



December 29, 2015

Ref: 57788.00

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

Re: Village of Hyde Park Electric Department  
Hyde Park Solar- Waterhouse Project  
Hyde Park, Vermont  
Application for a Vermont Wetland Individual Permit

Dear Shannon:

On behalf of The Village of Hyde Park Electric Department (“HPED” or “Applicant”), VHB is providing a re-submittal of the enclosed application package to the Vermont Department of Environmental Conservation (“VT DEC”) Wetlands Program. The application requests a Vermont Individual Wetland Permit (“VIWP”) 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 1 megawatt (“MW”) solar installation in an agricultural field located on the east side of the road at E-911 address 1124 Silver Ridge Road in Hyde Park, Vermont, and referred to as the Hyde Park Solar-Waterhouse Project (“Project”).

In response to our conversation on December 21, 2015 and VT DEC’s input regarding contents of the December 7, 2015 re-submittal of this permit application, the Project has revised the permanent buffer impact quantity to reflect the maximum potential buffer tree cutting that could occur over the operational lifetime of the Project of 16,609 square feet, and has also revised the access road design for the ditch crossing. The new crossing design for a 6 foot span timber deck bridge will enhance wetland hydrologic connectivity as well as provide for wildlife passage, while also reducing the total area of wetland impact from the previously proposed 4,010 square feet to 2,135 square feet.

The Applicant is seeking authorization for wetland and buffer impacts resulting from activities required as part of proposed Project construction. As revised from the initial application submittal and the December 7 re-submittal, the following temporary and permanent wetland and buffer impacts are proposed:

- Permanent Wetland Impacts: 2,135 square feet (0.05 acre)
- Permanent Buffer Impacts: 9,552 square feet (0.22 acre)
- Temporary Buffer Impacts: 38 square feet (.0009 acre)
- Buffer Clearing Impacts: 16,609 square feet (0.38 acre)

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VHB and the Applicant understand that VT DEC will consider providing a refund to address the reduction in permanent wetland impacts as well as buffer clearing impacts. Since the initial October 19 application submittal, wetland impacts have been reduced by 1,875 square feet (0.04 acre) and proposed buffer clearing has been reduced by 3,457 square feet (0.08 acre). According to communication from Laura Woods on December 3, 2015, no administrative fee is required for this technical resubmittal.

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 us if you have any questions, comments, or require further information regarding the enclosed Vermont Wetland Permit Application and supporting materials.

Sincerely,

A handwritten signature in blue ink, appearing to read "Carla A. Fenner".

Carla A. Fenner  
Environmental Scientist

A handwritten signature in blue ink, appearing to read "Brad Ketterling".

Brad Ketterling  
Senior Environmental Scientist

CAF/DBK/jkw

- Enclosures (on CD)
- Vermont Wetland Permit Application
- Attachment 1 - Site Location Map
- Attachment 2 - Wetland and Buffer Impact Exhibit-**REVISED**
- Attachment 3 – Hyde Park Solar- Waterhouse Project Section 248 Natural Resource Assessment Memorandum
- Attachment 4 - Hyde Park Solar- Waterhouse Project Site Plans-**REVISED**
- Attachment 5 - Project Abutter Information
- Attachment 6 – Landscaping Plan
- Attachment 7 – Lease Option
- Attachment 8 – Wetland Buffer Vegetation Management Plan

cc: Mike Adams, U. S. Army Corps of Engineers (via electronic transmittal only)  
Phillip Foy, Encore Redevelopment LLC (via electronic transmittal only)

## Vermont Wetland Section Wetland Application Database Form (AFFIX TO THE FRONT OF THE APPLICATION)

<b>Applicant Name:</b> Village of Hyde Park Electric Department (Attn: Derek Moretz, Encore Redevelopment, LLC)		<b>Representative Name:</b> Carla Fenner (VHB)	
<b>Town where project is located:</b> Hyde Park		<b>County:</b> Lamoille	
<b>Project Location Description:</b> To the east side of the road at e911 address 1124 Silver Ridge Road in Hyde Park, Vermont. <i>911 Street Address or direction from nearest intersection</i>			
<b>Project Summary:</b> Install and operate a net-metering solar electric generation facility on agricultural land in Hyde Park Vermont.			
<b>Permit Type Requested</b> (check all that apply) <input type="checkbox"/> Vermont General Permit Coverage <input type="checkbox"/> Wetland Determination <input checked="" type="checkbox"/> Vermont Wetland Permit			
<b>Impact Calculations:</b> Total up proposed impacts from wetland tables listed below			
Total Wetland Impact	2,135 square feet (s.f.)	Total Buffer Zone Impact	9,590 square feet (s.f.)
Total Wetland Clearing (qualified linear projects only)	0 square feet (s.f.)	Total Buffer Zone Clearing (qualified linear projects only)	16,609 square feet (s.f.)
<b>Permit Fees: Make check payable to - State of Vermont</b>			
Wetland Impact Fee: (\$0.75/sf)	\$1,601.25	Administrative Fee:	\$240
Buffer Impact Fee: (\$0.25/sf)	\$2,397.50	Total Check Amount:	\$8,381.50
Clearing Fee: (\$0.25/sf)	\$4,152.25		
<b>Existing Land Use Type:</b> (check all that apply) <input checked="" type="checkbox"/> Agriculture <input type="checkbox"/> Transportation <input type="checkbox"/> Parks/Rec/Trail <input type="checkbox"/> Residential (Single Family) <input type="checkbox"/> Residential (Subdivision) <input type="checkbox"/> Institutional <input type="checkbox"/> Undeveloped <input type="checkbox"/> Forestry <input type="checkbox"/> Industrial/ commercial			
<b>Proposed Land Use Type:</b> (check all that apply) <input checked="" type="checkbox"/> Agriculture <input type="checkbox"/> Transportation <input type="checkbox"/> Parks/Rec/Trail <input type="checkbox"/> Residential (Single Family) <input type="checkbox"/> Residential (Subdivision) <input type="checkbox"/> Institutional <input type="checkbox"/> No Change <input type="checkbox"/> Forestry <input type="checkbox"/> Industrial/ commercial			
<b>Proposed Impact Type:</b> (check all that apply) <input checked="" type="checkbox"/> Road <input type="checkbox"/> Driveway <input type="checkbox"/> Dry Hydrant <input type="checkbox"/> Buildings <input type="checkbox"/> Utilities <input type="checkbox"/> Parking <input type="checkbox"/> Septic/Well <input type="checkbox"/> Stormwater <input type="checkbox"/> Parks/Path <input type="checkbox"/> Agriculture <input type="checkbox"/> Pond <input type="checkbox"/> Lawn <input type="checkbox"/> Beaver dam alteration <input type="checkbox"/> Silviculture <input type="checkbox"/> Aesthetics <input checked="" type="checkbox"/> Other <input type="checkbox"/> No Impact			
<b>Wetland 1: 2015-1</b> (Label using Wetland ID from application if applicable, use supplemental sheets if more than one wetland is being impacted)		Location: <b>Hyde Park</b>	
Wetland Type: <b>PEM, PSS</b>	WL Size Class :	<b>Within Study Area: approximately 2.6 acres</b>	
<b>Proposed Alterations</b>			
<b>Wetland Alteration:</b>	<b>Buffer Zone Alteration:</b>	<b>Wetland Alteration Type</b> (check all that apply)	
Wetland Fill: 2,135 s.f.	Temporary: 0s.f. Permanent: 0s.f.	<input type="checkbox"/> Dredge	<input type="checkbox"/> Drain
	Temporary: 38 s.f. Permanent: 26,161 s.f.	<input type="checkbox"/> Cut Vegetation	<input type="checkbox"/> Stormwater
		<input checked="" type="checkbox"/> Trench/Fill	<input type="checkbox"/> Other
<b>Mitigation</b>			
<b>Avoidance and Minimization</b> (s.f. of wetland NOT impacted):	Wetland:	s.f.	Buffer Zone s.f.
<b>Wetland Mitigation: (s.f. Gained)</b>	Restoration s.f.	Enhancement s.f.	
<b>Buffer Zone Mitigation (s.f. Gained):</b>	Restoration s.f.	Enhancement s.f.	

Creation s.f. Conservation s.f. Creation s.f. Conservation s.f

**Reason for Mitigation:**



Correction of Violation

Mitigation to offset permit impacts

Voluntary



## Vermont Wetland Permit Application/Determination Petition

QUESTION	INSTRUCTIONS AND APPLICANT ANSWER	STAFF NOTE
1. Applicant	If the applicant is someone other than the landowner, the landowner information must also be included below.	
1.1. Applicant Name	Village of Hyde Park Electric Department ("Applicant") (Attn: Derek Moretz)	
1.2. Applicant Address	110 Main Street Second Floor Suite 2E Burlington VT 05401	
1.3. Applicant Phone Number	(802) 861-3023	
1.4. Applicant Email	derek@encoreredevelopment.com	
1.5. Applicant Signature (original signature required)	<p>By signing this application you are certifying that all the information contained within is true, accurate, and complete to the best of your knowledge.</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border-bottom: 1px solid black; width: 60%; text-align: center;">   X </div> <div style="border-bottom: 1px solid black; width: 30%; text-align: center;"> Date: 12/28/15 </div> </div>	
2. Representative	Consultant, engineer, or other representative that is responsible for filling out this application, if other than the applicant or landowner	
2.1. Representative Name	Cara A. Fenner, VHB	
2.2. Representative Address	40 IDX Drive, Building 100 Suite 200 South Burlington VT 05403	
2.3. Representative Phone Number	(802) 497-6144	
2.4. Applicant Email	cfenner@vhb.com	
2.5. Representative Signature (original signature required)	<p>By signing this application you are certifying that all the information contained within is true, accurate, and complete to the best of your knowledge.</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border-bottom: 1px solid black; width: 60%; text-align: center;">   X </div> <div style="border-bottom: 1px solid black; width: 30%; text-align: center;"> Date: 12/28/15 </div> </div>	
3. Landowner	Landowner must sign the application. Use this space if landowner is different from the applicant	
3.1. Landowner Name	Parkmount, LLC Raymond Chauvin	
3.2. Landowner Address	3691 Centerville Road, Hyde Park, VT 05655	
3.3. Landowner Phone Number		
3.4. Landowner Email		
3.5. Landowner Easement	<p>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.</p> <p>See Lease Option Lease, Attachment 7</p>	
3.6. Landowner Signature (original signature required)	<p>By signing this application you are certifying that all the information contained within is true, accurate, and complete to the best of your knowledge.</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border-bottom: 1px solid black; width: 60%; text-align: center;"> <p>See Lease Option (Attachment 7), which grants land control to the Applicant</p> </div> <div style="border-bottom: 1px solid black; width: 30%; text-align: center;"> Date: </div> </div>	
4. Location of Wetland and Project	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 geographic features.	

	<p>The Project site is located in an agricultural field located on the east side of the road at e911 address 1124 Silver Ridge Road in Hyde Park, Vermont approximately 1.1 mile north from the intersection of Vermont Route 15 (“VT-15”) and Vermont Route 100 (“VT-100”). An investigation area of approximately 15.1 acres was used to assess wetlands and other natural resources, and is depicted in the Natural Resources Map included in Attachment 3. The Project as proposed would be accessed via an existing agricultural access road extending generally east from Silver Ridge Road. The Project would be installed within approximately 6 acres of the field, to include a 1 MW solar electric generation facility and associated infrastructure. Electrical interconnection for the Project is planned to occur at Silver Ridge Road where there is an existing Hyde Park Electric Department (“HPED”) 3-phase distribution line; the Project transformer at the western edge of the array would connect to the HPED line via installation of new overhead line and one new utility pole (see Site Plan, Attachment 4)</p>		
<p>5. Site Visit Date and Attendees</p>	<p>Date of visit with District Wetlands Ecologist</p> <p>August 12, 2015</p>	<p>List people present for site visits including Ecologist, landowner, and representatives.</p> <p>Shannon Morrison (DEC Wetlands Ecologist), Chelsea Martin (VHB), Carla Fenner (VHB), Derek Moretz (Encore), Phillip Foy (Encore)</p>	
<p>6. Wetland Classification</p>	<p>The wetland is a Class II wetland because (Choose one):</p> <p>The wetland is mapped on the VSWI map and/or is connected to the VSWI mapped wetland.</p>		
<p>7. Description of Entire Wetland or Wetland Complex</p>	<p>Answer the following questions regarding the entire wetland or wetland complex. A wetland complex is generally defined as two or more wetland types that are contiguous and interrelated. Specific questions about the wetland in the project area will follow.</p>		
<p>7.1. Size of Wetland Complex in Acres</p>	<p>Can be obtained from the Environmental Interest Locator Map for mapped wetlands</p> <p>As mapped on the VSWI, the wetland complex includes 2 wetland features, one of which is mapped at 0.75 acre and the second of which is mapped at 0.98 acre. Both VSWI wetlands are mapped primarily beyond the limits (north of) the VHB Study Area. As delineated by VHB and confirmed by DEC on August 12, 2015, that portion of the wetland complex that occurs within VHB’s Study Area (see Natural Resources Map, Attachment 3) was delineated at 2.57 acres, and was observed to extend beyond VHB’s Study Area to the north and south.</p>		
<p>7.2. Natural Community Types Present</p>	<p>List all wetland types in the wetland or wetland complex and their abundance or relative abundance. For example: 50 acres of softwood forested swamp; or 30% scrub swamp, 70% emergent wetland</p> <p>Within the VHB Study Area: PEM (approximately 50% of delineated area), PSS (approximately 50% of delineated area)</p>		
<p>7.3. Landscape Position</p>	<p>Where is the wetland located on the landscape? Examples: bottom of a basin, edge of a stream, shore of a lake, etc.</p> <p>The wetland complex is located in a topographically defined valley and riparian corridor bounding a perennial stream segment (Stream 2015-SC-1 on VHB Natural Resources Map, Attachment 3) and maintained agricultural ditch (2015-JD-1 on VHB Natural Resource Map, Attachment 3), as well as wider depressional areas where streamflow becomes diffuse and includes areas of standing water with dense emergent vegetation. Stream and riparian areas are characteristic of upper-perennial streams in the middle-elevations of the Northern Green Mountain biophysical region of Vermont.</p>		
<p>7.4. Wetland Hydrology</p>	<p>Describe the main source of wetland hydrology for the wetland complex. List any river, streams, lakes and ponds.</p> <p>Primarily surface water (overland flow towards stream), secondarily groundwater discharge.</p> <p>Include answers to the following where appropriate:</p>		
<p>7.4.1. Direction of flow</p>	<p>For example: stream flows from north to south through the wetland complex.</p> <p>Flow in the jurisdictional ditch (2015-JD-1 on VHB Natural Resource Map,</p>		

	<p>Attachment 3) flows generally from the south to the north. Streamflow in the perennial stream segment (Stream 2015-SC-1 on VHB Natural Resources Map, Attachment 3), flows generally south to north beyond the eastern edge of the Project field, and then flows generally east to west beyond the north edge of the Project field, before making confluence with Centennial Brook approximately 0.4 mile to the northwest of the Project. Streams as mapped by the Vermont Hydrography Dataset (“VHD”) as well as stream and ditch segments delineated by VHB on August 12, 2015 are depicted on the Natural Resources Map in Attachment 3)</p>	
<p>7.4.2. Influence of hydrology on wetland complex</p>	<p>For example: The river provides flood water to the wetland in the spring.</p> <p>Seasonal high water table, overland flow of precipitation runoff, and some seasonal flooding of wetland from Stream 2015-SC-1 are the primary influences on hydrology.</p> <p>Subject wetland complex is located adjacent to a small upper-perennial stream and extends upslope away from the stream where convex topography and a high water table create wetter soil conditions than surrounding upland areas.</p>	
<p>7.4.3. Relation to the project area</p>	<p>Distance between the project area and any nearby surface waters.</p> <p>Project perimeter fence is proposed within approximately 65 feet of the jurisdictional ditch delineated by VHB as 2015-JD-1, and the Project access road improvements would occur on the existing access road which crosses over 2015-JD-1 (including installing a bridge at the existing crossing). Project perimeter fence is proposed within approximately 85 feet of the perennial stream delineated by VHB as Stream 2015-SC-1 (see Natural Resources Map, Attachment 3 and Site Plan, Attachment 4). In general, the Project is sited on gently sloping terraced lands above the wetland complex and stream, and therefore would avoid the hydrologic connections occurring at the wetland complex.</p>	
<p>7.4.4. Hydroperiod</p>	<p>Discuss frequency and duration of flooding, ponding, and/or soil saturation. High water table and the presence of adjacent intermittent (ditch) and perennial (stream) surface waters which create flooded conditions result in permanently saturated soil conditions and seasonally saturated soil conditions in the upper elevations of the wetland.</p>	
<p>7.5. Surrounding Landuse of the Wetland Complex</p>	<p>For example: rural residential and forested; agricultural and undeveloped, Wetland complex is bounded by forest to the east, agricultural fields and rural residential development to the north, and light industrial development to the south, as well as agricultural cropland and grazing land in the Project area and immediately to the north and west.</p>	
<p>7.6. Relation to Other Nearby Wetlands</p>	<p>Provide any information on wetlands or wetland complexes that are close enough to contribute to the overall function of the wetland in question. The subject wetland is positioned within a larger wetland complex which includes portions of PEM and PSS cover, extending along the lower-lying lands adjacent to the small, unnamed tributaries to Centennial Brook. Although outside of VHB’s delineation area, hydrologic connection is assumed to be present between the subject wetland and a larger wetland complex extending generally northwest from where 2015-JD-1 joins stream 2015-SC-1, and also with limited wetlands extending generally south from the southeast corner of VHB’s Study Area (see Natural Resources Map, Attachment 3).</p>	
<p>7.7. Pre-project Cumulative Impacts to the Wetland</p>	<p>Identify any cumulative ongoing impacts outside of the project that may influence the wetland. Examples include but are not limited to wetland encroachments off the subject property, land management in or surrounding the wetland, or development that influences hydrology or water quality. Existing impacts to the wetland within VHB’s delineated area are largely limited to the western portion of the feature. The landowner/farmer has conducted earthwork including excavating, grading, and channelization in the 2015-JD-1 ditch to maintain existing drainage and access between his crop fields. Ditch maintenance activities were conducted in 2015 as observed during the August 12 site visit attended by VHB, DEC Wetlands Program</p>	

	<p>staff, and Encore Redevelopment. The maintenance appeared to include re-establishing a channel for water flow as well as some smoothing and grading of the adjacent wetland area to create an even slope down to the ditch. Photographs depicting existing ditch conditions within the wetland are included in the Representative Site Photographs document in Attachment 3.</p> <p>In summary, a portion of the wetland and the wetland buffer have been disturbed during agricultural maintenance activities. The recently disturbed area within the wetland and buffer had been seeded to a grass mix as observed during the August 12, 2015 site visit.</p> <p>Other pre-Project impacts to the wetland complex are likely to include encroachment from neighboring residences and/or businesses, as well as runoff of toxins, sediment, and nutrients from adjacent agriculture and developments, although these were unobservable/not quantifiable during the field surveys.</p>	
<p>8. Description of Subject Wetland</p>	<p>Subject Wetland is defined as the area of wetland in the project area, 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 larger wetland or wetland complex that could be directly or indirectly impacted by the project, as defined by hydrology, vegetation and/or physical characteristics.</p>	
<p>8.1. Context of Subject Wetland</p>	<p>Describe where the subject wetland is in the context of the larger wetland or wetland complex described above.</p> <p>Subject wetland occurs within a larger riparian wetland complex, which generally bounds Centerville Brook above its confluence with the Lamoille River, and the intermittent and upper-perennial tributaries to Centerville Brook.</p> <p>The subject wetland encompasses two VSWI mapped wetlands, as described in Section 7.1. The subject wetland was delineated by VHB to include 2.6 acres (112,091 square feet). The overlapping VSWI wetlands are mapped at 0.75 acre and 0.98 acre on the ANR Atlas.</p> <p>A riparian wetland along Centerville Brook is mapped on the VSWI as approximately 37 acres, and is located approximately 570 feet to the north from the subject wetland at its closest point.</p>	
<p>8.2. Wetland Landuse</p>	<p>For example: mowed lawn; old field; naturally vegetated. Describe any previous and ongoing disturbance in the subject wetland.</p> <p>The eastern portion of the subject wetland is naturally vegetated. The western portion of the wetland is in between two agricultural fields and has been disturbed at regular intervals as well as during the 2015 growing season for agricultural purposes as described in Section 7.7.</p> <p>The northern portion of the wetland is impacted by grazing cows, and is in semi-natural scrub-shrub and emergent vegetation and is partially planted forage species.</p>	
<p>8.3. Wetland Vegetation</p>	<p>List dominant wetland community type and associated dominant plant species.</p> <p>PEM: <i>Impatiens capensis</i>, <i>Eupatorium perfoliatum</i>, <i>Sparganium americanum</i>, <i>Carex comosa</i></p> <p>PSS: <i>Alnus incana</i>, <i>Salix bebbiana</i>,</p>	
<p>8.4. Wetland Soils</p>	<p>Use USDA NRCS information where possible and use the ACOE Delineation Manual soil description</p> <p>NRCS: Adams loamy fine sand (AdD), Salmon very fine sandy loam (SaE2), Swanville silt loam (SwA), and Walpole fine sandy loam (Wa).</p> <p>USACE: Depleted Matrix (F3), Histosol (A1)</p>	
<p>8.5. Wetland Hydrology</p>	<p>Use descriptions from the ACOE Delineation Manual.</p> <p>Saturation (A3), Oxidized Rhizospheres on Living Roots (C3), Surface Water (A1), Saturation Visible on Aerial Imagery (C9)</p>	
<p>8.6. Buffer Zone</p> <p>8.6.1. General landuse</p>	<p>Describe the buffer zone of the subject wetland including:</p> <p>For example: mowed road shoulder; forested; old field; paved road and residential lawns etc. Describe any previous and ongoing disturbance in the</p>	

	<p>buffer zone.</p> <p>The buffer of the subject wetland is partially in a natural condition (buffer on the eastern portion of the wetland is generally in-tact however shows signs of previous tree clearing and remains partially in patchy woody vegetation), and is partially significantly disturbed from clearing and earthwork (buffer on the western portion of the wetland in between the agricultural fields, as described in previous sections), and partially with only low intensity disturbance (buffer on northern portion of wetland where fenced into a cow pasture is grazed and disturbed by hoof action).</p>	
<p>8.6.2. Buffer vegetation</p>	<p>List community type and dominant plant species</p> <p>The relatively more naturally vegetated portions of the wetland buffer (north and east of the Project area as shown on the Natural Resources Map, Attachment 3) is a successional forest edge community characterized by white pine (<i>Pinus strobus</i>), gray birch (<i>Betula populifolia</i>), and red maple (<i>Acer rubrum</i>)</p> <p>A fallow agricultural edge portion of the wetland buffer (southwestern portion of VHB Study Area as shown on Natural Resources Map, Attachment 3) is dominated by sensitive fern (<i>Onoclea sensibilis</i>) and Canada goldenrod (<i>Solidago canadensis</i>).</p> <p>The agricultural land portion of the wetland buffer is dominated by planted species including silage corn and erosion control grass seeding (too immature to identify during August 12 field survey)</p>	
<p>8.6.3. Buffer soils</p>	<p>Use USDA NRCS information where possible, and the ACOE Delineation Manual soil description</p> <p>NRCS: Adams loamy fine sand (AdD), Salmon very fine sandy loam (SaE2), Swanville silt loam (SwA), and Walpole fine sandy loam (Wa).</p> <p>USACE: None</p>	

<p><b>9. Wetland Determination</b></p>	<p>If the application involves a wetland determination please answer the following. <b>If not, skip to Section 10.</b></p>	
<p>9.1. Reason for Petition</p>	<p>Please choose one from the dropdown menu:</p> <p>Add a Section 4.6 presumed wetland to the VSWI map</p>	
<p>9.2. Previous Decisions</p>	<p>Please list all determinations and decisions, if any, issued by the Secretary, Panel or former Water Resources Board, pertaining to the wetland or buffer at issue:</p>	
<p>9.3. Narrative</p>	<p>Please provide any narrative to support the petition for a wetland determination here. This section is not required for petitions to add a Section 4.6 presumed wetland to the VSWI map, but is required for all other petitions.</p>	

**If the application is only for a Wetland Determination only, skip to Section 13**

<p>10. Project Description</p>		
<p>10.1. Overall Project</p>	<p>Description of the project. For example: six-lot residential subdivision; expansion of an existing commercial building, access drive to a single family residence.</p> <p>The Applicant proposes to install a 1 MW solar project (“Project”) on approximately 6 acres within an agricultural field and net-metered interconnection via an extension to an existing HPED distribution line, which currently extends along Silver Ridge Road. See Site Plans, Attachment 4, for</p>	

	<p>detailed information about the location and extent of Project components.</p> <p>The solar array would be comprised of approximately 18 rows of fixed-position ground-mounted array racks, which would be connected by string inverters and subsurface cables. Photovoltaic panels would be coated with non-reflective glazing, sloped at an angle between 20-30 degrees, and mounted approximately 9 feet above ground surface at their highest point. A perimeter fence (7-8 feet tall) with a locked gate would be installed around the array, an existing access road would be improved and expanded in order for construction and operation of the Project. The Project's electrical interconnection would occur via a ground-mounted transformer, sited along the western edge of the array and constructed with secondary containment. A new riser pole and new overhead primary line would be installed to span the distance between the transformer pad and the existing HPED line (see Site Plan, Attachment 4). The Project area within the perimeter fence would be mowed or brush-hogged to cut herbaceous and scattered small shrubs during operation as needed to prevent shading. Existing vegetation within the Project area is limited to planted agricultural row crops, and as such no vegetation clearing would be required for site preparation. The Project array site would not require site grading, and the construction laydown area would occur in an upland area to the west of the Project area in an adjacent corn field. Limited tree trimming and cutting would be required along the northern and eastern edge of the array for shade and risk management (see Site Plan, Attachment 4, Wetland Buffer Vegetation Management Plan ("VMP"), Attachment 8).</p>	
<p>10.2. Project Purpose</p>	<p>For example: To construct a residential subdivision, upgrade existing road to improve access, extend a trail system</p> <p>The purpose of the Project is to increase renewable energy production and distribution by developing a 1MW solar array. Output from the array will be used by the Town of Hyde Park electric meters under Vermont's net metering program.</p>	
<p>10.3. Acres Owned by Applicant</p>	<p>Acreage of subject property.</p> <p>Approximately 15.7 acres in the Project parcel according to the ANR Atlas parcel boundaries.</p>	
<p>10.4. Acres Involved in the Project</p>	<p>Acreage of area involved in the project.</p> <p>The entire area within the limits of disturbance ("LOD"), which includes the perimeter fence and access road, would occupy approximately 6 acres.</p>	
<p>11. Project Details</p>	<p>Provide details regarding specific impacts to the wetland and buffer zone</p>	
<p>11.1. Specific Impacts to Wetland and Buffer Zone</p>	<p>List portions of the project that will specifically impact the wetland or buffer zone.</p> <p>The Project is proposed to be located within an agricultural field, and the VHB delineated wetland area generally wraps around the Project field on the west, east and north sides. The wetland extends generally north-south along the western side of the Project array, where a limited number of solar panel rack bases, perimeter fence, and an extension to the existing access road would need to be installed in the wetland buffer. The existing access road is located partially within the delineated wetland area; extension and improvement of the existing access road would also necessarily occur in the wetland. Limited tree cutting and trimming would be required along the northern and eastern edge of the array for shade and risk management, and would be restricted to upland areas within and outside of the wetland buffer (see Wetland and Buffer Impact Exhibit, Attachment 2 and VMP, Attachment 8) The need for construction-related tree clearing and subsequent woody vegetation management is due to the numerous site design constraints for the Project including aesthetics, streams and wetlands and their associated buffers, Project access limitations, and required setback distances from property boundaries and public roads. The array panels could not be designed to an arrangement that avoids all buffer impacts or the need for</p>	

	<p>buffer vegetation management while still meeting the minimum necessary energy output, and the design as proposed represents a panel arrangement which minimizes buffer impacts to the greatest extent feasible.</p>	
<p>11.2.Dimension Details</p>	<p>Square footage of buildings, dimension of roads including fill footprint.</p> <p>Wetland impacts: 2,135 square feet for access road, ditch crossing, and perimeter fence</p> <p>Wetland buffer permanent impacts: 9,552 square feet for access road, solar panel racks, and perimeter fence Up to 16,609 square feet for tree clearing</p> <p>Wetland buffer temporary impacts: 38 square feet for interconnection line trenching to riser pole</p>	
<p>11.3.Bridges and Culverts</p>	<p>Culvert circumference, length, placement and shapes, or bridge details. A timber deck bridge would replace the current single 18-inch CMP at the jurisdictional ditch crossing within the subject wetland. The hydraulic capacity of the bridge, which would consist of concrete block abutments, steel crossbeams and timber decking with an approximately 6 foot span, is sufficient for passage of at least the 10-year storm event, enhanced hydrologic connectivity within the wetland, and would enhance habitat for aquatic and semi-aquatic wildlife passage including salamanders.</p> <p>The proposed deck bridge also minimizes proposed impacts to the wetland and ditch as compared to installing culverts as a crossing structure.</p>	
<p>11.4.Construction Sequence</p>	<p>Describe any details pertaining to the worked planned in the wetland and buffer in terms of sequence or phasing that is relevant</p> <p>The Project is planned for construction following the granting of a Certificate of Public Good (“CPG”) with a goal of installation during 2016. Project impacts to the wetland and buffer would occur coincident with the Project construction. The first Project impacts to occur would be the buffer clearing, which is proposed to occur prior to April 15, 2016 so as to avoid the summer roosting season for protected forest bat species.</p> <p>Wetland and buffer areas not proposed for impacts would be demarcated in the field with high visibility flagging prior to construction activities as described in Section 11.6. Individual trees within the buffer as identified in the VMP (Attachment 8) that would be cut prior to construction would be demarcated with either blue paint as typically used in tree harvest operations or flagged in a color different than the flagging used to demarcate the non-impacted areas.</p> <p>Following construction of the Project, all areas of soil disturbance would be restored.</p> <p>During operation of the Project, if/when tree cutting within the buffer becomes necessary per protocols defined in the VMP (Attachment 8), then either the management area or the individual trees which would be cut will be demarcated in the field using high visibility flagging or trees to be cut will be marked with blue paint as typically used in tree harvest operations.</p>	
<p>11.5.Stormwater Design</p>	<p>List any stormwater permits obtained or applied for. Describe any stormwater and/or erosion controls proposed to prevent discharges to the wetland and buffer zone.</p> <p>None anticipated, because the total project soil disturbance would be covered under a Construction General Permit 3-9020 as a Low Risk Site, and construction would proceed in accordance with site plans and the Low Risk Site Handbook for Erosion Prevention and Sediment Control (see Site</p>	

Plans, Attachment 4).

<p>11.6. Permanent Demarcation of Limits of Impact</p>	<p>Describe any plantings, fencing, signage, or other memorialization that provides permanent on-the-ground boundaries for the limits of disturbance for ongoing uses.</p> <p>Prior to construction all wetland and buffer locations as well as the Project's limits of disturbance ("LOD") would be demarcated in the field with silt fencing and/or high visibility net-type fencing (i.e., snow fence). Perimeter fence around the array would provide permanent demarcation of boundaries, and edge of road fill prism would demarcate the extent of disturbance for the access road expansion. Landscaping plantings would provide further visual demarcation for the Project. No additional permanent demarcation is anticipated.</p>							
<p>12. Wetland and Buffer Zone Impacts</p>								
<p>12.1. Wetland Impacts</p>	<p>Summarize the square footage of impact in the appropriate category. If more than one wetland is impacted, provide that information and use the supplemental wetland sheets.</p> <p><b>Totals</b></p> <table border="1" data-bbox="561 810 1385 909"> <tr> <td>Wetland Fill</td> <td>2,135 s. f.</td> </tr> <tr> <td>Temporary Wetland Impact</td> <td>0 s.f.</td> </tr> <tr> <td>Other Permanent Wetland Impact</td> <td>0 s.f.</td> </tr> </table> <p>Describe in detail the proposed impact.</p> <p>Permanent wetland impact would result from the proposed fill for the access road extension and a limited number of fence posts (15 fence posts), as depicted on the Site Plans included in Attachment 4).</p>	Wetland Fill	2,135 s. f.	Temporary Wetland Impact	0 s.f.	Other Permanent Wetland Impact	0 s.f.	
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<p>12.2. Buffer Zone Impacts</p>	<p>Summarize the square footage of impact in the appropriate category. If more than one wetland is impacted, provide that information and use the supplemental wetland sheets.</p> <p><b>Totals</b></p> <table border="1" data-bbox="561 1297 1385 1362"> <tr> <td>Temporary Buffer Impact</td> <td>38 s.f.</td> </tr> <tr> <td>Permanent Buffer Impact</td> <td>26,161 s.f.</td> </tr> </table> <p>Describe in detail the proposed impact.</p> <p>Permanent wetland buffer impacts would be from the proposed fill for the access road expansion and a limited number of solar panel rack bases and fence posts (12 solar rack bases, 76 fence posts and access road as depicted on the Site Plans included in Attachment 4) and would total 9,552 square feet.</p> <p>Temporary impacts in the wetland buffer would be restricted to trenching to install electric line between the transformer pad and the new riser pole. Trenching in the wetland buffer area amounts to a total area of 38 square feet of temporary impact.</p> <p>Buffer clearing would consist of at least 6,742 square feet to cut approximately 10 trees for shading and management of risk of damage to the array. The total possible area of buffer clearing during the life of the Project could be up to 16,609 square feet, as described in the Project's VMP, and so is the buffer clearing impact as proposed in this permit application. Prior to any buffer clearing, the areas of permitted buffer vegetation</p>	Temporary Buffer Impact	38 s.f.	Permanent Buffer Impact	26,161 s.f.			
Temporary Buffer Impact	38 s.f.							
Permanent Buffer Impact	26,161 s.f.							



