Wild Meadows Wind Project
Danbury & Alexandria, NH

NHDES Wetland Permit Application

View of Tinkham Hill Ridge, 2013

Submitted By:
Atlantic Wind LLC
1125 NW Couch St., Suite 700
Portland, OR 97209

Submitted:
December 11, 2013

NORMANDEAU
environmental consultants

December 11, 2013

Mr. Craig Rennie
DES Wetlands Bureau
29 Hazen Drive
Concord, NH 03302-00095

Re: Wild Meadows Wind DES Wetland Permit Application

Dear Craig:

On behalf of Atlantic Wind, LLC, please find attached two copies of the Wetland Permit Application package for the proposed Wild Meadows Wind Project in Danbury and Alexandria, NH. Each copy includes the Wetlands Permit Application form; supporting text, figures and plans; a full-size set of the design plans; and an 11x17 subset of the design plans showing impacts. A check for the wetland impact fee totaling $16,716.00 is attached to one copy. We have delivered two copies of the application package to the Town of Danbury and three copies to the Town of Alexandria. This Wetlands Permit Application will also be accompanying the Certificate of Site and Facility Application to the Site Evaluation Committee. We expect to deliver the SEC application within the next few days.

Do not hesitate to call me with questions. I look forward to working with you during review of this project.

Sincerely,

Sarah Allen

Sarah Allen
Principal Wetland Scientist
Agent for this application

Attachments

Iberdrola Renewables Holdings, Inc.
Accounts Payable Dept.
1125 NW Couch Suite 600
Portland , OR 97209

Check Date 09-DEC-13
Check 5111373
Vendor No 620941 Page 1 of 1

If you have any question or require further information, please contact our Suppliers Service Center:

SupplierAssistance@iberdrolaren.com
(+01) 503-796-7050

STATE OF NEW HAMPSHIRE
PO BOX 637 DRA-DOCUMENT PROCESSING
CONCORD , NH 03302-0637

Payment on behalf of	Invoice Number	Invoice Date	Description	Net Amount
Atlantic Wind LLC	120913	09-DEC-2013	WILD MEADOWS - DREDGE AND FILL PERMIT	16,716.00
			TOTALS	$16,716.00

THE ORIGINAL DOCUMENT HAS A WHITE REFLECTIVE WATERMARK ON THE BACK. HOLD AT AN ANGLE TO VIEW. DO NOT CASH IF NOT PRESENT.

Iberdrola Renewables Holdings, Inc.
1125 NW Couch Street, Suite 700
PORTLAND,OR 97209-4129

JPMorgan Chase Bank, N.A.
Chicago, Illinois

70-2322/719

CHECK NO: 5111373

CHECK DATE	CHECK NO	PAY THIS AMOUNT
09-DEC-13	5111373	$**16,716.00**

AMOUNT Sixteen Thousand Seven Hundred Sixteen Dollars And 00 Cents **********

PAY TO THE ORDER OF:

STATE OF NEW HAMPSHIRE
PO BOX 637 DRA-DOCUMENT
PROCESSING

Authorized Signature

⑈0005111373⑈ ⑆071923226⑆ 009408402⑈

Wild Meadows Wind Project
NH DES Wetlands Permit Application

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THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF ENVIRONMENTAL SERVICES
LAND RESOURCES MANAGEMENT
WETLANDS BUREAU
29 Hazen Drive, PO Box 95, Concord, NH 03302-0095
Phone: (603) 271-2147 Fax: (603) 271-6588
Website: http://des.nh.gov/organization/divisions/water/wetlands/index.htm
Application Status: http://des.nh.gov/onestop/index.htm

WETLANDS PERMIT APPLICATION

File No.	Check No.	Amount:	Initials:
Administrative Use Only	Administrative Use Only	Administrative Use Only	Administrative Use Only

1. REVIEW TIME: Check the applicable box to indicate your review time. Refer to Guidance Document A for a summary of the minimum impact criteria to determine if your review time is Standard or Expedited.

☒ Standard Review (Minimum, Minor or Major Impact) ☐ Expedited Review (Minimum Impact)

2. CHECKLIST: This checklist is provided to allow you to confirm all the required items are submitted. Please initial next to each item below to confirm these items, required for administrative review, are included in your application. Please note that your application and attachments will be returned to you if the below items are not provided. See no. 9 for instructions.

SA Check for the application fee
SA Completed application form with project description and required property owner signature or permission
SA Completed U.S. Army Corps of Engineers New Hampshire Programmatic General Permit Appendix B
SA Natural Heritage Bureau (NHB) report. NHB Report Number: NHB13-2964
SA Is the project within a ¼ mile of a designated river? ☐ Y ☒ N. If yes: Indicate river: ______ and provide confirmation a copy of the application was sent to the Local Advisory Committee (LAC)
SA Color copy of a USGS map
SA Photographs of the impact area
SA Plans
SA Copy of your tax map

Initial next to each item below to indicate items, required for technical review if applicable to your project, are included in your application.

SA Abutters list and copies of certified mail slips
– Response to the two (2) minimum impact questions
SA Attachment A - Response to the twenty (20) minor and major impact questions
SA Copies of comments, beyond the required NHB report, from NHB or the NH Fish and Game Department (NHFG)
SA Mitigation Agreement Form and materials
SA Copy of pre-application meeting notes or correspondence with Wetlands Bureau Staff
SA Property owner authorization for applicant and/or agent
SA Attachment B - Design Consideration & General Plan Requirements
SA Attachment C - Stream Crossing Requirements & Information
SA Function and Value Assessment

3. PROPERTY OWNER INFORMATION

NAME: Teresa J. Hardwick

TRUST / COMPANY NAME: H. & H. Investments, LLC is the primary one. See attached list of other landowners.

MAILING ADDRESS: PO Box 129

TOWN/CITY: Antrim | STATE: NH | ZIP CODE: 03440

EMAIL / FAX: dhhardwick@mcttelecom.com | PHONE:

ELECTRONIC COMMUNICATION: By initialing here: ________, I hereby authorize DES to communicate all matters relative to this application electronically

OWNER PERMISSION: I hereby authorize the applicant and/or agent indicated below to act in my behalf as the applicant and/or my agent in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.

See attached letter of agreement
Applicant name

Agent name

Property Owner Signature

Date

4. APPLICANT INFORMATION: Required only If application is different than property owner

NAME: Erik Lallum | COMPANY NAME: Iberdrola Renewables, LLC

MAILING ADDRESS: Two Radnor Corporate Center, Suite 200

TOWN/CITY: Radnor | STATE: PA | ZIP CODE: 19087

EMAIL / FAX: Elallum@iberdrolaren.com | PHONE: 610-254-9800

ELECTRONIC COMMUNICATION: By initialing here ________, I hereby authorize DES to communicate all matters relative to this application electronically

5. AGENT INFORMATION

NAME: Sarah Allen | COMPANY NAME: Normandeau Associates, Inc

MAILING ADDRESS: 25 Nashua Road

TOWN/CITY: Bedford | STATE: NH | ZIP CODE: 03110

EMAIL / FAX: sallen@normandeau.com | PHONE: 603-472-5191

ELECTRONIC COMMUNICATION: By initialing here SA, I hereby authorize DES to communicate all matters relative to this application electronically

6. PROJECT LOCATION: A separate application must be filed with each municipality that jurisdictional impacts will occur in

ADDRESS: Wild Meadow Road | TOWN/CITY: Danbury/Alexandria

TAX MAP: 403 | BLOCK: 9 | LOT: | UNIT:

US GEOLOGICAL SURVEY TOPO MAP WATERBODY NAME: Wild Meadow Brook

LOCATION COORDINATES (If known): 43°35'14.05"N 71°51'36.15"W ☒ Latitude/Longitude
☐ UTM ☐ State Plane

7. PROJECT DESCRIPTION: Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. **DO NOT reply "See Attached"** in the space provided below or your application risks being returned as incomplete

Atlantic Wind, LLC (Atlantic) is proposing to develop the 75.9 megawatt (MW) Wild Meadows Wind Project in the Towns of Danbury and Alexandria, Grafton and Merrimack Counties, New Hampshire. The Wild Meadows Wind Project will include up to 23 wind turbines, each rated at 3.3 megawatts (MWs). The proposed turbine type is the Vestas V112 turbine or similar, which have a hub height of 94 meters (approximately 308 feet), a rotor diameter of 112 meters (approximately 367 feet), and a total height of 150 meters (approximately 492 feet). The Project will include associated infrastructure including collector lines, access roads, a substation, a permanent meteorological tower, and an operations and maintenance building. The primary access route to the project will be located off of Wild Meadows Road in Danbury and the electrical interconnection point will be at an existing 230 kilovolt (kV) transmission line that passes through Alexandria to the east of the proposed turbine array.

