan

Candlewood Solar LLC
20 MW Solar Photovoltaic Project
New Milford Assessor Map Parcels 26/67.1, 34/15, 9/6, and 34/31.1
Candlewood Mountain Road, New Milford, CT
NDDB Review #2019-11-381

Prepared for:
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Submitted to:
Connecticut Department of Energy & Environmental Protection
Natural Diversity Data Base
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February 7, 2020

Epsilon ASSOCIATES INC.

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Section 1. Introduction

Candlewood Solar LLC (Candlewood Solar) is proposing to construct 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, electric interconnection corridor, and access roads (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) with the exception of one existing access road, which crosses two additional parcels to the north and east (New Milford Assessor Map parcels 34/15 and 34/15.1) (see **Figure 1**). The Facility will be located entirely on parcel 26/67.1 (197 Candlewood Mountain Road) on the southern flank of Candlewood Mountain in west central New Milford, northwest of Candlewood Lake, east of Candlewood Mountain Road, and southwest of Corridor 7 (the Facility Parcel). The electric interconnection corridor will originate on the Facility Parcel, exit the Facility Parcel in the southeastern portion of the Solar PV Facility and then cross two adjacent parcels to the east (parcels 9/6, and 34/31.1) owned by FirstLight Hydro Generating Company (FirstLight) 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**). Four (4) access roads will be used for construction, operation and maintenance of the Project (see **Figure 1**). The existing access road off of Candlewood Mountain Road will provide access to the Solar PV Facility. Due to existing environmental constraints, three access roads (Eastern, Southern and Northern) will provide access to the electric interconnection corridor.

On November 15, 2018, a Final Determination was issued by the Connecticut Department of Energy & Environmental Protection (CT DEEP) Natural Diversity Data Base (NDDB) for the Project (NDDB Final Determination No. 201703524) (Final Determination). Since the issuance of the Final Determination for the Project, there have been several changes to the Project design and Project layout. Revisions to the Project will result in a direct impact to a population of State Threatened *Plethodon glutinosus* (slimy salamander) that is known to occur within or close to the boundaries of the Project parcels. Based on consultation with NDDB, it is understood that CT DEEP regards revisions to the Project to represent an unavoidable "take" of the slimy salamander. This Mitigation Plan has been developed to identify those measures which will be implemented to avoid, minimize and mitigate potential impacts to the slimy salamander.

Section 2. Mitigation Plan Summary

As noted above, this Mitigation Plan has been developed to identify those measures which will be implemented to avoid, minimize and mitigate potential impacts to the slimy salamander. The following is a summary of the measures to be implemented.

- Conservation Easement Area Establishment
- 5 Year Targeted Research Program
- Invasive Species Control Plan
- In Right-of-Way and Buffer Zone Conservation Measures
- Construction Best Management Practices

These measures are described in Sections 3 through 7 of this Mitigation Plan.

Section 3. Conservation Easement Area

The November 15, 2018 NDDB Final Determination 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.*

Figure 2 depicts the 100-acre set aside area for permanent conservation included in the February 9, 2018 Incidental Take Report as Figure 1 and approved in the November 15, 2018 NDDB Final Determination.

As outlined in the September 23, 2019 Request for NDDB State Listed Species Review (2019 Review Request), based on Project modifications and changes, revisions to the approved 100-acre conservation easement are proposed. Proposed changes to the approved 100-acre conservation easement are located along the northwestern, northern and eastern sides of the Solar PV Facility (see **Figure 3.** Overall Site Plan [Included as Figure 1 in the 2019 Review Request]). The area proposed to be removed from the previously approved 100-acre conservation easement is depicted by red hatching.

As described in the 2019 Review Request, to compensate for the changes to the approved 100-acre conservation easement, Candlewood Solar is proposing to include the following new areas: (i) a portion of the northern tip of the Project area, where solar PV panels were previously located and slimy salamanders were field located during the 2019 pre-construction survey; (ii) an additional area east of Wetland I that includes a portion of Wetland VI and the Rocky River, and (iii) the southeastern corner of the Facility parcel which largely consists of preferred slimy salamander habitat (see **Figure 4.** Revised Conservation Restriction Area. The Proposed Revised 100-acre Conservation Area is depicted by blue hatching).

Additionally, to mitigate for new potential impacts associated with the modifications and changes to the Project, Candlewood Solar proposes to include an additional 20 acre area located east of and contiguous to the proposed revised 100-acre conservation easement area within the Adjacent Parcel (New Milford Assessor Map parcel 34/15) (see **Figure 4.** Revised Conservation Restriction Area. Note, the, proposed additional approximate 20-acre Conservation Area is depicted by green hatching). The additional 20-acre area was selected as it is contiguous to the revised 100-acre conservation area and predominantly consists of steep slope, mature forest area.

As such, Candlewood Solar has identified a 120-acre area that will be set aside for permanent conservation as mitigation for unavoidable impacts to the northern slimy salamander. The 120-acre mitigation area will be conveyed to a local conservation trust or similar entity as permanently conserved land. The 120-acre area includes approximately 58.8 acres of prime slimy salamander habitat (≥ 35% slopes). It also includes wetlands, watercourses, and vernal pools. Similar to the 100-acre area, the 120-acre area is located on portions of two parcels (Solar PV Facility Parcel and Adjacent Parcel). Of the 120-acres,

approximately 64.9 acres is located on the Solar PV Facility Parcel (New Milford Assessor Map parcel 26/67.1) and approximately 55.1 acres is located on the Adjacent Parcel (New Milford Assessor Map parcel 34/15).

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.

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 conservation trust or similar entity to convey the 120-acre area under a conservation easement. The conservation easement will allow named passive and non-destructive activities. 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". Scientific study, as proposed herein, will also be allowed by the conservation easement. Prohibited uses will include development, tree clearing and timber harvesting (except for habitat and invasive species management), land alteration, mineral extraction, other alterations of its natural state, hunting, and motorized vehicles such as all-terrain vehicles (ATVs) and snowmobiles. The completion of the transaction to deed the 120-acre mitigation area to a local trust or similar entity will be accomplished once the Project is fully entitled and permitted.

As noted above, approximately 58.8 acres (approximate 49%) of the conserved 120-acre area is steeply sloped, mature forest prime slimy salamander habitat. The mitigation area will also permanently conserve and protect wetlands, vernal pools and associated critical terrestrial habitat (CTH), 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.

As described in the February 9, 2018 Incidental Take Report, a brief Baseline Documentation Survey will be provided to NDDB and the conservation entity responsible for future conservation of the land. The Baseline Documentation Survey will consist of:

1. A narrative describing the current conditions of the premises.

2. Approximately 30 geo-located photographs exemplary of the current conditions. (The February 9, 2018 Incidental Take Report included 25 photographs. An additional five (5) photographs are proposed to photo document the additional 20 acres added to the conservation area to maintain one (1) photograph for every 4 acres of area conserved.)

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 Documentation Survey. Thereafter, the conservation entity may elect to continue such monitoring program at less frequent intervals (e.g. 3-5 year).

No maintenance or management measures are proposed to protect the mitigation area.

See Section 4 for surveys and studies proposed within the conservation 120-acre area.

Section 4. 5 Year Targeted Research Program

Recognizing that the Project area contains the most significant population of northern slimy salamanders in the State of Connecticut, a five (5) year targeted slimy salamander research program will be developed and implemented as part of the mitigation plan to observe and document the salamander population and habitat conditions for northern slimy salamander within the mitigation area, Solar PV Facility, and electric interconnection corridor and buffer zone. The details and goals of the 5 Year Research Program will be developed in consultation with CT DEEP Wildlife biologists, State Herpetologists, and FirstLight.

The Research Program will be conducted on portions of parcels 26/67.1 (Solar PV Facility Parcel), 34/15 (Adjacent Parcel), and 9/6 and 34/31.1 (Fist Light Parcels).

A pre-construction survey was completed by Oxbow Associates, Inc. (Oxbow) in June 2019. The purpose of the pre-construction survey was to document the presence or absence of slimy salamander within the forested Project Area and 100-acre conservation area. The portion of the electric interconnection corridor located on FirstLight Parcels 9/6 and 34/31.1 was not included in the pre-construction survey. The pre-construction survey is described in the February 9, 2018 Incidental Take Report (NDDB Preliminary Assessment No.: 201703524) and in the Protocol for Surveying Northern Slimy Salamander (*Plethodon glutinosus*) – Candlewood Solar LLC (April 30, 2019). The results of the pre-construction survey are documented in the Field Survey Report (see 2019 Review Request Attachment C, Section i. D) and Oxbow's Annual 2019 Northern Slimy Salamander Field Survey Report dated December 31, 2019.

The February 9, 2018 Incidental Take Report also included a commitment to complete post construction monitoring for two years within the approximate 70 acre conservation easement area located on the Solar PV Facility Parcel. As part of the 5 Year Research Program, post construction monitoring will be extended from two years (approved in NDDB's November 15, 2018 Final Determination) to five years (three additional years). Additionally, post construction monitoring will be conducted on portions of parcels 26/67.1 (Solar PV Facility Parcel), 34/15 (Adjacent Parcel), and 9/6 and 34/31.1 (FirstLight Parcels). Within the Solar PV Facility Parcel and Adjacent Parcel, post construction monitoring will be conducted within the Solar PV Facility and 120-acre conservation easement area (see Section 3 and **Figure 4**). Within the two FirstLight Parcels (9/6 and 34/31.1), post construction monitoring will be conducted within the electric interconnection corridor (high-quality suitable slimy salamander habitat Sections 1 – 3) (see **Figure 5**) and 150 – 300 foot buffer zone (see Section 5 and Attachment A) (approximately 20 acres). It should be noted that all 24 slimy salamanders found during the pre-construction survey were found within areas included within the 120-acre conservation area (see **Figure 4**).

The pre-construction survey covered the forested area to be cleared for the Solar PV Facility (approximately 56.8 acres) and the approved 100-acre conservation area (156.8 total acres). Field efforts included "…120 staff-hours of diurnal cover object survey over five field days, and 120 staff-hours of nocturnal visual surveys over five nights to detect presence and measure demographics of *P. glutinosis* through the study area."

As proposed, post construction monitoring field efforts under the 5 Year Research Program are anticipated to follow the same or similar protocol and survey methods as that employed during the pre-

construction survey. Based on areas to be surveyed (approximately 156.8 acres during pre-construction and approximately 210 acres during post construction), familiarity with portions of the conservation area, and the geo-location of *P. glutinosus* from the pre-construction survey, it is anticipated that a similar level of effort as that completed during the pre-construction survey will be employed (240 hours split evenly between diurnal and nocturnal surveys). Post construction monitoring will focus on the areas in which slimy salamanders were identified during the pre-construction survey to evaluate potential impacts or changes to species abundance and distribution, determine presence or absence of slimy salamander along the electric interconnection corridor and buffer zone, and use of the Solar PV Facility area by slimy salamanders and other non-avian reptiles and amphibians.

A cover object study is also proposed as part of the 5 Year Research Program. The cover object study is discussed in more detail in Section 6 below.

Additionally, 5 year monitoring of selective plantings within the electric interconnection corridor is also proposed as part of the 5 Year Research Program. This mitigation measure and proposed monitoring are also discussed in more detail in Section 6 below.

Further, monitoring for edge effects and invasive earthworms resulting from clearing is also proposed and discussed in more detail in Section 6 below.

In summary, the 5 Year Research Program includes:

1. Post construction monitoring of the 120-acre mitigation area, the electric interconnection corridor and buffer zone, and Solar PV Facility and Additional Cleared Area for Shading and Stormwater Features (approximately 210 acres).

2. Cover object monitoring within the electric interconnection corridor.

3. Post construction ground cover plantings monitoring.

4. Post construction soil moisture and temperature monitoring within the electric interconnection corridor and buffer zone.

5. Invasive earthworm monitoring within the electric interconnection corridor.

6. Field Survey Reports (within 7 business days of the last field day).

7. Annual Reports due by December 31st of that year.

As noted above, the details of the 5 Year Research Program will be further developed in consultation with CT DEEP Wildlife biologists, State Herpetologists, and FirstLight. Candlewood Solar 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. Candlewood Solar will fund the 5 Year Research Program. Funding for the 5 Year Research Program will not exceed $250,000.

Section 5. Invasive Species Control Plan

Attachment A contains a DRAFT Invasive Species Control Plan (ISCP) for the electric interconnection corridor and 150 – 300 foot buffer zone. The ISCP has been developed to identify communities of invasive plant species that occur along the electric interconnection corridor, describe the measures to prevent the potential introduction or spread of invasive species associated with Project construction activities, and the post construction monitoring and management program that will be implemented.

Upon receipt of comments from CT DEEP and FirstLight on the DRAFT ISCP, the DRAFT ISCP will be updated and finalized. The Final ISCP will be filed with CT DEEP prior to the start of construction activities. A copy of the Final ISCP will be kept on-site at all times during construction activities.

Section 6. In Right-of-Way and Buffer Zone Conservation Measures

On December 5, 2019, Oxbow conducted a site suitability habitat assessment for the slimy salamander along the revised segment of the electric interconnection corridor from the Solar PV Facility to just east of Wetland VIII where the electric interconnection corridor rejoins the approved electric interconnection corridor (see **Figure 5**). The results of the site suitability habitat assessment are documented in Oxbow's Habitat Survey and Mitigation Proposal Report dated December 13, 2019 (see February 7, 2020 Revised Review Request Attachment 4). Oxbow's December 13, 2019 Report recommends five conservation measures for clearing and finish-treatment of the alignment within three sections of high-quality suitable slimy salamander habitat (Sections 1 – 3). These conservation measures include:

1. Leave all stumps not in conflict with access or a structure in place; chip slash and tops within the alignment in uniform, shallow depths.

2. Leave any low-growing forest shrub species (mountain laurel, witch hazel, native *Viburnum*, etc.) in place, working around same if needed.

3. Reserve hardwood and pine trunk sections greater than 12" in diameter. Cut to three to four-foot lengths, split longitudinally, and place at an equivalent of one log piece per 800 sq. ft. of ROW (approx. 200 items) within high quality habitat.

4. Develop an operation and maintenance (O&M) plan for the ROW that retains woody growth under 15 feet in height and includes control and eradication of invasive vegetation, as well as visual inspection and photo-documentation of the sensitive sections of the alignment at least every three calendar years. This O&M plan could also include selective planting of low-growing, native shrubs wherever the soil is deep enough and already void of existing vegetation.

5. Examine and record amphibian occupants of the log sections during May and August of the third year following their placement.

Candlewood Solar and its contractors will limit tree clearing, soil disturbance, stump removal, and vegetation removal to that required for the construction of the electric interconnection corridor. This includes:

- Selected clearing approximately 10 – 15 feet on either side of the Ground Mount Segment that extends from the Solar PV Facility to the Rocky River (approximately 1,285 feet).

- Approximately 30 feet of clearing (approximately 14 feet from center of pole in each direction) along the Overhead Segment from the Rocky River to first Horizontal Directional Drilling (HDD) boring pit (approximately 1,550 feet). To avoid clearing, notches will be made to accommodate guy wires, where necessary.

- Along the HDD segment, clearing will be limited to 2 boring work pads/pits approximately 30 feet by 60 feet (1,800 square feet each; 0.04 acres each; 0.08 acres total).

Additionally, Candlewood Solar and its contractors will minimize tree clearing, soil disturbance, and vegetation removal to the extent practicable through the use of existing access roads and planned extensions or upgrades to existing access roads and limiting new points of access along the electric interconnection corridor. The contractor(s) and subcontractor(s) shall be instructed to stay within limits of access roads and work areas that are designated on the approved Construction Plan drawings.

Site restoration procedures will be the following as long as they are consistent with the Best Management Practices for Stormwater and Erosion Control.

1. Minimize soil disturbances by reducing the size of work areas and reducing the intensity of activities that may result in soil disturbances.

2. Re-vegetate bare soils as soon as feasible to minimize the possible establishment of invasive plant species. When seeding, local native species must be used. Seed will be broadcasted over all bare soil areas and covered with a mulch layer (seed-free straw, mulched wood chips, or equivalent). The proposed seed mix for the Solar PV Facility is a solar farm seed mix (Ernst Seed Mix ERNMX-186), shaded areas of the site are to be seeded with a Conservative shade mix (Ernst Seed Mix ERNMX-129), and in areas of landscape plantings along the western and southern sides of the Solar PV Facility, the understory infill plantings will be New England roadside matrix upland seed mix by New England Wetlands Plants.

3. On steep sloping areas (i.e., slopes exceeding 20 percent), soil erosion control matting (i.e., erosion control blankets or hydroseed with mulch) must be installed over the seeded area. Where erosion control blankets are used, blankets should be secured with biodegradable tacks or staples a minimum of 12-inches apart down the sides and along the top of the blankets.

4. Stabilize disturbed soils using appropriate erosion and sediment control procedures as soon as possible. Use invasive free materials such as straw or wood chips; avoid using hay.

As noted in conservation measures 3 and 5 above, hardwood and pine trunk sections greater than 12 inches in diameter will be reserved and cut to three to four-foot lengths, split longitudinally, and placed at an equivalent of one log piece per 800 sq. ft. of ROW (approx. 200 items) within high quality habitat (Sections 1 – 3) so as not to impede access to or function of the electric interconnection corridor. Only native hardwood and pine trunks cut from within the electric interconnection corridor will be used. As proposed, cover objects will be examined during May and August of the third year following their placement and amphibian occupants recorded as part of the 5 Year Research Program.

To assess the edge effect of the new electric interconnection corridor, a pre-construction survey consisting of measurements will be taken to document the soil moisture and soil temperature within the electric interconnection corridor and buffer zone. Measurements will be taken at prescribed intervals or locations along the length of the electric interconnection corridor and from the proposed edge of clearing. Each location will be documented using a handheld GPS and the results recorded. Additionally, a brief description of habitat classification will also be noted. To assess potential changes to soil moisture and temperature over time, measurements will be taken post construction for a period of 5 years both within the cleared electric interconnection corridor and at prescribed intervals from the edge of clearing (150',

300' and 500'). Measurement intervals or locations along the length of the electric interconnection corridor and from the proposed edge of clearing will be identified in consultation with CT DEEP Wildlife.

Further, where soil disturbance has occurred and/or vegetation removed during construction, Candlewood Solar will selectively plant low-growing, native shrubs (e.g., witch hazel, verbena, hazelnut, and mountain laurel) where the soil is deep enough to provide additional cover. Selective plantings will be monitored for successful establishment within the electric interconnection corridor as part of the 5 Year Research Program. Where an 80 percent survival rate is not established, additional shrubs will be planted. Where an 80 percent survival rate has not been met for three (3) consecutive years, the monitoring period will be extended until the success criteria has been met for three consecutive years.

Also, a survey and post construction monitoring of earthworm communities will be conducted as part of the 5 Year Research Program within the electric interconnection corridor and buffer zone. The survey and monitoring program will determine presence or absence of invasive earthworms and potential impacts or changes to invasive earthworm abundance and distribution as a result of the Project. The sampling protocol and sampling intervals will be determined in consultation with CT DEEP Wildlife.

Finally, an O&M Plan will be developed for the Solar PV Facility and electric interconnection corridor. One of the goals of the O&M Plan will be to retain woody growth under 15 feet in height within the electric interconnection corridor. The O&M Plan will also outline the maintenance schedule (e.g. mowing) for the Solar PV Facility as described in the February 9, 2018 Incidental Take Report and associated attachments. Candlewood Solar will also continue to implement avoidance, minimization, and best management practices throughout the life of the Project.

Section 7. Construction Best Management Practices

Construction Best Management Practices (BMPs) designed to avoid or minimize impacts to State-listed species are included in the February 9, 2018 Incidental Take Report, November 15, 2018 NDDB Final Determination, September 23, 2019 Request for NDDB State Listed Species Review, the Invasive Species Control Plan included as Attachment A to this Mitigation Plan, and the February 7, 2020 Revised Request for NDDB State Listed Species Review. With the exception of those Construction BMPs outlined in the Invasive Species Control Plan, the purpose of this section is to identify and summarize all construction best management practices designed to avoid or minimize impacts to State-listed species. Construction BMPs are summarized as follows:

- Limit tree and vegetation clearing impacts and the overall footprint of the Project.
- Avoid development of the Solar PV Facility in areas containing slopes that are 15% or greater to minimize grading, erosion, and impacts to preferred slimy salamander habitat.
- Tree clearing, soil disturbance, and vegetation removal will be minimized to the extent practicable through the use of existing access roads and planned extensions or upgrades to existing access roads and new points of access limited along the electric interconnection corridor.
- Stumps will be removed from the area of the Solar PV Facility, stormwater features, and in the area between the fence line and the limits of work and tree clearing. Along the electric interconnection corridor, all stumps not in conflict with access or a structure will be left in place.
- The contractor(s) and subcontractor(s) will be instructed to stay within limits of access roads and work areas that are designated on the approved Construction Plan drawings.
- Large diameter coniferous and deciduous trees and wooded buffers adjacent to wetland areas will be maintained whenever possible.
- 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 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.

- Hiring a qualified herpetologist to be on-site 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 inspected and maintained through the construction period (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. To comply with CT DEEP stormwater regulations exclusionary fencing is not permitted to be installed in a manner that will create channelized flow and increase the risk of erosion. These areas will be supplemented with two stacked and staked 12-inch high straw wattles or similar between exclusionary fencing segments to create a fully enclosed limit of work area. These areas will be inspected daily prior to construction activities by the on-site herpetologist.

- 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.

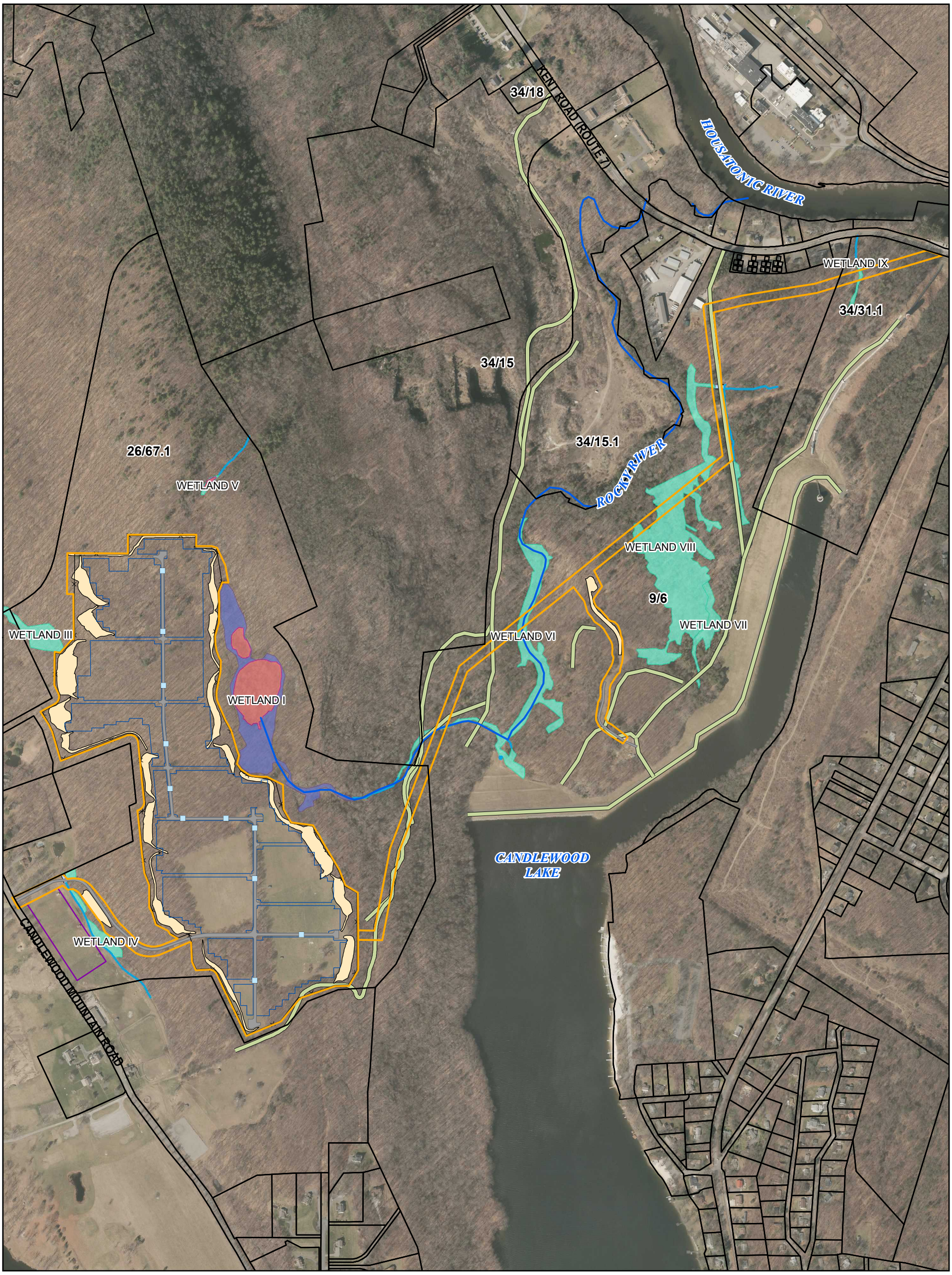
- When felling trees adjacent to brooks and streams, trees will be cut to fall away from the waterway and trees will not be dragged across the waterway and stumps will not be removed from banks.

- Avoid and limit any equipment use within 50 feet of streams and brooks.

Any confirmed sightings of State-listed species will be reported and documented with the NDDB on the appropriate form.Additionally, Candlewood Solar is working with CT DEEP Wildlife regarding tree clearing to be protective of bats.

See also Invasive Species Control Plan (Attachment A).