	<p>management would be GPS-located and demarcated in the field in order to avoid accidental additional impact. Approximately 10 trees, identified on Attachment 3 of the VMP Exhibit (Attachment 8) would be cut prior to Project construction. Then, during the operational life of the Project, trees within the permitted portion of the buffer would be monitored to determine if any individual tree or trees has grown to a height or form which poses a risk of damage to the array or is creating the need for shade management. Specific thresholds which would trigger operational phase tree cutting within permitted portions of the buffer are described in detail in the VMP, Attachment 8.</p> <p>The proposed new riser pole would be placed within the wetland buffer, however the Applicant understands that the single new pole would be considered an allowed use per Section 6.22 of the Vermont Wetland Rules (2010) and as such is not calculated into the wetland buffer impacts here.</p> <p>Although not a permitted impact, the Project would include a number of aesthetic landscaping plantings, located primarily along the west and south sides of the Project. According to the Landscaping Plan (Attachment 6) there would be a mix of softwood and hardwood trees planted along Silver Ridge Road, which would be compatible with the existing natural vegetative structure in the buffer and will enhance the overall quantity of woody cover within that portion of the wetland buffer. Details of the aesthetic plantings are included on the Landscaping Plan, Attachment 6.</p> <p>In addition to aesthetic plantings, the Project would install wetland and buffer plantings in order to enhance and restore the disturbed portion of the complex and encourage the growth of native woody shrub cover. The planting project would cover approximately 10,000 square feet of wetland area and approximately 7,000 square feet of buffer area, the combined total area of which exceeds the sum area of long term vegetation management in the wetland buffer as described in the VMP, Attachment 8.</p>	
<p>12.3.Cumulative Impacts</p>	<p>List any potential cumulative or ongoing, direct and indirect impacts on the functions of the wetland that could result from the proposed project.</p> <p>The Project lifespan is anticipated to be approximately 25 to 40 years, at which time it is anticipated that the cleared buffer area would be allowed to regrow, and array rack bases and fence posts would be removed from the site. It is anticipated that the access road would be left in place, unless a decommissioning plan is required of the Project by the CPG that includes provisions for road removal.</p>	
<p>12.4.Avoidance and Minimization</p>	<p>Please refer to Section 9.5b of the rules on Mitigation Sequencing for this section.</p>	
<p>12.4.1. Avoidance</p>	<p>Can the proposed activity be practicably located outside the wetland/buffer zone, or on another site owned or controlled by the applicant or reasonably available to satisfy the basic project purpose? If not, indicate why. This answer should include any examination of alternatives that you have explored including using other properties, requesting easements, and altering the project design.</p> <p>The Applicant has undertaken 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.</p> <p>In particular, the Project has avoided impacts to onsite wetlands:</p> <ul style="list-style-type: none"> <li>• Preliminary evaluation of alternative agricultural fields and other sites</li> </ul>	

	<p>within Hyde Park Electric Department's operational range for feasibility for the Project and siting it in a location that would result in the least amount of natural resource and other impacts.</p> <ul style="list-style-type: none"> <li>• Siting the array within upland areas outside of Class II wetlands;</li> <li>• Avoidance of the majority of wetland 2015-1 and buffer through revisions to design layout and configuration;</li> <li>• Avoidance of wetland impacts from installation of the new utility pole;</li> <li>• Avoidance of Class II wetlands and buffers by siting the construction staging and laydown area and the transformer and containment structure in uplands;</li> <li>• Avoidance of the more intact and higher functioning (i.e., less disturbed) portions of wetland 2015-1 to the north and east of the Project area;</li> <li>• Avoidance of any forested wetland clearing; and</li> <li>• Conducting a detailed field survey of woody vegetation within the buffer in order to reduce the proposed tree cutting to only those individual trees which are absolutely necessary in order to minimize risk and for shade management (survey methods and findings are included in the Vegetation Management Plan, Attachment 8).</li> </ul>	
<p>12.4.2. Minimization</p>	<p>If the proposed activity cannot practicably be located outside the wetland/buffer zone, have all practicable measures have been taken to avoid adverse impacts on protected functions? Please include any information on on-site alternatives that have been examined; minimizing the size and scope of the project to avoid impacts; or relocating portions of the project to avoid impacts</p> <p>The Project has been planned so that construction and operation would be as low impact as possible:</p> <ul style="list-style-type: none"> <li>• Limiting impacts to emergent wetland areas within an active agricultural field where wetland functional capacity and value is decreased, and has been disturbed by recent ditch maintenance activities conducted by the farmer;</li> <li>• Adherence to the requirements of a detailed site plan, which incorporates provisions to minimize indirect earth disturbance in wetlands and buffers from rutting during construction, including the use of low ground impact equipment and dry/frozen ground evaluation procedures or use of construction matting within wetland as ground conditions dictate;</li> <li>• Revising initial plans of the Project access road to reduce the disturbance area as much as possible;</li> <li>• Minimizing impacts to Class II wetlands and buffers from the Project's electrical interconnection by restricting interconnection impacts to only one new utility pole placed in a wetland buffer; Retrofit and upgrade of the access road culvert passage, increasing from the existing single 18-inch culvert up to a deck bridge with a 6 foot span, which results in the capacity to convey at least the 10-year storm event and enhances wetland hydrology throughflow and aquatic organism passage;</li> <li>• Development of a restrictive Vegetation Management Plan (Attachment 8), which defines specific construction and operational phase activities to occur within the buffer. The VMP described in detail the protocols that would be used to avoid unnecessary impacts and minimizes the unavoidable impacts to up to 16,609 square feet.</li> </ul>	
<p>12.4.3. Mitigation</p>	<p>If avoidance of adverse effects on protected functions cannot be practically achieved, has the proposed activity has been planned to minimize adverse impacts on the protected functions and a plan has been developed for the prompt restoration of any adverse impacts on protected functions? Include</p>	

	<p>any information on best management practices to be used for the project both for the initial construction and ongoing use. Also include any proposed restoration of temporary impacts, previously disturbed wetland or buffer zones or proposed conservation that are being used to offset the proposed impacts.</p> <p>As described in 12.4.2, the Project has been designed to mitigate against adverse impacts through avoidance and minimization of effects on Class II wetland and buffer functions. Operation of the Project is expected to result in a minimal decrease in wetland functional capacity or area, and following the service life of the Project, its infrastructure would be removed.</p> <p>Specifically, mitigation measures undertaken by the Project are:</p> <ul style="list-style-type: none"> <li>• Use of erosion prevention and sediment control (“EPSC”) measures in accordance with Project plans and the Low Risk Site Handbook for Erosion Prevention and Sediment Control to protect water quality during construction;</li> <li>• Construction equipment crossing the wetland and buffer areas would utilize low-ground pressure and/or tracked equipment conducted according to the following sequence to avoid soil disturbance from equipment:             <ul style="list-style-type: none"> <li>○ Work under frozen/non-growing season ground conditions,</li> <li>○ Work from construction matting;</li> </ul> </li> </ul> <p>At the request of the DEC Wetland Program, the Project proposes to avoid further disturbance in the disturbed portion of the wetland other than unavoidable impacts from the Project, and to allow the disturbed area (other than the agricultural ditch) to naturally revegetate into native forbs and shrubs to allow for the return of wetland/buffer function in that area. As part of the Landscaping Plan (Attachment 6), a mix of native shrubs would be planted along Silver Ridge Road, and a portion of this planting would occur within the wetland buffer. While not specifically required or suggested by the DEC Wetland Program, the overall Project plan for landscaping, including the shrubs to be planted within the buffer along Silver Ridge Road, would enhance the mix of vegetative structure on site and provide additional native seed sources for wildlife forage and future expansion of native shrub communities on and off site.</p> <p>In order to further mitigate for impacts to buffer vegetation, the Project proposes to install a native shrub planting within the disturbed portion of the complex along the west side of the array (see Attachment 8). The shrub planting will enhance woody vegetation cover within the wetland and buffer and advance the natural revegetation of the planting area, proposed to be approximately 17,000 square feet (0.39 acre).</p>	
<p>12.4.4. Compensation</p>	<p>Please refer to Section 9.5c of the rules for compensation, which is appropriate when the project will result in an undue adverse impact. If compensation is proposed please include a summary here.</p> <p>Since the proposed Project has avoided, minimized, and mitigated against adverse impacts to the on-site Class II wetland and buffer functions to the extent feasible and still meet the Project purpose (and be constructible and operable), no compensation is proposed beyond the permit fee as calculated based on the wetland and buffer impact areas (see Section 12.2).</p>	
<p>13. Supporting materials</p>	<p>Where appropriate list the accompanying material by title, author, date and last revision date. Submit these documents and plans with the application.</p>	
<p>13.1. Location map</p>	<p>Provide a project location map that is 8 ½” x 11” and reproducible in black and white. An Environmental Interest Locator Map is appropriate using the USGS topography map base layer, roads, and VSWI wetlands at minimum.</p> <p>See the Location Map in Attachment 1</p>	
<p>13.2. Site Plans</p>	<p>List by title, author, date and last revision date. Plans should include wetland delineation and buffer zones, limits of disturbance, erosion controls, building envelopes and permanent memorialization.</p>	

	See the Hyde Park Solar- Waterhouse Project Site Plans, Civil Engineering Associates Inc., Last Revised 10/15/15, in Attachment 4																																					
13.3.ACOE Delineation Forms	List by author, location, and date. Required only for Individual Permits. <b>Author:</b> VHB Staff (C. Fenner, C. Martin) <b>Location:</b> VHB's Study Area (Lat/Long on forms) <b>Date:</b> 08/12/15																																					
13.4.Other Supporting Documents	Provide any other documentation that supports the application. List photographs; easements; agreements; may include a GIS-compatible wetland submittal for determinations; etc. Attachment 2: Wetland Impact Exhibit Attachment 3: Natural Resources Memorandum. Natural Resources Memorandum includes embedded attachments: <ul style="list-style-type: none"> <li>Hyde Park Waterhouse Project Natural Resources Map</li> <li>Wetland and Stream Summary tables</li> <li>USACE Wetland Determination Forms</li> <li>Representative Natural Resources Assessment Site Photographs</li> <li>Representative On-Site Vegetation Inventory</li> <li>Information, Planning and Conservation System (IPaC) Trust Resources List</li> <li>Potential Rare, Threatened, and Endangered Plant Species and Significant Natural Communities Summary in the Project Region and Onsite Habitats</li> </ul> Attachment 6: Landscaping Plan Attachment 7: Lease Option Agreement Attachment 8: VMP																																					
13.5.List of Abutters (Neighbors with land adjoining wetland or buffer zone)	Attach list of names and mailing addresses or submit as word mailing document.  Abutting landowners of the proposed Project Impacts will be notified by the Applicant when the application is determined to be technically complete. There are 7 abutters to the Project site. The list of Project abutters are provided in Attachment 5.																																					
13.5.1. Newspaper Notification	If choosing the option to fulfill the notice requirement with a newspaper notice, list the newspaper to be used here. A list of names and addresses for immediately adjacent landowners (500 foot radius) of the project area is required for the List of Abutters. <b>***NOTE: The applicant will be billed directly by the newspaper you list here. Use of newspaper notification may extend the notice period, depending on when the notice posts in the newspaper.</b>																																					
14. Check Which Functions are Present in the Subject Wetland and in the Wetland Complex.	<p><b>Wetland Function Summary:</b> (if more than one wetland use supplemental wetland sheets)</p> <table border="1" data-bbox="548 1501 1479 1892"> <thead> <tr> <th>Functions &amp; Values</th> <th>Subject Wetland</th> <th>Wetland Complex</th> <th>Functions &amp; Values</th> <th>Subject Wetland</th> <th>Wetland Complex</th> </tr> </thead> <tbody> <tr> <td>Flood/Storm Storage</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>RTE Species</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Surface &amp; Groundwater Protection</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Education &amp; Research</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Fish Habitat</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Recreation/Economic</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Wildlife Habitat</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Open Space/Aesthetics</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Exemplary Natural Community</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Erosion Control</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table>	Functions & Values	Subject Wetland	Wetland Complex	Functions & Values	Subject Wetland	Wetland Complex	Flood/Storm Storage	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	RTE Species	<input type="checkbox"/>	<input type="checkbox"/>	Surface & Groundwater Protection	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Education & Research	<input type="checkbox"/>	<input type="checkbox"/>	Fish Habitat	<input type="checkbox"/>	<input type="checkbox"/>	Recreation/Economic	<input type="checkbox"/>	<input type="checkbox"/>	Wildlife Habitat	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Open Space/Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	Exemplary Natural Community	<input type="checkbox"/>	<input type="checkbox"/>	Erosion Control	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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15. Coverage under Vermont General Wetland Permit	<b>If applying for an Individual Vermont Wetland Permit or Determination, please proceed to number 16 and answer the remaining application questions.</b>																																					

	<p><b>If applying for Coverage under the Vermont General Wetland Permit, please complete question 15.1 prior to submitting application.</b></p>	
<p>15.1.VWP Vermont General Permit eligibility checklist</p>	<p>If applying for coverage under the Vermont General Wetland Permit, please verify the following to complete the application:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The activity qualifies as an eligible activity for coverage under the Vermont General Wetland Permit</li> <li><input type="checkbox"/> The proposed project will meet the conditions applicable to the proposed project in the Vermont Wetland General Permit</li> <li><input type="checkbox"/> The activity does not qualify as an Allowed Use under Section 6 of the Vermont Wetland Rules.</li> <li><input type="checkbox"/> The activity will not result in an undue adverse impact on protected wetland functions and values, nor does it need additional conditions to protect functions and values.</li> <li><input type="checkbox"/> All impacts have been avoided and minimized to the greatest extent possible.</li> <li><input type="checkbox"/> The wetland complex is not significant for Function 5.5 Exemplary Wetland Natural Community or 5.6 Rare, Threatened and Endangered Species Habitat.</li> <li><input type="checkbox"/> The activity is not located in or adjacent to a vernal pool, fen, or bog.</li> <li><input type="checkbox"/> The wetland is not at or above 2,500' in elevation (headwaters wetland).</li> <li><input type="checkbox"/> The project is not located in a Class I wetland or associated buffer zone.</li> <li><input type="checkbox"/> The activity is not an as-built project that constitutes a violation of the Vermont Wetland Rules.</li> </ul>	
<p><b>Stop here if applying for Coverage under the Vermont General Wetland Permit</b></p>		

<p><b>Complete the following Functions and Values checklist if applying for an Individual Wetland Permit and/or a Wetland Determination</b></p>		
<p>Functions and Values</p>	<p>For each Function and Value, first evaluate the entire wetland or <b>wetland complex</b> and check all that apply. Secondly, evaluate how the wetland in the project area contributes to that function. Thirdly explain how the project will not result in adverse impacts to this function. Include any information on specific avoidance and minimization measures.</p> <p>If more than one wetland complex is involved, use the Supplemental Wetland Forms.</p>	
<p>16. Storage for Flood Water and Storm Runoff</p>	<ul style="list-style-type: none"> <li><input checked="" 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"> <li><input type="checkbox"/> Constricted outlet or no outlet and an unconstricted inlet.</li> <li><input checked="" 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</li> </ul> </li> </ul>	

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. 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.
  - 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.

	<input type="checkbox"/> 2. Relatively impervious soils. <input type="checkbox"/> 3. Steep slopes in the adjacent areas.	
<p>16.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland and complex is located in a large flat area that is naturally vegetated and has physical space for floodwater.</p>	
<p>16.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>Wetland impact would be minimal and would not constrict or hinder flow through the wetland. Unavoidable impacts are minimized, as described in Section 12. As such, no undue adverse impact to wetlands or buffers will result from the project.</p>	
<p>17. Surface and Ground Water Protection</p>	<p><input checked="" 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"> <li><input type="checkbox"/> Constricted or no outlets.</li> <li><input checked="" type="checkbox"/> Low water velocity through dense, persistent vegetation.</li> <li><input checked="" type="checkbox"/> Hydroperiod permanently flooded or saturated.</li> <li><input type="checkbox"/> Wetlands in depositional environments with persistent vegetation wider than 20 feet.</li> <li><input type="checkbox"/> Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.</li> <li><input type="checkbox"/> Presence of seeps or springs.</li> <li><input type="checkbox"/> Wetland contains a high amount of microtopography that helps slow and filter surface water.</li> <li><input type="checkbox"/> Position in the landscape indicates the wetland is a headwaters area.</li> <li><input checked="" type="checkbox"/> Wetland is adjacent to surface waters.</li> <li><input checked="" type="checkbox"/> Wetland recharges a drinking water source.</li> <li><input type="checkbox"/> Water sampling indicates removal of pollutants or nutrients.</li> <li><input type="checkbox"/> Water sampling indicates retention of sediments or organic matter.</li> <li><input type="checkbox"/> Fine mineral soils and alkalinity not low.</li> <li><input checked="" type="checkbox"/> 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.</li> </ul> <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>	

	<p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>lower</i> level.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Presence of dead forest or shrub areas in sufficient amounts to result in diminished nutrient uptake.</li> <li><input type="checkbox"/> Presence of ditches or channels that confine water and restrict contact of water with vegetation.</li> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> Current use in the wetland results in disturbance that compromises this function.</li> </ul> <p><input checked="" type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level.</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> The wetland is adjacent to a well head or source protection area, and provides ground water recharge.</li> <li><input type="checkbox"/> The wetland provides flows to Class A surface waters.</li> <li><input type="checkbox"/> The wetland contributes to the protection or improvement of water quality of any impaired waters.</li> <li><input checked="" type="checkbox"/> The wetland is large in size and naturally vegetated.</li> </ul>	
<p>17.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland contributes hydrology to the wetland complex through conveyance of groundwater discharge, adjacent to a groundwater source protection area, and is an obvious filter between groundwater and surrounding land uses.</p>	
<p>17.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>Unavoidable impacts are minimized, as described in Section 12. As such, no undue adverse impact to wetlands or buffers will result from the project.</p>	
<p>18. Fish Habitat</p>	<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"> <li><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.</li> <li><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.</li> <li><input type="checkbox"/> Documented or professionally judged spawning habitat for northern pike.</li> <li><input type="checkbox"/> Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for</li> </ul>	



	<p>salmonoid species.</p> <p><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.</p>	
<p>18.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>N/A</p>	
<p>18.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>N/A</p>	
<p>19. Wildlife Habitat</p>	<p><input checked="" 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> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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</p>	

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;

	<p><input checked="" type="checkbox"/> 6. One of the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;</li> <li><input checked="" type="checkbox"/> ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;</li> <li><input type="checkbox"/> iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;</li> </ul> <p><input type="checkbox"/> Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and</p> <p><input type="checkbox"/> Contains evidence that it is used by wetland dependent wildlife species.</p> <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> <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>lower</i> level.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 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).</li> <li><input type="checkbox"/> 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.</li> <li><input type="checkbox"/> The current use in the wetland results in frequent cutting, mowing or other disturbance.</li> <li><input type="checkbox"/> The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.</li> </ul> <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The wetland complex is large in size and high in quality.</li> <li><input type="checkbox"/> The habitat has the potential to support several species based on the assessment above.</li> <li><input type="checkbox"/> Wetland is associated with an important wildlife corridor.</li> <li><input type="checkbox"/> The wetland has been identified as a locally important wildlife habitat by an ANR Wildlife Biologist.</li> </ul>	
<p>19.1.Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland contributes to wildlife habitat function of the wetland complex through additional total size, shrub vegetation cover, and adjacent to a stream.</p>	
<p>19.2.Statement of no undue</p>	<p>Please explain how the proposed project will not result in any undue,</p>	

<p>adverse impact</p>	<p>adverse impact to this function. Include any avoidance and minimization measures relevant to this function. Unavoidable impacts are avoided and minimized, as described in Section 12. As such, no undue adverse impact to wetlands or buffers will result from the project.</p>	
<p>20. Exemplary Wetland Natural Community</p>	<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> <p><input type="checkbox"/> 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.</p> <p>The wetland is also likely to be significant if any of the following conditions are met:</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Contains ecological features that contribute to Vermont’s natural heritage, including, but not limited to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Deep peat accumulation reflecting a long history of wetland formation;</li> <li><input type="checkbox"/> Forested wetlands displaying very old trees and other old growth characteristics;</li> <li><input type="checkbox"/> A wetland natural community that is at the edge of the normal range for that type;</li> <li><input type="checkbox"/> A wetland mosaic containing examples of several to many wetland community types; or</li> <li><input type="checkbox"/> A large wetland complex containing examples of several wetland community types.</li> </ul> <p>List species or communities of concern:</p>	
<p>20.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above N/A</p>	
<p>20.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A</p>	
<p>21. Rare, Threatened, and Endangered Species Habitat</p>	<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> <p><input type="checkbox"/> Wetlands that contain one or more species on the federal or</p>	

	<p>state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.</p> <p>The wetland is also likely to be significant if any of the following apply:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;</li> <li><input type="checkbox"/> There is credible documentation that threatened or endangered species have been present in past 10 years;</li> <li><input type="checkbox"/> 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;</li> <li><input type="checkbox"/> There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).</li> </ul> <p>List name of species and ranking:</p>	
<p>21.1.Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above N/A</p>	
<p>21.2.Statement of no adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A</p>	
<p>22. Education and Research in Natural Sciences</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.             <ul style="list-style-type: none"> <li><input type="checkbox"/> Owned by or leased to a public entity dedicated to education or research.</li> <li><input type="checkbox"/> History of use for education or research.</li> <li><input type="checkbox"/> Has one or more characteristics making it valuable for education or research.</li> </ul> </li> </ul>	
<p>22.1.Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above N/A</p>	
<p>22.2.Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A</p>	
<p>23. Recreational Value and Economic Benefits</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.</li> </ul>	

	<input type="checkbox"/> Used for, or contributes to, recreational activities. <input type="checkbox"/> Provides economic benefits. <input type="checkbox"/> Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law. <input type="checkbox"/> Used for harvesting of wild foods. Comments:	
23.1. Subject Wetland	Please explain how the subject wetland contributes to the function listed above N/A	
23.2. Statement of no undue adverse impact	Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A	
24. Open Space and Aesthetics	<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. <input type="checkbox"/> Can be readily observed by the public; and <input type="checkbox"/> Possesses special or unique aesthetic qualities; or <input type="checkbox"/> Has prominence as a distinct feature in the surrounding landscape; <input type="checkbox"/> Has been identified as important open space in a municipal, regional or state plan. Comments:	
24.1. Subject Wetland	Please explain how the subject wetland contributes to the function listed above N/A	
24.2. Statement of no undue adverse impact	Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A	
25. Erosion Control through Binding and Stabilizing the Soil	<input checked="" type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <input checked="" type="checkbox"/> Erosive forces such as wave or current energy are present and any of the following are present as well: <input checked="" type="checkbox"/> Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force. <input checked="" type="checkbox"/> Good interspersion of persistent emergent vegetation and water along course of water flow. <input type="checkbox"/> Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control. What type of erosive forces are present: <input type="checkbox"/> Lake fetch and waves	

	<p><input type="checkbox"/> High current velocities:</p> <p><input type="checkbox"/> Water level influenced by upstream impoundment</p> <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> <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>lower</i> level.</p> <p><input type="checkbox"/> The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.</p> <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level.</p> <p><input type="checkbox"/> The stream contains high sinuosity.</p> <p><input type="checkbox"/> Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.</p>	
<p>25.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>Wetland 2015-1 is located along stream 2015-SC-1 and 2015-SC-2 and has dense persistent woody vegetation.</p>	
<p>25.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>Unavoidable impacts are avoided and minimized, as described in Section 12. As such, no undue adverse impact to wetlands or buffers will result from the project.</p>	

Creation	s.f.	Conservation	s.f.	Creation	s.f	Conservation	s.f
<b>Reason for Mitigation:</b>	<input type="checkbox"/>	Correction of Violation	<input type="checkbox"/>	Mitigation to offset permit impacts	<input type="checkbox"/>	Voluntary	

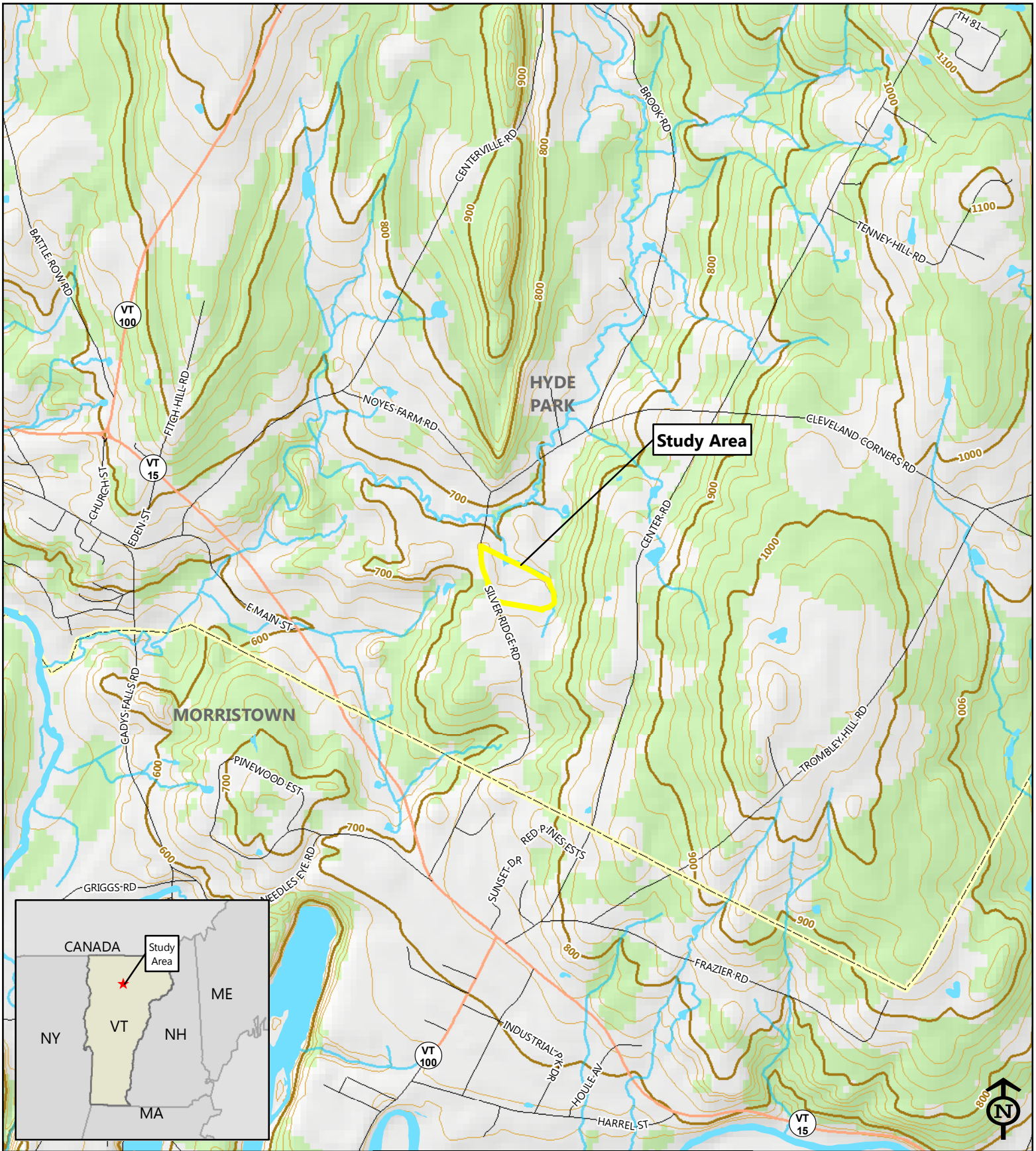


**All Applications Should be Mailed To:**

**Vermont Wetlands Program  
 Watershed Management Division  
 One National Life Drive, Main 2  
 Montpelier, VT 05620-3522**

**Staff To Complete**

<b>Wetland Project Number:</b>			
<b>Wetland Project Name:</b>		<b>DEC ID#:</b>	
<b>Date Application Received:</b>			
<b>Request for Information Date:</b>		<b>Information Received Date:</b>	
<b>Request for Information Date:</b>		<b>Information Received Date:</b>	
<b>Date Application Complete:</b>		<b>Distribution Complete Date:</b>	
<b>Notice Begin Date:</b>		<b>Notice End Date:</b>	
<b>Final Action Date:</b>		<b>Public Meeting Date:</b>	
<b>Check#</b>	<b>Check Amount</b>	<b>Date Check Received</b>	
<b>Check#</b>	<b>Check Amount</b>	<b>Date Check Received</b>	



Legend

- VHB Study Area
- Town Boundary
- VHD Waterbody
- Interstate
- VHD Streams
- US Highway
- 20 Ft. Contour
- State Highway
- 100 Ft. Contour
- Town Road

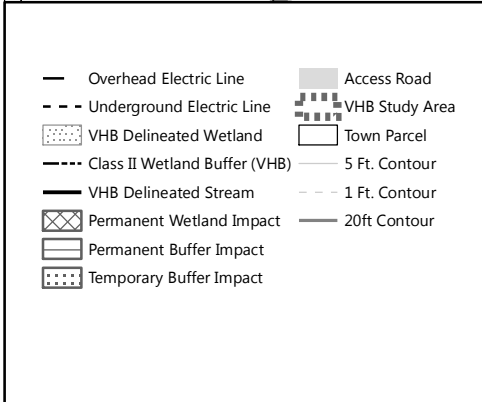
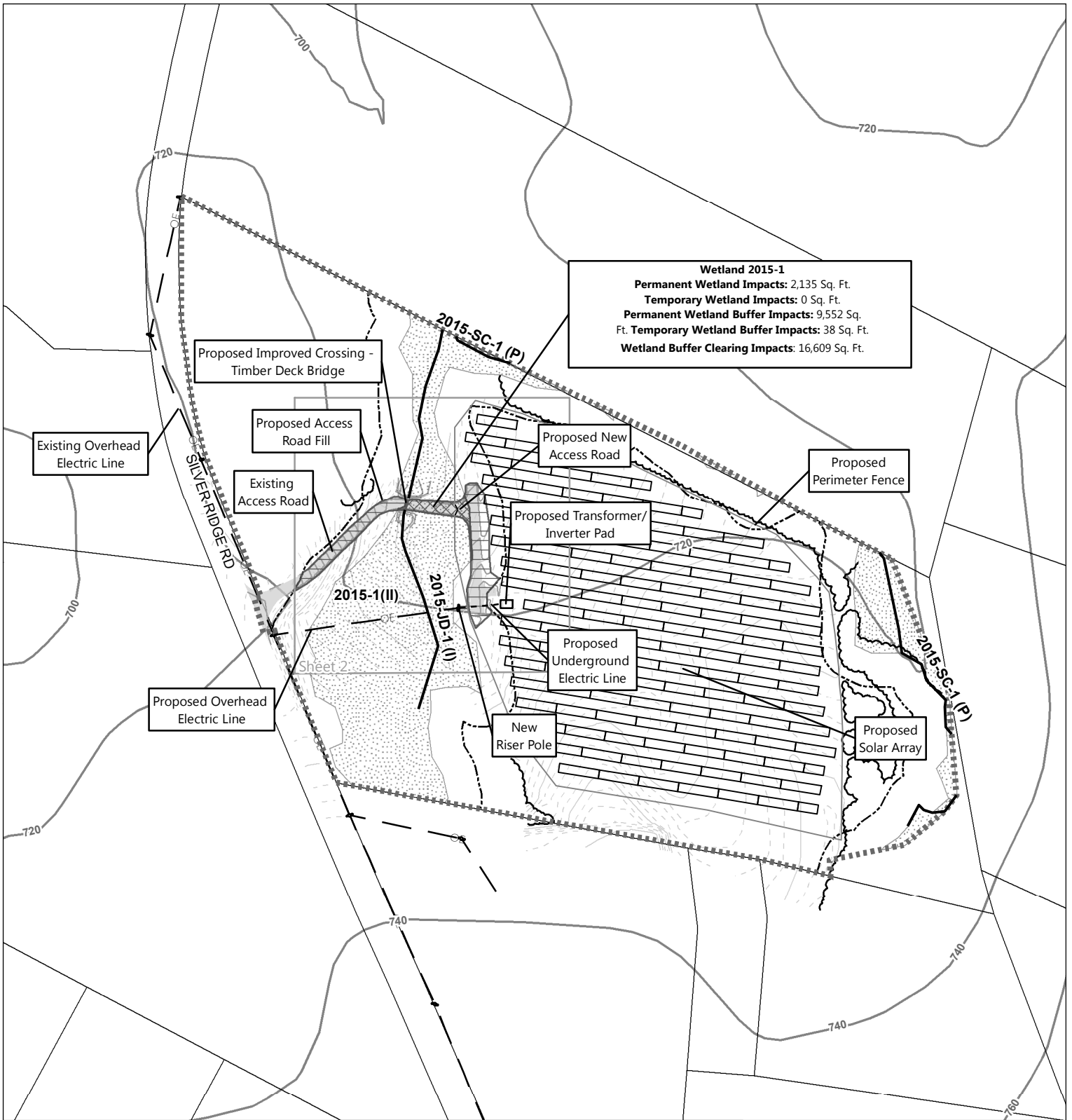
**Village of Hyde Park Electric Department  
Hyde Park Solar - Waterhouse Project  
Hyde Park, Vermont  
Site Location Map**

October 9, 2015



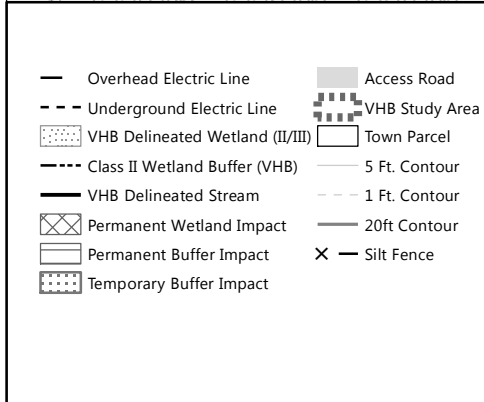
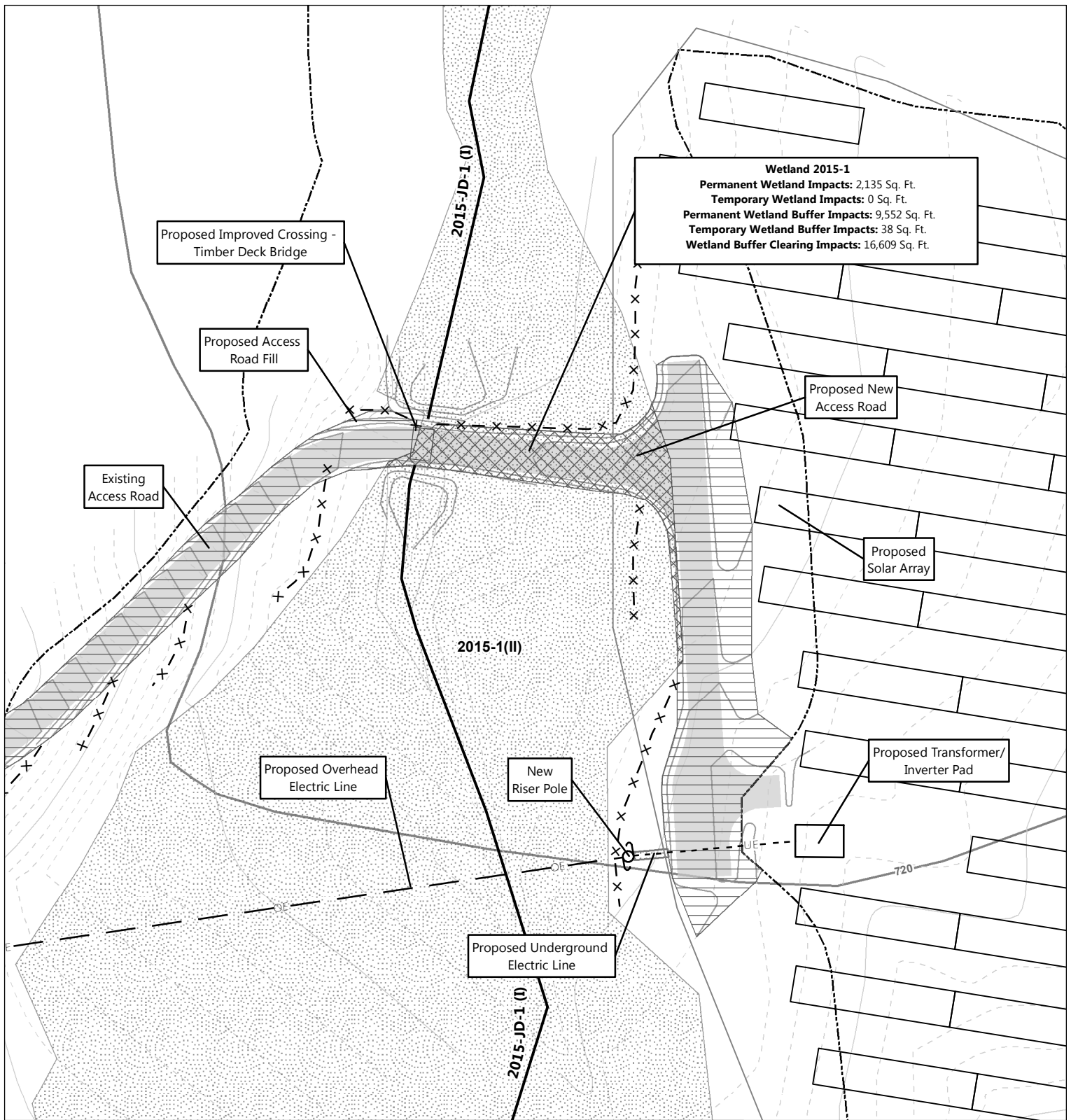
Sources: USGS Topographic Map from VCGI (2015);  
VHD Streams and Waterbodies from VCGI (2010).





