



# PUBLIC NOTICE

**US Army Corps  
of Engineers**®  
New England District  
8 Carmichael Street, Suite 205  
Essex Junction, Vermont 05452

**Comment Period Begins:** Apr-19-2011  
**Comment Period Ends:** May-18-2011  
**File Number:** NAE-2009-2408  
**In Reply Refer To:** Michael S. Adams  
**Phone:** (802) 872-2893  
**E-mail:** Michael.s.adams@usace.army.mil

The District Engineer has received a permit application from the applicant below to **conduct work in waters of the United States** as described below.

**APPLICANT: Green Mountain Power, Inc., ATTN: Charles Pughe, 163 Acorn Lane, Colchester, Vermont 05446**

## ACTIVITY

Place permanent and temporary fill in about 2.35 acres of waters of the U.S. in conjunction with the development of a 63 megawatt mountain top wind energy facility with an associated aerial electrical transmission line in Lowell, Westfield and Jay, Vermont.

The windfarm, consisting of 21 turbine towers, will be located on private property along the Lowell Mountain ridgeline. Project elements include: upgrade and new construction of approximately 2.75 miles of an access road, the construction of approximately 4.4 miles of a crane path, turbine pads, new substation, maintenance building, and an overhead 34.5 kV electric collection system. Approximately 11,610 sq. ft. (0.27 acre) of wetland and approximately 8,229 sq. ft. (0.19 acre) acre of streams will be permanently filled. Approximately 4,791 sq. ft. (0.11 acre) wetland and 2,113 sq. ft. (0.05 acre) of streams will be temporarily impacted. In addition, vegetation clearing within the electric collection system will affect approximately 6,779 sq. ft. (0.16 acre) of forested wetland, converting it to emergent or scrub-shrub cover types.

Approximately 14.5 miles of transmission line within the existing Vermont Electric Cooperative (VEC) right-of-way (ROW) will be upgraded from 35 kV to 46 kV voltage from the windfarm access road to the Vermont Electric Power Company (VELCO) 46 kV transmission line in Jay, Vermont. The new line will be primarily built within the existing 50' wide ROW, with the exception of 4.75 miles that will be re-aligned to address ROW infringements, to reduce lines on private property and to improve maintenance. Approximately 89 sq. ft. (0.002 acre) of wetland will be permanently filled during pole placement and approximately 75,704 sq. ft. (1.74 acre) of wetland will be temporarily filled using timber mats to access pole locations. All temporary access fill (timber mats) will be removed and the area fully restored upon completion of the project. In addition, vegetation clearing within the ROW will affect approximately 35,724 sq. ft. (0.82 acre) of forested wetland, converting it to emergent or scrub-shrub cover types. The upgraded transmission line will be built on single pole structures with distribution underbuild and telecommunications lines. The lines will be installed across the Winooski River in Westfield, Vermont. The lowest communication cable will be 13.5' above ordinary high water (OHW) and the lowest electrical cable will be 26.7' above OHW under conditions of greatest sag.

To compensate for impacts to waters of the U.S. of the proposed project the applicant proposes to preserve approximately 178 acres (160.7 ± acres of upland and 17.3 ± of wetlands/waterways) on the project site. The wetlands on the mitigation site consist of open water, emergent, scrub-shrub, and forested wetlands. The mitigation site contains 8,700 linear feet of perennial streams and several unmapped intermittent streams that originate on the site.

Clearing overstory vegetation in wetlands will not require filling, stump removal, or more than diminimus soil disturbance. The purpose of the project is to construct and operate a wind generation facility in north central Vermont.

Several off-site alternatives were considered. The applicant states that the most suitable wind direction and speed for commercial wind power generation in Vermont are found along the ridgelines. The site needs to be in close proximity to bulk distribution transmission infrastructure and Class 2 roadways, with no limiting property constraints. Using this site selection criteria, a desktop GIS exercise was conducted to identify alternative sites to the applicant's preferred site on Lowell Mountain. In addition to the Lowell Mountain site, eight alternative ridgelines of similar length, area and elevation were identified in the north central region of Vermont. These sites were further evaluated to consider land ownership, distance of new overhead utility, distance of transmission upgrade, proximity to Class II road, geology, significant natural communities, State threatened or endangered species, rare species, Vermont significant wetlands, Vermont hydrography dataset, Class A waters, highly erodible soils and hydric soils. An alternative site located on the Canada/United States border was determined to be most feasible of the eight. However, this site is restricted by land ownership by the Green Mountain Club (GMC) and Vermont Agency of Natural Resources (ANR). The applicant concluded that the preferred alternative is the least environmentally damaging and practicable alternative.

The work is partially described on the enclosed plans, in 20 sheets, entitled "Kingdom Community Wind", dated "March 3, 2011", "March 10, 2011", "March 11, 2011" and "March 16, 2011". The entire set of wetland and stream impact plans can be viewed at <http://www.kingdomcommunitywind.com/permitting/usace-impact-exhibits/>

#### **WATERWAY AND LOCATION OF THE PROPOSED WORK**

This work is proposed in numerous wetlands between Lowell and Jay, Vermont. The windfarm project site (ridgeline) is located on the USGS Lowell, Vermont quadrangle sheet at latitude 44.7533543° N; and longitude 72.4236075° W.

#### **AUTHORITY**

Permits are required pursuant to:

- Section 10 of the Rivers and Harbors Act of 1899
- Section 404 of the Clean Water Act
- Section 103 of the Marine Protection, Research and Sanctuaries Act).

The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which may reasonably accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered,

**CENAE-R**  
**FILE NO. NAE-2009-2408**

including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, cultural value, fish and wildlife values, flood hazards, flood plain value, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Where the activity involves the discharge of dredged or fill material into waters of the United States or the transportation of dredged material for the purpose of disposing it in ocean waters, the evaluation of the impact of the activity in the public interest will also include application of the guidelines promulgated by the Administrator, U.S Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act, and/or Section 103 of the Marine Protection Research and Sanctuaries Act of 1972 as amended.

Based on his initial review, the District Engineer has determined that little likelihood exists for the proposed work to impinge upon properties with cultural or Native American significance, or listed in, or eligible for listing in, the National Register of Historic Places. Therefore, no further consideration of the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended, is necessary. This determination is based upon one or more of the following:

- a. The permit area has been extensively modified by previous work.
- b. The permit area has been recently created.
- c. The proposed activity is of limited nature and scope.
- d. Review of the latest published version of the National Register shows that no presence of registered properties listed as being eligible for inclusion therein are in the permit area or general vicinity.
- e. Coordination with the State Historic Preservation Officer and/or Tribal Historic Preservation Officer(s).

The New England District, Army Corps of Engineers has reviewed the list of species protected under the Endangered Species Act of 1973, as amended, which might occur at the project site. It is our preliminary determination that the proposed activity for which authorization is being sought is designed, situated or will be operated/used in such a manner that it is not likely to adversely affect any Federally listed endangered or threatened species or their designated critical habitat. By this Public Notice, we are requesting that the appropriate Federal Agency concur with our determination.

The following authorizations have been applied for, or have been, or will be obtained:

- ( X ) Permit, License or Assent from State.
- ( ) Permit from Local Wetland Agency or Conservation Commission.
- ( X ) Water Quality Certification in accordance with Section 401 of the Clean Water Act.

**CENAE-R**  
**FILE NO. NAE-2009-2408**

In order to properly evaluate the proposal, we are seeking public comment. Anyone wishing to comment is encouraged to do so. **Comments should be submitted in writing by the above date.** If you have any questions, please contact Michael S. Adams at (802) 872-2893.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for a public hearing shall specifically state the reasons for holding a public hearing. The Corps holds public hearings for the purpose of obtaining public comments when that is the best means for understanding a wide variety of concerns from a diverse segment of the public.

The initial determinations made herein will be reviewed in light of facts submitted in response to this notice. All comments will be considered a matter of public record. Copies of letters of objection will be forwarded to the applicant who will normally be requested to contact objectors directly in an effort to reach an understanding.

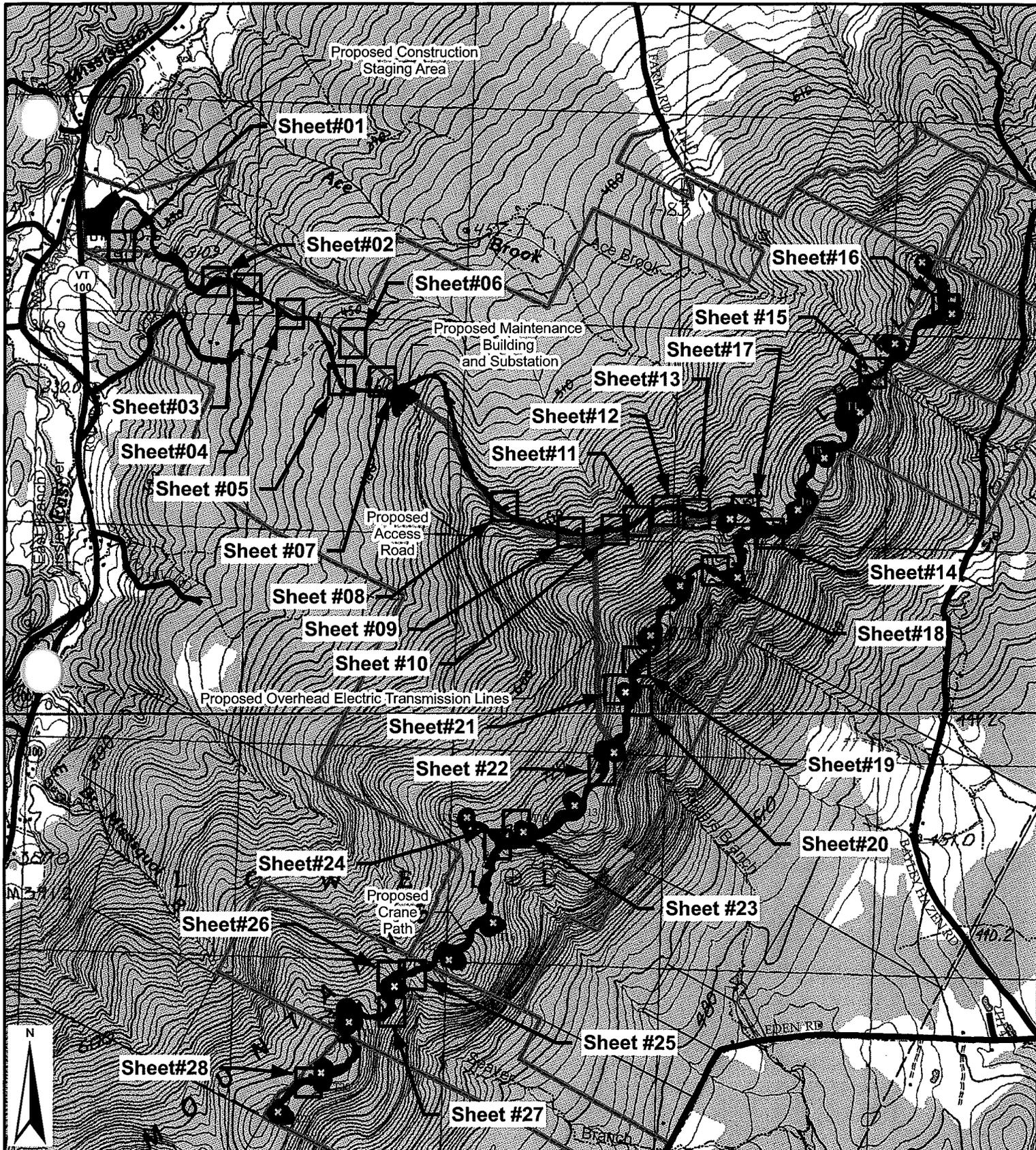
In accordance with 33 CFR 325.2(a)(8), we publish monthly a list of permits issued or denied during the previous month at [www.nae.usace.army.mil/reg](http://www.nae.usace.army.mil/reg), under the heading "Monthly General and Individual Permit Authorizations." Relevant environmental documents and the SOFs or RODs are available upon written request and, where applicable, upon the payment of administrative fees. Also visit [www.nae.usace.army.mil](http://www.nae.usace.army.mil) for more information on the New England District Corps of Engineers programs.