Figures



SITE PLAN AND PARCEL MAP

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Legend

- 2020 Project Area
- Fence
- Outline of Array
- Proposed Road
- Stormwater Feature
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0 300 600 Feet

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FIGURE 1

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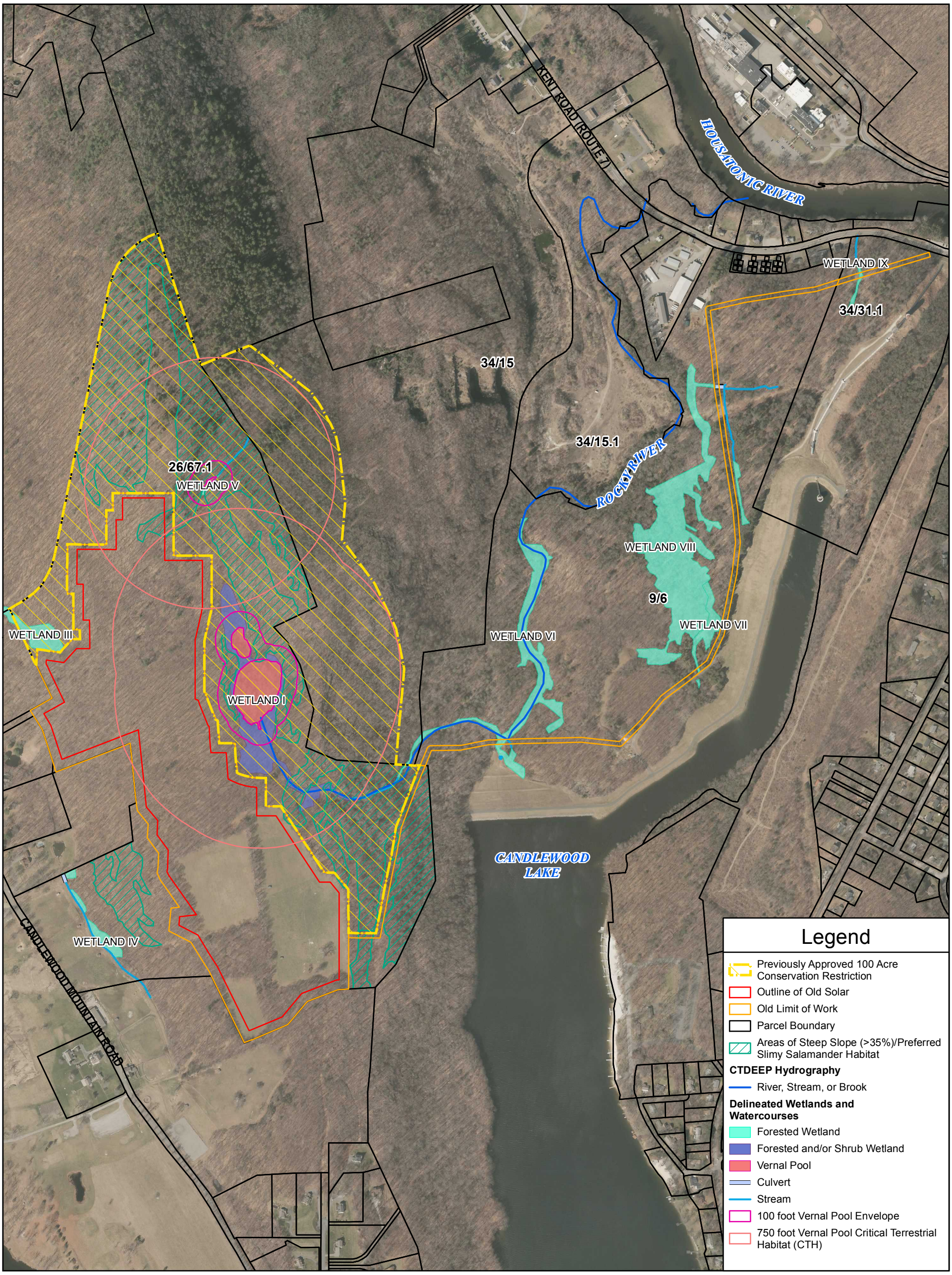


Location of Site

PREVIOUSLY APPROVED 100 ACRE CONSERVATION RESTRICTION AREA

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.
Datalayer Sources: Parcel Boundary from CTDEEP GIS website.

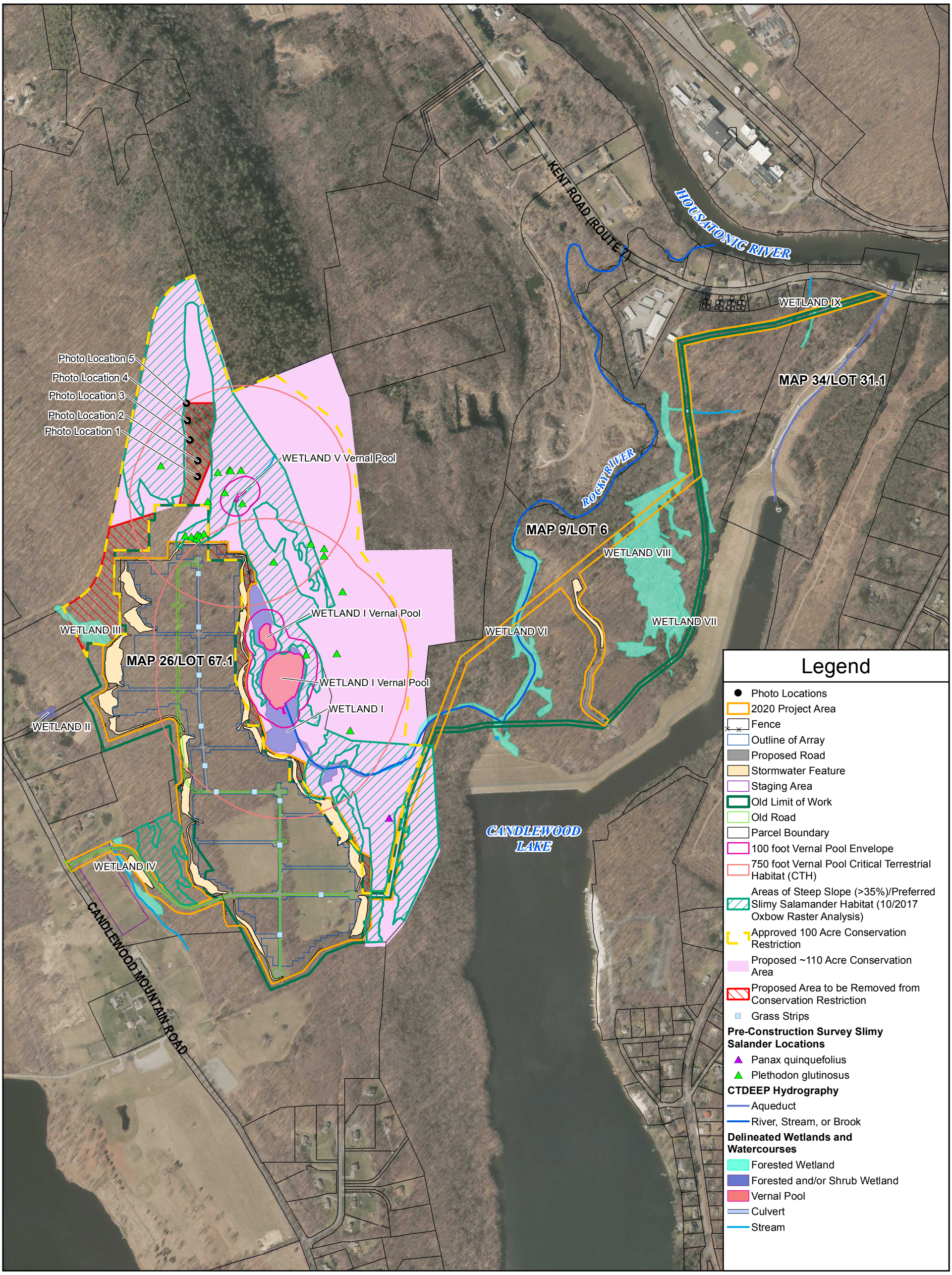
0 300 600 Feet

N

FIGURE 2

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

H:\OceanCommunityTheatre\Westerly_RI\Task1\MXD\Fig2_PreviouslyApprovedConservationRestriction.mxd February 06, 2020 DWN: emily.gardiner CHKD: AKN



Location of Site

OVERALL SITE PLAN

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Notes & Sources

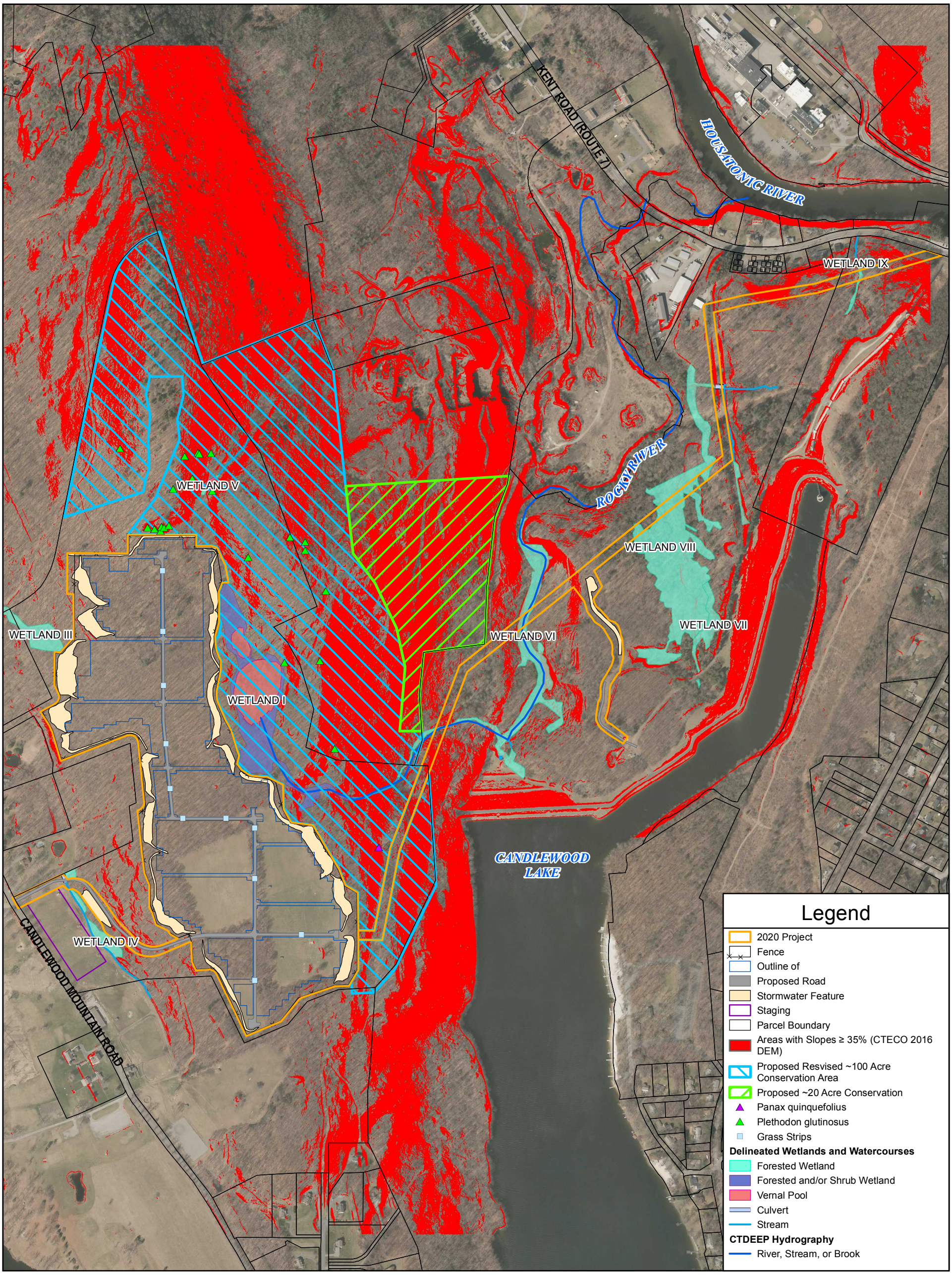
Basemap Source: 2016 Connecticut Orthophotography created by the University of Connecticut - Connecticut Environmental Conditions Online (UCONN CTECO), distributed by ArcGIS Online.
Datalayer Sources: Parcel Boundary from CTDEEP GIS website.

0 340 680 Feet

N

FIGURE 3

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



Location of Site

REVISED CONSERVATION RESTRICTION AREA

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.
Datalayer Sources: Parcel Boundary from CTDEEP GIS website. Areas with Slopes ≥ 35% datalayer derived from the CTECO 2016 DEM.

0 300 600 Feet

N

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

FIGURE 4

H:\Ameresco\NewMildford_CT\Task4\MXD\Fig4_RevisedConservationRestrictionArea.mxd February 07, 2020 DWN: emily.gardiner CHKD: AKN

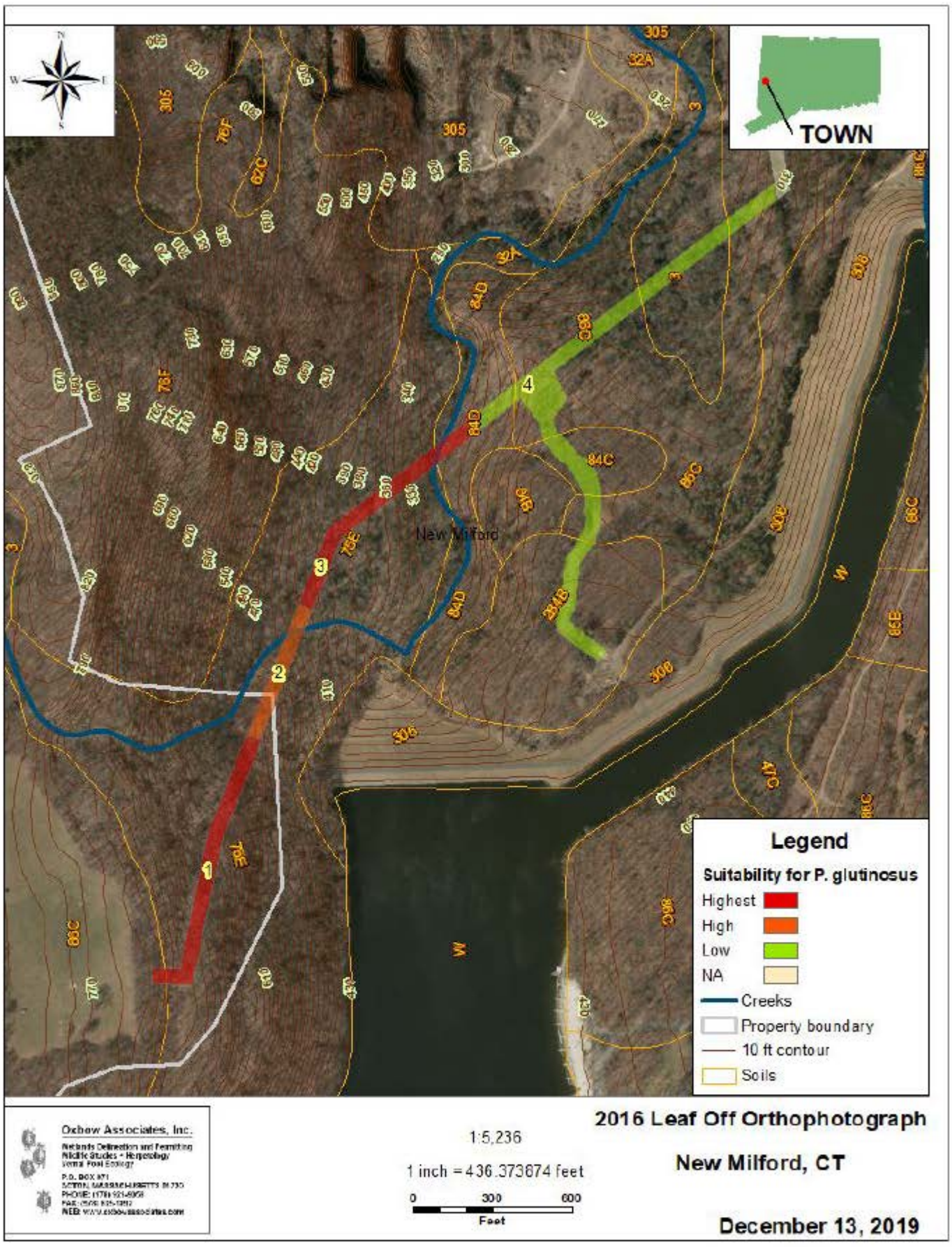


Fig. 1. Slimy Salamander habitat suitability survey of the proposed modified interconnect footprint.

Soil types: 3 - Ridgebury, Leicester & Whitman soils; **75E** - Hollis-Chatfield rock outcrop complex; **84B - 84 D & 86C** - Paxton and Montauk soils; **284B** - Paxton-Urban land complex.

OXBOW ASSOCIATES, INC.

Location of Site

SLIMY SALAMANDER HABITAT SUITABILITY SURVEY OF THE PROPOSED MODIFIED INTERCONNECT FOOTPRINT

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Notes & Sources

wood.

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

N

FIGURE
5

H:\Ameresco\NewMildford_CT\Task4\MXD\Fig5_Oxbow_SlimySalamanderSurvey_Interconnect.mxd February 06, 2020 DWN: emily.gardiner CHKD: AKN

Attachment A.

Invasive Species Control Plan

CANDLEWOOD SOLAR LLC
20 MW SOLAR PHOTOVOLTAIC PROJECT
NDDB REVIEW #2019-11-381

Invasive Species Control Plan

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

Submitted by:
Candlewood Solar LLC
111 Speen Street
Framingham, MA 01701

February 7, 2020

Epsilon ASSOCIATES INC.

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4.0	**INVASIVE SPECIES CONTROL PLAN**	**4-1**
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Figure 1. Site Plan and Parcel Map

Appendices

Appendix 1. Connecticut Invasive Plant List. October 2018

1.0 INTRODUCTION

As defined by Connecticut Department of Energy & Environmental Protection (CT DEEP), "Non-native species are those that are alien to the ecosystem that they have been introduced into and whose introduction causes or is likely to cause harm to the environment or human health. Some non-native species exhibit an aggressive growth habit and can out-compete and displace native species. These are referred to as invasive species and they are a serious problem in Connecticut and elsewhere."

Candlewood Solar LLC (Candlewood Solar) proposes to construct a new 20 megawatt (MW) AC (MWac) solar photovoltaic (PV) electric generating facility (the Solar PV Facility or the Facility), an electric interconnection corridor, and associated access roads in the Town of New Milford, Connecticut (the Project). The Facility, electric interconnection corridor and associated access roads will be located on portions of three (3) adjacent parcels (New Milford Assessor Map parcels 26/67.1, 9/6, and 34/31.1) with the exception of one existing access road, which crosses two additional parcels to the north and east (New Milford Assessor Map parcels 34/15 and 34/15.1) (see **Figure 1**). The Facility will be located entirely on parcel 26/67.1 (197 Candlewood Mountain Road) on the southern flank of Candlewood Mountain, northwest of Candlewood Lake, east of Candlewood Mountain Road, and southwest of Route 7 (the Facility Parcel). The electric interconnection corridor will originate on the Facility Parcel, exit the Facility Parcel in the southeastern portion of the Solar PV Facility and then cross two adjacent parcels to the east (parcels 9/6 and 34/31.1) owned by FirstLight Hydro Generating Company (FirstLight) 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 overall goal of this Invasive Species Control Plan (ISCP or the Plan) is to control the spread of invasive species specifically associated with the Candlewood Solar electric interconnection corridor within the Project Area, defined for the purpose of this document as locations where construction of the electric interconnection corridor will result in the physical disturbance to vegetated lands and a 150 – 300 foot buffer from the edge of disturbance. A variable buffer zone is proposed and will be defined during the pre-construction survey (see Section 3.0).

In terms of invasive species within the Project Area, each invasive species will be considered in its landscape context, such as whether a species is contributing positively to vegetation management and whether the same species has been observed, or is otherwise known to be abundant within the Project Area. Notwithstanding the presence of invasive species within the Project Area, which may contribute positively to vegetation management or which may be present on adjacent lands, this document describes measures to prevent the potential introduction or spread of invasive species associated with the Project's construction activities.

A formal invasive species field survey has not been completed for the electric interconnection corridor. However, the Habitat Assessment Report completed by The Chazen Companies and Kleinschmidt Associates, makes note of invasive species identified during a November 8, 2019 field study that was conducted from the Solar Array and FirstLight property boundary (New Milford Assessor Map parcels

26/67.1 and 9/6) to just west of Wetland VIII (see **Figure 1**). Further, a baseline invasive species survey will be completed prior to initiation of Project construction.

Invasive species identified during the November 8, 2019 field study include invasive species prohibited under Connecticut General Statute §22a-381d and additional species not prohibited by statute. Invasive species identified during the November 8, 2019 field study and prohibited under Connecticut General Statute §22a-381d include tree-of-heaven, multiflora rose, autumn olive, ground-ivy, garlic-mustard, Japanese stilt-grass, common reed, narrow-leaf Bittercress, climbing nightshade, and oriental bittersweet. Those not prohibited by statute include Japanese barberry, Norway maple, winged euonymus, black locust, and mugwort.

Best management practices (BMPs) described in the sections below will be implemented during and subsequent to Project construction activities to reduce the potential for spread of prohibited species and the introduction of new invasive species as a result of construction-related activities and the movement of materials, construction vehicles, and people through the Project Area.

Following completion of construction, Candlewood Solar will implement a monitoring program within the Project Area for five (5) full growing seasons following construction. The methods employed during the monitoring events will mimic those of the proposed pre-construction survey described below, and will note the location, type, and extent of invasives during each survey event, and will additionally consider whether any mapped areas of invasive species have spread geographically or whether any locations not previously known to contain invasive species exist following Project construction.

The post construction monitoring phase shall be used to identify any impacts associated with Project construction, including noting (i) the presence of invasive species not present during the pre-construction survey, and (ii) any geographical spread of invasive species from that identified during the pre-construction survey. If the species were not noted prior to construction, or the geographical extent of invasive species has spread, Candlewood Solar will consult with CT DEEP Wildlife to determine whether appropriate control measures (see Section 6) are warranted.

2.0 DEFINITION OF INVASIVE SPECIES

The Connecticut Invasive Plants Council has compiled a list of species that have been determined by floristic analysis to be invasive or potentially invasive in the state of Connecticut, in accordance with PA 03-136.

The list includes Invasive and Potentially Invasive Plants as determined by the Connecticut Invasive Plants Council in accordance with Connecticut General Statutes §22a-381a through §22a-381d. The list was most recently re-printed in October 2018 and is included as Appendix 1 to this ISCP (Reference: https://cipwg.uconn.edu/wp-content/uploads/sites/244/2018/12/CT-Invasive-Plant-List-2018Scientific-Name.pdf).

3.0 PRE-CONSTRUCTION SURVEY

A detailed pre-construction baseline survey of invasive species within the Project Area (electric interconnection corridor and buffer) will be completed prior to initiation of Project construction. The survey will document the presence, types, and extent of invasives throughout the Project Area. As noted above, a variable 150 – 300 foot buffer zone is proposed. The buffer zone will be defined during the pre-construction survey. Where the cover type adjacent to the limit of disturbance is homogenous, a 150 foot buffer will be assessed. Where habitat and vegetative species are not consistent, a larger buffer zone will be established.

The pre-construction survey will focus on documentation of invasive species within those parts of the electric interconnection corridor that would specifically be used to build, operate, and maintain the Project, and where soil disturbance is likely to occur. Additionally, the pre-construction survey will define the buffer zone along both sides of the electric interconnection corridor for its full length (Solar Array Parcel 26/67.1 and FirstLight Parcels 9/6 and 34/31.1) (see **Figure 1**) and document invasive species within the defined buffer zone.

The results of the pre-construction survey will be documented in a report. The report will include:

- A summary of the survey methods
- A description of the area surveyed
- A description of the buffer zone
- A description of each area identified as containing invasive species including:
    a. A description of habitat classification, slopes, and ground cover including presence of rocks, boulders, crevices, and leaf litter
    b. A list of all invasive species identified
    c. A list of non-invasive dominant plant species
    d. Invasive species estimated relative frequency
    e. Total area
- Photographs of all areas identified as containing invasive species keyed to Project Construction Plan drawings
- Mapping identifying each location, vegetation cover type and type and extent of invasive species

4.0 INVASIVE SPECIES CONTROL PLAN

Candlewood Solar and its contractors will utilize established construction best management practices (BMPs) and measures that (i) do not contribute to the spread of or (ii) reduce the spread of invasive species.

The following information and commitments/requirements (1-11) will be applied to all areas of construction activity:

(1) Purpose. The purpose of the ISCP is to establish the best management practices that will be used to reduce the spread of invasive species in the Project Area and the potential for invasive species to be transported outside of the Project Area.

(2) Applicability. The ISCP will apply in the Project Area, which includes all areas where construction activities will disturb vegetated lands and associated buffer zone defined during the pre-construction survey.

(3) Training and Education. As part of its environmental training, Candlewood Solar will train all employees, contractors, and subcontractors on the ISCP prior to the start of construction. Employees of Candlewood Solar and any contractors or subcontractors shall be provided with photographs of such invasive species, a description of the common characteristics of such species, typical locations where they are found, and the causes of their spread and dispersal. A copy of the Project pre-construction survey mapping identifying each location, type and extent of invasive species shall also be provided to all contractors and subcontractors. Additionally, clearing crews shall be trained to identify the Asian Longhorned Beetle, the Emerald Ash Borer, Hemlock Wooly Adelgid, and any other invasive insects that the CT DEEP Wildlife identifies as a potential problem in addition to invasive plant species. If evidence of the existence of invasive insects is found, they shall be reported immediately to the Connecticut Agricultural Experiment Station, Deputy State Entomologist at 203-974-8474. Photographs will be taken and the location and photographs will be provided to the Connecticut Agricultural Experiment Station (CAES). In no case will any insect, wood or other potentially infested material be moved from the Project Area prior to consultation with the CAES.

(4) Candlewood Solar will minimize soil disturbances and vegetation removal as much as possible through the use of existing access roads and planned extensions of access roads, and limiting new points of access along the electric interconnect corridor. The contractor(s) and subcontractor(s) shall be instructed to stay within access roads and work areas that are designated on the approved Construction Plan drawings. If practicable, areas infested with problematic invasive species will be entered last in construction sequences. Additionally, Candlewood Solar and its contractors will avoid invasive species populations when feasible to minimize the spread of invasive species during soil disturbance activities. Excavated material from areas containing invasive plants or insects will be reused within the limits of infestation or disposed offsite in accordance with applicable state law and policy.

(5) Inspection of Fill Sources. Source locations used for importation of fill and/or construction material, including topsoil, sand, gravel, rock and crushed stone, from offsite locations for use as fill and/or construction material, if needed, will be inspected by the Environmental Monitor for invasive species. If any new invasive species or any invasive insects are found, the material will not be accepted.