**Village of Hyde Park Electric Department**  
**Hyde Park Solar-Waterhouse Project**  
**Hyde Park, VT**  
**Sheet 1: Index Map**  
 REVISED December 28, 2015

Sources: Study Area and Natural Resource features delineated and digitized by VHB (2015); Parcel data by VHB (2009); Solar Array, Electric Poles, Electric/Communication Lines, Fence, Access Road, and Contours from Civil Engineering Associates, Inc. (2015); Roads from VCGI (2014).



**Village of Hyde Park Electric Department**  
**Hyde Park Solar-Waterhouse Project**  
**Hyde Park, VT**  
**Vermont Wetland Permit**  
**Sheet 2: Wetland Impact Exhibit**  
 REVISED December 28, 2015

Sources: Study Area and Natural Resource features delineated and digitized by VHB (2015); Parcel data by VHB (2009); LOD, Solar Array, Electric Poles, Electric/Communication Lines, Fence, Access Road, and Contours from Civil Engineering Associates, Inc. (2015); Roads from VCGI (2014).





## Memorandum

To: Project File

Date: October 16, 2015  
Project #: 57788.00

From: Carla A. Fenner, Environmental  
Scientist and Brad Ketterling,  
Senior Environmental Scientist

Re: Section 248 Natural Resource Assessment: Hyde Park Solar –  
Waterhouse Project (Hyde Park, Vermont)

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On behalf of Encore Redevelopment ("Encore") and the Village of Hyde Park Electric Department ("Applicant" or "HPED"), VHB conducted natural resource assessments in support of the proposal to develop a 1 MW solar electric generation facility for the Hyde Park Solar- Waterhouse Project ("Project"). The Project site is located on lands being leased by the Village of Hyde Park Electric Department, on Silver Ridge Road and the location is depicted on the Natural Resources Map in Attachment 1. The Project site is an agricultural field located to the east of Silver Ridge Road and south of Centerville Brook, approximately 1.1 miles to the north of the intersection of Vermont Route 15 ("VT-15") and Vermont Route 100 ("VT-100"). VHB evaluated natural resources across an approximately 15.1 acre area in which the Project is proposed ("Study Area"). Study Area boundaries, mapped results of the resource assessment, and the approximate extent and alignment of the Project are included on the Natural Resources Map (see Attachment 1).

VHB's natural resources assessment for the Project included database reviews as well as field surveys, and was designed to include an evaluation of the following criteria, which are incorporated into the Vermont Public Service Board ("PSB") Section 248 review for a Certificate of Public Good ("CPG"):

- Outstanding Resource Waters [10 V.S.A. § 1424a(d)]
- Headwaters [§ 6086(a)(1)(A)]
- Floodways [§ 6086(a)(1)(D)]
- Streams [§ 6086(a)(1)(E)]
- Shorelines [§ 6086(a)(1)(F)]
- Wetlands [§ 6086(a)(1)(G)]
- Rare or Irreplaceable Natural Areas ("RINA") [§ 6086(a)(8)], and Necessary Wildlife Habitat and Endangered Species [§ 6086 (a)(8)(A)]
- Soil Erosion [§ 6086(a)(4)]

A description of the Project site conditions is presented below. A description of the individual methodologies for each resource assessment, the findings, and an evaluation of the Project with respect to each criterion are presented following the Site Description. VHB has relied upon select Project information and a Site Plan provided to VHB by Encore Redevelopment and their engineer to assist in evaluating Project impacts to natural resources.



## **SITE DESCRIPTION**

The Study Area occurs in the Northern Green Mountain biophysical region of Vermont, within the Winooski River sub-basin of the Lake Champlain Richelieu River (HUC 8 – 04150403). The Natural Resources Map (see Attachment 1) shows the limits of the Study Area, which is approximately 15.1 acres in size and encompasses the proposed Project site of approximately 6 acres. All of the Project site and most of the Study Area is located within an existing agricultural field, planted to corn during the 2015 growing season. The Study Area is bounded to the north and south by the property line, to the east by an unnamed perennial stream and adjacent riparian forest, and to the west by Silver Ridge Road. An existing building and parking area for a lighting parts manufacturer (Light Logic, Inc.) lies just beyond the south property line. The surrounding landscape includes various sizes of forest blocks with scattered rural residential development, as well as the Village of Morristown approximately 1 mile to the south of the Project. An existing 3-phase overhead utility line extends along the east side of Silver Ridge Road immediately to the west of the Study Area, and an existing field access road extends from Silver Ridge Road generally to the east, crossing an agricultural ditch and wetland in between agricultural fields and allowing access to the Project site. Ground surface elevation in the Study Area is generally gently sloping, with short steeper slopes along the banks of the stream that runs along the east edge of the Study Area; a perennial tributary of Centerville Brook. Elevations in the Study Area range from approximately 700 to 740 feet above sea level. According to the Natural Resources Conservation Service ("NRCS"), the dominant soils within the Study Area are Swanville silt loam, 0 to 6 percent slopes and Walpole fine sandy loam, 0 to 6 percent slopes. Representative photographs of the Study Area are included in Attachment 2.

## **PROJECT DESCRIPTION**

As shown on the Natural Resources Map (see Attachment 1), the Project would consist of the installation and operation of a 1MW (AC) solar electric generation facility within an approximately 6 acre agricultural field, on land that will be leased to the Village of Hyde Park Electric Department, located off of Silver Ridge Road. The array arrangement is proposed to be approximately 18 rows of modules, installed as ground-mounted fixed photovoltaic panels at approximately 29 foot row spacing from panel leading edge to panel leading edge. The Project would be accessed from Silver Ridge Road along the existing field access road that would be extended and improved as part of Project construction. The Project area within the proposed perimeter fence would be annually mowed or brush-hogged to cut herbaceous and scattered small shrubs during operation as needed to prevent shading. As the Project site is currently under row crop agricultural management, no site clearing for pre-construction would be necessary, and no site grading is required. Minimal tree trimming or clearing may occur along the eastern edge of the field to minimize shading and the threat of damage to the array by hazard trees or branches. Otherwise, existing shrub vegetation surrounding the Project and the forested riparian corridor to the north and east would remain intact to screen the Project; natural vegetation on the west side of the Project would be augmented by proposed aesthetic vegetative plantings as described under separate cover in the Project's aesthetic resource report and landscaping plan. Temporary construction staging and laydown space would occur in a mid-field, upland area of the western field in the Study Area (see Natural Resources Map, Attachment 1), and following Project construction the fields outside the perimeter fencing would continue to be used for agriculture.

The Project's interconnection would occur at Silver Ridge Road from a ground-mounted transformer located at the western edge of the array via one new utility pole installed to span the distance between the Project transformer and the existing HPED distribution network, as shown on the Natural Resources Map (Attachment 1) and in detail on Project Site Plans. The new pole and overhead line would not require any additional tree clearing or site preparation,



however it is proposed to be placed within a 50 foot buffer of an on-site Class II wetland, as described in further detail below. The ground-mounted transformer would be owned and operated by HPED and installed during construction of the Project.

## **SECTION 248 NATURAL RESOURCES CRITERIA**

### Outstanding Resource Waters [10 V.S.A § 1424A (D)]

The Vermont Water Quality Standards ("VWQS", effective October 30, 2014) (ANR 2014a), under section 1-03D, state that the Secretary of the Vermont Agency of Natural Resources ("ANR") may, under 10 V.S.A. Section 1424(a), designate Outstanding Resource Waters ("ORW"). The following waterways have been classified as ORWs:

1. Batten Kill River, Towns of East Dorset and Arlington;
2. Pike's Falls/Ball Mountain, Town of Jamaica;
3. Poultney River, Towns of Poultney and Fair Haven; and
4. Great Falls, Ompompanoosuc River, Town of Thetford.

There are no waters which intersect the Project or in the Project vicinity that have been designated or are prospective as an ORW, and therefore, the Project would not result in any impact under this criterion.

### Headwaters [§ 6086(a)(1)(A)]

VHB analyzed available information, including soils data, topographic maps, and state-mapped public water supply source protection areas, and also performed a field review to determine if the Study Area is located on any lands that meet the Headwaters criterion of V.S.A. §6086(a)(1)(A) as incorporated in the Section 248(b) review. If located in a headwater, a project is required to meet any applicable health and environmental conservation department regulations regarding reduction of the quality of the ground or surface waters flowing through or upon lands that are not devoted to intensive development, which the Study Area is not. Lands that may be headwaters include:

- i. Headwaters or watersheds characterized by steep slopes and shallow soils; or
- ii. Drainage areas of 20 square miles or less; or
- iii. Above 1,500 feet elevation; or
- iv. Watersheds of public water supplies designated by ANR; or
- v. Areas supplying significant amounts of recharge waters to aquifers.

#### *Subcategory (i)*

The Project site is not characterized by steep slopes and shallow soils. Slopes within the Study Area are less than 15 percent. Therefore, the Project does not meet subcategory (i).

#### *Subcategory (ii)*

The drainage area for the unnamed tributary to Centerville Brook at the location of the Study Area (furthest downstream point along the northwest edge) is approximately 106 acres (0.16 square miles). Therefore, the Project could be considered to meet subcategory (ii).



*Subcategory (iii)*

The Project area is below 1,500 feet in elevation. Therefore, the Project does not meet subcategory (iii).

*Subcategory (iv)*

There is an active Non-Transient Non-Community ("NTNC") public water supply well located on the parcel immediately south of the proposed Project site, which serves the Light Logic, Inc. facility (Water System ID VT0020366, Well ID WL001). A portion of the Project Study Area lies within a Zone 2 Groundwater Source Protection Area ("Groundwater SPA") of this well as designated by ANR (see Natural Resources Map in Attachment 1). Therefore, the Project meets subcategory (iv).

*Subcategory (v)*

Water supply sources in the vicinity of the Study Area (approximately a 1,000 –foot radius) primarily consist of bedrock wells with low to modest yields ranging 1 to 15 gallons per minute ("gpm"). The Light Logic, Inc. NTNC bedrock well associated with the Groundwater SPA that overlaps the Study area has a very low permitted yield of 1 gpm. Further, soil in the Study Area is mapped as silt loam, and vicinity water supply well logs indicate the presence of a clay layer overlying bedrock. Silt and clay are not conducive to significant amounts of recharge. The low permeable soil and low yielding bedrock wells indicate that significant recharge does not occur in the Study Area.

Although the Project could be considered in a Headwaters location per Act 250 subcategories (ii) and (iv), the Project would not adversely affect groundwater quality because of the nature of the Project and the avoidance and mitigation measures included below:

- the Project transformer and new utility pole would be located outside of the Zone 2 Groundwater SPA associated with the Light Logic, Inc. well;
- Project components within the Groundwater SPA would be restricted to panel racking and fence posts that would be driven into the ground, with minimal earth disturbance for the expansion of the access road and installation of the transformer pad, underground electrical transmission line, and new utility pole; and
- the transformer would be constructed with secondary containment which would be sized to contain 110 percent of the largest anticipated volume of a potential release of transformer oil, plus a 5 inch rainwater event, in accordance with the requirements of 40 CFR 112.

The proposed new impervious surface area from the Project is not sufficient to warrant operational stormwater treatment. Where ground disturbance is necessary for Project implementation, erosion and sediment control best management practices ("BMPs") for Erosion Prevention and Sediment Control ("EPSC") would be used as described in the VT DEC *Low Risk Site Handbook for Erosion Prevention and Sediment Control* (2006, Amended 2008). Further related discussion is included in a separate Waste Disposal memorandum (VHB, 2015). As such, the Project would not adversely affect groundwater or surface water because the Project would meet applicable health and Vermont Department of Environmental Conservation ("VT DEC") regulations regarding the quality of groundwater and surface waters. There would be no reduction in ground or surface water quality of headwaters areas or otherwise from the construction and/or operation of the Project.





Floodways [§ 6086(a)(1)(D)]

The Act 250 Floodway criterion (10 V.S.A. § 6086(a)(1)(D)), as incorporated into Section 248 review, takes into consideration a project's effect on both floodways and floodway fringes. The term "floodway" is defined to mean "the channel of a watercourse which is expected to flood on an average of at least once every 100 years and the adjacent land areas which are required to carry and discharge the flood of the watercourse." (10 V.S.A. § 6001(6)). The term "floodway fringe" is defined as "an area which is outside of a floodway and is flooded with an average frequency of once or more in each 100 years." (Id. § 6001(7)). A project's impacts are considered with respect to both flood inundation and fluvial erosion hazards pursuant to ANR Flood Hazard Area and River Corridor Protection Procedure, (ANR 2014b). This document supersedes the 2003 Procedure on ANR Floodway Determinations in Act 250 Proceedings and the 2009 ANR Technical Guidance for Determining Floodway Limits Pursuant to Act 250 Criterion 1(D). The Flood Hazard Area and River Corridor Protection Procedure addresses both inundation risks as represented by Federal Emergency Management Agency ("FEMA") mapped flood information and potential fluvial erosion risks associated with the geomorphic principles necessary to achieve stable fluvial processes. The River Corridor consists of the meander belt or fluvial erosion hazard area, which is defined as the lateral width of a stream corridor that may be subject to fluvial erosion from stream channel lateral migration as well as a 50-foot riparian buffer outside of this meander belt (ANR 2014b). The meander belt is typically determined by geomorphic assessments of channel bankfull width, meander centerline, confining lateral topography, channel type, and current channel adjustments; which is then translated into the channel-width to belt-width ratio, dependent on stream sensitivity type and adjacent landform.

VHB reviewed the available FEMA data for the Town of Hyde Park in order to determine if the Study Area is situated within designated floodways. VHB also reviewed available mapping from the State of Vermont River Corridor Mapping. Based on the review of Flood Insurance Rate Map ("FIRM") (Panel #5002300020B) and the River Corridor Mapping, the Study Area is not located on any lands that meet the floodways criterion. As such, the Project would not restrict or divert the flow of flood waters (floodway or floodway fringe), or endanger the health, safety, and welfare of the public, riparian, or downstream landowners during flooding or from potential erosion.

Streams [§ 6086(a)(1)(E)]

This Act 250 criterion, as incorporated into Section 248 review, requires that projects will, when feasible, maintain natural stream channel condition, and will not endanger the health, safety, or welfare of the public or adjoining landowners (10 V.S.A. § 6086(a)(1)(E)). VHB Environmental Scientists conducted stream delineation and assessment work within the Study Area on August 12, 2015 to map any onsite stream channels.

When applicable, stream delineation flagging type is conducted pursuant to ANR Riparian Buffer Guidance (ANR 2005). Stream determinations and Ordinary High Water ("OHW") width follows guidance provided in the United States Army Corps of Engineers ("USACE") "Regulatory Guidance Letter: Subject- Ordinary High Water Identification" (USACE 2005). Stream Top of Bank ("TB") and Top of Slope ("TOS") are flagged in the field according to ANR Riparian Buffer Guidance (ANR 2005). Stream TB and TOS are flagged on larger channels and stream center-line is flagged for smaller channels, and labeling includes the stream ID and flag number. OHW limits are flagged when applicable. Stream flow regimes are preliminarily classified as ephemeral, intermittent, or perennial and are determined based on qualitative observations of instream hydrology indicators at the time of observation, as well as geomorphic characteristics, and are subject to professional judgment.



VHB identified 1 stream segment within the Study Area, designated as 2015-SC-1 on the Natural Resources Map (Attachment 1) and the Summary of Delineated Streams (Attachment 3). Stream 2015-SC-1 is a perennial stream, mapped in the Vermont Hydrography Dataset ("VHD") along and just beyond the north and east of the Study Area, and is an unnamed tributary to Centerville Brook (located approximately 0.4 mile to the west of the Study Area).

VHB also delineated a jurisdictional ditch, designated as 2015-JD-1 on the Natural Resources Map (Attachment 1). This ditch is not mapped on the VHD and was determined to be an intermittent feature, draining generally to the north to a confluence with Stream 2015-SC-1 immediately to the north of the Study Area boundary. This ditch feature lies within a Class II wetland (VHB delineated as 2015-1). Both perennial stream 2015-SC-1 and this ditch are flanked largely by wetland areas of mixed vegetative cover including emergent and scrub-shrub cover. The Project does not propose to impact Stream 2015-SC-1 or its 50 foot riparian buffer.

Ditch 2015-JD-1 is culverted through an 18 inch corrugated metal pipe ("CMP") under the existing field access road. The delineated ditch is located between crop fields, and the farmer has communicated to Encore that he conducts maintenance on this feature. Maintenance of this ditch had occurred in 2015 prior to VHB's field surveys (see Representative Site Photographs, Attachment 2). In order for construction equipment and materials as well as for future maintenance on the array or transformer, the field access road as well as the crossing over ditch 2015-JD-1 would need to be expanded. The crossing would be replaced with the installation of three, parallel 18 inch CMP culverts, set into the base of the ditch so as to allow the maximum width of base flow and still provide hydrologic capacity to pass a 10-year storm event. The access road extension would traverse the new crossing, and by using the current road and crossing alignment, disturbance impacts are minimized to this drainage feature and adjacent resources.

Temporary and permanent impacts to Waters of the U. S. (which include jurisdictional ditches when the purpose is other than routine maintenance for agricultural purposes) require authorization from the U. S. Army Corps of Engineers ("USACE") under Section 404 of the Clean Water Act. As such, the Project would require an authorization from USACE for proposed impacts to ditch 2015-JD-1 as well as impacts to the adjacent wetland 2015-1 as described in the next subsection of this report.

Photographs of both the delineated stream and ditch are included in the Representative Site Photographs in Attachment 2.

#### Shorelines [§ 6086(a)(1)(F)]

Shorelines are defined under Act 250, as also incorporated into Section 248, as the land adjacent to the waters of lakes, ponds, reservoirs, and rivers. Shorelines include the land between the mean high water mark and the low water mark of such waters (Argentine 2008). The Study Area was reviewed against these criteria to determine if it is located on any shoreline areas.

The Study Area does not include land adjacent to the waters of lakes, ponds, reservoirs, or rivers. Therefore, the Project would not impinge on current shoreline condition, recreational use, existing riparian vegetation, or result in decreased bank stability, and would not have any undue adverse impacts on areas defined as shorelines.



Wetlands [§ 6086(a)(1)(G)]

The wetlands criterion under Act 250, as incorporated into Section 248, requires that the proposed project comply with the Vermont Wetland Rules ("VWR") (NRB 2010). The VWR regulates significant wetlands (Class I and Class II wetlands) and their buffers. Impacts to Class III wetlands are not considered under Act 250 Criterion 1(G), but are generally reviewed under Section 248(b)(5) through consideration of the potential for undue adverse impacts on the natural environment. Further, wetlands are regulated by the federal USACE Section 404 permit program, as well as the related VT DEC Section 401 Water Quality Certification review process.

VHB Environmental Scientists conducted wetland delineation fieldwork within the Study Area on August 12, 2015, which was also field reviewed by VT DEC (Shannon Morrison) on August 12, 2015. Wetland delineations are made pursuant to applicable methodologies outlined in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region Routine Determination Method (USACE 2012). Wetlands are identified in the field with pink flagging. Field notes are taken to record information such as proposed wetland classifications, general characteristics, potential functions and values of the wetland, any unique qualities observed during the site assessment, along with other considerations relevant to support site findings. Wetlands are classified in accordance with the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). Wetland functions and values are evaluated based on the field notes and observations according to the VWR (NRB 2010). When applicable, wetland features are located in the field using a Trimble® GPS unit capable of sub meter accuracy and post processed using Trimble® Pathfinder software.

The Summary of Delineated Wetlands Table in Attachment 4 details wetland characteristics relative to the criteria for classifying significant wetlands under the VWRs, as well as wetland classification under the current VWR as confirmed in the field by VT DEC on August 12, 2015. VHB also completed a Vermont Wetland Evaluation Form for the delineated wetland, included as Attachment 5. Similarly, USACE Wetland Determination Data Forms were completed for points along the wetland and upland boundary, and are included in Attachment 6.

Given the relative size of the Study Area and existing constraints on the Project both from natural resources as well as property boundary setbacks, aesthetics, and constructability, the Project design includes portions of the Project being sited within the on-site Class II wetland and wetland buffer. Therefore, the Project would require a Vermont Wetland Permit ("VWP"). The Project would also require authorization under the Department of the Army Vermont General Permit ("VT-GP") pursuant to the requirements of Section 404 of the Clean Water Act. The activity is presumed to be eligible for authorization as Category 2 based on draft site plans, as the Project construction would result in permanent impacts to Waters of the U.S.

The Project planning and design process has avoided and minimized impacts to wetlands to the greatest extent possible and practicable. Avoidance, minimization, and mitigation (if necessary) measures undertaken for the Project will be fully described in applications for the required previously mentioned wetland permits. In summary, the avoidance and minimization of wetland impacts have included:

- alternative site analysis of other sites within HPED's operational range for feasibility for the Project and siting it in a location that would result in the least amount of natural resource and other impacts (the current site);
- siting the array within upland areas outside of all wetlands;
- design revisions to adjust layout and configuration to avoid wetland impacts;



- construction staging and laydown to be limited to upland locations;
- avoidance of the more intact and higher functioning (i.e., less disturbed) portions of wetland 2015-1 and the associated buffer;
- avoidance of any forested wetland clearing;
- minimization of wetland buffer clearing to less than 0.5 acre, including tall shrubs and scattered trees that would pose risk to the array equipment and/or prevent efficient operation by shading the array;
- limiting impacts to emergent wetland areas in between active agricultural fields where wetland functional capacity and value is decreased, and has been disturbed by recent maintenance conducted by the farmer;
- adherence to the requirements of a detailed site plan, which incorporates provisions to minimize indirect earth disturbance in wetlands and buffers from rutting during construction, including the use of low ground impact equipment and dry/frozen ground evaluation procedures; and
- retrofit and upgrade of the existing access road and culvert passage, which minimizes overall new impact and also increases the hydrologic capacity of the crossing and maintains Wetland 2015-1 hydrology.

#### Soil Erosion [§ 6086(a)(4)]

In order to satisfy this criterion for Section 248 review, a project must not cause unreasonable soil erosion or significant drainage or runoff problems (Argentine 2008). Determination of compliance with this criterion involves two components: (1) preventing soil erosion, and (2) preventing a reduction in the land's capacity to hold water.

The NRCS has classified each soil series in terms of its potential erodibility ("K-factors"). According to the NRCS-mapped K-factors, there are soil series within the Study Area which the *Vermont Standards and Specifications for Erosion Prevention and Sediment Control* (ANR 2008) considers to be of "medium" or "high" erodibility ranking (Medium =  $0.17 < K < 0.37$  and High =  $K > 0.36$ ). As depicted in the soil summary table included on the Natural Resources Map in Attachment 1, soils within the Project Study Area that are high erodibility soils include Boothbay silt loam (K factor 0.43), which is only located within the proposed construction laydown area, west of the array (i.e., where no earth disturbance is proposed). All other mapped on-site soils are considered low or medium erodibility.

Soil disturbance from the Project will not be below 1-acre, however 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). Compliance with the included BMPs would prevent undue soil erosion from the areas of minor earth disturbance. There also would be no significant or measurable reduction of the land's capacity to hold water as the nature of this Project would not result in a change in land form or cover. As such, there would be no dangerous or unhealthy conditions associated with soil erosion as a result of the Project and there would be no undue adverse effect from soil erosion.



Rare or Irreplaceable Natural Areas (RINA) [§ 6086(a)(8)], and Necessary Wildlife Habitat and Endangered Species [§6086(a)(8)(A)]

From Act 250, as incorporated into Section 248 review, a project must be shown to have no undue adverse effect on Rare or Irreplaceable Natural Areas ("RINA") [§ 6086(a)(8)]. Additionally, a project must not destroy or significantly imperil Necessary Wildlife Habitat ("NWH") or any Endangered Species [§ 6086(a)(8)(A)].

*RINA*

Significant natural communities are deemed RINA as part of the four-part test required by Act 250 Criterion 8. Determinations of "Significance" are made after utilizing a combination of community ranking, current condition (age, degree of disturbance), and landscape context (size, degree of fragmentation) in order to determine an "Element (or Community) Occurrence Ranking." Rare (S1 and S2) natural communities can be considered significant when quality-ranked A, B, or C. Uncommon (S3) and common (S4) types require a quality rank of A or B to be considered significant. Very common (S5) types require an A-rank (VFWD 2014). Significant natural communities can be deemed RINA under Criterion 8, based on the combination of the natural community rarity and quality ranking. Additional considerations for RINA include the presence of rare, threatened, or endangered ("RTE") species in these communities, as well as overall natural community associations.

In order to identify potential occurrences of known significant natural communities, VHB researched the Vermont Natural Heritage Inventory ("NHI") database for the presence of known Element Occurrences ("EOs") of significant natural community types within and adjacent to the Study Area. A one-mile radius was used when querying the NHI database (accessed May 15, 2015) and information specific to each EO identified. During the delineation efforts, VHB field staff also reviewed the onsite natural community or vegetative assemblage types. Descriptions found in *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont* (Thompson and Sorenson 2005) were used to define the natural community parameters as well as characterize the natural communities within the Study Area. Field observations and mapping data were used to identify onsite natural communities.

Through database review, no known significant natural community EO is mapped within the Study Area or within 5 miles of the Study Area. During the field survey, VHB corroborated that there are no natural communities or RINA within the Study Area.

*Endangered Species*

Endangered Species include those that are defined as "threatened" or "endangered" on the Vermont state endangered and the state threatened species lists, and that are protected under the Vermont Endangered Species Rule. Those species protected under the federal Endangered Species Act ("ESA") are included as well. In order to identify the potential occurrence of rare or sensitive species, particularly those that are federal- or Vermont-listed threatened or endangered, and quantify available onsite habitat condition relative to each, VHB researched the NHI database for the presence of known EOs of rare, threatened, or endangered species ("RTE") within and adjacent to the Study Area. Additionally, VHB queried the U.S. Fish and Wildlife Service ("USFWS") Information, Planning, and Conservation ("IPaC") system project review database, to identify any federally listed Threatened or Endangered species within the Project region.



VHB performs the database review for a 2-mile radius from the project site. If few or no EOs are contained within this search area, the search radius is then expanded to 5-miles. For the subject Project, a 5-mile search radius was used due to the lack of EOs within the 2-mile search radius.

Results of NHI Database Review

The Potential Rare, Threatened, and Endangered Plant Species and Significant Natural Communities Summary in the Project Region and Onsite Habitats table (Attachment 7) provides the results of the 5-mile EO database search, habitat characterizations on site, and survey recommendations. Based on NHI database review, there are no NHI-mapped RTE plant or animal species known within the Study Area. The closest mapped EO polygon is an aquatic animal species found approximately 1.6 miles south of the Study Area in Lake Lamoille. As none of the EO records within 5 miles are protected either in Vermont or at the federal level, there were no specific target species for the RTE field survey. VHB therefore conducted a general survey of onsite flora and habitat, and results of the vegetative inventory are included on the Species Checklist- Partial Floristic Inventory table in Attachment 9. There were no RTE species observed during field surveys.

Results of IPaC Database Review

Based on the USFWS IPaC database review, the Project occurs within the federally threatened northern long-eared bat (*Myotis septentionalis*) range. However, no critical habitat within or adjacent to the Project has been designated for this species by USFWS (see USFWS Natural Resources of Concern, Attachment 8) in the Project area. In general, tree clearing can have direct or indirect impacts to protected forest bats. The Project would only involve limited shrub and tree clearing (less than 0.5-acre) along the northern and eastern edge of the array, and cutting would be limited to winter months (between November 30 and April 15), therefore avoiding the bat summer roosting season entirely.

The USFWS Threatened listing of the northern long-eared bat included an interim and final 4(d) rule, for which conservation measures have been defined for exempt activities not requiring a permit. Based on the 4(d) rule, the Project activities would be considered exempt as defined under "minimal cutting" (USFWS 2015). Because the Project will require a VT-GP Section 404 permit, the Project will be under a federal nexus which requires that the nexus agency, in this case the USACE, conduct a consultation with the USFWS pursuant to Section 7 of the ESA. It is anticipated that the Project would not require additional mitigation measures or a Takings Permit from the USFWS. As the proposed cutting is an exempt activity under the 4(d) rule, and the Project has proposed to comply with a time of year cutting restriction described above, consultation with USFWS is anticipated to be a conservative measure of due diligence. As the Section 7 process often includes state agency cooperation, the Project has proactively coordinated with the Vermont Fish and Wildlife Department ("VT FWD") to request information regarding known occurrences of summer (roost) or winter (hibernaculum) habitat in vicinity of the Project. VT FWD (Alyssa Bennett) confirmed<sup>1</sup> that VT FWD does not have any records of protected bat occurrences or any other bat habitat related concerns with the general Project location.

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<sup>1</sup> Bennett, A. Vermont Department of Fish and Wildlife. Personal Communication, August 31, 2015.





### *Necessary Wildlife Habitat*

The types of habitat that typically constitutes Necessary Wildlife Habitat (“NWH”) include deer wintering habitat, black bear mast stands (concentrated American beech and oak species), black bear forested wetland habitat, black bear travel corridors, or in some cases, moose overwintering area.

VHB researched available deer wintering area, bear mast stand, and bear wetland habitat mapping provided by ANR database to determine if the Study Area is situated within or adjacent to mapped NWH. From this, it was determined that the Project site does not support NWH. The closest ANR-mapped deer wintering area is approximately 1.9 miles southeast of the Study Area. No NWH is known to occur within the vicinity of the Study Area, nor was any identified within the Study Area.

Although there is no NWH within the Project area, the Project does plan to install perimeter fencing that will be suitable for large wildlife exclusion (to avoid entrapment of travelling wildlife within the fenced area).

Based on VHB’s review and evaluation of database and field habitat information gathered for the Project Study Area, and review of current known EOs and wildlife habitat, VHB concludes that there are no RINA or NWH present within the Project Area and as such, there will be no impacts to these resources. Additionally, there would be no adverse effects on known listed threatened or endangered species as a result of the Project.

