

October 14, 2016

Ref: 57818.00

Ms. Julie Follensbee
District Wetlands Ecologist
Vermont DEC – Watershed Management Division
1 National Life Drive, Main 2
Montpelier, VT 05620-3522



Re: ER Thurston Farm Solar East, LLC
Orange, Vermont
Application for a Vermont Wetland Individual Permit and Wetland Determination Petition

Dear Julie:

On behalf of ER Thurston Farm Solar East, LLC ("ERTE" or "Applicant"), VHB is submitting the enclosed application form and supporting materials to the Vermont Department of Environmental Conservation ("DEC") requesting a Vermont Individual Wetland Permit per the Vermont Wetland Rules pursuant to 10 V.S.A. § 6025(d)(5), to authorize activities related to the construction and operation of a planned project to install a 500kV solar installation in an agricultural field located in Orange, Vermont (the "Project"). A petition for a wetland determination for the on-site wetlands proposed for impact is also included.

The Applicant is seeking authorization for Permanent Buffer Impacts (2,316 square feet) for activities required as part of the proposed construction of a new solar electric generation facility and associated infrastructure. A check payable to the State of Vermont for the permit fee of \$819.00 is also enclosed.

Thank you for your assistance providing input as this Project was developed, and your timely review of the enclosed materials. Please do not hesitate to contact me if you have any questions, comments, or require further information regarding the enclosed Vermont Wetland Permit Application and Petition for Wetland Determination request and supporting materials.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Carla A. Fenner', is written over a light blue circular stamp.

Carla A. Fenner
Environmental Scientist

CAF/jkw

Enclosures (on CD)
Vermont Wetland Permit Application and supporting documents
Check
cc: Derek Moretz, Encore Redevelopment (electronic only)

\\vhb\proj\Vermont\57818.00 Encore 500 kW Solar\docs\Permits\Thurston (Orange) East\VWP\Encore Thurston East VWP_Cover Letter_Final.doc

Engineers | Scientists | Planners | Designers

40 IDX Drive, Building 100
Suite 200
South Burlington, Vermont 05403
P 802.497.6100
F 802.495.5130

Vermont Wetlands Program Permit Application Database Form

Under Sections 8 and 9
of the Vermont Wetland Rules



Application Submittal Instructions
<ul style="list-style-type: none"> ■ If submitting via US post, include a check in the correct fee amount made payable to the “State of Vermont,” and a CD for applications that contain large files (1 MB or greater). <div style="margin-left: 20px;"> Mail to: Vermont Wetlands Program Watershed Management Division One National Life Drive, Main 2 Montpelier, VT 05620-3522 </div> ■ Applications can also be submitted via email to the following address: anr.wsmddwetlands@vermont.gov <ul style="list-style-type: none"> ■ If submitting via email, please mail a check in the correct fee amount, made payable to the “State of Vermont,” and a copy of the Vermont Wetlands Program Application Database Form (this page) to the address provided above. <i>It is not necessary to mail in a copy of the complete application.</i>

Applicant Name: Encore Renewable Energy	Application Preparer Name: Carla A. Fenner (VHB)
Town where project is located: Orange	County: Orange
Span#:	Vermont Wetlands Project (VWP)# if Known:
Project Location Description: e911 310 VT Route 110, Orange, VT <i>911 street address or direction from nearest intersection</i>	
Brief Project Summary: Install and operate a 500 kW solar electric generation facility in an existing agricultural field.	
Application Type: <input checked="" type="checkbox"/> Individual Permit (multiple wetlands) <input type="checkbox"/> After the Fact Permit <input type="checkbox"/> Wetland Determination <input type="checkbox"/> Individual Permit (single wetland) <input type="checkbox"/> General Permit Coverage Authorization <input type="checkbox"/> Permit Amendment: VWP Project # _____	
Existing Land Use Type(s): <i>(Check all that apply)</i> <input type="checkbox"/> Residential (single family) <input type="checkbox"/> Residential (subdivision) <input type="checkbox"/> Undeveloped <input checked="" type="checkbox"/> Agriculture <input type="checkbox"/> Transportation <input type="checkbox"/> Forestry <input type="checkbox"/> Parks/Rec/Trail <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial/Commercial	
Proposed Land Use Type(s): <i>(Check all that apply)</i> <input type="checkbox"/> Residential (single family) <input type="checkbox"/> Residential (subdivision) <input type="checkbox"/> Undeveloped <input type="checkbox"/> Agriculture <input type="checkbox"/> Transportation <input type="checkbox"/> Forestry <input type="checkbox"/> Parks/Rec/Trail <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> Industrial/Commercial	
Proposed Impact Type(s): <i>(Check all that apply)</i> <input type="checkbox"/> Buildings <input type="checkbox"/> Utilities <input type="checkbox"/> Parking <input type="checkbox"/> Septic/Well <input type="checkbox"/> Stormwater <input type="checkbox"/> Driveway <input type="checkbox"/> Park/Path <input type="checkbox"/> Agriculture <input type="checkbox"/> Pond <input type="checkbox"/> Lawn <input type="checkbox"/> Dry Hydrant <input type="checkbox"/> Beaver Dam Alteration <input type="checkbox"/> Silviculture <input type="checkbox"/> Road <input type="checkbox"/> Aesthetics <input type="checkbox"/> No Impact <input type="checkbox"/> Other: _____	
Wetland and Buffer Impact Type: <i>(Check all that apply)</i> <input type="checkbox"/> Dredge <input type="checkbox"/> Drain <input type="checkbox"/> Cut Vegetation <input type="checkbox"/> Stormwater <input type="checkbox"/> Trench/Fill <input checked="" type="checkbox"/> Other: Driveway and fence	
Wetland Delineation Date(s): October 14, 2015. October 14, 2015	

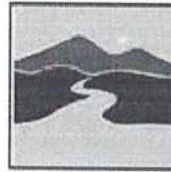
Wetland Improvements	Buffer Zone Improvements	Reason for Improvements
Restoration: s.f.	Restoration: s.f.	<input type="checkbox"/> Correction of Violation <input type="checkbox"/> To offset permit impacts <input type="checkbox"/> Voluntary
Creation: s.f.	Creation: s.f.	
Enhancement: s.f.	Enhancement: s.f.	
Conservation: s.f.	Conservation: s.f.	

Wetland Impact Fee Calculations: Round to the nearest square foot. Fees will auto-calculate.		
Total Wetland Impact (minus linear clear, including ATF)	square feet (s.f.)	Wetland Impact Fee: (\$0.75/sf) \$ 0.00
Total Wetland Clearing (qualified linear projects only)	square feet (s.f.)	Wetland Clearing Fee: (\$0.25/sf) \$ 0.00
After The Fact Wetland Impact (to correct a violation)	square feet (s.f.)	After the Fact Wetland Fee: (0.75/sf) \$ 0.00 <i>(Required for after the fact permit applications)</i>
Total Buffer Zone Impacts and Calculations: Round to the nearest square foot		
Total Buffer Zone Impact	2316 square feet (s.f.)	Buffer Impact Fee: (\$0.25/sf) \$ 579.00

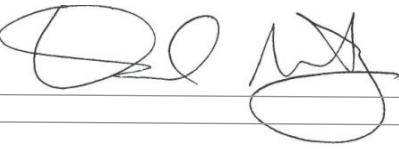
Additional Fees	
Agricultural Crop Conversion <i>Check here:</i> <input type="checkbox"/> <i>(Flat fee of \$200.00)</i>	\$ 0.00
Minimum Application Fee: (\$50.00) <i>Required when total impact fee is less than \$50.00</i>	\$ 0.00
Administrative Fee:	\$ 240.00


Make Checks Payable to: State of Vermont	Total Check Amount:	\$ 819.00
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**Vermont Individual Wetland
Permit Application and
Determination Petition**
Under Sections 8 and 9
of the Vermont Wetland Rules



VERMONT DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
**WATERSHED
MANAGEMENT DIVISION**
WETLANDS PROGRAM

Applicant Information: <i>If the applicant is someone other than the landowner, the landowner information must be included below</i>			
Applicant Name: ER Thurston Farm Solar East, LLC (c/o Derek Moretz, Encore Renewable Energy)			
Address: 110 Main Street, Suite 2E		City/Town: Burlington	State VT
Phone Number: (802) 861-3023		Email Address: derek@encorerenewableenergy.com	
Zip: 05401			
Applicant Certification: By signing this application you are certifying that all of the information contained within is true, accurate, and complete to the best of your knowledge. Original signature is required.			
Applicant Signature: 		Date: 10/11/16	

Landowner Information: <i>Landowner must sign the application. If landowner is different from the applicant this section must be filled out</i>			
<input type="checkbox"/> Check this box if landowner is the same as the applicant			
Landowner Name: Kathryn Thurston-Leith dba Thurston Family Farm			
Address: 562 Bailey Rd		City/Town: Williamstown	State: VT
Phone Number: 802-240-0910		Email Address: kleith569@aol.com	
Zip: 05107			
Landowner Easement: <i>Attach copies of any easements, agreements, or other documents conveying permission, and agreement with the landowner stating who will be responsible for meeting the terms and conditions of the permit. List the attachment for this information in this section. Describe the nature of the agreement or easement in the space provided below:</i>			
Landowner Certification: By signing this application you are certifying that all the information contained within is true, accurate, and complete to the best of your knowledge. Original signature is required.			
Landowner Signature: 		Date: 10-10-16	

Application Preparer Information: <i>Consultant, engineer, or other representative that is responsible for filling out the application, if other than the applicant or landowner.</i>			
Application Preparer Name: Carla A. Fenner		Organization/Company: VHB	
Address: 40 IDX Drive, Building 100 Suite 200		City/Town: South Burlington	State: VT
Phone Number: (802) 497-6144		Email Address: cfenner@vhb.com	
Zip: 05403			
Application Preparer Certification: By signing this application you are certifying that all of the information contained within is true, accurate, and complete to the best of your knowledge. Original signature is required.			
Application Preparer Signature: 		Date: October 14, 2016	

Handwritten signatures are also accepted

1. Location of wetland and project: <i>Location description should include the road the wetland is located on, the compass direction of the wetland in relation to the road, 911 street address if available, and any other distinguishing features.</i>	<input type="checkbox"/>
Project site is located in a mowed agricultural field, fallow field and an existing VELCO right-of-way ("ROW") to the east of Vermont Route 110 ("VT-110") at 911 address 310 VT-110 in the town of Orange, Vermont.	

2. Site visit date(s) and attendees: <i>A site visit is required before the application can be called complete</i>		<input type="checkbox"/>
2.1 Date of Visit(s) with State District Wetland Ecologist	2.2. List of people present for site visit(s) including Ecologist, landowner, and representatives.	
October 22, 2015 and May 25, 2016	October 22, 2015 Site Visit: Chelsea Martin (VHB), Julie Follensbee (VTDEC) May 25, 2016 Site visit: Carla Fenner (VHB), Julie Follensbee (VTDEC), Karin McNeill (ANR), Brett Ladago (VTFWD), Derek Moretz (Encore)	

3. Wetland Classification: <i>For multiple wetlands fill out the multiple wetlands table for sections 1 and 3 through 1</i>	<input type="checkbox"/>
3.1. The wetland is a Class II wetland because : <Choose One>	
3.2. Section 4.6 Presumption <i>If the wetland meets the Section 4.6 Presumption, it does so primarily because:</i>	
<Choose One> <Choose One> <Choose One>	

4. Description of the Entire Wetland: <i>Answer the following questions regarding the entire wetland, which includes all wetland areas connected to the wetland proposed for impact. Answers may be estimates based on desktop review when the wetland extends past the investigation area (parcel boundary). Specific questions about the wetland in the project area will follow. For multiple wetlands , fill out the multiple wetlands table.</i>	
4.1. Size of Complex in Acres: <i>The size of the complex can be obtained from the Wetland Inventory Map for mapped wetlands, or best estimation based on review of aerial photography or site visit. This is not the size of the of the delineated wetland on the subject property unless the entirety of the wetland is represented in the delineation.</i>	<input type="checkbox"/>
4.2. Vegetation Cover Types Present: <i>List all wetland types in the wetland or wetland complex and their percent cover.</i> <i>For example:</i> 50 acres of softwood forested swamp; or 30% scrub swamp, 70% emergent wetland	<input type="checkbox"/>
4.3. Landscape Position: <i>Where is the wetland located on the landscape?</i> <i>For example:</i> Bottom of a basin, edge of a stream, shore of a lake, etc.	<input type="checkbox"/>
4.4. Hydrology: <i>Describe the main source of water for the entire wetland. List any river, stream, lakes, or ponds</i>	<input type="checkbox"/>
4.4.1. Direction of Flow: <i>For example:</i> Stream flows from north to south through the wetland complex, or the wetland drains generally to the southwest.	<input type="checkbox"/>
4.4.2. Influence of Hydrology on the Entire Wetland: <i>For example:</i> The river provides floodwater to the wetland in the spring.	<input type="checkbox"/>
4.4.3. Relation of Entire Wetland to the Project Area: <i>The distance between the project area and any nearby surface waters</i>	<input type="checkbox"/>

<p>4.4.4. Entire Wetland Hydroperiod: <i>Discuss the frequency and duration of flooding, ponding, and/or soil saturation</i></p>	<input type="checkbox"/>
<p>4.5. Surrounding Landuse of the Entire Wetland: <i>For example: Rural residential and forested; Agricultural and undeveloped</i></p>	<input type="checkbox"/>
<p>4.6. Relation of the Entire Wetland to Other Nearby Wetlands: <i>Provide any information on wetlands or wetland complexes that are close enough to contribute to the overall function of the wetland in question.</i></p>	<input type="checkbox"/>
<p>4.7. Pre-project Cumulative Impacts to the Entire Wetland: <i>Identify any cumulative ongoing impacts outside of the proposed project that may influence the wetland. Examples include but are not limited to: Wetland encroachments on and off the subject property, land use management in or surrounding the wetland, or development that influences hydrology or water quality. List any past Vermont Wetland Permits or CUD's related to this property.</i></p>	<input type="checkbox"/>
<p>5. Description of Subject Wetland and Buffer: <i>Subject wetland is defined as the area of wetland in the project vicinity, but not limited to the portion of the wetland to be directly impacted by the project. For the purposes of this application, the subject wetland should encompass any portion of the wetland that could either be directly or indirectly impacted by the project, as defined by chemical, physical, or biological characteristics. This may include the entire wetland area, or wetland area off property. For multiple wetlands, fill out the multiple wetlands table.</i></p>	
<p>5.1. Context of Subject Wetland: <i>Describe where the subject wetland is in the context of the entire wetland described in section 4 above. For example: Upslope, narrow eastern "finger", 400 ft. from open water portion.</i></p>	<input type="checkbox"/>
<p>5.2. Subject Wetland Land Use: <i>For example: Mowed lawn, old field, naturally vegetated. Describe any previous and ongoing disturbance in the subject wetland.</i></p>	<input type="checkbox"/>
<p>5.3. Subject Wetland Vegetation: <i>List dominant wetland vegetation cover type and associated dominant plant species.</i></p>	<input type="checkbox"/>
<p>5.4. Subject Wetland Soils: <i>Use the USDA NRCS information where possible and use the ACOE Delineation Manual soil description</i></p>	<input type="checkbox"/>
<p>5.5. Subject Wetland Hydrology: <i>Use the description from the ACOE Delineation Manual</i></p>	<input type="checkbox"/>

5.6. Buffer Zone: <i>Describe the buffer zone of the subject wetland (50 foot envelope of land adjacent to wetland boundary).</i>	
5.6.1. Buffer Land Use: <i>For example: Mowed shoulder, forested, old field, paved road, and residential lawns, etc.</i> <i>Describe any previous and ongoing disturbance in the buffer zone.</i>	<input type="checkbox"/>
5.6.2. Buffer Vegetation: <i>List the vegetation cover type and dominant plant species.</i>	<input type="checkbox"/>
5.6.3. Buffer Soils: <i>Use USDA NRCS information where possible, and the ACOE Delineation Manual soil description.</i>	<input type="checkbox"/>

6. Entire Wetland Function and Value Summary (as defined in the Vermont Wetland Rules Section 5): <i>Check which functions are present in the entire wetland</i>	<input type="checkbox"/>
<input type="checkbox"/> Flood/Storm Storage	<input type="checkbox"/> RTE Species
<input type="checkbox"/> Surface & Groundwater Protection	<input type="checkbox"/> Education & Research
<input type="checkbox"/> Fish Habitat	<input type="checkbox"/> Recreation/Economic
<input type="checkbox"/> Wildlife Habitat	<input type="checkbox"/> Open Space/Aesthetics
<input type="checkbox"/> Exemplary Natural Community	<input type="checkbox"/> Erosion Control

Functions and Values: *For each function and value:*

1. Evaluate the entire wetland and check all that apply. Use Wetland Inventory Maps for offsite areas
2. Evaluate how the wetland in the project area contributes to the function.
3. Explain how the project will not result in adverse impacts to the function.

Include any information on specific avoidance and minimization measures.

If more than one wetland complex is involved, provide a function and value checklist for each wetland complex. In addition fill out the Multiple Wetlands Table.

7. Water Storage for Flood Water and Storm Runoff	<input type="checkbox"/>
<p><input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function</p> <ul style="list-style-type: none"> <input type="checkbox"/> Constricted outlet or no outlet and an unconstructed inlet. <input type="checkbox"/> Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration. <input type="checkbox"/> If a stream is present, it's course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods. <input type="checkbox"/> Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water. <input type="checkbox"/> Hydrologic or hydraulic study indicates wetland attenuates flooding <p>If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.</p>	

Water Storage for Flood Water and Storm Runoff Continued...

Check this box if any of the following conditions apply that may indicate the wetland provides this function at a **lower** level.

- Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
- Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
- Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
- Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.

Check this box if any of the following conditions apply that may indicate the wetland provides this function at a **higher** level.

- History of downstream flood damage to public or private property.
- Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by loss or reduction of the water storage function.
 - Developed public or private property
 - Stream banks susceptible to scouring and erosion
 - Important habitat for aquatic life
- The wetland is large in size and naturally vegetated.
- Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
 - Developed public or private property.
 - Stream banks susceptible to scouring and erosion.
 - Important habitat for aquatic life.
- The wetland is large in size and naturally vegetated
- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
 - A large amount of impervious surface in urbanized areas.
 - Relatively impervious soils.
 - Steep slopes in the adjacent areas.