(6) Equipment. If alternative procedures (differing from those below) are proposed, Candlewood Solar shall notify CT DEEP Wildlife to discuss these procedures prior to the start of construction.

a. Equipment must arrive clean without visible soil clumps, plant or animal material.

b. Equipment includes, but is not limited to, vehicles, trailers, machinery, timber mats, tools, and other materials.

c. Transporting equipment will be cleaned before accepting a new load.

d. Consider tracking pads as a means to remove soil from equipment. If tracking pads are used they must be cleaned after each use in a specific area.

e. Equipment will be cleaned using one of the methods listed below (use the most effective method that is practical):

i. Brush, broom, shovel or other similar hand tools (used without water);

ii. High pressure air (when feasible).

f. Equipment must be cleaned within one of the below areas:

i. The infested work area;

ii. An area immediately adjacent to the work area that is itself currently infested with invasive plant species.

g. Do not clean equipment in or near waterways as it may promote the spread of invasive plant species downstream.

h. Where possible, staging areas will be established in locations that are free of invasive plant species. Otherwise, all equipment will be cleaned using the techniques described above before leaving the area.

(7) Inspection and Cleaning. Candlewood Solar shall utilize the following Inspection and Cleaning procedures as applicable. If alternative procedures are proposed, Candlewood Solar shall notify CT DEEP Wildlife to discuss these procedures prior to the start of construction.

a. Inspections and cleaning should be conducted especially when moving from an infested area to an un-infested area.

b. Prior to exiting work area clothing, footwear, and gear should be cleaned of visible signs of plant material.

c. Carry appropriate cleaning equipment (e.g., wire brush, small screwdriver, boot brush) to help remove soils, seeds, and plant material.

d. Preferred locations for cleaning are those where:

   i. Work activities are taking place;

   ii. Invasive plant species are already established; or

   iii. An area immediately adjacent to the work site that is itself currently infested with invasive plant species.

e. No cleaning of clothing, footwear, or gear in or adjacent to waterways – it may promote the spread of invasive plant species downstream.

f. Cleaning will include brushing or self "pat down" of clothing, footwear, and other personal gear within the infested work area.

g. Cleaning will be conducted in an area where personnel can freely move around the equipment.

(8) Disposal of Impacted Material. Except as otherwise provided for by permit conditions or regulatory agency guidance, which shall take precedence, the Disposal of Impacted Material procedures listed below shall be adhered to. If alternative procedures are proposed, Candlewood Solar shall notify CT DEEP Wildlife to discuss these procedures prior to the start of construction.

a. Preferred locations for equipment cleaning are those areas where work activities are taking place or immediately adjacent areas currently impacted with invasive plant species.

b. Do not clean equipment, vehicles or trailers in or near waterways.

c. Do not dispose of soil, seeds, or plant material in storm drains.

d. Any plant materials that are incidentally removed in an area other than an area where work activities are taking place or immediately adjacent area will be properly disposed of in a manner that prevents viable plant parts and propagates from being spread.

(9) Other Prevention Measures. The information gathered during the pre-construction survey will be analyzed and used to further identify and prescribe construction practices to reduce the potential spread of invasive species from work areas to other environments within or outside of the Project Area. All locations where site-specific protection measures are appropriate for controlling the potential spread and transport of identified invasive plant species will be identified on the Project Construction Plan drawings.

(10) Vegetative Screening. To visually screen the Solar PV Facility, Candlewood Solar will employ a 7-foot high cedar screening fence and landscape plantings (trees and shrubs) in various locations along the western and southern sides of the Solar PV Facility. Where the 7-foot high cedar screening fence is installed, the cedar fence will be installed in place of the 7-foot high chain link fence. The landscape plantings will only include plant species native to Connecticut. Additionally, lowbush blueberry sod will be used and the understory infill plantings will be New England roadside matrix upland seed mix by New England Wetlands Plants.

(11) Site Restoration. Site Restoration procedures will be the following as long as they are consistent with the Best Management Practices for Stormwater and Erosion Control.

a. Minimize soil disturbances by reducing the size of work areas and reducing the intensity of activities that may result in soil disturbances.

b. Re-vegetate bare soils as soon as feasible to minimize the possible establishment of invasive plant species. When seeding, local native species must be used. Seed will be broadcasted over all bare soil areas and covered with a mulch layer (seed-free straw, mulched wood chips or equivalent). The proposed seed mix for the Solar PV Facility is a solar farm seed mix (Ernst Seed Mix ERNMX-186), shaded areas of the site are to be seeded with a Conservative shade mix (Ernst Seed Mix ERNMX-129), and in areas of landscape plantings along the western and southern sides of the Solar PV Facility, the understory infill plantings will be New England roadside matrix upland seed mix by New England Wetlands Plants.

c. On steep sloping areas (i.e., slopes exceeding 20 percent), soil erosion control matting (i.e., erosion control blankets or hydroseed with mulch) must be installed over the seeded area. Where erosion control blankets are used, blankets should be secured with biodegradable tacks or staples a minimum of 12-inches apart down the sides and along the top of the blankets.

d. Stabilize disturbed soils using appropriate erosion and sediment control procedures as soon as possible. Use invasive free materials such as straw or wood chips; avoid using hay.

5.0 PREVENTING THE INTRODUCTION AND TRANSPORT OF INVASIVE SPECIES

The following measures to prevent or reduce the transport of invasive species during construction will be prescribed:

- Access will be limited to defined access roads.
- Clean all vehicles of all visible vegetation and soils before exiting an area containing invasive species and the Project Area.
- Cleaning shall consist of brushing and/or use of compressed air or power-blowers.
- Where particularly adhesive soils are encountered, the Environmental Monitor may direct that power-washing with clean water (no detergents be used), as non-freezing seasonal conditions permit and within a temporary wash station area (in such cases, no wash water shall be directly discharged into any stream, wetland, wetland adjacent area, or stormwater conveyance).
- Where populations of Prohibited Invasive Species are encountered, the Environmental Monitor may direct that portions thereof be isolated from vehicles with temporary physical barriers, i.e., fabric fencing, tarps, etc. and/or that an appropriate mechanical or herbicide treatment be applied to such population portions, in consultation with CT DEEP Wildlife.

6.0 INVASIVE SPECIES MONITORING AND MANAGEMENT

Following completion of construction, Candlewood Solar will implement a monitoring and management program within the Project Area for five (5) full growing seasons following construction. The methods employed during the monitoring events will mimic those of the proposed pre-construction survey described above, and will document the location, type, and extent of invasives during each survey event, and will additionally consider whether any mapped areas of invasive species have spread geographically or whether any locations not previously known to contain invasive species exist following Project construction.

The post construction monitoring phase shall be used to identify any impacts associated with Project construction, including assessing the presence of invasive species not present during the pre-construction survey. If the species were not noted prior to construction, Candlewood Solar will consult with CT DEEP Wildlife and FirstLight, as appropriate to determine whether appropriate management measures are warranted (see below). Invasive species may be managed by mechanical or manual control methods, chemical control methods, or biological methods.

The following provisions shall apply to the Project Area unless a more limited area of application is indicated.

(1) Physical Control. Candlewood Solar may determine if the site and invasive species are appropriate for mechanical or manual control methods and implement physical control methods on species that are known to respond to such treatment. These methods may include pulling, or digging out by hand, levers, or cables, removing whole plants, roots, rhizomes, disposing of dead plants and soil in a manner that will not allow reproduction of plants in new location, i.e., rotting in place; or burying at a depth that prevents survival of plant reproductive parts, such as rhizomes. Care must be taken to contain seed, flowers and seed heads.

(2) Chemical Control. The ISCP may utilize herbicides for chemical control for the management of invasive species subject to the provisions of these Best Management Practices for herbicide and pesticide application, provided that the application does not conflict with FirstLight's vegetation management plan. If chemical control is utilized, Candlewood Solar shall:

- Determine effectiveness of herbicide application on the invasive plant species, including application rates, techniques, timing, combination with other control methods, and impacts to non-invasive plant communities;
- Implement chemical control methods in areas where herbicide is most effective;
- Herbicides will be applied consistent with all applicable state and federal law and policy, and always in accordance with manufacturer's directions;

- In uplands either ROUNDUP®, AQUAMASTER®, GLYPRO®, or similar substance will be used as allowed by the property owner, and

- Target applications to control identified populations:

  - Hand-applied to plant with the "bloody glove" method;

  - Painting cut stems with herbicide; or

  - Backpack sprayers, handheld sprayers.

(3) Biological Control. Candlewood Solar may determine if the site and invasive species are appropriate for biological control methods in consultation with CT DEEP Wildlife. Biological controls should be considered on species that are known to respond to such treatment and need to be evaluated prior to release.

(4) Candlewood Solar and its contractors should minimize ground disturbances and vegetation removal as much as possible. All contractor(s) and subcontractor(s) shall be instructed to stay within access roads and work areas.

(5) Any transported fill materials, topsoil, and mulches shall come from sources visibly free of invasive species.

(6) Stabilization and re-vegetation of disturbed sites shall utilize seed and/or live plant materials that have a labeled weed content that does not exceed the weed content maximums for such seeds under applicable state policy.

(7) Transport of any wood from the Project Area shall be pursuant to Connecticut firewood regulations found in Regulations of Connecticut State Agencies §22-84-5g and any applicable quarantine order. https://eregulations.ct.gov/eRegsPortal/Browse/RCSA/Title_22Subtitle_22-84Section_22-84-5g/

(8) Clearing crews shall be trained to identify the Asian Longhorned Beetle, the Emerald Ash Borer, Hemlock Wooly Adelgid and any other invasive insects that the CT DEEP Wildlife identifies as a potential problem. If evidence of the existence of invasive insects is found, they shall be reported immediately to the Connecticut Agricultural Experiment Station, Deputy State Entomologist at 203-974-8474. The location will be documented and photographs will be taken and provided to the Connecticut Agricultural Experiment Station. In no case will any insect, wood or other potentially infested material be moved from the Project Area prior to consultation with the CAES.

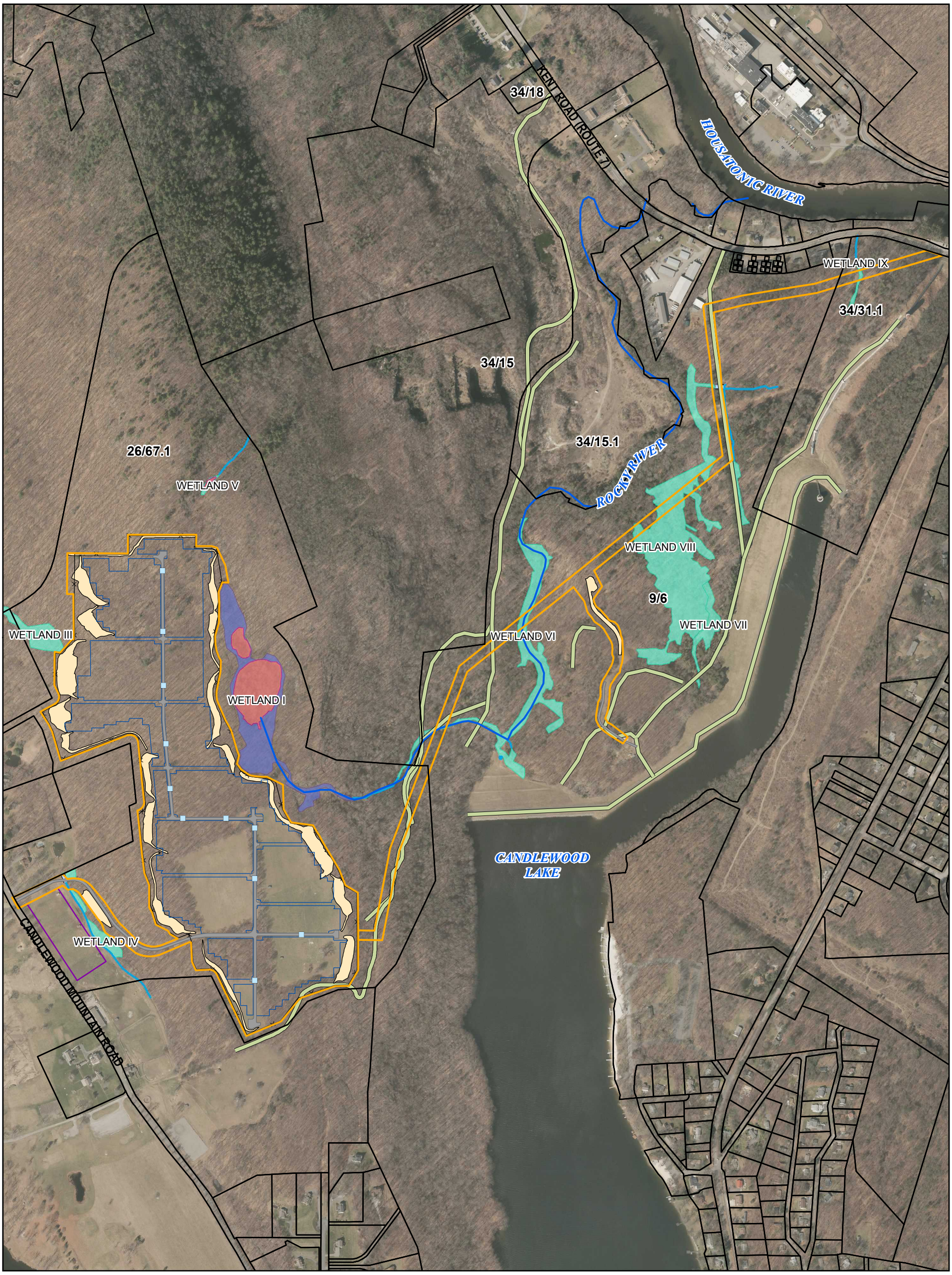
(9) To the extent practicable, avoid moving invasive-plant-infested soils, gravel, rock, and other fill materials to relatively-invasive-plant-free locations. Soil, gravel, rock, and other fill material will come from sources visibly free of invasive species.

An annual monitoring report shall be submitted to CT DEEP Wildlife. Each monitoring report shall include a summary of the monitoring activities conducted, the results of monitoring activities, a summary of any new invasive species not previously identified, any management activities implemented, the success of the management activities, and associated mapping. The monitoring reports shall be formatted in the same manner so that a comparison of site conditions can be made from year to year.

If during post-construction monitoring year 5, it is determined that management measures are required to address invasive species that have spread geographically or that are identified in any location not previously known to contain invasive species, a sixth year of monitoring will be conducted following agency and landowner-approved control actions to document the success of the management measures employed.

A survey and post construction monitoring of earthworm communities will be conducted within the Project Area (electric interconnection corridor and buffer zone) and are discussed in Section 6 of the State Threatened *Plethodon glutinosus* (slimy salamander) Mitigation Plan. The survey and monitoring program will determine presence or absence of invasive earthworms and potential impacts or changes to invasive earthworm abundance and distribution as a result of the Project.

Figures



SITE PLAN AND PARCEL MAP

Candlewood Solar LLC

Candlewood Solar Project
New Milford, Connecticut

Legend

- 2020 Project Area
- Fence
- Outline of Array
- Proposed Road
- Stormwater Feature
- Staging Area
- Parcel Boundary
- Existing Road
- Grass Strips

CTDEEP Hydrography

- River, Stream, or Brook

Delineated Wetlands and Watercourses

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

Location of Site

Notes & Sources

Basemap Source: 2016 Connecticut Orthophotography created by the University of Connecticut - Connecticut Environmental Conditions Online (UCONN CTECO), distributed by ArcGIS Online.
Datalayer Sources: Parcel Boundary from CTDEEP GIS website.

0 300 600 Feet

N

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

FIGURE 1

H:\Ameresco\NewMildford_CT\Task4\MXD\Fig1_SitePlan_ParcelMap.mxd February 07, 2020 DWN: emily.gardiner CHKD: AKN

Appendix 1.

Connecticut Invasive Plant List. October 2018.

This list is updated annually by the CT Invasive Plants Council

CONNECTICUT INVASIVE PLANT LIST October 2018

Connecticut Invasive Plants Council **Ordered by Scientific Name**

Statement to accompany list -- January 2004: This is a list of species that have been determined by floristic analysis to be invasive or potentially invasive in the state of Connecticut, in accordance with PA 03-136. The Invasive Plants Council will generate a second list recommending restrictions on some of these plants. In developing the second list and particular restrictions, the Council will recognize the need to balance the detrimental effects of invasive plants with the agricultural and horticultural value of some of these plants, while still protecting the state's minimally managed habitats.

In May 2004, Public Act 04-203 restricted a subset of the January 2004 list making it illegal to move, sell, purchase, transplant, cultivate or distribute prohibited plants. Effective July 1, 2009, Public Act 09-52 removed the prohibition on *Pistia stratiotes*.

@ column indicates growth form or habitat: A = Aquatic & Wetland; G = Grass & Grass-like; H = Herbaceous; S = Shrub; T = Tree; V = Woody Vine

Explanation of symbols after Common Name:

(P) indicates Potentially Invasive (all other plants listed are considered Invasive in Connecticut)

***** denotes that the species, although shown by scientific evaluation to be invasive, has cultivars that have not been evaluated for invasive characteristics. Further research may determine whether or not individual cultivars are potentially invasive. Cultivars are commercially available selections of a plant species that have been bred or selected for predictable, desirable attributes of horticultural value such as form (dwarf or weeping forms), foliage (variegated or colorful leaves), or flowering attributes (enhanced flower color or size).

"PROHIBITED BY STATUTE?" column indicates prohibited status: Y= prohibited from importation, movement, sale, purchase, transplanting, cultivation and distribution under CT Gen. Stat. §22a-381d; N/A= not prohibited

^ indicates species that are not currently known to be naturalized in Connecticut but would likely become invasive here if they are found to persist in the state without cultivation

The taxonomic names used by the Connecticut Invasive Plants Council on the Invasive Plant List are consistent with the names used by the United States Department of Agriculture PLANTS database, accessible online at www.plants.usda.gov. The Council also maintains a list of scientific name synonyms for reference purposes.

COMMON NAME	@	SCIENTIFIC NAME	SYNONYMS	PROHIBITED BY STATUTE?
Amur maple (P)	T	*Acer ginnala* Maxim.		N/A
Norway maple*	T	*Acer platanoides* L.		N/A
Sycamore maple (P)	T	*Acer pseudoplatanus* L.		Y
Goutweed	H	*Aegopodium podagraria L.*	Bishop's weed	Y
Tree of heaven	T	*Ailanthus altissima* (Mill.) Swingle		Y
Garlic mustard	H	*Alliaria petiolata* (M. Bieb.) Cavara & Grande		Y
False indigo (P)	S	*Amorpha fruticosa* L.		Y
Porcelainberry*	V	*Ampelopsis brevipedunculata* (Maxim.) Trautv.	Amur peppervine	N/A
Mugwort	H	*Artemisia vulgaris* L.	Common wormwood	N/A
Hairy jointgrass (P)	G	*Arthraxon hispidus* (Thunb.) Makino	Small carpgrass	Y
Common kochia (P)	H	*Bassia scoparia* (L.) A.J. Scott	*Kochia scoparia*; Fireweed; Summer cypress	Y
Japanese barberry*	S	*Berberis thunbergii* DC.		N/A
Common barberry	S	*Berberis vulgaris* L.		Y
Drooping brome-grass (P)	G	*Bromus tectorum* L.	Cheatgrass	Y
Flowering rush (P)	A	*Butomus umbellatus* L.		Y
Fanwort	A	*Cabomba caroliniana* A. Gray	Carolina fanwort	Y
Pond water-starwort (P)	A	*Callitriche stagnalis* Scop.		Y
Narrowleaf bittercress	H	*Cardamine impatiens* L.		Y
Japanese sedge^ (P)	G	*Carex kobomugi* Ohwi		Y
Oriental bittersweet	V	*Celastrus orbiculatus* Thunb.	Asiatic bittersweet	Y
Spotted knapweed	H	*Centaurea stoebe* L.	*Centaurea biebersteinii; Centaurea maculosa*	Y
Canada thistle (P)	H	*Cirsium arvense* (L.) Scop.		Y
Black swallow-wort	H	*Cynanchum louiseae* Kartesz & Gandhi	*Cynanchum nigrum*; *Vincetoxicum nigrum*	Y
Pale swallow-wort	H	*Cynanchum rossicum* (Kleo.) Borhidi	*Vincetoxicum rossicum*	Y
Jimsonweed (P)	H	*Datura stramonium* L.		Y
Brazilian water-weed (P)	A	*Egeria densa* Planchon	Anacharis; Egeria	Y
Common water-hyacinth^ (P)	A	*Eichhornia crassipes* (Mart.) Solms		N/A
Russian olive (P)	S	*Elaeagnus angustifolia* L.		Y
Autumn olive	S	*Elaeagnus umbellata* Thunb.		Y
Crested late-summer mint (P)	H	*Elsholtzia ciliata* (Thunb.) Hylander	Elsholtzia	Y
Winged euonymus*	S	*Euonymus alatus* (Thunb.) Sieb.	Burning bush	N/A
Cypress spurge (P)	H	*Euphorbia cyparissias* L.		Y
Leafy spurge	H	*Euphorbia esula* L.		Y
Glossy buckthorn	S	*Frangula alnus* Mill.	*Rhamnus frangula*; European buckthorn	N/A
Slender snake cotton	H	*Froelichia gracilis* (Hook.) Moq.	Cottonweed	Y
Ground ivy (P)	H	*Glechoma hederacea* L.	Gill-over-the-ground; Run-away robin	Y
Reed mannagrass^ (P)	G	*Glyceria maxima* (Hartm.) Holmb.	Tall mannagrass	Y
Giant hogweed (P)	H	*Heracleum mantegazzianum* (Sommier & Levier)		Y

Dame's rocket	H	*Hesperis matronalis* L.		Y
Japanese hops (P)	H	*Humulus japonicus* Sieb. & Zucc.	Japanese hop	Y
Hydrilla	A	*Hydrilla verticillata* (L.f.) Royle	Water thyme	Y
Ornamental jewelweed (P)	H	*Impatiens glandulifera* Royle	Tall impatiens	Y
Yellow iris	A	*Iris pseudacorus* L.	Yellow flag iris; Pale yellow iris	Y
Perennial pepperweed	H	*Lepidium latifolium* L.	Tall pepperwort	Y
Border privet (P)	S	*Ligustrum obtusifolium* Sieb. & Zucc.		Y
California privet (P)	S	*Ligustrum ovalifolium* Hassk.		N/A
European privet (P)	S	*Ligustrum vulgare* L.		N/A
Japanese honeysuckle*	V	*Lonicera japonica* Thunb.		Y
Amur honeysuckle	S	*Lonicera maackii* (Rupr.) Herder		Y
Morrow's honeysuckle	S	*Lonicera morrowii* A. Gray		Y
Tatarian honeysuckle (P)	S	*Lonicera tatarica* L.		Y
Belle honeysuckle	S	*Lonicera x bella* Zabel	Bell's honeysuckle (*misapplied*)	Y
Dwarf honeysuckle^ (P)	S	*Lonicera xylosteum* L.	European fly-honeysuckle	Y
Ragged robin (P)	H	*Lychnis flos-cuculi* L.		Y
Moneywort* (P)	H	*Lysimachia nummularia* L.	Creeping jenny	N/A
Garden loosestrife* (P)	H	*Lysimachia vulgaris* L.	Garden yellow loosestrife	Y
Purple loosestrife	A	*Lythrum salicaria* L.		Y
European waterclover (P)	A	*Marsilea quadrifolia* L.	Water shamrock	Y
Japanese stilt grass	G	*Microstegium vimineum* (Trin.) A. Camus		Y
Eulalia* (P)	G	*Miscanthus sinensis* Andersson	Chinese or Japanese silvergrass	N/A
Forget-me-not	A	*Myosotis scorpioides* L.	True forget-me-not; Water scorpion-grass	Y
Parrotfeather (P)	A	*Myriophyllum aquaticum* (Vell.) Verdc.		Y
Variable-leaf watermilfoil	A	*Myriophyllum heterophyllum* Michx.		Y
Eurasian watermilfoil	A	*Myriophyllum spicatum* L.		Y
Brittle water-nymph (P)	A	*Najas minor* All.	Eutrophic water-nymph	Y
Onerow yellowcress (P)	A	*Nasturtium microphyllum* Boenn. ex. Rchb.	*Rorippa microphylla*	Y
Watercress (P)	A	*Nasturtium officinale* W.T. Aiton	*Rorippa nasturtium-aquaticum*	Y
American water lotus (P)	A	*Nelumbo lutea* Willd.	American water lotus	Y
Yellow floating heart (P)	A	*Nymphoides peltata* (S.G. Gmel.) Kuntze		Y
Scotch thistle (P)	H	*Onopordum acanthium* L.		Y
Star-of-Bethlehem (P)	H	*Ornithogalum umbellatum* L.		N/A
Princess tree (P)	T	*Paulownia tomentosa* (Thunb.) Siebold & Zucc. ex Steud.	Empress-tree	Y
Reed canary grass	G	*Phalaris arundinacea* L.		N/A
Common reed	G	*Phragmites australis* (Cav.) Trin. ex Steud.	Phragmites	Y
Water lettuce^ (P)	A	*Pistia stratiotes* L.		N/A
Canada bluegrass (P)	G	*Poa compressa* L.		Y
Bristled knotweed	H	*Polygonum caespitosum* Blume	*Persicaria longiseta;* Oriental lady's thumb	Y
Japanese knotweed	H	*Polygonum cuspidatum* Siebold & Zucc.	*Fallopia japonica*	Y
Mile-a-minute vine	H	*Polygonum perfoliatum* L.	*Persicaria perfoliata*	Y
Giant knotweed (P)	H	*Polygonum sachalinense* F. Schmidt ex. Maxim.	*Fallopia sachalinense*	Y
White poplar (P)	T	*Populus alba* L.		Y
Crispy-leaved pondweed	A	*Potamogeton crispus* L.	Curly pondweed or Curly-leaved pondweed	Y
Kudzu (P)	V	*Pueraria montana* (Lour.) Merr.	*Pueraria lobata*	Y
Fig buttercup	H	*Ranunculus ficaria* L.	Lesser celandine; *Ficaria verna*	Y
Common buckthorn	S	*Rhamnus cathartica* L.		Y
Black locust*	T	*Robinia pseudoacacia* L.		N/A
Multiflora rose	S	*Rosa multiflora* Thunb.		Y
Rugosa rose* (P)	S	*Rosa rugosa* Thunb.*	Beach, Salt spray, Japanese, or Ramanas Rose	N/A
		**Note: This plant is especially aggressive in coastal areas*		
Wineberry	S	*Rubus phoenicolasius* Maxim.		Y
Sheep sorrel (P)	H	*Rumex acetosella* L.		Y
Giant salvinia^ (P)	A	*Salvinia molesta* Mitchell		Y
Tansy ragwort^ (P)	H	*Senecio jacobaea* L.	Stinking Willie	Y
Cup plant (P)	H	*Silphium perfoliatum* L.		Y
Bittersweet nightshade (P)	H	*Solanum dulcamara* L.	Climbing nightshade	Y
Water chestnut	A	*Trapa natans* L.		Y
Coltsfoot	H	*Tussilago farfara* L.		Y
Garden heliotrope (P)	H	*Valeriana officinalis* L.	Garden Valerian	Y

Attachment 3

The Chazen Companies Habitat Assessment Report
November 13, 2019

November 13, 2018

VIA E-MAIL

Mr. Rob Bukowski, PE
Principal Engineer, Engineering Manager
Wood Environment & Infrastructure Solutions, Inc.
271 Mill Road, 3rd Floor
Chelmsford, MA 01824

Transmittal Letter – Habitat Assessment for the Proposed Candlewood Solar Project Interconnect, between Candlewood Mountain Road and Kent Road in New Milford, Connecticut (Kleinschmidt Project No. 4842001.01)

Dear Mr. Bukowski:

Kleinschmidt Associates and the Chazen Companies conducted a habitat survey along the proposed electrical interconnect alignment and in the area to the north and west of Wetland VIII extending to the Rocky River in accordance with our proposal dated November 6, 2019. The survey effort was led by Dr. Richard Futyma with assistance from Nicholas Gabuzda. Our report is attached hereto and documents the methods used in the survey, the results and conclusions.