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## ATTACHMENTS

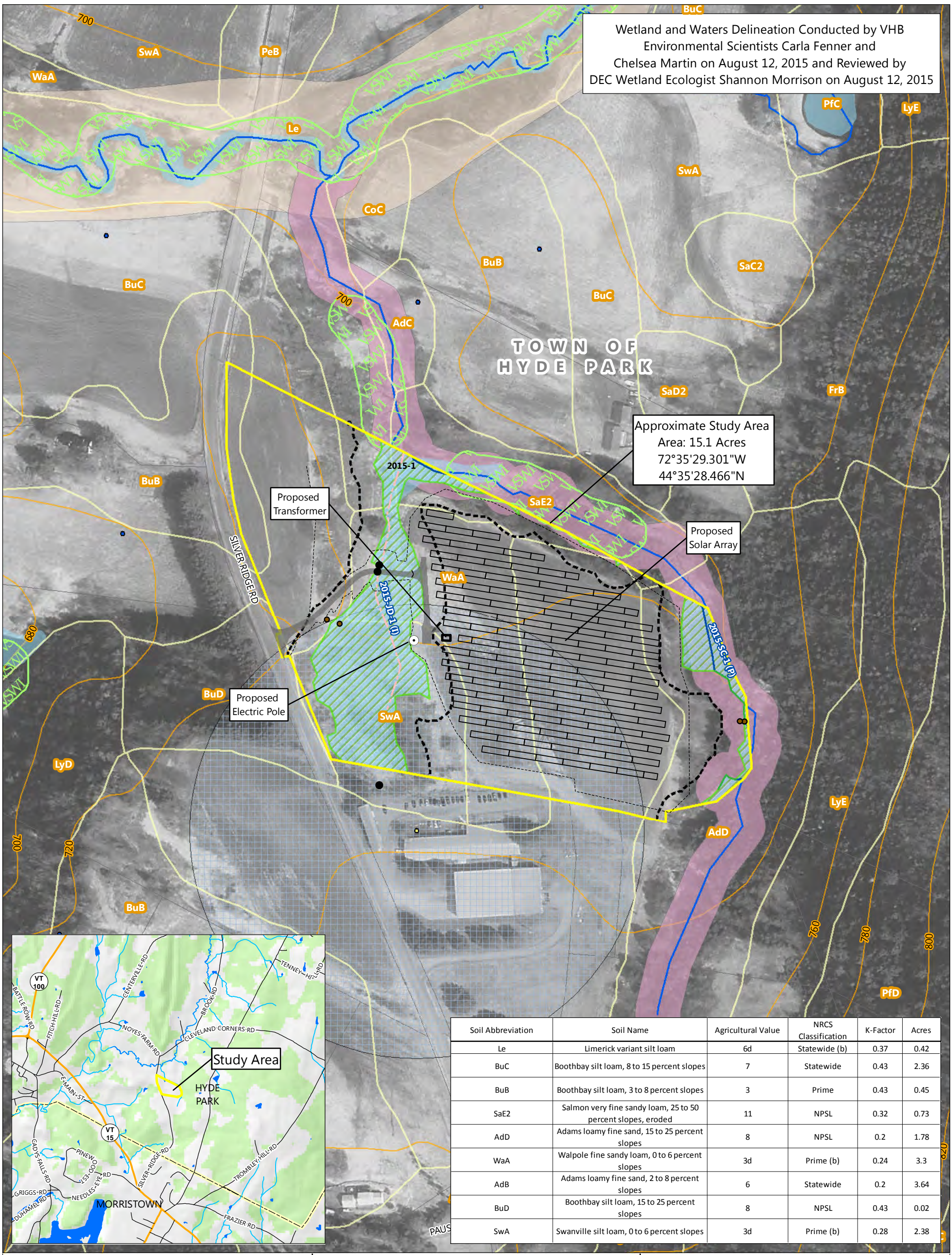
1. Natural Resources Map
2. Representative Site Photographs
3. Stream Summary Table
4. Wetland Summary Table
5. Vermont Wetland Evaluation Form
6. USACE Wetland Determination Data Forms
7. Potential Rare, Threatened, and Endangered Plant Species and Significant Natural Communities Summary in the Project Region and Onsite Habitats
8. USFWS Natural Resources of Concern
9. Species Checklist- Partial Floristic Inventory



# **ATTACHMENT 1**



Wetland and Waters Delineation Conducted by VHB  
 Environmental Scientists Carla Fenner and  
 Chelsea Martin on August 12, 2015 and Reviewed by  
 DEC Wetland Ecologist Shannon Morrison on August 12, 2015

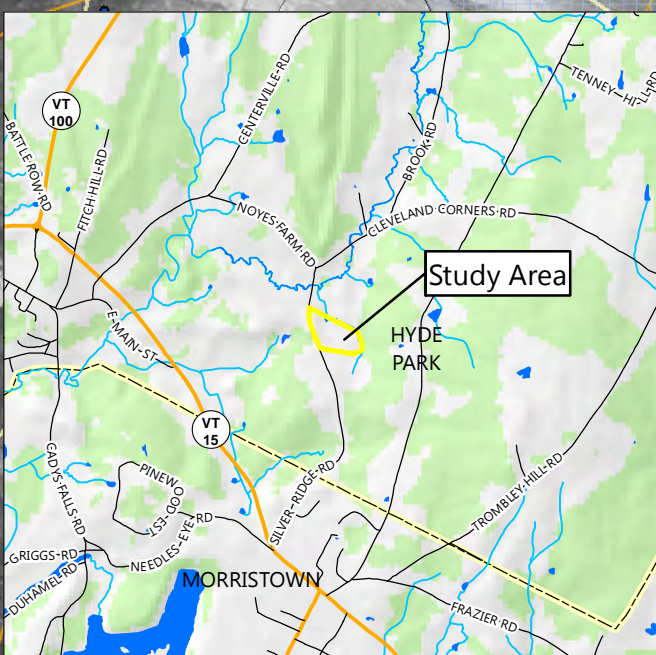


Approximate Study Area  
 Area: 15.1 Acres  
 72°35'29.301"W  
 44°35'28.466"N

Proposed Transformer

Proposed Solar Array

Proposed Electric Pole



Soil Abbreviation	Soil Name	Agricultural Value	NRCS Classification	K-Factor	Acres
Le	Limerick variant silt loam	6d	Statewide (b)	0.37	0.42
BuC	Boothbay silt loam, 8 to 15 percent slopes	7	Statewide	0.43	2.36
BuB	Boothbay silt loam, 3 to 8 percent slopes	3	Prime	0.43	0.45
SaE2	Salmon very fine sandy loam, 25 to 50 percent slopes, eroded	11	NPSL	0.32	0.73
AdD	Adams loamy fine sand, 15 to 25 percent slopes	8	NPSL	0.2	1.78
WaA	Walpole fine sandy loam, 0 to 6 percent slopes	3d	Prime (b)	0.24	3.3
AdB	Adams loamy fine sand, 2 to 8 percent slopes	6	Statewide	0.2	3.64
BuD	Boothbay silt loam, 15 to 25 percent slopes	8	NPSL	0.43	0.02
SwA	Swanville silt loam, 0 to 6 percent slopes	3d	Prime (b)	0.28	2.38

- Study Area (VHB)
  - Delineation Data Point (VHB)
  - Approximate Project Extent
  - Access Road
  - Culvert
  - Proposed Class II Wetland (VHB)
  - Approximate River Corridor (VHB)
  - Delineated Stream (VHB)
  - Jurisdictional Ditch (VHB)
  - Resource Buffer (VHB)
  - VSWI Wetland (ANR)
  - NHI Element Occurrences (VTFWD)\*
  - Deer Wintering Area (VT ANR)\*
  - Ground Water Protection Area (VT ANR)
  - Surface Water Protection Area (VT ANR)\*
  - NRCS Soils
  - Streams (VHD)
  - Waterbody (VHD)
  - River Corridors (ANR)\*
  - 100 Year Flood Zone (FEMA)\*
  - 500 Year Flood Zone (FEMA)\*
  - Private Well (ANR)
  - Public Well (ANR)
  - Parcel Boundary
  - 20Ft. Contours
- \*Feature does not occur within map extent

**Village of Hyde Park Electric Department  
 Hyde Park Waterhouse Project  
 Hyde Park, VT  
 Natural Resources Map**

October 16, 2015

200 100 0 200  
 Feet

Sources: Background Imagery by VCGI (2011-2014); NHI Element Occurrences, Surface Water Protection Area, Ground Water Protection Area, and Deer Wintering Area by ANR (2013); River Corridors by ANR (2015); Contours generated from LIDAR DEM (2015); Streams and Waterbodies by VHD (2010); Soil Boundary by NRCS (2008); VSWI Wetlands by ANR (2010); Flood Zones by FEMA (2014); Parcel data by VHB (2009); Study Area, Delineated Wetlands, Delineated Streams, Jurisdictional Ditch, Approximate River Corridor and Resource Buffers by VHB (2015); Project Components by CEA (2015).



# **ATTACHMENT 2**

Natural Resource Assessment Site Photographs  
Village of Hyde Park Electric Department  
Hyde Park Solar – Waterhouse Project  
Hyde Park, Vermont



**Photograph 1.** Looking south along Silver Ridge Road from the end of the existing Project access road; aerial 3-phase line in view.



**Photograph 2.** Looking east from Silver Ridge Road at the existing agricultural access road; Project laydown area is to the left in photo view.



**Photograph 3.** Looking down the existing access road, view to the northeast with laydown area to the left and array area to the right in the background.



**Photograph 4.** Looking east across the existing ditch crossing.







**Photograph 5.** View to the south looking up-gradient at the ditch 2015-JD-1; Wetland 2015-1 present on both sides of the ditch.



**Photograph 6.** A representative view of Wetland 2015-1 in the northeastern portion of the Study Area; photo view looking west.



**Natural Resource Assessment Site Photographs**  
**Village of Hyde Park Electric Department**  
**Hyde Park Solar – Waterhouse Project**  
 Hyde Park, Vermont

	
<p><b>Photograph 7.</b> A view of the upland forested edge of the northern Project area.</p>	<p><b>Photograph 8.</b> Representative view of Wetland 2015-1 in the northwestern portion of the Study Area; not proposed for any Project disturbance.</p>
	
<p><b>Photograph 9.</b> An area of shallow open water within Wetland 2015-1 and adjacent to Stream 2015-SC-1.</p>	<p><b>Photograph 10.</b> Representative view of Stream 2015-SC-1, along the eastern edge of the Study Area.</p>
	
<p><b>Photograph 11.</b> A view looking south across the portion of Wetland 2015-1 that would be impacted by the Project on the right side of the photo view; this is the lower functioning and disturbed portion of the wetland.</p>	<p><b>Photograph 12.</b> A view along the northern edge of the corn field, where the Project perimeter fence is proposed.</p>

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# **ATTACHMENT 3**

**Summary of Delineated Streams**

**Client: Village of Hyde Park Electric Department (Encore Redevelopment)**

**Project: Hyde Park Solar-Waterhouse Project**

**Date: October 6, 2015**

**Delineation Date: August 12, 2015**

**Prepared by: VHB (C. Fenner)**

Waters ID	VHD Waters Name	Town	Mapping Type (Center, TOB, and/or OHW)	Average Ordinary High Water Width (OHW) Feet <sup>1</sup>	Flow Regime (Perennial, Intermittent, Ephemeral) <sup>2</sup>	Substrate	Bank Height	Depth of Water	Watershed Size > 0.5 square miles (Yes/No) <sup>3</sup>	VWQS Waters Classification <sup>4</sup>	2014 Impaired or Priority Surface Waters <sup>5</sup> (Yes/No)	ANR Mapped River Corridor (Yes/No)	VHB River Corridor (if applicable) <sup>6</sup>
2015-SC-1	NA	Hyde Park	SC	4.0	Perennial	Silt/sand/organic	1-3 feet	2 feet	No	B	No	No	50 feet
2015-JD-1	NA	Hyde Park	JD	3.0	Intermittent	Silt/sand/organic	1-2 feet (artificial)	0.5 foot	No	-	-	No	N/A

<sup>1</sup>U.S. Army Corps of Engineers (USACE). 2005. "Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification." No. 05-05.

<sup>2</sup>Stream flow regime determined based on qualitative observations of in stream hydrology indicators and geomorphic characteristic and are subject to professional judgment.

<sup>3</sup>Watershed size was determined from Vermont Agency of Natural Resources (ANR) River Management Program mapping and U.S. Geological Survey StreamStats online application.

<sup>4</sup>Under Vermont Water Quality Standards (Vt. Code R. 12 004 052), Effective October 30, 2014 all of the streams mapped are considered Class B Waters; ditches are not classified

<sup>4</sup> From the Vermont Water Quality Standards (Vt. Code R 12 004 052), Effective October 30, 2014 [Vermont Agency of Natural Resources (ANR) 2014].

<sup>5</sup> List of streams from the State of Vermont 2014 303(d) List of Impaired Waters – Part A – Impaired Surface Waters in Need of TMDL (Vermont Department of Environmental Conservation (DEC) – Watershed Management Division (WMD), 2014)

<sup>6</sup> If no ANR mapped river corridor is present, VHB proposed river corridor is applied pursuant to the DEC Flood Hazard Area and River Corridor Protection Procedure, Effective December 5, 2014. VHB proposed River Corridor is preliminary and river corridor determination is subject to review and approval of DEC.

# **ATTACHMENT 4**



**Summary of Delineated Wetlands**

**Client: Village of Hyde Park Electric Department (Encore Redevelopment)**

**Project: Hyde Park Solar- Waterhouse Project**

**Date: October 6, 2015**

**Delineation Date: August 12, 2015**

**Prepared by: VHB (C. Fenner)**

VHB Delineated Wetlands										
Wetland ID	Delineated Area (Square Feet) <sup>1</sup>	Cowardin Classification <sup>2</sup>	Vermont Wetland Rules Classification					VHB Proposed VWR Classification <sup>6</sup>	Typical Vegetation	Comments
			Contiguous to a VSWI-mapped Wetland?	Riparian Wetland Contiguous to Stream Channel? (Flow Regime) <sup>3</sup>	VWR Section 4.6 Presumptions <sup>4</sup>	VWR Section 5 Functional Criteria Presence/Significance				
						Type <sup>5</sup>	VHB-Proposed Significant?			
2015-1	112,091 sq ft (2.57 ac)	PEM/PSS	Yes	Yes	a, b	5.1(H), 5.2 (H), 5.4 (P) 5.10 (P)	Yes	II	PEM: <i>Carex comosa</i> , <i>Eupatorium perfoliatum</i> , <i>Impatiens capensis</i> , <i>Sparganium americanum</i> , PSS: <i>Alnus incana</i> , <i>Salix bebbiana</i> ,	General position is toe of slope wetland along riparian corridor, with wet meadow conditions at the upper (west and southwest) end

<sup>1</sup>All 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. 2012.

<sup>2</sup>Classification 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.

<sup>3</sup>Wetland 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).

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

<sup>5</sup>VWR 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

<sup>6</sup>VHB-Proposed VWR Classification is based on review and application of the VWR, particularly VHB's interpretation of Section 4.6 Presumptions; delineation and proposed classification were reviewed in the field by DEC (Shannon Morrison) on September 12, 2015.

# **ATTACHMENT 5**

**VERMONT WETLAND EVALUATION FORM**

Project Name: Hyde Park Solar Project Project #: VHB #57788.00

Date: Delineation: August 12, 2015 Investigator: C Martin and C Fenner

**SUMMARY OF FUNCTIONAL EVALUATION:**

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

6. Rare, Threatened, and Endangered Species Habitat

2. Surface & Ground Water Protection

7. Education and Research in Natural Sciences

3. Fish Habitat

8. Recreational Value and Economic Benefits

4. Wildlife Habitat

9. Open Space and Aesthetics

5. Exemplary Wetland Natural Community

10. Erosion Control through Binding and Stabilizing the Soil

**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

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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.

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- 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

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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.



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- 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

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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;

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- 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.

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### 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.

Comments:

### 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.

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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.

# **ATTACHMENT 6**



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2015-1-1UP

Project Site: Hyde Park Solar-Waterhouse City/County: Hyde Park/Lamoille Samp. Date: 8/12/2015
Applicant/Owner: Encore Redevelopment State: VT Sampling Point: 2015-1-1UP
Investigator(s): C Fenner, C Martin Section, Township, Range: Hyde Park
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-6%
Subregion (LRR or MLRA): LRR R Lat: 44°35'27.48"N Long: 72°35'33.305"W Datum: NAD 83
Soil Map Unit: Swanville Silt Loam 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? NO
Hydric Soil Present? NO
Wetland Hydrology Present? NO
Is This Sample Area Within a Wetland? NO
Remarks: Upland data point closest flag is 2015-1-24; upslope from sloping wet meadow portion of wetland complex

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B13)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Depth (inches):
Water Table Present? Depth (inches):
Saturation Present? Depth (inches):
Wetland Hydrology Present? NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
0.4" precipitation over 5 days prior to investigation. No precipitation on day of investigation (NOAA-Morrisville)
Remarks:

SOIL

Table with 8 columns: Depth, Matrix, Color (moist), %, Redox Features, Type, Loc, Texture, Remarks. Rows include 0-10 and 10-16+ depth intervals with soil descriptions like 10YR 3/3 and 10YR 3/4.

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)
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)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type:
Depth (inches):
Hydric Soil Present? NO

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. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply By: _____ OBL _____ x 1 = _____ FACW <u>6</u> x 2 = <u>12</u> FAC <u>15</u> x 3 = <u>45</u> FACU <u>77</u> x 4 = <u>308</u> UPL _____ x 5 = _____ Sum: <u>98</u> (A) <u>365</u> (B)  Prevalence Index = B/A = <u>3.72</u>
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				
Sapling Stratum (Plot size: <u>15' RAD</u> )				Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  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. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5' RAD</u> )				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. <b>Solidago canadensis</b>	<b>62</b>	<b>X</b>	<b>FACU</b>	
2. <b>Solidago rugosa</b>	<b>15</b>		<b>FAC</b>	
3. <b>Rubus idaeus</b>	<b>15</b>		<b>FACU</b>	
4. <b>Phalaris arundinacea</b>	<b>3</b>		<b>FACW</b>	
5. <b>Spiraea alba</b>	<b>3</b>		<b>FACW</b>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<b>98</b> = Total Cover				
Woody Vines (Plot size: _____)				Hydrophytic Vegetation Present? <u>NO</u>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (If observed, list morphological adaptations below).				



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

2015-1-1WET

Project Site: Hyde Park Solar-Waterhouse City/County: Hyde Park/Lamoille Samp. Date: 8/12/2015  
 Applicant/Owner: Encore Redevelopment State: VT Sampling Point: 2015-1-1WET  
 Investigator(s): C Fenner, C Martin Section, Township, Range: Hyde Park  
 Landform (hillslope, terrace, etc.): lower slope Local relief (concave, convex, none): None Slope (%): 0-6%  
 Subregion (LRR or MLRA): LRR R Lat: 44°35'27.39"N Long: 72°35'32.917"W Datum: NAD 83  
 Soil Map Unit: Walpole fine sandy loam NWI Class: PEM-PSS  
 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>YES</u>	Is This Sample Area Within a Wetland? <u>YES</u>
Hydric Soil Present?	<u>YES</u>	
Wetland Hydrology Present?	<u>YES</u>	
Remarks: <b>Wetland data point closest flag is 2015-1-24; sloping wet meadow portion of wetland complex</b>		

**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 checked="" 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 checked="" 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>YES</u>	
Surface Water Present? <input type="checkbox"/>	Depth (inches): <input type="text"/>		
Water Table Present? <input type="checkbox"/>	Depth (inches): <input type="text"/>		
Saturation Present? <input checked="" type="checkbox"/>	Depth (inches): <u>10"</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: <b>0.4" precipitation over 5 days prior to investigation. No precipitation on day of investigation (NOAA-Morrisville)</b>			
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 <sup>1</sup>		
0-5	10YR 4/1	90	7.5YR 4/6	10	C	PL, M	FINE SANDY LOAM
5-11	10YR 4/1	85	7.5YR 5/8	15	C	M	FINE SANDY LOAM
11-17+	2.5Y 5/3	90	10YR 6/6	10	C	M	FINE SANDY LOAM
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <span style="float: right;"><sup>2</sup>Location: PL=Pore Lining, M=Matrix.</span>							
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils <sup>3</sup> :			
<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 checked="" 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)			
<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.							
Restrictive Layer (if observed): Type: <input type="text"/> Depth (inches): <input type="text"/>				Hydric Soil Present? <u>YES</u>			
Remarks:							

		Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum	(Plot size: <u>30' RAD</u> )				Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A)  # Dominants across all strata: <u>2</u> (B)  % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
		= Total Cover			Prevalence Index Worksheet: Total % Cover of:                      Multiply By: OBL <u>41</u> x 1 = <u>41</u> FACW <u>80</u> x 2 = <u>160</u> FAC <u>3</u> x 3 = <u>9</u> FACU _____                                x 4 = _____ UPL _____                                 x 5 = _____ Sum: <u>124</u> (A) <u>210</u> (B)  Prevalence Index = B/A = <u>1.69</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: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations  <sup>1</sup> 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.	<u>Juncus effusus</u>	<u>38</u>	<u>X</u>	<u>OBL</u>	
2.	<u>Onoclea sensibilis</u>	<u>38</u>	<u>X</u>	<u>FACW</u>	
3.	<u>Spiraea alba</u>	<u>15</u>		<u>FACW</u>	
4.	<u>Carex scoparia</u>	<u>15</u>		<u>FACW</u>	
5.	<u>Carex lurida</u>	<u>3</u>		<u>OBL</u>	
6.	<u>Spiraea tomentosa</u>	<u>3</u>		<u>FACW</u>	
7.	<u>Solidago rugosa</u>	<u>3</u>		<u>FAC</u>	
8.	<u>Phalaris arundinacea</u>	<u>3</u>		<u>FACW</u>	
9.	<u>Rubus hispidus</u>	<u>3</u>		<u>FACW</u>	
10.	<u>Phalaris arundinacea</u>	<u>3</u>		<u>FACW</u>	
11.	_____	_____	_____	_____	
12.	_____	_____	_____	_____	
		<u>124</u> = Total Cover			
Woody Vines	(Plot size: _____ )				Hydrophytic Vegetation Present? <u>YES</u>
1.	_____	_____	_____	_____	
2.	_____	_____	_____	_____	
3.	_____	_____	_____	_____	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
		= Total Cover			
Remarks: (If observed, list morphological adaptations below).					



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2015-1-2UP

Project Site: Hyde Park Solar-Waterhouse City/County: Hyde Park/Lamoille Samp. Date: 8/12/2015
Applicant/Owner: Encore Redevelopment State: VT Sampling Point: 2015-1-2UP
Investigator(s): C Fenner, C Martin Section, Township, Range: Hyde Park
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): convex Slope (%): 15-25%
Subregion (LRR or MLRA): LRR R Lat: 44°35'25.212"N Long: 72°35'20.72"W Datum: NAD 83
Soil Map Unit: Adams loamy fine sand NWI Class: PEM/PSS
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? NO
Hydric Soil Present? NO
Wetland Hydrology Present? NO
Is This Sample Area Within a Wetland? NO
Remarks:
Data collected along western wetland boundary of east portion of complex; upslope from wetland boundary

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
Saturation (A3) Marl Deposits (B13)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)
Field Observations:
Surface Water Present? Depth (inches):
Water Table Present? Depth (inches):
Saturation Present? Depth (inches):
Wetland Hydrology Present? NO
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
0.4" precipitation over 5 days prior to investigation. No precipitation on day of investigation (NOAA-Morrisville)
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
0-6 10YR 5/4 100 Color (moist) % Color (moist) % Type1 Loc2 FINE SANDY LOAM
6-14 2.5Y 6/4 100 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) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
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? NO
Remarks:

		Absolute % Cover	Dom. Sp?	Indicator Status	
Tree Stratum (Plot size: <u>30' RAD</u> )					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)
1.					
2.					
3.					
4.					
5.					
6.					
_____ = Total Cover					Prevalence Index Worksheet: Total % Cover of:                      Multiply By: OBL _____ x 1 = _____ FACW _____ x 2 = _____ FAC <u>38</u> x 3 = <u>114</u> FACU <u>24</u> x 4 = <u>96</u> UPL _____ x 5 = _____ Sum: <u>62</u> (A) <u>210</u> (B) Prevalence Index = B/A = <u>3.39</u>
Sapling Stratum (Plot size: <u>15' RAD</u> )					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
_____ = Total Cover					Hydrophytic Vegetation Indicators: _____ Dominance Test is > 50% _____ Prevalence Index is <= 3.0 _____ Problematic Hydrophytic Vegetation <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations <sup>1</sup> 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.	<b>Clintonia borealis</b>	<b>38</b>	<b>X</b>	<b>FAC</b>	
2.	<b>Maianthemum canadense</b>	<b>15</b>	<b>X</b>	<b>FACU</b>	
3.	<b>Tsuga canadensis</b>	<b>3</b>		<b>FACU</b>	
4.	<b>Pinus strobus</b>	<b>3</b>		<b>FACU</b>	
5.	<b>Picea rubens</b>	<b>3</b>		<b>FACU</b>	
6.					
7.					
8.					
9.					
10.					
11.					
12.					
<b>62</b> = Total Cover					
Woody Vines (Plot size: _____ )					Hydrophytic Vegetation Present? <u>NO</u>
1.					
2.					
3.					
4.					
5.					
_____ = Total Cover					
Remarks: (If observed, list morphological adaptations below).					



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2015-1-2Wet

Project Site: Hyde Park Solar-Waterhouse City/County: Hyde Park/Lamoille Samp. Date: 8/12/2015
Applicant/Owner: Encore Redevelopment State: VT Sampling Point: 2015-1-2Wet
Investigator(s): C Fenner, C Martin Section, Township, Range: Hyde Park
Landform (hillslope, terrace, etc.): toe slope Local relief (concave, convex, none): concave Slope (%): 15-25%
Subregion (LRR or MLRA): LRR R Lat: 44°35'25.278"N Long: 72°35'20.628"W Datum: NAD 83
Soil Map Unit: Adams loamy fine sand NWI Class: PEM/PSS
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? YES
Hydric Soil Present? YES
Wetland Hydrology Present? YES
Is This Sample Area Within a Wetland? YES
Remarks: Data collected along western wetland boundary of east portion of complex; toe of slope location

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)
Secondary Indicators (minimum of two required)
Surface Water (A1) Water-Stained Leaves (B9)
High Water Table (A2) Aquatic Fauna (B13)
X Saturation (A3) Marl Deposits (B13)
Water Marks (B1) Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3)
Drift Deposits (B3) Presence of Reduced Iron (C4)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils (C6)
Iron Deposits (B5) Thin Muck Surface (C7)
Inundation Visible on Aerial (B7) Other (Explain in Remarks)
Sparsely Vegetated Concave Surface (B8) FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Water Table Present? Saturation Present?
Depth (inches): 1"
Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
0.4" precipitation over 5 days prior to investigation. No precipitation on day of investigation (NOAA-Morrisville)

Remarks:

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
Table with columns: Depth (in), Matrix, Color (moist), %, Redox Features, Color (moist), %, Type1, Loc2, Texture, Remarks

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

Hydric Soil Indicators: X Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
Histic Epipedon (A2) MLRA 149B
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
Stratified Layers (A5) Loamy Gleyed Matrix (F2)
Depleted Below Dark Surface (A11) Depleted Matrix (F3)
Thick Dark Surface (A12) Redox Dark Surface (F6)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
Sandy Gleyed Matrix (S4) Redox Depressions (F8)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7) (LRR R, MLRA 149B)
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:

		Absolute % Cover	Dom. Sp?	Indicator Status	
<b>Tree Stratum</b> (Plot size: <u>30' RAD</u> )					Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>3</u> (A)  # Dominants across all strata: <u>3</u> (B)  % Dominants OBL, FACW, FAC: <u>100%</u> (A/B)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
_____ = Total Cover					Prevalence Index Worksheet: Total % Cover of: <span style="float:right">Multiply By:</span> OBL <u>21</u> x 1 = <u>21</u> FACW <u>53</u> x 2 = <u>106</u> FAC _____ x 3 = _____ FACU _____ x 4 = _____ UPL _____ x 5 = _____ Sum: <u>74</u> (A) <span style="float:right"><u>127</u> (B)</span>  Prevalence Index = B/A = <u>1.72</u>
<b>Sapling Stratum</b> (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 <sup>1</sup> (explain) _____ Rapid Test for Hydrophytic Vegetation _____ Morphological Adaptations  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<b>Shrub Stratum</b> (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.
<b>Herb Stratum</b> (Plot size: <u>5' RAD</u> )					
1.	<b>Eupatorium perfoliatum</b>	<b>38</b>	<b>X</b>	<b>FACW</b>	
2.	<b>Impatiens capensis</b>	<b>15</b>	<b>X</b>	<b>FACW</b>	
3.	<b>Persicaria sagittata</b>	<b>15</b>	<b>X</b>	<b>OBL</b>	
4.	<b>Chelone glabra</b>	<b>3</b>		<b>OBL</b>	
5.	<b>Carex comosa</b>	<b>3</b>		<b>OBL</b>	
6.					
7.					
8.					
9.					
10.					
11.					
12.					
<b>74</b> = Total Cover					
<b>Woody Vines</b> (Plot size: _____ )					
1.					
2.					
3.					
4.					
5.					
_____ = Total Cover					Hydrophytic Vegetation Present? <u>YES</u>

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

# **ATTACHMENT 7**



	Species	Common Name	Type	State Rank	Global Rank	VT Status	Federal Status	EO last Observed	Habitat Description <sup>1</sup>	Occurrence Description <sup>2</sup>	EO Mapped within Study Area (yes/no)	Potential for Habitat to Occur Onsite?	2015 Survey Recommended?	
													(yes/ no)	Comments
Species Occurrence Range = 5 mile radius; Natural Community Occurrence range - 2 mile radius	<i>Ardea herodias</i>	Great blue heron	Animal	S3B	G5			2007	Saltmarshes, rivers, ponds, reservoirs, estuaries, and in some cases coral reefs. Their conspicuous stick nests are placed in the open on poles, channel markers, and dead trees, often over water	Along the Lamoille River in Morrystown	No	No	No	No suitable habitat within or adjacent to Study Area
	<i>Carex aquatilis spp. altior</i>	Water sedge	Insect	S3	G5			NA	Flowing clear streams and rivers in the northeastern third of the U.S.,	None	No	No	No	Study Area is adjacent to, but does not include any surface waters that provide suitable habitat
	<i>Falco columbarius</i>	Merlin	Animal	S3S4B	G5			1987	Marshes, swamps, shores, tideflats. Very adaptable. Forages in any kind of calm fresh waters or slow-moving rivers, also in shallow coastal bays. Nests in trees or shrubs near water, sometimes on ground in areas free of predators. "Great White" form is mostly in salt water habitats.	Along the Lamoille River, close to Bridge Street	No	No	No	No suitable habitat within or adjacent to Study Area
	<i>Gomphaeschna furcillata</i>	Harlequin damer	Plant	S2S3	G5			2001	Wet meadows, fens, northern latitudes and often associated with sphagnum mats	Near Green River reservoir; uncertain identification in 2001; subsequent surveys in 2009 and 2012 did not identify the species	No	Yes	No	Not a listed species and not known within/adjacent to Study Area, therefore not a target for field survey
	<i>Ophiogomphus rupinsulensis</i>	Rusty snaketail	Animal	S2B	G5			1998	Summer, breeding habitat within fragmented woodlands, forest edges, and often nearby a river, lake or pond	Pleasant View Cemetery, Morrystown	No	Yes	No	Not a listed species and not known within/adjacent to Study Area, therefore not a target for field survey
	<i>Pandion haliaetus</i>	Osprey	Animal	S2S3	G5			2002	Shallow water of ditches, swamps, and bogs; pools, very slow moving water	None provided; specimen from Bartlett hill collection	No	No	No	Study Area is adjacent to, but does not include any surface waters that provide suitable habitat
	<i>Vaccinium vitis-idaea</i>	Mountain cranberry	Plant	S2	G5			2011	Upper elevations and mountaintops, commonly associated with openings, ledges, and balds above or adjacent to spruce-fir forest communities	Elmore Mountain, close to the fire tower	No	No	No	No high elevation forest community or exposed balds present on site

<sup>1</sup>Potential sources for habitat description listed below:

Brown, Paul Martin. 2007. *Wild Orchids of the Northeast: New England, New York, Pennsylvania, and New Jersey*. University Press of Florida.  
 Conant, Roger and Collins, Joseph T. 1998. *Peterson Field Guides: Reptiles and Amphibians*. Houghton Mifflin Company, Boston.  
 EFloras.org. <http://www.efloras.org/index.aspx>  
 Gleason, Henry A. and Cronquist, Arthur. 1991. *Manual of Vascular Plants of Northeast United States and Adjacent Canada*. The New York Botanical Garden.  
 Haines, Arthur. 2011. *Flora Novae Angliae*. New England Wildflower Society/Yale University Press, New Haven, CT. 973 Pp.  
 Illinois Natural History Survey. [http://www.inhs.uiuc.edu/animals\\_plants/mollusk/musselmanual/TofC.html](http://www.inhs.uiuc.edu/animals_plants/mollusk/musselmanual/TofC.html)  
 Langdon, Richard W., Ferguson, Mark T. and Cox, Kenneth M. 2006. *Fishes of Vermont*. Vermont Department of Fish and Wildlife.  
 Newcomb, Lawrence. 1977. *Newcomb's Wildflower Guide*. Little, Brown, and Company, Boston  
 Northern Prairie Wildlife Research Center. <http://www.npwrc.usgs.gov/resource/distr/insects/tigb/usa/49.htm>  
 Seymour, Frank Conkling. 1982. *The Flora of New England*. 2d ed. Phytologia Memoirs 5. Plainfield, NJ: Harold N. Moldenke and Alma L. Moldenke. 611 p. [7604]  
 Thompson, Elizabeth H. and Sorenson, Eric R. 2005. *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont*. Vermont Department of Fish and Wildlife and The Nature Conservancy.  
 Vermont Natural Resources Atlas, Accessed August 2015. Element Occurrence Reports

<sup>2</sup>Sources for occurrence description listed below:

Vermont Natural Heritage Inventory - Vermont Fish & Wildlife Department - Element Occurrence Reports.