7.1 Subject Wetland Contribution to Water Storage:

Explain how the subject wetland contributes to the function listed above

7.2 Statement of No Undue Adverse Impact to Water Storage for Flood Water and Storm Runoff:

Explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance, minimization, and compensation measures relevant to this function.

8. Surface and Ground Water Protection:

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Constricted or no outlets.
 - Low water velocity through dense, persistent vegetation.
 - Hydroperiod permanently flooded or saturated.
 - Wetlands in depositional environments with persistent vegetation wider than 20 feet.
 - Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
 - Presence of seeps or springs.
 - Wetland contains a high amount of microtopography that helps slow and filter surface water.
 - Position in the landscape indicates the wetland is a headwaters area.
 - Wetland is adjacent to surface waters.
 - Wetland recharges a drinking water source.
 - Water sampling indicates removal of pollutants or nutrients.
 - Water sampling indicates retention of sediments or organic matter.
 - Fine mineral soils and alkalinity not low.
 - The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.

- Check this box if any of the following conditions apply that may indicate the wetland provides function at a **lower** level.
- Presence of dead forest or shrub areas in sufficient amounts to result in diminished nutrient uptake.
 - Presence of ditches or channels that confine water and restrict contact of water with vegetation.
 - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
 - Current use in the wetland results in disturbance that compromises this function.
- Check this box if any of the following conditions apply that may indicate the wetland provides function at a **higher** level.
- The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
 - The wetland provides flows to Class A surface water. (Check ANR Atlas)
 - The wetland contributes to the protection or improvement of water quality of any impaired waters.
 - The wetland is large in size and naturally vegetated.

8.1. Subject Wetland Contribution to Water Protection: <i>Explain how the subject wetland contributes to the function listed above.</i>	<input type="checkbox"/>
8.2. Statement of No Undue Adverse Impact to <u>Surface and Ground Water Protection</u>: <i>Explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance, minimization, or compensation measures relevant to this function.</i>	<input type="checkbox"/>
9. Fish Habitat:	<input type="checkbox"/>
<input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability. <input type="checkbox"/> Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers. <input type="checkbox"/> Documented or professionally judged spawning habitat for northern pike. <input type="checkbox"/> Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species. <input type="checkbox"/> The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water and food sources. 	
9.1. Subject Wetland Contribution to Fish Habitat: <i>Explain how the subject wetland contributes to the function listed above.</i>	<input type="checkbox"/>
9.2. Statement of No Undue Adverse Impact to <u>Fish Habitat</u>: <i>Explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance, minimization, or compensation measures relevant to this function.</i>	<input type="checkbox"/>

10. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
 - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
 - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
 - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
 - Supports winter habitat for white-tailed deer. Good habitats for this species include softwood swamps. Evidence of use includes browsing, bark stripping, worn trails, or pellet piles.
 - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
 - Has the habitat to support muskrat, otter, or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers, and streams.
 - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
 - Provides the following habitats that support the reproduction of uncommon Vermont amphibian species including:
 - Wood frog, Jefferson salamander, blue-spotted salamander, or spotted salamander. Breeding habitat for these species includes vernal pools and small ponds.
 - Northern dusky salamander and the spring salamander. Habitat for these species includes headwater seeps, springs, and streams.
 - The four-toed salamander, Fowler's toad, western or boreal chorus frog, or other amphibians, found in Vermont of similar significance.
 - Supports or has the habitat to support populations of Vermont amphibian species including, but not limited to, pickerel frog, northern leopard frog, mink frog, and others found in Vermont of similar significance. Good habitat for these types of species include large marsh systems with open water components.
 - Supports or has the habitat to support populations of uncommon Vermont reptile species including: wood turtle, northern map turtle, eastern musk turtle, spotted turtle, spiny softshell, eastern ribbonsnake, northern watersnake, and others found in Vermont of similar significance.
 - Supports or has the habitat to support significant populations of Vermont reptile species, including smooth greensnake, DeKay's brownsnake, or other more common wetland-associated species.
 - Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - Three or more wetland vegetation classes (greater than 1/2 acre) present including but not

Wildlife Habitat Continued...

limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog.

- The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp.
- Located adjacent to a lake, pond, river or stream.
- Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land.
- Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water.
- One of the following:
 - Hydrologically connected to other wetlands of different dominant classes or open water within 1 mile.
 - Hydrologically connected to other wetlands of same dominant class within 1/2 mile.
 - Within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected.

Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation.

Contains evidence that it is used by wetland dependent wildlife species

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a lower level.

The wetland is small in size for its type and does not represent fugitive habitat in developed areas (vernal pools and seeps are generally small in size, so this does not apply).

The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.

The current use in the wetland results in frequent cutting, mowing or other disturbance.

The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a higher level.

The wetland is large in size and high in quality.

The habitat has the potential to support several species based on the assessment above.

Wetland is associated with an important wildlife corridor.

The wetland has been identified as a locally important wildlife habitat by an ANR Wildlife Biologist.

10.1. Subject Wetland Contribution to Wildlife Habitat Functions:

Explain how the subject wetland contributes to the function listed above.

10.2. Statement of No Undue Adverse Impact to Wildlife Habitat:

Explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance, minimization, or compensation measures relevant to this function.

11. Exemplary Wetland Natural Community

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function

The wetland is also likely to be significant if any of the following conditions are met:

Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.

Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:

- Deep peat accumulation reflecting a long history of wetland formation;
- Forested wetlands displaying very old trees and other old growth characteristics;
- A wetland natural community that is at the edge of the normal range for that type;
- A wetland mosaic containing examples of several to many wetland community types; or
- A large wetland complex containing examples of several wetland community types.

List species or communities of concern:

11.1. Subject Wetland Proximity to Exemplary Natural Communities

11.2. Statement of No Undue Adverse Impact to Exemplary Wetland Natural Community:

Explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance, minimization, or compensation measures relevant to this function.

12. Rare, Threatened, and Endangered Species Habitat:

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

- There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
- There is credible documentation that threatened or endangered species have been present in past 10 years;
- There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
- There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

12.1. Subject Wetland Contribution to RTE Habitat:

Explain how the subject wetland contributes to the function listed above.

12.2 Statement of No Undue Adverse Impact to Rare, Threatened, or Endangered Species Habitat:

Explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance, minimization, or compensation measures relevant to this function.

13. Education and Research in Natural Sciences:

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Owned by or leased to a public entity dedicated to education or research.
 - History of use for education or research.
 - Has one or more characteristics making it valuable for education or research.

13.1. Subject Wetland Education and Research Potential:
Explain how the subject wetland contributes to the function listed above.

13.2 Statement of No Undue Adverse Impact to Education and Research in Natural Sciences:
Explain how the proposed project will not result in any undue, adverse impact to this value. Include any avoidance, minimization, or compensation measures relevant to this value.

14. Recreational Value and Economic Benefits:

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Used for, or contributes to, recreational activities.
 - Provides economic benefits.
 - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - Used for harvesting of wild foods.

Comments:

14.1. Subject Wetland Recreational and Economic Value:
Explain how the subject wetland contributes to the value listed above.

14.2. Statement of No Undue Adverse Impact to Recreational Value and Economic Benefits:
Explain how the proposed project will not result in any undue, adverse impact to this value. Include any avoidance, minimization, or compensation measures relevant to this value.

15. Open Space and Aesthetics:

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Can be readily observed by the public; and
 - Possesses special or unique aesthetic qualities; or
 - Has prominence as a distinct feature in the surrounding landscape;
- Has been identified as important open space in a municipal, regional or state plan.

Comments:

15.1. Subject Wetland Aesthetic Value:
Explain how the subject wetland contributes to the value listed above.

15.2. Statement of No Undue Adverse Impact to Open Space and Aesthetics:
Explain how the proposed project will not result in any undue, adverse impact to this value. Include any avoidance, minimization, or compensation measures relevant to this value.

16. Erosion Control Through Binding and Stabilizing

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Erosive forces such as wave or current energy are present and any of the following are present as well:
 - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
 - Good interspersion of persistent emergent vegetation and water along course of water flow.
 - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

What type of erosive forces are present?

- Lake fetch and waves
- High current velocities:
- Water level influenced by upstream impoundment

Erosion Control Through Binding and Stabilization Continued...

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a **lower** level.

The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a **higher** level.

The stream contains high sinuosity.

Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

16.1. Subject Wetland Contribution to Erosion Control:

Explain how the subject wetland contributes to the function listed above.

16.2. Statement of No Undue Adverse Impact to Erosion Control:

Explain how the proposed project will not result in any undue, adverse impact to this function. include any avoidance, minimization, or compensation measures relevant to this function.

17. Project Description:

17.1. Overall Project Purpose:

Description of the basic project and why it is needed. Partial projects with no clear purpose will not be accepted.

For example: *six-lot residential subdivision; expansion of an existing commercial building, building a single family residence.*

The Project would consist of the installation and operation of a 500 kW solar electric generation facility within an agricultural field. The solar array arrangement is proposed to be approximately 12 rows of modules, installed as ground-mounted fixed photovoltaic panels. Other Project components include an access drive, a perimeter fence, a new riser pole with 3 pole-mounted transformers, and an overhead interconnection line between the project and an existing 3-phase distribution line which extends along Vermont Route 110 (VT-110). The Project would be accessed from the west via VT-110 along the edge of the field and a proposed new access driveway. The Project area within the proposed perimeter fence would be annually mowed or brush-hogged to maintain vegetation in a low growth state during operation as needed to prevent shading. As the Project site is currently under agricultural management, no site clearing or change in vegetation cover for pre-construction would be necessary. There would be no tree clearing proposed for construction or operation of the array. Otherwise, existing shrubs and trees to the south of the Project and the hedgerow located along VT-110 to the west would remain intact and would provide visual screening for the Project. A supplemental landscaping planting, outside of any wetlands or buffers, would be installed along the northern edge of the array for additional visual screening for adjacent residences. Temporary construction staging and laydown space would occur in a mid-field, upland area to the south of the Project site outside of wetlands or buffers. The field areas outside the perimeter fencing would continue to be used for agriculture. The Project's interconnection would occur at VT-110. A new service pad, production meter and utility disconnect will be installed located southwest of the array would transfer power via overhead line which would consist of the installation of three new utility poles, including a riser pole with three pole-mounted transformers owned and operated by Green Mountain Power ("GMP"), extending west towards an existing Green Mountain Power ("GMP") 3-phase distribution line on the east side of VT-110. The new pole and overhead line construction would not require any additional tree clearing or site preparation. Interconnection infrastructure would be installed during construction of the rest of the Project, anticipated to start in late 2016 or early 2017 pending issuance of a Certificate of Public Good ("CPG") and a Vermont Individual wetland Permit ("VIWP").

17.2. Description of Project Component Impacting Wetland or Buffer:

Explain in general terms which portions of the project will impact wetlands or buffer zones.

For example: *Cross the wetland with a driveway to construct a residential subdivision, upgrade existing road through buffer to improve access, extend a trail system.*

The Project has been designed to avoid and minimize impacts to significant wetlands and other natural resources to the greatest extent practicable. However, in order to meet safety, production, and access requirements for the Project, unavoidable impacts to wetland buffers would occur in from two project components.
 • Impact to two areas of wetland buffer would result from the Project's access driveway, which would be installed during Project construction and remain in place for the lifespan of the Project, up to approximately 40 years. The access driveway would extend through the southern edge of the buffer of wetland 2015-2 and through the northern edge of the buffer of wetland 2015-4.
 • Buffer impact would result from the installation of the Project's perimeter fence. Vertically driven fence posts are proposed around the entire array, resulting in impacts to the western edge of the buffer of wetland 2015-5. Fence posts would be installed using low ground pressure, tracked equipment and/or would be installed during dry or frozen ground conditions, installed at approximately 20 foot intervals.
 There are no wetland impacts proposed by the Project. There are no temporary impacts to wetlands or buffers proposed by the Project.

17.3. Acreage of Parcel(s) or Easements(s): <i>Acreage of subject property.</i>	<input type="checkbox"/>
Approximately 26.8 acres according to digital tax maps.	
17.4. Acreage of Project Area: <i>Acreage of area involved in the project.</i>	<input type="checkbox"/>
Approximately 3.1 acres within perimeter fence according to Project site plans.	

18. Project Details: <i>Provide details regarding specific impacts to the wetland and buffer zone.</i> For multiple wetlands fill out the multiple wetland table.

18.1. Specific Impacts to Wetland and Buffer Zone Dimensions: <i>List portions of the project that will specifically impact the wetland or buffer zone and their dimensions. For example: driveway crossing with 16' wide fill; installation of buried sewer force main with 5' trench including fill footprint; addition of Stormwater outfall which directs flow to northern portion of wetland</i>	<input type="checkbox"/>
Project access drive, 16 feet wide, will impact wetland buffers; • Wetland 2015-2: 1,995 square feet of permanent buffer impact • Wetland 2015-4: 314 square feet of permanent buffer impact Project perimeter fence posts will be installed in wetland buffers; • Wetland 2015-5: 7 square feet of permanent buffer impact See Multiple Wetland Table for additional information regarding buffer impacts.	

18.2. Bridges and Culverts: <i>Culvert circumference, length, placement and shapes, or bridge details. List any stream alteration permits that are required or obtained where perennial streams or rivers are involved.</i>	<input type="checkbox"/>
Perennial streams are present on the property and are hydrologically connected with the subject wetland 2015-2 and 2015-5, however no Project impacts are proposed to streams. No Stream Alteration Permit or Flood Hazard Area permits are required by the Project.	

18.3. Construction Sequence: <i>Describe any details pertaining to the work planned in the wetland and buffer in terms of sequence or phasing that is relevant. Describe the construction limits of disturbance, how those will be marked, and check to ensure these are shown on the site plans as well.</i>	<input type="checkbox"/>
The Project is planned for construction following the granting of a CPG with a goal of construction in late 2016 or early 2017. Project impacts to the buffer would occur coincident with the Project construction. The first Project impacts to occur would be the buffer impacts from the access driveway. Buffer areas not proposed for impacts would be demarcated in the field with an uninterrupted band of high visibility flagging or fence prior to construction activities. The limits of disturbance ("LOD") are shown on the Project site plans.	

18.4. Stormwater Design** <i>List any stormwater permits obtained or applied for. Describe stormwater and/or erosion controls proposed. ** Erosion prevention is required in order to prevent sediment from entering the wetland.</i>	<input type="checkbox"/>
<small>The Project is eligible for coverage under the VT DEC Construction Stormwater National Pollutant Discharge Elimination System ("NPDES") General Permit 3-9020 ("GP 3-9020") due to risk mitigation factors to be undertaken. Although soil disturbance would be minor, construction would be conducted in accordance with the VT DEC Low Risk Site Handbook for Erosion Prevention and Sediment Control (2006, Amended 2008). As of the submittal of this permit, the Project's GP 3-9020 has not been submitted. Compliance with BMPs would prevent undue soil erosion from the areas of minor earth disturbance. Following construction of the Project, all areas of soil disturbance would be restored.</small> <small>The area of new impervious surface from the Project does not necessitate an operational stormwater permit.</small>	

18.5. Permanent Demarcation of Limit of Impacts** <i>Describe any boulders, fencing, signage, or other memorialization that provides permanent on-the-ground boundaries for the limits of disturbance for ongoing uses. **Permanent demarcations are required for projects with ongoing activities in or near wetlands or buffer zones such as houses, yards, woody clearing or parking areas, and needs to be depicted on the site plans.</i>	<input type="checkbox"/>
Prior to construction all wetland and buffer locations as well as the Project's LOD would be demarcated in the field with silt fencing and/or high visibility net-type fencing (i.e., snow fence). Silt and/or snow fence would remain installed through the duration of Project construction. Perimeter fence around the array would provide permanent demarcation of the Project array boundaries, and the edge of the road fill prism would demarcate the extent of disturbance for the access driveway. Landscaping plantings would provide further visual demarcation for the Project along the northern edge. No additional permanent demarcation is anticipated.	

19. Wetland and Buffer Zone Impacts:

For multiple wetlands provide narrative overview for each section below, and fill out the Multiple Wetland Tables

19.1. Wetland Impacts:

Summarize the square footage of impact in the appropriate category. Add After-the-Fact impacts here too. Round to the nearest square foot

Permanent Wetland Fill		s.f.
Temporary Wetland Impact		s.f.
Other Permanent Wetland Impact <i>(this number includes clearing of woody vegetation, dredging, and does not include fill)</i>		s.f.
Total Wetland Impact:	0	s.f.

Describe in detail the proposed impact to wetlands

For example: Fill for road crossing, temporary impacts for trench and fill related to utility installation.

General narrative required here even for projects with multiple wetlands and impacts

No wetland impacts are proposed.

19.2. Buffer Zone Impacts:

Summarize the square footage of impact in the appropriate category.

Temporary Buffer Impact		s.f.
Permanent Buffer Impact	2316	s.f.
Total Buffer Impact:	2316	s.f.

Describe in detail the proposed impact to buffer zones

For example: Addition of fill along roadway embankment extending into buffer zone.

General narrative required here even for projects with multiple wetlands and impacts.

Wetland 2015-2: Buffer impacts would result from the placement of fill in the form of gravel for an access drive for the solar array. Buffer impacts have been minimized to the greatest extent practicable, and the access drive has been designed to extend along a narrow area in between two wetland buffer zones. However in the area immediately adjacent to VT-110, the access drive must be wider to accommodate the turning radius for maintenance and emergency vehicles and as such would result in unavoidable buffer impacts of 1,995 square feet. Per comment from DEC (Foley) on May 25, 2015 in the field, a larger portion of unavoidable buffer impacts are being proposed to wetland 2015-2 as this wetland is recognized as being of lower overall function and value than the partially forested wetland complex that extends south beyond VHB's study area (portion of that wetland within VHB's study area identified as wetland 2015-4).