For each jurisdictional area that will be or has been impacted, provide square feet and, if applicable, linear feet of impact

Temporary = impacts that are not intended to remain after the project is completed.

After-the-fact = work completed prior to receipt of this application by DES

	Permanent Sq. Ft.	Permanent Lin. Ft.	Temporary Sq. Ft.	Temporary Lin. Ft.	After-the-fact Sq. Ft.	After-the-fact Lin. Ft.
Forested wetland	30942		22449			
Scrub-shrub wetland	6077		2369			
Emergent wetland						
Wet meadow	9900		928			
Intermittent stream	1319	378	7832	1046		
Perennial stream / river			1764	544		
Lake or pond						
Tidal water						
Salt marsh						
Sand dune						
Prime wetland						
Prime wetland buffer						
Undeveloped Tidal Buffer Zone (TBZ)						
Previously-developed upland in TBZ						
Total:	48,238	378	35,342	1,590		

Surface water dredge and beach replenishment, provide the cubic yards of material: NA

Shoreline structures, provide the average shoreline frontage (linear feet), using the formula below:

(Straight line distance pin to pin:) + (Actual natural navigable shoreline pin to pin) / 2 = NA

Stream and river culverts and bridges, provide the watershed size of the contributing watercourse: Four intermittent streams, Please see attached Stream Crossing Analysis for the watershed sizes.

8. RELATED FILES: List related files or approvals (Wetlands, Shoreland, Alteration of Terrain, Subsurface or other)

Certificate of Site and Facility, Alteration of Terrain Permit, 401 Water Quality Certificate

9. APPLICATION REQUIREMENTS: This application and attachments will be returned to you if items outlined in A - H.1 are not provided

☐ A. **Fee** (RSA 482-A:3,I & Env-Wt 505.01(c))

Attach the application fee in the form of a check or money order payable to: "Treasurer-State of NH"

Minimum Impact Fee: Flat fee of $ 200

OR

Minor or Major Impact Fee: Complete the application fee table below

Permanent impacts (non-docking):	48,238 sq. ft.	X	$0.20 =	$9,647.60
Temporary impacts (non-docking):	35,342 sq. ft.	X	$ 0.20 =	$7,068.40
Temporary (seasonal) docking structure:	sq. ft.	X	$1.00 =	
Permanent docking structure:	sq. ft.	X	$2.00 =	
Projects proposing shoreline structures add $200 =				
Total =				
The Application Fee is the above calculated Total or $200, whichever is greater =				$16,716.00

☒ B. **Appendix B**

Attach a completed U.S. Army Corps of Engineers New Hampshire Programmatic General Permit (PGP) Appendix B – Corps Secondary Impacts Checklist. Link: http://des.nh.gov/organization/divisions/water/wetlands/documents/pgp-appendix-b.pdf

☒ C. **NHB Review**

Attach the required report and map provided from NHB indicating that NHB has reviewed your project.

Documentation can be obtained online at: https://www2.des.state.nh.us/nhb_datacheck/ or by phone (603) 271-2215 x 323

Attach copies of any additional comments/correspondence received from NHB and/or the NHFG

☒ D. **Designated Rivers**

1. Is the project within a ¼ mile of a designated river? ☐ **Y** ☒ **N**

   Designated river list and map link: http://des.nh.gov/organization/divisions/water/wmb/rivers/desigriv.htm
2. As required by RSA 482-A:3,I(d)(2), I have notified the Local River Advisory Committee (LAC) by sending a copy of the complete application and supporting materials via certified mail on: **Month:** __ **Day:** __ **Year:** ____

   LAC Information & Contact link: http://des.nh.gov/organization/divisions/water/wmb/rivers/lac/index.htm

☒ E. **USGS Map** (Env-Wt 501.02(a)(4) & 505.01(g))

Attach a copy of a U. S. Geological Survey topographic map upon which the property lines and project limits have been outlined (surveyed property boundaries not required). The map must be at an unaltered scale of 1:24,000 or 1" = 2,000 feet (1:25,000 metric map).

Topographic Map Links: http://des.nh.gov/organization/divisions/water/wetlands/categories/technical.htm

☒ F. **Photographs** (Env-Wt 501.02(a)(3) & 505.01(i))

Attach legible and labeled color photographs clearly depicting the jurisdictional areas to be impacted, the resource outside of impact area, any shoreline structures and culvert inlet/outlets

☒ G. **Plans** (Env-Wt 501.02)

Attach plans See Attachments B & C for detailed plan requirements.

☒ H. 1. **Tax Map** (Env-Wt 501.02(a)(1)& 505.01(e))

Attach a legible copy or tracing of the tax map from the municipal office

9. APPLICATION REQUIREMENTS CONT'D:

2. **Abutter Notification** (Env-Wt 501.02(a)(1)& 505.01(f))

Confirm the submitted tax map illustrates the property of the applicant, the location of the proposed project on the property, and the location of properties of abutters (defined Env-Wt 101.03) with each lot labeled with the abutter's name(s) and mailing address(es); or provide a list of abutters' names and mailing addresses to cross-reference with the tax map

Exemption: Abutter notification shall not be required for logging operations, minimum impact agricultural projects, projects in utility rights-of-way, or public highway construction. (Env-Wt 501.01(c))

Permission: If jurisdictional impacts occur within 20 feet of an abutting property line or imaginary extension thereof over surface water signed permission letter(s) from the affected abutters must be included with this application (Env-Wt 304.04). This letter must be notarized if your project is a boat docking facility (RSA 482-A:3-XIII(c)). Notarized abutter permission is not required for maintenance projects.

☒ I. **Need and Minimization & Avoidance** (Env-Wt 302.03, Env-Wt 302.04, 505.01)

Minimum: Attach statements demonstrating:

1. The need for the proposed project; and
2. That the proposal is the alternative with the least adverse impact to areas and environments under the department's jurisdiction.

-OR-

Minor & Major: Attach statements is response to the 20 questions in Attachment B

☒ J. **Mitigation**

Minor & Major Impact Projects ONLY: Does the project require compensatory mitigation? ☐Y ☐ N

Projects that require mitigation are listed in section Env-Wt 302.03. Mitigation requirements are outlined in Chapter Env-Wt 800 of the Wetland Rules Env-Wt 100-900 Link: http://des.nh.gov/organization/commissioner/legal/rules/index.htm#wetlands

If yes: Attach a completed Mitigation Agreement Form and materials outlined on the form (Env-Wt 501.02(a)(6) & 501.06)
Link: http://des.nh.gov/organization/divisions/water/wetlands/wmp/index.htm

10. PROPERTY OWNER SIGNATURE

By signing the application, I am certifying that:

1. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.
2. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.
3. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.
4. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.44.
5. I have submitted a copy of the application materials to the NH State Historic Preservation Officer.
   Link: http://www.nh.gov/nhdhr/review/
6. I authorize DES and the municipal conservation commission to inspect the site of the proposed project.
7. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.
8. I understand that the willful submission of falsified or misrepresented information to the New Hampshire Department of Environmental Services is a criminal act, which may result in legal action.
9. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
10. The mailing addresses I have provided are up to date and appropriate for receipt of DES correspondence. DES will not forward returned mail.

Sarah Allen Property Owner / Authorized Applicant / Authorized Agent	SARAH ALLEN Print name legibly	Dec 11, 2013 Date

Authorized applicant or agent signature acceptable with required property owner permission(s) in no. 3

11. APPLICATION SUBMITTAL DIRECTIONS FOR APPLICANT

1. If you are seeking expedited review, submit the original application form and accompanying items to the conservation commission for signature before submitting the application to the town/city clerk for mailing to DES. Standard review applications do NOT require conservation commission signature.
2. All applications require the original application form and accompanying items, with four copies, application fee and any required municipal fees (authorized by RSA 482-A:3,I) are submitted to the town/city clerk for their required signature and mailing via certified mail to DES. Municipal fees means an administrative fee not to exceed $10 plus the cost of postage by certified mail

12. CONSERVATION COMMISSION SIGNATURE: Required for Expedited review only

Expedited review ONLY requires that the conservation commission's signature is obtained in the space below. The conservation commission signature should be obtained prior to submitting the original application and attachments and four copies to the town/city clerk for mailing to the DES. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, then the application is not eligible for expedited review and the application will reviewed in the standard review time frame.