Sincerely,

KLEINSCHMIDT ASSOCIATES

Bryan R. Apell
Sr. Project Manager and Fisheries Ecologist

Cc: RF
Attachments: Habitat Assessment Report for the Candlewood Solar Interconnect Project
Town of New Milford
Litchfield County, Connecticut

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Habitat Assessment Report
for the
Candlewood Solar Interconnect Project

Town of New Milford
Litchfield County, Connecticut

Issued: November 13, 2019

Prepared for:

Wood Environment &
Infrastructure Solutions, Inc.
271 Mill Road
Chelmsford, MA 01824

Prepared by:

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Chazen Project No. 91932.00

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APPENDICES

Appendix A: Plants Growing within the Survey Area
Appendix B: Figures
Appendix C: Photographs
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1.0 INTRODUCTION AND METHODS

The proposed solar development project (Project) is sited in the town of New Milford, Connecticut. The development will consist of a solar field and an electrical interconnect that will transmit power generated from the solar field to the electrical grid. The proposed solar field is located adjacent to Candlewood Mountain Road with the interconnect extending to Kent Road. The originally proposed interconnect alignment has been modified resulting in the need for additional natural resource investigation within the newly proposed alignment and access road. This report characterizes habitats and observed vegetative species located within the currently proposed electrical transmission alignment. The survey area was to the west of the northern end of Candlewood Lake. The field study was conducted on November 8, 2019, by Dr. Richard Futyma of the Chazen Companies and Mr. Nicholas Gabuzda of Kleinschmidt Associates. While meandering across the entire survey area in a zig-zag pattern to ensure thorough coverage of the site, Dr. Futyma recorded notes on the vegetation, photographed representative habitats, and identified plants to species. Using a Trimble® GeoXT GPS unit, Mr. Gabuzda mapped boundaries between the vegetation units identified by Dr. Futyma. Later, the GPS data were uploaded into a GIS, post-processed, and converted to shapefiles for creation of a map.

2.0 RESULTS

The classification of habitats and corresponding vegetation communities was based on the 2015 Connecticut Wildlife Action Plan[1]. A listing of the plants identified growing within the survey area is provided in Appendix A. Given the time of year when the survey was conducted, many of the herbaceous plants that grow in the area were not visible or identifiable to species, and so this table should not be considered a comprehensive flora inventory of the site. The common names of the plants, which correspond to the names on the vascular plants of Connecticut checklist[2], are used in the habitat descriptions that follow. A map of the proposed transmission alignment, survey area and identified habitats is presented in Appendix B. A topographic map of the survey area, which is also presented in Appendix B, shows that the Project area is hilly, with the steepest slopes occurring in the southern half of the site, on both sides of the crossing of the Rocky River.

Boundaries between habitat units were delineated in the field, except for the wetland boundaries, which were provided by Wood Environment & Infrastructure Solutions, Inc. Flags for the previous wetland delineation were observed in the field, and the classification of those areas as wetlands was confirmed during the present study. Appendix C contains representative photographs of the habitats described below.

2.1 Mixed Hardwood Forest

The largest habitat identified within the survey area consisted of a mixed hardwood forest with somewhat variable composition, and not dominated by only one or two species. The more common trees included sugar maple, American beech, tuliptree, eastern hemlock, sweet birch, white ash, northern white oak, scarlet oak, northern red oak, and black oak. Saplings of the trees appeared dominant in the understory and shrubs were scarce. Siebold's arrowwood was the most common shrub and American witch hazel was

[1] See Appendix 4 at https://www.ct.gov/deep/cwp/view.asp?a=2723&q=329520&deepNav_GID=1719#Review

[2] https://sites.google.com/a/conncoll.edu/vascular-plants-of-connecticut-checklist/?pli=1

found in some places. The forest appeared relatively mature, with a majority of the canopy trees observed to be greater than 8 inches in diameter and breast height (dbh). Some of the larger trees, particularly tuliptrees, were observed to be up to 24 inches dbh. This habitat is in an area of silt loam soils containing large, rounded boulders, most of which appeared greater than 18 inches in diameter. Where the boulders are least abundant, there was usually about 8 to 12 feet between boulders and the soil had a few inches of leaf litter. Along the southernmost part of the survey area, on a relatively steep slope above the Rocky River, boulders were more abundant and spacing averaged less than 1 foot generally. See Photos 1 and 2 in Appendix C for examples of this habitat.

2.2 Coniferous Forest - Hemlock

Eastern hemlock is the dominant species in the only habitat identified as a coniferous forest. This is a moist upland forest occurring next to the Rocky River in the wider, northern part of the survey area. Eastern hemlock comprised 50% or more of the canopy of this mature forest, with scattered hardwoods, including tuliptree, American beech, northern red oak, northern white oak, American sycamore, and sweet birch. The relatively dense shade in this habitat does not favor much growth of herbaceous plants and shrubs. See Photo 3 in Appendix C for a typical view of this habitat. In general, the soil in this habitat is a silt loam with a moderate density of boulders. Beneath a top layer of deciduous leaves, the leaf litter appeared to be a few inches deep and predominately composed of hemlock needles.

2.3 Hardwood-Conifer Wooded Wetland

This wetland habitat was most widespread in the northern part of the survey area. The hardwood-conifer wooded wetland was variable in composition, being characterized by a somewhat open canopy that included eastern hemlock, green ash, America elm, American sycamore, eastern cottonwood, yellow birch, and American hornbeam. The most abundant native shrub observed was the northern spicebush, but the non-native Siebold's arrowwood was abundant in some parts. Among the herbaceous plants visible during the survey were wood fern, blue flag, white avens, naked miter-wort, common scouring rush, marsh bedstraw, and skunk-cabbage. As would be expected, the soil in these areas was noticeably moist, as well as bouldery, which is typical of this area in general. Many of the boulders stand out because the finer soil around them has been washed away by water flowing through the sloping areas where these wetlands are situated. See Photos 4 and 5 in Appendix C.

2.4 Utility Transmission Corridor

The northern part of the survey area is crossed by a utility right-of-way in which the Iroquois natural gas pipeline is located. This right-of-way is maintained regularly to control the growth of woody plants, and so it is dominated by herbaceous plants. Part of the corridor is upland dominated by miscellaneous grasses, mugwort, and coltsfoot. A portion close to the Rocky River is herbaceous wetland dominated by common reed and wrinkle-leaved goldenrod.

2.5 Upland Herbaceous – Mugwort

The survey area includes a branch near the center that extends to the south-southeast. The southern half of the branch includes an open area centered on an access road and dominated by dense stands of mugwort (see Photo 6 in Appendix C). Where the invasive mugwort has not taken over, herbaceous vegetation dominated by grasses was present, including tall redtop, common timothy bluegrass, and foxtail grass, along with broadleaved herbs such as wild basil, garlic-mustard, red clover, and ground-ivy. Also, autumn olive, a non-native shrub, was relatively abundant on the edge between the herb-dominated

area and the surrounding forest. Other non-native, invasive plants observed in this area included Japanese barberry, multiflora rose, Japanese stilt-grass and tree-of-heaven.

2.6 Watercourse Crossings

The interconnect route crosses watercourses in two locations, both within the southern half of the survey area. As indicated on the map, the northern crossing is on the Rocky River. Although wetland is mapped at that location, there is only a very limited area of riparian wetland (see Photo 7 in Appendix C). The second area, only a few hundred feet from the southern end of the survey area, has two parallel watercourses close to each other. Although the map indicates that one of the two is a crossing of the Rocky River, that is not the case, but it is a tributary of the Rocky River. The origin of the Rocky River is to the east, at the base of the Candlewood Lake dam. The two lower crossings appear to be intermittent streams with beds composed of moss-covered boulders (see Photo 8).

3.0 CONCLUSIONS

The habitats found within the survey area are not unusual and are relatively common in western Connecticut. None of the plant species identified growing on the site are classified as endangered, threatened, or of special concern in Connecticut. Many of the plants found are classified as invasive species prohibited under Connecticut general statute §22a-381d, including tree-of-heaven, multiflora rose, autumn olive, ground-ivy, garlic-mustard, Japanese stilt-grass, common reed, narrow-leaf Bittercress, climbing nightshade, and oriental bittersweet. Several others are classified as invasive species, but are not prohibited by statute, including Japanese barberry, Norway maple, winged euonymus, black locust, and mugwort.

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Appendix A:
Plants Growing within the Survey Area

Table of Plants Identified Growing within the Survey Area

Scientific Name	**Common Name**
Trees	
Acer pensylvanicum	Striped Maple
Acer platanoides	Norway Maple
Acer saccharum	Sugar Maple
Ailanthus altissima	Tree-of-Heaven
Betula alleghaniensis	Yellow Birch
Betula lenta	Sweet Birch
Carpinus caroliniana	American Hornbeam
Fagus grandifolia	American Beech
Fraxinus americana	White Ash
Fraxinus pennsylvanica	Green Ash
Liriodendron tulipifera	Tuliptree
Platanus occidentalis	American Sycamore
Populus deltoides	Eastern Cottonwood
Quercus alba	Northern White Oak
Quercus coccinea	Scarlet Oak
Quercus montana	Chestnut Oak
Quercus rubra	Northern Red Oak
Quercus velutina	Black Oak
Robinia pseudoacacia	Black Locust
Tsuga canadensis	Eastern Hemlock
Ulmus americana	American Elm
Shrubs	
Berberis thunbergii	Japanese Barberry
Hamamelis virginiana	American Witch-Hazel
Kalmia latifolia	Mountain-Laurel
Lindera benzoin	Northern Spicebush
Rosa multiflora	Multiflora Rose
Viburnum dentatum	Smooth Arrowwood
Elaeagnus umbellata	Autumn Olive
Viburnum sieboldii	Siebold's Arrowwood
Euonymus alatus	Winged Euonymus
Woody Vines	
Celastrus orbiculatus	Asian Bittersweet
Toxicodendron radicans	Eastern Poison Ivy
Vitis sp.	grape
Herbaceous Plants	
Adiantum pedatum	Northern Maidenhair Fern
Alliaria petiolata	Garlic-Mustard
Artemisia vulgaris	Mugwort
Athyrium angustum	Northern Lady Fern

Scientific Name	Common Name
Brachyelytrum erectum	Bearded Shorthusk
Cardamine impatiens	Narrow-Leaf Bittercress
Carex spp.	Sedges
Chimaphila maculata	Spotted-Wintergreen
Clinopodium vulgare	Wild Basil
Deparia acrostichoides	Silvery-Spleenwort
Dryopteris carthusiana	Spinulose Wood Fern
Dryopteris clintoniana	Clinton's Wood Fern
Dryopteris cristata	Crested Wood Fern
Dryopteris marginalis	Marginal Wood Fern
Epipactis helleborine	Broad-Leaved Helleborine
Equisetum hyemale	Common Scouring-Rush
Galium palustre	Marsh Bedstraw
Geum canadense	White Avens
Glechoma hederacea	Groundivy
Iris versicolor	Blue Flag
Lysimachia ciliata	Fringed Yellow-Loosestrife
Microstegium vimineum	Japanese Stilt Grass
Mitella nuda	Naked Miter-wort
Osmunda claytoniana or *Osmundastrum cinnamomeum*	Interrupted Fern or Cinnamon Fern
Persicaria longiseta	Bristly Lady's-Thumb
Phleum pratense	Common Timothy
Phragmites australis	Common Reed
Poa sp.	Bluegrass
Polystichum acrostichoides	Christmas Fern
Rubus occidentalis	Black Raspberry
Setaria sp.	Foxtail Grass
Solanum dulcamara	Climbing Nightshade
Solidago flexicaulis	Zigzag Goldenrod
Solidago rugosa	Wrinkle-Leaved Goldenrod
Solidago sp.	Goldenrod
Symplocarpus foetidus	Skunk-Cabbage
Tridens flavus	Tall Redtop
Trifolium pratense	Red Clover
Tussilago farfara	Coltsfoot
Bryophytes	
Climacium dendroides	Tree Moss
Conocephalum conicum	Great Scented Liverwort
Leucobryum glaucum	Pincushion Moss

Appendix B: Figures

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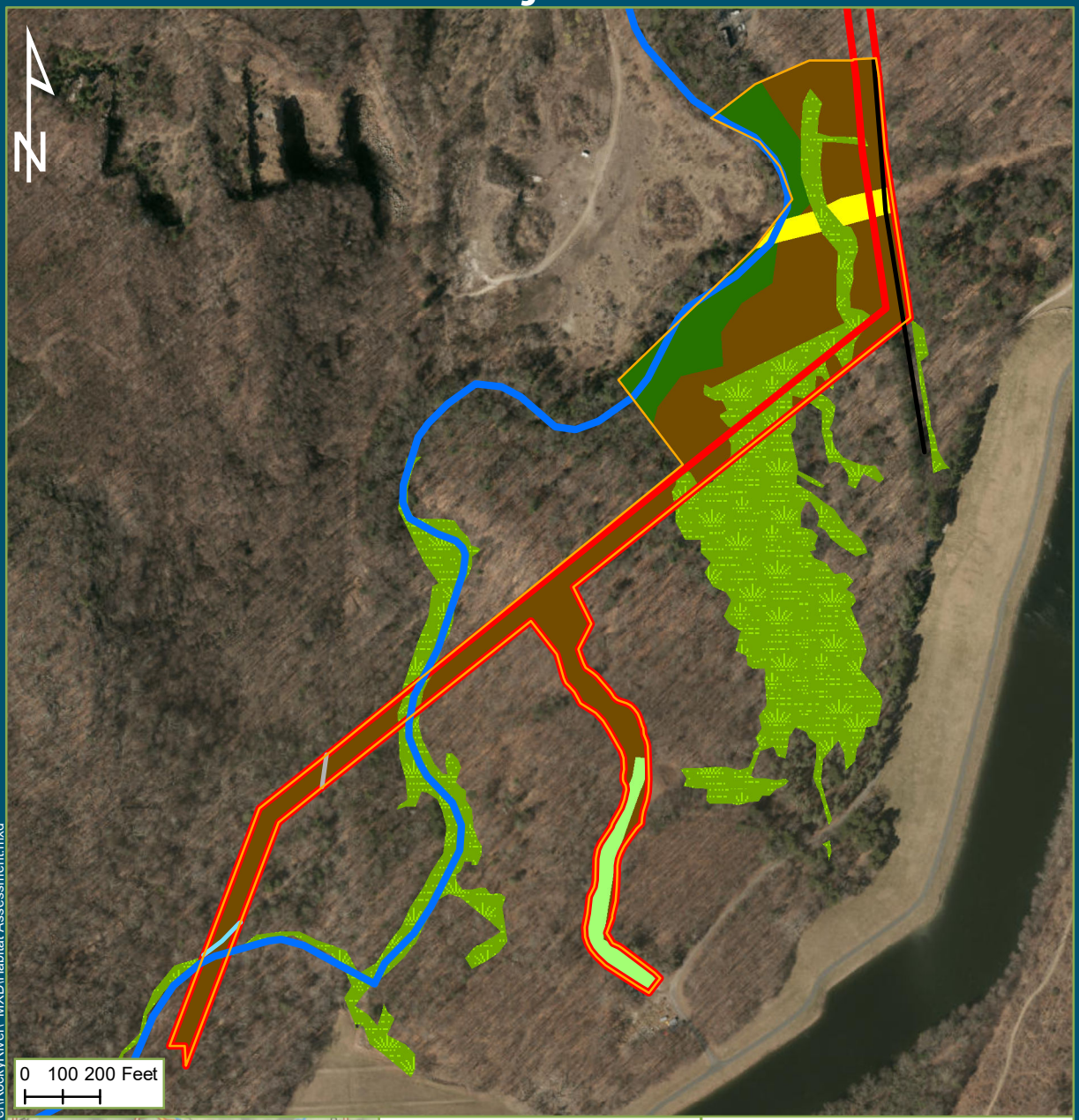
Candlewood Solar Project - Habitat Assessment



Legend

- Survey Area
- Unpaved Access Road
- Intermittent Watercourse
- Paved Road
- Rocky River
- Proposed Interconnect
- Hardwood-Conifer Wooded Wetland
- Utility Transmission Corridor
- Coniferous Forest- Hemlock
- Upland Herbaceous-Mugwort
- Mixed Hardwood Forest

Wood Environment & Infrastructure Solutions, Inc.
Chelmsford, MA

Drawn By:	Date Drawn:	Checked By:	Date Checked:
NXG	11-11-2019	KPN	11-11-2019

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Date Printed: 11/12/2019

Source: Wetlands (Provided by Wood Environment & Infrastructure Solutions, Inc., 2019)

PN: 4842001.01

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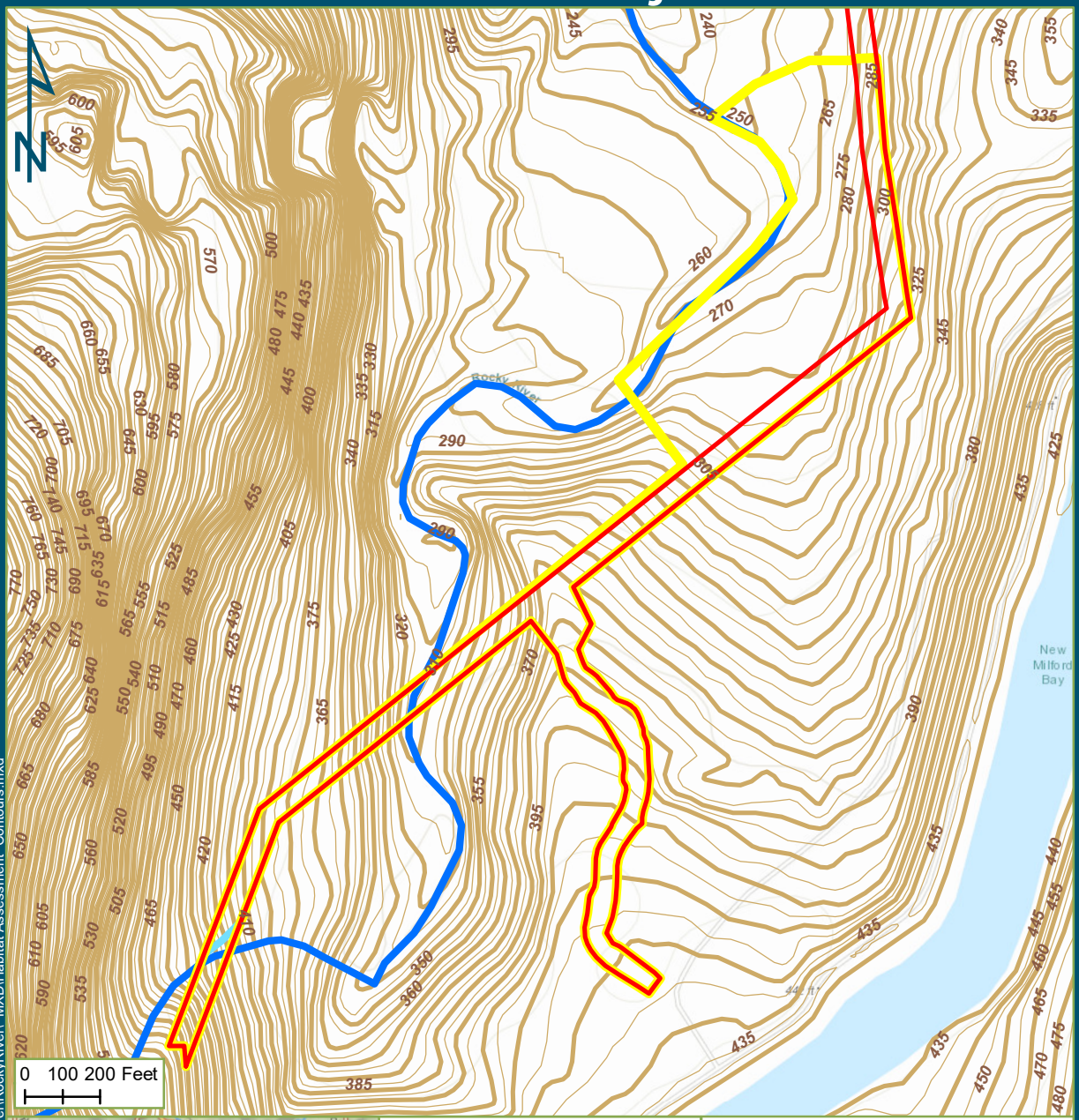
Candlewood Solar Project - Site Contours



Legend

- Proposed Interconnect
- Survey Area
- Intermittent Watercourse
- Rocky River
- 5 ft Contour
- 10 ft Contour

Wood Environment & Infrastructure Solutions, Inc.
Chelmsford, MA

Drawn By:	Date Drawn:	Checked By:	Date Checked:
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Path: G:\Client Data\FirstLight&Power\RockyRiver\MXD\Habitat Assessment Contours.mxd

Date Printed: 11/13/2019

Source:

PN: 4842001.01

Appendix C: Photographs

Photo 1. A typical view of the mixed hardwood forest in the northern half of the survey area. At this location, northern white oak, northern red oak, American beech and eastern hemlock are the dominant trees.

Photo 2. The mixed hardwood forest in a very bouldery area in the southern part of the survey area. This east-facing slope has eastern hemlock, sweet birch, yellow birch, northern red oak, and northern white oak.

Photo 3. Coniferous forest dominated by eastern hemlock lies adjacent to the Rocky River in the northernmost part of the survey area. Less abundant trees include tuliptree, northern red oak, American beech, and American Sycamore.

Photo 4. An area of hardwood-conifer wooded wetland in the northernmost part of the survey area. Plants in this area include American elm, green ash, northern spicebush, eastern hemlock, Siebold's arrowwood, autumn olive, smooth arrowwood, crested wood fern, blue flag, white avens, and sedges.

Photo 5. This part of the hardwood-conifer wooded wetland is at the base of a slope covered with mixed hardwood forest and has a very bouldery surface.

Photo 6. The southward-branching part of the survey area includes a woods road clearing with herbaceous vegetation dominated by mugwort, the tall plant on the edge of the woods.

Photo 7. At the crossing of the Rocky River in the southern part of the survey area, there is only a narrow zone of riparian wetland with plants such as eastern hemlock, Japanese barberry, Siebold's arrowwood, fringed yellow-loosestrife, Christmas fern, garlic-mustard, and spinulose wood fern.

Photo 8. This intermittently flowing stream in the southernmost part of the survey area does not have an associated wetland. At the time of the site visit, there was a trickle of water in the bouldery channel.

Appendix D:
Résumé

EDUCATION

Ph.D., Botany, The University of Michigan, 1982

M.S., Botany, The University of Michigan, 1977

B.A., Biology, SUNY at Buffalo, 1975

AFFILIATIONS

Ecological Society of America

The Society of Wetland Scientists

Sigma Xi

New York State Wetlands Forum

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DR. RICHARD FUTYMA

Environmental Scientist

Dr. Futyma has experience as a professional ecologist, having worked extensively in the analysis of the vegetation of both wetland and upland habitats. He has conducted numerous ecological site assessments, which have included vegetation mapping, botanical inventories, and surveys for threatened and endangered species and their habitats, including Karner blue butterfly, Indiana bat, and numerous plant species. Dr. Futyma has helped clients obtain permits from regulatory agencies, including the US Army Corps of Engineers, NY State Department of Environmental Conservation, and Adirondack Park Agency.

PROJECT EXPERIENCE

COGENERATION FACILITIES – PLATTSBURGH, NY
Participated in wetland delineation for a steam/electric cogeneration facility and an 18-mile transmission line. Worked on obtaining state and federal wetland permits and contributed to the design of mitigation wetlands. Conducted five years of monitoring of the created wetlands.

NYSOPRHP - HARLEM VALLEY RAIL TRAIL – COLUMBIA COUNTY, NY
Delineated approximately 8,050 linear feet of the proposed Harlem Valley Rail Trail between Black Grocery Road and Anthony Street Extension in the Town of Copake, Columbia County, NY for the NYSOPRHP.

RIVERFRONT PARK – TOWN OF STILLWATER, SARATOGA COUNTY, NY
Delineated wetland boundaries at the proposed site of a kayak and canoe launch at a park under development on the Hudson River. Prepared an application for authorization under Army Corps of Engineers Nationwide Permit 18, and for a streambank disturbance permit and Section 401 Water Quality Certification from NYSDEC.

NATIONAL GRID – ELECTRIC POWER TRANSMISSION LINE REFURBISHMENTS
Led a team of environmental scientists conducting delineations of wetland and stream boundaries and analyzing access issues on several National Grid electric transmission lines in Warren, Washington, Essex, Lewis, St. Lawrence, and Franklin Counties of New York. These transmission lines totaled more than 80 miles, much of it situated in rugged terrain in the Adirondack Mountains. Some of this work also involved analysis of the presence and extent of invasive plant species in the transmission line rights-of-way.