Wetland 2015-4: Buffer impacts would result from the placement of fill in the form of gravel for an access drive. Buffer impacts have been minimized to the greatest extent practicable, and the access drive has been designed to extend along a narrow area in between two wetland buffer zones (wetland 2015-2 and wetland 2015-4). However, the access drive cannot be narrowed to a dimension smaller than 16 feet for maintenance and emergency vehicle access and as such would result in unavoidable buffer impacts of 314 square feet.

Wetland 2015-5: Buffer impact would result from the construction of a perimeter fence around the solar array. Fence posts would be vertically driven into the ground and therefore would result in minimal soil disturbance. Installation would make use of low-ground pressure equipment or construction on dry/frozen ground conditions and as such there are no temporary impacts from soil disturbance proposed. Fence posts within the wetland buffer have been limited to 7 posts (post spacing of approximately 20 feet).

19.3. Cumulative Impacts:

List any potential cumulative or ongoing, direct and indirect impacts on the functions of the wetland.

For example: Increased noise from parking lot, vegetation management, inputs from stormwater pond outlet, reduction in flood storage volume from the addition of fill from the project.

No proposed additional cumulative and ongoing impacts to wetlands and buffers resulting from the Project other than described in Section 19.2 above.

Existing cumulative and ongoing impacts to wetlands and buffers on the Project parcel include vegetation maintenance from agriculture, trampling and compaction from pastured cows, manipulation of vegetation type and composition for agricultural (hay and pasture) production, nutrient input and increased sedimentation of adjacent surface waters from pastured livestock, toxins, nutrients, salts, and/or sediments in runoff from VT-110 and adjacent agricultural and residential development.

20. Mitigation Sequence:

Before you begin, please read all of Section 20 to respond most appropriately to specific questions. Questions specifically related to Section 9.5b of the Vermont Wetland Rules.

20.1. Avoidance of Wetland Impacts:

20.1.1. Can the activity be located on another site owned or controlled by the applicant, or reasonably available to satisfy the basic project purpose? If not, indicate why. Cite any alternative sites and explain why they were not chosen.

The Applicant conducted a preliminary screening of multiple sites within the GMP service area prior to selecting the Project site. Within the subject property, the Applicant investigated a much larger area than the Project requires in order to determine the proposed site with the least possible impacts to wetland and other resources.

Constructing the Project on the subject property and at the selected site was determined to result in the least impacts to wetlands and other natural resources.

20.1.2. Can the proposed activity be practicably located outside the wetland/buffer zone? If not, indicate why. Explain the alternatives you have explored for avoiding the wetland and buffer onsite, And why they are not feasible.

The Project design has been revised numerous times, as described in 20.2.2 and 20.2.3 below, in order to avoid impacts to significant wetlands, however cannot practicably be located outside the wetland buffer. Impacts to wetland buffers are unavoidable due to the size of the Project and distribution of wetlands on site, as well as numerous competing design constraints such as landform, slope and aspect, minimum set-backs from property boundaries, residences, and town roads, required minimum access road dimensions for emergency vehicle access, and the landowner's continued use of surrounding fields for the agriculture. Details of Project design alternatives and measures taken to avoid and minimize impacts are included below. The Project explored access driveway alternatives as well as multiple locations within the agricultural field for the array, however the other alternatives would have resulted in stream impacts and greater impacts to wetlands and buffers.

20.2. Avoidance to the Impact to Functions and Values:

20.2.1. If the proposed activity cannot be practicably located outside the wetland/buffer zone, have all practicable measures been taken to avoid adverse impacts on protected functions? Yes No

20.2.2. What design alternatives were examined to avoid impacts to wetland function? For example: Use of matting, relocation of footprint, etc.

The Applicant has undertaken multiple design revisions in order to avoid impacts to subject wetland and other natural resources to the extent practicable. Where it was determined the impacts would be unavoidable due to Project site constraints (which are primarily parcel size, orientation of the wetland complex bisecting the site from north to south, access constraints from adjacent landowners), the Project design was further revised and a DEC Wetlands Program site visit was initiated to identify any potential further avoidance measures. From this input, the final proposed design was developed to avoid impacts to the onsite wetlands where practicable and feasible to meet the Project purpose. A follow up site visit with DEC wetland program was conducted to review this proposed design.

In particular, the Project has avoided impacts to onsite wetlands:

- Preliminary evaluation of alternative agricultural fields and other sites within the landowner's property in a location that would result in the least amount of impact to wetlands, buffers, and other natural resources;
- Siting the array within upland areas outside of Class II wetlands and all wetland buffers;
- Avoidance all wetlands and the majority of buffers through revisions to design layout and configuration, including incorporating comments from DEC (Foley) made on May 25, 2016;
- Avoidance of Class II wetlands and buffers by siting the construction staging and laydown area and the riser pole in uplands;
- Avoidance of wetland and stream impacts and a larger area of buffer impacts that would result from using the existing agricultural access road. At expense to the Project, a new access driveway is proposed from VT-110 to the array;
- In addition to Project design revisions for the access road, the Project revised the solar array layout numerous times in order to avoid wetland and buffer impacts from all solar panels.
- Avoidance of the more intact and higher functioning (i.e., less disturbed) portions of wetland 2015-4 to the south the Project access drive;
- Avoidance of any forested wetland or buffer clearing

20.2.3. What steps have been taken to minimize the size and scope of the project to avoid impacts to wetland functions and values? Include information on project size reduction and relocation.

- Project size as proposed is necessary in order to meet the minimum solar electricity output needed;
- Limiting wetland buffer impacts to only the upland edge of the buffer, and also limiting buffer impacts to portions of the buffer with low function/value due to existing cumulative ongoing impacts from agriculture are otherwise. The proposed access drive alternative was selected over the original design (i.e. access from homestead) which involved substantially more buffer impacts;
- Array row spacing and solar module layout has been consolidated as much as possible to minimize the footprint of the Project and therefore avoid the need for any solar panel racking in wetlands or buffers;
- Project's access drive has been narrowed as much as possible while still meeting safety and access needs for operation and emergency access;
- Fence posts within the buffer are minimized only to what is needed for safety and security during Project operation, to be spaced approximately 20 feet apart;
- All staging areas will be located outside of wetlands or buffers;
- EPSC measures will be implemented according to the Low Risk Site Handbook and GP 3-9020;
- Conducting natural resources screenings and surveys early in the Project process in order to first identify and then avoid impacts to sensitive natural resources within the Project Study Area;
- Avoidance of all clearing in scrub-shrub and forested Class II wetlands and buffers;
- Locating interconnection poles outside of Class II wetlands or buffers;

20.2.4. Explain how the proposed project represents the least impact alternative design. Explain why other alternatives, which you described above, were not chosen.

The Project design as proposed represents the design alternative with the least amount of wetland buffer impact and proposes no wetland impacts. In response to discussions with DEC Wetland Ecologist Julie Follensbee during multiple site visits during the planning and VWP pre-application process, the Applicant has revised the Project design to avoid and minimize impacts to wetlands and buffers. The other alternative designs were not chosen because they would result in a greater impact to natural resources, including streams and wetlands.

20.3. Minimization and Restoration:

20.3.1. If avoidance of adverse effects on protected functions cannot be practically achieved, has the proposed activity been planned to minimize adverse impacts on the protected function? Yes No N/A

20.3.2. What measures will be used during construction and on an ongoing basis to protect the wetland and buffer zone? For example: Stormwater treatment, signs, fencing, etc.

- The Project will require a construction phase stormwater permit GP 3-9020, and will follow BMPs for EPSC;
- All wetlands and non-impacted buffers will be demarcated in the field prior to construction with a continuous extent of high visibility flagging and/or fence (ie snow fence), to be left in place for the duration of construction in order to avoid inadvertent unauthorized activity within a wetland or buffer;
- The Project consists of a permanent perimeter fence for wildlife exclusion, which will demarcate the area of operational activity and prevent inadvertent unauthorized activity associated with the Project in wetlands or buffers.

Minimization and Restoration Continued...

20.3.3. Has a plan been developed for the prompt restoration of any adverse impacts on protected functions? Yes No N/A

Restoration Narrative:

For example: Planting along the stream.

Quantification of Restoration:

Wetland Area (sqft)	Buffer Area (sqft)	Functions/Value s Addressed

20.4. Compensation:

*Please refer to Section 9.5c of the Vermont Wetland Rules for compensation, which is required when the project will result in net adverse impact to wetland function. Not all functions are presumed to be compensable. **All projects requiring compensation need prior consultation with the Vermont Wetlands Program.***

If compensation is proposed please include a summary here. Also list any supporting documents you may have attached to the application including In-Lieu-Fee proposal or detailed compensation plan.

21. Wetland Determination:

If the application involves a wetland determination please answer the following. For multiple wetlands provide narrative overview for each section below, and fill out the Multiple Wetland Tables.

- Wetland is mapped or contiguous to the Vermont Significant Wetland Inventory Map
- Wetland is not mapped on or contiguous to the Vermont Significant Wetland Inventory Map

21.1. Reason for Petition:

Please choose one from the dropdown menu.

Make a determination of class II

21.2. Determination Narrative:

Please provide any narrative to support the petition for a wetland determination here, including previous decisions by the Secretary or Water Board.

The wetlands identified by VHB as 2015-2, 2015-4, and 2015-5 meet a VWR section 4.6 presumption and have been field-reviewed by DEC Wetland Ecologist Julie Follensbee. Based on site visit discussions and electronic mail communication following those site visits, VHB's proposed Class II designation for wetland 2016-2, 2015-4, and 2015-5 were concurred by DEC.

22. Supporting Materials:

****ADDITIONAL MATERIAL REQUIRED TO CALL APPLICATION COMPLETE**

22.1. **Location Map:

Provide a location map that is 8 1/2" x 11" and separate from any site plans.
The Vermont Natural Resources Atlas is appropriate using USGS topography map base layer, roads, and VSWI wetlands at a minimum.

Date	Title
October 10, 2016	ER Thurston Farm Solar East - Site Location Map

22.2. **Site Plan(s):

List as specified below. Plans must be legible and include wetland delineation and buffer zones, limits of disturbance, erosion controls, building envelopes, and any permanent memorialization.

Title	Author	Date	Date of Last Revision
ER Thurston Farm Solar East Proposed Conditions Site Plan	Civil Engineering Associates	8/5/2016	
ER Thurston Farm Solar East VWP Impact Exhibit	VHB	8/26/16	
Orange			

22.3. **U.S. Army Corps of Engineer Wetland Delineation Forms:

List attachment names, dates data was collected, cover types sampled, and number of paired plots included

Attachment #/Title	Range of Collection Dates	Vegetation Cover Types	# of Paired Plots
USACE Data Forms	10/14/16, 10/20/16	PEM, PSS	1

22.4. Other Supporting Documents:

Provide any other documentation that supports the application.
Examples include but are not limited to: Photographs, easements, agreements, restoration/plan, GIS shapefiles, additional ACOE forms.

Date	Last Revision	Author	Title
8/8/16		VHB	Natural Resources Map
8/8/16		VHB	Representative Natural Resources Site Assessment Photographs
6/6/16		VHB	Summary of Delineated Wetlands Table
8/4/15		Encore	Thurston East Lease Option Agreement
10/13/16		VHB	Thurston East Vermont Wetland Evaluation Forms

23. Abutting Landowners



Please provide abutting landowner information so that all persons owning property within, or adjacent to, the affected wetland area of buffer zone can be notified during the public notice period. **Please use additional sheets if necessary.**

23.1. Abutting Land Owner Information: Please list as first names first followed by last name

<p>1. Name: Gerald Booth Street/Road: PO Box 129 City/State/Zip: East Barre, VT 05649</p>	<p>16. Name: James and Hannah Avery Street/Road: 240 VT Route 11 City/State/Zip: Orange, VT 05641</p>
<p>2. Name: Timothy J. Belden Street/Road: 2016 VT Route 110 City/State/Zip: Barre, VT 05641</p>	<p>17. Name: Hannah Avery Street/Road: PO Box 498 City/State/Zip: East Barre, VT 05649</p>
<p>3. Name: Thomas E. and Heather V. Comolli Street/Road: 1914 VT Route 110 City/State/Zip: Barre, VT 05641</p>	<p>18. Name: Leon and Joan Tucker Street/Road: 325 Tucker Road City/State/Zip: Orange, VT 05641</p>
<p>4. Name: Gloria Hanson Street/Road: 1800 VT Route 110, Barre, VT 05641 City/State/Zip:</p>	<p>19. Name: Vermont Electric Power Company Inc. Street/Road: 366 Pinnacle Ridge Road City/State/Zip: Rutland, VT 05701</p>
<p>5. Name: Stephen W. and Jerri L. Howard Street/Road: PO Box 123 City/State/Zip: Washington, VT 05675</p>	<p>20. Name: Edward K. and Sandra A. Wheaton Street/Road: PO Box 444 City/State/Zip: Hancock, MI 49930</p>
<p>6. Name: Jesse and Jennifer Lambert Street/Road: 1062 Carrier Road City/State/Zip: Washington, VT 05675</p>	<p>21. Name: Street/Road: City/State/Zip:</p>
<p>7. Name: Frank and Marilyn Johnson Street/Road: 408 Lowery Road City/State/Zip: Barre, VT 05641</p>	<p>22. Name: Street/Road: City/State/Zip:</p>
<p>8. Name: Percy and Betty Lou Smith Street/Road: 841 Lambert Road City/State/Zip: Graniteville, VT 05654</p>	<p>23. Name: Street/Road: City/State/Zip:</p>
<p>9. Name: Thurston Family Farm, LLC Street/Road: 569 Baily Road City/State/Zip: Williamstown, VT 05679</p>	<p>24. Name: Street/Road: City/State/Zip:</p>
<p>10. Name: Christopher A. Watson Street/Road: 780 Lambert Road City/State/Zip: Graniteville, VT 05654</p>	<p>25. Name: Street/Road: City/State/Zip:</p>
<p>11. Name: Gary G. and Jean G. Gosselin Street/Road: 28 Prospect Street City/State/Zip: Barre, VT 05641</p>	<p>26. Name: Street/Road: City/State/Zip:</p>
<p>12. Name: Randolph and Ginette Pickel Street/Road: 265 VT Route 110 City/State/Zip: Orange, VT 05641</p>	<p>27. Name: Street/Road: City/State/Zip:</p>
<p>13. Name: Mario Verdon Street/Road: 337 VT Route 110 City/State/Zip: Orange, VT 05641</p>	<p>28. Name: Street/Road: City/State/Zip:</p>
<p>14. Name: Gerald Booth Street/Road: PO Box 385 City/State/Zip: East Barre, VT 05649</p>	<p>29. Name: Street/Road: City/State/Zip:</p>
<p>15. Name: Central Vermont Community Land Trust Street/Road: 107 North Main Street City/State/Zip: Barre, VT 05641</p>	<p>30. Name: Street/Road: City/State/Zip:</p>

24. Modified Distribution (Newspaper Notification): In situations where there is an application within a large wetland or buffer zone that has a large number of landowners, applicants can choose to limit the distribution list with a supplemental newspaper notification. At a minimum the applicant must 1) provide notice to immediate abutters, 2) provide notice to all persons owning property containing the wetland or buffer within 500 ft. of the project area, and 3) shall have the VWP publish notice of the application in a local newspaper generally circulating in the area where the wetland is located. *****The applicant will be billed directly by the newspaper listed. Use of newspaper notification may extend the notice period, depending on when the notice posts in the newspaper*****

Name of Newspaper(s)

ER Thurston East	2015-2	The wetland is along the east side of VT-110, west of Jail Branch, and south of Tucker Rd.	approximately 44.12872° N	approximately 72.43003° W	5.1, 5.2, 5.10	<i>The wetland is contiguous to VSWI mapped wetland</i>	<i>Same type and size as VSWI wetlands or over 0.5 acres</i>
ER Thurston East	2015-2	The wetland is along the east side of VT-110, west of Jail Branch, and south of Tucker Rd.	-	-	-	<i>The wetland meets the presumption of significance</i>	<i>Adjacent to a stream, lake, pond, or river</i>
ER Thurston East	2015-4	The wetland is east of VT-110 and south of Tucker Rd. and generally extends along the southern edge of an active agricultural field and under an overhead utility line	approximately 44.12695° N	approximately 72.42590° W	5.1, 5.2	<i>The wetland meets the presumption of significance</i>	<i>Same type and size as VSWI wetlands or over 0.5 acres</i>
ER Thurston East	2015-5	The wetland is east of VT-110 and south of Tucker Rd. and generally extends along the riparian corridor of Jail Branch	approximately 44.12792° N	approximately 72.42591° W	5.1, 5.2, 5.10	<i>The wetland meets the presumption of significance</i>	<i>Same type and size as VSWI wetlands or over 0.5 acres</i>
ER Thurston East	2015-5	The wetland is east of VT-110 and south of Tucker Rd. and generally extends along the riparian corridor of Jail Branch	-	-	-	<i>The wetland meets the presumption of significance</i>	<i>Adjacent to a stream, lake, pond, or river</i>

4.0 Description of the Entire Wetland or Wetland Complex												
Wetland Complex ID	Wetland ID	4.1 Size of Wetland Complex in Acres	4.2 Cover Types Present	4.3 Landscape Position	4.4 Wetland Hydrology	4.4.1 Direction of Flow	4.4.2 Influence of Hydrology on Wetland Complex	4.4.3 Relation to the Project Area	4.4.4 Hydroperiod	4.5 Surrounding Landuse of the Wetland Complex	4.6 Relation to Other Nearby Wetlands	4.7 Pre-Project Cumulative Impacts to Wetlands
Example: A	W4	14	85% hardwood swamp; 10% emergent wetland; 5% open water (dammed)	bottom of a basin and along Great Brook	surface runoff and adjacent to small tributary that flows into Otter Creek	The tributary flows easterly through wetland towards Otter Creek	The wetland is seasonally flooded from Otter Creek	Otter Creek is located approximately 200 feet east of the project site	The wetland is inundated during the spring, and soils stay saturated through the summer and fall	The surrounding landuse is rural with agricultural, forested and undeveloped areas	There is a mapped wetland 1,000 ft to the north east of the subject wetland complex.	The northeastern section of the wetland complex is managed for hay