**THIS NOTICE IS NOT AN AUTHORIZATION TO DO ANY WORK.**

  
**Frank DelGiudice**  
**Chief, Permits and Enforcement Branch**  
**Regulatory Division**

If you would prefer not to continue receiving Public Notices, please contact Ms. Tina Chaisson at (978) 318-8058 or e-mail her at [bettina.m.chaisson@usace.army.mil](mailto:bettina.m.chaisson@usace.army.mil). You may also check here ( ) and return this portion of the Public Notice to: Bettina Chaisson, Regulatory Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751.

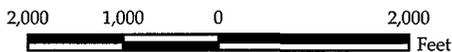
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- Legend**
- Turbine Location
  - Roads
  - Impact Exhibit Sheet
  - Project Limits of Disturbance
  - Collector Line Clearing
  - Project Parcel Boundary
  - Parcel Boundary
  - Streams (VHD)

**Kingdom Community Wind**  
**Lowell, VT**  
**Wind Farm Site**  
**Wetland and Stream Impact Exhibit**  
**USGS Index Map**

March 3, 2011



Sources: USGS Background Albany and Lowell (1997); Design by K&L (2/2/2011); Streams from VHD (2008), Road by VTrans (2009) provided by VCGI (2010); Parcel Boundary provided by Bruno (2009).

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Prepared by: SEM  
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VHB Impact Exhibit #	Wetland ID	Delineated Area (Sq Ft) <sup>1</sup>	Design Drawing # <sup>2</sup>	Wetland Impacts					Description of Impact	Elevation of Impact (feet)
				Proposed Permanent Impact (Sq Ft) <sup>3</sup>	Proposed Temporary Impacts (Sq Ft) <sup>4</sup>	Proposed Secondary Impacts (Sq Ft) <sup>5</sup>	TOTAL IMPACTS (SQ FT)	TOTAL IMPACTS (ACRES)		
1	2009-C51	4,270	C101	0	0	2,189	2,189	0.050	Clearing for collector line	1095
3	2010-C100	12,860	C102	36	168	0	204	0.005	Grading and clearing for access road and EPSC	1320
4	2009-B3	14,780	C102	0	256	0	256	0.006	Clearing for EPSC near level spreader and access road	1395
4	2009/2010-C5	13,490	C102	0	195	3,673	3,868	0.089	Clearing for collector line, access road and EPSC	1405
5	2009-C3	6,410	C103	469	314	0	783	0.018	Grading and clearing for access road and EPSC	1485
6	2009-C44	10,280	C103	0	0	670	670	0.015	Clearing for collector line	1506
7	2009-C46	1,450	C103	0	0	240	240	0.006	Clearing for collector line	1590
7	2009-C47	3,710	C103	0	0	7	7	0.0002	Clearing for collector line	1565
14	2009-B9	4,650	C107	274	364	0	638	0.015	Grading and clearing for access road and EPSC	2315
15	2009-C20	10,610	C109	0	301	0	301	0.007	Clearing for access road and EPSC	2175
15	2009-C21	2,250	C109	0	4	0	4	0.0001	Clearing for access road and EPSC	2155
16	2009-C62	3,870	C108	3,870	0	0	3,870	0.089	Grading for crane path and turbine pad	2245
21	2009-C30	1,700	C112	0	90	0	90	0.002	Clearing for EPSC near turbine location	2470
22	2009-C26	8,570	C113	465	889	0	1,354	0.031	Grading and clearing for crane path and EPSC	2480

Kingdom Community Wind  
 Dated March 3, 2011

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VHB Impact Exhibit #	Wetland ID	Delineated Area (Sq Ft) <sup>1</sup>	Design Drawing # <sup>2</sup>	Wetland Impacts					Description of Impact	Elevation of Impact (feet)
				Proposed Permanent Impact (Sq Ft) <sup>3</sup>	Proposed Temporary Impacts (Sq Ft) <sup>4</sup>	Proposed Secondary Impacts (Sq Ft) <sup>5</sup>	TOTAL IMPACTS (SQ FT)	TOTAL IMPACTS (ACRES)		
22	2009-C27	6,130	C113	1,649	1,155	0	2,804	0.064	Grading and clearing for crane path and EPSC	2470
23	2009-C29	1,410	C114	0	36	0	36	0.001	Clearing for EPSC near turbine location	2365
25	2009-C39	6,480	C115	2,573	507	0	3,080	0.071	Grading and clearing for crane path and EPSC	2285
28	2009-C40	610	C116	0	40	0	40	0.001	Clearing for EPSC	2495
28	2009-C41	290	C116	225	0	0	225	0.005	Grading for stormwater treatment practice	2475
28	2009-C42	10,040	C117	2,049	472	0	2,521	0.058	Grading and clearing for crane path and EPSC	2485
<b>TOTAL WETLAND IMPACTS (SQ FT):</b>				<b>11,610</b>	<b>4,791</b>	<b>6,779</b>	<b>23,180</b>			
<b>TOTAL WETLAND IMPACTS (ACRES):</b>				<b>0.267</b>	<b>0.110</b>	<b>0.156</b>	<b>0.532</b>			

**NOTES:**

Bold Delineated Area denotes that wetland delineation is completely within the Direct Study Limits.

<sup>1</sup>Areas of delineated wetlands from survey of wetlands and streams located by Krebs & Lansing ground survey or VHB GPS data collections.

<sup>2</sup>Design Drawings derived from ESPC Permit Set (2/2/11).

<sup>3</sup>Proposed Permanent Impacts are calculated from areas of direct fill or excavation. Does not include areas of stream impacts.

<sup>4</sup>Proposed Temporary Impacts are calculated based on the area needed between the area of permanent impact and limit of clearing disturbance primarily planned for erosion prevention and sediment control features. Does not include areas of stream impact.

<sup>5</sup>Secondary Impacts are calculated based on forested wetland types or those that occur within a closed forested upland which will be permanently converted to emergent or scrub shrub wetland type through clearing and regular vegetation maintenance within the planned overhead collector line.

Kingdom Community Wind  
 Dated March 3, 2011

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VHB Impact Exhibit # <sup>1</sup>	Stream ID	Flow Regime <sup>2</sup>	Average Ordinary High Water (OHW) Width (Feet) <sup>3</sup>	Design Drawing # <sup>4</sup>	Proposed Permanent Impact			Proposed Temporary Impact			Description of Impact
					Impact (Linear Feet)	Impact Area (Sq Ft) <sup>6</sup>	Impact Area (Acres)	Temporary Impact (Linear Feet)	Temporary Impacts (Sq Ft) <sup>7</sup>	Temporary Impact (Acres)	
2	2010-SC-C101	Intermittent	3.0	C102	72	216	0.005	10	30	0.001	Portion of channel culverted for construction of access road, installation of EPSC measures
5	2009-TB-C3	Perennial	6.0	C103	77	462	0.011	32	192	0.004	Installation of culvert for access road and EPSC measures
5	2009-SC-C4	Perennial	3.0	C103	29	87	0.002	30	90	0.002	Installation of culvert for access road and EPSC measures
8	2009-TB/SC-C9	Perennial	4.0	C105	0	0	0.000	7	28	0.001	Installation of EPSC measures
9	2009-SC-C10	Intermittent	2.0	C105	91	182	0.004	25	50	0.001	Installation of a culvert for the access road and EPSC measures
10	2009-SC/TB-C11	Perennial	4.0	C106	72	288	0.007	23	92	0.002	Installation of a culvert for the access road, temporary de-watering of the stream channel for culvert installation
10	2009-TB-C12	Perennial	6.0	C106	88	528	0.012	15	90	0.002	Installation of a culvert for the access road, temporary de-watering of the stream channel for culvert installation
11	2009-SC-B2	Ephemeral	1.0	C106	82	82	0.002	39	39	0.001	Portion of channel filled for construction of access road
11	2009-TB/SC-C13	Perennial	4.0	C106	83	332	0.008	31	124	0.003	Installation of a culvert for the access road, temporary de-watering of the stream channel for culvert installation
12	2009-SC-B3	Ephemeral	1.0	C106	86	86	0.002	26	26	0.001	Installation of a culvert for the access road, temporary de-watering of the stream channel for culvert installation
13	2009-TB/SC-C14	Perennial	4.0	C107	132	528	0.012	17	68	0.002	Installation of drop-inlet culvert for the access road and temporary de-watering of stream channel for culvert installation
15	2009-TB/SC-C25	Perennial	4.0	C109	0	0	0.000	62	248	0.006	Installation of EPSC measures
16	2009-SC-C62A	Intermittent	2.0	C108	151	302	0.007	12	24	0.001	Portion of channel filled for construction of turbine pad, installation of EPSC measures
17, 18	2009-TB/SC-C15	Perennial	5.0	C107,C111	254	1,270	0.029	47	235	0.005	Installation of culvert for the access road and crane path, temporary de-watering of the stream channel for culvert installation
18	2009-SC-C15a	Perennial	3.0	C111	123	369	0.008	21	63	0.001	Installation of drop-inlet culvert for the crane path, temporary de-watering of the stream channel for culvert installation

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VHB Impact Exhibit # <sup>1</sup>	Stream ID	Flow Regime <sup>2</sup>	Average Ordinary High Water (OHW) Width (Feet) <sup>3</sup>	Design Drawing # <sup>4</sup>	Proposed Permanent Impact			Proposed Temporary Impact			Description of Impact
					Impact (Linear Feet)	Impact Area (Sq Ft) <sup>6</sup>	Impact Area (Acres)	Temporary Impact (Linear Feet)	Temporary Impacts (Sq Ft) <sup>7</sup>	Temporary Impact (Acres)	
19	2009-SC-C30	Intermittent	3.0	C112	308	924	0.021	14	42	0.001	Portion of channel filled for construction of crane path and EPSC measures
20	2009-SC-C29	Intermittent	3.0	C112	26	78	0.002	79	237	0.005	Portions of channel filled for construction of crane path and installation of EPSC measures
22	2009-SC-C33	Intermittent	3.0	C113	108	324	0.007	71	213	0.005	Portion of channel filled for construction of crane path and turbine pad, and EPSC
24	2009-SC-C34	Intermittent	3.0	C114	210	630	0.014	21	63	0.001	Installation of culvert for construction of crane path, temporary de-watering of stream channel for culvert installation
24	2009-SC-C35	Intermittent	3.0	C114	97	291	0.007	11	33	0.001	Portion of channel filled for construction of crane path, installation of EPSC measures
25	2009-SC-C39	Perennial	4.0	C115	94	376	0.009	10	40	0.001	Portion of channel filled for construction of crane path, installation of EPSC measures
26	2009-SC-C61	Ephemeral	2.0	C115	86	172	0.004	9	18	0.000	Portion of channel filled for construction of crane path, installation of EPSC measures
26	2009-SC-C62	Intermittent	3.0	C115	134	402	0.009	0	0	0.000	Channel filled for construction of crane path and turbine pad
27	2009-SC-C44	Ephemeral	2.0	C116	0	0	0.000	9	18	0.000	Installation of EPSC measures
28	2009-SC-C41	Intermittent	4.0	C117	71	284	0.007	9	36	0.001	Portion of channel filled for construction of crane path, installation of EPSC measures
28	2009-SC-C42	Intermittent	2.0	C117	8	16	0.000	7	14	0.000	Portion of channel filled for construction of crane path, installation of EPSC measures
<b>TOTAL:</b>					<b>2,482</b>	<b>8,229</b>	<b>0.189</b>	<b>637</b>	<b>2,113</b>	<b>0.049</b>	

<sup>1</sup>Proposed stream impacts were calculated by multiplying average OHW width by linear length of impact; impacts are not symbolized to scale on VHB Wetland and Stream Impact Exhibits.