NATIONAL GRID – PROPOSED ELECTRIC POWER TRANSMISSION LINES
Worked on wetland boundary delineation and wetland permitting issues in connection with proposed electric transmission lines and substations in Albany, Rensselaer, Franklin, and Erie Counties of New York. This included five years of monitoring of wetlands created as mitigation for expansion of a substation in the Village of Tupper Lake.

TRI-LAKES 46 KV TRANSMISSION LINE RELIABILITY PROJECT
As a member of a team of wetland scientists, delineated wetland boundaries on existing and proposed routes of an electrical power transmission line in St. Lawrence County, New York. Also worked on issues related to obtaining state and federal permits and conducted research on potential impacts to forest and wetland communities resulting from the proposed work.

TAPESTRY ON THE HUDSON COMMUNITY BUILDINGS – TROY, NY
As the Wetland Scientist, completed Joint Permit Application for seawall restoration along Hudson River. Included Corps of Engineers permitting under Section 10 and Section 404, and NYSDEC Permitting under Article 15, along with review for state owned underwater lands and Coastal Zone consistency. Also completed endangered species review for sturgeon in Hudson River.

IROQUOIS PIPELINE OPERATING COMPANY
Since 1996, has been involved in a variety of projects on the Iroquois Gas Transmission System pipeline, which runs through New York and Connecticut, from the St. Lawrence River to Long Island.

Dr. Futyma, as a terrestrial Ecologist, has regularly evaluated habitats and ecological communities for their ability to support rare, threatened and endangered species in New York State using an ecological community classification similar to that of the Connecticut Wildlife Action Plan. He is recognized for his ability to identify plants and knowledge on plant communities, and is often sought as a consultant because of his reputation with regulatory agencies.

During the past 23 years, Dr. Futyma has consulted for the Iroquois Pipeline Operating Company on numerous projects within the right-of-way of their natural gas pipeline. That includes projects involving identification of wetlands and other habitats, analyses of invasive species abundance, and searches for rare, threatened and endangered species. In Connecticut, the Iroquois pipeline right-of-way stretches for 50 miles in Litchfield, Fairfield, and New Haven Counties. Dr. Futyma is familiar with the north end of Candlewood Lake, where the Iroquois right-of-way and crosses the proposed route of the Candlewood solar interconnect. The most recent projects in Connecticut on which Dr. Futyma has participated are the following:

IROQUOIS PIPELINE VEGETATION MAINTENANCE (2014 AND 2017)
Dr. Futyma identified and marked stream and wetland buffer zones, analyzed abundance of invasive plant species, and identified of potential roost trees of the northern long-eared bat along the entire Iroquois ROW in Connecticut. He coordinated with Christa Fine of Iroqois, Laura Saucier of the CT DEEP Wildlife Diversity Program, and Barbara Beall of Chazen on bog and wood turtles.

CATHODIC PROTECTION PROJECT, TOWN OF MONROE, FAIRFIELD COUNTY (2015)
Dr. Futyma conducted a census and dbh measurement of trees in an area to be cleared as part of installation of a cathodic protection system on the Iroquois pipeline.

BROOKFIELD COMPRESSOR STATION, TOWN OF BROOKFIELD, FAIRFIELD COUNTY (2019)
Dr. Futyma led a project for delineation of wetland boundaries and habitat analysis for threatened and endangered species.

Attachment 4

Oxbow Associates, Inc. Habitat Survey and Mitigation Proposal Report, December 13, 2019

OXBOW ASSOCIATES, INC.

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

Habitat Survey and Mitigation Proposal

Electrical Interconnect Routing Alternative

Candlewood Mountain Solar Facility, New Milford, CT

December 13, 2019

On 5 December 2019 an OA herpetologist surveyed the proposed alternative electrical interconnection alignment for the presence of potentially suitable habitat for Northern Slimy Salamander (*Plethodon glutinosus*).

Work began on 10:00 with the safety meeting and an excursion to the Rocky River Main Dam site led by Brian Wood of First Light.

Weather

Skies were partly (80%) cloudy. The ground was covered with 2.2" (56 mm) of snow, which allowed identification of the key habitat features including rocks and fallen logs. The air temperature was 36˚F (7.4˚C), while the surface temperature was 33.5˚F (0.83˚C), with relative humidity 56%, according to portable thermo-hygrometer measurements.

Site description

The proposed interconnect alignment occupies steep to moderately steep southeastern slopes of Candlewood Mountain and adjacent hilly terrain between 320 and 750 feet above sea level, in New Milford, CT. It extends 1224 m (4016 feet) northeast from a hay field, toward an unnamed branch of the utility Access Road, and has a 60-foot (18.3m) width. The Southern portion of the area is represented by highly to moderately rocky slopes covered by mature mixed hardwood forest. The northern part of the alignment is represented by low hilly terrain supporting Mixed Hardwood Forest, with a Hardwood-Conifer Wooded Wetland in its northeastern part. The transmission alignment footprint has a branch extending south. This contains Mixed Hardwood Forest and an upland herbaceous (Mugwort-dominated) plant community.

Survey

The site was surveyed on foot, by walking along the centerline of the proposed interconnect alignment, utilizing a Trimble GEO XH device loaded with digital files of the project area. We took notes on the density of critical *P. glutinosus* habitat features: (i) deep crevices and spaces underneath and between medium to large cover material (rocks, logs, crevices); (ii) presence of aggregations of cover material and associated crevices; and within their aggregations; and (iii) connectivity between those aggregations; as well as (iv) soil type and (v) dominant vegetation.

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Telephone: 978.929.9058 • Facsimile: 978.635.1892 • E-mail: butler@oxbowassociates.com

Soil type was determined using CT soils data layer (CT DEEP), and by occasionally measuring the depth of the top-soil and leaf litter using hand auger.

To summarize our findings, the potential habitat suitability for *P. glutinosus* was classified into three categories, based on literature accounts as well as our own experience with this species on the mountain: Highest – indicating high density of well interconnected habitat features; High – typically indicating adequate density and moderate degree of obvious interconnection between key habitat features; and Low – indicating low density, and/or spatial isolation of key habitat features. According to our estimates 3.54 out of 7.22 (49%) acres of the surveyed interconnect section contains potential habitat; Highest and High suitability for *P. glutinosus* (Appendix 1: Fig.1 & 2).

Within the perimeter of the proposed interconnect alignment, we identified four (4) sections represented primarily by one of the three categories of habitat suitability for *P. glutinosus* (Appendix 1: Fig. 1, Appendix 2 Photos 1-16).

The highly suitable habitat is present throughout Sections 1 and 3 (Appendix 1: Fig. 1; Appendix 2: Photos 1-3 & 7-10 respectively). This area is underlain primarily by the Hollis-Chatfield rock outcrop complex soil series. However, the extreme south-western tip of the proposed interconnect is represented by extremely stony 3-15% slopes with well drained Paxton and Montauk soils. A minor portion of Section 3, east from the Rocky River, is represented by 15-25% slope with well drained Paxton and Montauk soils. Land cover throughout Section 1 consists primarily of mature mixed hardwood forest, while the south-western tip abuts open hay field habitat.

Habitat with high predicted suitability is present throughout Section 2 (Appendix 1: Fig. 1; Appendix 2: Photos 4-6). It is represented by 15-45% steep slopes, with well drained Hollis-Chatfield rock outcrop complex soils. The land is covered with mature, mixed hardwood forest, and is very similar to the highest quality habitat.

The habitat with low predicted suitability is present through Section 4 of the proposed interconnect alignment (Appendix 1: Fig. 1; Appendix 2: photos 11-16). This section is represented by a low hilly terrain with streams and wetlands occupying depressions. Upland fragments are represented by 3-15% slope, 10-25% slopes, with extremely stony, well drained, Paxton and Montauk soils, supporting mixed hardwood forest. Falling in this category, the southern branch of the proposed interconnect occupies 3-15% slopes. Its southern portion is presented by Paxton-Urban land complex soils, and covered by upland herbaceous (e.g., mugwort) vegetation (Chazen Engineering Habitat Assessment Report, 2018). The north-eastern portion of the proposed alternative interconnect is represented by wetland with poorly drained, extremely stony, Ridgebury, Leicester & Whitman soils, with fragments of hardwood-conifer forest (Chazen Engineering Habitat Assessment Report, 2018).

Concluding Remarks

Potential core habitat *of P. glutinosus* is defined as those areas with an abundant variety of deep crevices, and other hiding spaces associated with cover objects including exposed bed-rock,

more or less interconnected rock outcrops, slabs of rocks and boulders varying in size, as well as fallen tree trunks and stumps, which all provide cover features critical for *P. glutinosus*. More often than not such rocky areas, and especially outcrops occur on steep slopes (> 35 ˚). However, these salamanders were observed by us in the vicinity, on less steep sites rich in cover objects as well. Therefore, such sites, if not isolated from the more typical steep slope habitat should be presumed to likely support the species in an area contiguous with documented occurrences.

The present survey suggests that there is a potential risk of a take of Slimy Salamander resulting from work within the footprint of the interconnect alignment. The risk of take is higher throughout the 3.54 acre area identified as highly suitable (Appendix 1: Fig. 1), west and south of where the Rocky River intersects the interconnect alignment. This determination was based on the presence, abundance and connectivity among habitat features identified as suitable to support Slimy Salamander. However, due to winter conditions at the time of the survey, we were unable to test and obtain more direct evidence for presence or absence of the Slimy Salamander within the interconnect alignment footprint.

Minimization of Take

The bisection of suitable habitat will impact local, resident slimy salamanders, if present. Recent observations of individual salamanders within approximately 500 horizontal feet of the alignment and within generally equivalent habitat further suggest their presence there; most of the alignment and its vicinity were not surveyed during our previous seasonal surveys in the early summer of 2019.

Fragmentation of otherwise intact, mature forest blocks has been studied with regard to impacts to diverse wildlife taxa. The response of forest-interior bird species and various amphibian species are among the most documented groups relative to forest fragmentation. Large scale forest harvesting results in significant changes to both taxonomic groups. In this case the alteration is not expansive but limited to a linear bisection of intact, hardwood-dominated mature forest. However, a change in microclimatic conditions at the forest floor is inevitable with a sixty-foot wide linear clearing.

One fortunate aspect of the alignment placement is that it is clearly within the easterly twenty-five percent of suitable habitat relative to that located to the west and northwest on Candlewood Mountain. In that regard, the bisection of the habitat is more tangential than central; a lesser proportion of the population is likely to be affected.

The alignment is likely to reduce the suitability of the habitat within its limits for slimy salamander and may influence a zone beyond the lateral limits of clearing. It should be noted however that OA staff have observed this species, within rights-of-way, in Hinsdale, New York and in Mahwah, New Jersey.

There is sparse literature regarding impacts of habitat bisection on this species. Field research on congeneric species as well as less closely affiliated salamander species generally show a diminution in habitat quality and suitability from linear incursions in habitat, even if the linear feature does not present a specific ongoing source of mortality, such as active roadways.

We considered credible means to minimize or mitigate the inevitable segmentation of forest habitat for the installation of conductors and transmission poles. It is fairly obvious that a zero-impact scenario is not compatible with a reliable overhead conductor system. Although directional drilling beneath habitat features would avoid fragmentation, there are methods not typically employed in distribution or transmission right-of-way construction that can be applied in this case that are compatible with reliable distribution construction and maintenance.

LeGros, et al. (2017) examined the beneficial effects of placing large, coarse woody debris items within abandoned logging roads (20 to 39 feet wide). They found that the smaller, congener of *P. glutinosus*, *Plethodon cinereus*, as well as more unrelated terrestrial salamanders benefited from the placement of large (1 sq. m. or larger) hardwood trunk sections placed within the deforested logging paths. Somewhat analogously, Grover (1998) found that both density of cover objects and moisture were positively correlated with density of both *P. glutinosus* and *P. cinereus* (in a forested experimental landscape). Stojny and Hunter (2009) found that *P. cinereus* was found in forest gaps with the same frequency as in intact forest – only in association with large diameter logs placed in the environment; not for small woody material.

The value of coarse woody debris to fossorial and ground-dwelling vertebrates is well appreciated by ecologists in general. This is particularly true for a taxonomic group (Plethodontidae) whose respiration is entirely trans-cutaneous making consistent moistness of the integument a critical parameter.

A forested community cannot be maintained, nor re-established in an electric right-of-way for obvious reason. However, the impacts of the forest cut can potentially be mitigated for by the placement of abundant, native coarse woody debris, of sufficient dimensions to effectively shorten the distance of exposure or hazard experienced by a salamander entering the right-of-way. This is unproven as to the extent of benefit, but we believe that by comparison, a conventional, barren right-of-way, verses one peppered with large, common and persistent hardwood log sections will provide a favorable microenvironment and safe harbor during dry and hot conditions.

In view of the above we suggest the following prescription for the clearing and finish-treatment of the alignment within the high-quality zones indicated in Appendix 1.

1. Leave all stumps not in conflict with access or a structure in place; chip slash and tops within the alignment in uniform, shallow depths.
2. Leave any low-growing forest shrub species (mountain laurel, witch hazel, native *Viburnum*, etc.) in place, working around same if needed.

3. Reserve hardwood and pine trunk sections greater than 12" in diameter. Cut to three to four-foot lengths, split longitudinally, and place at an equivalent of one log piece per 800 sq. ft. of ROW (approx. 200 items) within high quality habitat.
4. Develop and O & M plan for the ROW that retains woody growth under 15 feet in height and includes control and eradication of invasive vegetation, as well as visual inspection and photo-documentation of the sensitive sections of the alignment at least every three calendar years. This O & M plan could also include selective planting of low-growing, native shrubs wherever the soil is deep enough and already void of existing vegetation.
5. Examine and record amphibian occupants of the log sections during May and August of the third year following their placement.

The above prescription would be validated by a drift fence and pitfall trap survey conducted at representative lengths of the interconnect alignment and several control "X" arrays off alignment, in advance, or concurrent with the site work (depending on seasonal window for construction). Such an investigation would validate whether *P. glutinosus* currently inhabit the interconnection and to what extent the installation and maintenance of the overhead transmission line could disrupt the population. Presuming the regulatory authorities are involved in determining the appropriate level of effort, seasonality, methods, and study duration this could provide valuable data applicable to any future linear projects under NDDB review in the two counties where *P. glutinosus* occurs. Potentially, this field study could be used as unconventional mitigation in exchange for project approval.

References

Grover, M. C. 1998. Influence of cover and moisture on abundances of the terrestrial salamanders *Plethodon cinereus* and *Plethodon glutinosus*. *Journal of Herpetology* 32, 489–497.

LeGros, D. L., B. Steinberg and D. Lesbarreres. 2017. Middle of the road: enhanced habitat for salamanders on unused logging roads. *Wildlife Research* 44(1) 1-8.

Strojny, C. A. and M. L. Hunter, Jr. 2009. Log Diameter Influence Detection of Eastern Red-Backed Salamanders (*Plethodon cinereus*) in Harvest Gaps, But Not in Closed-Canopy Forest Conditions. Herpetological Conservation and Biology 5(1): 80-85.

Habitat Assessment Report, Candlewood Solar Interconnect Project. Chazen Engineering, Land Surveying & Landscape Architecture Co. Chazen Project No 91932.00. New York, 2018.

USDA Natural Resource Conservation Service. https://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=CT

Attachments

Appendix 1. Figures

Appendix 2. Photographs

Candlewood Solar Interconnect Project, New Milford
Appendix 1

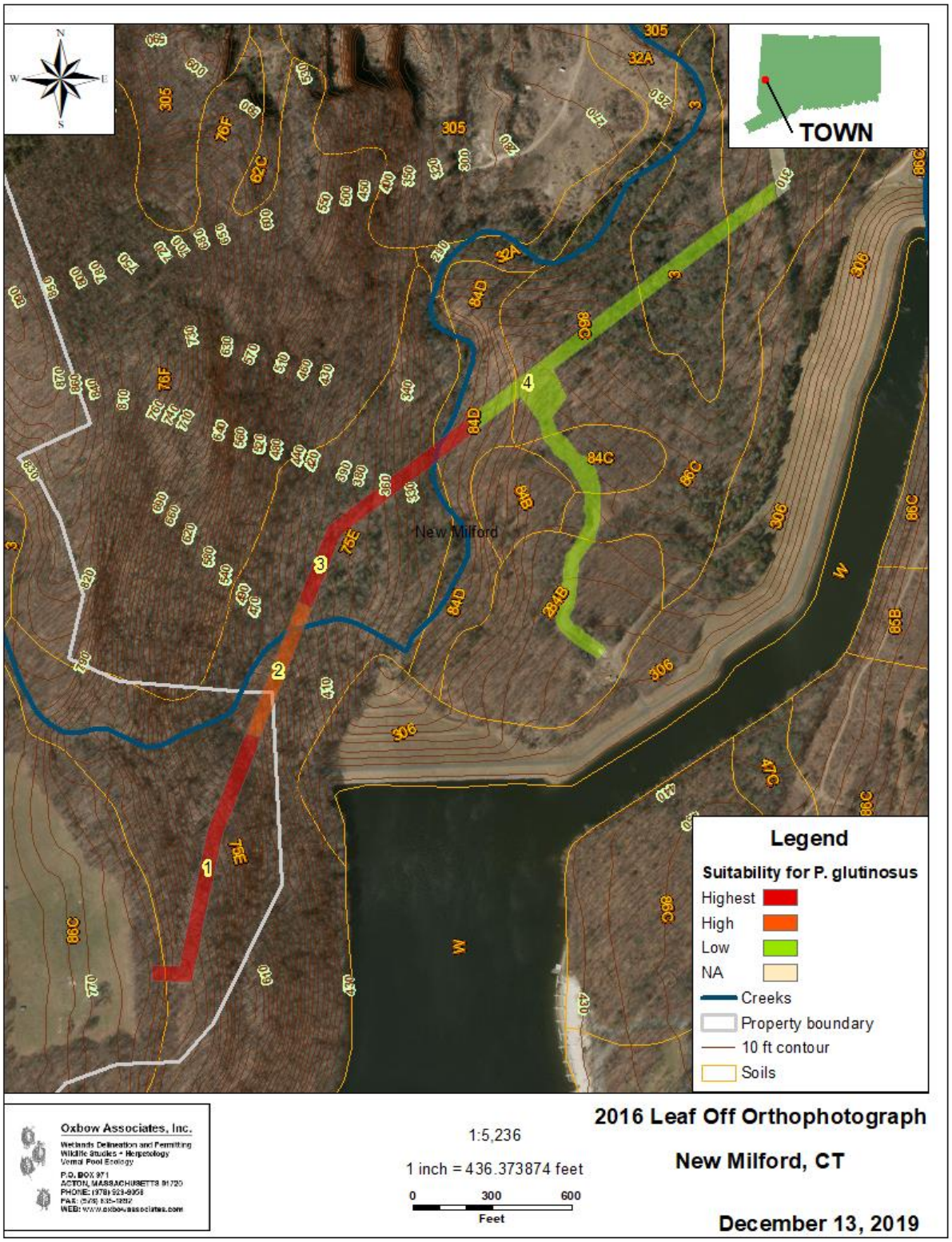

Fig. 1. Slimy Salamander habitat suitability survey of the proposed modified interconnect footprint.

Soil types: 3 - Ridgebury, Leicester & Whitman soils; **75E -** Hollis-Chatfield rock outcrop complex; **84B - 84 D & 86C -** Paxton and Montauk soils; **284B** - Paxton-Urban land complex.

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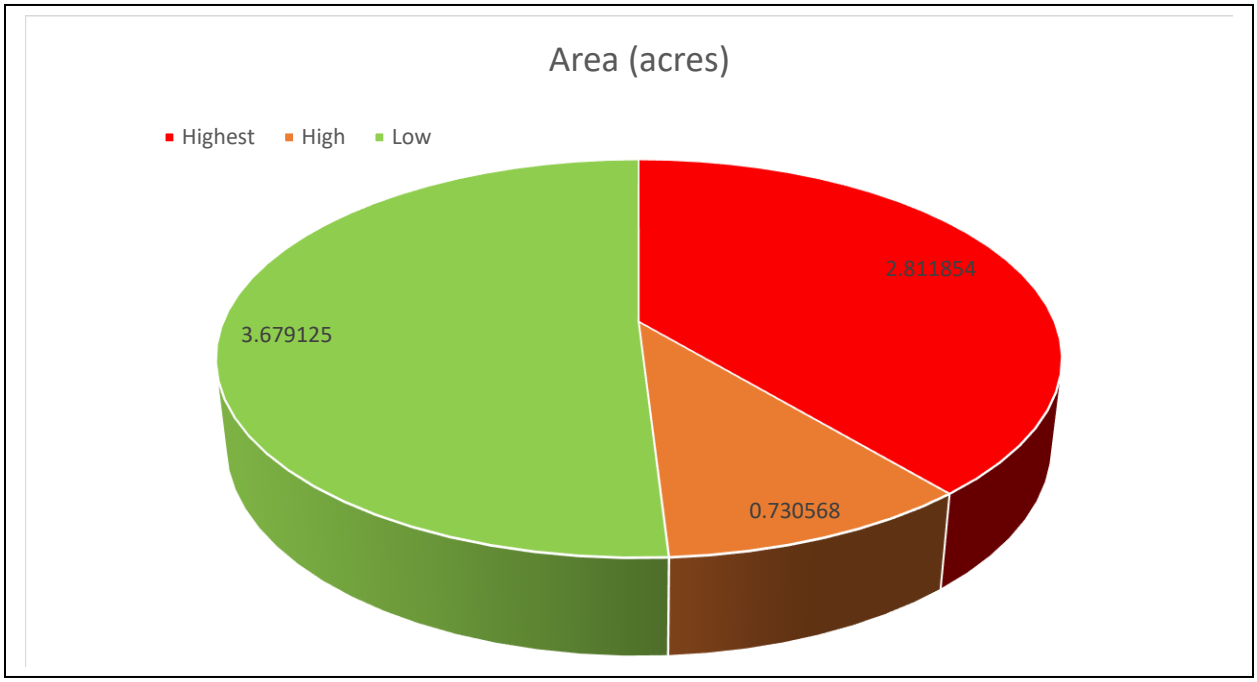

Fig. 2. Relative representation of the Slimy Salamander habitat of varying suitability within the proposed interconnect footprint.

Photo 1. Highest quality mixed hardwood forest habitat potentially suitable for Slimy Salamander: Section 1, view along the midline of the proposed interconnect

Photo 2. Highest quality mixed hardwood forest habitat potentially suitable for Slimy Salamander: Section 1, view west from the midline of the proposed interconnect

Photo 3. Highest quality mixed hardwood forest habitat potentially suitable for Slimy Salamander: Section 1, view northwest from the midline of the proposed interconnect

Photo 4. High quality mixed hardwood forest habitat potentially suitable for Slimy Salamander: Section 2, view south-west, and uphill from the midline of the proposed interconnect

Photo 5. High quality mixed hardwood forest habitat potentially suitable for Slimy Salamander: Section 2, west, and uphill from the midline of the proposed interconnect

Photo 6. Stream bed portion of the high quality mixed hardwood forest habitat potentially suitable for Slimy Salamander: Section 2, view south-west, and uphill from the midline of the proposed interconnect

Photo 7. Highest quality mixed hardwood forest habitat potentially suitable for Slimy Salamander: Section 3, west, and uphill from the midline of the proposed interconnect

Photo 8. Fragment of a highest quality potential Slimy Salamander habitat: Section 3, view west from the midline of the proposed interconnect

Photo 9. Fragment of a highest quality mixed hardwood forest habitat potentially suitable for Slimy Salamander: Section 3, view west from the midline of the proposed interconnect

Photo 10. Fragment of a highest quality mixed hardwood forest habitat potentially suitable for Slimy Salamander: Section 3, view west from the midline of the proposed interconnect

Photo 11. Fragment of a upland mixed hardwood forest habitat with low potential to support Slimy Salamander: Section 4, view east from the midline of the proposed interconnect

Photo 12. Fragment of upland mixed hardwood forest habitat with low potential to support Slimy Salamander: Section 4, view northeast from the midline of the proposed interconnect

Photo 13. Fragment of upland mixed hardwood forest habitat with low potential to support Slimy Salamander: Section 4, view east from the midline of the proposed interconnect

Photo 14. Fragment of hardwood-conifer wooded wetland habitat with some potential to support Slimy Salamander: Section 4, view northeast from the midline of the proposed interconnect

Photo 15. Fragment of a habitat with low potential to support Slimy Salamander population: Section 4, view north from the midline of the proposed interconnect

Photo 16. Fragment of a habitat with some potential to support Slimy Salamander: Section 4, view north-west from the midline of the proposed interconnect

Attachment 5

Connecticut Siting Council Development & Management Plan (D&M Plan) Approval, April 26, 2019

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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April 26, 2019

Paul R. Michaud, Esq.
Michaud Law Group LLC
515 Centerpoint Drive, Suite 502
Middletown, CT 06457

RE: **PETITION NO. 1312** - Candlewood Solar LLC 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. **Development and Management Plan.**

Dear Attorney Michaud:

At a public meeting of the Connecticut Siting Council (Council) held on April 25, 2019, the Council considered and approved the Development and Management (D&M) Plan submitted for this project on January 28, 2019 with the following conditions:

1. Pursuant to RCSA §16-50j-62, submit the applicable revisions including, but not limited to, the solar array layout, clearing limits, fence design and stormwater management plan for Council review and approval prior to the commencement of construction; and

2. Submit a copy of the Department of Energy and Environmental Protection (DEEP) General Permit and DEEP-approved stormwater management plan prior to commencement of construction.

This approval applies only to the D&M Plan submitted on January 28, 2019 and supplemental data dated March 5, 2019 and April 4, 2019. Requests for any changes to the D&M Plan shall be approved by Council staff in accordance with Regulations of Connecticut State Agencies (RCSA) §16-50j-62(b). Furthermore, the project developer is responsible for reporting requirements pursuant to RCSA §16-50j-62.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the Council's decision on the petition dated December 22, 2017 and in the D&M Plan dated January 28, 2019.