ER
Thurston
East 2015-2

2.4 acres (103,776 sq ft) delineated within VHB's study area

Approximatley 20% scrub-shrub and 80% emergent (emergent portion is active and fallow ag)

Overall terrace landscpe position on the lower portion of slope to the west

Surface water runoff; seasonal water table

No surface water flow within VHB's study area; grade within delineated wetland generally to the south and east

Seasonally saturated by surface water runoff and seasonal high water table

The Project access driveway would extend along the southern edge of the wetland buffer within an agricultural field, but all other areas of the wetland and buffer, including the unnamed tributary to Jail Branch, would be avoided by the Project; the solar array would be installed to the east of the wetland complex

Wetland is estimated to be seasonally saturated in the emergent portion and appears to be permanently saturated in the scrub-shrub portion to the south beyond VHB's study area; indirect indicators of wetland hydrology were also observed

Surrounding landscape includes active and inactive agricultural lands, a forest block to the south, and rural residential and agricultural development

VSWI wetland overlaps and extends to the west of Rte. 110; likely additional fringe wetlands associated with the unnamed tributary to Jail Branch to the northeast that would be hydrologically connected to the subject wetland however are beyond VHB's study area

Wetland is currently impacted by agricultural uses including crop (hay) production, nutrient inputs from livestock manure, livestock grazing, sediment discharge from hoof action on streambanks and within the riparian wetland area, impervious surface runoff fom farmstead

			19.1 Proposed Class II Wetland Impacts				19.2 Proposed Class II Buffer Zone Impacts				
	Wetland Complex ID	Wetland ID	19.1 Subject Wetland Impact Description	Proposed Wetland Fill (sq ft)	Proposed Temporary Impacts (sq ft)	Proposed Other Impacts (sq ft)	Total Wetland Impacts (sq ft)	Proposed Permanent Impact (sq ft)	Proposed Temporary Impact (sq ft)	Proposed Other Permanent Impacts (sq ft)	Total Buffer Impacts (sq ft)
			TOTALS:	0	0	0	0	0	0	0	2316
Example:	A	W4	<i>Proposed 10-foot access driveway with 18" culvert</i>	985	2,000	0	2,985	255	1,015	0	1,270
	ER Thurston East	2015-2	Proposed 16 foot wide access drive to the solar array to provide construction and operational phase access will occur partially within the buffer.				0	1995			1,995
	ER Thurston East	2015-4	Proposed 16 foot wide access drive to the solar array to provide construction and operational phase access will occur partially within the buffer.				0	314			314
	ER Thurston East	2015-5	Proposed perimeter fence for the solar array to consist of vertically driven fence posts will occur partially within the buffer.				0	7			7

	Wetland Complex ID	Subject Wetland ID	19.1 Subject Wetland Impact Description	6. Wetland Functions	Subject Wetland Contribution	No Adverse Impact Statement and Avoidance	Functional Checklist
Example:	A	W4	Proposed 10-foot access driveway with 18" culvert	5.1	<i>The subject wetland provides this function at a low level. The subject wetland has the physical space for floodwater expansion, but does not have dense vegetation to slow down floodwaters. The subject wetland is currently maintained as an old field and will essentially retain the same characteristics</i>	<i>The physical and vegetative characteristics of the wetland which provide this function, even in a limited capacity, will not be disturbed as a result of the proposed Project. The Project will result in the installation of pilings via helical screws for the solar array and posts for the chain link fence in the wetland meadow with no site grading. There will be no loss of flood water or stormwater runoff storage as a result of the proposed Project. The Project will not result in an undue adverse impact to this function.</i>	Hyperlink
				5.2	<i>The subject wetland provides a potential filter between the upslope residential development/impervious surfaces and the overall wetland complex. Given that the subject wetland is currently maintained as old field, it does not have opportunity to perform this function in a significant way.</i>	<i>The physical and vegetative characteristics of the wetland that provide this function will not be disturbed as a result of the proposed Project. The applicant shall employ standard erosion control measures including silt fence, and seed and mulch as specified in the State of Vermont Handbook for Erosion Prevention and Sediment Control to limit soil erosion on the site. Array installation and decommissioning within the wetland will be conducted on mats to protect wetland soils and vegetation. For these reasons, the proposed Project will not result in an undue adverse impact to this function.</i>	
				5.4	<i>While the broader wetland complex is significant for wildlife habitat, the subject wetland is characterized as an old field and does not contribute to the function of wildlife habitat in a significant way.</i>	<i>The Project as proposed will result in minimal changes to the overall wetland complex. The physical and vegetative characteristics of the wetland which provide this function will not be disturbed as a result of the proposed Project. A woody vegetative management plan has been developed for a wetland area of approximately 200 sq. ft. The use of non-mechanized practices/techniques for all vegetation (shading) management with no removal of material will ensure minimal impact. The result of the vegetation management will be an increase in coarse woody debris (CWO), an integral component of forest nutrient cycling and wildlife habitat. The proposed Project will not result in an undue adverse impact to this function.</i>	
ER Thursto 2015-2			Construction of access driveway for a solar array within a portion of wetland buffer	5.1	The subject wetland provides this function. However, the current function is diminished by agricultural activities that compact the soil and have modified vegetation.	The subject wetland's current function for flood or stormwater storage capacity would not be reduced, and as such there would be no adverse impact from the Project to this criterion. The Project will include construction of an access driveway through an agricultural field and would extend through a portion of the upland buffer of the subject wetland.	
ER Thursto 2015-2			Construction of access driveway for a solar array within a portion of wetland buffer	5.2	The subject wetland provides this function at a low level, due to current and historical agricultural land use.	The subject wetland's current level of function for surface or groundwater protection would not be reduced, and as such there would be no adverse impact from the Project to this criterion. The Project will include construction of an access driveway through an agricultural field and would extend through a portion of the upland buffer of the subject wetland.	
ER Thursto 2015-2			Construction of access driveway for a solar array within a portion of wetland buffer		An unnamed tributary to Jail Branch flows through the northern portion of the subject wetland. Although the vegetative community along the stream is modified by agriculture, there is thick, dense, herbaceous vegetation which functions to stabilize and bind the soil. However, due to the ongoing agricultural impact, this criterion is functioning at a low level.	The subject wetland's current level of function for stabilization and soil binding would not be reduced, and as such there would be no adverse impact from the Project to this criterion. The Project will include construction of an access driveway through an agricultural field and would extend through a portion of the upland buffer of the subject wetland.	
ER Thursto 2015-4			Construction of access driveway for a solar array within a portion of wetland buffer	5.1	The subject wetland provides this function. However, the current function is diminished by agricultural activities that compact the soil and have modified vegetation.	The subject wetland's current function for flood or stormwater storage capacity would not be reduced, and as such there would be no adverse impact from the Project to this criterion. The Project will include construction of an access driveway through an agricultural field and would extend through a portion of the upland buffer of the subject wetland.	
ER Thursto 2015-4			Construction of access driveway for a solar array within a portion of wetland buffer	5.2	The subject wetland provides this function at a low level, due to current and historical agricultural land use.	The subject wetland's current level of function for surface or groundwater protection would not be reduced, and as such there would be no adverse impact from the Project to this criterion. The Project will include construction of an access driveway through an agricultural field and would extend through a portion of the upland buffer of the subject wetland.	
ER Thursto 2015-5			Vertically driven fence posts installed by low-ground pressure or tracked equipment, within a portion of wetland buffer	5.1	The subject wetland provides this function. However, the current function is diminished by agricultural activities that compact the soil and have modified vegetation.	The subject wetland's current function for flood or stormwater storage capacity would not be reduced, and as such there would be no adverse impact from the Project to this criterion. The Project will include fenceposts being vertically driven into a portion of the wetland buffer in an existing agricultural field, occurring via low ground pressure and/or tracked equipment and/or construction during dry or frozen ground conditions.	
ER Thursto 2015-5			Vertically driven fence posts installed by low-ground pressure or tracked equipment, within a portion of wetland buffer	5.1	The subject wetland provides this function at a low level, due to current and historical agricultural land use, combined with the comparatively small portion of the much larger wetland complex along Jail Branch occurring on the property and the relatively small portion of buffer that would be impacted as compared to either the subject wetland area on the property or the complex as a whole.	The subject wetland's current function for surface or groundwater protection would not be reduced, and as such there would be no adverse impact from the Project to this criterion. The Project will include fenceposts being vertically driven into a portion of the wetland buffer in an existing agricultural field, occurring via low ground pressure and/or tracked equipment and/or construction during dry or frozen ground conditions.	
ER Thursto 2015-5			Vertically driven fence posts installed by low-ground pressure or tracked equipment, within a portion of wetland buffer	5.2	The subject wetland provides this function. However, the current function within the proposed impact area is diminished by agricultural activities that compact the soil and have modified vegetation.	The subject wetland's current function for stabilization and soil binding would not be reduced, and as such there would be no adverse impact from the Project to this criterion. The Project will include fenceposts being vertically driven into a portion of the wetland buffer in an existing agricultural field, occurring via low ground pressure and/or tracked equipment and/or construction during dry or frozen ground conditions.	

	Wetland Complex ID	Subject Wetland ID	1. Location of Subject Wetland	4.1 Size of Wetland Complex in Acres	3. Wetland Classification		21. Wetland Determination	
					3.1 Why is it Class II?	3.2 Applicable VWR 4.6 Presumption	21.1 Reason for Petition	20.3 Determination Narrative
<i>Example:</i>	A	W4	<i>The wetland is northwest of 1375 Lime Kiln Road.</i>	14	<i>The wetland meets the presumption of significance</i>	<i>adjacent to a stream, lake, pond, or river</i>	<i>Add a Section 4.6 presumed wetland to the VSWI map</i>	<i>adding a Section 4.6 presumed wetland to the VSWI mapped. Confirmed with District Ecologist.</i>
ER Thurston East		2015-2	The wetland is along the east side of VT-110, west of Jail Branch, and south of Tucker Rd.	2.4 acres (103,776 sq ft) delineated within VHB's study area	<i>The wetland meets the presumption of significance</i>	<i>Same type and size as VSWI wetlands or over 0.5 acre</i>	<i>Add a Section 4.6 presumed wetland to the VSWI map</i>	Proposed classification as Class II wetland confirmed in the field by DEC District Ecologist on October 22, 2015.
ER Thurston East		2015-4	The wetland is along the east side of VT-110, west of Jail Branch, and south of Tucker Rd.	0.5 acre (21,707 sq ft) delineated within VHB's study area	<i>The wetland meets the presumption of significance</i>	<i>Same type and size as VSWI wetlands or over 0.5 acre</i>	<i>Add a Section 4.6 presumed wetland to the VSWI map</i>	Proposed classification as Class II wetland confirmed in the field by DEC District Ecologist on October 22, 2015.
ER Thurston East		2015-5	The wetland is east of VT-110 and south of Tucker Rd. and generally extends along the southern edge of an active agricultural field and under an overhead utility line	2.1 acres (91,800 sq ft) delineated within VHB's study area	<i>The wetland meets the presumption of significance</i>	<i>Same type and size as VSWI wetlands or over 0.5 acre</i>	<i>Add a Section 4.6 presumed wetland to the VSWI map</i>	Proposed classification as Class II wetland confirmed in the field by DEC District Ecologist on October 22, 2015.

LEASE OPTION AGREEMENT

THIS AGREEMENT, entered into by and between Thurston Family Farm, LLC of Williamstown Vermont, hereinafter referred to as the "Owner" and Encore Redevelopment, LLC, of Burlington, Vermont, hereafter referred to as "Encore".

WITNESSETH:

WHEREAS, The Owner is the owner of certain real estate located at 285 VT Route 110 in Orange, Vermont (the "Property"); and

WHEREAS, the parties have agreed that Encore may lease said real estate from the Owner; and

WHEREAS, the parties wish to reduce their agreement to writing.

NOW THEREFORE, in consideration of One Dollar and other good and valuable consideration and the mutual benefits accruing to each, the parties hereby covenant and agree as follows:

1. The Owner hereby grants to Encore the right and option to lease from the Owner any portion of the Property, and access thereto, owned by the Owner, located at the Property as shown in Attachment 1, to develop the site for electricity generation (the "Option Agreement").
2. The owner hereby warrants and represents that Owner (1) owns the property in fee simple absolute; b) has the sole and unilateral right and authority to enter into this Option Agreement, (c) has and will maintain good and marketable title to the Premises, free and clear of any encumbrances that could reasonably be expected to have a material adverse affect on development of the Premises for a solar energy generating facility, (d) shall not enter into any lease, option to lease, purchase and sale agreement, option to purchase, or any other similar agreement with any other developer of solar energy generating facilities during the Exclusive Negotiating Period, and (e) shall notify Encore promptly in writing after any transfer or other change in ownership of all or any part of the Premises, including the name and address of the new owner.
3. Encore shall give the Owner written notice of Encore's election to lease the subject Property at the time and date specified by Encore in such notice, which time and date shall not be later than sixty (60) days from the date the Owner receives such notice. The formal Site Lease Agreement, which has been fully negotiated and agreed to by Owner and Encore, and included herein as Attachment 2, shall be executed by both Parties at that time.
4. During the Option Period, Owner shall permit Encore and its authorized agents and representatives to enter upon the Property at reasonable times during normal business hours to inspect the Property and perform surveys. Encore shall notify Owner of its intention, or the intention of its agents or representatives, to enter the Property at least twenty-four (24) hours prior to such intended entry. Encore shall bear the cost of all inspections.

5. In the event Owner fails to perform its obligations under this Agreement for any reason other than Encore's breach, Encore may pursue all remedies available at law and in equity. Owner hereby acknowledges that Encore will incur significant expenses in reliance on this Agreement.

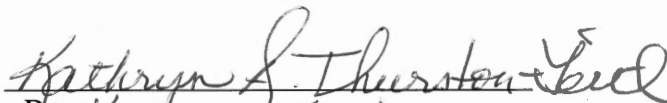
6. The parties shall execute any and all other documents and take all actions necessary to effectuate the intent of this Option Agreement.

7. This Option Agreement shall be and remain in full force for a period not to exceed two (2) years from the date of execution of this Option Agreement.

8. This agreement shall be binding upon the parties hereto and the respective heirs, successors and assigns of each.

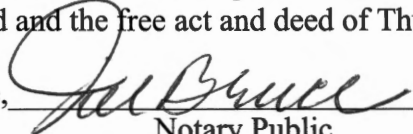
DATED at Berlin, VT this 3 day of Aug, 2015.

Thurston Family Farm, LLC


By: Kathryn Thurston-Leith


STATE OF VERMONT
COUNTY OF Washington, SS.

At Berlin, VT in said County this 3 day of August, 2015,
_____ personally appeared, and s/he acknowledged this instrument, by him/her sealed and subscribed, to be his/her free act and deed and the free act and deed of Thurston Family Farm, LLC

Before me, 
Notary Public

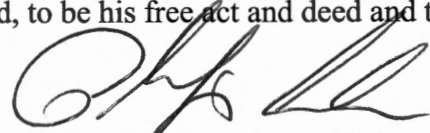
DATED at Queensbury, Vermont this 4th day of Aug, 2015.

Encore Redevelopment, LLC


By: Charles R. ("Chad") Farrell, Member

STATE OF VERMONT
COUNTY OF CHITTENDEN, SS.

At Burlington, Vermont in said County this 4 day of August, 2015, personally appeared Charles R. ("Chad") Farrell, Duly Authorized Agent of Encore Redevelopment, LLC, and he acknowledged this instrument, by him sealed and subscribed, to be his free act and deed and the free act and deed of Encore Redevelopment, LLC.