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.

X

Authorized Commission Signature	Print name legibly	Date

13. TOWN / CITY CLERK: All applications require this section to be completed by the Town/City Clerk

As required by Chapter 482-A:3 (amended 1991), I hereby certify that the applicant has filed five application forms, five detailed plans, and five USGS location maps with the town/city indicated below and I have received and retained certified postal receipts (or copies) for all abutters identified by the applicant.

X

Town/City Clerk Signature	Print name legibly	Date	Town/City

APPLICATION SUBMITTAL & MAILING DIRECTIONS FOR TOWN/CITY CLERK

Per RSA 482-A:3,I(d):

1. For applications where "Expedited Review" is checked on page 1, accept the application only if the Conservation Commission signature has been sought (Standard Review Applications do NOT require the Conservation Commission signature);
2. Collect from the applicant the postal receipts demonstrating that all abutters and the Local Advisory Committee were sent proper notice;
3. Collect any administrative fees, not to exceed $10 plus the cost of postage by certified mail (RSA 482-A:3,I).
4. IMMEDIATELY sign the original application and four copies in the signature space provided above;
5. Retain one copy of the application form and attachments that will remain with the town/city clerk and will be made reasonably accessible to the public;
6. IMMEDIATELY distribute a copy of the application with attachments to the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board in accordance with RSA 482-A:3, I; and
7. IMMEDIATELY send (DO NOT HOLD FOR OTHER MUNICIPAL REVIEWS) the original application form and attachments and filing fee, by CERTIFIED MAIL to the NHDES Wetlands Bureau at the address indicated on the front of this application.

Section 3.

Lease Agreements

Doc#: 739343
Book: 3139 Pages:0691 - 0702
06/26/2009 1:11PM

RETURN TO:
ORR & RENO, P.A.
1 EAGLE SQUARE
CONCORD, NH 03301

COPY

55.34
2

NOTICE OF WIND ENERGY LEASE AGREEMENT

NOTICE IS HEREBY GIVEN of a certain Wind Energy Lease Agreement by and between the parties identified in this Notice, of property owned by **H & H Investments, LLC** located in the Towns of Alexandria, Grafton and Orange in Grafton County and in the Town of Danbury in Merrimack County, as follows:

LESSORS:

H & H Investments, LLC
P.O. Box 129
Francestown, New Hampshire 03403

LESSEE:

Iberdrola Renewables USA, Ltd.
201 King of Prussia Road, Suite 500
Radnor, PA 19087

PREMISES: An exclusive lease to the use of a portion of the Landlord's land and improvements located in the Towns of Alexandria, Danbury, Grafton and Orange, in the counties of Grafton and Merrimack, New Hampshire, described in that certain Fiduciary Deed from Marilyn F. Serra, sole Trustee of the Declaration of Trust of Charles F. Trumpetto dated February 6, 2000, as amended, to H & H Investments, LLC, which deed is dated June 28, 2006 and recorded in the Merrimack County Registry of Deeds at Book 2910, Page 1262 and in the Grafton County Registry of Deeds at Book 3304, Page 183, said premises further identified on EXHIBIT A attached hereto.

TERM: The Development Period of the Lease shall be five (5) years with a renewal term of 2 years. The Extended Term of the Lease is twenty-five (25) years beginning on the Commencement of Construction as defined in the Lease, with two (2) renewals terms of ten (10) years each.

LESSORS:

H & H INVESTMENTS, LLC

By: ______________________
Donald H. Hardwick, Sr., Member
Duly authorized

By: ______________________
Teresa Hardwick, Member
Duly authorized

STATE OF NEW HAMPSHIRE
COUNTY OF HILLSBOROUGH

The foregoing instrument was acknowledged before me this 2nd day of JUNE 2009, by Donald H. Hardwick, Sr., a duly authorized Member of H & H Investments, LLC, a New Hampshire limited liability company, on behalf of the said company.

MARLENE MOSHER PAULSEN
MY COMMISSION EXPIRES MARCH 26, 2013

Marlene Mosher Paulsen
Notary Public/Justice of the Peace
Print Name: MARLEWE MOSHER PAULSEW
My Commission Expires: 03/26/2013

STATE OF NEW HAMPSHIRE
COUNTY OF HILLSBOROUGH

The foregoing instrument was acknowledged before me this 2nd day of JUNE 2009, by Teresa Hardwick, a duly authorized Member of H & H Investments, LLC, a New Hampshire limited liability company, on behalf of the said company.

Marlene Mosher Paulsen
Notary Public/Justice of the Peace
Print Name: MARLENE MOSHER PAULSEW
My Commission Expires: 03/26/2013

MARLENE MOSHER PAULSEN
MY COMMISSION EXPIRES MARCH 26, 2013

LESSEE:

IBERDROLA RENEWABLES USA, LTD.

LEGAL

By: ____________________
Name: David C Shadle
Title: Authorized Representative
Duly authorized

By: ____________________
Name: **Trevor Mihalik**
Title: **Authorized Representative**
Duly authorized

COMMONWEALTH/STATE OF Pennsylvania
COUNTY OF Delaware

The foregoing instrument was acknowledged before me this 8th day of June 2009, by David Shadle, a duly authorized Representative of Iberdrola Renewable Energies USA, a Delaware corporation, on behalf of the said corporation.

NOTARIAL SEAL
MARIA ROJAS
Notary Public
RADNOR TWP. DELAWARE COUNTY
My Commission Expires Nov 9, 2011

____
Notary Public/Justice of the Peace
Print Name: Maria Rojas
My Commission Expires: 11/9/11

COMMONWEALTH/STATE OF Oregon
COUNTY OF Multnomah

The foregoing instrument was acknowledged before me this 10th day of June 2009, by Trevor Mihalik, a duly authorized representative of Iberdrola Renewables USA, Ltd., a Delaware corporation, on behalf of the said corporation.

OFFICIAL SEAL
KATE O'CONNELL
NOTARY PUBLIC - OREGON
COMMISSION NO. 414502
MY COMMISSION EXPIRES FEB 21, 2011

Kate OConnell
Notary Public/Justice of the Peace
Print Name: Kate O'Connell
My Commission Expires: 02/21/2011

EXHIBIT A

TO
NOTICE OF WIND FARM LEASE AGREEMENT
BETWEEN
H&H INVESTMENTS, LLC
AND
IBERDROLA RENEWABLES USA, LTD.

DESCRIPTION OF PROPERTY

The Property is the land and improvements, together with all rights appurtenant thereto as described in the Lease, located in the Towns of Grafton, Danbury, Orange and Alexandria, New Hampshire described in that certain Fiduciary Deed from Marilyn F. Serra, sole Trustee of the Declaration of Trust of Charles F. Trumpetto dated February 6, 2000, as amended, to H&H Investments, LLC, which deed is dated June 28, 2006 and recorded in the Merrimack County Registry of Deeds at Book 2910, Page 1262 and the Grafton County Registry of Deeds at Book 3304, Page 183, and is described as follows:

"Picard Lot"

A certain tract of land, with the buildings thereon, situated in the "Wild Meadows" section of the Town of Grafton, Grafton County, State of New Hampshire, bounded and described as follows:

Southerly by the highway; westerly by land formerly owned by Daniel B. Smith and John Tinkham; northerly by land formerly known as the Williams Place; and easterly by land formerly owned by the heirs of Greeley Sulloway.

Excepting and reserving, to the extent that the same still exists, a certain right-of-way or right to a certain lane or cow path, over and across the northwesterly corner of the premises heretofore described.

"Brailey Lot"

Two certain tracts of land with the buildings thereon situated in Alexandria, Grafton County, State of New Hampshire, and bounded and described as follows, to wit:

Tract 1.

Beginning at a stone and iron stake at the Northwest corner of the within described tract, on the Easterly side of the highway leading from Grafton to Alexandria Four Corners, so-called, and on line of land of Edgar (Ned) Haynes; thence running Southeasterly on line of land of said Haynes two hundred twenty-one (221) feet to an iron stake on the Northerly line of the second tract herein described; thence Westerly along said second tract one hundred ninety-two (192) feet to the highway; thence Northerly along said highway seventy-nine (79) feet to the point of beginning. Meaning hereby to describe a triangular piece of land.

Tract 2.