Enclosed is a copy of the staff report on this D&M Plan, dated April 25, 2019.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

RS/MP/laf

Enclosure: Staff Report dated April 25, 2019

S:\PETITIONS\1301-1400\1312\9_D&M_D&MExtensions\pe1312-20190426-D&Mdcltr.docx

c: Parties and Intervenors
The Honorable Pete Bass, Mayor, Town of New Milford
Laura Regan, Zoning Enforcement Officer, Town of New Milford
The Honorable Stephen C. Dunn, First Selectman, Town of Brookfield
Francis Lollie, Zoning Enforcement Officer, Town of Brookfield
Alice Dew, Wetlands Enforcement Officer & Land Use Manager, Town of Brookfield
The Honorable Patricia Del Monaco, First Selectman, Town of New Fairfield
Evan White, Zoning Enforcement Officer, Town of New Fairfield

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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Petition No. 1312
Candlewood Solar, LLC
Development &Management Plan
197 Candlewood Mountain Road, New Milford
Staff Report
April 25, 2019

On December 21, 2017, the Connecticut Siting Council (Council) issued a Declaratory Ruling to Candlewood Solar, LLC (CS), pursuant to Connecticut General Statutes (CGS) §4-176 and §16-50k, for the construction, maintenance, and operation of an approximately 20 megawatt (MW) alternating current (AC) solar photovoltaic electric generating facility and associated electrical interconnection at 197 Candlewood Mountain Road, New Milford, Connecticut. In its Declaratory Ruling, the Council required CS to submit a Development and Management Plan (D&M Plan). On January 28, 2019, CS submitted its D&M Plan for this project. On or about January 28, 2019, copies of the D&M Plan were provided to the Town of New Milford, the Town of Brookfield, the Town of New Fairfield, as well as all parties on the service list.[1]

On February 19, 2019, the Council issued Set One interrogatories to CS. On March 5, 2019, CS submitted responses to Council interrogatories. Pursuant to Section 16-50j-60(d) of the Regulations of Connecticut State Agencies (RCSA), the 60-day deadline for the Council to approve, modify, or disapprove the D&M Plan was March 29, 2019. By letter dated March 5, 2019, the Council requested an extension of the D&M Plan deadline until May 10, 2019. By letter dated March 13, 2019, CS consented to the extension of the D&M Plan deadline to May 10, 2019. On March 7, 2019, the Council issued Set Two interrogatories to CS. By letter dated March 19, 2019, CS noted that the Department of Energy and Environmental Protection (DEEP) issued a Notice of Rejection without prejudice in connection with CS's January 2, 2019 General Permit (GP) registration, and thus, CS requested a two-week extension of time to respond to Set Two of the Council's interrogatories. By letter dated March 19, 2019, the Council granted an extension of time to April 4, 2019 to respond to the Set Two interrogatories. On April 4, 2019, CS submitted revised responses to Set One interrogatories and responses to the Set Two interrogatories.

Pursuant to CGS §22a-430b, DEEP retains final jurisdiction over stormwater management. The solar array layout and stormwater design are currently being revised/redesigned based on a reduced limit of work area. The design will be finalized to obtain DEEP approval of the GP. This reduced limit of work, including an increased natural buffer on the western side of the site, will also reduce tree clearing. Council staff notes that this D&M Plan review is based on the current design before the Council. Any changes to the D&M Plan, prompted by a revised stormwater design or by settlement through litigation, are required to be submitted by CS per RCSA §16-50j-62 for Council review and approval.

No comments on the D&M Plan were received. However, on February 28, 2019, the Town of New Milford submitted a petition (Petition No. 1362) for a declaratory ruling, pursuant to CGS §4-176, for a determination that the January 28, 2019 D&M Plan submitted by CS in Petition No. 1312 conflicts and/or is inconsistent with the Council's December 21, 2017 final decision on Petition No. 1312. In support of its petition, the Town of New Milford submitted an affidavit from Milone & MacBroom, Inc. (MM), a consulting firm that was not a witness for the Town in the proceedings held on Petition No. 1312, detailing concerns about the D&M Plan. CS's responses to MM's affidavit are attached hereto.

The solar array portion of the project will be on an approximately 163 acre parcel (Array Parcel) of property located on the southern flank of Candlewood Mountain. The electrical connection route will cross the eastern portion of the array parcel and then two additional parcels to reach Rocky River Substation off of Route 7. The array parcel is zoned

[1] The Town of New Milford is also a party.

Major Planned Residential Development District. The approved solar project includes solar arrays totaling about 20 MW AC with a total disturbance area of about 83.4 acres.

The Declaratory Ruling requires the following information to be included in the D&M Plan:

a. A final site plan including, but not limited to, the solar array, fence design, and the electrical interconnection line and corridor;

The final site plan provided illustrates the solar array, fence design, and the electrical interconnection line and corridor. This plan is consistent with the footprint approved by the Council on December 21, 2017. Approximately 60,000 solar panels at 400 Watts DC each (for a total of about 24 MW DC) will be installed.

CS will install a seven-foot chain link fence. Consistent with the Council's approval, no wildlife gap is proposed. Notwithstanding, there will be an approximately two-inch gap at the bottom to provide clearance above grade per Drawing No. C-304.

A roughly ¼-mile long existing dirt access road off of Candlewood Mountain Road will be improved with gravel for use during construction and operation of the solar facility. The access road will be approximately 16 feet wide outside of the fenced array area. Inside the fenced array area, the access road width will increase to about 24 feet wide. Internal access road widths will be approximately 20 feet wide, with grass strips to accommodate movement of the slimy salamander (See Section m).

Approximately 9.34 acres of the tree clearing will be required to accommodate the approximately 1.3-mile long by 60 feet wide electrical interconnection corridor. The interconnection line will consist of two, overhead approximately 10 megavolt-ampere (MVA) circuits to be installed on approximately 18 single wood poles and 19 double wood poles. The heights of the wood poles will vary with the terrain, but the expected heights will range from between approximately 38-feet 8-inches to about 61 feet 2-inches above grade, with the majority less than 50 feet above grade. The plans for the interconnection line as depicted in CS's D&M Plan terminate immediately south of Kent Road (Route 7) at this time. CS will coordinate with Eversource on the crossing of Kent Road to reach Eversource's Rocky River Substation (RRSS), which is located directly on the opposite side or north side of Route 7. Eversource would file a petition with the Council for its final interconnection into the RRSS because Eversource will own the final interconnection into RRSS.

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;

CS considered the feasibility of locating a portion of the solar panels within the approximately 5-acre open field area and associated visual screening of the panels as necessary. While CS technically could relocate some of the solar panels to this area, it notes several drawback associated with this alternative:

a) In the Phase 1B Report submitted to the State Historic Preservation Office (SHPO), it was noted that this area will be used during construction for parking and storage. As such, construction matting was suggested to lessen the potential impact to undisturbed resources. A change in the use of this area from a temporary parking and "laydown" area to a location of permanent solar panel installation would require further consultation with SHPO to determine potential impacts to resources and potential avoidance and minimization measures;
b) While mature trees could be planted to visually screen the panels from nearby residences and Candlelight Farms Inn, a complete screening may not be possible because tree plantings would need to be planted so as to prevent shading on the solar panels; and
c) A new electric interconnection line would be required to connect the solar panels within this 5-acre area to the main solar facility on Candlewood Mountain.

Accordingly, CS contends that this alternative is neither prudent nor preferable to the approved layout and location.

c. Construction hours and days of the week;

Work hours will typically be 7:00 a.m. to 5:00 p.m., Monday through Friday, while complying with the Town of New Milford's regulations, to minimize the length of the calendar time the temporary construction impacts affect the area.

However, should the schedule require it, additional work may be performed on Saturdays. For example, because portions of the project involve work on an existing power system (interconnection) to serve customers, there may also be times when work needs to occur outside of these hours to avoid impacts to energy delivery and customer service. In addition, there are certain operations that, due to their nature or scope, must be accomplished in part outside the specified working hours. CS will coordinate with the municipality when work outside of these hours is necessary.

d. Construction traffic measures;

The primary (and only) access to the site will be from Candlewood Mountain Road. In accordance with the Town of New Milford Code and Ordinances, §18-78 Protection of Public During Construction, "During construction, the permittee shall not create a hazard to the traveling public and shall furnish such protective devices or police protection as the Director of Public Works may require at the permittee's expense." Accordingly, CS will work with the Town of New Milford to arrange traffic control if required during periods of frequent material deliveries during construction.

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;

CS has provided its erosion and sedimentation control (E&S Control) plan as part of the Stormwater Pollution Control Plan (SWPCP). CS contends that the E&S Control measures are consistent with the *2002 Connecticut Guidelines for Erosion and Sedimentation Control.* The E&S Control measures include, but are 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;

CS has provided its Project Phasing and Control Plan, which includes clearing, grubbing, stabilization and stormwater controls phasing plans, as part of its SWPCP. The five phases are listed as follows:

a) Phase I – Install Perimeter Erosion Control Measures and Clear Trees;
b) Phase II – Access Road Construction;
c) Phase III* – Solar Array Installation;
    i. Phase III.1 – Grub Stumps, Install Sediment Traps, Perform Minimal Grading and Stabilize.
    ii. Phase III.2 – Once Vegetation is Stable, Install Solar Array Equipment.
    iii. Phase III.3 – Install Electrical Equipment.
    iv. Phase III.4 – Convert Sediment Trap to Sand Filter, Clean and Restore Areas as Required..
d) Phase IV – Interconnection Route; and
e) Phase V – Perimeter Fence Installation.

*Phase III will be broken up into several, smaller sub-phases. Stump removal and limited grading will be performed such that the total area of disturbed, exposed ground surface contributing stormwater runoff to a common point is restricted to five acres or less.

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;

CS submitted a copy of the Stormwater Management Plan (SWMP). The SWMP includes an analysis on the potential impact of driveways on stormwater flows, including but not limited to, potential diversion of stormwater away from wetlands. The SWMP was developed consistent with the 2004 Connecticut Stormwater Quality Manual.

h. Plans to comply with the recommendations from DEEP outlined in "Stormwater Management at Solar Farm Construction Projects" dated September 8, 2017;

CS has developed plans to comply with the recommendations of the September 8, 2017 DEEP document on stormwater management at solar farms and to comply with more stringent Minnesota stormwater management guidelines for solar photovoltaic construction.

i. FAA marking/lighting plan, as necessary;

The Federal Aviation Administration (FAA) aeronautical study determined that the northern portion of the fence must be marked with red obstruction lighting at the corners and at (spacing) intervals not exceeding 150 feet. CS will install approximately 14 ea. L-810 LED TRO series red obstruction lights per those spacing requirements along the top of the fence in response to the FAA evaluation. Such lighting design will comply with the FAA Advisory circular 70/7460-1 L Change 1 as specified in FAA's No Hazard Determination letters.

Power for the FAA lighting will be delivered from the closest transformer pad and will be available 24/7 via the utility connection to the transformer. All wiring will be underground from the transformer pad to the lighting fixtures.

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;

In order to maintain vegetation, the grass will be mowed twice per year during the growing season. Vegetation that becomes established outside the fence line but within the proposed limit of clearing will be removed or trimmed as needed. Herbicides or pesticides will not be used as part of the vegetation management plan.

Post-construction stormwater best management practices (BMPs) will be inspected in accordance with DEEP guidelines. Inspections will be documented and any vegetation maintenance required for removal of sediment or restoration to re-establish vegetation will be performed as-needed in order to properly maintain stormwater BMP function.

k. Decommissioning plan;

CS provided a decommissioning plan. The decommissioning process will, include, but not be limited to, the installation of temporary erosion and sedimentation controls, disconnecting power, removal of wiring and cables, removal of solar panels, removal of racks, removal of rack foundations, removal of electrical equipment,

removal of concrete pads, removal of power poles, removal of the fence, removal of access roads, and final restoration including grading and seeding disturbed areas.

All dismantled/removed equipment and materials will be categorized into those that could be reused, salvaged, recycled or disposed of. Generally, steel, aluminum, glass, copper, and plastics can be recycled. The crystalline silicon panels are considered landfill safe because they do not contain hazardous materials such as lead or cadmium. The panels contain recyclable materials such as aluminum, copper and glass. The panels will be dismantled and packaged per manufacturer or approved recycler specifications.

l. Plans to comply with the SHPO's recommended precautionary measures as specified in the letter dated November 28, 2017; and

By letter dated November 28, 2017, SHPO notes that cultural resource Locus No. 7 (a prehistoric lithic workshop) is potentially eligible for listing on the National Register of Historic Places. Accordingly, CS developed an avoidance and construction management plan to protect Locus No. 7 and Area 4, located in the southwestern portion of the project area and to be used for parking and material and equipment storage, and submitted such plan to SHPO. This plan includes the following measures:

a) A buffer of approximately 69 feet that will separate the limits of work (LOW) and the limits of tree clearing from the area of archaeological sensitivity;
b) Provide a distance of about 129 feet from the fence line (surrounding the facility) to Locus No. 7;
c) Allow tree stumps to remain in the tree clearing area between the LOW and fence line;
d) Install an exclusion barrier consisting of standard silt fence along the LOW;
e) A 100-acre conservation restriction (which includes Locus No. 7); and
f) Avoid grading, additional tree clearing and stone wall alterations in Area 4 to lessen potential impacts to undisturbed resources.

Additionally, SHPO suggests that construction matting be used in Area 4 to lessen the potential impacts to undisturbed resources. SHPO notes that, with these precautionary measures, the solar facility will not have an adverse effect on cultural resources. Accordingly, CS will implement all of the above protective measures.

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

By letter dated November 15, 2018, DEEP provided an updated Natural Diversity Database determination letter. While not required as part of the D&M Plan, DEEP concurred that, due to lack of habitat, no protection measures are required for the golden-winged warbler. DEEP also provided a Tree Roosting Bat Protection plan, which will limit tree clearing to between November 1 and March 30 to be protective of three state-listed tree roosting bat species. DEEP concurred with CS's vernal pool protection strategies (Vernal Pool Protection Plan) and noted that it will benefit the Jefferson salamander complex, a state-listed Species of Special Concern. DEEP also provided a recommended protection plan (Turtle Protection Plan) for wood turtles and eastern box turtles, both state-listed Species of Special Concern. Accordingly, CS will comply with the Tree Roosting Bat Protection Plan, Vernal Pool Protection Plan and the Turtle Protection Plan.

With respect to the slimy salamander, a state-listed Threatened Species, DEEP believes that the project would result in the incidental take of this species. However, the following actions are planned to avoid, minimize and mitigate the impacts to the "take" of the slimy salamander. Such measures include limiting tree clearing impacts and the overall footprint of the project; providing a 100-acre conservation easement; three-years of monitoring and reporting; and the addition of grassy strips to the access roads.

Specifically, the approved site plan limits the impact to about 1.3 acres of about 49 acres of high-quality forested salamander habitat. The 100-acre conservation easement was also included in the approved project layout. Grassy strips will replace the gravel for the full width of the roadway in areas proximate to forested habitat where the salamanders would presumably be emanating from. Lastly, CS will work with a qualified herpetologist to conduct the required survey, monitoring and reporting to DEEP.

Recommendations

If approved, staff recommends following conditions:

1. Pursuant to RCSA §16-50j-62, submit the applicable revisions including, but not limited to, the solar array layout, clearing limits, fence design and stormwater management plan for Council review and approval prior to the commencement of construction; and

2. Submit a copy of the DEEP General Permit and DEEP-approved stormwater management plan prior to commencement of construction.

ATTACHMENT A: Response to Milone & MacBroom Inc. affidavit dated February 26, 2019

5. The plans submitted to the CSC as part of the D&M Plan are represented as being "For construction." The plans are not suitable for construction, in our opinion, because they lack detail specific to the conditions on this subject site, are not adequate to allow a responsible contractor to implement the improvements in the field, and allow CSC to verify that the improvements have been constructed in accordance with the approved plans. Note the following:

5.1 Based on our experience with the design of similar facilities, it is customary engineering practice to provide site layout plans with appropriate dimensions showing the precise limits of clearing and the location of all improvements, grading plans having 2-foot contour intervals showing existing and proposed finished grades including what will be beneath the solar arrays, and detailed drainage plans showing the precise slope sizes and inverts of pipes and other structures. This information is in addition to the required Erosion and Sedimentation Control Plans. Without having refined plans, the impacts of the proposed development cannot be adequately assessed.

Response: The Issued for Construction plans dated December 19, 2018 are in the process of being revised in order to provide additional information to construct the project.

- *The existing and proposed topography is presented in 2-ft intervals as shown on the Grading and Drainage Plans (Sheets 9-12). The proposed grading is only shown where it differs from the existing conditions, otherwise the existing topography will remain. Proposed grading is shown as solid lines that tie into existing dashed grade lines (for example, the 830 elevation contour is being slightly regraded as shown on the northwest portion of the array on Sheet 11). The Grading and Drainage Plans do not show the solar PV components in order to provide clarity on the grading and drainage design. Note that the stormwater design is in the process of being revised based on a reduced limit of work as a result of the solar PV array redesign. This reduced limit of work, including an increased natural buffer on the western side of the site, will reduce the tree clearing. Additional clarification on this response will be provided once the re-design is complete.*

- *Callouts for the proposed tree clearing limits are depicted on the site layout plans (Sheets 4-8). Dimensions have been added depicting the distance between tree clearing limits and proposed panels.*

- *Erosion and sedimentation controls including construction phasing, site plans, notes, and specific details for each control measure are provided in the Erosion and Sedimentation Control Plans (Sheets 13-22). The detailed phasing plan is described on Sheet 13. Note that the stormwater design is in the process of being revised based on a reduced limit of work area. Additional clarification on this response will be provided once the re-design is complete, which will include additional detail on the phasing plan as well as specific proposed dates that correspond to the construction schedule (see further comment response related to the construction schedule below (comment 7.5)).*

- *The design of stormwater and erosion control features was prepared based on the Connecticut Department of Energy & Environmental Protection (CTDEEP) regulations including the 2002 Connecticut Guidelines for Erosion and Sedimentation Control, the 2004 Connecticut Stormwater Quality Manual, and the 2017 Stormwater Management at Solar Farm Construction Projects. Note that the stormwater design is in the process of being revised based on a reduced limit of work area. Additional clarification on this response will be provided once the re-design is complete.*

5.2 The project calls for the clearing and grubbing of the site in order to install the solar arrays, access drives, and other related facilities. However, except for some drainage swales and other drainage improvements located on the perimeter of the disturbed site (83.4 acres), there are no grading plans that show how the topography will be regraded once the existing vegetation and stumps have been removed and prior to restoration and the implementation of site improvements.

Response: The site topography will remain largely unchanged with minimal site grading proposed to construct the access roads, stormwater features, and minor land grading as shown on the Grading and Drainage Plans (Sheets 9-12) of the Issued for Construction plan set dated December 19, 2018. Once the trees are cleared and stumps are removed within the proposed fence line, the land will be graded to match existing conditions, unless otherwise shown on the Grading and Drainage Plans (see response above). Stumps will remain in place in the area between the fence line and the limit of work. Note that the proposed access road within the array is flush with the surrounding grade as explained in the testimony to the Siting Council. For this reason, proposed grades are not shown in the majority of the proposed access roads within the array, however, proposed grading for the access road from Candlewood Mountain Road to the limits of the array are shown Sheet 10. Details for the flush access drive and the raised access road are provided as details B3 and C1, respectively on Sheet 24. Also note that the stormwater design is in the process of being revised based on a reduced limit of work area. Additional clarification on this response will be provided once the re-design is complete.

5.3 The site construction details included in the plans are generic, accompanied by standard tables. The critical details related to drainage structures have not been customized to be applied to this site and rely on field interpretation during construction.

Response: The site construction details presented in the Issued for Construction set are specific to the site development, including the surface sand filter (Detail C3 on Sheet 23) and sediment trap (Detail C1 on Sheet 22) design tables which specify the design elevations for each structure. These tables are included below for your convenience. The surface sand filter water quality volume calculations are also included in Appendix B-3.1 and are summarized in Table B3-2. These details reference the 2002 Connecticut Guidelines for Soil Erosion & Sediment Control, the 2004 Connecticut Stormwater Quality Manual and also the Minnesota Stormwater Manual's Stormwater Management for Solar Projects. Note that the stormwater design is in the process of being revised based on a reduced limit of work area. Additional clarification on this response, including physical dimensions of each BMP for construction, will be provided once the re-design is complete.

CTDEEP SEDIMENT TRAP TABLE														
Sediment Trap No.	Drainage Area	Acreage	Initial Storage Capacity	Trap Bottom Elevation	Outlet Base Elevation (Wet Pool)	Max. Trap Depth Below Outlet, ft (D_w)	Outlet Top Elevation (Overflow)	Rise of Stone Outlet, ft (D_d)	Wet Pool Surface Area, sf (A_w)	High Pool Surface Area, sf (A_d)	Wet Storage Volume Provided*, cf (V_w)	*Wet Storage Volume Required, cf (V_w)*	Dry Storage Volume Provided*, cf (V_d)	*Dry Storage Volume Required, cf (V_d)*
1A	1AS	3.71	13,405	805.00	808.00	3.00	810.00	2.00	3,936	5,117	10,037	*6,702*	9,053	*6,702*
1B	1BS	2.34	8,455	805.00	808.00	3.00	809.54	1.54	5,702	7,413	14,540	*4,228*	10,098	*4,228*
2A**	2AS	2.46	8,915	791.00	794.00	3.00	795.50	1.50	1,046	3,151	4,457	*4,457*	4,457	*4,457*
					Perform additional grading to a minimum area of:				**1,748**	**4,195**				
2B**	2BS	4.54	16,437	772.00	775.00	3.00	776.76	1.76	2,353	5,599	8,218	*8,218*	8,218	*8,218*
					Perform additional grading to a minimum area of:				**3,223**	**6,116**				
2C**	2CS	3.58	12,967	766.00	769.00	3.00	770.81	1.81	1,408	3,027	6,483	*6,483*	6,483	*6,483*
					Perform additional grading to a minimum area of:				**2,543**	**4,622**				
3A**	3AS	4.31	15,575	722.00	725.00	3.00	727.00	2.00	2,841	6,027	7,788	*7,788*	8,868	*7,788*
					Perform additional grading to a minimum area of:				**3,054**					
3B**	3BS	3.88	14,049	729.50	732.50	3.00	734.25	1.75	2,566	5,694	7,024	*7,024*	7,228	*7,024*
					Perform additional grading to a minimum area of:				**2,755**					
4A**	4AS	4.00	14,472	719.00	722.00	3.00	723.71	1.71	1,647	5,420	7,236	*7,236*	7,060	*7,236*
					Perform additional grading to a minimum area of:				**2,838**					
4B**	4BS	4.02	14,548	727.00	730.00	3.00	730.99	0.99	1,410	4,332	7,274	*7,274*	7,274	*7,274*
					Perform additional grading to a minimum area of:				**2,853**	**11,842**				
5A**	5AS	2.76	9,971	792.00	795.00	3.00	796.06	1.06	1,540	4,126	4,986	*4,986*	3,003	*4,986*
					Perform additional grading to a minimum area of:				**1,955**					
5B	5BS	2.03	7,337	797.00	800.00	3.00	802.00	2.00	1,977	4,640	5,041	*3,669*	6,617	*3,669*
6A**	6AS	1.30	4,685	802.00	805.00	3.00	806.62	1.62	636	6,907	2,343	*2,343*	6,110	*2,343*
					Perform additional grading to a minimum area of:				**919**					
6B**	6BS	2.03	7,341	799.00	802.00	3.00	803.56	1.56	583	7,728	3,670	*3,670*	6,483	*3,670*
					Perform additional grading to a minimum area of:				**1,439**					
6C**	6CS	2.85	10,304	764.84	767.84	3.00	769.67	1.83	1,384	3,453	5,152	*5,152*	5,152	*5,152*
					Perform additional grading to a minimum area of:				**2,020**	**3,610**				
7A**	7AS	2.98	10,771	786.93	789.93	3.00	791.76	1.83	961	3,276	5,385	*5,385*	5,385	*5,385*
					Perform additional grading to a minimum area of:				**2,112**	**3,774**				
					NO CTDEEP SEDIMENT TRAP FOR SUBCATCHMENT 7B									
7C	7CS	1.44	5,210	718.04	721.04	3.00	722.87	1.83	1,700	6,822	6,822	*2,605*	7,798	*2,605*
8A**	8AS	4.38	15,843	760.00	763.00	3.00	764.56	1.56	1,073	3,008	7,922	*7,922*	7,922	*7,922*
					Perform additional grading to a minimum area of:				**3,187**	**7,049**				
8B**	8BS	4.86	17,580	744.00	747.00	3.00	748.64	1.64	1,125	3,174	8,790	*8,790*	8,790	*8,790*
					Perform additional grading to a minimum area of:				**3,447**	**7,272**				
9A**	9AS	3.46	12,522	754.00	757.00	3.00	758.14	1.14	1,693	5,755	6,261	*6,261*	6,261	*6,261*
					Perform additional grading to a minimum area of:				**2,455**	**8,529**				
9B**	9BS	4.93	17,837	752.00	755.00	3.00	757.19	2.19	1,673	3,974	8,918	*8,918*	8,918	*8,918*
					Perform additional grading to a minimum area of:				**3,497**	**4,647**				
10	10S	3.53	12,753	751.50	754.50	3.00	757.19	2.69	2,724	8,698	6,946	*6,377*	15,363	*6,377*
12	12S	0.42	1,523	696.25	700.25	3.00	701.70	1.45	945	1,425	2,410	*762*	1,718	*762*

Notes:

* Storage volumes provided are shown on the drawings for most sediment traps as the grading contours for the permanent sand filters. Following construction, temporary sediment traps will be converted to permanent water quality sand filters.

** Sediment traps require additional grading beyond what is shown on the drawings to meet the required storage volume(s).