# **ATTACHMENT 8**

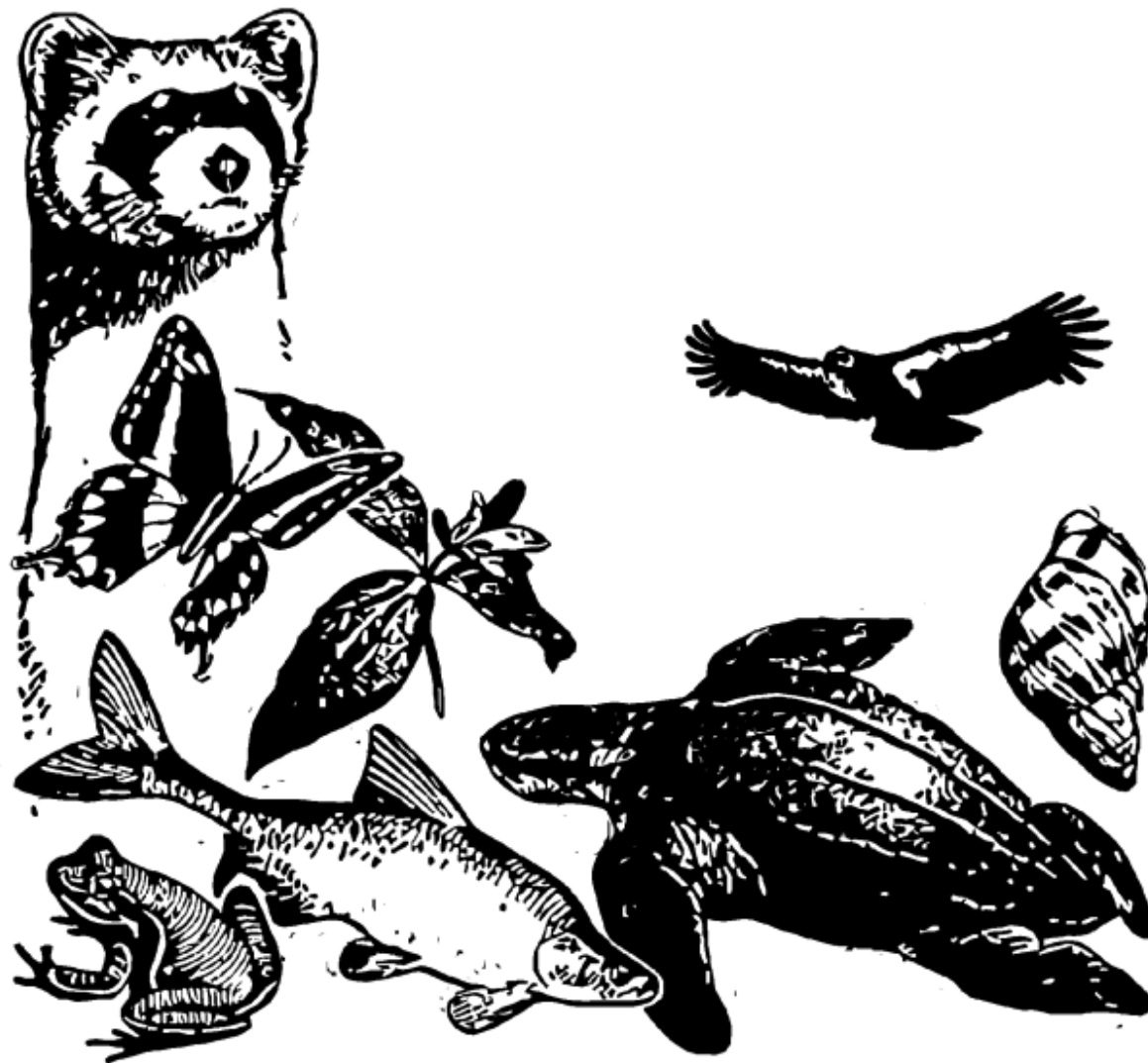
# Hyde Park Solar Project

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## *IPaC Trust Resource Report*

Generated September 29, 2015 12:12 PM MDT

This report is for informational purposes only and should not be used for planning or analyzing project-level impacts. For projects that require FWS review, please return to this project on the IPaC website and request an official species list from the Regulatory Documents page.



US Fish &amp; Wildlife Service

# IPaC Trust Resource Report



## Project Description

**NAME**

Hyde Park Solar Project

**PROJECT CODE**

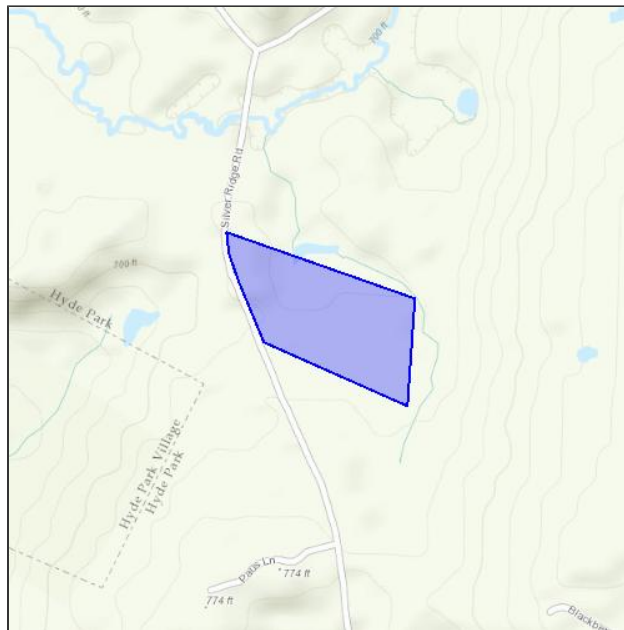
3WA5N-7LJPV-HDBAG-CYG2Y-DW3NPI

**LOCATION**

Lamoille County, Vermont

**DESCRIPTION**

No description provided



## U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

**New England Ecological Services Field Office**

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

# Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the [Endangered Species Program](#) and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under [Section 7](#) of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an official species list on the Regulatory Documents page.

## Mammals

**Northern Long-eared Bat** *Myotis septentrionalis*

Threatened

### CRITICAL HABITAT

**No critical habitat** has been designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=A0JE>

## Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

# Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

<p><b>American Bittern</b> <i>Botaurus lentiginosus</i>            Season: Breeding  <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F3">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F3</a></p>	<b>Bird of conservation concern</b>
<p><b>Bald Eagle</b> <i>Haliaeetus leucocephalus</i>            Year-round  <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008</a></p>	<b>Bird of conservation concern</b>
<p><b>Bay-breasted Warbler</b> <i>Dendroica castanea</i>            Season: Breeding</p>	<b>Bird of conservation concern</b>
<p><b>Black-billed Cuckoo</b> <i>Coccyzus erythrophthalmus</i>            Season: Breeding  <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HI">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HI</a></p>	<b>Bird of conservation concern</b>
<p><b>Canada Warbler</b> <i>Wilsonia canadensis</i>            Season: Breeding</p>	<b>Bird of conservation concern</b>
<p><b>Common Tern</b> <i>Sterna hirundo</i>            Season: Breeding  <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B09G">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B09G</a></p>	<b>Bird of conservation concern</b>
<p><b>Olive-sided Flycatcher</b> <i>Contopus cooperi</i>            Season: Breeding  <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0AN">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0AN</a></p>	<b>Bird of conservation concern</b>
<p><b>Peregrine Falcon</b> <i>Falco peregrinus</i>            Season: Breeding  <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FU">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FU</a></p>	<b>Bird of conservation concern</b>
<p><b>Pied-billed Grebe</b> <i>Podilymbus podiceps</i>            Season: Breeding</p>	<b>Bird of conservation concern</b>
<p><b>Wood Thrush</b> <i>Hylocichla mustelina</i>            Season: Breeding</p>	<b>Bird of conservation concern</b>

## Refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area



# Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate [U.S. Army Corps of Engineers District](#).

## DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

## DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

## DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

There are no wetlands identified in this project area

# **ATTACHMENT 9**

Species Checklist1 - Partial Floristic Inventory  
 Client: Village of Hyde Park Electric Department  
 Project: Hyde Park Solar - Waterhouse Project  
 Date: September 16, 2015  
 Survey Date: August 12, 2015  
 Field Investigator(s): VHB (C. Fenner, C. Martin)  
 Prepared by: VHB (C. Fenner)



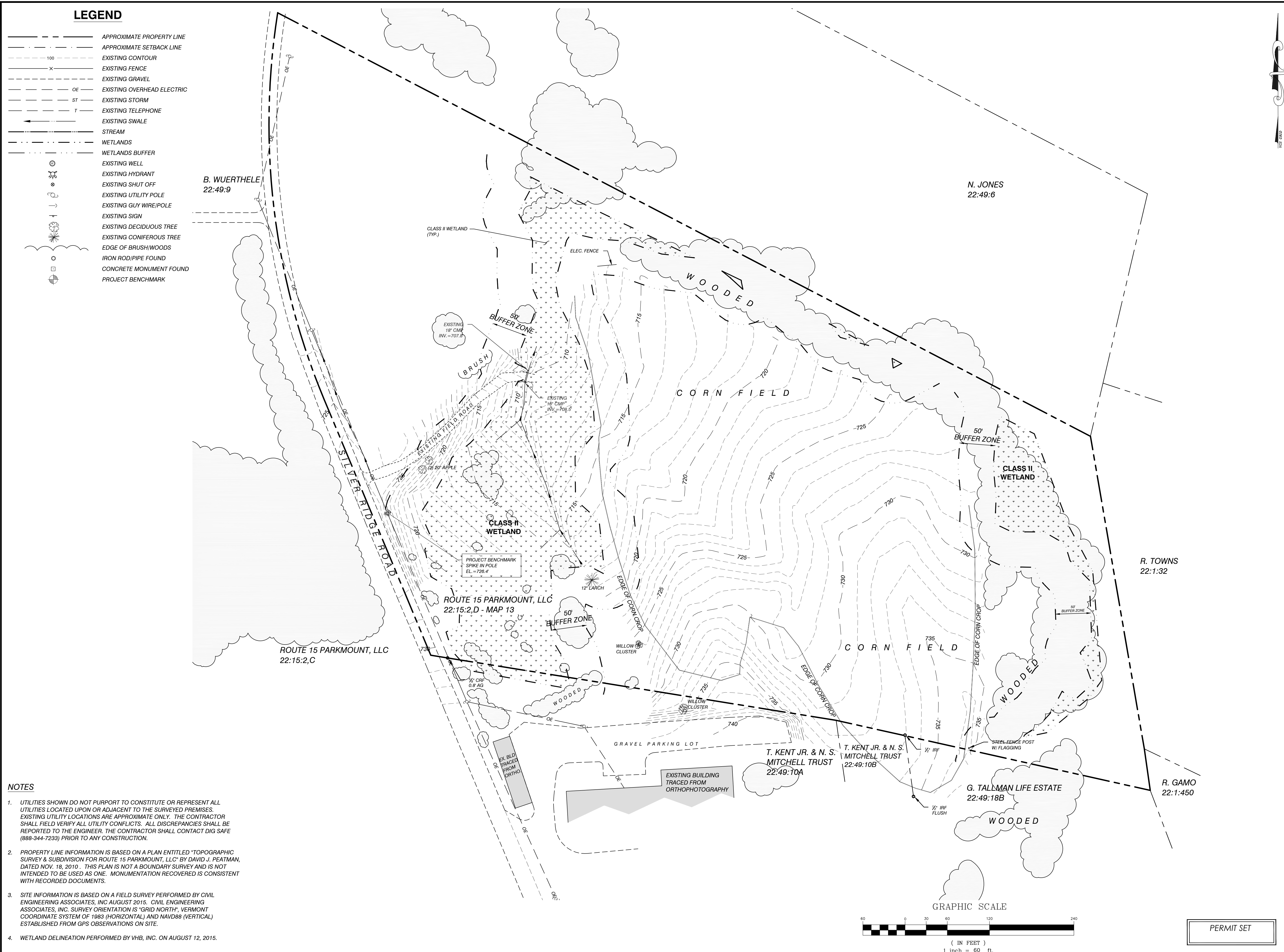
Scientific Name <sup>1</sup>	Common Name	Family	Wetland Habitat	Forest Habitat	Pasture and Field Edge Habitat	VT Rarity Rank <sup>2</sup>	Non-Native Invasive Species <sup>3</sup>
Acer rubrum L.	red maple	Aceraceae	X	X			
Bromus inermis Leys.	smooth brome	Poaceae			X		
Achillea millefolium L.	common yarrow	Typhaceae			X		
Alnus incana (L.) Moench ssp. rugosa (Du Roi) R.T. Clausen	speckled alder	Betulaceae	X				
Antennaria neglecta Greene	field pussytoes	Asteraceae			X		
Asclepias syriaca L.	common milkweed	Asclepiadaceae			X		
Bidens cernua L.	nodding beggartick	Asteraceae	X		X		
Carex crinita Lam.	fringed sedge	Cyperaceae	X		X		
Carex lurida Wahlenb.	shallow sedge	Cyperaceae	X				
Carex scoparia Schkuhr ex Willd. var. scoparia	broom sedge	Cyperaceae	X		X		
Carex vulpinoidea Michx.	fox sedge	Cyperaceae	X		X		
Chelone glabra L.	white turtlehead	Scrophulariaceae	X		X		
Cirsium arvense (L.) Scop.	Canada thistle	Asteraceae			X		
Clematis virginiana L.	devil's darning needles	Ranunculaceae			X		
Clinopodium vulgare L.	wild basil	Lamiaceae	X		X		
Convolvulus arvensis L.	field bindweed	Convolvulaceae			X		
Coptis trifolia (L.) Salisb.	threeleaf goldthread	Ranunculaceae		X			
Cornus canadensis L.	bunchberry dogwood	Cornaceae		X			
Cornus rugosa Lam.	roundleaf dogwood	Cornaceae		X	X		
Cornus sericea L. ssp. sericea	redosier dogwood	Cornaceae	X				
Crataegus L.	hawthorn	Rosaceae			X		
Cyperus esculentus L.	yellow nutsedge	Cyperaceae	X		X		
Dactylis glomerata L.	orchardgrass	Typhaceae			X		
Dasiphora fruticosa (L.) Rydb.	shrubby cinquefoil	Anacardiaceae			X		
Dennstaedtia punctilobula (Michx.) T. Moore	eastern hayscented fern	Dennstaedtiaceae		X			
Doellingeria umbellata (Mill.) Nees	parasol whitetop	Asteraceae		X			
Eleocharis obtusa (Willd.) Schult.	blunt spikerush	Cyperaceae	X				
Eleocharis palustris (L.) Roem. & Schult.	common spikerush	Cyperaceae	X				
Epilobium ciliatum Raf. ssp. ciliatum	fringed willowherb	Onagraceae	X				
Equisetum arvense L.	field horsetail	Equisetaceae	X		X		
Eupatorium perfoliatum L.	common boneset	Asteraceae	X		X		
Eutrochium maculatum (L.) E.E. Lamont	spotted joe pye weed	Asteraceae	X		X		
Fagus grandifolia Ehrh.	American beech	Fagaceae		X			
Festuca L.	fescue	Poaceae			X		
Fragaria vesca L.	woodland strawberry	Rosaceae		X	X		
Frangula alnus Mill.	glossy buckthorn	Rhamnaceae			X		B
Fraxinus pennsylvanica Marshall	green ash	Oleaceae		X			
Galium mollugo L.	false baby's breath	Rubiaceae			X		
Geum rivale L.	purple avens	Rosaceae	X				
Glyceria canadensis (Michx.) Trin.	rattlesnake mannagrass	Anacardiaceae	X				
Glyceria grandis S. Watson	American mannagrass	Poaceae	X				
Hesperis matronalis L.	dames rocket	Brassicaceae			X		WL
Hydrocotyle americana L.	American marshpennywort	Apiaceae	X		X		
Hypericum punctatum Lam.	spotted St. Johnswort	Clusiaceae	X		X		
Impatiens capensis Meerb.	jewelweed	Balsaminaceae	X	X			
Juncus articulatus L.	jointleaf rush	Juncaceae	X				
Juncus canadensis J. Gay ex Laharpe	Canadian rush	Juncaceae	X				
Juncus effusus L.	common rush	Juncaceae	X		X		
Juncus tenuis Willd.	poverty rush	Juncaceae			X		
Lactuca canadensis L.	Canada lettuce	Asteraceae		X	X		
Leersia oryzoides (L.) Sw.	rice cutgrass	Poaceae	X				
Lobelia inflata L.	Indian-tobacco	Campanulaceae			X		
Lolium perenne L.	perennial ryegrass	Poaceae			X		
Lonicera tatarica L.	Tatarian honeysuckle	Caprifoliaceae			X		B
Lotus corniculatus L.	bird's-foot trefoil	Typhaceae			X		
Lycopus americanus Muhl. ex W.P.C. Barton	American water horehound	Lamiaceae	X		X		
Lysimachia nummularia L.	creeping jenny	Primulaceae	X		X		
Lysimachia terrestris (L.) Britton, Sterns & Poggenb.	earth loosestrife	Primulaceae	X		X		
Maianthemum canadense Desf.	Canada mayflower	Anacardiaceae		X			
Malus Mill.	apple	Rosaceae			X		
Matteuccia struthiopteris (L.) Todaro	ostrich fern	Dryopteridaceae	X				
Mentha arvensis L.	wild mint	Lamiaceae	X		X		
Onoclea sensibilis L.	sensitive fern	Dryopteridaceae	X		X		
Osmunda cinnamomea L.	cinnamon fern	Anacardiaceae		X			
Oxalis montana Raf.	mountain woodsorrel	Oxalidaceae		X			
Parthenocissus quinquefolia (L.) Planch.	Virginia creeper	Vitaceae			X		
Polygonum amphibium L. var. emersum Michx.	longroot smartweed	Anacardiaceae	X				
Phalaris arundinacea L.	reed canarygrass	Poaceae	X		X		WL
Phleum pratense L.	timothy	Poaceae			X		
Pinus strobus L.	eastern white pine	Pinaceae		X	X		
Plantago major L.	common plantain	Plantaginaceae			X		
Polygonum persicaria L.	spotted ladythumb	Polygonaceae	X				
Polygonum sagittatum L.	arrowleaf tearthumb	Polygonaceae	X				
Populus tremuloides Michx.	quaking aspen	Salicaceae		X	X		
Prunus pensylvanica L. f.	pin cherry	Anacardiaceae		X	X		

Scientific Name <sup>1</sup>	Common Name	Family	Wetland Habitat	Forest Habitat	Field Edge Habitat	VT Rarity Rank <sup>2</sup>	Invasive Species <sup>3</sup>
<i>Pteridium aquilinum</i> (L.) Kuhn	western brackenfern	Dennstaedtiaceae		X			
<i>Ranunculus repens</i> L.	creeping buttercup	Ranunculaceae			X		
<i>Rorippa palustris</i> (L.) Besser	bog yellowcress	Brassicaceae	X				
<i>Rubus hispidus</i> L.	bristly dewberry	Rosaceae	X				
<i>Rubus occidentalis</i> L.	black raspberry	Rosaceae			X		
<i>Rumex obtusifolius</i> L.	bitter dock	Polygonaceae			X		
<i>Sagittaria latifolia</i> Willd.	broadleaf arrowhead	Alismataceae	X				
<i>Salix bebbiana</i> Sarg.	Bebb willow	Salicaceae	X				
<i>Salix discolor</i> Muhl.	pussy willow	Salicaceae	X				
<i>Salix petiolaris</i> Sm.	meadow willow	Salicaceae	X				
<i>Scirpus atrovirens</i> Willd.	green bulrush	Cyperaceae	X				
<i>Scirpus cyperinus</i> (L.) Kunth	woolgrass	Cyperaceae	X				
<i>Scutellaria galericulata</i> L.	marsh skullcap	Lamiaceae	X				
<i>Silene latifolia</i> Poir. ssp. <i>alba</i> (Mill.) Greuter & Burdet	bladder campion	Caryophyllaceae			X		
<i>Solidago canadensis</i> L.	Canada goldenrod	Asteraceae			X		
<i>Solidago rugosa</i> Mill.	wrinkleleaf goldenrod	Asteraceae	X		X		
<i>Sparganium americanum</i> Nutt.	American bur-reed	Typhaceae	X				
<i>Spiraea tomentosa</i> L.	steepleshub	Typhaceae	X				
<i>Symphotrichum novae-angliae</i> (L.) G.L. Nesom	New England aster	Asteraceae	X		X		
<i>Taraxacum officinale</i> F.H. Wigg.	common dandelion	Typhaceae			X		
<i>Thelypteris noveboracensis</i> (L.) Nieuwl.	New York fern	Thelypteridaceae		X			
<i>Thelypteris palustris</i> Schott	eastern marsh fern	Thelypteridaceae	X				
<i>Trientalis borealis</i> Raf.	starflower	Primulaceae		X			
<i>Trifolium arvense</i> L.	rabbitfoot clover	Fabaceae			X		
<i>Trifolium pratense</i> L.	red clover	Fabaceae			X		
<i>Tsuga canadensis</i> (L.) Carrière	eastern hemlock	Pinaceae		X			
<i>Tussilago farfara</i> L.	coltsfoot	Asteraceae			X		
<i>Typha latifolia</i> L.	broadleaf cattail	Typhaceae	X				
<i>Ulmus americana</i> L.	American elm	Ulmaceae		X	X		
<i>Vaccinium myrtilloides</i> Michx.	velvetleaf huckleberry	Ericaceae		X			
<i>Verbena hastata</i> L.	swamp verbena	Typhaceae	X				
<i>Vicia cracca</i> L.	bird vetch	Fabaceae			X		

<sup>1</sup> Nomenclature follows USDA-NRCS PLANTS database ([plants.usda.gov/](http://plants.usda.gov/)) and/or Haines (2011).

<sup>2</sup> The Vermont State Rank from the "Rare and Uncommon Native Vascular Plants of Vermont - Vermont Natural Heritage Inventory - Vermont Fish & Wildlife Department", version dated June 15, 2015.

<sup>3</sup> Vermont Agency of Agriculture, Food & Markets (VTAAF) Quarantine #3- Noxious Weeds (2012). A= Class A Noxious Weeds, B= Class B Noxious Weeds  
Vermont Agency of Natural Resources (ANR) Vermont Wildlife Action Plan- Appendix K Exotic Invasive and Pest Species (2005). WL= Watch List Species



**LEGEND**

- APPROXIMATE PROPERTY LINE
- APPROXIMATE SETBACK LINE
- 100 EXISTING CONTOUR
- x- EXISTING FENCE
- - - EXISTING GRAVEL
- OE EXISTING OVERHEAD ELECTRIC
- ST EXISTING STORM
- T EXISTING TELEPHONE
- EXISTING SWALE
- STREAM
- WETLANDS
- WETLANDS 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

SITE ENGINEER:



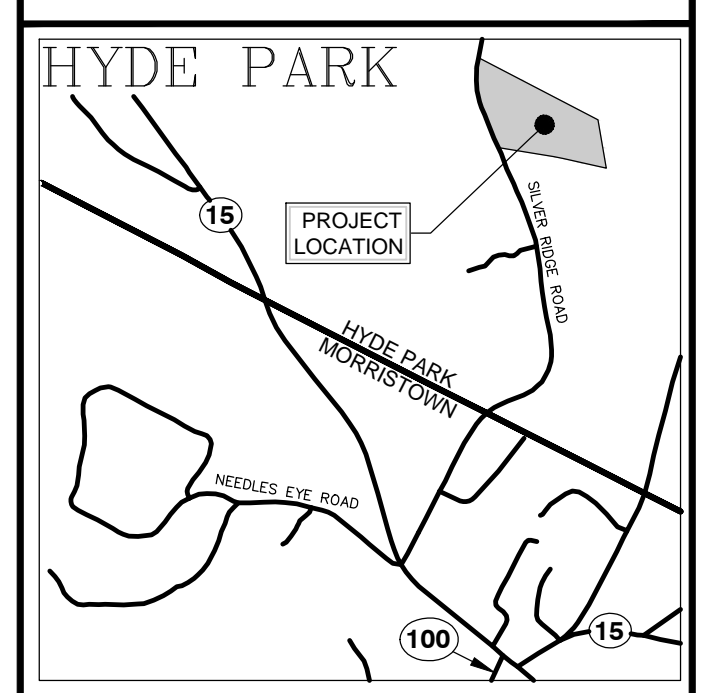
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CHECKED JLM	
APPROVED PBS	

CLIENT:  
**ENCORE REDEVELOPMENT**  
 110 MAIN STREET  
 2nd FLOOR, SUITE 2E  
 BURLINGTON, VT

PROJECT:  
**HYDE PARK SOLAR, WATERHOUSE PROJECT**  
 HYDE PARK, VT



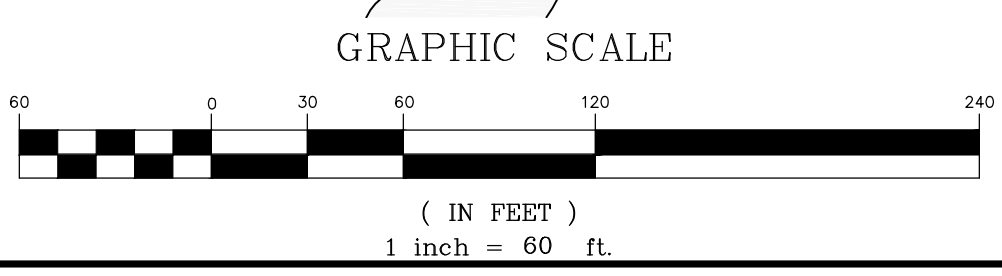
LOCATION MAP  
 1" = 2000'

DATE	CHECKED	REVISION
10/15/2015	PBS	PERMIT SET
12/23/2015	DSM	ADD TJ BOYLE'S REVISED EX. WOODS

**OVERALL EXISTING CONDITIONS SITE PLAN**

DATE 10/07/2015	DRAWING NUMBER <b>C1.0</b>
SCALE 1" = 60'	PROJ. NO. 15192

- NOTES**
- 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.
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  - WETLAND DELINEATION PERFORMED BY VHB, INC. ON AUGUST 12, 2015.



PERMIT SET

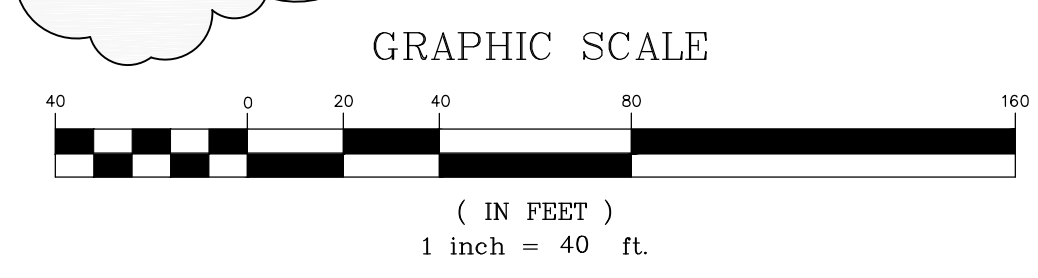


**LEGEND**

	APPROXIMATE PROPERTY LINE
	APPROXIMATE SETBACK LINE
	EXISTING CONTOUR
	EXISTING FENCE
	EXISTING GRAVEL
	EXISTING OVERHEAD ELECTRIC
	EXISTING STORM
	EXISTING TELEPHONE
	EXISTING SWALE
	STREAM
	WETLANDS
	WETLANDS 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



- NOTES**
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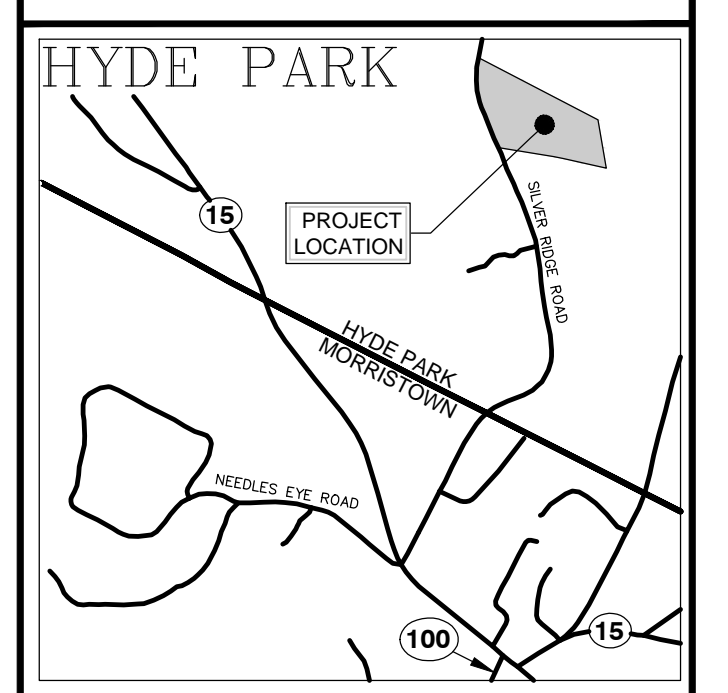


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PBS

CLIENT:  
**ENCORE REDEVELOPMENT**  
 110 MAIN STREET  
 2nd FLOOR, SUITE 2E  
 BURLINGTON, VT

PROJECT:  
**HYDE PARK SOLAR, WATERHOUSE PROJECT**  
 HYDE PARK, VT



LOCATION MAP  
 1" = 2000'

DATE	CHECKED	REVISION
10/15/2015	PBS	PERMIT SET
12/23/2015	DSM	ADD TJ BOYLE'S REVISED EX. WOODS

**EXISTING CONDITIONS SITE PLAN**

DATE  
10/07/2015  
 SCALE  
1" = 40'  
 PROJ. NO.  
15192  
 DRAWING NUMBER  
**C1.1**



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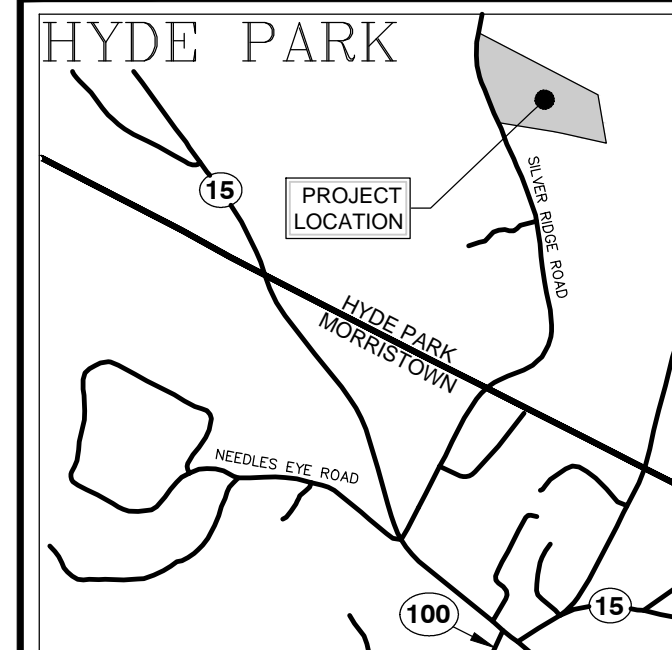
**ENCORE  
REDEVELOPMENT**

110 MAIN STREET  
2nd FLOOR, SUITE 2E  
BURLINGTON, VT

PROJECT:

**HYDE PARK SOLAR,  
WATERHOUSE  
PROJECT**

HYDE PARK, VT



LOCATION MAP

1" = 2000'

DATE	CHECKED	REVISION
10/15/2015	PBS	PERMIT SET
12/23/2015	DSM	ADD BRIDGE & BRIDGE DETAIL
12/23/2015	DSM	ADD TJ BOYLE'S REVISED PLANTINGS

**PROPOSED  
CONDITIONS SITE  
PLAN**

DATE  
10/07/2015

SCALE  
1" = 40'

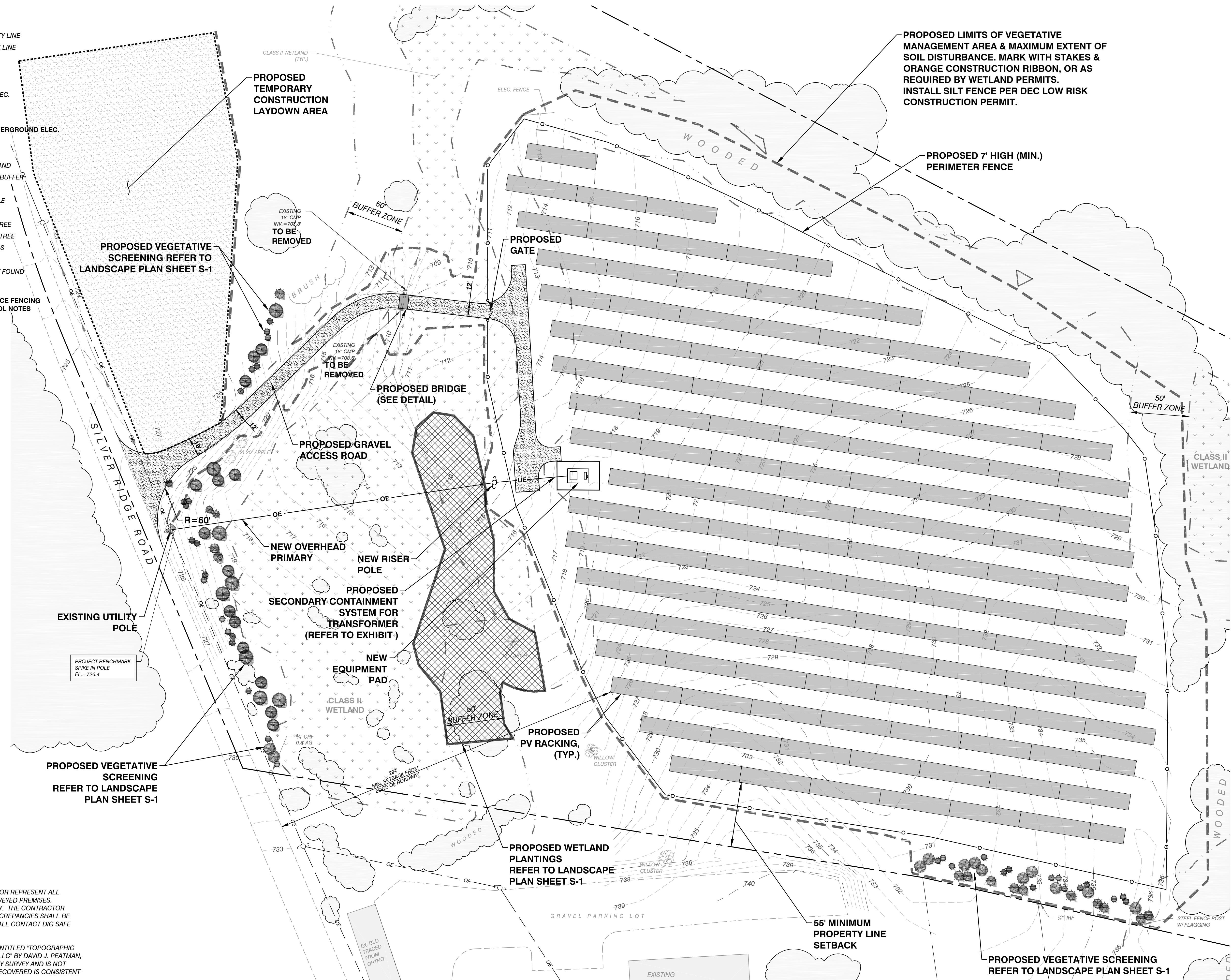
PROJ. NO.  
15192

DRAWING NUMBER

**C1.2**

**LEGEND**

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- APPROXIMATE SETBACK LINE
- 100 --- EXISTING CONTOUR
- X- EXISTING FENCE
- - - EXISTING GRAVEL
- OE --- EXISTING OVERHEAD ELEC.
- ST --- EXISTING STORM
- T --- EXISTING TELEPHONE
- OE --- UE --- NEW OVERHEAD / UNDERGROUND ELEC.
- EXISTING SWALE
- STREAM
- VHB DELINEATED WETLAND
- VHB CLASS II WETLAND BUFFER
- EXISTING UTILITY POLE
- EXISTING GUY WIRE/POLE
- EXISTING SIGN
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- EDGE OF BRUSHWOODS
- IRON ROD/PIPE FOUND
- CONCRETE MONUMENT FOUND
- PROJECT BENCHMARK
- LIMITS OF DISTURBANCE FENCING  
SEE EROSION CONTROL NOTES
- VHB DELINEATED  
CLASS II WETLAND



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.