Beginning at the Southwest corner of the within-described tract, on the Easterly side of the highway leading from Grafton to Alexandria Four Corners and on the Grafton-Alexandria Town Line, said Town Line also marking line of land formerly of Alfred Williams and now of the said Charles F. Trumpetto; thence running Northerly along said highway to the Southwest corner of the first tract herein described; thence Easterly along said first tract, and continuing on the same course along land of Edgar (Ned) Haynes to a maple tree standing in an old wire fence at the corner of land of said Haynes, land formerly of one Hodgdon, now of the Sulloway Heirs, and land formerly of Alfred Williams, subsequently of Charles F. Trumpetto; thence Southwesterly along land formerly of said Williams, subsequently of Trumpetto, to the Grafton-Alexandria Town Line; thence Westerly along said Town Line by land of said Trumpetto to the point of beginning. Excepting from said tract a parcel in the Southwest corner fronting 143 feet on the highway and 250 feet on the Town Line, sold to Ernest Gilman by deed recorded Lib. 882, Fol. 412.

"Danise Lots A"

The following described tracts of land with any improvements thereon in the Town of Alexandria in the County of Grafton, bounded and described as follows, to wit:

Beginning at the Southwesterly corner of lot 9; thence on the head or cross line of said lot to the Southerly corner of said lot, being 165 rods; thence North 13 Degrees West 28 rods on the side line of said lot; thence turning and running about 140 rods to strike a beech tree standing on the Westerly side of said lot 128 rods from the Southwesterly corner of said lot; thence South 13 degrees East on said westerly line to the said Southwesterly corner of said lot, being the bound begun at, excepting and reserving that part of said premises which was deeded to Isaac Bailey.

"Robbins Lots"

TRACTS IN GRAFTON

Certain tracts or parcels of land with any improvements thereon situated in Grafton in the County of Grafton and State of New Hampshire, bounded and described as follows:

TRACT #1: Bounded easterly by Danbury Town line; southerly and westerly by Wild Meadow Pond and land formerly owned by John Tinkham; westerly and northerly by the highway to the easterly line of Nicanor Heath place, so-called; northwesterly by land formerly owned by Nicanor Heath; and northerly by Williams place, so-called, and land formerly of John Tinkham to the Danbury Town line.

TRACT #2: Also another parcel or tract of land known as cow pasture and big woods, bounded and described as follows:

Beginning at the northeast corner, northerly by land formerly owned by D. B. Smith; westerly by land formerly owned by D. B. Smith and Greeley Sulloway Heirs and so-called Smiley lot; southerly by Putney place, so-called, and Dan Peters land, so-called; easterly by Dan Peters land, George Grant, and John Tinkham land to starting point.

TRACT #3: Also another parcel or tract of land known as Mountain Pasture, bounded and described as follows:

Beginning at northeast corner, easterly by land owned by Sulloway Heirs; southerly and westerly by Smiley lot; westerly by old highway; northerly by land formerly owned by D. B. Smith to first mentioned bound.

Excepting and reserving from Tract #2 described above that small portion thereof which was conveyed by G. Wesley Sulloway to Charles Swenson, et als, by deed dated May 14, 1954, and recorded in the Grafton County Registry of Deeds, Book 851, Page 264, to which deed reference is made for a more particular description of the premises hereby excepted and reserved.

TRACTS IN GRAFTON AND ALEXANDRIA

Certain parcels of land, together with all buildings thereon standing, situate in the Town of Grafton and Alexandria in the State of New Hampshire, bounded and described as follows:

Parcel 1. In the Town of Grafton, bounded on the North by land now or formerly of Randolph Lucas; on the East by land owned formerly by Sybil Smith and Daniel B. Smith; on the South by land formerly owned by James R. Smiley and Martin M. Powers; on the West by land owned now or formerly by Randolph Lucas, being all and the same premises conveyed to Gilbert W. Sulloway by the Town of Grafton by its deed dated February 16, 1942, and recorded in Book 704, Page 280.

Parcel 2. In the Towns of Grafton and Alexandria, being all and the same premises described in deed of Winnifred S. Gray, Gdn., to Gilbert W. Sulloway, under date of April 30, 1930, and recorded in Book 620, Page 226. See also deed of Gilbert W. Sulloway to Lucette L. Sulloway of an undivided one-half interest, recorded in Book 639, Page 585.

Parcel 3. In the Towns of Alexandria and Grafton, being described as two parcels, one being the northerly half of a fifty (50) acre lot in the Town of Alexandria, and the second parcel containing about one hundred (100) acres in the Town of Grafton, and being all and the same premises described in deed of Alfred J. Kidder to G. Wesley Sulloway, dated August 18, 1941, and recorded in Book 700, Page 177.

Parcel 4. In the Town of Grafton, being all and the same premises described in a Warranty Deed from Josephine M. Tinkham, widow of John W. Tinkham, and Anna G. Tinkham, et al. children and heirs-at-law of said John W. Tinkham to Gilbert W. Sulloway, dated June 12, 1917, and recorded in Book 523, Page 477, to which deed reference is hereby made and had. See also deed of Gilbert W. Sulloway to Lucette L. Sulloway of an undivided one-half interest, recorded in Book 639, Page 585.

Parcel 5. In the Town of Alexandria, being all and the same premises described in deed from the Town of Alexandria to G. W. Sulloway, dated January 31, 1940, and recorded in Book 688, Page 333.

Parcel 6. In the Town of Grafton, bounded as follows:

Northerly by land now or formerly of George Grant; easterly by land formerly owned by Sybil Smith; southerly by land formerly owned by Sybil Smith and land formerly owned by John Tinkham; westerly by land formerly owned by Daniel B. Smith, known as the Kemp land.

Excepting and reserving, however, from this conveyance the premises conveyed by said Sterling to Raymond W. Martin by deed dated April 25, 1956, and recorded in Grafton County Registry of Deeds, Book 879, Page 378, bounded and described as follows:

> "A certain tract of land with buildings thereon, situated in the Town of Grafton, County of Grafton and State of New Hampshire, and bounded and described as follows, to wit:
>
> Beginning at the brook and running in a northwesterly direction across the highway, along the stone wall to an iron pin in the wall; thence in a southeasterly direction along a stone wall to a yellow birch tree in the end of wall by the brook; thence in a southerly direction along the brook, crossing the highway to the first mentioned bound."

Also the rights to the well of the Dan Smith property, excepted and reserved from the aforementioned deed to Martin to the extent they remain in existence.

Also excepting and reserving from this conveyance the premises previously sold by Edward C. Sterling to Marie E. Landry, bounded and described approximately as follows:

> (For a more particular description, see deed in Book 913, Page 239.) A certain tract of land with the buildings thereon, situate in Grafton, County of Grafton and State of New Hampshire, bounded and described as follows, to wit:
>
> Located on the westerly side of the highway leading from East Grafton to Alexandria and known as the Wild Meadows Road. Beginning at an iron pin at the side of said highway thence running northerly about twelve hundred feet (1200') to another iron pin; thence westerly at a right angle to a third iron pin; thence southerly along a line parallel to the said highway, or roughly so, to a fourth iron pin; thence easterly at a right angle to the point of beginning.

TRACTS IN ORANGE

A certain tract of land, together with the buildings thereon, located in the Town of Orange, County of Grafton and State of New Hampshire, bounded and described as follows:

Commencing at the northerly corner at stake and stone; thence southerly by land now or formerly of Joseph French and one Nelson Gifford to stake and stones; thence easterly by land now or formerly of Sleeper Stevens to stake and stones; thence southerly by said Sleeper Stevens land to stake and stone; thence northerly by land now or formerly of Nelson Gifford and John Bullock to stake and stone; thence northerly by said John Bullock's land to Alexandria's new town line; thence northerly by said Alexandria's new town line to the Gore lot line; thence westerly by the said Gore lot line to point begun at. Being the property formerly owned by Thomas F. Brown and conveyed by will of Thomas F. Brown and heirs.

Also another parcel of land in said Orange, bounded and described as follows:

Commencing at the stake and stones which is the point of beginning of the parcel above described and running westerly by land now or formerly of Joseph French about 160 rods to a stake and stones; thence northerly by land now or formerly owned by William Chellis to stake and stones; thence easterly to a pile of stones at the top of the mountain; thence southerly by land now or formerly owned by Eugene Moore to the point begun at.

Excepting and reserving, however, that portion of the above-described premises estimated to contain one acre, more or less, conveyed by said Sulloways to Alfred B. Therrien, et als, by deed recorded December 3, 1954 at Vol. 857, Page 262, to which reference is made for a more particular description of said excepted portion.

"Brownell Lots"

Tract #3

Certain tracts or parcels of land situate in Alexandria, County of Grafton, and State of New Hampshire, bounded and described as follows:

A certain tract of land situated in said Alexandria bounded on the east by land now or formerly of Samuel A. Patten running to Danbury Corner; on the north by the Washburn Road, so-called, on the west by land now or formerly of S. Scott Patten; on the south running from Danbury Corner parallel with the Washburn Road.