1. Wet storage volume: $V_w = 0.85 * A_w * D_w$
2. Dry Storage volume: $V_d = (A_w + A_d)/2 * D_d$

CTDEEP SURFACE SAND FILTER TABLE									
SURFACE SAND FILTER	TOP OF FILTER ELEVATION (FT)	FILTER INVERT ELEVATION (FT)	UNDERDRAIN INVERT ELEVATION (FT)	TOP OF BERM ELEVATION (FT)	WATER QUALITY HGL ELEVATION (FT)	10 YEAR HGL ELEVATION (FT)	25 YEAR HGL ELEVATION (FT)	100 YEAR HGL ELEVATION (FT)	100 YEAR FREEBOARD HEIGHT (FT)
1A	810.00	808.17	807.17	812.50	807.43	810.66	810.86	811.18	1.32
1B	809.54	807.71	806.71	811.37	806.75	809.85	810.05	810.36	1.01
2A	795.50	793.67	792.67	798.45	795.04	797.22	797.29	797.36	1.09
2B	776.76	774.93	773.93	780.58	774.83	779.16	779.35	779.57	1.01
2C	770.81	768.98	767.98	774.90	768.35	773.44	773.62	773.82	1.08
3A	727.00	725.17	724.17	730.49	724.31	728.91	729.11	729.39	1.10
3B	734.25	732.42	731.42	738.62	731.56	737.06	737.30	737.62	1.00
4A	723.71	721.88	720.88	728.20	721.23	726.70	726.99	727.20	1.00
4B	730.99	729.16	728.16	734.90	728.43	733.47	733.65	733.90	1.00
5A	796.06	794.23	793.23	799.35	793.49	798.12	798.22	798.34	1.01
5B	802.00	800.17	799.17	805.25	799.38	803.90	804.02	804.16	1.09
6A	806.62	804.79	803.79	809.12	803.98	807.92	808.01	808.12	1.00
6B	803.56	801.73	800.73	806.06	801.11	804.07	804.16	804.31	1.75
6C	769.67	767.84	766.84	772.67	767.27	771.27	771.38	771.54	1.13
7A	791.76	789.93	788.93	794.30	789.22	793.08	793.14	793.24	1.06
No CTDDEP Surface Sand Filter for Subcatchment 7B									
7C	722.87	721.04	720.04	726.25	720.89	724.64	725.03	725.24	1.01
8A	764.56	762.73	761.73	768.63	762.32	767.39	767.49	767.63	1.00
8B	748.64	746.81	745.81	752.30	746.22	751.03	751.12	751.26	1.04
9A	758.14	756.31	755.31	761.64	755.73	760.36	760.47	760.60	1.04
9B	757.19	755.36	754.36	759.44	754.79	758.23	758.30	758.43	1.01
10	796.30	794.47	793.47	798.96	793.74	797.65	797.76	797.91	1.05
Wet Swale 12B	NA	NA	NA	702.20	701.08	702.03	702.07	702.15	0.05

5.4 In reviewing other solar installations and based on our experience, the ratio between the panels and the space between arrays should be approximately 50/50 to facilitate adequate maintenance and provide for sunlight for the vegetation to grow beneath the panels. The plans show that the solar arrays are separated by aisles having a width as narrow as 5 feet, which is too narrow to allow maintenance and promote a healthy vegetative community. Moreover, it will cause the vegetation in the aisles and beneath the panels to be shaded, thus affecting the long-term sustainability and quality of the vegetation.

Response: Shade tolerant seed mixes have been specified for restoration of the array portion of the site to account for the potential increase in shade due to the row spacing. The stabilization seed mix installed after clearing and grubbing but before the array installation will be the Quick Erosion Control Cover Mix (ERNMX-104). Once the array is installed, the site will be restored by overseeding with either the Solar Farm Seed Mix (ERNMX-186) or the Conservation Shade Mix (ERNMX-129) both of which require as little as 2 hours of indirect sunlight per day to promote a healthy vegetated cover. Seeding will be performed by hydroseeding.

As a conservative approach and per CTDEEP direction, the stormwater design was revised to incorporate the Minnesota Stormwater Manual's Stormwater Management for Solar Projects and Determining Compliance with NPDES Construction Stormwater Permit to provide additional stormwater quality volume treatment.

In addition, the stormwater design is being revised for the reduced size limit of work area and revised to achieve a consistent interrow spacing.

6. The stormwater analysis presented by the applicant is fundamentally flawed as noted below:

6.1 The plans are based on outdated rainfall data. Both CTDEEP and the Connecticut Department of Transportation (CTDOT) require the use of rainfall precipitation data from National Oceanic and Atmospheric Administration (NOAA) Atlas 14, not TP-40 (See Appendix B in Chapter 6 of the 2000 DOT Drainage Manual, as undated on the DOT webpage, now referencing NOAA Atlas 14 Volume 10). The NOAA Atlas 14 rainfall data is 15% to 20% higher than the old data in TP-40 and would have a significant impact on the outcome of the modeling and the actual design.

Response: The approach of the stormwater design was to follow Table 7-2 of the CTDEEP 2004 Stormwater Quality Manual. Based on these comments and comments from DEEP, the stormwater analysis has been revised to include the updated rainfall data provided by the National Oceanic

and Atmospheric Administration Atlas 14 (NOAA Atlas 14) Precipitation Frequency Estimates. The revised stormwater calculations will be included with the revised design plans. The table below shows a comparison of the Table 7-2 rainfall data (for Litchfield County) vs. the NOAA Atlas 14 rainfall data for the site (Candlewood Mountain) for the 24-hour storm event.

24 Hour Design Rainfall Event	CTDEEP Table 7-2 Rainfall Amount for Litchfield County	NOAA Atlas 14 Rainfall Amount for Station ID 06-6966
2-year	3.2	3.42
10-year	4.7	5.42
25-year	5.5	6.68
100-year	7.0	8.61

The NOAA Atlas 14 rainfall data was used to recalculate the peak discharge from the site under pre and post construction conditions. A summary table with the peak flow rate result from each surface sand filter is provided below which demonstrates that 5 of the surface sand filters will require additional capacity to accommodate the increase in flow for the 100-year storm event and the surface sand filters for Point of Analysis 6 would require additional capacity for the 10-, 25-, and 100-year storm events. The NOAA Atlas 14 rainfall data will be used in the stormwater analysis to be completed for the reduced limit of work area.

Watershed	24-hour Storm Event	Existing Condition Peak Outflow (cfs)	Proposed Condition Peak Outflow (cfs)	**Difference in Peak Flow (cfs)**
DA-1	10	14.73	0.00	**-14.73**
	25	20.88	0.05	**-20.83**
	100	30.69	3.22	**-27.47**
DA-2	10	32.83	28.50	**-4.33**
	25	45.78	43.81	**-1.97**
	100	66.21	64.02	**-2.19**
DA-3	10	11.06	6.68	**-4.38**
	25	15.92	15.10	**-0.82**
	100	23.79	26.36	2.57
DA-4	10	13.59	10.44	**-3.15**
	25	19.57	18.94	**-0.63**
	100	29.16	30.39	1.23
DA-5	10	7.43	4.79	**-2.64**
	25	10.68	10.42	**-0.26**
	100	15.95	17.25	1.30
DA-6	10	9.26	9.63	0.37
	25	13.23	14.57	1.34
	100	19.61	21.98	2.37
DA-7	10	16.83	13.20	**-3.63**
	25	23.50	21.24	**-2.26**
	100	34.06	32.63	**-1.43**
DA-8	10	22.60	15.44	**-7.16**
	25	31.56	22.61	**-8.95**
	100	45.72	33.82	**-11.90**
DA-9	10	13.52	11.98	**-1.54**
	25	19.16	18.58	**-0.58**
	100	28.17	27.89	**-0.28**
DA-10	10	7.33	4.91	**-2.42**
	25	10.31	7.89	**-2.42**
	100	15.05	12.05	**-3.00**
DA-11	10	2.12	2.12	**0.00**
	25	2.91	2.91	**0.00**
	100	4.13	4.13	**0.00**
DA-12	10	1.80	1.72	**-0.08**
	25	2.36	2.22	**-0.14**
	100	3.23	3.31	0.08

24-hour average rainfall data referenced from NOAA Atlas 14, Volume 10, Version 2 ROCKY RIVER DAM for Station ID: 06-6966 New Milford, Connecticut.

10-year = 5.43 inches
25-year = 6.69 inches
100-year = 8.62 inches

6.2 The HydroCAD model output provided in the Stormwater Pollution Control Plan indicates the use of infiltration in the design of the proposed sand filters. However, it does not appear that In-situ soil testing has been performed to determine if surface sand filters are an acceptable stormwater practice for the site.

Response: Soil test pitting is proposed to be completed in the Spring of 2019 to evaluate the soil characterization at each BMP location. The test pits will be completed at each surface sand filter location to evaluate soil type, depth to groundwater and presence of ledge. Following the test pit activities, the stormwater analysis will be updated to include the information collected at each test

pit, following Table II-P3-I from the 2004 Connecticut Stormwater Quality Manual (below). If unfavorable soil types for infiltration, high groundwater or ledge are present at the proposed BMP locations, the BMPs will be relocated to a more favorable location.

Group	Soil Texture	Minimum Infiltration Rate (in/hr)
A	sand, loamy sand, or sandy loam	0.3-0.45
B	silt loam or loam	0.15-0.3
C	sandy clay loam	0.05-0.15
D	lab loam, silty loam, sandy clay, silty clay, or clay	0-0.05

6.3 The *CTDEEP Stormwater Quality Manual* provides guidelines for stormwater filtering practices that have not been followed in the proposed design. The manual states that filtering practices are designed as offline systems to treat the water quality volume and bypass larger flows. Also, the manual recommends the Water Quality Volume should be diverted into a pretreatment sediment forebay or settling chamber to reduce the amount of sediment that reaches the filter. (See Filtering Practices in Chapter 11 of the 2004 DEEP Water Quality Manual, page 11-P4-I) The proposed design directs all of the runoff to the surface sand filter with no pretreatment. The manual contains a list of the limitations of stormwater filters that pertain to the proposed design: 1) Pretreatment is required to prevent filter media from dogging; 2) Frequent maintenance is required; 3) Surface sand filters are not feasible in areas of high groundwater; 4) Surface sand filters should not be used in areas of heavy sediment loads; 5) Surface sand filters provide little or no stormwater quantity control; and 6) Surface and perimeter filters may be susceptible to freezing. The design of the proposed stormwater management needs to be designed with greater attention to site conditions.

Response: The majority of the drainage areas are proposed to have water quality swales collect and pretreat the stormwater prior to discharge at the surface sand filters. For surface discharge of stormwater to the surface sand filter, there is an upgradient vegetated buffer to provide pretreatment and sediment filtration. As discussed in the Stormwater Management Plan, the Operation and Maintenance (O&M) Plan will provide more detail on the frequency and method of cleaning each filter as discussed in 6.3.2 below. Once the site is considered stabilized, it will not be considered an area of high pollutant load, therefore, the sedimentation rate is anticipated to be very low as discussed further in 6.3.4 below.

1. *The site is proposed to have water quality swales and vegetated buffers which collect and treat the stormwater flow to the surface sand filters. This is allowable per the 2004 Connecticut Stormwater Quality Manual page 3-5, however, the stormwater analysis will be revised to include pretreatment measures at each surface sand filter in accordance with the 2004 Connecticut Stormwater Quality Manual Chapter 11 Primary Treatment Practice 4 (Filtering Practice) which will include:*
    a. *Primary pretreatment within a sediment chamber or stilling basin (to be included in the revised stormwater analysis);*
    b. *Secondary pretreatment through water quality swales*
    c. *Tertiary pretreatment through vegetated filter strips.*

Note that the stormwater design is in the process of being revised based on a reduced limit of work area. Additional clarification on this response will be provided once the re-design is complete.

2. *The site will have a standing O&M Plan that will address the frequency and required maintenance for each design feature as discussed in Section 8 of the Stormwater Management Plan dated January 3, 2019 submitted as part of the Development and Management Plan dated January 14, 2019. This O&M Plan will address inspection, maintenance and access to each stormwater BMP along with the responsibilities of each person in charge. The O&M Plan will*

be updated to include BMP specific maintenance measures. The specific inspection and maintenance requirements for the surface sand filter are provided below:

a. *Each surface sand filter will be inspected in accordance with the Connecticut General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. The inspection will generally be conducted after every major storm (rainfall that generates a discharge from each surface sand filter and/or a storm event that generates 0.5 inches of rainfall or greater) during the first 6 months after construction. Based on the results of the inspections, the surface sand filters will be inspected every 6 months thereafter. The inspections will include:*
    i. *Checking the filter surface for standing water or other evidence of clogging such as discolored or accumulated sediments;*
    ii. *Checking the pretreatment stilling basin, water quality swales and vegetated filter strips contributing to the surface sand filter for sediment accumulation, trash, and debris;*
    iii. *Checking inlets, outlets, and overflow spillway for blockage, structural integrity and evidence of erosion.*
b. *Sedimentation should be removed from the sedimentation chamber or pretreatment collection systems when it accumulates to a depth of more than 12 inches or 10 percent of the pretreatment volume. All outlet devices should be cleaned when drawdown times exceed 36 hours.*
c. *Sediment should be removed from the filter bed when the accumulation exceeds 1 inch or when there is evidence that the infiltration capacity of the filter bed has been significantly reduced (i.e., observed water level above the filter exceeds the design level or drawdown time exceeds 36 to 48 hours).*
d. *The top layer (approximately 6 to 12 inches) of the filter bed should be removed and replaced annually or more frequently if necessary. The material should be removed with rakes rather than heavy equipment to avoid compaction of the filter bed. Heavy equipment may be used if the system is designed in a configuration where the heavy equipment can access the filter material from outside the BMP.*

3. *Per the 2004 Connecticut Stormwater Manual page 11-P4-4, 'At least 3 feet of separation is recommended between the bottom of the filter and the seasonally high groundwater table ...". As discussed in Response 6.2, soil test pitting is proposed to be completed prior to construction to assess the seasonally high groundwater elevation, presence of ledge and soil type at each proposed surface sand filter location. The groundwater elevation relative to the bottom of the surface sand filter media will dictate if groundwater recharge, while not required at all locations, can be accounted for in the stormwater analysis. The groundwater recharge volume required is approximately 3,000 ft^3 for the site which is based on the increase in impervious area proposed (see documentation in Appendix B-3). This recharge volume is accounted for in 17 of the stormwater BMPs, therefore not all BMPs have to infiltrate stormwater to meet the groundwater recharge requirements. In addition, the stormwater design is in the process of being revised based on a reduced limit of work area. Additional clarification on this response will be provided once the re-design is complete.*

4. *The surface sand filters are proposed to be installed after the solar array construction is complete and the vegetation is restored. The site is considered restored when 80% of the vegetated cover is established, therefore, all potential erosion and sedimentation sources will have been stabilized and the sedimentation rate from the site is expected to be minimal. Also, once stabilization is achieved, the roadway will be very infrequently traveled, and there is no fueling or storage of oils proposed at the site. The site will, therefore, not be considered an area of high pollutant load.*

5. *The surface sand filters were designed to meet the post-development water quality volume and water quantity rate for the site through the use of the constructed earthen berms of the surface sand filter proposed to retain and treat the stormwater runoff. The surface sand filters were designed to accommodate the 25 and 100 year storm events through controlling the discharge with the spillway design elevations. The berm and spillway design elevations work together to control the peak stormwater runoff to ensure the pre-construction stormwater rates of runoff are met once construction is complete. Note that the stormwater design is in the process of being revised based on a reduced limit of work area. Additional clarification on this response will be provided once the re-design is complete.*

6. *Per the 2004 Connecticut Stormwater Manual Figure 11-P4-1, the surface sand filters have been designed with an underdrain collection system to allow the sand filters to drain completely and not pond water for durations exceeding 24 hours. During periods of thaw the surface sand filters will, therefore, drain appropriately so that there is no standing water which may freeze during periods of low temperature conditions. The surface sand filters will be inspected and maintained in accordance with the O&M Plan for the project as discussed in Response 6.3 above to address any underdrain maintenance or repairs that may be required due to clogging and/or damage. Note that the stormwater design is in the process of being revised based on a reduced limit of work area. Additional clarification on this response will be provided once the re-design is complete.*

6.4 It is appropriate to assume a meadow coverage condition for the proposed conditions HydroCAD model only if continuous vegetation is permanently established and maintained under the solar panels. However, it is expected that the new vegetation will struggle to grow under the panels due to the density, size, and short height of the panels in relation to the ground. The only possible portion of the site where the arrays are proposed that could have a continuous meadow coverage would be the open space in between the panel rows that are illustrated to be as narrow as 5 feet. The hydrologic computations need to be revised to assume a poorer ground coverage under the proposed solar panels. This is likely to result in the need for stormwater detention that is not part of the plans as now presented.

Response: Shade tolerant seed mixes have been specified for restoration of the array portion of the site to account for the potential increase in shade due to the row spacing. The stabilization seed mix installed (by hydroseeding) after clearing and grubbing but before the array installation will be the Quick Erosion Control Cover Mix (ERNMX-104). Once the array is installed, the site will be restored by overseeding with either the Solar Farm Seed Mix (ERNMX-186) or the Conservation Shade Mix (ERNMX-129) both of which require as little as 2 hours of indirect sunlight per day to promote a healthy vegetated cover.

Soil test pits are proposed to be conducted in the Spring of 2019. The stormwater analysis will be revised based on the soil conditions including the presence of groundwater and/or ledge. Stormwater detention will be evaluated as part of the redesign.

6.5 The post development peak discharge rates for Points of Analysis 5 and 6 show an increase from the predevelopment conditions. A technical explanation as to why these increases will not cause negative impacts downstream has not been provided.

Response: The overall stormwater discharge from the site decreases (Table B4-1), however, one of the goals for post-construction stormwater design is to ensure the rate of runoff to each off-site property is equal to or less than the pre-construction flow rate. This analysis shows that the hydrology of the site is not drastically different from pre-construction conditions and one area of the site is not contributing a larger stormwater runoff rate when compared to others. Points of Analysis 5 and 6 met the pre-construction rate of runoff for all storm events except for the 100-year storm. The stormwater design will be revised based on the reduced limit of work area. This analysis will

demonstrate the rate of runoff for all Points of Analysis at the site are less than, or equal to, the pre-construction conditions.

6.6 At present, much of the runoff from the western portion of the site that drains to abutting properties to the west does so in an even, shallow, concentrated flow. The introduction of the spillway outlets will result in runoff being consolidated and concentrated in a few distinct locations. This will fundamentally change the nature of the discharge from the subject parcels and could result in long-term risk of erosion and damage to downgradient parcels. This condition also exists on the eastern side of the parcel where runoff is concentrated and not spread out in a manner more consistent with existing conditions.

Response: The basis of the stormwater design related to attenuation was to design so the post-construction rates of runoff are equal to, or less than existing conditions at each point of analysis (see Table in response to comment 6.1). The spillway from the surface sand filter is proposed to discharge over an energy dissipator (Detail A1, Sheet 23) which also includes a table (included below) specifying the design for each location. This design references Chapter 10 of the 2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control and redistributes the stormwater discharge from the surface sand filter over a larger area to mimic existing conditions. The energy dissipators vary in length from 10 to 20 feet based on the contributing flow rate. Also, the stormwater design, including the energy dissipators, will be revised based on the reduced limit of work area and further clarification will be provided related to this comment.

ENERGY DISSIPATOR TABLE			
SURFACE SAND FILTER	LENGTH (FT)	WIDTH (FT)	DEPTH (FT)
1A	20.00	6.00	0.60
1B	10.00	6.00	0.50
2A	20.00	6.00	0.60
2B	10.00	6.00	0.50
2C	20.00	6.00	0.60
3A	10.00	6.00	0.50
3B	10.00	6.00	0.50
4A	10.00	6.00	0.50
4B	10.00	6.00	0.50
5A	10.00	6.00	0.50
5B	10.00	6.00	0.50
6A	10.00	6.00	0.50
6B	10.00	6.00	0.50
6C	10.00	6.00	0.50
7A	10.00	6.00	0.50
7B	10.00	6.00	0.50
No Surface Sand Filter for Subcatchment 7B			
7C	10.00	6.00	0.50
8A	10.00	6.00	0.50
8B	10.00	6.00	0.50
8C	10.00	6.00	0.50
9A	10.00	6.00	0.50
9B	10.00	6.00	0.50
10	10.00	6.00	0.50
11	10.00	6.00	0.50
Dimensions per CTDEEP Guidelines for Soil Erosion and Sediment Control Manual Chapter 5-10 - Energy Dissipators - Figure LS-1 - Minimum Dimensions for Level Spreaders			

6.7 Design computations for the drainage swales and culverts have not been provided to demonstrate that they are adequately sized to convey the contributing stormwater runoff.

Response: Due to the size of the HydroCAD file, only the summary tables were included in the Stormwater Pollution Control Plan per DEEP's request. The full HydroCAD model output is attached that reflects the December 19, 2018 submittal. Note that the stormwater design is in the process of being revised based on a reduced limit of work area. Additional clarification on this response will be provided once the re-design is complete.

6.8 There are no supporting calculations demonstrating the velocity of runoff that is expected at the outlets of the basins.

Response: The full HydroCAD model output is attached which includes supporting documentation for the velocity of stormwater runoff expected at the site. Discharge flows from the sand filters were compared to the length of proposed energy dissipators to estimate a discharge velocity for each Point of Analysis for the 25- and 100-year storm events (see table below). Velocities were compared to allowable discharge velocities by soil texture type outlined in Section 5 Table OP-1 of the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. The erosion control matting on the downslope side of each basin was specified based on the expected discharge velocity. Note that the stormwater design is in the process of being revised based on a reduced limit of work area. The current design shows exceedance of allowable discharge velocities at sand filters 2B, 8B and 9B. Additional clarification on this response will be provided, including revised energy dissipator sizing, once the re-design is complete.

Drainage Area	Existing Conditions				Proposed Conditions						
	Storm Event	Flow (cfs)	Area[1] (sq ft)	Velocity (fps)	Sand Filter ID	Storm Event	BMP Outflow (cfs)	Area[2] (sq ft)	Actual Discharge Velocity (fps)	Soil Type at Discharge Point[3]	Allowable Discharge Velocity[4] (fps)
DA-1	25-year	15.06	235	0.06	1A	25-year	0	6.7	0.0	HSG C Fine Sandy	3.5
	100-year	22.43		0.10		100-year	0	6.7	0.0		
					1B	25-year	0	3.3	0.0	HSG C Fine Sandy	3.5
						100-year	0.45	3.3	0.1		
DA-2	25-year	33.54	167.5	0.20	2A	25-year	8.95	6.7	1.3	HSG D Rock Outcrop	6.0
	100-year	49.02		0.29		100-year	12.69	6.7	1.9		
					2B	25-year	12.3	3.3	3.7	HSG C Fine Sandy	3.5
						100-year	19.8	3.3	5.9		
					2C	25-year	8.77	6.7	1.3	HSG C Fine Sandy	3.5
						100-year	14.75	6.7	2.2		
DA-3	25-year	11.32	155	0.07	3A	25-year	9.41	3.3	2.8	HSG C Fine Sandy	3.5
	100-year	17.17		0.11		100-year	9.41	3.3	2.8		
					3B	25-year	2.98	3.3	0.9	HSG C Fine Sandy	3.5
						100-year	7.79	3.3	2.3		
DA-4	25-year	13.92	215	0.06	4A	25-year	5.13	3.3	1.5	HSG C Fine Sandy	3.5
	100-year	21.08		0.10		100-year	10.07	3.3	3.0		
					4B	25-year	6.96	3.3	2.1	HSG C Fine Sandy	3.5
						100-year	11.4	3.3	3.4		
DA-5	25-year	7.61	250	0.03	5A	25-year	4.34	3.3	1.3	HSG C Fine Sandy	3.5
	100-year	11.51		0.05		100-year	7.3	3.3	2.2		
					5B	25-year	2.01	3.3	0.6	HSG C Fine Sandy	3.5
						100-year	4.81	3.3	1.4		
DA-6	25-year	9.47	140	0.07	6A	25-year	2.45	3.3	0.7	HSG C Fine Sandy	3.5
	100-year	14.24		0.10		100-year	3.92	3.3	1.2		
					6B	25-year	3.69	3.3	1.1	HSG C Fine Sandy	3.5
						100-year	5.98	3.3	1.8		
					6C	25-year	5.12	3.3	1.5	HSG C Fine Sandy	3.5
						100-year	7.72	3.3	2.3		
DA-7	25-year	17.19	52.5	0.33	7A	25-year	5.1	3.3	1.5	HSG C Fine Sandy	3.5
	100-year	25.18		0.48		100-year	7.68	3.3	2.3		
					7C	25-year	0.15	3.3	0.0	HSG D Rock Outcrop	6.0
						100-year	2.85	3.3	0.9		
DA-8	25-year	23.09	115	0.20	8A	25-year	7.42	3.3	2.2	HSG C Fine Sandy	3.5
	100-year	33.81		0.29		100-year	11.38	3.3	3.4		
					8B	25-year	8.58	3.3	2.6	HSG C Fine Sandy	3.5
						100-year	13.14	3.3	3.9		
DA-9	25-year	13.82	125	0.11	9A	25-year	4.69	3.3	1.4	HSG C Fine Sandy	3.5
	100-year	20.58		0.16		100-year	8.23	3.3	2.5		
					9B	25-year	7.9	3.3	2.4	HSG C Fine Sandy	3.5
						100-year	11.86	3.3	3.6		
DA-10	25-year	7.49	160	0.05	10	25-year	5.08	3.3	1.5	HSG C Fine Sandy	3.5
	100-year	2.50		0.02		100-year	8.57	3.3	2.6		

Notes:

1. Area of discharge for existing condtions was assumed to be a half foot of the total downstream length of the drainage area.

2. Area of discharge for proposed conditions is the cross-sectional area of level spreader as shown in Detail S-1 on C-303 (sheet 23 of 26) Issued For Construction dated December 19, 2018.

3. Soil types based on NRCS Soil Maps.

4. Allowable velocities taken from Figure OP-1 Allowable Velocities for Various Soils Section 5-10 of the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. Red velocities denote exceedance of allowable velocities for the existing soil type.

6.9 The use of sheet flow in the time of concentration calculations where solar panels are proposed is not a reasonable expectation given the concentrated nature of the runoff from the panels themselves. The runoff generated from the drip line of the panels will travel downgradient in a manner more consistent with shallow concentrated flow.

Response: In our experience, sheet flow has been the industry standard for modeling this runoff, however, the stormwater analysis will be revised to model shallow concentrated flow from the panels. A gravel strip will be incorporated into the solar design within areas where the existing topography is greater than or equal to 10% as demonstrated in Figure 1 attached. A more detailed O&M Plan will be developed that addresses potential erosion from the drip line which, in our experience, has not been an issue for sites with established vegetation. The O&M Plan will include a detailed discussion of inspections, turf mowing frequency, and additional required maintenance and contingencies so that erosion is easily identified and corrected in a timely manner.

6.10 The grading of the driveway from Candlewood Mountain includes riprap swales along both sides of the road, with runoff directed to sand filter 7C. The uphill swale appears to simply discharge across the driveway to the sand filter. The uphill swale in particular is likely to convey significant flows that will cause erosion across the driveway in an unprotected manner. Also, there does not appear to be any supporting calculations on the design of the roadside or other swales on site.