Before me, 
Notary Public

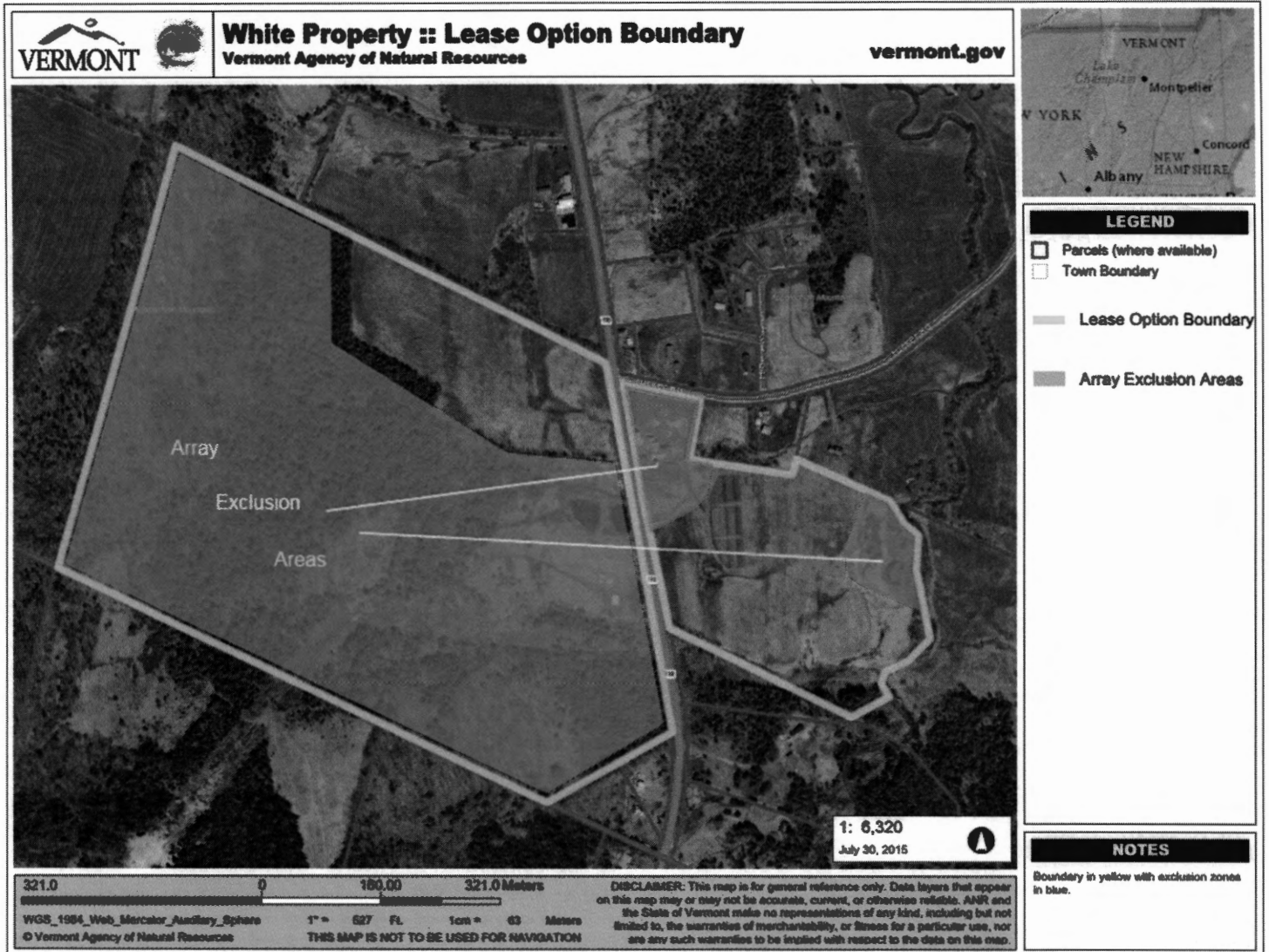
ATTACHMENT 1

MAP OF PROPERTY

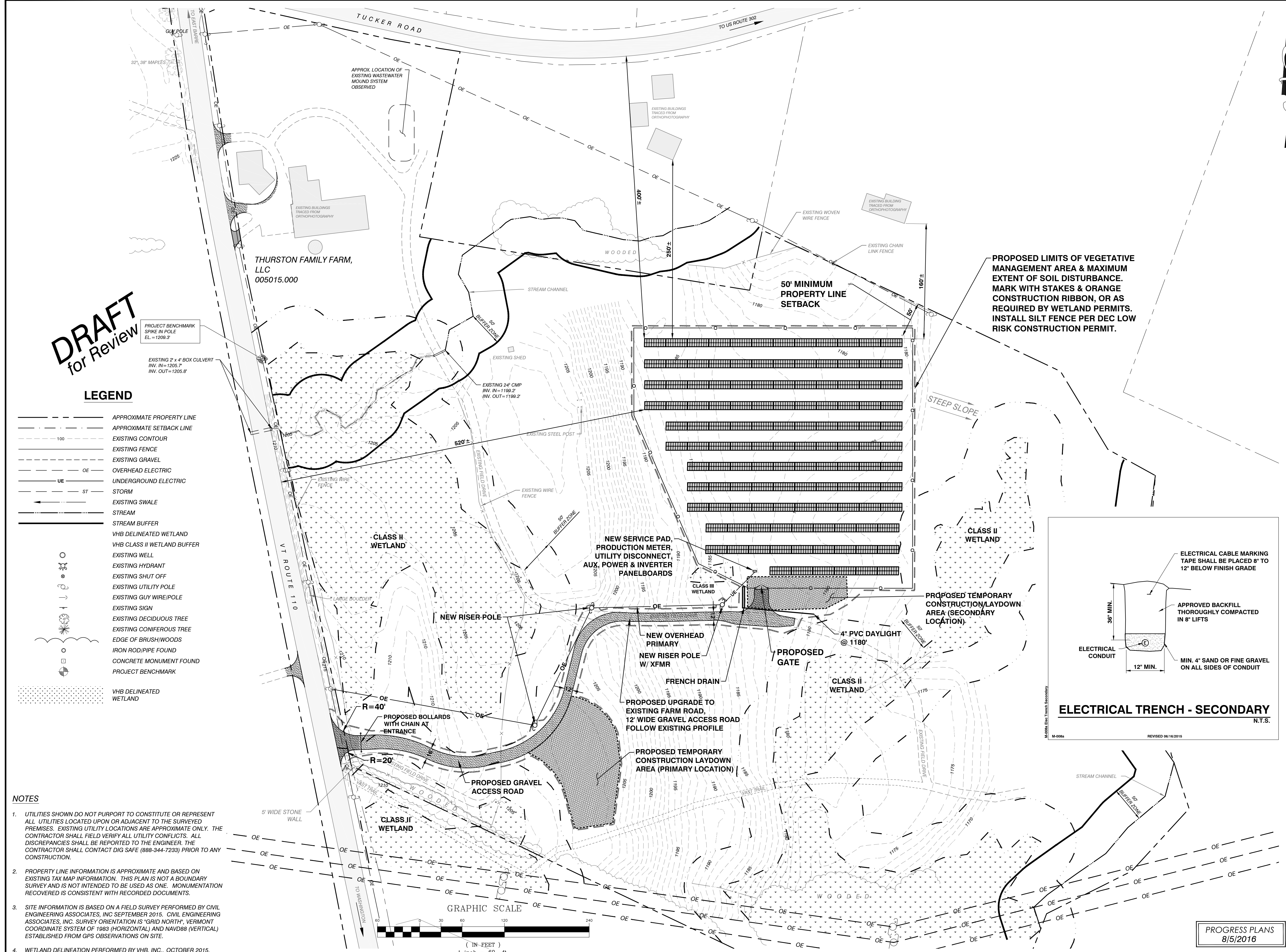
Two tracts of land located in Orange, Vermont as indicated below:

Tract 1: PARCEL NUMBER: 110315 / SPAN: 453-143-10518

Tract 2: PARCEL NUMBER: 110500 / SPAN: 453-143-10053



ATTACHMENT 2 (REDACTED)



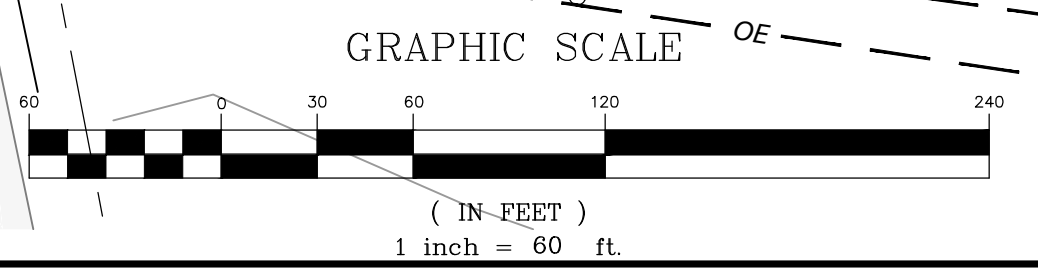
DRAFT
for Review

LEGEND

- APPROXIMATE PROPERTY LINE
- APPROXIMATE SETBACK LINE
- 100 --- EXISTING CONTOUR
- EXISTING FENCE
- EXISTING GRAVEL
- OE --- OVERHEAD ELECTRIC
- UE --- UNDERGROUND ELECTRIC
- ST --- STORM
- EXISTING SWALE
- STREAM
- STREAM BUFFER
- VHB DELINEATED WETLAND
- VHB CLASS II WETLAND BUFFER
- EXISTING WELL
- EXISTING HYDRANT
- EXISTING SHUT OFF
- EXISTING UTILITY POLE
- EXISTING GUY WIRE/POLE
- EXISTING SIGN
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- EDGE OF BRUSH/WOODS
- IRON ROD/PIPE FOUND
- CONCRETE MONUMENT FOUND
- PROJECT BENCHMARK
- VHB DELINEATED WETLAND

NOTES

1. UTILITIES SHOWN DO NOT PURPORT TO CONSTITUTE OR REPRESENT ALL UTILITIES LOCATED UPON OR ADJACENT TO THE SURVEYED PREMISES. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL UTILITY CONFLICTS. ALL DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER. THE CONTRACTOR SHALL CONTACT DIG SAFE (888-344-7233) PRIOR TO ANY CONSTRUCTION.
2. PROPERTY LINE INFORMATION IS APPROXIMATE AND BASED ON EXISTING TAX MAP INFORMATION. THIS PLAN IS NOT A BOUNDARY SURVEY AND IS NOT INTENDED TO BE USED AS ONE. MONUMENTATION RECOVERED IS CONSISTENT WITH RECORDED DOCUMENTS.
3. SITE INFORMATION IS BASED ON A FIELD SURVEY PERFORMED BY CIVIL ENGINEERING ASSOCIATES, INC. IN SEPTEMBER 2015. CIVIL ENGINEERING ASSOCIATES, INC. SURVEY ORIENTATION IS "GRID NORTH", VERMONT COORDINATE SYSTEM OF 1983 (HORIZONTAL) AND NAVD83 (VERTICAL) ESTABLISHED FROM GPS OBSERVATIONS ON SITE.
4. WETLAND DELINEATION PERFORMED BY VHB, INC., OCTOBER 2015.



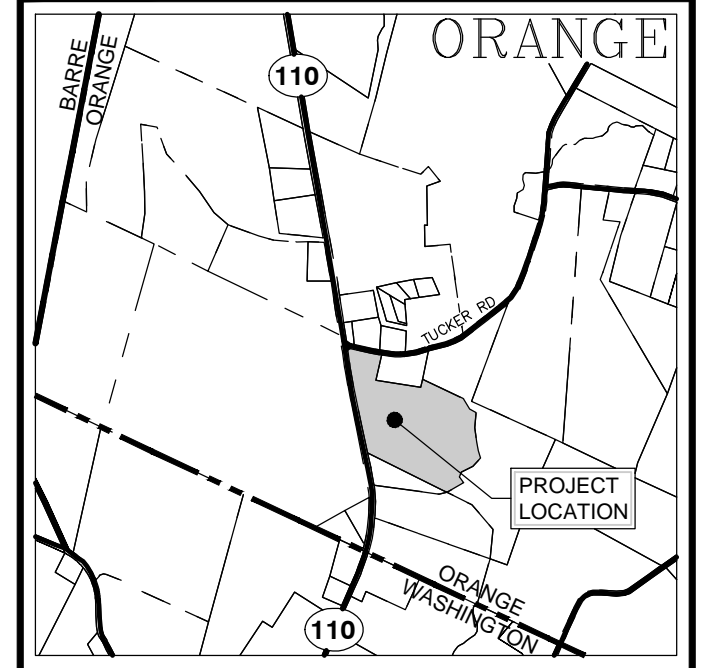
SITE ENGINEER:

 CIVIL ENGINEERING ASSOCIATES, INC.
 10 MANSFIELD VIEW LANE, SOUTH BURLINGTON, VT 05403
 802-864-2323 FAX: 802-864-2271 web: www.ceavt.com
 COPYRIGHT © 2015 - ALL RIGHTS RESERVED

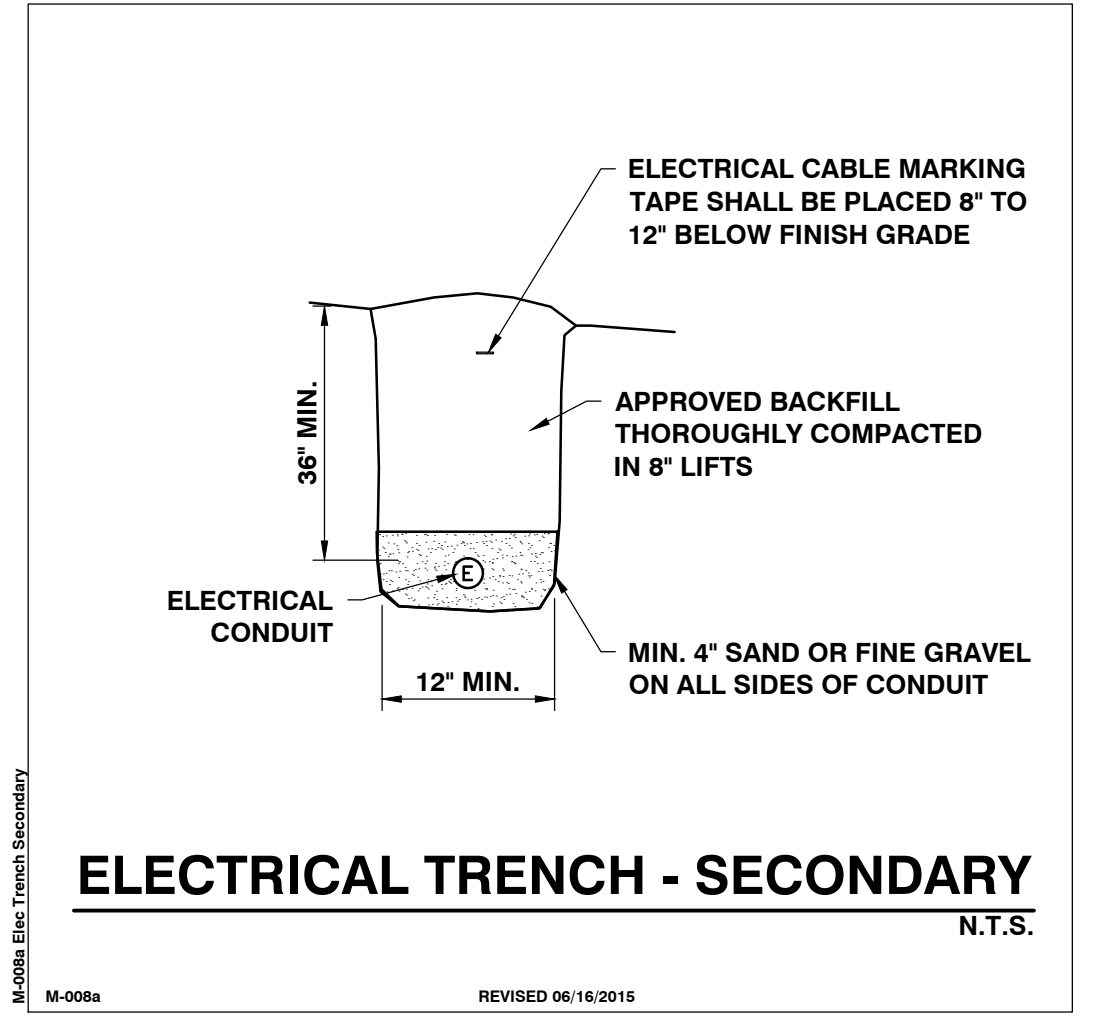
DRAWN: GAC
 CHECKED: DSM
 APPROVED: DSM

CLIENT:
ENCORE RENEWABLE ENERGY
 110 MAIN STREET
 2nd FLOOR, SUITE 2E
 BURLINGTON, VT

PROJECT:
ER THURSTON FARM SOLAR EAST, LLC
 ORANGE, VT



LOCATION MAP
1" = 2000'



ELECTRICAL TRENCH - SECONDARY
N.T.S.
REVISED 06/16/2015

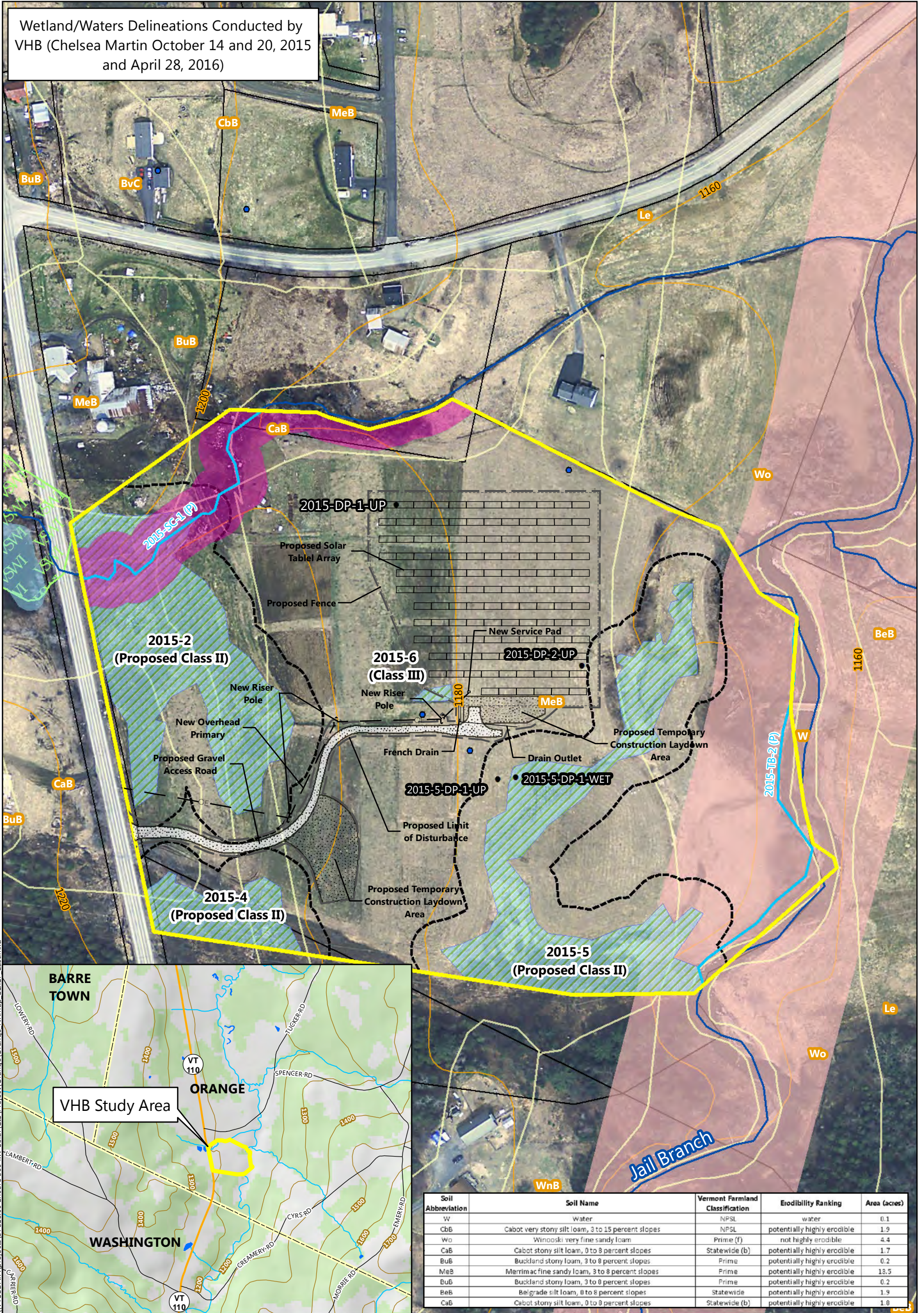
PROPOSED LIMITS OF VEGETATIVE MANAGEMENT AREA & MAXIMUM EXTENT OF SOIL DISTURBANCE. MARK WITH STAKES & ORANGE CONSTRUCTION RIBBON, OR AS REQUIRED BY WETLAND PERMITS. INSTALL SILT FENCE PER DEC LOW RISK CONSTRUCTION PERMIT.