PROPOSED 7" HIGH (MIN.)  
PERIMETER FENCE

PROPOSED BRIDGE  
(SEE DETAIL)

PROPOSED GRAVEL  
ACCESS ROAD

NEW OVERHEAD  
PRIMARY

NEW RISER  
POLE

PROPOSED  
SECONDARY CONTAINMENT  
SYSTEM FOR  
TRANSFORMER  
(REFER TO EXHIBIT)

NEW  
EQUIPMENT  
PAD

PROPOSED  
PV RACKING,  
(TYP.)

PROPOSED WETLAND  
PLANTINGS  
REFER TO LANDSCAPE  
PLAN SHEET S-1

55' MINIMUM  
PROPERTY LINE  
SETBACK

PROPOSED VEGETATIVE SCREENING  
REFER TO LANDSCAPE PLAN SHEET S-1

**NOTES**

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4. WETLAND DELINEATION PERFORMED BY VHB, INC. ON AUGUST 12, 2015.

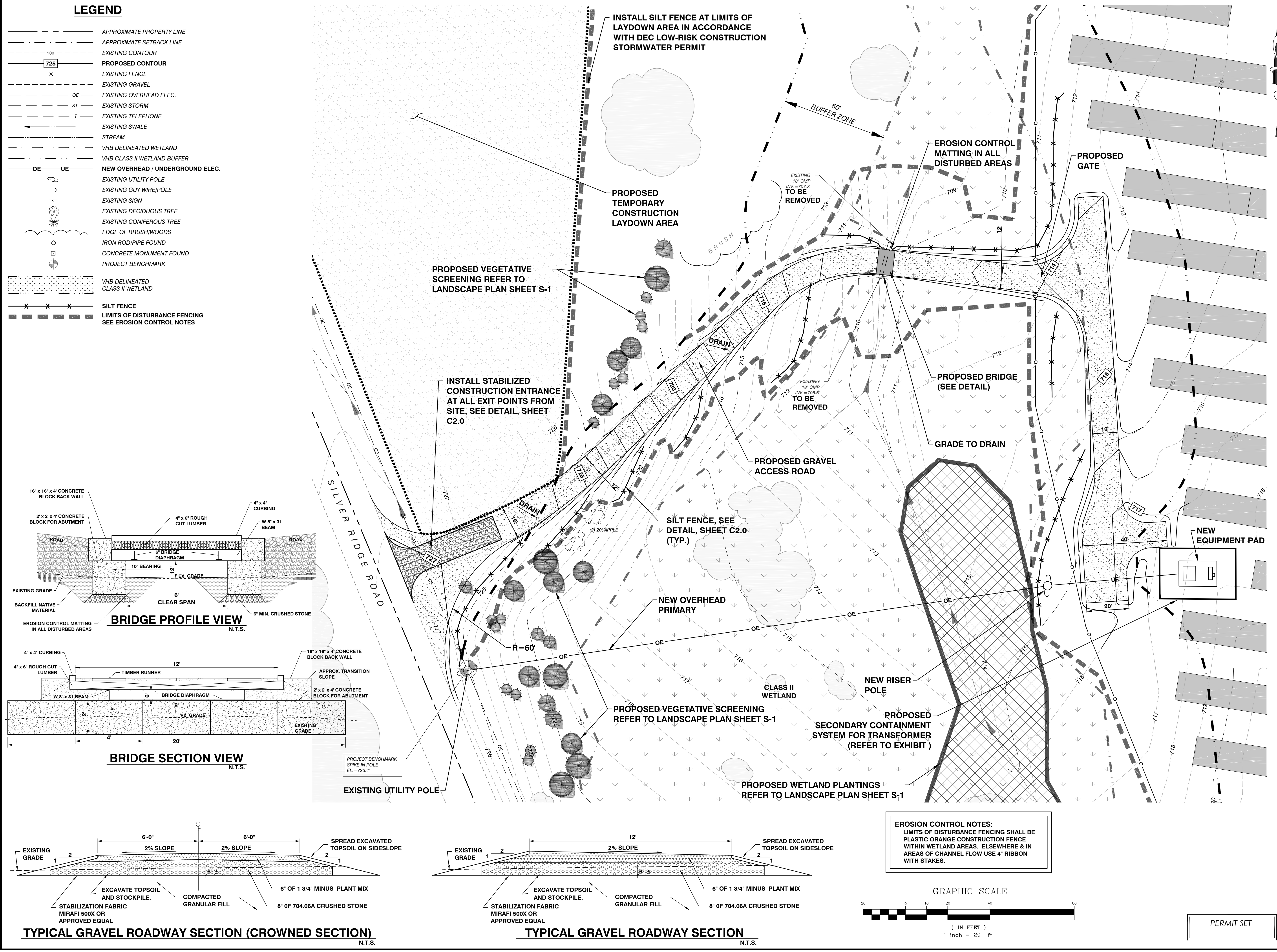
GRAPHIC SCALE



( IN FEET )  
1 inch = 40 ft.

PERMIT SET





**LEGEND**

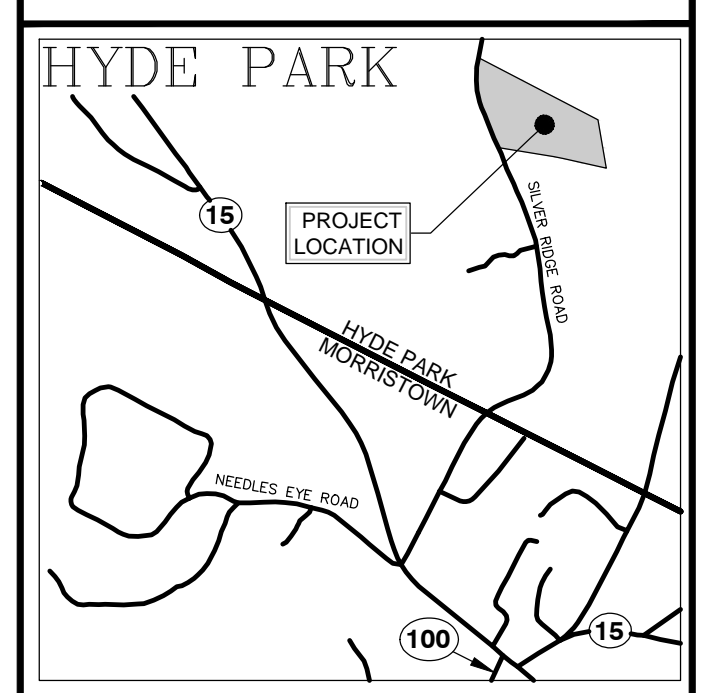
- APPROXIMATE PROPERTY LINE
- APPROXIMATE SETBACK LINE
- 100 --- EXISTING CONTOUR
- 725 --- PROPOSED CONTOUR
- x- EXISTING FENCE
- EXISTING GRAVEL
- OE --- EXISTING OVERHEAD ELEC.
- ST --- EXISTING STORM
- T --- EXISTING TELEPHONE
- EXISTING SWALE
- STREAM
- VHB DELINEATED WETLAND
- VHB CLASS II WETLAND BUFFER
- NEW OVERHEAD / UNDERGROUND ELEC.
- EXISTING UTILITY POLE
- EXISTING GUY WIRE/POLE
- EXISTING SIGN
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- EDGE OF BRUSHWOODS
- IRON ROD/PIPE FOUND
- CONCRETE MONUMENT FOUND
- PROJECT BENCHMARK
- VHB DELINEATED CLASS II WETLAND
- x-x-x- SILT FENCE
- LIMITS OF DISTURBANCE FENCING SEE EROSION CONTROL NOTES

SITE ENGINEER:  
  
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CLIENT:  
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 110 MAIN STREET  
 2nd FLOOR, SUITE 2E  
 BURLINGTON, VT

PROJECT:  
**HYDE PARK SOLAR, WATERHOUSE PROJECT**  
 HYDE PARK, VT

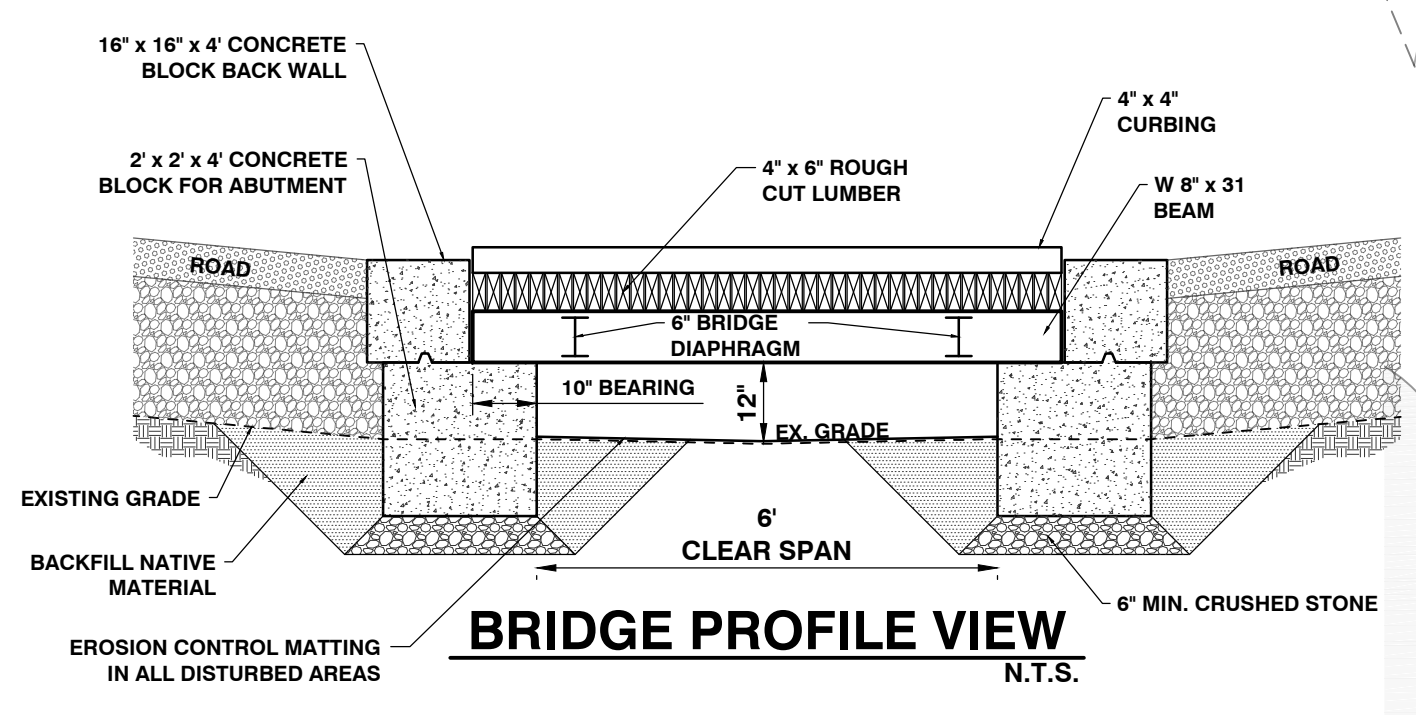


LOCATION MAP  
 1" = 2000'

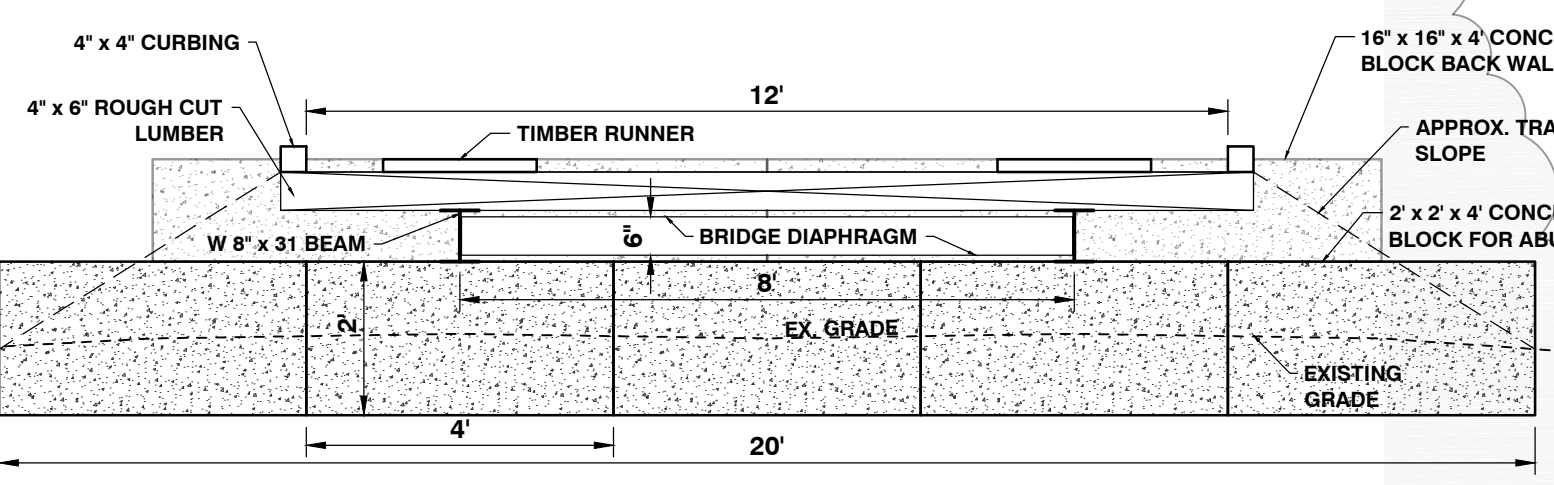
DATE	CHECKED	REVISION
10/15/2015	PBS	PERMIT SET
12/23/2015	DSM	ADD BRIDGE & BRIDGE DETAIL
12/23/2015	DSM	ADD TJ BOYLE'S REVISED PLANTINGS

**GRADING PLAN**

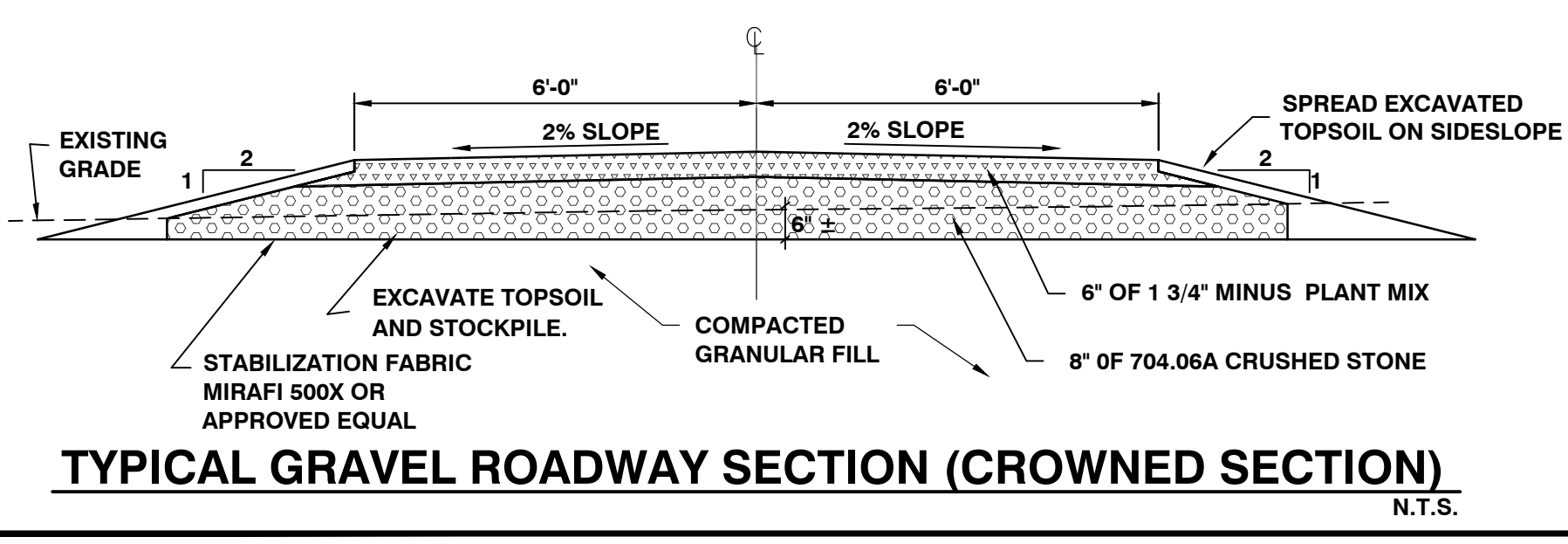
DATE: 10/07/2015  
 SCALE: 1" = 20'  
 PROJ. NO: 15192  
 DRAWING NUMBER: **C1.3**



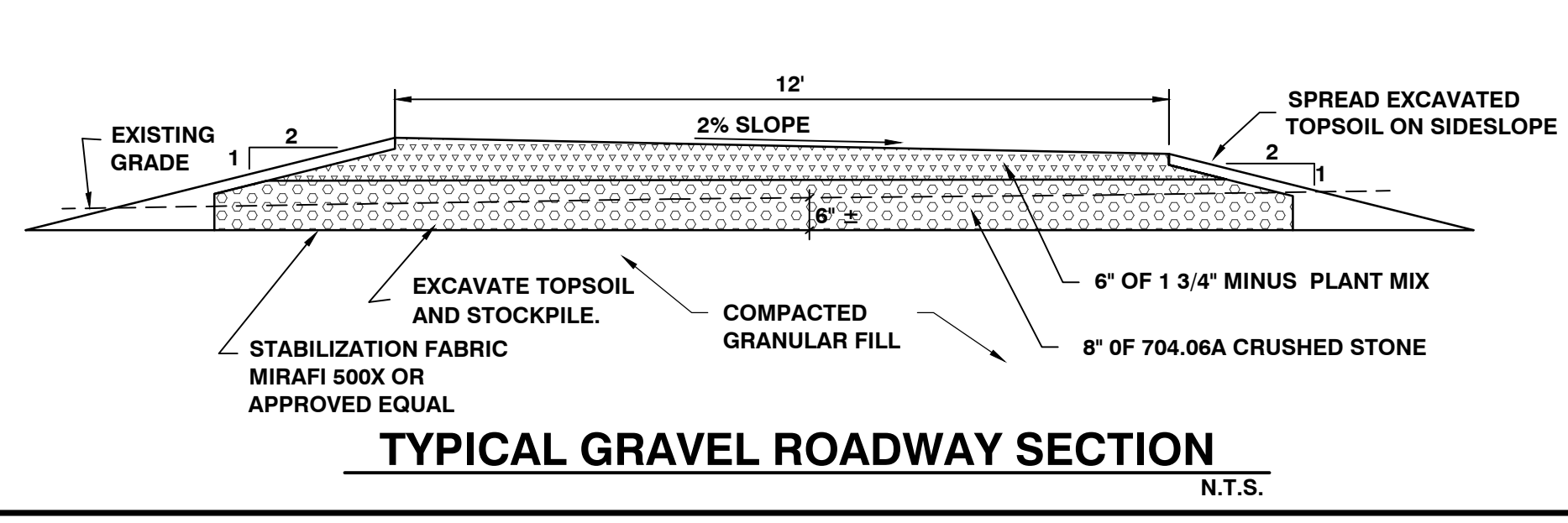
BRIDGE PROFILE VIEW  
 N.T.S.



BRIDGE SECTION VIEW  
 N.T.S.

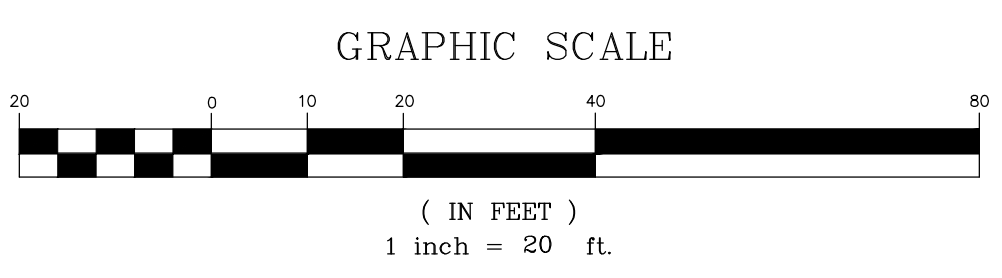


TYPICAL GRAVEL ROADWAY SECTION (CROWNED SECTION)  
 N.T.S.



TYPICAL GRAVEL ROADWAY SECTION  
 N.T.S.

**EROSION CONTROL NOTES:**  
 LIMITS OF DISTURBANCE FENCING SHALL BE PLASTIC ORANGE CONSTRUCTION FENCE WITHIN WETLAND AREAS. ELSEWHERE & IN AREAS OF CHANNEL FLOW USE 4" RIBBON WITH STAKES.



PERMIT SET

P:\AutoCAD\Projects\2015\15192\CADD Files\15192\DWG\15192.dwg, 12/23/2015 2:05:15 PM, gcenter



**Introduction**

This project is subject to the terms and conditions of the authorization from the State of Vermont to discharge construction related storm water runoff.

Coverage under the State Construction General Permit 3-9020 is required for any construction activity that disturbs 1 or more acres of land, or is part of a larger development plan that will disturb 1 or more acres.

This project has been deemed to qualify as a Low Risk Site which is subject to the erosion prevention and sediment control (EPSC) standards set for in the State of Vermont's **Low Risk Site Handbook for Erosion Prevention and Sediment Control**

The following narrative and implementation requirements represent the minimum standard for which this site is required to be maintained as regulated by the State of Vermont.

Any best management practices (BMPs) depicted on the project's EPSC Site plan which go beyond the Handbook requirements are considered to be integral to the management of the site and represent components of the municipal EPSC approval for the project which shall be implemented.

The EPSC plan depicts one snap shot in time of the site. All construction sites are fluid in their day to day exposures and risks as it relates to minimizing sediment loss from the site. It is the responsibility of the Contractor to implement the necessary BMPs to comply with the Low Risk Handbook standards outlined on this sheet based on the interim site disturbance conditions which may or may not be shown on the EPSC Site Plan.

Specific BMPs which are critical to allowing the project to be considered a Low risk site include the items checked below:

- There shall be a maximum of 7 consecutive days of disturbed earth exposure in any location before temporary or final stabilization is implemented.

Refer to VT DEC Construction General Permit for total allowed area of disturbance

- Mark Site Boundaries

**Purpose:**  
Mark the site boundaries to identify the limits of construction. Delineating your site will help to limit the area of disturbance, preserve existing vegetation and limit erosion potential on the site.

**How to comply:**  
Before beginning construction, walk the site boundaries and flag trees, post signs, or install orange safety fence. Fence is required on any boundary within 50 feet of a stream, lake, pond or wetland, unless the area is already developed (existing roads, buildings, etc.)

- Limit Disturbance Area

**Purpose:**  
Limit the amount of soil exposed at one time to reduce the potential erosion on site.

**Requirements:**  
The permitted disturbance area is specified on the site's written authorization to discharge. Only the acreage listed on the authorization form may be exposed at any given time.

**How to comply:**  
Plan ahead and phase the construction activities to ensure that no more than the permitted acreage is disturbed at one time. Be sure to properly stabilize exposed soil with seed and mulch or erosion control matting before beginning work in a new section of the site.

- Stabilize Construction Entrance

**Purpose:**  
A stabilized construction entrance helps remove mud from vehicle wheels to prevent tracking onto streets.

**Requirements:**  
If there will be any vehicle traffic off of the construction site, you must install a stabilized construction entrance before construction begins.

**How to install**  
**Rock Size:** Use a mix of 1 to 4 inch stone  
**Depth:** 8 inches minimum  
**Width:** 12 feet minimum  
**Length:** 40 feet minimum (or length of driveway, if shorter)  
**Geotextile:** Place filter cloth under entire gravel bed

**Maintenance:**  
Redress with clean stone as required to keep sediment from tracking onto the street.

- Install Silt Fence

**Purpose:**  
Silt fences intercept runoff and allow suspended sediment to settle out.

**Requirements:**  
Silt fence must be installed:  

- on the downhill side of the construction activities
- between any ditch, swale, storm sewer inlet, or waters of the State and the disturbed soil

*\* Hay bales must not be used as sediment barriers due to their tendency to degrade and fall apart.*

**Where to place:**  

- Place silt fence on the downhill edge of bare soil. At the bottom of slopes, place fence 10 feet downhill from the end of the slope (if space is available).
- Ensure the silt fence catches all runoff from bare soil.
- Maximum drainage area is 1/4 acre for 100 feet of silt fence.
- Install silt fence across the slope (not up and down hills)
- Install multiple rows of silt fence on long hills to break up flow.
- Do not install silt fence across ditches, channels, or streams or in stream buffers.

**How to install silt fence:**  

- Dig a trench 6 inches deep across the slope
- Unroll silt fence along the trench
- Ensure stakes are on the downhill side of the fence
- Join fencing by rolling the end stakes together
- Drive stakes in against downhill side of trench
- Drive stakes until 16 inches of fabric is in trench
- Push fabric into trench; spread along bottom
- Fill trench with soil and pack down

**Maintenance:**

- Remove accumulated sediment before it is halfway up the fence.
- Ensure that silt fence is trenched in ground and there are no gaps.

- Divert Upland Runoff

**Purpose:**  
Diversion berms intercept runoff from above the construction site and direct it around the disturbed area. This prevents clean water from becoming muddied with soil from the construction site.

**Requirements:**  
If storm water runs onto your site from upslope areas and your site meets the following two conditions, you must install a diversion berm before disturbing any soil.

- You plan to have one or more acres of soil exposed at any one time (excluding roads).
- Average slope of the disturbed area is 20% or steeper.

**How to install:**

- Compact the berm with a shovel or earth-moving equipment.
- Seed and mulch berm or cover with erosion control matting immediately after installation.
- Stabilize the flow channel with seed and straw mulch or erosion control matting. Line the channel with 4 inch stone if the channel slope is greater than 20%.
- Ensure the berm drains to an outlet stabilized with riprap. Ensure that there is no erosion at the outlet.
- The diversion berm shall remain in place until the disturbed areas are completely stabilized.

- Slow Down Channelized Runoff

**Purpose:**  
Stone check dams reduce erosion in drainage channels by slowing down the storm water flow.

**Requirements:**  
If there is a concentrated flow (e.g. in a ditch or channel) of storm water on your site, then you must install stone check dams. Hay bales must not be used as check dams.

**How to install:**  
**Height:** No greater than 2 feet. Center of dam should be 9 inches lower than the side elevation  
**Side slopes:** 2:1 or flatter  
**Stone size:** Use a mixture of 2 to 9 inch stone  
**Width:** Dams should span the width of the channel and extend up the sides of the banks  
**Spacing:** Space the dams so that the bottom (toe) of the upstream dam is at the elevation of the top (crest) of the downstream dam. This spacing is equal to the height of the check dam divided by the channel slope.  
Spacing (in feet) = Height of check dam (in feet)/Slope in channel (ft/ft)

**Maintenance:**  
Remove sediment accumulated behind the dam as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam. If significant erosion occurs between check dams, a liner of stone should be installed.

**Requirements:**  
Permanent storm water treatment practices are constructed to maintain water quality, ensure groundwater flows, and prevent downstream flooding. Practices include detention ponds and wetlands, infiltration basins, and storm water filters.

**How to comply:**  
Contact the Vermont Storm water Program and follow the requirements in the Vermont Storm water Management Manual. The Storm water Management Manual is available at: [www.vtwaterquality.org/stormwater.htm](http://www.vtwaterquality.org/stormwater.htm)

**Requirements:**  
\*An impervious surface is a manmade surface, including, but not limited to: paved and unpaved roads, parking areas, roofs, driveways, and walkways, from which precipitation runs off rather than infiltrates.

**How to comply:**  
The Vermont Storm water Program and follow the requirements in the Vermont Storm water Management Manual. The Storm water Management Manual is available at: [www.vtwaterquality.org/stormwater.htm](http://www.vtwaterquality.org/stormwater.htm)

**Requirements:**  
Within 48 hours of final grading, the exposed soil must be seeded and mulched or covered with erosion control matting.

**How to comply:**  
Bring the site or sections of the site to final grade as soon as possible after construction is completed. This will reduce the need for additional sediment and erosion control measures and will reduce the total disturbed area.

**Requirements:**  
For seeding and mulching rates, follow the specifications under Rule 8, Stabilizing Exposed Soil.

**How to comply:**  
Use sock filters or sediment filter bags on dewatering discharge hoses or pipes, discharge water into silt fence enclosures installed in vegetated areas away from waterways. Remove accumulated sediment after the water has dispersed and stabilize the area with seed and mulch.

**Requirements:**  
Inspect the site at least once every 7 days and after every rainfall or snow melt that results in a discharge from the site. Perform maintenance to ensure that practices are functioning according to the specifications outlined in this handbook.

**How to comply:**  
Prepare bare soil for seeding by grading the top 3 to 6 inches of soil and removing any large rocks or debris.

**Seeding Rates for Temporary Stabilization**  
April 15 - Sept. 15 --- Ryegrass (annual or perennial): 20 lbs/acre  
Sept. 15 - April 15 --- Winter rye: 120 lbs/acre

**Seeding Rates for Final Stabilization: Choose**

Seeding Rates for Final Stabilization:			
Choose from:	Variety	lbs./acre	lbs./1000 sq. ft.
Birdsfoot trefoil	Empire/Purdue	51	0.1
or			
Common white clover	Common	8	0.2
plus			
Tall Fescue	KY-31/Rebel	10	0.25
plus			
Redtop	Common	2	
or			
Ryegrass (perennial)	Pennfinc/Linn	5	0.1

1- Mix 2.5 each of Empire and Purdue OR 2.5 lbs. of Birdsfoot and 2.5 lbs. white clover per acre

**Mulching Rates**  
April 15 - Sept.15 -- Hay or Straw: 1 inch deep (1-2 bales/1000 s.f.)  
Sept.15 - April 15 -- Hay or Straw: 2 in. deep (2-4 bales/1000 s.f.)

**Erosion Control Matting**  
As per manufacturer's instructions

**Hydroseed**  
As per manufacturer's instructions

- Winter Stabilization

**Purpose:**  
Managing construction sites to minimize erosion and prevent sediment loading of waters is a year-round challenge. In Vermont, this challenge becomes even greater during the late fall, winter, and early spring months.  
'Winter construction' as discussed here, describes the period between October 15 and April 15, when erosion prevention and sediment control is significantly more difficult. Rains in late fall, thaws throughout the winter, and spring melt and rains can produce significant flows over frozen and saturated ground, greatly increasing the potential for erosion.

**Requirements for Winter Shutdown:**  
For those projects that will complete earth disturbance activities prior to the winter period (October 15), the following requirements must be adhered to:

- For areas to be stabilized by vegetation, seeding shall be completed no later than September 15 to ensure adequate growth and cover.
- If seeding is not completed by September 15, additional non-vegetative protection must be used to stabilize the site for the winter period. This includes use of Erosion Control Matting or netting of a heavy mulch layer. Seeding with winter rye is recommended to allow for early germination during wet spring conditions.
- Where mulch is specified, apply roughly 2 inches with an 80-90% cover. Mulch should be tracked in or stabilized with netting in open areas vulnerable to wind.