Also a certain other tract of land situate in said Alexandria and bounded and described as follows:

A certain other tract of land on the southerly side of Washburn Road, so-called, and bounded and described as follows:

Northerly by the Washburn Road; easterly by the westerly line of land now or formerly of the General Electric Company, formerly George D. Patten; southerly by land formerly of Jonas Patten formerly known as the Place Farm; and westerly by land now or formerly of Amos Blake, formerly Samuel A. Patten, being the same land conveyed in two tracts one by John and Lovina Patten to Nellie Patten, January 11, 1881. The other by said Lovina Patten, George E. Patten and Mary A. Clough to Hadlet B. Patten, August 21, 1882.

Also a certain other tract of land situated in said Alexandria, bounded and described as follows:

Beginning at the northeast corner of land formerly of Amos A. Blake at the Washburn Road, so-called; thence southerly by said Blake land to land of Edward Blake; thence southwesterly to a stone monument at the town line between Alexandria and Danbury; thence northerly to said Washburn Road; thence easterly by said Road to the bound begun at.

There is excepted and reserved out of the above-described tracts of land the following two described parcels of land:

EXCEPTION NO. 1

A certain tract or parcel of land situated on the southerly side of Washburn Road, so-called, in Alexandria, County of Grafton, and State of New Hampshire, bounded and described as follows:

Beginning at a stake in the ground which is situated 180 feet, more or less, easterly of a "line" tree, blazed; and running thence in an easterly direction along the southerly side of said Washburn Road 400 feet, more or less, to a stake in the ground at other land of Stanley W. Fenerty; thence turning at an internal angle of 55° and running a southwesterly direction approximately 1000 feet to a stone post, which stone post marks the division line between Merrimack County and Grafton County, thence running along other land of Stanley W. Fenerty in a northwesterly direction a distance of approximately 850 feet to the post driven in the ground at the point of beginning.

Meaning and intending hereby to exclude a triangular strip of land which said strip is a part of the premises contained in the first tract of land described in deed of Fred C. Tobey to Stanley W. Fenerty dated April 30, 1959 and recorded in Book 927, Page 143 of Grafton County Registry of Deeds.

Said Exception No. 1 having been conveyed by Stanley W. Fenerty to Ronald A. Davis and Barbara W. Davis by deed dated December, 1966.

EXCEPTION NO. 2

Also a certain tract or parcel of land situated on the southerly side of Washburn Road, so-called, in said Alexandria, bounded and described as follows:

Beginning at the northeasterly corner of land of Ronald and Barbara Davis, above referred to, and at the northwesterly corner of the parcel herein conveyed and running thence in an easterly direction along the southerly side of Washburn Road, so-called, a distance of 100 feet, more or less, to a stake; thence in a southwesterly direction along land conveyed to Wilmer L. Brownell, et ux, to the northerly shore of Patten Brook, so-called; thence in a westerly direction along said Patten Brook 100 feet, more or less, to land of Ronald and Barbara Davis; thence in a northeasterly direction approximately 400 feet, more or less, along said Davis land to the point of beginning.

Meaning and intending hereby to exclude a portion of the premises acquired by Stanley W. Fenerty by Deed of Fred C. Tobey, Jr. dated April 30, 1959 and recorded in Grafton County Records, Book 927, Page 143.

EXCEPTING AND RESERVING therefrom a tract of 25 acres, more or less, conveyed by said Brownells to Robert G. Taylor and Marianna E. Taylor by deeds dated October 9, 1967 and recorded in the Grafton County Registry of Deeds, Book 1069, Page 302, to which reference is made for a more particular description.

Tract #4

A certain tract or parcel of land situated in the Town of Alexandria, in the County of Grafton and State of New Hampshire, bounded and described as follows, to wit:

Beginning at the south corner of the tract on the Danbury Town Line; thence northerly on said Danbury line eighty-five (85) rods to a stake and stones; thence south 65° east to a stake and stone standing on the easterly line of Jacob Patton land, now or formerly; thence southerly to bound begun at.

Also conveying as an appurtenance to the "Brownell Lots" a right-of-way by foot or with vehicle for purposes of ingress and egress over the Dicey Lot, so-called, from the Washburn Road, so-called.

EXCEPTING from the aforementioned "Brownell Lots" located in Alexandria, the following:

1) All of Tax Map 410, Lot 16-2, being a ten (10) acre lot, more or less, located at 1165 Washburn Road, Alexandria, New Hampshire; and

2) All of Tax Map 21, Lot 21-1, being a 7.1 acre lot, more or less situated on Washburn Road, Alexandria, New Hampshire.

"Robbins Lots"

TRACTS IN DANBURY

Certain tracts or parcels of land with any improvements thereon situated in Danbury in the County of Merrimack and State of New Hampshire, bounded and described as follows:

TRACT #1: Commencing at the Town line between Danbury and Grafton at the corner of land now or formerly of one Sulloway; thence northerly by said Town line to land now or formerly owned by Dexter Perkins; thence southerly by land now or formerly of said Perkins to the range line; thence southerly by the range line to land now or formerly owned by C. A. and G. M. Sulloway; thence northerly to the first mentioned bound, said premises being known as the old Tinkham place.

Reference is made to the deed from Florence E. Barrett to G. Wesley Sulloway dated August 23, 1957, duly recorded.

TRACT #2: Containing by estimate thirty acres, more or less, and bounded and described as follows: Bounded northerly and easterly by land supposed to be owned now or formerly by George W. Sawing of Grafton; southerly by the Hale Mountain pasture, so-called, and westerly by the highway leading to the Hopper, so called, in said Danbury.

TRACT #3: Commencing at a stake and stones at the North corner of said lot on the Grafton Town Line; thence South on the Grafton Town Line to land now or formerly owned by Sulloway Heirs; thence southeasterly on land of Sulloway Heirs to the old highway; thence northerly on said highway to the Tinkham land, so-called; thence northwesterly on said Tinkham land to the first mentioned bound.

TRACT #4: Bounded westerly by land now or formerly of Cyrus A. and the heirs of Gilbert M. Sulloway; northerly and easterly by land now or formerly of Cyrus A. Sulloway and the heirs of Gilbert M. Sulloway and W. Cornell; easterly by land now or formerly of said Cornell and land formerly of John C. Pillsbury; southerly and westerly by land formerly of said Pillsbury and land now or formerly of George S. Tenney, the premises known as the Eastman Place.

TRACT #5: Westerly by the Grafton Town line; thence northerly by the land of the Sulloway heirs to the Eastman Road, so-called; thence by said Eastman Road to land formerly owned by John W. Pillsbury; southerly and westerly by land now or formerly owned by Lewis M. Bean to point of beginning.

Reserving the Town Highway through the above-described premises formerly called the Hopper Road. Also reserving a mining right in the Sanborn Pasture, so-called.

TRACT #6: Westerly by the Grafton Town Line; southerly by land formerly owned by William H. Burleigh and land formerly owned by Lucien Follansbee; easterly and northerly by said Follansbee's land and land now or formerly owned by I. B. Sargent, Peter Kimball and Nicanor Heath.

"Brownell Lots"

Tract #1

Certain tracts or parcels of land situated in Danbury, County of Merrimack, State of New Hampshire and being Lot #10 and Lot #46 as said lots are shown and laid out on the original lay-out or plan of the Town of Danbury.

Tract #2

A certain tract of land situated in said Danbury, bounded and described as follows, to wit:

Commencing at the southeast corner of Lot No. 46, thence northerly on the east side line of said Lot No. 46 about forty (40) rods to a corner at stake and stones; thence westerly about eighty (80) rods on a straight line to a stake and stones standing on the west line of said lot and parallel with the east side line about forty (40) rods to the southerly line of said Lot No. 46; thence easterly along the south line of said lot eighty (80) rods (said south line supposed to be the range line) to the point of beginning.

Also all of the mineral or inning rights appurtenant to a certain tract of land situated in said Danbury, bounded and described as follows, to wit:

Easterly and northerly by the Alexandria Town Line, westerly land of Dan Braley and Catherine Braley; and southerly by the Rolf Lot, so-called; being known as the I. H. Bailey homestead and being the easterly half of Lot #10. Containing one hundred acres.

Reference is made to deed of Standard Mica to Errol Perkins dated February 19, 1914 and entered in Book 416, Page 133 of Merrimack County Records. Said mining rights were taken by said Town of Danbury for nonpayment of taxes owed by said Standard Mica Company for the years 1915, 1916, 1917 and 1918.