DRAFT
for Review

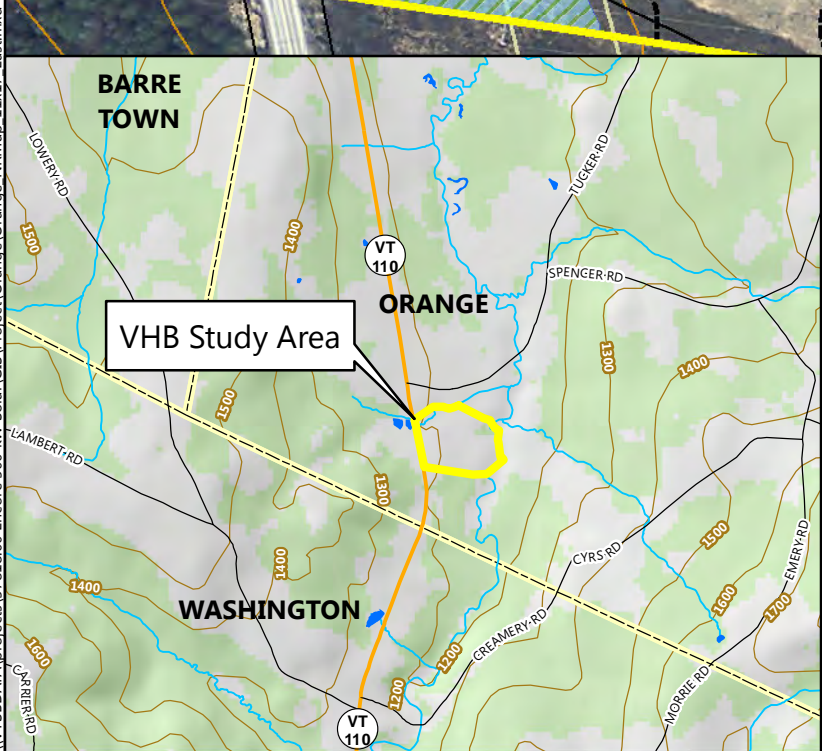
PROPOSED CONDITIONS SITE PLAN

DATE: --
 SCALE: 1" = 60'
 PROJ. NO: 15228
 DRAWING NUMBER: **C1.1**

PROGRESS PLANS
8/5/2016



Soil Abbreviation	Soil Name	Vermont Farmland Classification	Erodibility Ranking	Area (acres)
W	Water	NPSL	water	0.1
CbB	Cabot very stony silt loam, 3 to 15 percent slopes	NPSL	potentially highly erodible	1.9
Wo	Winooksi very fine sandy loam	Prime (f)	not highly erodible	4.4
CaB	Cabot stony silt loam, 0 to 8 percent slopes	Statewide (b)	potentially highly erodible	1.7
BuB	Buckland stony loam, 3 to 8 percent slopes	Prime	potentially highly erodible	0.2
MeB	Merrimac fine sandy loam, 3 to 8 percent slopes	Prime	potentially highly erodible	13.5
BuB	Buckland stony loam, 3 to 8 percent slopes	Prime	potentially highly erodible	0.2
BeB	Belgrade silt loam, 0 to 8 percent slopes	Statewide	potentially highly erodible	1.9
CaB	Cabot stony silt loam, 0 to 8 percent slopes	Statewide (b)	potentially highly erodible	1.8



ER Thurston Farm Solar East

Orange, Vermont

- Study Area (VHB)
- Delineated Wetland (VHB)
- Proposed Class II Wetland Buffer (50 ft) (VHB)
- Delineation Datapoint (VHB)
- Delineated Stream (VHB)
- River Corridor (VHB)
- VHD Stream (VCGI)
- VHD Waterbody (VCGI)
- NHI Element Occurrence (FWD)*
- VSWI Wetland (ANR)
- Deer Wintering Area (ANR)*
- NRCS Soil Boundary (VCGI)
- River Corridor (ANR)
- Public Well (ANR)*
- Private Well (ANR)
- GW Protection Area (ANR)*
- SW Protection Area (ANR)*
- County Boundary (VCGI)*
- Town Boundary (VCGI)*
- Parcel Boundary (VCGI)
- 20 ft. Contour (VCGI)

- * Feature not present within map extent

Natural Resources Map

Sources:
Background Imagery by VCGI (Collected Spring, 2013)
VCGI (Vermont Center for Geographic Information - Various Dates)
ANR (Vermont Agency of Natural Resources - Various Dates)
FWD (Vermont Department of Fish and Wildlife - 2015)
VHB - 2016
Proposed Project Components from CEA (8/5/2016)

Representative Natural Resources Site Assessment Photographs
Encore Renewable Energy – ER Thurston Farm Solar East
Orange, Vermont



Photograph 1. Representative view of the Study Area, looking northwest



Photograph 2. View of the southern edge of the Study Area, looking south



Photograph 3. View of Class II wetland 2015-4



Photograph 4. Representative view of perennial stream 2015-TB-2, facing northeast



Photograph 5. View of the northwest portion of the Study Area, facing north



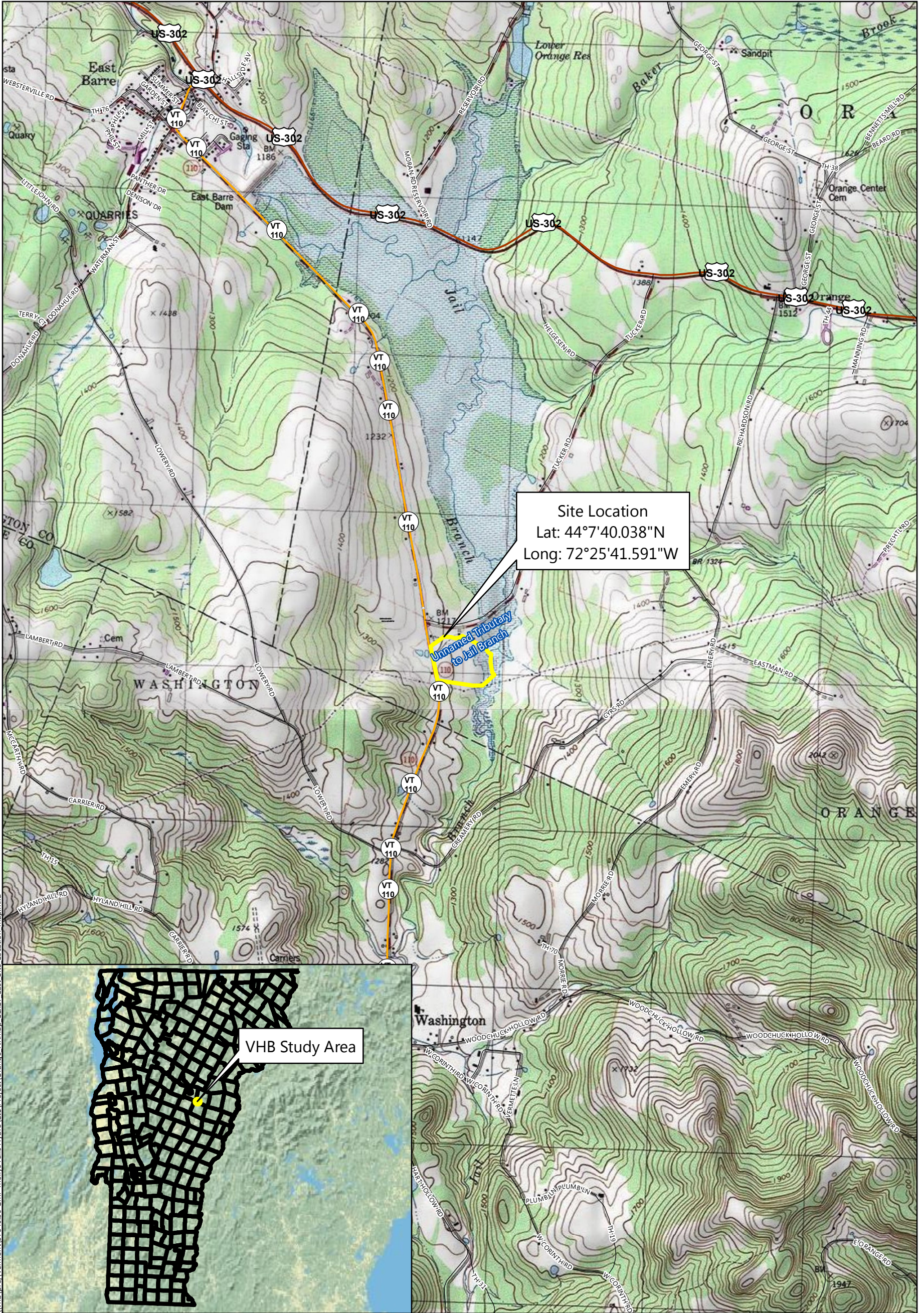
Photograph 6. Representative view of perennial stream 2015-SC-1

**Representative Natural Resources Site Assessment Photographs
Encore Renewable Energy – ER Thurston Farm Solar East
Orange, Vermont**



Photograph 7. Representative view of Class II wetland 2015-2, looking south

Photograph 8. Representative view of the Study Area, facing southeast



\\vhb\prj\vermont\57646-30 GMP\Mollys Falls Hydro\GIS\Project\Orange_NR\Map_11x17 East_Site_Location_Map.mxd

↑
2000/200 Feet

ER Thurston Farm Solar East

Orange, Vermont

Site Location Map

- Study Area (VHB)
- Road (Type)**
- Interstate
- US Highway
- State Highway
- Town Road

Sources:
USGS Topographic Background from National Geographic Society (2013); Town boundaries by VCGI (2006); Roads from VTrans (2011)



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2015-5-DP-1-Wet

Encore Redevelopment - Orange (East) 500kW
Project Site: Solar Project
City/County: Orange/Orange
Samp. Date: 10/14/2015
Applicant/Owner: Encore Redevelopment
State: VT
Sampling Point: 2015-5-DP-1-Wet
Investigator(s): C. Martin
Section, Township, Range: Royalton
Landform: Terrace
Local relief: Concave
Slope (%): 3 - 8
Subregion: L LRR
Lat: 44°7'38.64"N
Long: 72°25'38.618"W
Datum: NAD 83
Soil Map Unit: Merrimac fine sandy loam, 3 to 8 percent slopes
NW1 Class: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Vegetation, Soil, or Hydrology significantly disturbed? No
Are Vegetation, Soil, or Hydrology naturally problematic? No

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? YES
Hydric Soil Present? YES
Wetland Hydrology Present? YES
Is This Sample Area Within a Wetland? YES
Remarks: Datapoint located approximately 18 feet south of wetland flag 2015-5-6

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1)
High Water Table (A2)
X Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B13)
Hydrogen Sulfide Odor (C1)
X Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C6)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:
Surface Water Present?
Water Table Present?
Saturation Present? X
Depth (inches):
Depth (inches):
Depth (inches): surface
Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
0.99" of precipitation recorded during October 2015 up to day of investigation, 0.92" recorded during 7 days prior to investigation. 0.00" of precipitation recorded on day of investigation (NOAA)

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth, Matrix, Redox Features, Texture, Remarks.
Rows: 0-2, 2-12, 12+
Matrix: 10YR 2/2, 10YR 3/2, 2.5Y 4/2
Redox Features: 5YR 3/4, 5YR 4/6, 5YR 4/6
Texture: FINE SANDY LOAM

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. 2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
X Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils3:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S9) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? YES

Remarks:

Tree Stratum	Absolute % Cover	Dom. Sp?	Indicator Status	
(Plot size: <u>30' RAD</u>)				
1. _____	_____	_____	_____	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>1</u> (B) % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index Worksheet: Total % Cover of: OBL <u>30</u> x 1 = <u>30</u> FACW <u>63</u> x 2 = <u>126</u> FAC <u>15</u> x 3 = <u>45</u> FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: <u>108</u> (A) <u>201</u> (B) Prevalence Index = B/A = <u>1.86</u>
Sapling Stratum				
(Plot size: <u>15' RAD</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum				
(Plot size: <u>15' RAD</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
Herb Stratum				
(Plot size: <u>5' RAD</u>)				
1. Phalaris arundinacea	63	X	FACW	
2. Scirpus atrovirens	15		OBL	
3. Solidago rugosa	15		FAC	
4. Eutrochium maculatum	15		OBL	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
108 = Total Cover				
Woody Vines				
(Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? <u>YES</u>				

Remarks: (If observed, list morphological adaptations below).
Symphotrichum sp. observed at 3%

**WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region**

2015-5-DP-1-Up

Project Site: Encore Redevelopment - Orange (East) 500kW City/County: Orange/Orange State: VT Samp. Date: 10/14/2015
 Applicant/Owner: Encore Redevelopment Section, Township, Range: Royalton Sampling Point: 2015-5-DP-1-Up
 Investigator(s): C. Martin Local relief (concave, convex, none): Convex Slope (%): 3 - 8
 Landform (hillslope, terrace, etc.): Terrace Lat: 44°7'38.614"N Long: 72°25'39.072"W Datum: NAD 83
 Subregion (LRR or MLRA): L LRR Soil Map Unit: Merrimac fine sandy loam, 3 to 8 percent slopes NWI Class: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)
 Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes
 Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	<u>NO</u>	Is This Sample Area Within a Wetland?	<u>NO</u>
Hydric Soil Present?	<u>NO</u>		
Wetland Hydrology Present?	<u>NO</u>		
Remarks: Datapoint located approximately 23 feet northwest of wetland flag 2015-5-7			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)		Surface Soil Cracks (B6)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Inundation Visible on Aerial (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present? <u>NO</u>	
Surface Water Present? <u> </u>	Depth (inches): <u> </u>		
Water Table Present? <u> </u>	Depth (inches): <u> </u>		
Saturation Present? <u> </u>	Depth (inches): <u> </u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 0.99" of precipitation recorded during October 2015 up to day of investigation, 0.92" recorded during 7 days prior to investigation. 0.00" of precipitation recorded on day of investigation (NOAA)			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-4	10YR 3/4		5YR 4/4			FINE SANDY LOAM	
4-14+	10YR 4/4		5YR 4/4			FINE SANDY LOAM	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.						² Location: PL=Pore Lining, M=Matrix.	
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)			<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)			<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Dark Surface (S9) (LRR K, L, M)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)				<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
<input type="checkbox"/> Sandy Redox (S5)				<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Stripped Matrix (S6)				<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)				<input type="checkbox"/> Other (Explain in Remarks)			
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.							
Restrictive Layer (if observed): Type: _____ Depth (inches): _____				Hydric Soil Present? <u>NO</u>			
Remarks:							

	Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30' RAD</u>)				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: _____ (A) # Dominants across all strata: <u>1</u> (B) % Dominants OBL, FACW, FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>15</u> x 2 = <u>30</u> FAC _____ x 3 = _____ FACU <u>99</u> x 4 = <u>396</u> UPL _____ x 5 = _____ Sum: <u>114</u> (A) <u>426</u> (B) Prevalence Index = B/A = <u>3.74</u>
Sapling Stratum (Plot size: <u>15' RAD</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				
Shrub Stratum (Plot size: <u>15' RAD</u>)				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5' RAD</u>)				Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1. Elymus repens	63	X	FACU	
2. Taraxacum officinale	15		FACU	
3. Plantago major	15		FACU	
4. Phalaris arundinacea	15		FACW	
5. Vicia sativa	3		FACU	
6. Galium mollugo	3		FACU	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
114 = Total Cover				
Woody Vines (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? <u>NO</u>
Remarks: (If observed, list morphological adaptations below).				



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2015-DP-1-Up

Encore Redevelopment - Orange (East) 500kW
Project Site: Solar Project
City/County: Orange/Orange
State: VT
Sampling Point: 2015-DP-1-Up
Investigator(s): C. Martin
Section, Township, Range: Royalton
Local relief (concave, convex, none): Convex
Slope (%): 3 - 8
Subregion (LRR or MLRA): L LRR
Lat: 44°7'43.306"N
Long: 72°25'41.442"W
Datum: NAD 83
Soil Map Unit: Merrimac fine sandy loam, 3 to 8 percent slopes
NW1 Class: Upland

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? YES
Hydric Soil Present? NO
Wetland Hydrology Present? NO
Is This Sample Area Within a Wetland? NO
Remarks: Datapoint located approximately 175 feet north of wetland 2015-5

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Field Observations:
Surface Water Present?
Water Table Present?
Saturation Present?
Wetland Hydrology Present? NO
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
0.99" of precipitation recorded during October 2015 up to day of investigation, 0.92" recorded during 7 days prior to investigation. 0.00" of precipitation recorded on day of investigation (NOAA)

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-4 10YR 4/1 10YR 3/6 CLAY LOAM
4-14+ 2.5Y 5/2 SILT LOAM
Hydric Soil Indicators:
Indicators for Problematic Hydric Soils:
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? NO

Tree Stratum	(Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>2</u> (B) % Dominants OBL, FACW, FAC: <u>50%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			Prevalence Index Worksheet: Total % Cover of: OBL <u>3</u> x 1 = <u>3</u> FACW <u>38</u> x 2 = <u>76</u> FAC <u>6</u> x 3 = <u>18</u> FACU <u>18</u> x 4 = <u>72</u> UPL _____ x 5 = _____ Sum: <u>65</u> (A) <u>169</u> (B) Prevalence Index = B/A = <u>2.60</u>
Sapling Stratum (Plot size: <u>15' RAD</u>)					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			
Shrub Stratum (Plot size: <u>15' RAD</u>)					Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation ¹ (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
		_____ = Total Cover			
Herb Stratum (Plot size: <u>5' RAD</u>)					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height.
1.	Phalaris arundinacea	38	X	FACW	
2.	Taraxacum officinale	15	X	FACU	
3.	Solidago rugosa	3		FAC	
4.	Ranunculus acris	3		FAC	
5.	Vicia sativa	3		FACU	
6.	Scirpus atrovirens	3		OBL	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
		65 = Total Cover			
Woody Vines (Plot size: _____)					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
		_____ = Total Cover			
Hydrophytic Vegetation Present? <u>YES</u>					
Remarks: (If observed, list morphological adaptations below).					