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

<sup>3</sup>Ordinary High Water (OHW) Width is determined on measurements taken in the field at the time of the delineation according to guidance provided in the U.S. Army Corps of Engineers (USACE). 2005. "Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification." No. 05-05. Accessed online at: <http://www.usace.army.mil/cw/cecwo/reg/rglsindx.htm>.

<sup>4</sup>Design Drawings derived from EPSC Permit Set (2/2/11).

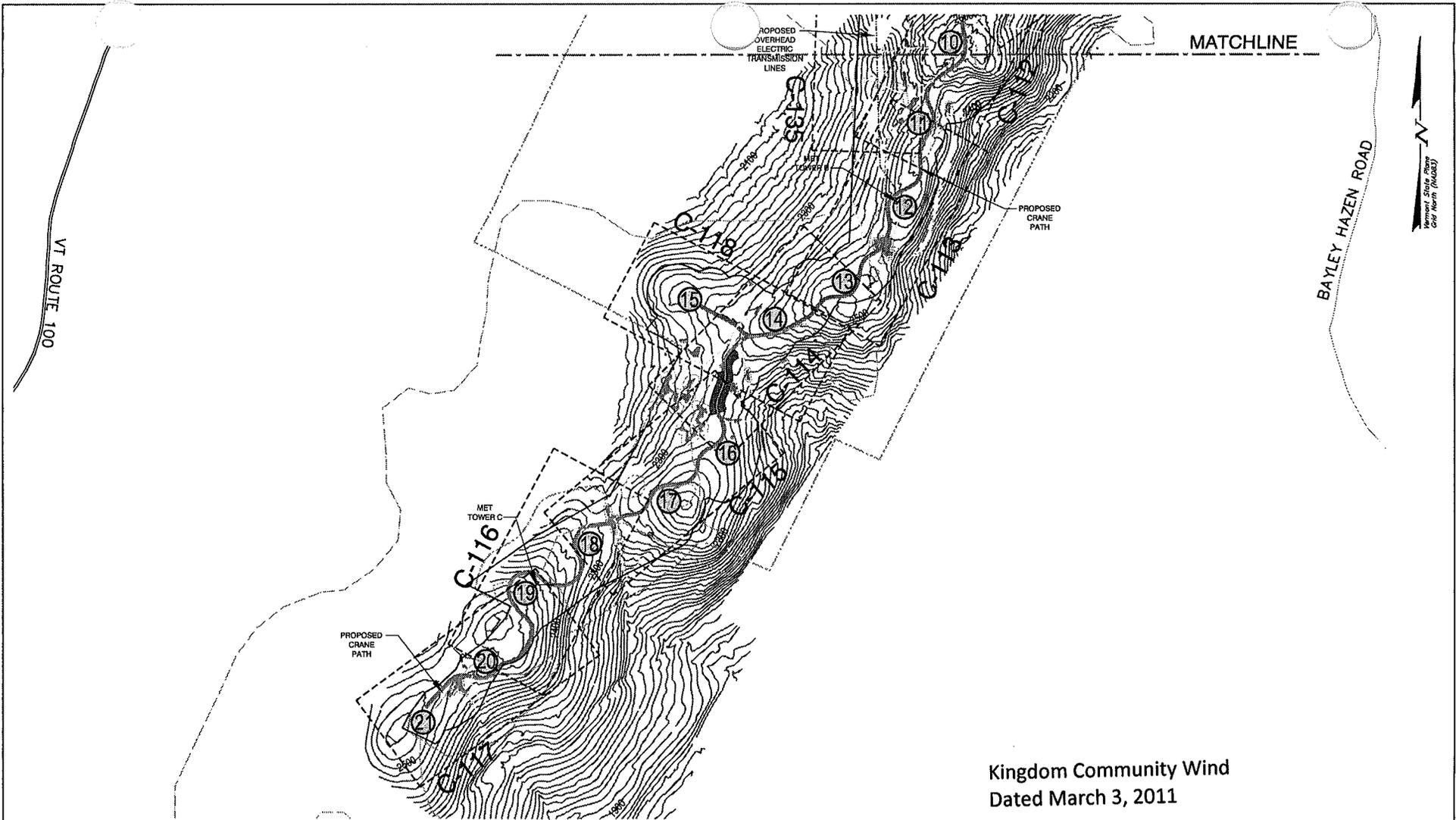
<sup>6</sup>Proposed Permanent Impacts are calculated based the excavation of or placement of fill (of any kind) below the stream OHW.

<sup>7</sup>Proposed Temporary Impacts to streams are calculated based on an estimate of temporary construction impact as calculated between the area of permanent impact and limit of clearing disturbance primarily planned for temporary construction access, any necessary dewatering, and/or erosion prevention and sediment control measures.

\*GIS based impact analysis from design plans by Krebs & Lansing: REV-4 (11/11/10), and EPSK Sketches (1A through 37).

Kingdom Community Wind  
 Dated March 3, 2011

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Kingdom Community Wind  
Dated March 3, 2011

**LEGEND**

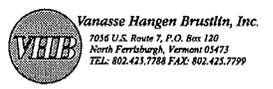
- PROPOSED TURBINE LOCATION
- CENTERLINE OF NEW OVERHEAD ELECTRIC TRANSMISSION LINE CORRIDOR
- EXISTING GROUND CONTOUR LINES (20 FOOT INTERVALS)
- APPROXIMATE PROPERTY LINES/ PROJECT LIMITS
- VHB INVESTIGATION AREA
- WETLANDS DELINEATED BY VHB
- STREAMS DELINEATED BY VHB
- REMOTELY SENSED MONTANE SPRUCE-FIR FOREST COMMUNITY
- REMOTELY SENSED MONTANE YELLOW BIRCH-RED SPRUCE FOREST COMMUNITY
- MET TOWER LOCATION
- CRANE PATH/ACCESS ROAD
- S2 PLANTS IDENTIFIED BY VHB
- S3 PLANTS IDENTIFIED BY VHB



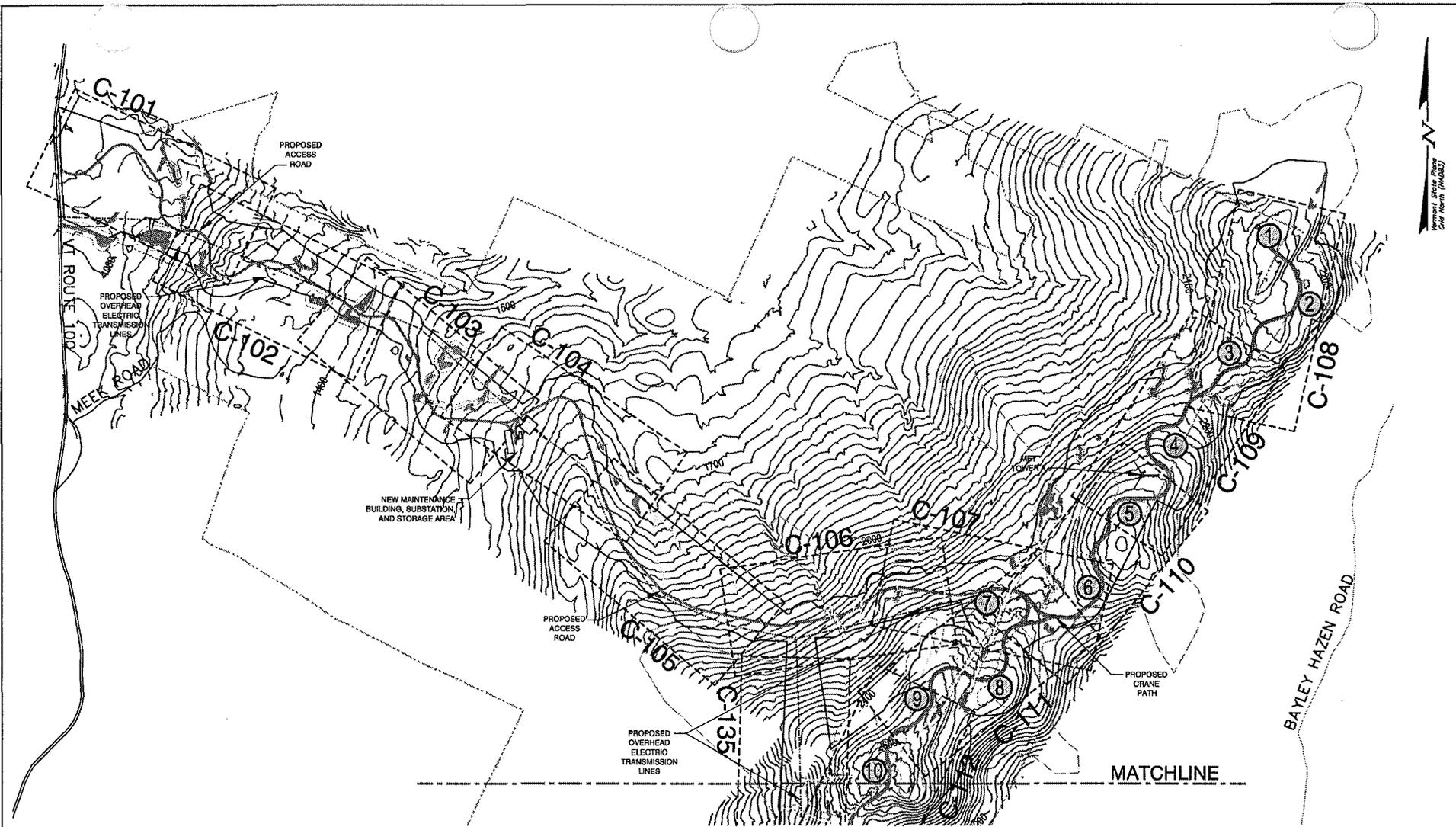
GRAPHIC SCALE 1" = 1,500'

**OVERALL SITE PLAN - SHEET 2**

Date of Issue: 3/4/2011  
 Drawn by: GTD, Krebs and Lansing  
 Project No.: 09198  
 Checked by: Adam Crory, VHB  
 Scale: 1"=1,500'



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**LEGEND**

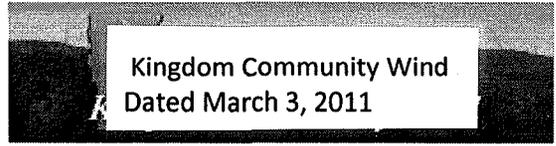
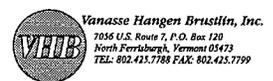
- PROPOSED TURBINE LOCATION
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- VHB INVESTIGATION AREA
- WETLANDS DELINEATED BY VHB
- STREAMS DELINEATED BY VHB
- REMOTELY SENSED MONTANE SPRUCE-FIR FOREST COMMUNITY
- REMOTELY SENSED MONTANE YELLOW BIRCH-RED SPRUCE FOREST COMMUNITY
- MET TOWER LOCATION
- CRANE PATH/ACCESS ROAD
- S2 PLANTS IDENTIFIED BY VHB
- S3 PLANTS IDENTIFIED BY VHB