Response: The uphill swale along the access road is not designed to discharge across the roadway. Since this swale will collect stormwater from undeveloped portions of land from above, it is simply a collection swale which discharges to a culvert farther down the proposed access road. The flat section of the swale shown opposite the sand filter 7C is a result of the grading of the access road to accommodate the sand filter (see the Grading and Drainage Plan - 2, Sheet 10). A minimum slope of 0.8% is, however, maintained within the swale to promote positive drainage. The plans will be revised to clarify this approach. See Response 6.7 above for calculations.

6.11 The roadway swales ultimately discharge into two 18-inch culverts beneath the driveway that will channelize the flow and result in point discharges that currently do not occur on site. Also, the 18-inch culvert along the road is shown within the town right-of-way, requiring approval from the New Milford Public Works Department Calculations for the 18-inch culverts have not been provided.

Response: The location of the culverts will be revised to be installed within the project's property lines. Any impacts to Candlewood Mountain Road or the existing drainage system will be coordinated with the Town of New Milford and their Department of Public Works for approval. The culvert design information is included in the attached HydroCAD report.

6.12 The riprap spillway depth is not specified for the sand filter details. Assuming that the outflow from the spillway is calculated to begin at the crest and not the bottom of the riprap, the basins will begin to drain at the interface between the earth embankment and the bottom of the riprap, significantly reducing the effective storage within the basins.

Response: Details A2 and C3 on Sheet 23 of the Issued for Construction plan set dated December 19, 2018 will be revised to address this comment. The surface sand filter design was modeled with a soil berm retaining the stormwater. This stormwater would be retained within the surface sand filter by the berm, percolate through the filter media and eventually either be discharged through the underdrain or infiltrated back into the ground (soil test pits are proposed to confirm this design as discussed above). The berm was designed to retain the rainfall runoff from the 25 year storm event and the spillway was designed to discharge during the 100-year storm event. Details A2 and C3 will be revised to accurately depict the design of the stormwater model since, as the review notes, outflow will begin at that crest.

6.13 The berms of the sand filters are shown at a 2:1 slope. Recommended slopes on constructed berms generally require an average slope of 2.5 between the inside and outside slopes of the berm.

Response: The design is being re-evaluated and the berm slope will be modified in the re-design.

6.14 Sand filter 7C does not include a berm as shown in the calculations and merely drains from elevation 726 to 724.

Response: Surface sand filter 7C has a top of berm design height of 726.25 ft as shown on the design table on Sheet 23 of the Issued for Construction plan set dated December 19, 2018 and also included as Table B3-2 (below) of the Stormwater Pollution Control Plan. The sand filter 100 year hydraulic grade line is 725.24 ft providing 1.01 ft of freeboard with the proposed berm. The Grading and Drainage Plan - 2 (Sheet 10) will be revised for clarity. Note that the stormwater design is in the process of being revised based on a reduced limit of work area. Additional clarification on this response will be provided once the re-design is complete.

Surface Sand Filter	Top of Filter Elevation (Ft)	Filter Invert Elevation (Ft)	Underdrain Invert Elevation (Ft)	Spillway Crest Elevation (Ft)	Top of Berm Elevation (Ft)	100 Year HGL Elevation (Ft)	100 Year Freeboard Height (Ft)
1A	810	808.17	807.17	811.50	812.5	811.18	1.32
1B	809.54	807.71	806.71	810.29	811.37	810.36	1.01
2A	795.50	793.67	792.67	796.80	798.45	797.36	1.09
2B	776.76	774.93	773.93	778.75	780.58	779.57	1.01
2C	770.81	768.98	767.98	773.15	774.90	773.82	1.08
3A	727.00	725.17	724.17	728.60	730.49	729.39	1.10
3B	734.25	732.42	731.42	736.92	738.62	737.62	1.00
4A	723.71	721.88	720.88	726.37	728.20	727.20	1.00
4B	730.99	729.16	728.16	733.00	734.90	733.90	1.00
5A	796.06	794.23	793.23	797.91	799.35	798.34	1.01
5B	802.00	800.17	799.17	803.83	805.25	804.16	1.09
6A	806.62	804.79	803.79	807.68	809.12	808.12	1.00
6B	803.56	801.73	800.73	803.64	806.06	804.31	1.75
6C	769.67	767.84	766.84	770.87	772.67	771.54	1.13
7A	791.76	789.93	788.93	792.80	794.30	793.24	1.06
7C	722.87	721.04	720.04	725.00	726.25	725.24	1.01
8A	764.56	762.73	761.73	767.07	768.63	767.63	1.00
8B	748.64	746.81	745.81	750.64	752.30	751.26	1.04
9A	758.14	756.31	755.31	760.14	761.64	760.60	1.04
9B	757.19	755.36	754.36	758.85	759.44	758.43	1.01
10	796.30	794.47	793.47	797.46	798.96	797.91	1.05

6.15 The plans call for a narrow sand filter strip within the bottom of some sand filter basins. The soil media should be placed within the entire bottom of the sand filters.

Response: The filter media is proposed to be installed to ensure the entire bottom of the sand filter is operational as shown on Details C2 and C3, Sheet 23 of the Issued for Construction plan set. Note that the stormwater design is in the process of being revised based on a reduced limit of work area. Additional clarification on this response will be provided once the re-design is complete.

6.16 Water quality basins 2A, 2B, 4A, and 4B are proposed on existing grades approaching 25%, resulting in significant grading along the property line. These basins need to be relocated upgradient to flatter existing slopes that are more suitable for construction of stormwater control features.

Response: The stormwater design is in the process of being revised based on a reduced limit of work area. The revisions will include relocation of these BMPs. Additional clarification on this response will be provided once the re-design is complete.

6.17 Portions of the site grading, drainage, and site improvements are shown directly against property lines and the town right-of-way. The submitted documents indicate that the property lines are based on tax maps and not based on surveyed property lines. Assessor's mapping is approximate and should not be used as a basis for design of construction plans particularly when activity is proposed right up to a property line. An A-2 boundary survey should have been completed prior to submission of the Stormwater General Permit application.

Response: A A-2 boundary survey has been completed by Robert Green Associates, LLC. The boundary lines are very similar to those shown on the design plans submitted with the permit applications. The stormwater design is in the process of being revised based on a reduced limit of work area, however, the design is not expected to change based on the recently conducted boundary survey.

6.18 The grading plan for basin 1A requires the installation of a constructed berm that will impound stormwater up to a couple feet in depth beneath portions of the solar panels. Based on the limited area of sand filter that is shown only in a small portion of the area impounded by the basin nearest to the eastern berm, extended periods of standing water may exist beneath panels after a rainstorm.

Response: Based on the results of the soil test pits (confirming soil type, depth to groundwater and presence of ledge) and the re-design of the solar array, the grading plan for surface sand filter 1A will be revised to be located outside the solar array footprint.

7. The phasing plan described in the Stormwater Pollution Control Plan (Appendix D) is simplistic and does not adequately address the potential erosion and sedimentation that should be anticipated from the disturbance of 83.4 acres (see Section 2.1in the Stormwater Pollution Control Plan) on a steep hillside. Note the following:

7.1 The plans do not clearly show how no more than 5 acres at a time will be disturbed before stabilization and prior to the installation of the panels.

Response: The phasing plan depicted on Sheet 13 of the Issued for Construction plan set shows the areas to be constructed as Phase IIA, IIB, etc. The text on Sheet 13 also describes how the phasing will occur to ensure no more than 5 acres will be disturbed at one time in accordance with the DEEP Stormwater Erosion Control Guidance. This phasing plan will be revised based on the revised solar PV array design. Note that temporary stabilization will be implemented as part of the phasing plan.

7.2 The plan states that the solar array will be installed after vegetative cover is "initiated," but there is no metric for determining when the soil has been stabilized.

Response: Phase III.1.9 on Sheet 13 of the Issued for Construction plan set states that a stabilized vegetative cover exists when 80% of the area is covered with growth mature enough to control soil erosion and survive severe weather conditions as dictated on page 5-3-3 of the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. The phasing plan will be updated based on the revised design which will include temporary (e.g., hydroseed with tackifier) and permanent stabilization measures.

7.3 The plans call for the clear-cutting of trees as one continuous operation, leaving the stumps in place. Such forest operations can cause soil erosion, but the applicant is not proposing to install erosion control measures until after the clearing operation is finished.

Response: The phasing plan depicted on Sheet 13 of the Issued for Construction plan set describes Phase I – Install Perimeter Erosion Control and Site Clearing which includes establishing perimeter controls prior to tree clearing. This will also include survey staking of each angle point of the phase subareas.

Phase I – Install Perimeter Erosion Control and Site Clearing

This phase will consist of the installation of all perimeter erosion control measures and clearing above ground large growth trees from the site. The contractor shall be responsible for survey layout and flagging of the limit of clearing prior to the start of activities associated with this phase.

1. *Survey and stake limits of disturbance for Phase I activities, as shown on the drawings.*
2. *Hold a pre-construction meeting*
3. *Install perimeter sediment controls as shown on the drawings*
4. *Install the construction entrance along Candlewood Mountain Road and prepare the temporary staging area.*
5. *Cut above ground vegetation, within the limits of disturbance. Chip cleared vegetation and save for future use as mulch or wood chip mulch berms around the perimeter of the site. Avoid disturbing vegetation outside the limits of clearing.*

The phasing plan will be updated to reflect the revised design.

7.4 The second phase of the operation calls for the grubbing (removal of stumps) to be done in 5-acre increments, but the locations of those "plots" have not been clearly defined; this will be left to field survey at the time of construction. Furthermore, the method of grubbing has not been presented. If not performed with appropriate equipment, there is likely to be a loss of topsoil and an increase in the potential for erosion on the steep slopes. It appears from the plans that it is the applicant's intention to perform the operations in a continuum rather that in discrete and separate disturbance plots that will allow for separation of the disturbed areas and for vegetation to become established.

Response: This will be addressed in the redesigned submittal. Hydroseeding with tackifier will be performed as grubbing and grading are completed with a goal of no more than 5 acres of unstabilized soil at one time. The redesign will also address additional erosion control measured on longer, steep exposed side slopes.

7.5 Temporary seeding is proposed in areas that will be disturbed by subsequent construction activity with permanent seeding occurring at a later time. It is not clear how, when, and where permanent seeding will occur.

Response: Phase III.1.8 on Sheet 13 of the Issued for Construction plan set describes that the site shall be temporarily seeded within 72 hours of final grading in a given area and that permanent seeding may be initiated in lieu of temporary seeding in areas that are not anticipated to be disturbed during later phases.

Phase III.4.3 on Sheet 13 of the Issued for Construction plan set also describes that the site shall be cleaned, restored, and reseeded as required after the solar and electrical equipment is installed.

The seed mix installed after clearing and grubbing but before the array installation will be the Quick Erosion Control Cover Mix (ERNMX-104). This seed mix will be combined with a fertilizer and polymer (First Stop or similar) which will harden and hold the soil and seed in place. This seed/fertilizer/polymer mix will then be covered with a continuous application of hay mulch (approximately 4 tons/acre). The final step in stabilization will be to reapply a polymer to the hay mulch to act as a 'glue' to hold the seed, mulch and soil in place. This stabilization sequence has been completed successfully at other large solar PV installations in Connecticut.

Once the array is installed, the site will be restored by overseeding with either the Solar Farm Seed Mix (ERNMX-186) or the Conservation Shade Mix (ERNMX-129) both of which are shade tolerant seed mixes. This site restoration will be completed in the same stabilization sequence noted above on an as-needed basis following site inspections. Additional information on phasing and seed specifications will be provided with the redesign submittal.

Other temporary erosion and sedimentation controls such as erosion control blanket, flocculants, and/or soil stabilizers (Envirotac II, Posi-Shell, or similar) will be proposed on steep and/or long slopes to ensure the site remains stable at all times throughout construction.

The final construction schedule will depend on the final date of approval.

7.6 It is not appropriate to assume that once germination occurs that the land is stabilized and the 5-acre phase is ready for the installation of foundations. It is our experience on sites where grass needs to be established prior to having activity on the site that it takes a substantial period of time before sod becomes adequately established. Permanent seed, which should include drought- and shade-tolerant species, takes 3 weeks or so to germinate and takes months, not weeks, to develop a root system that can withstand traffic. The actual time for turf establishment depends on the time of year that seed is placed, temperature, and moisture. The turf needs to be mowed to promote density. In this instance, we would expect a full growing season for the grass to become fully established.

Response: The phasing plan on Sheet 13 of the Issued for Construction plan set provides response actions necessary for reseeding if re-disturbance of the vegetation takes place.

The temporary seed mix installed after clearing and grubbing but before the array installation will be the Quick Erosion Control Cover Mix (ERNMX-104). In sensitive areas, a clover mix may also be used in conjunction with the Quick Erosion Control Cover Mix such as a Crownvetch Seeding Mix (ERNMX-109) and also the Native Steep Slope Mix w/Annual Ryegrass (ERNMX-181) for areas with steep slopes and poor soils. The seed mix will be combined with a fertilizer and polymer (First Stop or similar) which will harden and hold the soil and seed in place. This seed/fertilizer/polymer mix will then be covered with a continuous application of hay mulch (approximately 4 tons/acre). The final step in stabilization will be to reapply a polymer to the hay mulch to act as a 'glue' to hold the seed, mulch and soil in place. This stabilization sequence has been completed successfully at other large solar PV installations in Connecticut.

Once the array is installed, the site will be restored by overseeding with either the Solar Farm Seed Mix (ERNMX-186) or the Conservation Shade Mix (ERNMX-129) both of which are shade tolerant seed mixes. This site restoration will be completed in the same stabilization sequence noted above on an as needed basis following site inspections.

Temporary erosion and sedimentation controls such as erosion control blanket, flocculants, and/or soil stabilizers (Envirotac II, Posi-Shell, or approved equal) will be proposed on steep and/or long slopes to ensure the site remains stable at all times throughout construction.

The phasing plan and construction schedule will be revised based on the revised solar PV layout.

7.7 As described in the plan, the foundations for the solar arrays will be ground screws that, in our experience, are installed using a skid-steer vehicle (a Bobcat). The movement of such equipment will tear-apart the grass, likely resulting in erosion unless the grass is fully established.

Response: The site will be monitored for erosion and precautionary measures will be taken to ensure the construction activities have minimal impact on the vegetation. Temporary equipment access roads and/or low-ground pressure (typically 7 psi or less) equipment will be used to minimize disturbance of the restored areas. The temporary roads may be built with gravel or an erosion control product such as TMax High-Performance Turf Reinforcement Mat or approved equal. Vehicles operating on the vegetated surface shall only operate on the existing or temporary gravel access roads, except for low ground pressure construction equipment. Low ground pressure construction equipment operating off the designated access drives shall limit turning on the stabilized vegetation as much as possible. If the full-time on-site inspector and/or engineer determines that the use of equipment is creating the potential for damage to the vegetation, the usage of such equipment shall immediately cease and a revised operation plan shall be

implemented. All operators of the equipment shall be clearly instructed by the on-site inspector and/or engineer regarding the requirements of this project prior to mobilization. Any ruts or rills identified during inspections will be filled and appropriately stabilized promptly.

7.8 The phasing plan attempts to break up the stabilization and construction of the site based on contributing watersheds. This does not seem to be a practical means to construct the improvements, particularly given the potential of subwatersheds being changed or modified as a result of ongoing construction activities. Sediment control measures including sediment traps and diversion swales should be installed and in place in phases immediately adjacent to phases that are under active construction to ensure that downgradient protections are in place should the topography not precisely match what is shown on the plans or if construction activities divert runoff across the estimated watershed limits.

Response: The sediment traps and diversion swales will be installed taking into account the cleared area of land to ensure the topography is accurately depicted and will contribute to the drainage area of each sediment trap without uncontrolled runoff. Per discussions with CT DEEP, on-site representation will monitor for potential changes to subwatersheds. Sheet 13 of the Issued for Construction plan set specifies each sub-area and how these areas are to be developed in series. All perimeter and sediment controls will be installed prior to earth disturbance. The phasing plan will be updated based on the reduced limit of work area.

7.9 The temporary sediment traps (TST) are shown on the plans in the identical manner that sand filter/Water quality basins are shown. The supporting calculations shown on the details sheets include bottom elevations of the TSTs that are up to 3 feet below the bottom of the sand filter, well below the finished grade. The sediment and erosion control plans should reflect the grading of the TSTs shown in the supporting calculations.

Response: Grading detail for each of the temporary sediment traps will be shown on the Erosion and Sedimentation Control Plans (Sheets 17 – 20). The revised design will incorporate the results of the soil test pits.

7.10 Long slopes several hundred feet in length (as much as 700 feet) with average slopes exceeding 10% of disturbed, exposed soil are proposed prior to any sediment control measures. Unprotected long and steep slopes represent a significantly high risk of erosion. Long, steep slopes are required to be broken up by benching, terracing, or diversions to avoid erosion problems (pages 3 through 7 of the 2002 Connecticut Guidelines for Erosion and Sediment Control). Detailed site grading plans should be provided to show these site modifications.

Response: The proposed topography mimics the existing topography unless shown otherwise. There will be on-site personnel monitoring erosion and sediment control to ensure there are adequate protections installed for the site (including perimeter controls and sediment traps). Temporary erosion and sedimentation controls such as erosion control blanket, hay mulch and/or soil stabilizers (Envirotac II, Posi-Shell, or approved equal) will be proposed on steep and/or long slopes to ensure the site remains stable at all times throughout construction. Note that the stormwater design is in the process of being revised based on a reduced limit of work area. Additional clarification on this response will be provided once the re-design is complete, which will include mid-slope E&S controls on longer disturbed slopes. Any ruts or rills identified during inspections will be filled and appropriately stabilized promptly.

7.11 The sediment barrier shown on the perimeter of the site will channelize and direct runoff to the low points along the slope, concentrating runoff from sediment trap outlets. The sediment barrier/silt fence locations need to be placed in a manner that will not result in channelizing the discharge from the basins.

Response: It is acknowledged that the sediment barrier will be installed along consistent contour intervals to avoid channeling or re-directing stormwater flow. For example, a continuous segment of sediment barrier will be installed along contour 280' and a new length of sediment barrier will be

installed along contour 282' when the 280' contour deviates from the surveyed limit of work. The erosion and sedimentation control plans and details of the Issued for Construction plan set will be revised to address this comment, which will include E-Fence or similar product at the outfall of the sediment traps.

7.12 Soil stockpile locations are not shown.

Response: The material staging and stockpiles areas will be shown on the revised plan set. The stockpiles will be surrounded with perimeter controls according the General Construction Details note 5 on Sheet 21 and Detail B4 on Sheet 22 of the Issued for Construction plan set. The stockpiles that are intended to be left dormant for 30 days or longer will also be seeded and stabilized within 15 days.

7.13 Much of the clearing and installation of overhead wires occurs on a slope that exceeds 25% in grade. While the activities proposed in that area are intended to be minor in nature, disturbed soil on a slope this steep will require temporary diversions and at least temporary erosion control matting to allow for vegetation to become established.

Response: Figure 1 attached has been prepared demonstrating the areas of the site where existing topography is equal to or exceeds a 10% and a 25% slope. This figure represents the areas where temporary erosion and sedimentation controls such as erosion control blanket, hydroseed with tackifier, flocculants, and/or soil stabilizers (Envirotac II, Posi-Shell, or approved equal) will be proposed on steep and/or long slopes to ensure the site remains stable at all times throughout construction. A polymer will also be used during the seeding process as discussed above, which will hold the soils, seed and erosion control in place. A detail for slope erosion control matting is provided as Detail A3 on Sheet 22 of the Issued for Construction plan set which states that the biodegradable erosion control matting shall be installed on slopes greater than or equal to 10%.

7.14 There are no long-term stabilization measures shown along the drip line of the panels. Particularly in areas exceeding 10% in grade, there exists the potential for erosion of the soil, which over time will result in increased sediment loads to downgradient areas.

Response: A gravel strip will be incorporated into the solar design within areas where the existing topography is greater than or equal to 10% as demonstrated in Figure 1 attached.

8. The document prepared by CTDEEP entitled Stormwater Management at Solar Farm Construction Projects includes clarification on procedure, design goals, and construction monitoring requirements that reiterate the goals of design documents referenced in Comment 3 above. The submitted documents fail to adhere to the recommendations of CTDEEP guidelines as noted below:

8.1 The CTDEEP document requires that the methods of "an approvable SWPCP will include methods for avoiding compaction of soils, disconnection of and reduction of runoff...avoidance of concentration of stormwater, and other measures necessary to maintain or improve pre-construction hydrology conditions." For the reasons stated in Comment 6, it is our opinion that the post construction hydrology will degrade and exacerbate preconstruction hydrology.

Response: The majority of the equipment proposed for construction at the site will be track equipment which is typically lower ground pressure than rubber tire equipment which will reduce the compaction of existing soils on-site. The contractor will be directed to use access roads for as much site traffic as possible. In addition, while the majority of the site was modeled with poorly infiltrating soils with a high runoff potential (hydrologic soil group (HSG) C and D), the stormwater model will be adjusted for the remainder of the site to be modeled with more conservative hydrologic soil types (such as HSG D) to accommodate potentially compacted soil within the solar PV array area. This will also address the post-construction stormwater design should soils be significantly

compacted (as commented on by DEEP). The response to comment 6.8, above, addresses discharge velocities.

8.2 The CTDEEP document requires that the design professional be well versed in erosion and sedimentation guidelines, particularly Chapter 4 for large construction sites. For the reasons we stated in Comment 7, the D&M Plan does not meet these criteria.

Response: Candlewood Solar will address the comments noted above and incorporate these updates into a revised Stormwater Pollution Control Plan. We will work with the Siting Council and DEEP to ensure all concerns are met which includes:

- *Completion of soil test pits at each stormwater BMP location;*
- *Revising the stormwater design to ensure the analysis represents the existing hydrologic conditions at the site;*
- *Updated temporary and permanent soil stabilization measures;*
- *Revised perimeter E&S control measures; and*
- *Revising the solar PV layout including consistent interrow spacing; revising the E&S control approach to include minimization of grading, use of compost filter socks to diffuse channelized flows, and promptly restoring ruts and rills; and adjusting the stormwater analysis accordingly.*

8.3 The document states an approvable SWPCP shall include, but not be limited to, the location of all erosion, sediment and stormwater control measures including detailed design cut sheets with supporting calculations, construction means and methods, project phasing (i.e. site planning pre-construction, construction, and post- construction stabilization, etc.), construction sequencing and a construction schedule." For the reasons stated in Comment 7, the phasing plan lacks sufficient detail, and the timing of construction activities will result in large tracts of disturbed land with a lack of mature vegetation needed to limit the potential for transport of sediment during construction.

Response: We have summarized the locations within the SWPCP where the requested information can be located. The HydroCAD model output for pre and post construction conditions is also attached, which contains these supporting calculations. We will revise the application to ensure the information is clear and complete:

- *The location of all erosion, sediment and stormwater control measures such as sediment barriers, silt fence, construction exits, outlet protection, and notes/references for temporary and permanent seed mixes are included on:*
  - *Sheets 14 – 20 for temporary erosion and sedimentation controls*
  - *Sheets 9 – 12 for permanent erosion and sedimentation controls*
- *Detailed design cut sheets with supporting calculations:*
  - *All construction details including specific design details are provided on Sheets 22 – 23*
  - *All detailed calculations are provided in Appendix B of the SWPCP*
- *Construction means and methods, project phasing and construction sequencing:*
  - *All project phasing is provided on the Erosion and Sedimentation Controls – Overview and Phasing Plan (Sheet 13)*
- *Construction Schedule: provided in response 7.5 above and will be included in the revised plan set.*

9. In summary, the plans submitted to the CSC as part of the D&M Plan are inadequate and lack the necessary information to assure that there will not be erosion and sedimentation caused by the construction activities that could impact the waters of the stated as noted below:

9.1 Contrary to representations made by the petitioner, the hydrology of the site will be permanently altered and will impact adjoining properties.

Response: While the conditions of the site will be altered for the construction of the solar PV array, the stormwater design was developed based on the Connecticut requirements. Existing drainage patterns will be maintained, and the intent of the design is to model the post construction stormwater hydrology to generate an equal or less rate of stormwater runoff from the site, compared to existing conditions, with better stormwater quality as demonstrated in Appendix B of the SWPCP. The discharge of each surface sand filter will flow over an energy dissipator designed to reduce the discharge velocity and redistribute the stormwater to promote sheet flow. This response will be further clarified upon submittal of the re-design.

9.2 The Candlewood Solar project should be distinguished from other projects that come before the CSC. Whereas transmission line projects, for example, disturb land in a linear manner where impacts from erosion and sedimentation are manageable and stabilization can occur quickly, the Candlewood Solar project will require the clearing, grubbing, and regrading of a large block of land on steep slopes where it will be difficult to manage impacts.

Response: The construction plan will be revised based on the re-design and the project schedule.

9.3 The establishment of grass cover adequate to prevent long-term erosion will require regrading of the site prior to seeding. The time that it will take to achieve well-established grass should be measured in months, not weeks. By developing the site in "rolling" 5-acre increments without establishing thick turf before installing the solar arrays is highly likely to cause both short-term and long-term erosion and sedimentation.

Response: The construction phasing plan will be revised as discussed above based on the redesign. The overall strategy is to provide as much time for seed germination as possible prior to installing the racking and panels. To augment this, additional stabilization measures will be provided as outlined in the response to comment 7.6

9.4 The density of the solar arrays will severely restrict sunlight to the grass beneath the panels and make it very difficult to maintain the grass that will allow for its long-term health.

Response: Shade tolerant seed mixes have been specified for restoration of the array portion of the site to account for the potential increase in shade due to the row spacing. The stabilization seed mix installed after clearing and grubbing but before the array installation will be the Quick Erosion Control Cover Mix (ERNMX-104). Once the array is installed, the site will be restored by overseeding with either the Solar Farm Seed Mix (ERNMX-186) or the Conservation Shade Mix (ERNMX-129) both of which require as little as 2 hours of indirect sunlight to promote a healthy vegetated cover. Also, the array design will be re-designed with a consistent interrow spacing. The revised inter-row spacing will be shown on the redesign submittal.

9.5 If the CSC requires the petitioner to modify and resubmit the plan and supporting documents in accordance with the foregoing comments, it is quite possible that the configuration of the solar arrays will need to be modified and further reduced in number.

Response: The solar PV array layout is being redesigned to address these comments. The design will be finalized to obtain DEEP approval.