Also conveying as an appurtenance to the "Brownell Lots" a right-of-way by foot or with vehicle for purposes of ingress and egress over the Dicey Lot, so-called, from the Washburn Road, so-called.

For purposes of further clarification, Landowner and Lessee have attached a map as part of Exhibit A to the Lease showing the Property. In addition, the Landowner and Lessee have attached a map as part of Exhibit A showing the "no-build" area near Grants Pond in which Lessee shall not build any improvements.

Based upon the records available to them as of the date of the Lease, Landowner and Lessee have estimated that the portion of the Property which will be subject to the Lease upon the completion of the Windpower Facilities is comprised of that land commonly known as the following tax lots:

Town	Tax Map/Lot
Alexandria	410/16
Alexandria	410/18

Alexandria	416/13
Alexandria	416/14
Alexandria	416/4
Danbury	403/19
Danbury	403/20
Danbury	403/18
Danbury	401/1
Orange	4/18
Grafton	8/923
Grafton	8/923-1
Grafton	8/923-2
Grafton	7/106
Grafton	13/1235
Grafton	8/929

All defined terms in this Exhibit shall have the meaning set forth in the Lease.

RETURN TO:
ORR & RENO, P.A.
1 EAGLE SQUARE
CONCORD, NH 03301

$57.22

COPY

Doc # 0011347 Jul 17, 2009 1:26 PM
Register of Deeds, Grafton County

069

NOTICE OF WIND ENERGY LEASE AGREEMENT

NOTICE IS HEREBY GIVEN of a certain Wind Energy Lease Agreement by and between the parties identified in this Notice, of property owned by **H & H Investments, LLC** located in the Towns of Alexandria, Grafton and Orange in Grafton County and in the Town of Danbury in Merrimack County, as follows:

LESSORS:

H & H Investments, LLC
P.O. Box 129
Francestown, New Hampshire 03403

LESSEE:

Iberdrola Renewables USA, Ltd.
201 King of Prussia Road, Suite 500
Radnor, PA 19087

PREMISES: An exclusive lease to the use of a portion of the Landlord's land and improvements located in the Towns of Alexandria, Danbury, Grafton and Orange, in the counties of Grafton and Merrimack, New Hampshire, described in that certain Fiduciary Deed from Marilyn F. Serra, sole Trustee of the Declaration of Trust of Charles F. Trumpetto dated February 6, 2000, as amended, to H & H Investments, LLC, which deed is dated June 28, 2006 and recorded in the Merrimack County Registry of Deeds at Book 2910, Page 1262 and in the Grafton County Registry of Deeds at Book 3304, Page 183, said premises further identified on EXHIBIT A attached hereto.

TERM: The Development Period of the Lease shall be five (5) years with a renewal term of 2 years. The Extended Term of the Lease is twenty-five (25) years beginning on the Commencement of Construction as defined in the Lease, with two (2) renewals terms of ten (10) years each.

LESSORS:

H & H INVESTMENTS, LLC

By:____________________
Donald H. Hardwick, Sr., Member
Duly authorized

By:____________________
Teresa Hardwick, Member
Duly authorized

STATE OF NEW HAMPSHIRE
COUNTY OF HILLSBOROUGH

The foregoing instrument was acknowledged before me this 2nd day of JUNE 2009, by Donald H. Hardwick, Sr., a duly authorized Member of H & H Investments, LLC, a New Hampshire limited liability company, on behalf of the said company.

MARLENE MOSHER PAULSEN
MY COMMISSION EXPIRES MARCH 26, 2013

Marlene Mosher Paulsen
Notary Public/Justice of the Peace
Print Name: MARLENE MOSHER PAULSEN
My Commission Expires: 03/26/2013

STATE OF NEW HAMPSHIRE
COUNTY OF HILLSBOROUGH.

The foregoing instrument was acknowledged before me this 2nd day of JUNE 2009, by Teresa Hardwick, a duly authorized Member of H & H Investments, LLC, a New Hampshire limited liability company, on behalf of the said company.

Marlene Mosher Paulsen
Notary Public/Justice of the Peace
Print Name: MARLENE MOSHER PAULSEN
My Commission Expires: 03/26/2013

MARLENE MOSHER PAULSEN
MY COMMISSION EXPIRES MARCH 26, 2013

LESSEE:

IBERDROLA RENEWABLES USA, LTD.

LEGAL IN

By:
Name: David C Shadle
Title: Authorized Representative
Duly authorized

By:
Name: **Trevor Mihalik**
Title: **Authorized Representative**
Duly authorized

COMMONWEALTH/STATE OF Pennsylvania
COUNTY OF Delaware

The foregoing instrument was acknowledged before me this 8th day of June 2009, by David C Shadle, a duly authorized Representative of Iberdrola Renewable Energies, a Delaware corporation, on behalf of the said corporation.

NOTARIAL SEAL
MARIA ROJAS
Notary Public
RADNOR TWP, DELAWARE COUNTY
My Commission Expires Nov 9, 2011

Notary Public/Justice of the Peace
Print Name: Maria Rojas
My Commission Expires: 11/9/11

COMMONWEALTH/STATE OF Oregon
COUNTY OF Multnomah

The foregoing instrument was acknowledged before me this 10th day of June 2009, by Trevor Mihalik, a duly authorized representative of Iberdrola Renewables USA, Ltd, a Delaware corporation, on behalf of the said corporation.

OFFICIAL SEAL
KATE O'CONNELL
NOTARY PUBLIC - OREGON
COMMISSION NO. 414502
MY COMMISSION EXPIRES FEB 21, 2011

Kate Oconnell
Notary Public/~~Justice of the Peace~~
Print Name: Kate O'Connell
My Commission Expires: 02/21/2011

EXHIBIT A

TO
NOTICE OF WIND FARM LEASE AGREEMENT
BETWEEN
H&H INVESTMENTS, LLC
AND
IBERDROLA RENEWABLES USA, LTD.

DESCRIPTION OF PROPERTY

The Property is the land and improvements, together with all rights appurtenant thereto as described in the Lease, located in the Towns of Grafton, Danbury, Orange and Alexandria, New Hampshire described in that certain Fiduciary Deed from Marilyn F. Serra, sole Trustee of the Declaration of Trust of Charles F. Trumpetto dated February 6, 2000, as amended, to H&H Investments, LLC, which deed is dated June 28, 2006 and recorded in the Merrimack County Registry of Deeds at Book 2910, Page 1262 and the Grafton County Registry of Deeds at Book 3304, Page 183, and is described as follows:

"Picard Lot"

A certain tract of land, with the buildings thereon, situated in the "Wild Meadows" section of the Town of Grafton, Grafton County, State of New Hampshire, bounded and described as follows:

Southerly by the highway; westerly by land formerly owned by Daniel B. Smith and John Tinkham; northerly by land formerly known as the Williams Place; and easterly by land formerly owned by the heirs of Greeley Sulloway.

Excepting and reserving, to the extent that the same still exists, a certain right-of-way or right to a certain lane or cow path, over and across the northwesterly corner of the premises heretofore described.

"Brailey Lot"

Two certain tracts of land with the buildings thereon situated in Alexandria, Grafton County, State of New Hampshire, and bounded and described as follows, to wit:

Tract 1.

Beginning at a stone and iron stake at the Northwest corner of the within described tract, on the Easterly side of the highway leading from Grafton to Alexandria Four Corners, so-called, and on line of land of Edgar (Ned) Haynes; thence running Southeasterly on line of land of said Haynes two hundred twenty-one (221) feet to an iron stake on the Northerly line of the second tract herein described; thence Westerly along said second tract one hundred ninety-two (192) feet to the highway; thence Northerly along said highway seventy-nine (79) feet to the point of beginning. Meaning hereby to describe a triangular piece of land.

Tract 2.

Beginning at the Southwest corner of the within-described tract, on the Easterly side of the highway leading from Grafton to Alexandria Four Corners and on the Grafton-Alexandria Town Line, said Town Line also marking line of land formerly of Alfred Williams and now of the said Charles F. Trumpetto; thence running Northerly along said highway to the Southwest corner of the first tract herein described; thence Easterly along said first tract, and continuing on the same course along land of Edgar (Ned) Haynes to a maple tree standing in an old wire fence at the corner of land of said Haynes, land formerly of one Hodgdon, now of the Sulloway Heirs, and land formerly of Alfred Williams, subsequently of Charles F. Trumpetto; thence Southwesterly along land formerly of said Williams, subsequently of Trumpetto, to the Grafton-Alexandria Town Line; thence Westerly along said Town Line by land of said Trumpetto to the point of beginning. Excepting from said tract a parcel in the Southwest corner fronting 143 feet on the highway and 250 feet on the Town Line, sold to Ernest Gilman by deed recorded Lib. 882, Fol. 412.