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2015-DP-2-Up

Encore Redevelopment - Orange (East) 500kW
Project Site: Solar Project
City/County: Orange/Orange
Samp. Date: 10/14/2015
Applicant/Owner: Encore Redevelopment
State: VT
Sampling Point: 2015-DP-2-Up
Investigator(s): C. Martin
Section, Township, Range: Royalton
Landform: Terrace
Local relief: Convex
Slope (%): 3-8
Subregion: L LRR
Lat: 44°7'40.533"N
Long: 72°25'37.074"W
Datum: NAD 83
Soil Map Unit: Merrimac fine sandy loam, 3 to 8 percent slopes
NW1 Class: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes
Are Vegetation, Soil, or Hydrology significantly disturbed? No
Are Vegetation, Soil, or Hydrology naturally problematic? No

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? YES
Hydric Soil Present? NO
Wetland Hydrology Present? NO
Is This Sample Area Within a Wetland? NO
Remarks: Datapoint located in northern portion of the Study Area, approximately 320 feet north of wetland 2015-6

HYDROLOGY

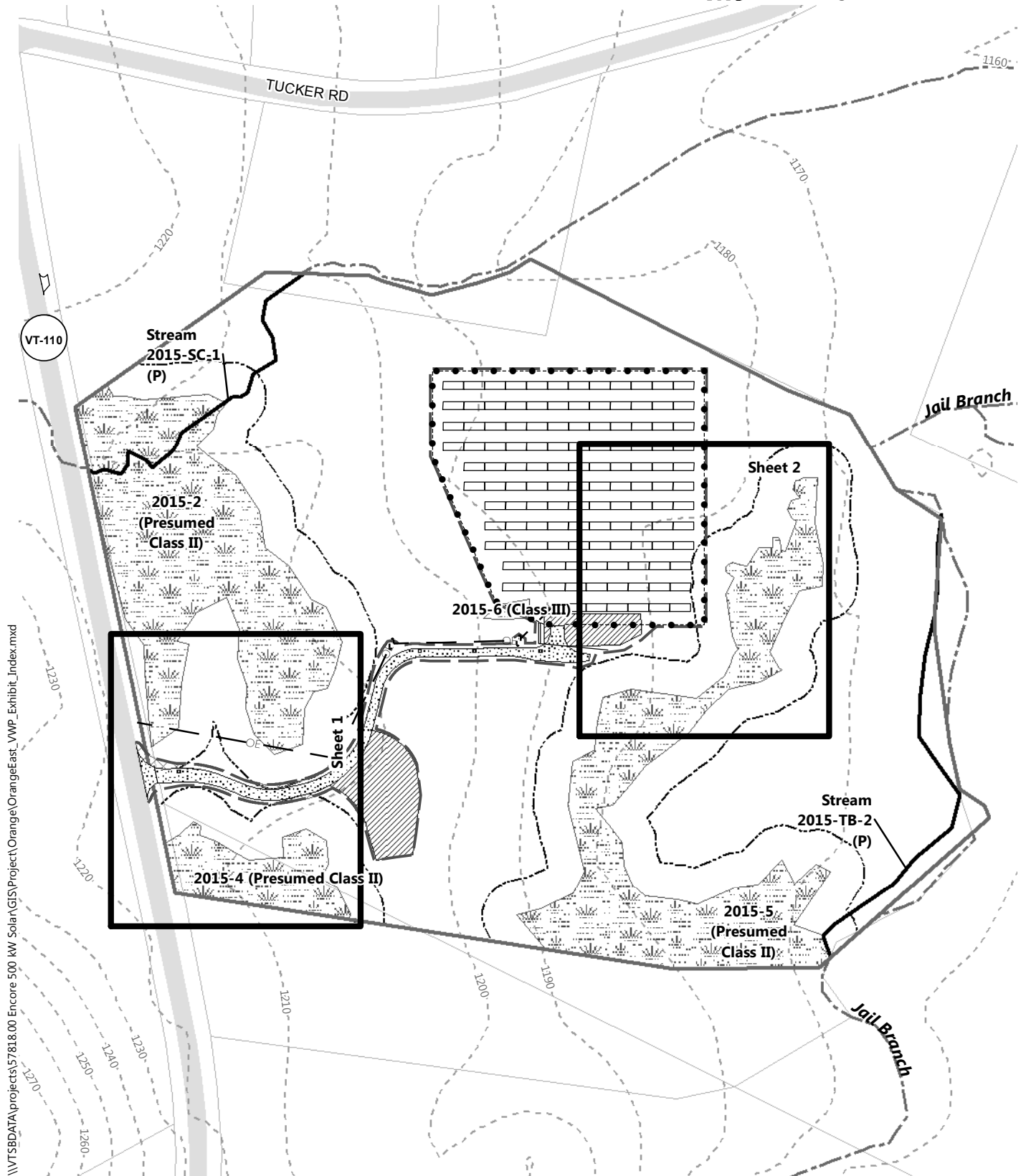
Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1)
High Water Table (A2)
Saturation (A3)
Water Marks (B1)
Sediment Deposits (B2)
Drift Deposits (B3)
Algal Mat or Crust (B4)
Iron Deposits (B5)
Inundation Visible on Aerial (B7)
Sparsely Vegetated Concave Surface (B8)
Water-Stained Leaves (B9)
Aquatic Fauna (B13)
Marl Deposits (B13)
Hydrogen Sulfide Odor (C1)
Oxidized Rhizospheres on Living Roots (C3)
Presence of Reduced Iron (C4)
Recent Iron Reduction in Tilled Soils (C6)
Thin Muck Surface (C7)
Other (Explain in Remarks)
Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)
Field Observations:
Surface Water Present?
Water Table Present?
Saturation Present?
Depth (inches):
Wetland Hydrology Present? NO
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
0.99" of precipitation recorded during October 2015 up to day of investigation, 0.92" recorded during 7 days prior to investigation. 0.00" of precipitation recorded on day of investigation (NOAA)
Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Depth Matrix Redox Features Texture Remarks
0-4 10YR 4/1 10YR 5/6 CLAY LOAM
4-14 2.5Y 5/2 SILT LOAM
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.
Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:
Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Thin Dark Surface (S9) (LRR R, MLRA 149B)
Loamy Mucky Mineral (F1) (LRR K, L)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Indicators for Problematic Hydric Soils:
2 cm Muck (A10) (LRR K, L, MLRA 149B)
Coast Prairie Redox (A16) (LRR K, L, R)
5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Dark Surface (S9) (LRR K, L, M)
Polyvalue Below Surface (S8) (LRR K, L)
Thin Dark Surface (S9) (LRR K, L)
Iron-Manganese Masses (F12) (LRR K, L, R)
Piedmont Floodplain Soils (F19) (MLRA 149B)
Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Red Parent Material (F21)
Very Shallow Dark Surface (TF12)
Other (Explain in Remarks)
Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? NO
Remarks:

Tree Stratum	(Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status	
1.	_____	_____	_____	_____	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>1</u> (A) # Dominants across all strata: <u>1</u> (B) % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
_____ = Total Cover					Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>63</u> x 2 = <u>126</u> FAC <u>6</u> x 3 = <u>18</u> FACU <u>3</u> x 4 = <u>12</u> UPL _____ x 5 = _____ Sum: <u>72</u> (A) <u>156</u> (B) Prevalence Index = B/A = <u>2.17</u>
Sapling Stratum (Plot size: <u>15' RAD</u>)					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
_____ = Total Cover					Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (explain) <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Morphological Adaptations ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (Plot size: <u>15' RAD</u>)					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
_____ = Total Cover					Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height. Woody vine - All woody vines, regardless of height. Hydrophytic Vegetation Present? <u>YES</u>
Herb Stratum (Plot size: <u>5' RAD</u>)					
1.	Phalaris arundinacea	63	X	FACW	
2.	Solidago rugosa	3		FAC	
3.	Ranunculus acris	3		FAC	
4.	Taraxacum officinale	3		FACU	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
9.	_____	_____	_____	_____	
10.	_____	_____	_____	_____	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
72 = Total Cover					
Woody Vines (Plot size: _____)					
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
_____ = Total Cover					

Remarks: (If observed, list morphological adaptations below).



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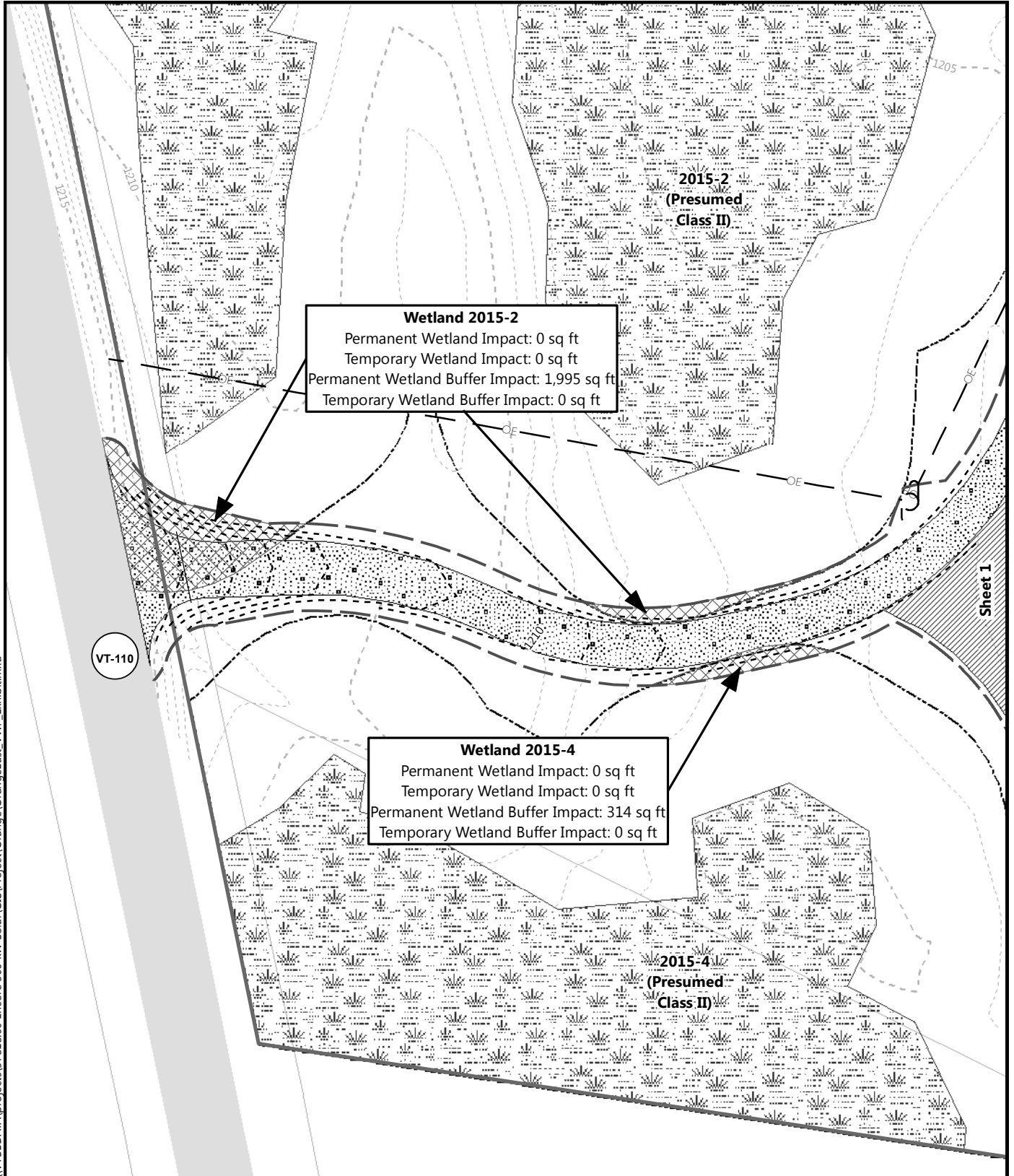


ER Thurston Farm Solar East | Orange, Vermont

- | | | |
|---|-------------------------------|--------------------------|
| Proposed Project Component (CEA) | Sheet Outline (VHB) | VHD Stream (VCGI) |
| Fence | Delineated Wetland (VHB) | Parcel Boundary (VCGI) |
| Limit of Disturbance | Class II Wetland Buffer (VHB) | Existing Pavement (CEA) |
| Overhead Utility | Delineated Stream (VHB) | 10 ft Contour (VHB/VCGI) |
| Gravel Access | | |
| Temp Laydown | | |

**Vermont Wetland Permit
Wetland Impact Exhibit
Index Sheet**

Sources:
 VCGI (Vermont Center for Geographic Information - Various Dates)
 CEA (Civil Engineering Associates, Inc. - Prog. Plans, 08/05/16)
 VHB - 2015-2016



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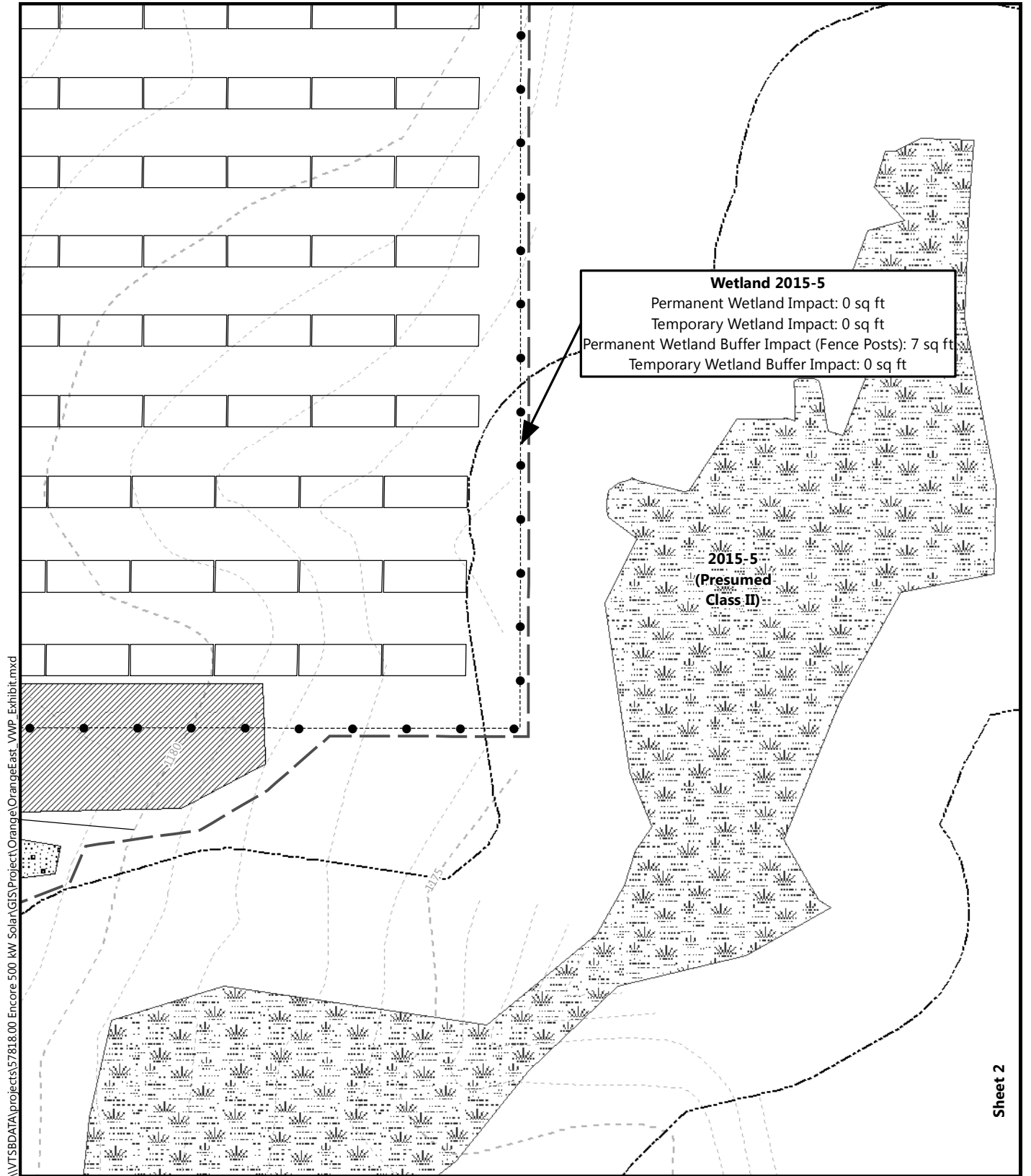


ER Thurston Farm Solar East | Orange, Vermont

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|--|--|--|
| <ul style="list-style-type: none"> --- Proposed Contour (CEA) Proposed Project Component (CEA) ● Fence (CEA) --- Limit of Disturbance (CEA) — Overhead Utility (CEA) ▨ Gravel Access (CEA) ▩ Temporary Laydown (CEA) | <ul style="list-style-type: none"> ▭ Sheet Outline (VHB) ▭ Study Area (VHB) ▨ Delineated Wetland (VHB) ▨ Class II Wetland Buffer (VHB) ▨ Permanent Wetland Buffer Impact (VHB) — Delineated Stream (VHB) | <ul style="list-style-type: none"> --- VHD Stream (VCGI) ▭ Parcel Boundary (VCGI) Existing Contour (CEA) --- 5ft Contour --- 1ft Contour |
|--|--|--|

**Vermont Wetland Permit
Wetland Impact Exhibit
Sheet 1 of 2**

Sources:
VCGI (Vermont Center for Geographic Information - Various Dates)
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VHB - 2015-2016



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Sheet 2



ER Thurston Farm Solar East | Orange, Vermont

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> --- Proposed Contour (CEA) Proposed Project Component (CEA) ● Fence (CEA) --- Limit of Disturbance (CEA) — Overhead Utility (CEA) ▤ Gravel Access (CEA) ▨ Temporary Laydown (CEA) | <ul style="list-style-type: none"> ▭ Sheet Outline (VHB) ▭ Study Area (VHB) ▨ Delineated Wetland (VHB) ▨ Class II Wetland Buffer (VHB) ▨ Permanent Wetland Buffer Impact (VHB) — Delineated Stream (VHB) | <ul style="list-style-type: none"> --- VHD Stream (VCGI) ▭ Parcel Boundary (VCGI) Existing Contour (CEA) --- 5ft Contour --- 1ft Contour |
|--|--|--|

**Vermont Wetland Permit
Wetland Impact Exhibit
Sheet 2 of 2**

Sources:
 VCGI (Vermont Center for Geographic Information - Various Dates)
 CEA (Civil Engineering Associates, Inc. - Prog. Plans, 08/05/16)
 VHB - 2015-2016

VERMONT WETLAND EVALUATION FORM

Project Name: ER Thurston Farm Solar East, Orange, VT
Project #: 57818.00

Date: 10/14/2015 and 10/20/2015 Investigator: C. Martin

SUMMARY OF FUNCTIONAL EVALUATION: Wetland 2015-2

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff <input type="text" value="H"/>	6. Rare, Threatened, and Endangered Species Habitat <input type="text" value="0"/>
2. Surface & Ground Water Protection <input type="text" value="P"/>	7. Education and Research in Natural Sciences <input type="text" value="0"/>
3. Fish Habitat <input type="text" value="0"/>	8. Recreational Value and Economic Benefits <input type="text" value="0"/>
4. Wildlife Habitat <input type="text" value="0"/>	9. Open Space and Aesthetics <input type="text" value="0"/>
5. Exemplary Wetland Natural Community <input type="text" value="0"/>	10. Erosion Control through Binding and Stabilizing the Soil <input type="text" value="P"/>

Note:

- **When to use this form:** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- **Both a desktop review and field examination** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- **The entire wetland or wetland complex** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- **The surrounding upland and outflow area** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- **Evaluation:** The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
 - The wetland is mapped on the VSWI map
 - The wetland is contiguous to a VSWI mapped wetland
 - The wetland meets the presumptions of significance under Section 4.6
 - The wetland has a preliminary determination that it is Class II

1. Water Storage for Flood Water and Storm Runoff

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

Constricted outlet or no outlet and an unconstricted inlet.

Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.

If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.

Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.

Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).

Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.

Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.

Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

History of downstream flood damage to public or private property.

Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.

1. Developed public or private property.

2. Stream banks susceptible to scouring and erosion.

3. Important habitat for aquatic life.

- The wetland is large in size and naturally vegetated.
- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
 - 1. A large amount of impervious surface in urbanized areas.
 - 2. Relatively impervious soils.
 - 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Constricted or no outlets.
 - Low water velocity through dense, persistent vegetation.
 - Hydroperiod permanently flooded or saturated.
 - Wetlands in depositional environments with persistent vegetation wider than 20 feet.
 - Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
 - Presence of seeps or springs.
 - Wetland contains a high amount of microtopography that helps slow and filter surface water.
 - Position in the landscape indicates the wetland is a headwaters area.
 - Wetland is adjacent to surface waters.
 - Wetland recharges a drinking water source.
 - Water sampling indicates removal of pollutants or nutrients.
 - Water sampling indicates retention of sediments or organic matter.
 - Fine mineral soils and alkalinity not low.
 - The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides

this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished nutrient uptake.
 - Presence of ditches or channels that confine water and restrict contact of water with vegetation.
 - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
 - Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
- The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
 - The wetland provides flows to Class A surface waters.
 - The wetland contributes to the protection or improvement of water quality of any impaired waters.
 - The wetland is large in size and naturally vegetated.

3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
 - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
 - Documented or professionally judged spawning habitat for northern pike.
 - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
 - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

4. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
 - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
 - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
 - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
 - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
 - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
 - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
 - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
 - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.

- 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
- 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the

following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The wetland is small in size for its type and does not represent fugitive habitat in developed areas (vernal pools and seeps are generally small in size, so this does not apply).
 - The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
 - The current use in the wetland results in frequent cutting, mowing or other disturbance.
 - The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland complex is large in size and high in quality.
 - The habitat has the potential to support several species based on the assessment above.
 - Wetland is associated with an important wildlife corridor.
 - The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.

- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
 - Deep peat accumulation reflecting a long history of wetland formation;
 - Forested wetlands displaying very old trees and other old growth characteristics;
 - A wetland natural community that is at the edge of the normal range for that type;
 - A wetland mosaic containing examples of several to many wetland community types; or
 - A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

 - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
 - There is credible documentation that threatened or endangered species have been present in past 10 years;
 - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
 - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Owned by or leased to a public entity dedicated to education or research.
 - History of use for education or research.
 - Has one or more characteristics making it valuable for education or research.

8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Used for, or contributes to, recreational activities.
 - Provides economic benefits.
 - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - Used for harvesting of wild foods.

9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Can be readily observed by the public; and
 - Possesses special or unique aesthetic qualities; or
 - Has prominence as a distinct feature in the surrounding landscape;
 - Has been identified as important open space in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Erosive forces such as wave or current energy are present and any of the following are present as well:
 - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
 - Good interspersion of persistent emergent vegetation and water along course of water flow.
 - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The stream contains high sinuosity.
 - Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

VERMONT WETLAND EVALUATION FORM

Project Name: ER Thurston Farm Solar East Orange, VT
Project #: 57818.00

Date: 10/14/2015 and 10/20/2015 Investigator: C. Martin

SUMMARY OF FUNCTIONAL EVALUATION: Wetland 2015-4

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff <input type="text" value="P"/>	6. Rare, Threatened, and Endangered Species Habitat <input type="text" value="0"/>
2. Surface & Ground Water Protection <input type="text" value="H"/>	7. Education and Research in Natural Sciences <input type="text" value="0"/>
3. Fish Habitat <input type="text" value="0"/>	8. Recreational Value and Economic Benefits <input type="text" value="0"/>
4. Wildlife Habitat <input type="text" value="0"/>	9. Open Space and Aesthetics <input type="text" value="0"/>
5. Exemplary Wetland Natural Community <input type="text" value="0"/>	10. Erosion Control through Binding and Stabilizing the Soil <input type="text" value="0"/>

Note:

- **When to use this form:** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- **Both a desktop review and field examination** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- **The entire wetland or wetland complex** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- **The surrounding upland and outflow area** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- **Evaluation:** The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
 - The wetland is mapped on the VSWI map
 - The wetland is contiguous to a VSWI mapped wetland
 - The wetland meets the presumptions of significance under Section 4.6
 - The wetland has a preliminary determination that it is Class II

1. Water Storage for Flood Water and Storm Runoff

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Constricted outlet or no outlet and an unconstricted inlet.
 - Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
 - If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
 - Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
 - Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
- Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
 - Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
 - Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
 - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
- History of downstream flood damage to public or private property.
 - Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
 - 1. Developed public or private property.
 - 2. Stream banks susceptible to scouring and erosion.
 - 3. Important habitat for aquatic life.

- The wetland is large in size and naturally vegetated.
- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
 - 1. A large amount of impervious surface in urbanized areas.
 - 2. Relatively impervious soils.
 - 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Constricted or no outlets.
 - Low water velocity through dense, persistent vegetation.
 - Hydroperiod permanently flooded or saturated.
 - Wetlands in depositional environments with persistent vegetation wider than 20 feet.
 - Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
 - Presence of seeps or springs.
 - Wetland contains a high amount of microtopography that helps slow and filter surface water.
 - Position in the landscape indicates the wetland is a headwaters area.
 - Wetland is adjacent to surface waters.
 - Wetland recharges a drinking water source.
 - Water sampling indicates removal of pollutants or nutrients.
 - Water sampling indicates retention of sediments or organic matter.
 - Fine mineral soils and alkalinity not low.
 - The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides

this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished nutrient uptake.
- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
 - The wetland provides flows to Class A surface waters.
 - The wetland contributes to the protection or improvement of water quality of any impaired waters.
 - The wetland is large in size and naturally vegetated.

3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
 - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
 - Documented or professionally judged spawning habitat for northern pike.
 - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
 - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

4. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
 - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
 - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
 - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
 - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
 - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
 - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
 - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
 - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.

- 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
- 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the

following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The wetland is small in size for its type and does not represent fugitive habitat in developed areas (vernal pools and seeps are generally small in size, so this does not apply).
 - The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
 - The current use in the wetland results in frequent cutting, mowing or other disturbance.
 - The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland complex is large in size and high in quality.
 - The habitat has the potential to support several species based on the assessment above.
 - Wetland is associated with an important wildlife corridor.
 - The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.

- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
 - Deep peat accumulation reflecting a long history of wetland formation;
 - Forested wetlands displaying very old trees and other old growth characteristics;
 - A wetland natural community that is at the edge of the normal range for that type;
 - A wetland mosaic containing examples of several to many wetland community types; or
 - A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

 - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
 - There is credible documentation that threatened or endangered species have been present in past 10 years;
 - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
 - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Owned by or leased to a public entity dedicated to education or research.
 - History of use for education or research.
 - Has one or more characteristics making it valuable for education or research.

8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Used for, or contributes to, recreational activities.
 - Provides economic benefits.
 - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - Used for harvesting of wild foods.

9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Can be readily observed by the public; and
 - Possesses special or unique aesthetic qualities; or
 - Has prominence as a distinct feature in the surrounding landscape;
 - Has been identified as important open space in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Erosive forces such as wave or current energy are present and any of the following are present as well:
 - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
 - Good interspersion of persistent emergent vegetation and water along course of water flow.
 - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The stream contains high sinuosity.
 - Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

VERMONT WETLAND EVALUATION FORM

Project Name: ER Thurston Farm Solar East, Orange, VT
Project #: 57818.00

Date: 10/14/2015 and 10/20/2015 and 4/28/16 Investigator: C. Martin

SUMMARY OF FUNCTIONAL EVALUATION: Wetland 2015-5

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff <input type="text" value="H"/>	6. Rare, Threatened, and Endangered Species Habitat <input type="text" value="0"/>
2. Surface & Ground Water Protection <input type="text" value="P"/>	7. Education and Research in Natural Sciences <input type="text" value="0"/>
3. Fish Habitat <input type="text" value="0"/>	8. Recreational Value and Economic Benefits <input type="text" value="0"/>
4. Wildlife Habitat <input type="text" value="L"/>	9. Open Space and Aesthetics <input type="text" value="0"/>
5. Exemplary Wetland Natural Community <input type="text" value="0"/>	10. Erosion Control through Binding and Stabilizing the Soil <input type="text" value="P"/>

Note:

- **When to use this form:** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- **Both a desktop review and field examination** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- **The entire wetland or wetland complex** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- **The surrounding upland and outflow area** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- **Evaluation:** The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
 - The wetland is mapped on the VSWI map
 - The wetland is contiguous to a VSWI mapped wetland
 - The wetland meets the presumptions of significance under Section 4.6
 - The wetland has a preliminary determination that it is Class II

1. Water Storage for Flood Water and Storm Runoff

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Constricted outlet or no outlet and an unconstricted inlet.
 - Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
 - If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
 - Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
 - Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
- Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
 - Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
 - Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
 - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
- History of downstream flood damage to public or private property.
 - Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
 - 1. Developed public or private property.
 - 2. Stream banks susceptible to scouring and erosion.
 - 3. Important habitat for aquatic life.

Complex
(not
within
VHB delin
area)

Complex
(not
within
VHB
delin
area)

- The wetland is large in size and naturally vegetated.
- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
 - 1. A large amount of impervious surface in urbanized areas.
 - 2. Relatively impervious soils.
 - 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Constricted or no outlets.
 - Low water velocity through dense, persistent vegetation.
 - Hydroperiod permanently flooded or saturated.
 - Wetlands in depositional environments with persistent vegetation wider than 20 feet.
 - Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
 - Presence of seeps or springs.
 - Wetland contains a high amount of microtopography that helps slow and filter surface water.
 - Position in the landscape indicates the wetland is a headwaters area.
 - Wetland is adjacent to surface waters.
 - Wetland recharges a drinking water source.
 - Water sampling indicates removal of pollutants or nutrients.
 - Water sampling indicates retention of sediments or organic matter.
 - Fine mineral soils and alkalinity not low.
 - The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides

this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished nutrient uptake.
- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
 - The wetland provides flows to Class A surface waters.
 - The wetland contributes to the protection or improvement of water quality of any impaired waters.
 - The wetland is large in size and naturally vegetated.

Complex
(not
within
VHB
delin
area)

3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
 - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
 - Documented or professionally judged spawning habitat for northern pike.
 - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
 - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

4. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
 - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
 - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
 - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
 - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
 - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
 - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
 - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
 - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.

- 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
- 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the

Complex
(not
within
VHB
delin
area)

following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The wetland is small in size for its type and does not represent fugitive habitat in developed areas (vernal pools and seeps are generally small in size, so this does not apply).
 - The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
 - The current use in the wetland results in frequent cutting, mowing or other disturbance.
 - The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland complex is large in size and high in quality.
 - The habitat has the potential to support several species based on the assessment above.
 - Wetland is associated with an important wildlife corridor.
 - The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.

- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
 - Deep peat accumulation reflecting a long history of wetland formation;
 - Forested wetlands displaying very old trees and other old growth characteristics;
 - A wetland natural community that is at the edge of the normal range for that type;
 - A wetland mosaic containing examples of several to many wetland community types; or
 - A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

 - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
 - There is credible documentation that threatened or endangered species have been present in past 10 years;
 - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
 - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Owned by or leased to a public entity dedicated to education or research.
 - History of use for education or research.
 - Has one or more characteristics making it valuable for education or research.

8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Used for, or contributes to, recreational activities.
 - Provides economic benefits.
 - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - Used for harvesting of wild foods.

9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Can be readily observed by the public; and
 - Possesses special or unique aesthetic qualities; or
 - Has prominence as a distinct feature in the surrounding landscape;
 - Has been identified as important open space in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Erosive forces such as wave or current energy are present and any of the following are present as well:
 - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
 - Good interspersion of persistent emergent vegetation and water along course of water flow.
 - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The stream contains high sinuosity.
 - Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

Summary of Delineated Wetlands
 Encore Renewable Energy - Ed Thurston Farm Solar East 500 kW Solar Project
 Orange, VT
 Prepared by VHB (O. McEnroe)
 June 6, 2016

VHB Delineated Wetlands													
Wetland ID	Delineated Area (Square Feet) ¹	Cowardin Classification ²	Hydrology	Hydric Soil Indicator	Vermont Wetland Rules Classification						VHB Proposed VWR Classification ⁶	Typical Vegetation	Comments
					Contiguous to a VSWI-mapped Wetland?	Riparian Wetland Contiguous to Stream Channel? (Flow Regime) ³	VWR Section 4.6 Presumptions ⁴	VWR Section 5 Functional Criteria Presence/ Significance					
								Type ⁵	VHB-Proposed Significant?				
2015-2	103,776	PEM, PSS	Saturation (A3); Drainage Patterns (B10)	Depleted Matrix (F3)	Yes	Yes (Perennial)	a,c	5.1, 5.2, 5.10	Yes	II	<i>Cornus alba</i> , <i>Carex crinita</i> , <i>Spiraea alba</i>	Associated with 2015-SC-1; Extends outside of study area; majority of wetland mowed and in maintained field	
2015-4	21,707	PEM, PSS	Saturation (A3); Drainage Patterns (B10)	Depleted Matrix (F3)	No	No	a	5.1, 5.2	Yes	II	<i>Cornus alba</i> , <i>Carex crinita</i> , <i>Spiraea alba</i>	Wetland located in VELCO ROW; existing trails bisects wetland; slight topographical depression	
2015-5	91,800	PEM, PSS	Saturation (A3); Oxidized Rhizospheres on Living Roots (C3)	Depleted Matrix (F3)	No	Yes (Perennial)	a,c	5.1, 5.2, 5.10	Yes	II	<i>Phalaris arundinacea</i> , <i>Scirpus atrovirens</i> , <i>Solidago rugosa</i>	Associated with 2015-TB-2; Extends outside of study area ; along VELCO ROW; floodplain feature	
2015-6	1,366	PEM	Saturation (A3); Oxidized Rhizospheres on Living Roots (C3)	Depleted Matrix (F3)	No	No	-	5.1	No	III	<i>Phalaris arundinacea</i>	Small isolated wetland feature; located in slight topographical depression in field	

¹All wetlands field-delineated per the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast and North Central Region. U.S. Army Corps of Engineers. 2011; Italics indicate wetland continues outside of study area.

²Classification follows Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitat of the United States. U.S. Fish and Wildlife Service. FWS/OBD-79/31. 103pp.

³Wetland contiguity to streams as defined in the Vermont ANR 12/9/05 *Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers* and confirmed if a delineated perennial or intermittent stream channel inflows, through flows, and outflows from a delineated wetland (ephemeral channels not typically being subject to ANR Riparian Buffer Guidance). The vegetative assemblage or natural community type is used when determining riparian vegetation function. Flow regime determined based on qualitative observations of instream hydrology indicators and geomorphic characteristic and are subject to professional judgment (P=perennial, I=intermittent, E=ephemeral).

⁴Alpha-numeric codes correspond with Section 4.6 Presumptions, of the 2010 Vermont Wetland Rules.

⁵VWR Section 5: Functional Criteria for Evaluating a Wetland's Significance: 5.1=Water Storage for Flood Water and Storm Runoff, 5.2=Surface and Groundwater Protection, 5.3=Fish Habitat, 5.4=Wildlife Habitat, 5.5=Exemplary Wetland Natural Community, 5.6=Rare, Threatened or Endangered Species Habitat, 5.7=Education and Research in Natural Sciences, 5.8=Recreational Value and Economic Benefits, 5.9=Open Space and Aesthetics, 5.10=Erosion Control Through Binding and Stabilizing the Soil. (P)= Present, (H)=High, (L)=Low; Correspond to observed level of functionality

⁶VHB-Proposed VWR Classification is based on review and application of the VWR, particularly VHB's interpretation of Section 4.6 Presumptions and and VWR Section 5 Functional Analysis.