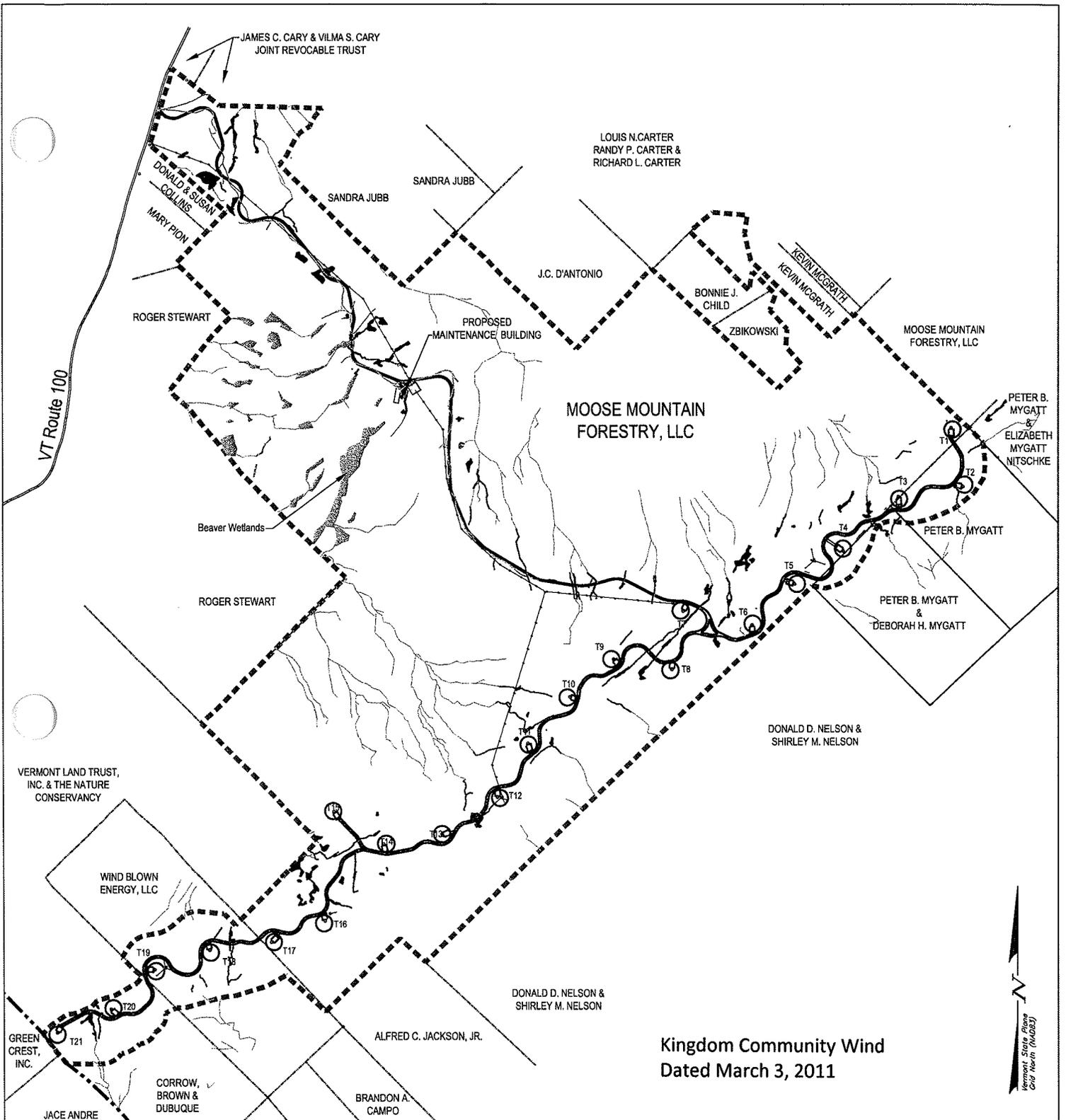
GRAPHIC SCALE 1" = 1,500'

**OVERALL SITE PLAN - SHEET 1**

Date of Issue: 3/4/2011  
 Drawn by: GTD, Krebs and Lansing  
 Project No.: 09198  
 Checked by: Adam Crory, VHB  
 Scale: 1"=1,500'



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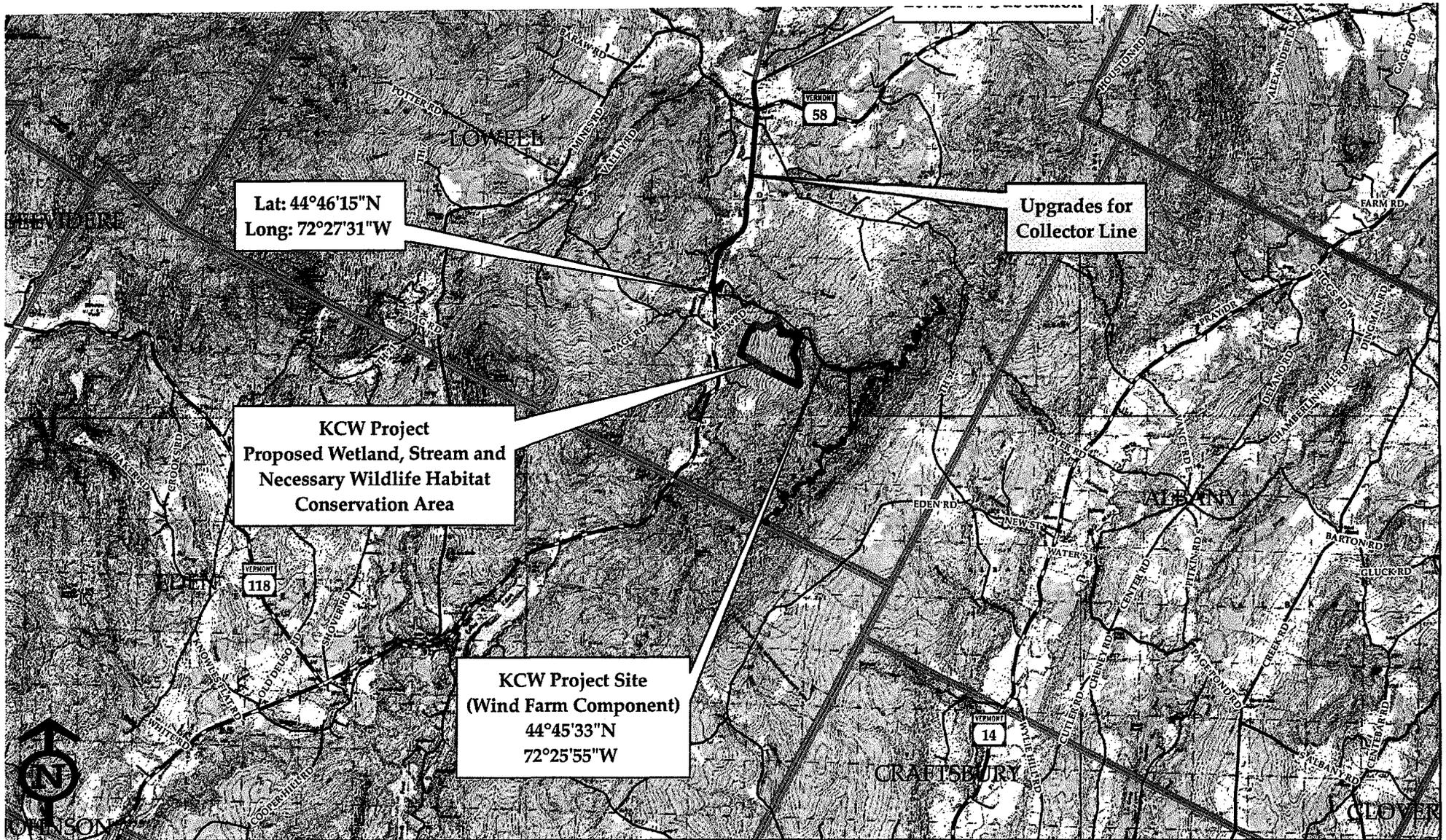
### Abutting Properties Map for the Kingdom Community Wind

**K&L**  
 Krebs & Lansing  
 Consulting Engineers, Inc.  
 164 Main Street, Suite 201  
 Colchester, VT 05446  
 T: (802) 878-0375  
 F: (802) 878-9618

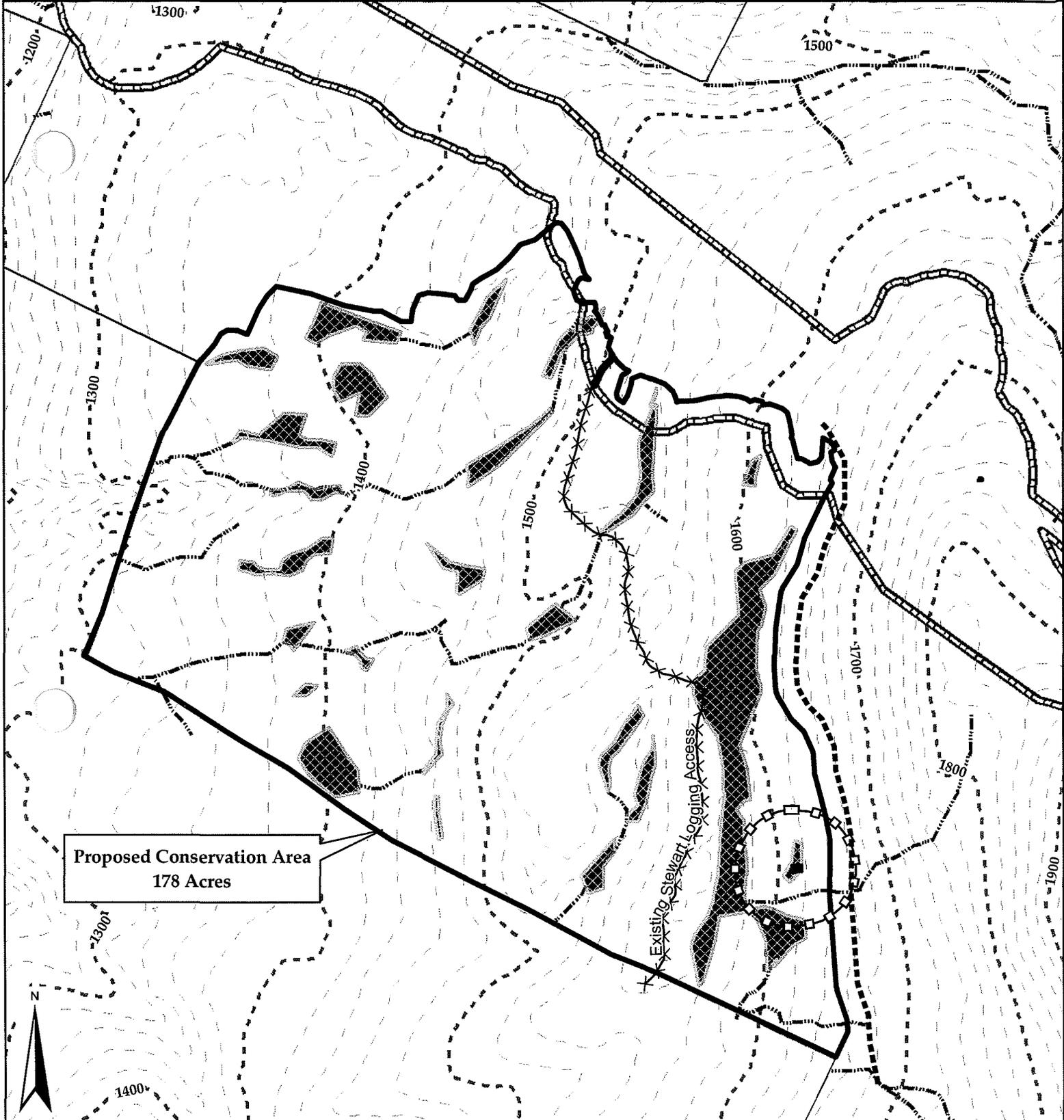
- VHB DELINEATED STREAMS
- VHB RECON STREAMS
- VHB DELINEATED WETLANDS
- VHB RECON WETLANDS

0'    1,000'    2,000'    4,000'    6,000'    8,000'