**Requirements for Winter Construction**  
If construction activities involving earth disturbance continue past October 15 or begin before April 15, the following requirements must be adhered to:

- Enlarged access points, stabilized to provide for snow stockpiling.
- Limits of disturbance moved or replaced to reflect boundary of winter work.
- A snow management plan prepared with adequate storage and control of meltwater, requiring cleared snow to be stored down slope of all areas of disturbance and out of storm water treatment structures.
- A minimum 25 foot buffer shall be maintained from perimeter controls such as silt fence.
- In areas of disturbance that drain to a water body within 100 feet, two rows of silt fence must be installed along the contour.
- Drainage structures must be kept open and free of snow and ice dams.
- Silt fence and other practices requiring earth disturbance must be installed ahead of frozen ground.
- Mulch used for temporary stabilization must be applied at double the standard rate, or a minimum of 3 inches with an 80-90% cover.
- To ensure cover of disturbed soil in advance of a melt event, areas of disturbed soil must be stabilized at the end of each work day, with the following exceptions:
  - If no precipitation within 24 hours is forecast and work will resume in the same disturbed area within 24 hours, daily stabilization is not necessary.
  - Disturbed areas that collect and retain runoff, such as house foundations or open utility trenches.
- Prior to stabilization, snow or ice must be removed to less than 1 inch thickness.
- Use stone to stabilize areas such as the perimeter of buildings under construction or where construction vehicle traffic is anticipated. Stone paths should be 10 to 20 feet wide to accommodate vehicular traffic.

- Stabilize Soil at Final Grade

**Purpose:**  
Stabilizing the site with seed and mulch or erosion control matting when it reaches final grade is the best way to prevent erosion while construction continues.

**Requirements:**  
Within 48 hours of final grading, the exposed soil must be seeded and mulched or covered with erosion control matting.

**How to comply:**  
Bring the site or sections of the site to final grade as soon as possible after construction is completed. This will reduce the need for additional sediment and erosion control measures and will reduce the total disturbed area.

**Requirements:**  
For seeding and mulching rates, follow the specifications under Rule 8, Stabilizing Exposed Soil.

**How to comply:**  
Use sock filters or sediment filter bags on dewatering discharge hoses or pipes, discharge water into silt fence enclosures installed in vegetated areas away from waterways. Remove accumulated sediment after the water has dispersed and stabilize the area with seed and mulch.

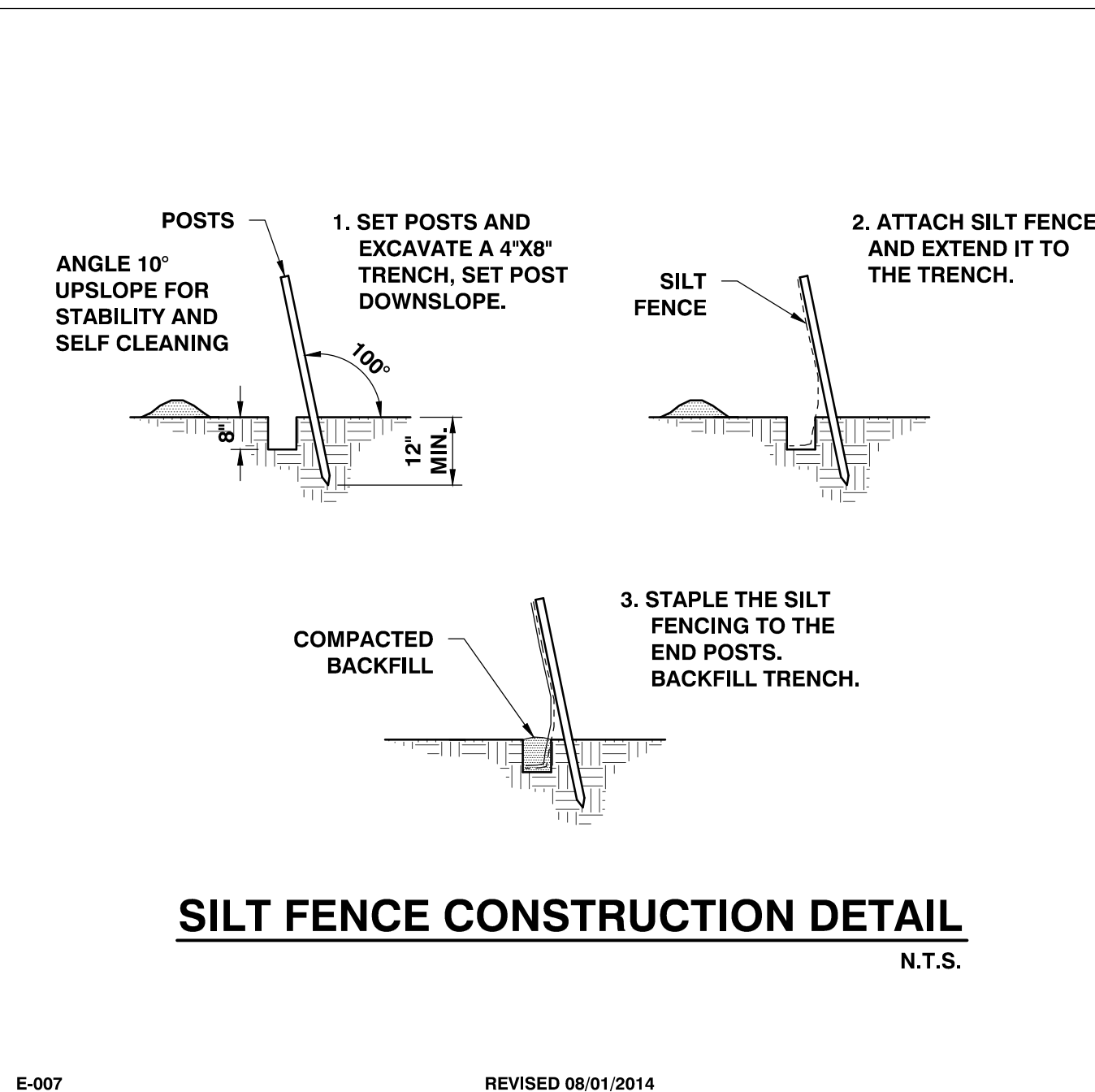
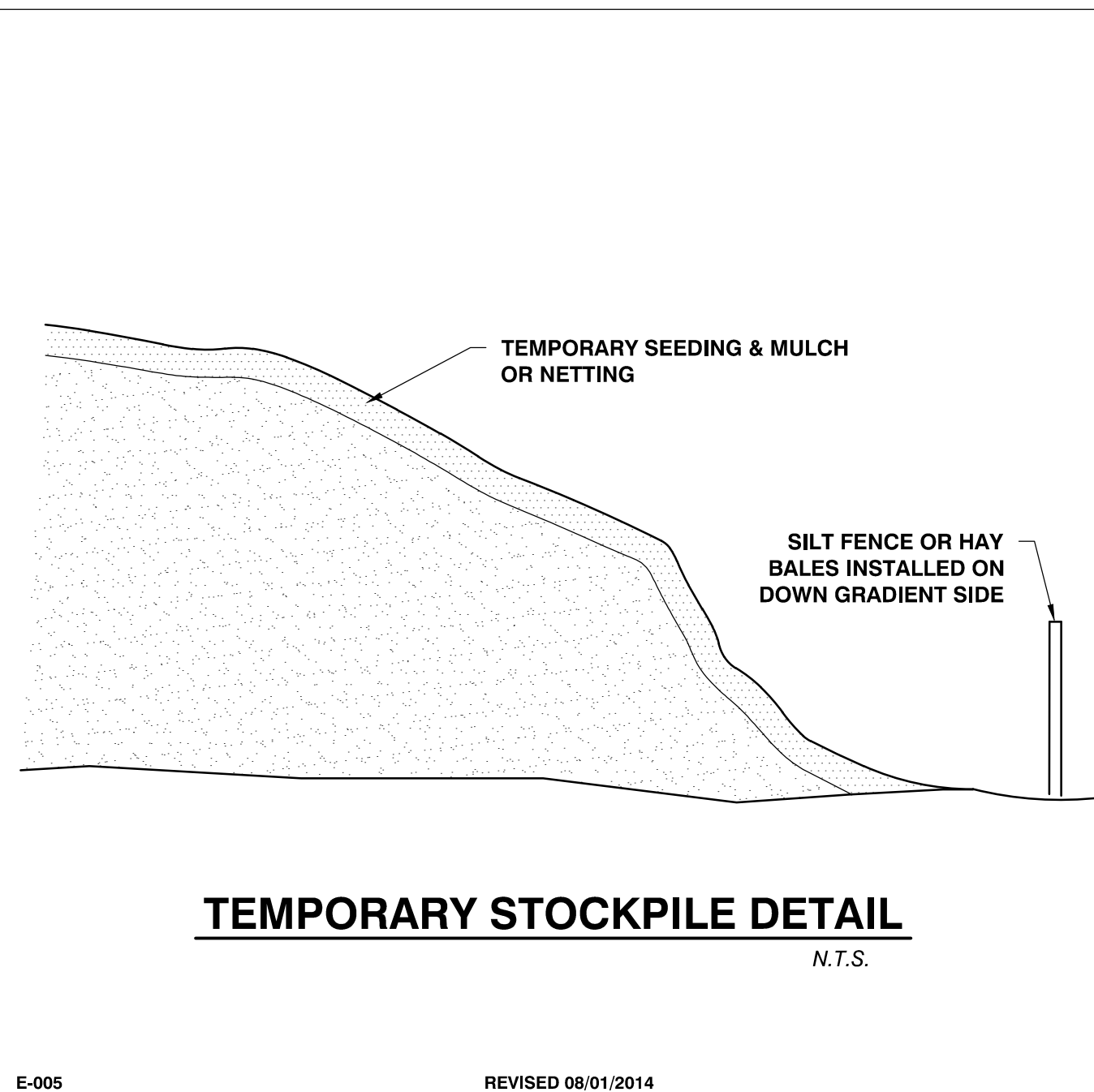
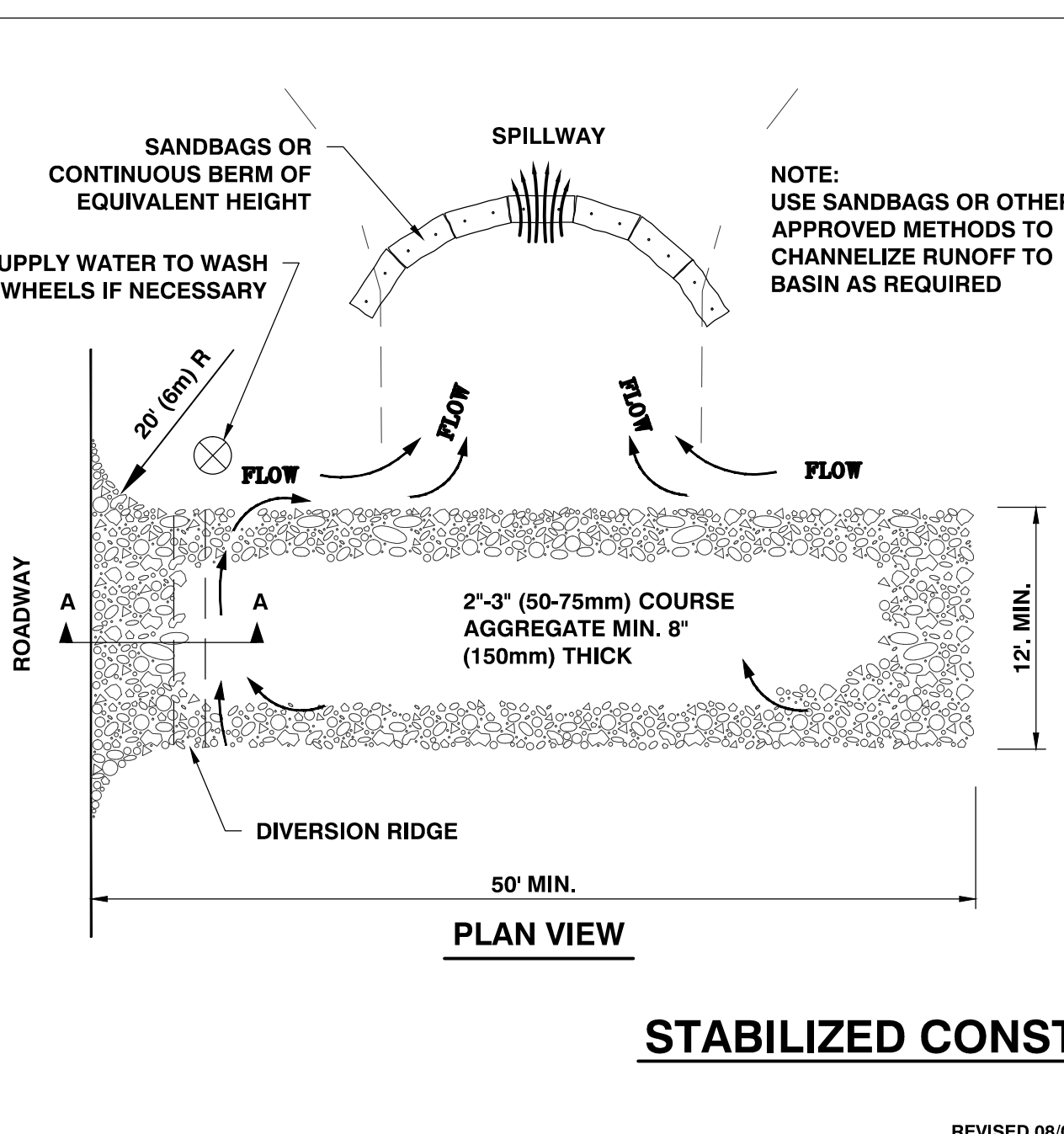
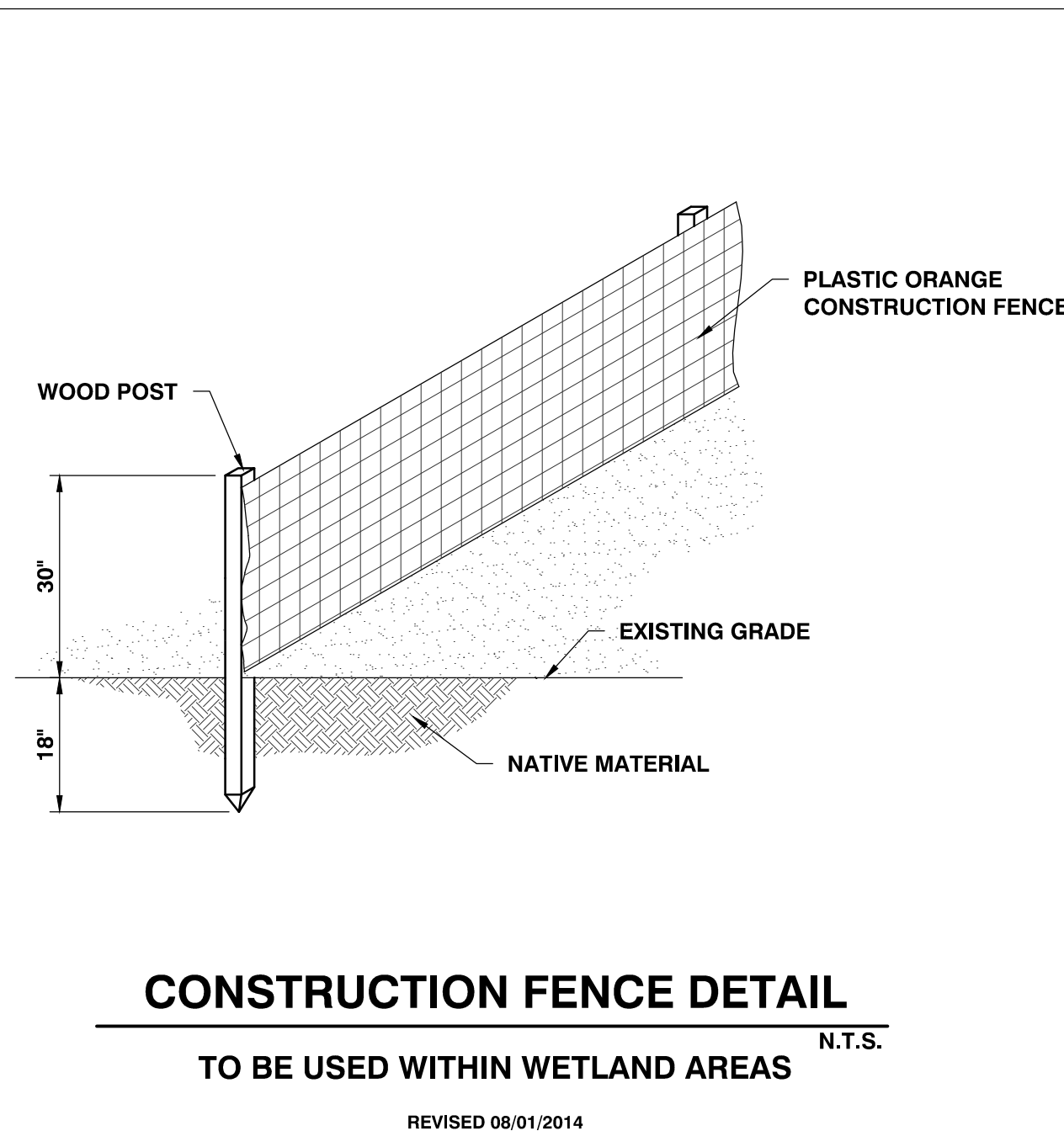
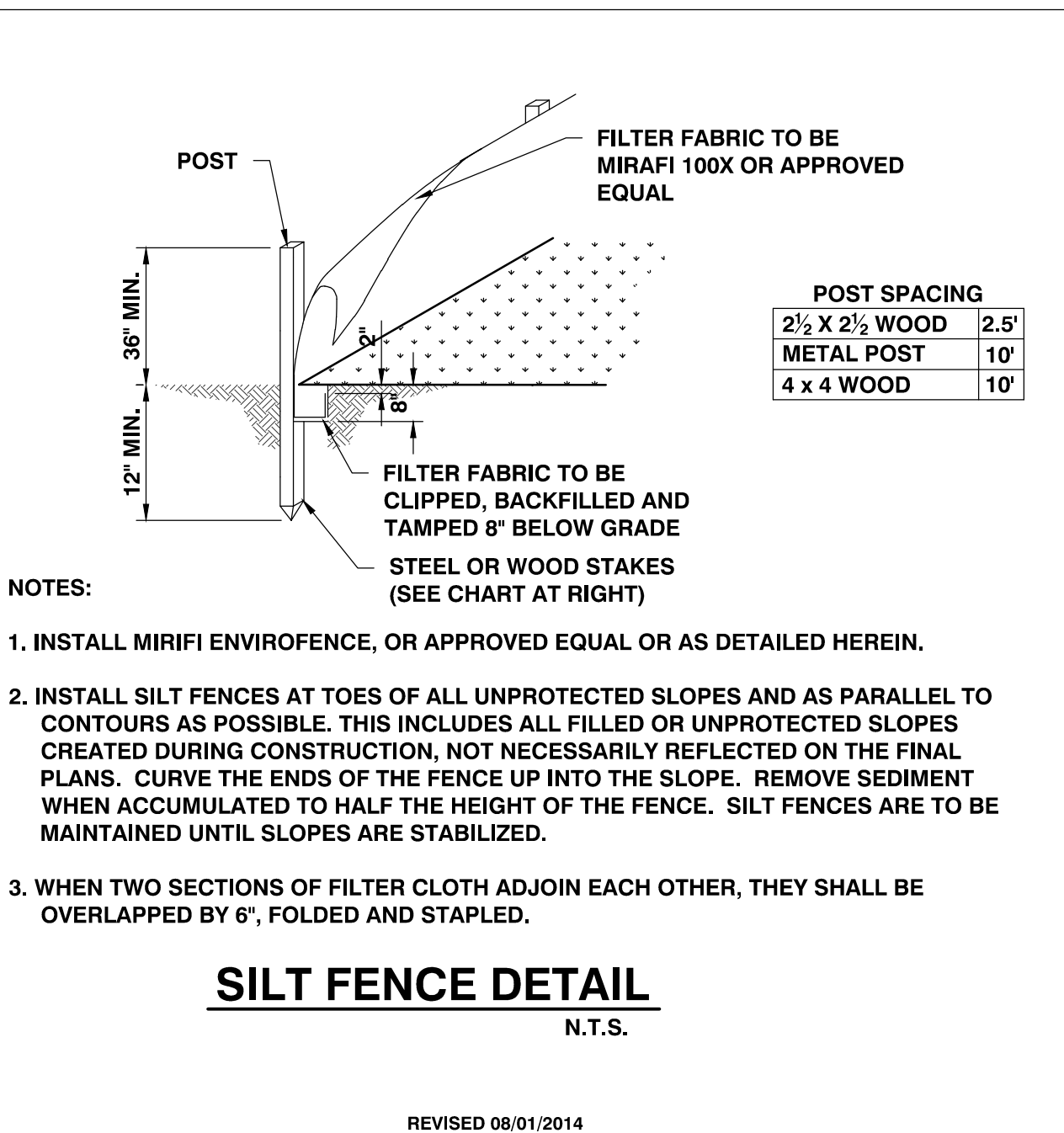
**Requirements:**  
Inspect the site at least once every 7 days and after every rainfall or snow melt that results in a discharge from the site. Perform maintenance to ensure that practices are functioning according to the specifications outlined in this handbook.

- Inspect Your Site

**Purpose:**  
Perform site inspections to ensure that all sediment and erosion control practices are functioning properly. Regular inspections and maintenance of practices will help to reduce costs and protect water quality.

**Requirements:**  
Inspect the site at least once every 7 days and after every rainfall or snow melt that results in a discharge from the site. Perform maintenance to ensure that practices are functioning according to the specifications outlined in this handbook.

In the event of a noticeable sediment discharge from the construction site, you must take immediate action to inspect and maintain existing erosion prevention and sediment control practices. Any visibly discolored storm water runoff to waters of the State must be reported. Forms for reporting discharges are available at: [www.vtwaterquality.org/stormwater.htm](http://www.vtwaterquality.org/stormwater.htm)



SITE ENGINEER:



CIVIL ENGINEERING ASSOCIATES, INC.  
10 MANSFIELD VIEW LANE, SOUTH BURLINGTON, VT 05403  
802-864-2323 FAX: 802-864-2271 web: www.ceai-vt.com

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DRAWN GAC	
CHECKED PBS	
APPROVED PBS	

OWNER:  
**ENCORE REDEVELOPMENT**

110 MAIN STREET  
2nd FLOOR, SUITE 2E  
BURLINGTON, VT

PROJECT:

**HYDE PARK SOLAR, WATERHOUSE PROJECT**

HYDE PARK, VT

LOCATION MAP  
1" = 200'

DATE	CHECKED	REVISION
10/07/2015	PBS	PERMIT SET

**EROSION CONTROL DETAILS & SPECIFICATIONS**

DATE 10/07/2015	DRAWING NUMBER <b>C2.0</b>
SCALE NONE	
PROJ. NO. 15192	

PERMIT SET



**Hyde Park Solar- Waterhouse Project**  
**Vermont Wetland Permit Application**  
**Hyde Park, Vermont**  
**Adjoining Property Owners**  
**Prepared by: VHB (C Fenner)**  
**October 19, 2015**



Property Owner	Mailing Address	City	State	Zip
Route 15 Parkmount, LLC	3691 Centerville Road	Hyde Park	VT	05655
Barbara Wuerthele	1081 Silver Ridge Road	Hyde Park	VT	05655
Neil & Diana Jones	1200 Silver Ridge Road	Hyde Park	VT	05655
Ryan Towers	732 Center Road	Hyde Park	VT	05655
Kent Mitchell, Jr.	839 Tamarack Road	Stowe	VT	05655
Gordon Tallman	114 Tallman Drive	Hyde Park	VT	05655
Ralph Gamo	523 Center Road	Hyde Park	VT	05655
Note: Property owner information supplied by Encore Redevelopment				

PLANTING SCHEDULE

Trees								
Qty.	Code	Scientific Name	Common Name	Size	Spec	Remarks	Notes	Unit
3	AB	ABIES balsamea	Balsam Fir	4' Ht.	B&B			\$
5	AP	AESCULUS parviflora	Bottlebrush Buckeye	3'	No. 5 cont.			\$
7	AL	AMELANCHIER laevis	Alleghany Serviceberry	6' Ht.	B&B			\$
3	PA	PICEA abies	Norway Spruce	4' Ht.	B&B			\$
3	PA1	PICEA abies	Norway Spruce	6' Ht.	B&B			\$
3	PG	PICEA glauca	White Spruce	4' Ht.	B&B			\$
1	PG1	PICEA glauca	White Spruce	6' Ht.	B&B			\$
7	PS	PINUS strobus	White Pine	4' Ht.	B&B			\$
4	PS 1	PINUS strobus	White Pine	6' Ht.	B&B			\$
35	TP	THUJA plicata	Giant Arborvitae	5' Ht.	B&B			\$
13	TC	TSUGA canadensis	Canadian Hemlock	4' Ht.	B&B			\$

Proposed Shrub Planting Schedule*			
Common Name	Scientific Name	Stock Type*	Quantity
<b>Wetland Planting Area (approx. 10,000 square feet)</b>			
speckled alder	<i>Alnus incana</i>	Bareroot (2-3')	20
pussy willow	<i>Salix discolor</i>	Bareroot (2-3')	20
silky dogwood	<i>Cornus amomum</i>	Bareroot (2-3')	25
winterberry	<i>Ilex verticillata</i>	Bareroot (2-3')	15
steplebush	<i>Spiraea tomentosa</i>	Potted, 1 gal.	32
red-osier dogwood	<i>Cornus sericea</i>	Bareroot (2-3')	25
Total Wetland Stems**:			137
<b>Buffer Planting Area (approx. 7,000 square feet)</b>			
nannyberry	<i>Viburnum lentago</i>	Potted, 1 gal.	11
elderberry	<i>Sambucus canadensis</i>	Potted, 1 gal.	11
serviceberry/ shadbush	<i>Amelanchier canadensis</i>	Potted, 1 gal.	11
Total Buffer Stems***:			33
<b>TOTAL PROPOSED WOODY STEMS</b>			<b>170</b>

\*Wetland Planting Schedule Provided by VHB



PLANTING PLAN  
ISSUED  
11/24/2015

## LEASE OPTION AGREEMENT

THIS AGREEMENT, entered into by and between Parkmont, LLC of Hyde Park, Vermont, hereinafter referred to as the "Owner" and the Village of Hyde Park, Inc., hereafter referred to as "Hyde Park".

### WITNESSETH:

WHEREAS, The Owner is the owner of certain real estate located at 1124 Silver Ridge Road in Hyde Park, Vermont (the "Property"); and

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

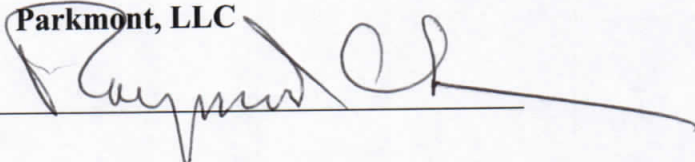
WHEREAS, the parties wish to reduce their agreement to writing.

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 Hyde Park 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. Hyde Park shall give the Owner written notice of Hyde Park's election to lease the subject property at the time and date specified by Hyde Park in such notice, which time and date shall not be earlier than thirty (30) days nor 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 Hyde Park, and included herein as Attachment 2, shall be executed by both Parties at that time.
3. The rent for the property shall be \$2,500 per acre, per year, for land utilized by a solar PV project and actually used by the project, which shall be due and payable in advance of each anniversary.
4. The parties shall execute any and all other documents and take all actions necessary to effectuate the intent of this Option Agreement.
5. 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.

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

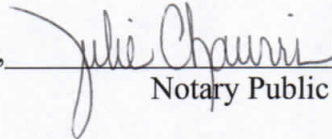
DATED at Morrisville, VT this 21 day of May, 2015.

**Parkmont, LLC**  


STATE OF VERMONT  
COUNTY OF Lamoille, SS.

At Morrisville, VT in said County this 21 day of May, 2015, **Raymond Chauvin**, Duly Authorized Agent of Parkmont, LLC, personally appeared, and he acknowledged this instrument, by him sealed and subscribed, to be his free act and deed and the free act and deed of Parkmont, LLC.

Before me,

  
Notary Public ex 2.10.18

DATED at Hyde Park, Vermont this 21 day of May, 2015.

**The Village of Hyde Park, Inc.**

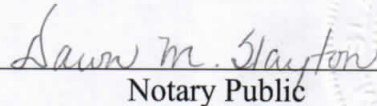


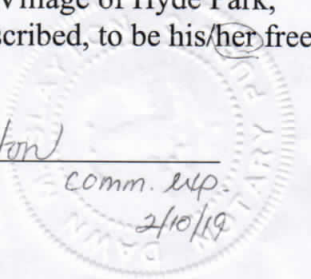
By: General Manager

STATE OF VERMONT  
COUNTY OF Lamoille, SS.

At Hyde Park, VT in said County this 21<sup>st</sup> day of May, 2015, Carol Robertson, Duly Authorized Agent of the Village of Hyde Park, Inc., 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 the Village of Hyde Park, Inc.

Before me,

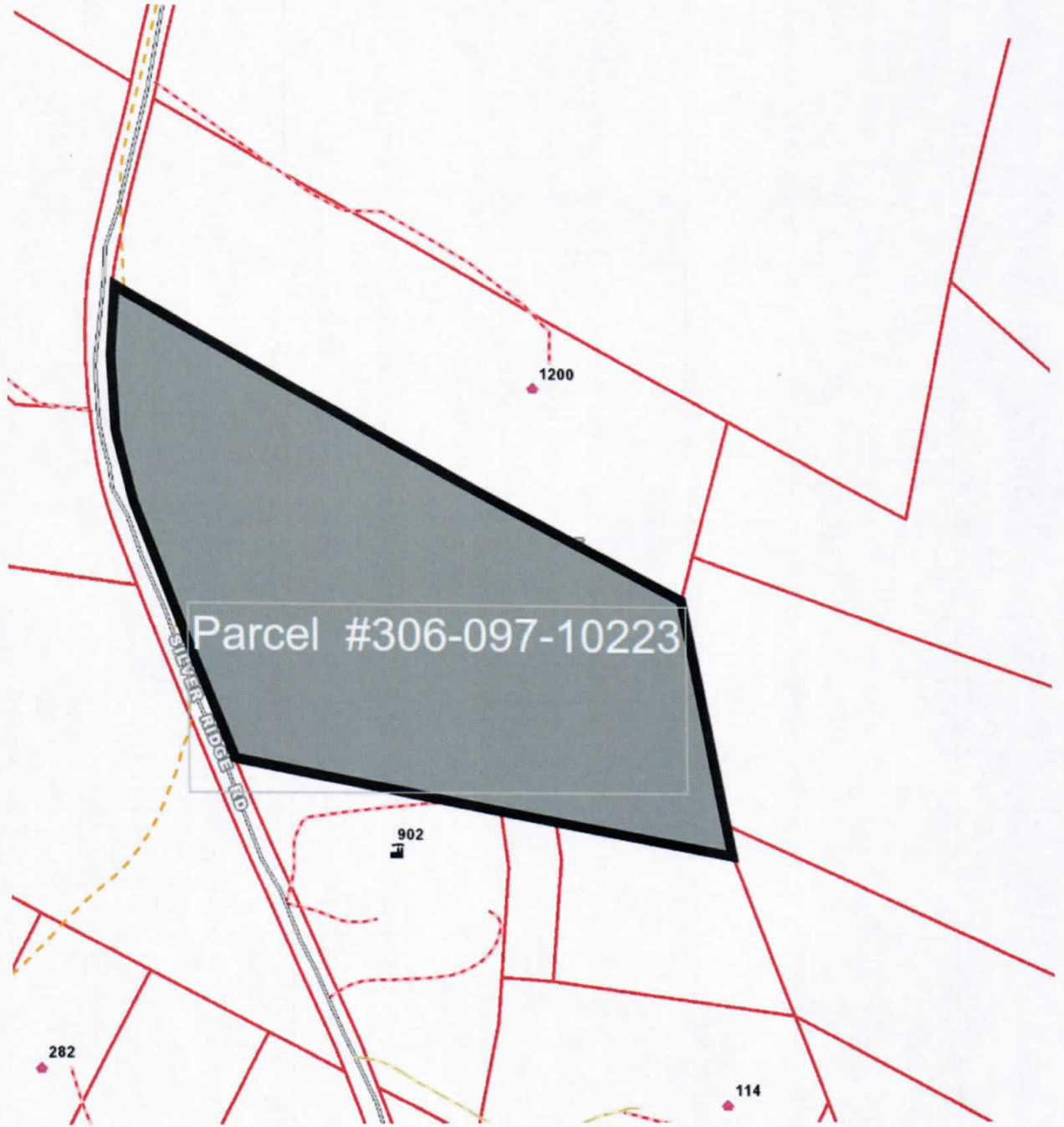
  
Notary Public comm. exp. 2/10/19





ATTACHMENT 1

An approximate 16 acre parcel located at 1124 Silver Ridge Rd in Hyde Park, Vermont, as further illustrated below.