"Danise Lots A"

The following described tracts of land with any improvements thereon in the Town of Alexandria in the County of Grafton, bounded and described as follows, to wit:

Beginning at the Southwesterly corner of lot 9; thence on the head or cross line of said lot to the Southerly corner of said lot, being 165 rods; thence North 13 Degrees West 28 rods on the side line of said lot; thence turning and running about 140 rods to strike a beech tree standing on the Westerly side of said lot 128 rods from the Southwesterly corner of said lot; thence South 13 degrees East on said westerly line to the said Southwesterly corner of said lot, being the bound begun at, excepting and reserving that part of said premises which was deeded to Isaac Bailey.

"Robbins Lots"

TRACTS IN GRAFTON

Certain tracts or parcels of land with any improvements thereon situated in Grafton in the County of Grafton and State of New Hampshire, bounded and described as follows:

TRACT #1: Bounded easterly by Danbury Town line; southerly and westerly by Wild Meadow Pond and land formerly owned by John Tinkham; westerly and northerly by the highway to the easterly line of Nicanor Heath place, so-called; northwesterly by land formerly owned by Nicanor Heath; and northerly by Williams place, so-called, and land formerly of John Tinkham to the Danbury Town line.

TRACT #2: Also another parcel or tract of land known as cow pasture and big woods, bounded and described as follows:

Beginning at the northeast corner, northerly by land formerly owned by D. B. Smith; westerly by land formerly owned by D. B. Smith and Greeley Sulloway Heirs and so-called Smiley lot; southerly by Putney place, so-called, and Dan Peters land, so-called; easterly by Dan Peters land, George Grant, and John Tinkham land to starting point.

TRACT #3: Also another parcel or tract of land known as Mountain Pasture, bounded and described as follows:

Beginning at northeast corner, easterly by land owned by Sulloway Heirs; southerly and westerly by Smiley lot; westerly by old highway; northerly by land formerly owned by D. B. Smith to first mentioned bound.

Excepting and reserving from Tract #2 described above that small portion thereof which was conveyed by G. Wesley Sulloway to Charles Swenson, et als, by deed dated May 14, 1954, and recorded in the Grafton County Registry of Deeds, Book 851, Page 264, to which deed reference is made for a more particular description of the premises hereby excepted and reserved.

TRACTS IN GRAFTON AND ALEXANDRIA

Certain parcels of land, together with all buildings thereon standing, situate in the Town of Grafton and Alexandria in the State of New Hampshire, bounded and described as follows:

Parcel 1. In the Town of Grafton, bounded on the North by land now or formerly of Randolph Lucas; on the East by land owned formerly by Sybil Smith and Daniel B. Smith; on the South by land formerly owned by James R. Smiley and Martin M. Powers; on the West by land owned now or formerly by Randolph Lucas, being all and the same premises conveyed to Gilbert W. Sulloway by the Town of Grafton by its deed dated February 16, 1942, and recorded in Book 704, Page 280.

Parcel 2. In the Towns of Grafton and Alexandria, being all and the same premises described in deed of Winnifred S. Gray, Gdn., to Gilbert W. Sulloway, under date of April 30, 1930, and recorded in Book 620, Page 226. See also deed of Gilbert W. Sulloway to Lucette L. Sulloway of an undivided one-half interest, recorded in Book 639, Page 585.

Parcel 3. In the Towns of Alexandria and Grafton, being described as two parcels, one being the northerly half of a fifty (50) acre lot in the Town of Alexandria, and the second parcel containing about one hundred (100) acres in the Town of Grafton, and being all and the same premises described in deed of Alfred J. Kidder to G. Wesley Sulloway, dated August 18, 1941, and recorded in Book 700, Page 177.

Parcel 4. In the Town of Grafton, being all and the same premises described in a Warranty Deed from Josephine M. Tinkham, widow of John W. Tinkham, and Anna G. Tinkham, et al. children and heirs-at-law of said John W. Tinkham to Gilbert W. Sulloway, dated June 12, 1917, and recorded in Book 523, Page 477, to which deed reference is hereby made and had. See also deed of Gilbert W. Sulloway to Lucette L. Sulloway of an undivided one-half interest, recorded in Book 639, Page 585.

Parcel 5. In the Town of Alexandria, being all and the same premises described in deed from the Town of Alexandria to G. W. Sulloway, dated January 31, 1940, and recorded in Book 688, Page 333.

Parcel 6. In the Town of Grafton, bounded as follows:

Northerly by land now or formerly of George Grant; easterly by land formerly owned by Sybil Smith; southerly by land formerly owned by Sybil Smith and land formerly owned by John Tinkham; westerly by land formerly owned by Daniel B. Smith, known as the Kemp land.

Excepting and reserving, however, from this conveyance the premises conveyed by said Sterling to Raymond W. Martin by deed dated April 25, 1956, and recorded in Grafton County Registry of Deeds, Book 879, Page 378, bounded and described as follows:

> "A certain tract of land with buildings thereon, situated in the Town of Grafton, County of Grafton and State of New Hampshire, and bounded and described as follows, to wit:
>
> Beginning at the brook and running in a northwesterly direction across the highway, along the stone wall to an iron pin in the wall; thence in a southeasterly direction along a stone wall to a yellow birch tree in the end of wall by the brook; thence in a southerly direction along the brook, crossing the highway to the first mentioned bound."

Also the rights to the well of the Dan Smith property, excepted and reserved from the aforementioned deed to Martin to the extent they remain in existence.

Also excepting and reserving from this conveyance the premises previously sold by Edward C. Sterling to Marie E. Landry, bounded and described approximately as follows:

> (For a more particular description, see deed in Book 913, Page 239.) A certain tract of land with the buildings thereon, situate in Grafton, County of Grafton and State of New Hampshire, bounded and described as follows, to wit:
>
> Located on the westerly side of the highway leading from East Grafton to Alexandria and known as the Wild Meadows Road. Beginning at an iron pin at the side of said highway thence running northerly about twelve hundred feet (1200') to another iron pin; thence westerly at a right angle to a third iron pin; thence southerly along a line parallel to the said highway, or roughly so, to a fourth iron pin; thence easterly at a right angle to the point of beginning.

TRACTS IN ORANGE

A certain tract of land, together with the buildings thereon, located in the Town of Orange, County of Grafton and State of New Hampshire, bounded and described as follows:

Commencing at the northerly corner at stake and stone; thence southerly by land now or formerly of Joseph French and one Nelson Gifford to stake and stones; thence easterly by land now or formerly of Sleeper Stevens to stake and stones; thence southerly by said Sleeper Stevens land to stake and stone; thence northerly by land now or formerly of Nelson Gifford and John Bullock to stake and stone; thence northerly by said John Bullock's land to Alexandria's new town line; thence northerly by said Alexandria's new town line to the Gore lot line; thence westerly by the said Gore lot line to point begun at. Being the property formerly owned by Thomas F. Brown and conveyed by will of Thomas F. Brown and heirs.

Also another parcel of land in said Orange, bounded and described as follows:

Commencing at the stake and stones which is the point of beginning of the parcel above described and running westerly by land now or formerly of Joseph French about 160 rods to a stake and stones; thence northerly by land now or formerly owned by William Chellis to stake and stones; thence easterly to a pile of stones at the top of the mountain; thence southerly by land now or formerly owned by Eugene Moore to the point begun at.

Excepting and reserving, however, that portion of the above-described premises estimated to contain one acre, more or less, conveyed by said Sulloways to Alfred B. Therrien, et als, by deed recorded December 3, 1954 at Vol. 857, Page 262, to which reference is made for a more particular description of said excepted portion.

"Brownell Lots"

Tract #3

Certain tracts or parcels of land situate in Alexandria, County of Grafton, and State of New Hampshire, bounded and described as follows:

A certain tract of land situated in said Alexandria bounded on the east by land now or formerly of Samuel A. Patten running to Danbury Corner; on the north by the Washburn Road, so-called, on the west by land now or formerly of S. Scott Patten; on the south running from Danbury Corner parallel with the Washburn Road.