*Bar Scale*



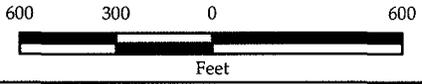
9/20



**Proposed Conservation Area  
178 Acres**

- ✕ Existing Stewart Logging Access
- VHB Digitized Logging Road
- Vernal Pool Envelope (250')
- Potential Conservation Area Limits
- ▨ KCW Vernal Pools
- ▧ Wetlands (Recon)
- - - Streams (Recon)
- KCW Wind Farm Direct Study Area
- KCW Project Parcels
- 20 ft. Contour
- - - 100 ft. Contour

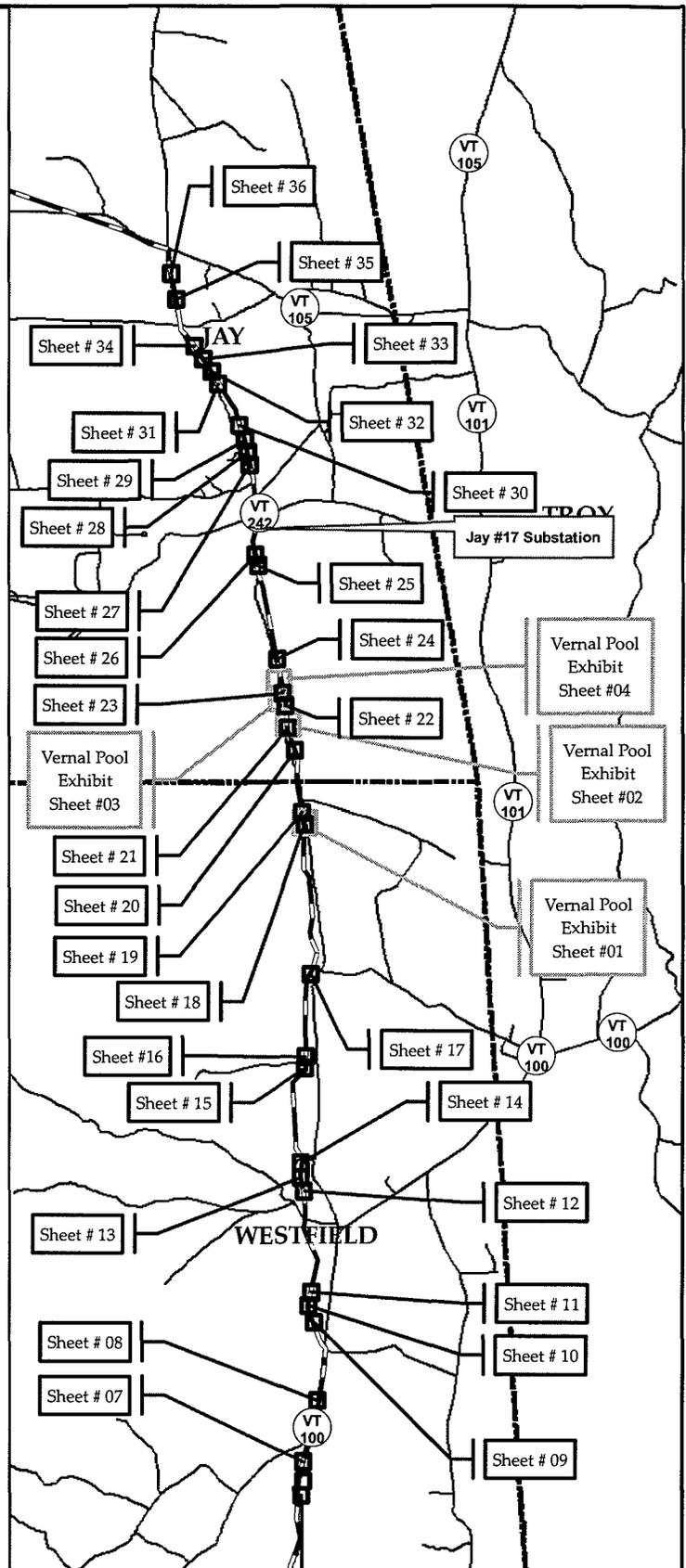
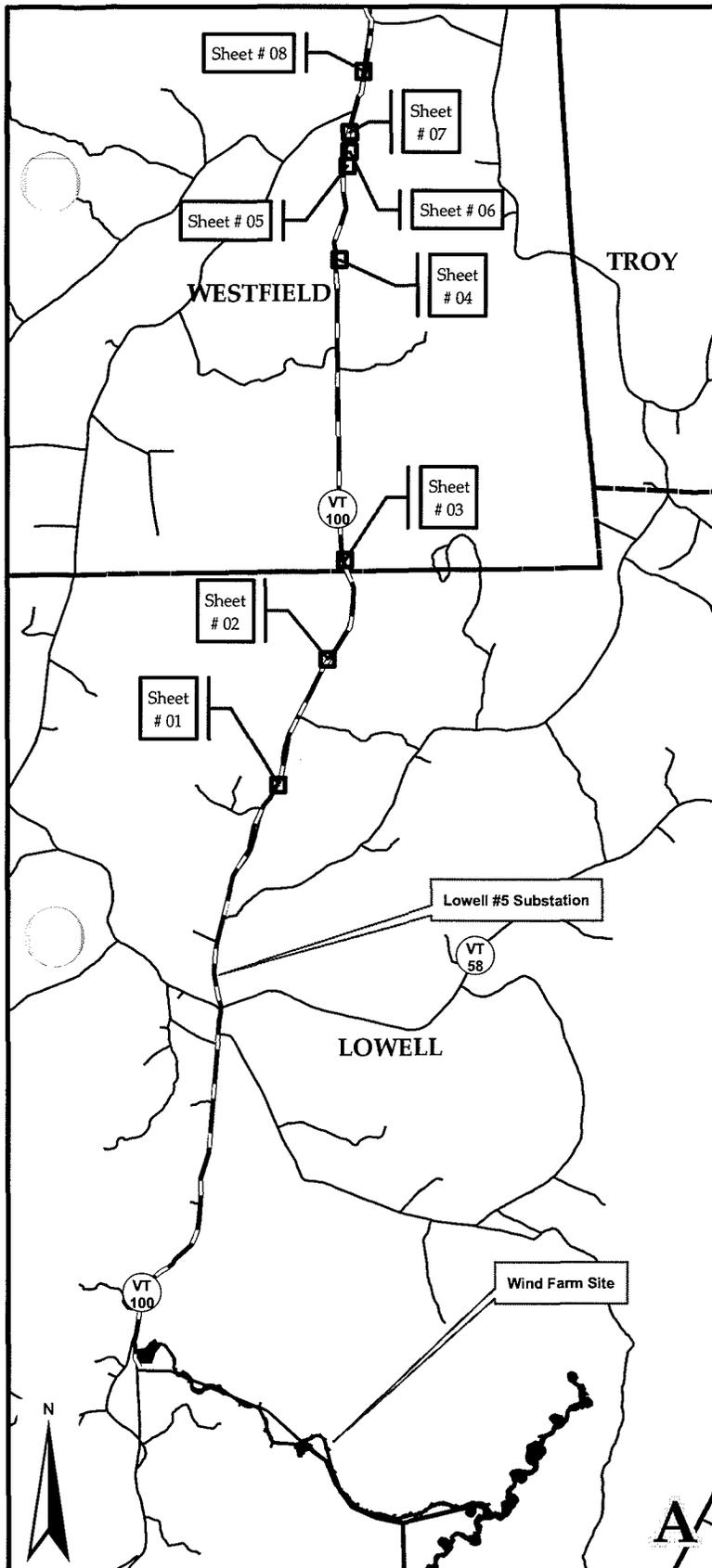
**Kingdom Community Wind  
Lowell, Vermont  
Proposed Wetland, Stream, and Necessary  
Wildlife Habitat Conservation  
Area Wetland Map  
March 10, 2011  
Revised April 11, 2011**



Sources: Background Orthophoto from VCGI (2008); Potential Conservation Limits provided by Krebs and Lansing (2/24/11), Direct Study Limits, Vernal Pools, Recon Wetlands and Streams, Wetland Continues, and Streams by VHBP (2009 and 2010); Delineated Wetlands by Krebs & Lansing survey and VHB GPS data collection (2009); Property boundary provided by Bruno (2009); proposed buffers created in ArcGIS by VHB (2011).

**VHB Vanasse Hangen Brustlin, Inc.**

Prepared by: SBM  
F:\57346.00\GIS\project\Site\Mitigation\  
KCW\_NR\_mitigation\_buffers\_New\_2011\_B&W.mxd

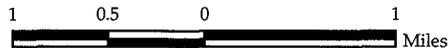


**Legend**

-  Wetland Impact Exhibit
-  Vernal Pool Impact Exhibit
-  Proposed Transmission Centerline
-  KCW Project Site- Project Area
-  Roads
-  Town Boundary

**Kingdom Community Wind  
Lowell, Westfield, and Jay, VT  
Upgrades from Electric Collection  
and Transmission  
Wetland and Vernal Pool Impact Exhibits**

**Index Map**  
March 16, 2011



Sources: Design by K&L (2/9/2011);  
Impact Sheets by VHB (2011) Roads,  
Town/County Layer provided by VCGI (2008)

**VHB** Vanasse Hangen Brustlin, Inc.

Prepared by: SEM/CMM

F:\57346.00\GIS\project\Transmission Line\NaturalResources\Impact Map Series\404\TransmissionLine\_Impact\_Series\_Index.mxd

Kingdom Community Wind (KCW)  
 Lowell, Westfield, and Jay, Vermont  
 Wetland Summary and Impact Analysis  
 Upgrades for Electric Collection and Transmission  
 Prepared by VHB



Revised: April 11, 2011

VHB Wetland Impact Exhibit Sheet #	Wetland ID	Delineated Area Within in ROW <sup>1</sup> (Sq Ft)	Krebs and Lansing Design Sheet #, Town		Adjacent Utility Pole #		Proposed Wetland Impact					Description of Impact	Adjoining Property Owner
					Existing Pole #	Proposed New Pole #	Proposed Permanent Impact (Sq Ft) <sup>2</sup>	Proposed Temporary Impacts (Sq Ft) <sup>3</sup>	Proposed Secondary Impacts (Sq Ft) <sup>4</sup>	TOTAL IMPACT (SQ FT)	TOTAL IMPACT (ACRES)		
01	2009-C6	4,340	8,9	Lowell	JYT22	112	0	0	767	767	0.02	Clearing of forested area within wetland	Bearfield, Inc./Town of Lowell/ Lowden
02	2009-C9B	3,260	10	Lowell	JYT36	130	0	353	0	353	0.01	Temporary access for old pole removal	Vermont Highland Cattle Co., LLC
03	2009-C11	31,210	11, 12	Westfield	JYT47	144	0	1,058	0	1,058	0.02	Temporary access for old pole removal	Elliot
04	2009-C18	40,730	16	Westfield	JYT77	NA	0	1,388	0	1,388	0.03	Temporary access for old pole removal	Hisman & Starr
05, 06, 07	2009-C19	100,770	17,18	Westfield	JYT86-87-88-89	NA	0	3,182	0	3,182	0.07	Temporary access for old pole removal	Simpson/ Quintal/ Kearny
08	2009-C21	10,290	18,19	Westfield	JYT95	211	0	2,440	0	2,440	0.06	Temporary access for old pole removal and placement of new pole	Kearny
09	2009-C22	1,560	19,20	Westfield	JYT104	224	5	2,296	0	2,301	0.05	Temporary access for new pole placement, placement of new pole	Leblanc/Audet & Prue
10, 11	2009-C23	44,080	20	Westfield	JYT105-106	225-226	10	10,906	0	10,916	0.25	Temporary access for old pole removal, placement of new poles	Horine/Croizet
12	2009-D1	1,100	22	Westfield	NA	241	0	305	65	370	0.01	Clearing of forested area within wetland, temporary access for new pole placement	Myott/Wockner
13	2009-D2	11,650	22,23	Westfield	JYT119	243	0	1,989	0	1,989	0.05	Temporary access for new pole placement	Myott/Wockner/Hamelin/Bluett
14	2009-D3/2010-A1	23,170	22,23	Westfield	JYT120	244	5	373	0	378	0.01	Placement of new pole, temporary access for new pole placement	Bluett
14	2009-D4	2,340	23	Westfield	JYT121	NA	0	18	0	18	0.00	Temporary access for pole removal	Bluett
15	2009-C25	28,010	24	Westfield	JYT130	257	10	3,949	1,507	5,466	0.13	New pole placement, temporary access for new pole placement, clearing of forested area within wetland	Veilleux
16	2010-C101	37,015	24	Westfield	JYT132	proposed new pole	4	3,178	0	3,182	0.07	New pole placement, temporary access for new pole placement	Estate of Cedar F. Cowles (c/o Bank of America)
17	2009-C27	2,050	25	Westfield	NA	270	0	0	161	161	0.00	Clearing of forested area within wetland feature	Brownfield/ Bevins
18	2010-R1	1,790	27	Westfield	NA	291	0	0	263	263	0.01	Clearing of forested wetland	Slayton
19	2009-C28	9,070	27	Westfield	NA	292	0	0	189	189	0.00	Clearing of forested area within wetland	Slayton
20	2009-C30	8,040	28	Jay	JYT164	301-302	0	2,142	0	2,142	0.05	Temporary access for new pole placement	Kennison
21	2009-C31	3,470	28	Jay	JYT166	305	5	193	0	198	0.00	Temporary access for new pole, new pole placement	Kennison
22	2009-C32	28,850	28,29	Jay	JYT168	307	5	3,592	0	3,597	0.08	Temporary access for old pole removal, new pole placement	Kennison/ Green