MORRISTOWN

East Main St

Vt Rt 15 East

Silver Ridge Rd

Silver Ridge Rd

Paus Ln (Pw)

Tallman Rd (Pw)

Blackberry Ln (Pw)

Centerville Brook

21:4:5 12:15:13.0

12:15:13.0

12:15:1

22:15:2.b

22:15:2.0

19:15:20

22:50:5.b

22:50:5.0

22:15:2.c

22:15:2.100

12:49:35

12:49:29.101

12:49:29.102

12:49:29.103

12:49:29.100

22:49:9

22:49:6

22:15:2.d

12:49:61

12:49:57

12:49:53

12:49:49

22:50:13.0

22:50:37.0

22:50:37.b

22:49:10.0

22:49:10.b

22:49:18.b

22:49:18.0

12:49:29

22:49:18.c

12:1:460

22:1:450

22:1:442

22:1:432

22:1:438

22:1:428

22:1:421

22:1:419

22:1:411

12:1:480.100

12:1:480.b

12:1:480.0

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12:1:468

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12:1:462

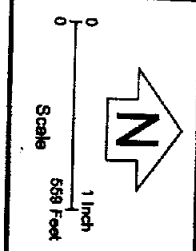
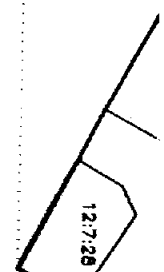
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12:1:474.b

12:1:474

1 004 002	D1	3.48	K.A. HARVEY MANUFACTURED HOUSING INC
1 004 005	D1	1.01	RUSSELL THOMAS R
1 004 009	D1	12.19	12.00 590 EAST MAIN STREET LLC
1 004 009.100	D1	5.32	SUNRISE DEVELOPMENT LLC
1 004 010	D1	0.50	ALLEN DIANNA L
1 004 013	D1	0.46	MANUFACTURING SOLUTIONS INC.
1 004 016	D1	1.85	1.75 NOLAN DALE
1 004 024	D1	1.99	1.99 ARMELL KRISTY L
1 004 024.001	C1	1.83	1.74 MENDEIETA ANGELA
2 001 040	B2	3.40(2)	SCHOOLCRAFT RUBY, LIFE ESTATE
2 001 040.0	B1	2.59	SCHOOLCRAFT RUBY, LIFE ESTATE
2 001 040.b	B2	0.82	SCHOOLCRAFT RUBY, LIFE ESTATE
2 001 045	A2	1.02	BERRY TERE FOTHENOLL
2 001 047	A2	0.71	KOCH THEODORE J
2 001 048	B2	0.96(2)	LEHOULLIER MARK
2 001 048.0	B2	0.72	LEHOULLIER MARK
2 001 048.b	A2	0.24	LEHOULLIER MARK
2 001 052	B2	4.58	HAYFORD TROY A
2 001 061	A2	127.21(2)	BAKER JILL L
2 001 061.b	A2	19.63	WEBSTER PEARL
2 001 062	A3	73.10(2)	WEBSTER PEARL
2 001 062.b	A3	6.49	HEPBURN DOROTHY, LIFE ESTATE
2 001 400	B6	14.56	MESSIER LYNE A
2 001 408	C5	1.56	MESSIER LYNE A
2 001 411	C5	50.77(2)	MATRE VICKI B, TRUSTEE
2 001 411.0	C5	7.75	MATRE VICKI B, TRUSTEE
2 001 411.b	C5	43.01	MATRE VICKI B, TRUSTEE
2 001 418	C5	1.42	SEARLES LAR W
2 001 419	D6	10.46	10.15 PRESTON EDWARD
2 001 424	D5	1.03	RUSSELL CAROLE A
2 001 428	D5	10.60	10.68 BISBEE DAVID M
2 001 432	D5	10.58	10.43 TOWNS RYAN H
2 001 438	D5	1.68	LALIME MARK P
2 001 442	D5	4.57	LOMT KURT
2 001 450	D5	10.10	10.30 GAVO RALPH
2 015 002	D3	160.41(4)	ROUTE 15 PARKMOUNT, LLC
2 015 002.0	D3	89.35	ROUTE 15 PARKMOUNT, LLC
2 015 002.b	C3	5.66	ROUTE 15 PARKMOUNT, LLC
2 015 002.c	C3	49.77	ROUTE 15 PARKMOUNT, LLC
2 015 002.d	D4	15.64	ROUTE 15 PARKMOUNT, LLC
2 015 002.100	E3	48.03	ROUTE 15 CHAPMAN LLC
2 046 002	A5	6.88	EISENHARDT JOHN
2 046 012	A5	2.10	CARTIN SAMIKO A
2 046 019	A5	2.76	3.00 KIMBALL HELEN J
2 046 019.b	A5	7.32	YOUINKMAN THOMAS B SR
2 046 020.001	A4	60.94	YOUINKMAN THOMAS B SR
2 049 006	C4	10.13	SHAUM GALEN L
2 049 009	C3	4.08	JONES NEIL
2 049 010	D4	5.26	WUERTHELE BARBARA J
2 049 010.0	D4	6.02(2)	MITCHELL T KENT JR & WIFE
2 049 010.b	D4	0.77	MITCHELL T KENT JR & WIFE
2 049 018	D4	10.87(3)	10.90 TALLMAN GORDON E, LIFE ESTATE
2 049 018.0	D4	6.05	6.07 TALLMAN GORDON E, LIFE ESTATE
2 049 018.b	D4	2.82	2.83 TALLMAN GORDON E, LIFE ESTATE
2 049 018.c	E5	2.00	2.00 TALLMAN GORDON E, LIFE ESTATE
2 050 001	B2	16.14(3)	BARTLETT WILLIAM
2 050 001.0	B2	8.61	BARTLETT WILLIAM
2 050 001.b	B2	5.57	BARTLETT WILLIAM
2 050 001.c	B2	1.96	BARTLETT WILLIAM
2 050 002	A2	12.77	12.70 BESKIN HOWARD
2 050 002.100	A3	23.40(3)	23.40 LANDI GIACOMO
2 050 002.100.a	A3	7.97	8.00 LANDI GIACOMO
2 050 002.100.b	A3	8.04	8.00 LANDI GIACOMO
2 050 002.100.c	A3	7.40	7.40 LANDI GIACOMO
2 050 005	C2	50.30(2)	BOWEN WILLIAM J
2 050 005.0	C2	45.22	BOWEN WILLIAM J
2 050 005.b	C2	5.08	BOWEN WILLIAM J
2 050 009	B2	9.81	10.10 TESKE CHARLES
2 050 010	A4	14.16(3)	WEBSTER EDWIN W SR
2 050 010.0	A4	6.03	WEBSTER EDWIN W SR
2 050 010.b	B3	3.08	WEBSTER EDWIN W SR
2 050 010.c	B3	5.06	WEBSTER EDWIN W SR
2 050 015.0	B3	14.95	WHALEN ROBERT L
2 050 015.0	B3	37.78(4)	SMITH-KALAND OLEA, TRUSTEE
2 050 015.0	B3	10.31	SMITH-KALAND OLEA, TRUSTEE
2 050 015.0	B3	8.25	SMITH-KALAND OLEA, TRUSTEE
2 050 015.0	B3	6.01	SMITH-KALAND OLEA, TRUSTEE
2 050 015.0	B3	13.21	SMITH-KALAND OLEA, TRUSTEE
2 050 024	B3	9.79(3)	SMITH-KALAND OLEA, TRUSTEE
2 050 024	B3	1.79	9.80 VIEIRA STEVEN J
2 050 024	B3	1.79	1.80 VIEIRA STEVEN J



8

Town of Hyde Park  
Vermont  
Page 13  
April 23, 2014

GrassRoots GIS





To: Project File- Village of Hyde Park  
Electric Department – Hyde Park  
Solar- Waterhouse Project

Date: December 3, 2015

Memorandum

Project #: 57788.00

From: Carla A. Fenner, Environmental  
Scientist

Re: Hyde Park Solar- Waterhouse Project: Wetland Buffer  
Vegetation Management Plan

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On behalf of Encore Redevelopment ("Encore") and the Village of Hyde Park Electric Department ("Applicant" or "HPE"), VHB has developed a vegetation management plan ("VMP", or "Plan") in support of the proposal to develop a 1 MW solar electric generation facility known as the Hyde Park Solar - Waterhouse Project ("Project", see Site Location Map, Attachment 1). The Plan was developed at the request of the Department of Environmental Conservation ("DEC") Wetlands Program to support the Project's application for a Vermont Individual Wetland Permit ("VIWP"), initially submitted on October 19, 2015.

In order to manage risk of damage to the solar array and associated equipment as well as shade management to maintain the Project's efficiency, the Plan proposes limited tree cutting along the north and east edges of the array. Because a portion of the area proposed for this limited tree cutting lies within a 50 foot buffer of a Class II wetland, tree cutting that would occur within the construction phase of the Project. This and other work within a Class II wetland and buffer areas requires authorization via a VIWP. The activities described herein include both construction phase tree cutting proposed within the buffer, which are described in the VIWP application, as well as a set of protocols to guide operational phase vegetation management, which are proposed as conditions for the Project's Certificate of Public Good ("CPG") to ensure no undue adverse effect to wetlands as defined in Act 250 criterion 1(G) [§ 6086(a)(1)(G)]. Lastly, this Plan includes the enhancement of a select area of wetland buffer by planting with native woody vegetation as a means of mitigating the impacts of proposed tree clearing. This enhancement effort was requested by the DEC Wetlands Program and will be a condition of the CPG.

### **Existing Conditions Assessment**

As observed in the field by a VHB Environmental Scientist on November 10, 2015, the canopy within the wetland buffer is not consistent along the north and east edges of the field. There are a number of locations where existing vegetation is limited to only shrub and sapling cover, areas where a single mature tree or small group of mature trees is surrounded by shrub and sapling cover, and some areas which exhibit a generally intact canopy. The existing woody vegetation within the wetland buffer and the Project's limits of disturbance ("LOD") is typical not only of successional field edge growth as described above, but also includes typical edge species such as eastern white pine (*Pinus strobus*), black cherry (*Prunus serotina*), gray birch (*Betula populifolia*), red maple (*Acer rubrum*) and red spruce (*Picea rubens*) (see Wetland Buffer Vegetation Management Photographs, Attachment 2). The trees and shrubs are of varying heights, and in variable but overall good health. The average age of maturing and mature trees in the buffer LOD was observed to be approximately 30 to 50 years; the more vigorous mature tree species included red maple, white pine and black cherry while potentially less healthy individuals of birch and black cherry were also noted. Sapling and small pole-sized trees vary in height from approximately 5 feet to approximately 30 feet; overall there was observed to be a larger component of sapling and smaller [less than approximately 4 inches diameter at breast height ("DBH") pole size trees than poles greater than 4 inch DBH]. Aerial photography interpretation confirms that the north and east edges of the field were partially cleared of trees to the top of the slope leading down to the stream and wetland complex as recently as 1995.



The buffer trees within the Project LOD are largely early successional species, which have grown up in largely open field conditions: early successional trees are known to mature early and decline rapidly, and open grown trees put on growth faster than trees which grow up with more intense competition for light. Both of these factors increase the risk of trunk or limb breakage that could damage the Project's infrastructure.

As depicted on the Wetland Buffer Vegetation Management Exhibit (Attachment 3), VHB delineated the drip line of existing mature and maturing tree canopies in order to quantify the portion of the wetland buffer in the LOD which would be converted to a shrub cover type and those areas that presently exhibit only a shrub layer cover structure and may develop into a mature canopy within the lifespan of the Project, estimated to be 25 to 40 years.

### **Construction Phase Tree Cutting**

- Within the wetland buffer, tree clearing of approximately 6,742 square feet (0.15 acre) would occur in order to manage the immediate risk of damage to the Project and loss of solar generating power capacity from shading:
  - As shown on the Wetland Buffer Vegetation Management Exhibit (Attachment 3), 11 trees have been identified as high priority trees for risk and shade management and would be cut prior to or coincident with Project construction. These trees were observed to be approximately 40-50 feet in height and are within approximately 40-50 feet from the Project LOD.
  - Cutting area is based on an average 15 foot canopy radius observed for construction phase priority trees, with some areas of canopy overlap.
- Tree cutting would occur between November 30 and April 15.
- Coarse woody debris generated by the tree cutting would be chipped and disposed of in upland areas on site.

### **Potential Operational Phase Tree Cutting**

- Within the wetland buffer area of the Project's LOD, tree clearing of up to a total maximum area of 16,609 square feet (0.38 acre) may occur along the north edge of the field in order to address the risk of damage to the Project by overhanging trees, branches or the potential for storm damaged trees to cause damage to Project equipment, and along the east side for the same need for risk management and also to address a loss of efficiency due to shading.
- Trees along both the north and east side of the field will be considered to pose a storm damage risk if/when they grow to a height of approximately equivalent or greater than its distance to the nearest point of the Project array, and as such may be cut during operations of the Project in order to minimize the risk of damage to the Project:
  - Only those trees which occur within the wetland buffer in the Project's LOD will be evaluated according to this criteria.
  - Approximately 25 individual trees, shown on the Wetland Buffer Vegetation Management Exhibit (Attachment 2) were observed to be mature or maturing, and could reach a height that would cause a risk of damage or a shading concern for the Project. While there could be a higher number of trees which would need to be cut during the operational life of the Project, the approximately 25 trees shown on the Exhibit in Attachment 2 represent the approximate amount of tree cutting that may be required and are being used to provide a cursory quantitative estimate of management needs.
- Trees on the east side of the array that pose a threat to Project's capacity from shading can be cut if/when they grow to the height of 30 feet and shade the array between 10:00 AM to 2:00 PM during any day of the year. This two-factor threshold will ensure that only the trees which are actually affecting the Project's capacity will be cut, thereby avoiding and minimizing buffer vegetation impacts to the greatest extent feasible.



- Trees which do not exceed the metrics described above will be left uncut by the Project.
- All woody shrub growth within the wetland buffer of the LOD will be left uncut by the Project.
- Tree cutting would occur between November 30 and April 15, and would be completed by hand tools only, such as a chain saw, within the wetland buffer. Any equipment necessary for extraction or chipping would be positioned in uplands outside the wetland buffer.
- Coarse woody debris generated by the tree cutting would be chipped and disposed of in upland areas on site.

#### **Wetland and Buffer Mitigation Planting Plan**

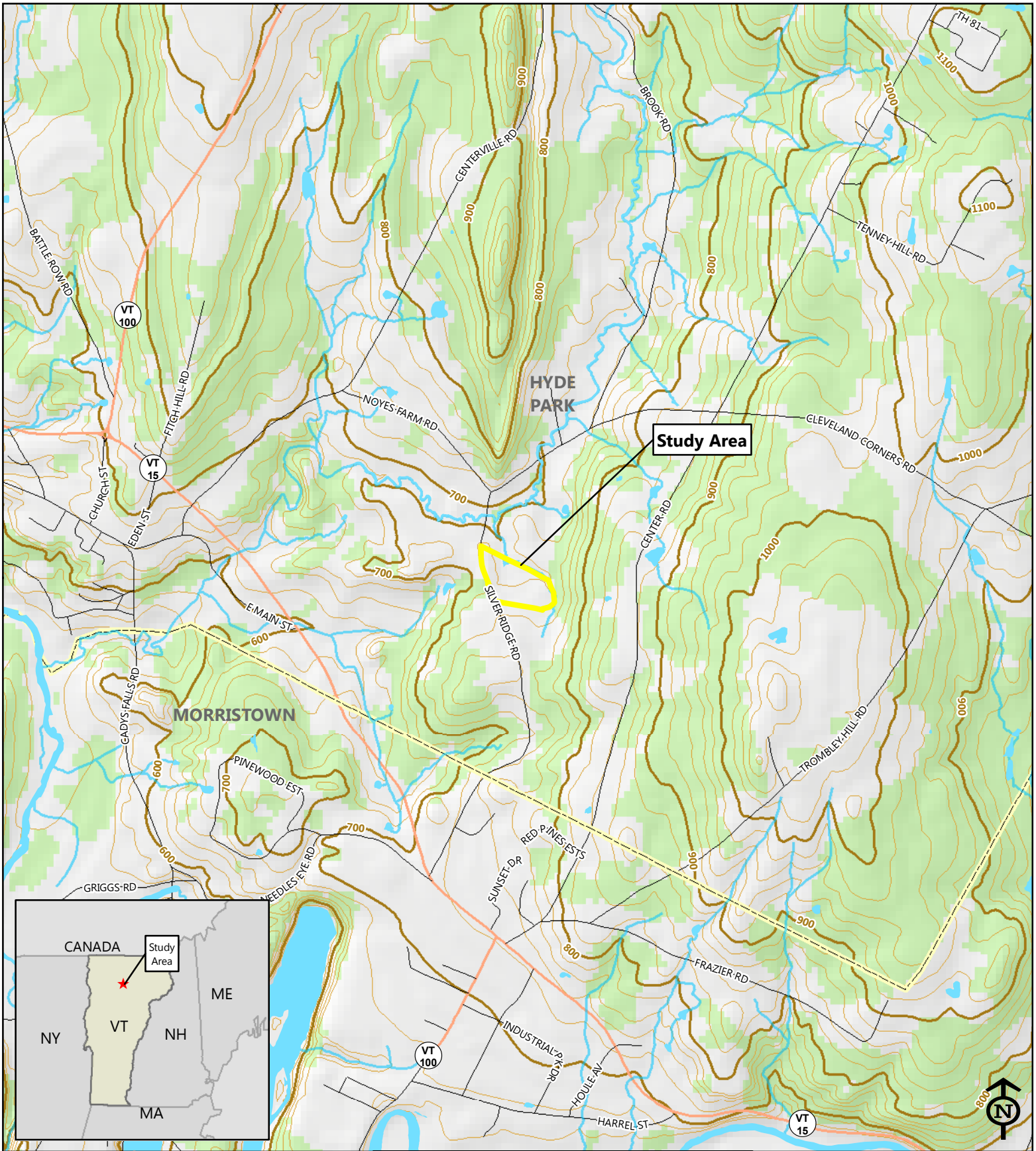
In order to mitigate the impacts of the total potential area of tree cutting that could occur for the Project (i.e., construction and operational phases), a shrub planting plan is proposed within a disturbed portion of the wetland and buffer complex (see Wetland/Buffer Planting Plan Exhibit, Attachment 4). The area proposed for planting includes areas of both wetland and wetland buffer, would include a mix of native shrubs and perennials, and would serve to enhance the natural revegetation of the disturbed wetland and buffer area and promote desired woody shrub structure in the vicinity of Project infrastructure. Planting area information and details of species composition and planting specifics are included on Attachments 4 and 5. In summary, the restoration planting would include the following:

- wetland planting area would be approximately 10,000 square feet (0.23 acre);
- wetland buffer planting area would be approximately 7,000 square feet (0.16 acre);
- planting stock would be a mix of native shrub species (see Attachment 5);
- planting would occur before July 30, 2016 following construction of the Project; and
- a portion of the wetland and buffer which are already disturbed by agricultural activities, along the west side of the field, will be allowed to revegetate naturally, and are anticipated to regrow to a condition similar to the contiguous, undisturbed portion of the complex which is a mosaic of palustrine scrub-shrub ("PSS") and palustrine emergent ("PEM") wetland.

#### **ATTACHMENTS**

- Attachment 1 – Site Location Map
- Attachment 2 – Wetland Buffer Vegetation Management Photographs
- Attachment 3 – Wetland Buffer Vegetation Management Exhibit
- Attachment 4– Wetland/Buffer Planting Plan Exhibit
- Attachment 5 – Wetland/Buffer Planting Plan Specifications

# **ATTACHMENT 1**



Legend

- VHB Study Area
- Town Boundary
- VHD Waterbody
- Interstate
- VHD Streams
- US Highway
- 20 Ft. Contour
- State Highway
- 100 Ft. Contour
- Town Road

**Village of Hyde Park Electric Department  
Hyde Park Solar - Waterhouse Project  
Hyde Park, Vermont  
Site Location Map**

October 9, 2015



Sources: USGS Topographic Map from VCGI (2015);  
VHD Streams and Waterbodies from VCGI (2010).



# **ATTACHMENT 2**



**Wetland Buffer Vegetation Management Photographs**  
**Village of Hyde Park Electric Department**  
**Hyde Park Solar – Waterhouse Project**  
 Hyde Park, Vermont



**Photograph 1.** Looking east along the north edge of the field; photo view shows a white pine and black cherry within the wetland buffer which would pose a threat of damage to Project equipment and would be cut.



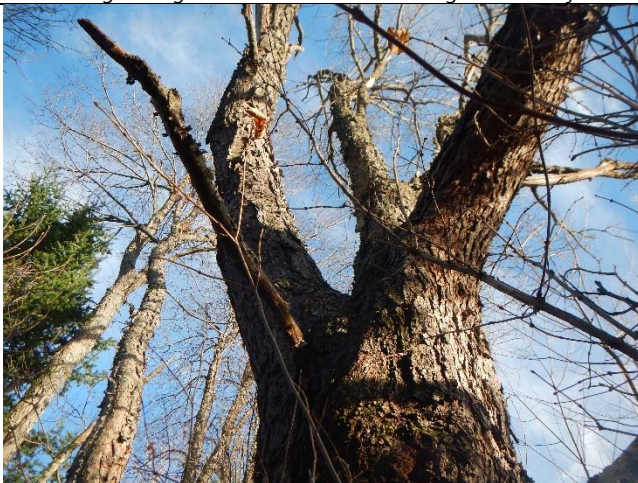
**Photograph 2.** Looking generally northeast from approximately the northeast corner of the agricultural field; view shows a black cherry and white pine within the wetland buffer that would be cut for risk management.



**Photograph 3.** A representative view of a pole-size white pine tree within the wetland buffer along the eastern side of the agricultural field, which will be evaluated during the operational phase of the project to assess any shading management need or risk of damage to the Project.



**Photograph 4.** A representative view of shrub and sapling cover conditions along the north side of the agricultural field within the wetland buffer and Project LOD.



**Photograph 5.** A view of a mature black cherry tree along the east side of the agricultural field, observed to be in declining health, which would be cut prior to Project construction for risk management.

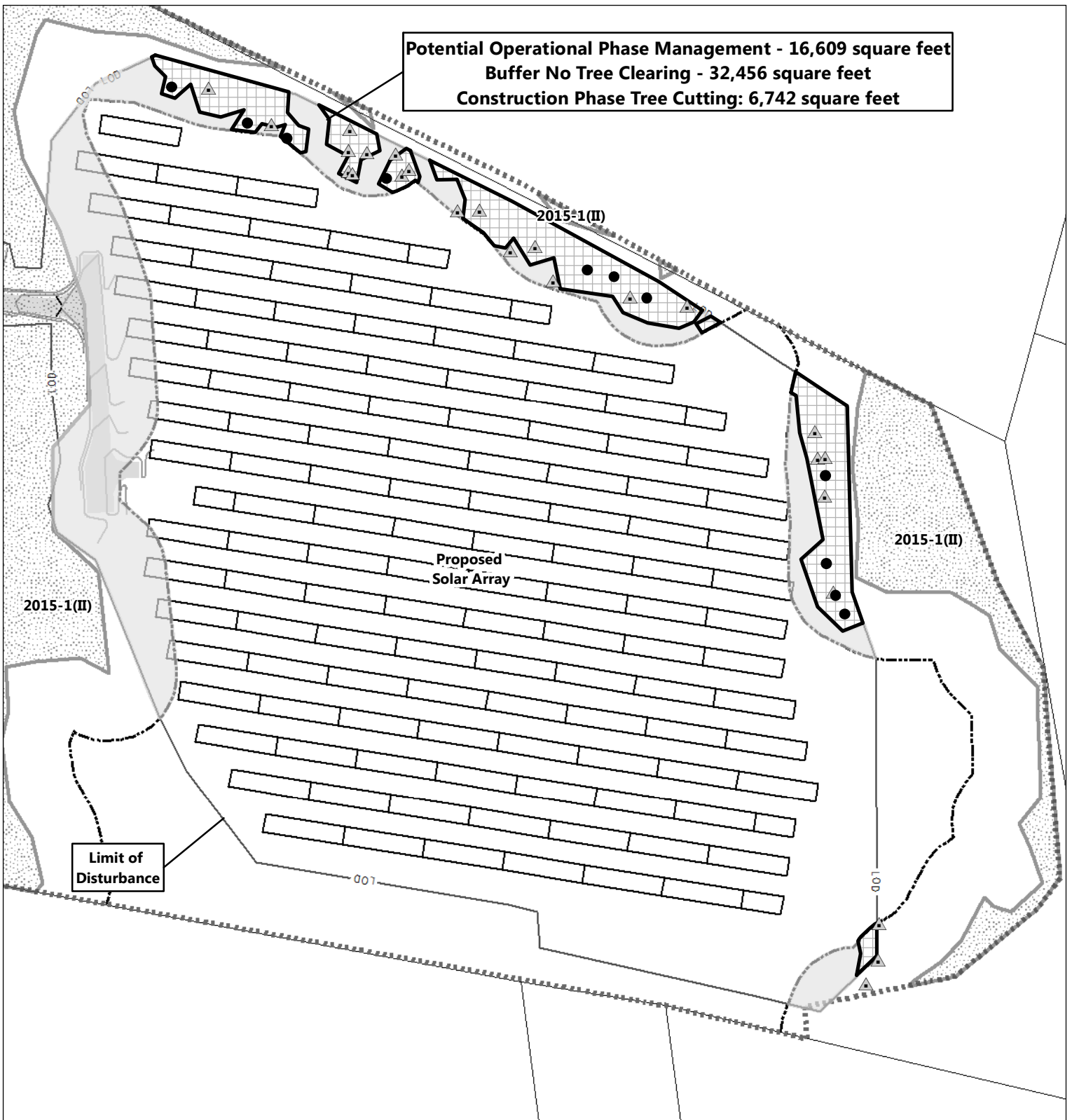


**Photograph 6.** A representative view of the clumped distribution of saplings and shrubs mixed with maturing and mature trees along the eastern side of the agricultural field.

# **ATTACHMENT 3**



Potential Operational Phase Management - 16,609 square feet  
 Buffer No Tree Clearing - 32,456 square feet  
 Construction Phase Tree Cutting: 6,742 square feet



- Construction Phase Vegetation Management**
- Immediate Construction Phase Tree Cutting
- Operational Phase Vegetation Management**
- ▲ Mature/Maturing Tree
  - ▭ Pole/Sapling/Shrub Cover - Potential for Management
  - ▭ Buffer with No Proposed Vegetation Management
  - ▭ VHB Delineated Wetland
  - ▭ Class II Wetland Buffer (VHB)
  - ▭ VHB Delineated Stream
  - LOD Limit of Disturbance
  - ▭ Access Road
  - ▭ VHB Study Area
  - 5 Ft. Contour
  - 1 Ft. Contour
  - 20ft Contour

**Village of Hyde Park Electric Department  
 Hyde Park Solar-Waterhouse Project  
 Hyde Park, VT  
 Wetland Buffer Vegetation Management  
 Exhibit**

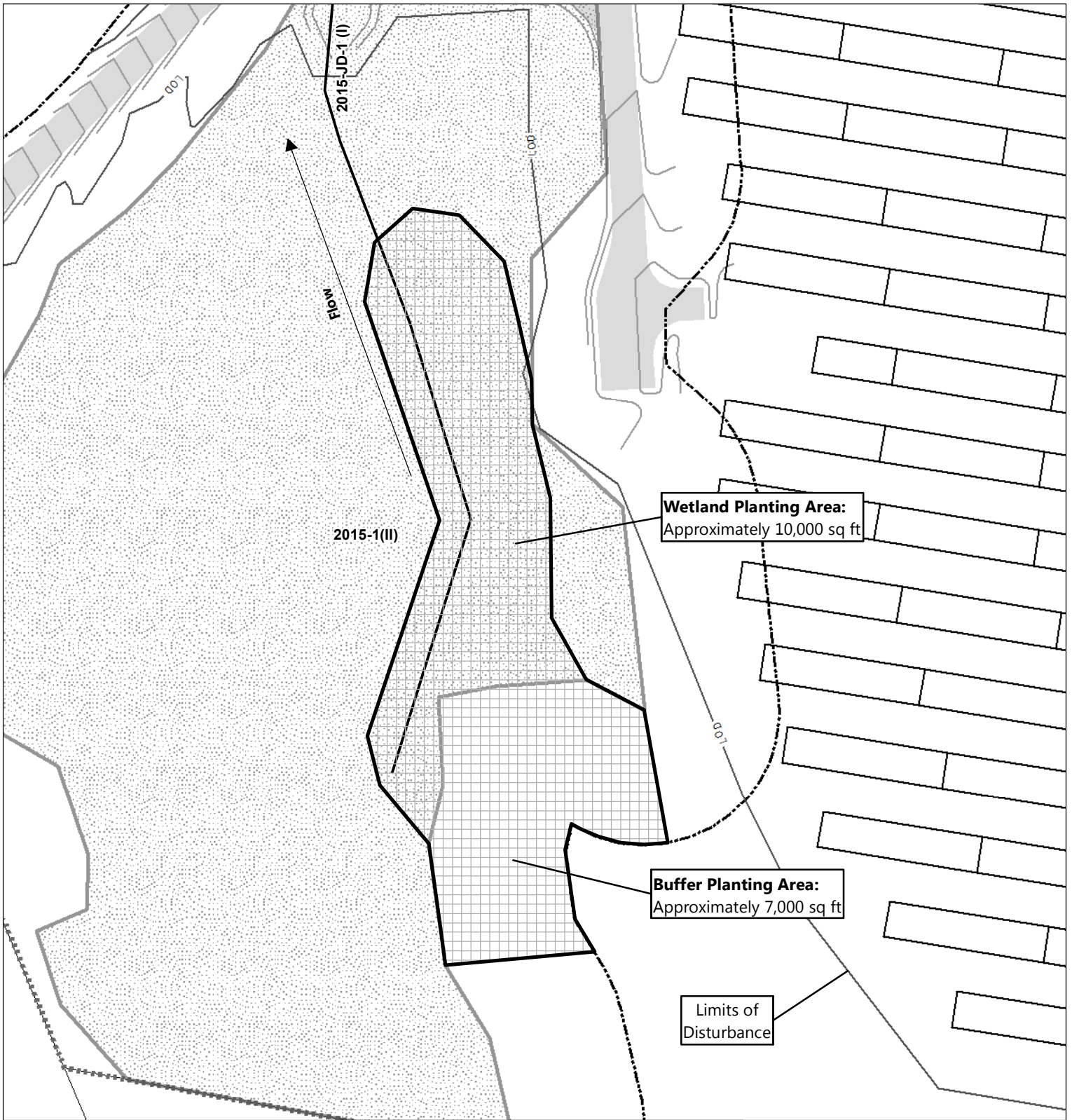
December 3, 2015













Sources: Study Area and Natural Resource features delineated and digitized by VHB (2015); Parcel data by VHB (2009); Solar Array, Electric Poles, Electric/Communication Lines, Fence, Access Road, and Contours from Civil Engineering Associates, Inc. (2015); Roads from VCGI (2014).



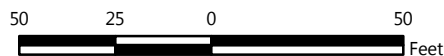
# **ATTACHMENT 4**



-  Proposed Planting Area
-  VHB Study Area
-  VHB Delineated Wetland
-  Class II Wetland Buffer (VHB)
-  VHB Delineated Stream
-  Access Road
-  -LOD Limit of Disturbance
-  5 Ft. Contour
-  1 Ft. Contour
-  20ft Contour

**Village of Hyde Park Electric Department  
Hyde Park Solar-Waterhouse Project  
Hyde Park, VT  
Wetland/Buffer Planting Plan Exhibit**

November 20, 2015



Sources: Study Area and Natural Resource features delineated and digitized by VHB (2015); Parcel data by VHBP (2009); Solar Array, Electric Poles, Electric/Communication Lines, Fence, Access Road, and Contours from Civil Engineering Associates, Inc. (2015); Roads from VCGI (2014).



# **ATTACHMENT 5**



**Wetland and Buffer Enhancement Planting Plan**

**Client: Encore Redevelopment**

**Project: Village of Hyde Park Electric Department - Waterhouse Solar Project**

**Prepared by: VHB (C. Fenner)**

**Date: December 3, 2015**

<b>Proposed Shrub Planting Schedule</b>			
<b>Common Name</b>	<b>Scientific Name</b>	<b>Stock Type*</b>	<b>Quantity</b>
<b>Wetland Planting Area (approx. 10,000 square feet)</b>			
speckled alder	<i>Alnus incana</i>	Bareroot (2-3')	20
pussy willow	<i>Salix discolor</i>	Bareroot (2-3')	20
silky dogwood	<i>Cornus amomum</i>	Bareroot (2-3')	25
winterberry	<i>Ilex verticillata</i>	Bareroot (2-3')	15
steplebush	<i>Spiraea tomentosa</i>	Potted, 1 gal.	32
red-osier dogwood	<i>Cornus sericea</i>	Bareroot (2-3')	25
<i>Total Wetland Stems**:</i>			137
<b>Buffer Planting Area (approx. 7,000 square feet)</b>			
nannyberry	<i>Viburnum lentago</i>	Potted, 1 gal.	11
elderberry	<i>Sambucus canadensis</i>	Potted, 1 gal.	11
serviceberry/ shadbush	<i>Amelanchier canadensis</i>	Potted, 1 gal.	11
<i>Total Buffer Stems***:</i>			33
<b>TOTAL PROPOSED WOODY STEMS</b>			<b>170</b>

<b>General Planting Specifications</b>
Trees will be planted in spring or early summer (no later than July 30), and will be monitored during the
Plant spacing will be approximately 5 feet by 5 feet on-center within the wetland and approximately 8 feet
by 8 feet on-center within the wetland buffer; if this spacing is not feasible based on local conditions such
Plants are to be installed in accordance with the Natural Resources Conservation Service Specification
Guide Sheet for Conservation Practice 612- Tree/Shrub Establishment
Species distribution will be "random" within the planting areas to approximately mimic natural variability of
species distribution in the wetland and buffer
This proposed planting schedule is subject to review and approval by the Vermont Agency of Natural
Resources and also may be altered in response to nursery availability pending approval of the same

\* Recommended stock type based on size and availability from regional vendors such Vermont Wetland Plant Supply, LLC (Orwell, VT), Intervale Conservation Nursery (Burlington, VT), New England Wetland Plants (Amherst, MA), Pierson Nursery Inc. (Biddeford, ME).

\*\* Stem count is based on 600 stems per acre density for the restored wetland area, (approximately 5-foot spacing).

\*\*\* Stem count is based on 200 stems per acre density for the restored buffer area, (approximately 8-foot spacing).