Kingdom Community Wind  
 Dated March 3, 2011

1/2/20

Kingdom Community Wind (KCW)  
 Lowell, Westfield, and Jay, Vermont  
 Wetland Summary and Impact Analysis  
 Upgrades for Electric Collection and Transmission  
 Prepared by VHB



Revised: April 11, 2011

VHB Wetland Impact Exhibit Sheet #	Welland ID	Delineated Area Within in ROW <sup>1</sup> (Sq Ft)	Krebs and Lansing Design Sheet #, Town		Adjacent Utility Pole #		Proposed Wetland Impact					Description of Impact	Adjoining Property Owner
					Existing Pole #	Proposed New Pole #	Proposed Permanent Impact (Sq Ft) <sup>2</sup>	Proposed Temporary Impacts (Sq Ft) <sup>3</sup>	Proposed Secondary Impacts (Sq Ft) <sup>4</sup>	TOTAL IMPACT (SQ FT)	TOTAL IMPACT (ACRES)		
23	2009-C33	2,220	28,29	Jay	JYT169	308	0	252	0	252	0.01	Temporary access for old pole removal	Green
23	2009-C34	3,090	29	Jay	JYT170	309	0	1,382	0	1,382	0.03	Temporary access for new pole placement and old pole removal	Green
24	2009-C35	3,260	29	Jay	JYT173	314	0	0	789	789	0.02	Clearing of forested area within wetland	Green/ Weiner
25, 26	2009-C37	25,830	30,31	Jay	JYT182	327, 328	10	1,344	1,544	2,898	0.07	New pole placement, temporary access for new pole placements, clearing of forested wetland	Bordet & Gorris
27, 28, 29, 30, 31,	2009-Z1	364,610	32,33	Jay	JAN9-10-11-12-16-17-18	343-344-345-346-347-348-349-359-356	25	20,476	15,307	35,808	0.82	Placement of new poles, temporary access for new pole placement, clearing of forested wetland	Hurlburt/ Garbutt-Waldie/ Q Development/ McKenzie & Ryan/ Leduc/ LeBlanc
32	2009-Z2	6,030	33	Jay	JAN18	356, 357	0	1,999	1,472	3,471	0.08	Temporary access for new pole placement, clearing of forested wetland	LeBlanc/ Q Development
32, 33	2009-Z3	43,510	33	Jay	JAN18-19	357,358,359	5	6,819	4,275	11,099	0.25	Placement of new poles, temporary access for placement of new poles, clearing of forested wetland	Q Development
34	2009-Z4	10,260	33	Jay	JAN20	360	0	2,394	966	3,360	0.08	Temporary access for placement of poles, clearing of forested wetland	Rappold/ Dejarlais
34	2009-Z5	12,260	33	Jay	JAN21	361	0	1,903	701	2,604	0.06	Temporary access for placement of new poles, clearing of forested wetland	Desjarlais
35	2009-Z6B	20,880	34	Jay	JAN24	367	5	1,773	6,457	8,235	0.19	New pole placement, temporary access for new pole placement, clearing of forested wetland	Desjarlais
36	2009-Z7	5,420	34	Jay	JAN26	371	0	0	1,261	1,261	0.03	Clearing of forested area within wetland	Desjarlais/ Caffrey
<b>TOTAL IMPACTS:</b>							<b>89</b>	<b>75,704</b>	<b>35,724</b>	<b>111,517</b>	<b>2.56</b>		

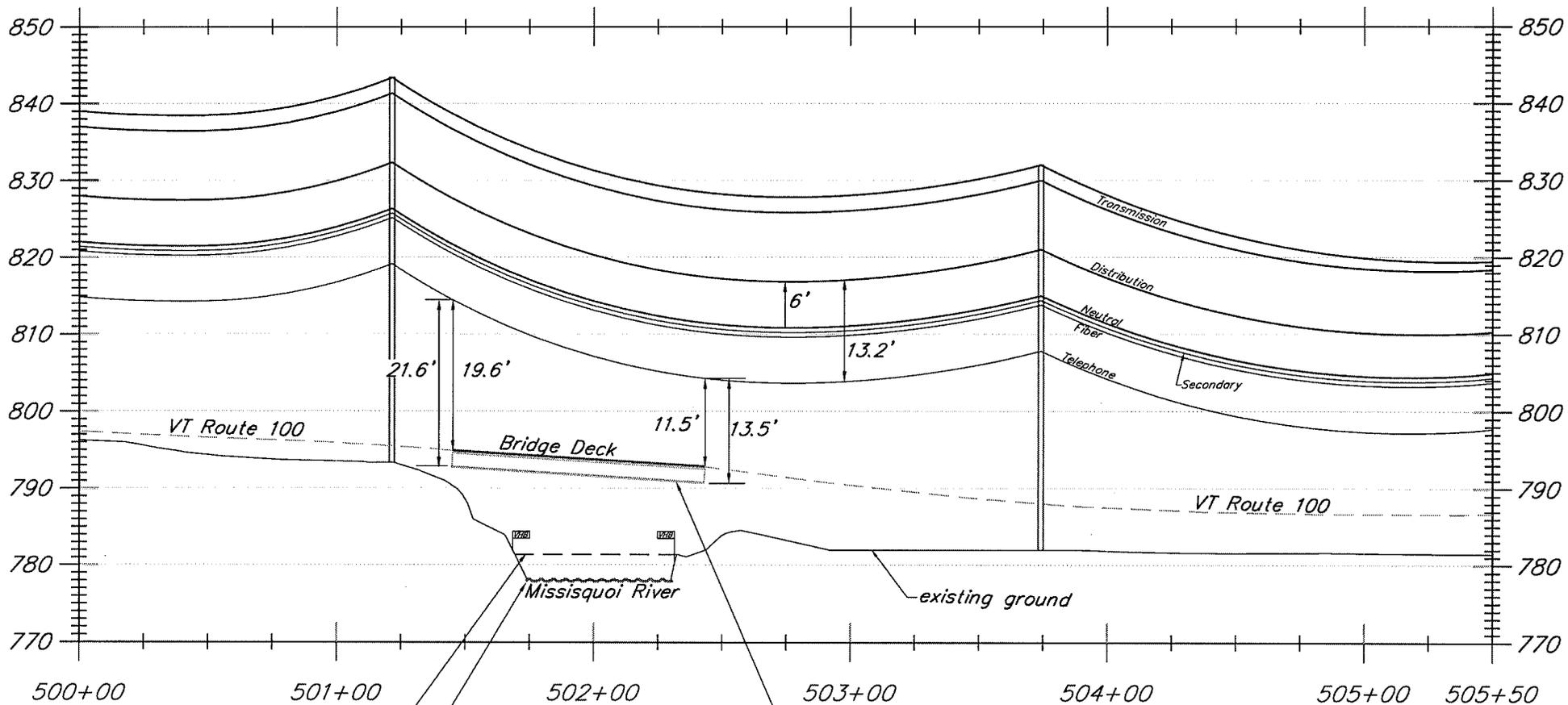
NOTES:  
 Impacts are assessed for the portion of the transmission alignment from the KCW Wind Farm Project limits at Vermont Route 100 in Lowell, VT up to the VELCO 115kV line in Jay, VT, which will be reconducted to the Jay Tap but should not result in the placement of any new fill or clearing.  
<sup>1</sup> Areas of delineated wetlands from survey of wetlands and streams located by Krebs & Lansing ground survey or VHB GPS data collections.  
<sup>2</sup> Permanent impacts are estimated based on number of poles depicted in the AutoCAD drawing that are in wetlands, assuming that placement of each pole will result in 5 s.f. of permanent impact.  
<sup>3</sup> Temporary impacts were calculated based on the proposed use of 16' wide "swamp mats" which will be used to access poles located in wetlands, within access routes determined by GMP as well as 20'x20' temporary work areas at wetland pole locations.  
<sup>4</sup> Proposed Secondary Impacts are composed of delineated forested wetlands that will be cleared and permanently converted to emergent or scrub shrub wetland types.

13/20

Kingdom Community Wind  
 Dated March 3, 2011

# Missisquoi River Profile

Horizontal Scale 1"=60'  
Vertical Scale 1"=20'



Approximate Height of Ordinary High Water = 781.4'

Water Level at time of Survey = 777.94'

Bridge's steel reinforcement beams. Bottom of metal beams assumed to be approximately 2' below bridge deck.

Power and communication lines were provided from SGC Engineering, LLC drawings dated

VHB GPS Located Rivers Edge

## Kingdom Community Wind Project Upgrades for Electric Collection and Transmission Profile Over the Missisquoi River

Kingdom Community Wind  
Dated March 3, 2011

Drawn By: GTD, Krebs & Lansing, Inc.

Checked By: Adam Crary, VHB

Project Number: 09225

P-1

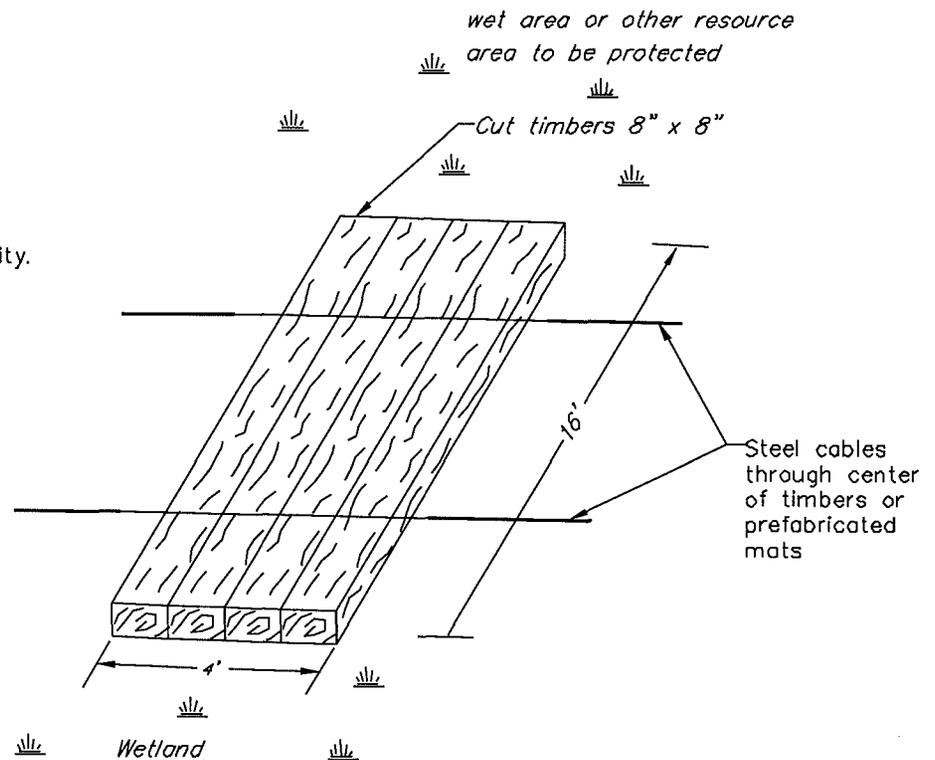
**K&L**  
Krebs & Lansing Consulting Engineers, Inc.  
164 Main Street, Suite 201  
Colchester, VT 05446  
T: (802) 878-0375  
F: (802) 878-9618  
klansing@comcast.net  
KrebsandLansing.com

**VHB**  
Vanasse Hangen Brustlin, Inc.  
7056 U.S. Route 7, P.O. Box 120  
North Ferrisburgh, Vermont 05473  
TEL: 802.425.7788 FAX: 802.425.7799

14/20

NOTE:

1. Mats are NOT to be placed on stream beds.
2. Perform routine inspection to include removal of loose soil tracked onto bridge by equipment and inspection of stream banks for stability.
3. Mats shall be positioned to maintain the natural stream characteristics.
4. Mats laid perpendicular to the stream can be substituted with pre-fabricated bridge structures as span lengths dictate or at the preference of the Contractor.
5. *Alternative construction matting that is approved by the OSPC may be substituted for timber matting.*
6. *Timbers to be cabled tightly, eliminating spaces between timbers.*
7. *Removal of snow and ice from the mats shall be achieved with mechanical methods. Deicing salts or chemicals shall not be used.*

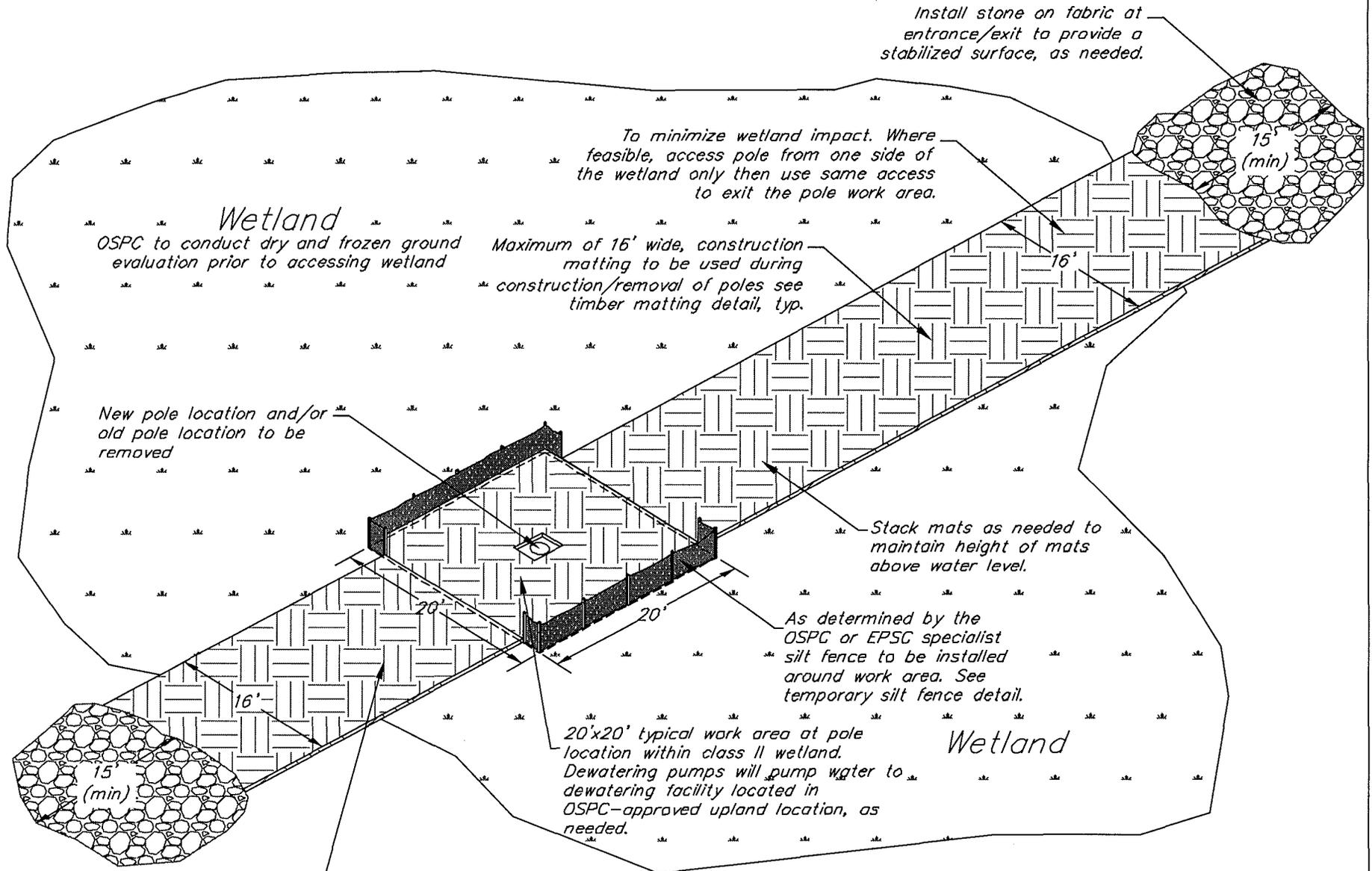


Timber Matting

N.T.S.

Kingdom Community Wind  
Dated March 3, 2011

15/20

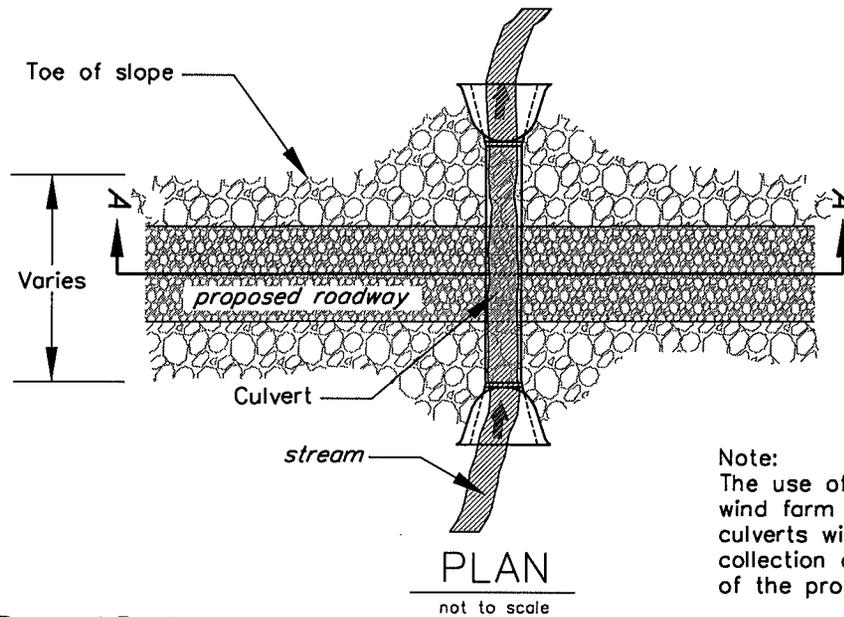


As needed temporarily stockpile any/all material on mats. Followed by proper disposal in an OSPC-approved upland location

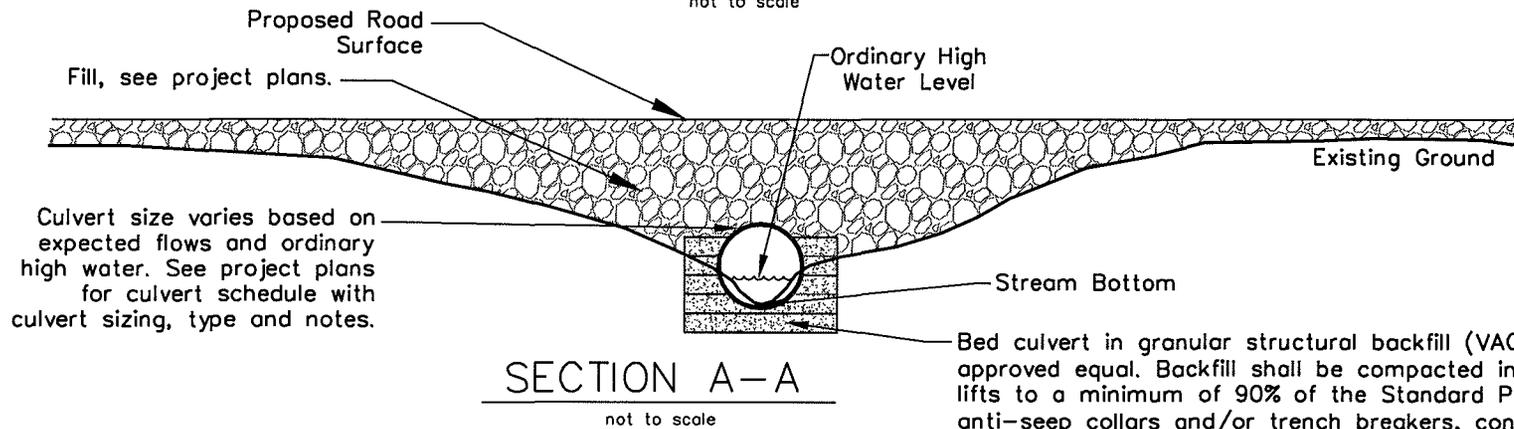
### Typical Work Area and Access Through Wetland

N.T.S.

16/20



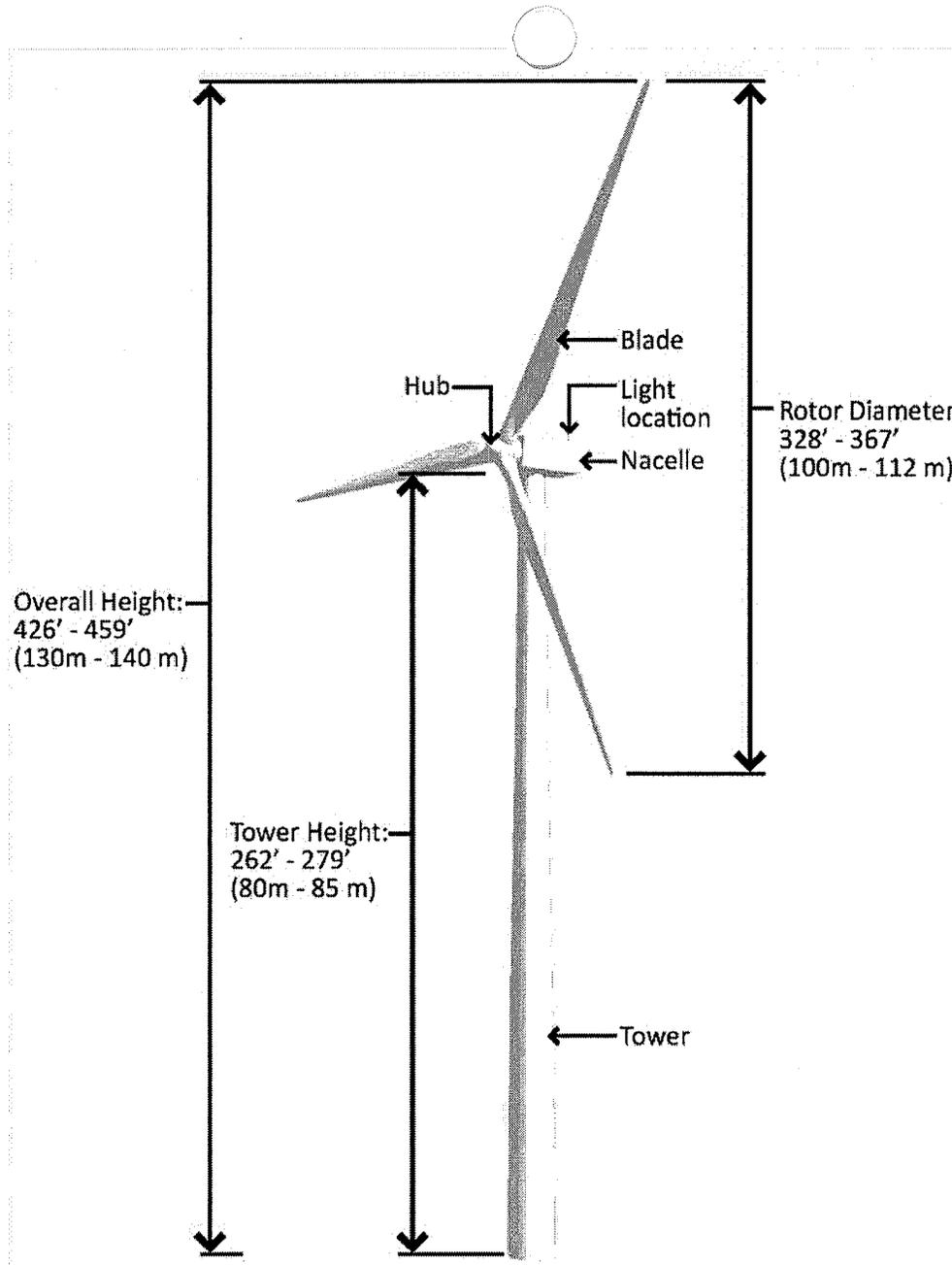
Note:  
 The use of culverts occurs ONLY on the wind farm portion of the project. No culverts will be used on the electrical collection or transmission line portions of the project.



Bed culvert in granular structural backfill (VAOT 704.05a) or approved equal. Backfill shall be compacted in 6 to 12 inch lifts to a minimum of 90% of the Standard Proctor Value. Use anti-seep collars and/or trench breakers, constructed of cohesive fill, as needed to prevent undermining of culvert. Structural backfill shall extend to a minimum height of 2/3 of the pipe diameter.

Typical Stream Crossing Culvert Section

17/20



1/8/20

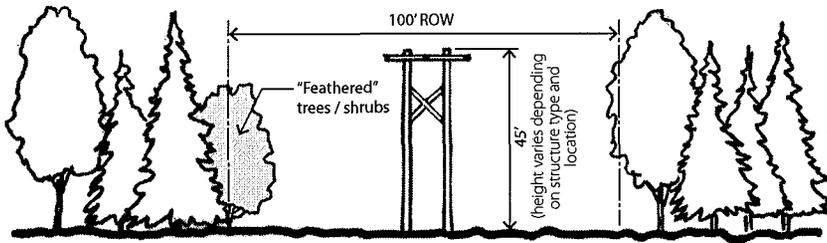
## Turbine Dimensions

Kingdom Community Wind

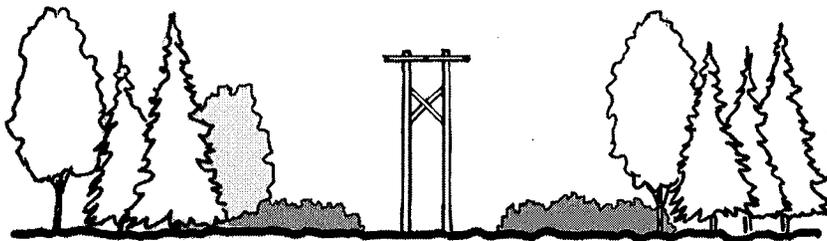
Kingdom Community Wind  
Dated March 3, 2011

Prepared for Green Mountain Power  
Prepared by Landworks, Middlebury, VT

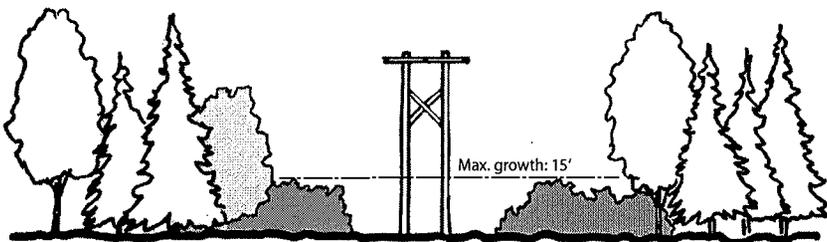




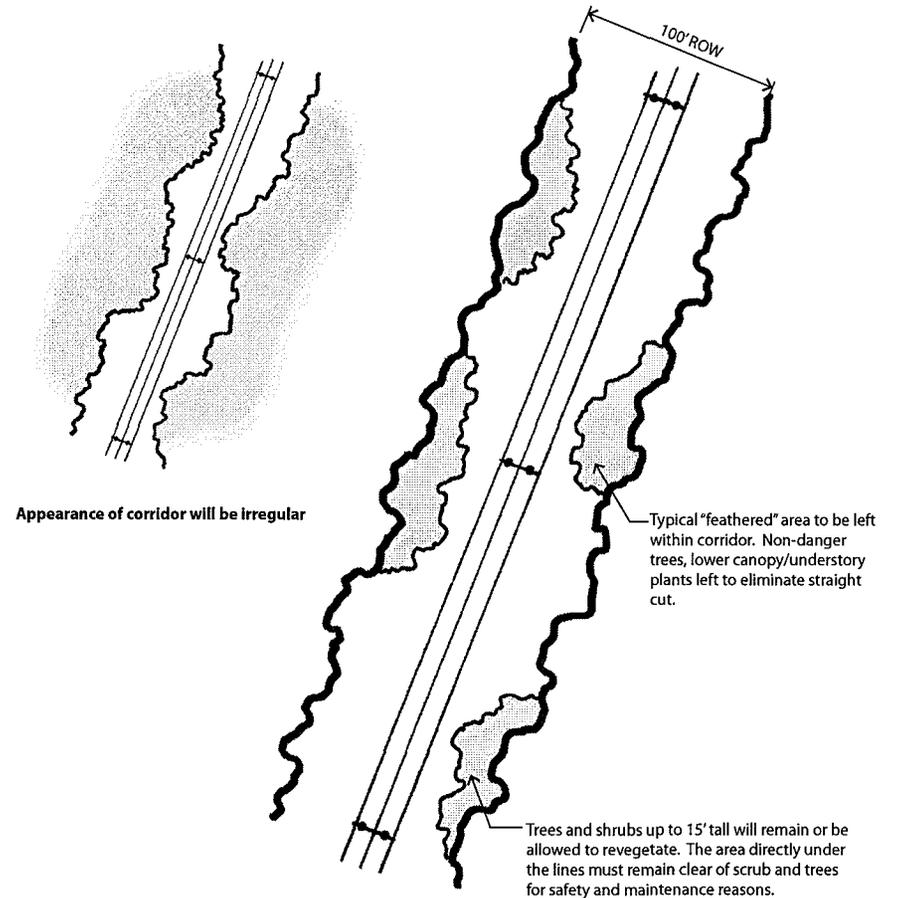
Section: ROW Clearing at Time of Construction



Section: Revegetation After 3-5 Years



Section: Revegetation After 7-10 Years



Plan: ROW Clearing at Time of Construction

Note: These drawings are illustrative and approximate representations of how the collector line corridor will be managed to reduce visual impacts, promote revegetation, and support habitat.

19/20

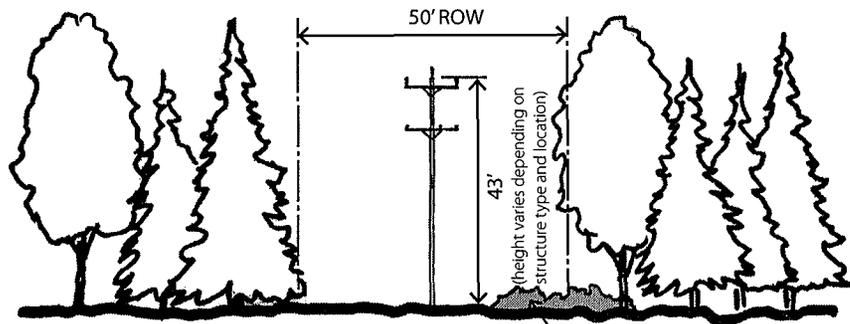
## Collector Line Corridor: Conceptual Approach for Clearing & Revegetation

Kingdom Community Wind

Kingdom Community Wind  
Dated March 3, 2011

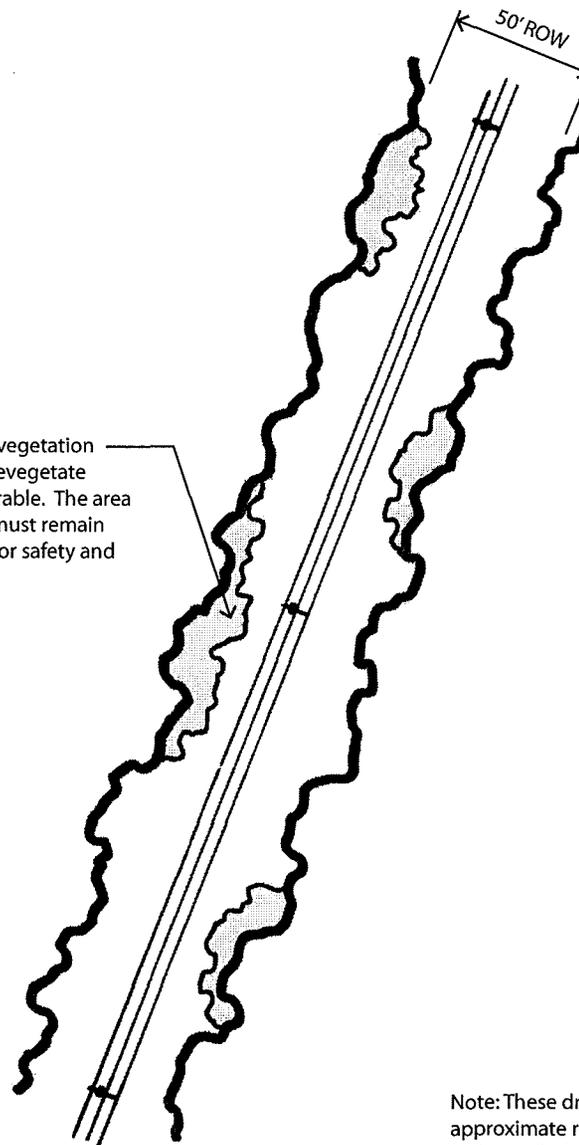
Prepared for Green Mountain Power  
Prepared by Landworks, Middlebury, VT





Section: ROW Clearing with Revegetation after 3-5 Years

Compatible low growth vegetation maintained/allowed to revegetate where possible and desirable. The area directly under the lines must remain clear of scrub and trees for safety and maintenance reasons.



Plan: ROW Clearing after 3-5 Years

Note: These drawings are illustrative and approximate representations of how the collector line corridor will be managed to reduce visual impacts, promote revegetation, and support habitat.

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**Transmission Line Corridor:** Conceptual Approach for Clearing & Revegetation

**Kingdom Community Wind**

Kingdom Community Wind  
Dated March 3, 2011

Prepared for Green Mountain Power  
Prepared by Landworks, Middlebury, VT