Also a certain other tract of land situate in said Alexandria and bounded and described as follows:

A certain other tract of land on the southerly side of Washburn Road, so-called, and bounded and described as follows:

Northerly by the Washburn Road; easterly by the westerly line of land now or formerly of the General Electric Company, formerly George D. Patten; southerly by land formerly of Jonas Patten formerly known as the Place Farm; and westerly by land now or formerly of Amos Blake, formerly Samuel A. Patten, being the same land conveyed in two tracts one by John and Lovina Patten to Nellie Patten, January 11, 1881. The other by said Lovina Patten, George E. Patten and Mary A. Clough to Hadlet B. Patten, August 21, 1882.

Also a certain other tract of land situated in said Alexandria, bounded and described as follows:

Beginning at the northeast corner of land formerly of Amos A. Blake at the Washburn Road, so-called; thence southerly by said Blake land to land of Edward Blake; thence southwesterly to a stone monument at the town line between Alexandria and Danbury; thence northerly to said Washburn Road; thence easterly by said Road to the bound begun at.

There is excepted and reserved out of the above-described tracts of land the following two described parcels of land:

EXCEPTION NO. 1

A certain tract or parcel of land situated on the southerly side of Washburn Road, so-called, in Alexandria, County of Grafton, and State of New Hampshire, bounded and described as follows:

Beginning at a stake in the ground which is situated 180 feet, more or less, easterly of a "line" tree, blazed; and running thence in an easterly direction along the southerly side of said Washburn Road 400 feet, more or less, to a stake in the ground at other land of Stanley W. Fenerty; thence turning at an internal angle of 55° and running a southwesterly direction approximately 1000 feet to a stone post, which stone post marks the division line between Merrimack County and Grafton County, thence running along other land of Stanley W. Fenerty in a northwesterly direction a distance of approximately 850 feet to the post driven in the ground at the point of beginning.

Meaning and intending hereby to exclude a triangular strip of land which said strip is a part of the premises contained in the first tract of land described in deed of Fred C. Tobey to Stanley W. Fenerty dated April 30, 1959 and recorded in Book 927, Page 143 of Grafton County Registry of Deeds.

Said Exception No. 1 having been conveyed by Stanley W. Fenerty to Ronald A. Davis and Barbara W. Davis by deed dated December, 1966.

EXCEPTION NO. 2

Also a certain tract or parcel of land situated on the southerly side of Washburn Road, so-called, in said Alexandria, bounded and described as follows:

Beginning at the northeasterly corner of land of Ronald and Barbara Davis, above referred to, and at the northwesterly corner of the parcel herein conveyed and running thence in an easterly direction along the southerly side of Washburn Road, so-called, a distance of 100 feet, more or less, to a stake; thence in a southwesterly direction along land conveyed to Wilmer L. Brownell, et ux, to the northerly shore of Patten Brook, so-called; thence in a westerly direction along said Patten Brook 100 feet, more or less, to land of Ronald and Barbara Davis; thence in a northeasterly direction approximately 400 feet, more or less, along said Davis land to the point of beginning.

Meaning and intending hereby to exclude a portion of the premises acquired by Stanley W. Fenerty by Deed of Fred C. Tobey, Jr. dated April 30, 1959 and recorded in Grafton County Records, Book 927, Page 143.

EXCEPTING AND RESERVING therefrom a tract of 25 acres, more or less, conveyed by said Brownells to Robert G. Taylor and Marianna E. Taylor by deeds dated October 9, 1967 and recorded in the Grafton County Registry of Deeds, Book 1069, Page 302, to which reference is made for a more particular description.

Tract #4

A certain tract or parcel of land situated in the Town of Alexandria, in the County of Grafton and State of New Hampshire, bounded and described as follows, to wit:

Beginning at the south corner of the tract on the Danbury Town Line; thence northerly on said Danbury line eighty-five (85) rods to a stake and stones; thence south 65° east to a stake and stone standing on the easterly line of Jacob Patton land, now or formerly; thence southerly to bound begun at.

Also conveying as an appurtenance to the "Brownell Lots" a right-of-way by foot or with vehicle for purposes of ingress and egress over the Dicey Lot, so-called, from the Washburn Road, so-called.

EXCEPTING from the aforementioned "Brownell Lots" located in Alexandria, the following:

1) All of Tax Map 410, Lot 16-2, being a ten (10) acre lot, more or less, located at 1165 Washburn Road, Alexandria, New Hampshire; and

2) All of Tax Map 21, Lot 21-1, being a 7.1 acre lot, more or less situated on Washburn Road, Alexandria, New Hampshire.

"Robbins Lots"

TRACTS IN DANBURY

Certain tracts or parcels of land with any improvements thereon situated in Danbury in the County of Merrimack and State of New Hampshire, bounded and described as follows:

TRACT #1: Commencing at the Town line between Danbury and Grafton at the corner of land now or formerly of one Sulloway; thence northerly by said Town line to land now or formerly owned by Dexter Perkins; thence southerly by land now or formerly of said Perkins to the range line; thence southerly by the range line to land now or formerly owned by C. A. and G. M. Sulloway; thence northerly to the first mentioned bound, said premises being known as the old Tinkham place.

Reference is made to the deed from Florence E. Barrett to G. Wesley Sulloway dated August 23, 1957, duly recorded.

TRACT #2: Containing by estimate thirty acres, more or less, and bounded and described as follows: Bounded northerly and easterly by land supposed to be owned now or formerly by George W. Sawing of Grafton; southerly by the Hale Mountain pasture, so-called, and westerly by the highway leading to the Hopper, so called, in said Danbury.

TRACT #3: Commencing at a stake and stones at the North corner of said lot on the Grafton Town Line; thence South on the Grafton Town Line to land now or formerly owned by Sulloway Heirs; thence southeasterly on land of Sulloway Heirs to the old highway; thence northerly on said highway to the Tinkham land, so-called; thence northwesterly on said Tinkham land to the first mentioned bound.

TRACT #4: Bounded westerly by land now or formerly of Cyrus A. and the heirs of Gilbert M. Sulloway; northerly and easterly by land now or formerly of Cyrus A. Sulloway and the heirs of Gilbert M. Sulloway and W. Cornell; easterly by land now or formerly of said Cornell and land formerly of John C. Pillsbury; southerly and westerly by land formerly of said Pillsbury and land now or formerly of George S. Tenney, the premises known as the Eastman Place.

TRACT #5: Westerly by the Grafton Town line; thence northerly by the land of the Sulloway heirs to the Eastman Road, so-called; thence by said Eastman Road to land formerly owned by John W. Pillsbury; southerly and westerly by land now or formerly owned by Lewis M. Bean to point of beginning.

Reserving the Town Highway through the above-described premises formerly called the Hopper Road. Also reserving a mining right in the Sanborn Pasture, so-called.

TRACT #6: Westerly by the Grafton Town Line; southerly by land formerly owned by William H. Burleigh and land formerly owned by Lucien Follansbee; easterly and northerly by said Follansbee's land and land now or formerly owned by I. B. Sargent, Peter Kimball and Nicanor Heath.

"Brownell Lots"

Tract #1

Certain tracts or parcels of land situated in Danbury, County of Merrimack, State of New Hampshire and being Lot #10 and Lot #46 as said lots are shown and laid out on the original lay-out or plan of the Town of Danbury.

Tract #2

A certain tract of land situated in said Danbury, bounded and described as follows, to wit:

Commencing at the southeast corner of Lot No. 46, thence northerly on the east side line of said Lot No. 46 about forty (40) rods to a corner at stake and stones; thence westerly about eighty (80) rods on a straight line to a stake and stones standing on the west line of said lot and parallel with the east side line about forty (40) rods to the southerly line of said Lot No. 46; thence easterly along the south line of said lot eighty (80) rods (said south line supposed to be the range line) to the point of beginning.

Also all of the mineral or inning rights appurtenant to a certain tract of land situated in said Danbury, bounded and described as follows, to wit:

Easterly and northerly by the Alexandria Town Line, westerly land of Dan Braley and Catherine Braley; and southerly by the Rolf Lot, so-called; being known as the I. H. Bailey homestead and being the easterly half of Lot #10. Containing one hundred acres.

Reference is made to deed of Standard Mica to Errol Perkins dated February 19, 1914 and entered in Book 416, Page 133 of Merrimack County Records. Said mining rights were taken by said Town of Danbury for nonpayment of taxes owed by said Standard Mica Company for the years 1915, 1916, 1917 and 1918.

Also conveying as an appurtenance to the "Brownell Lots" a right-of-way by foot or with vehicle for purposes of ingress and egress over the Dicey Lot, so-called, from the Washburn Road, so-called.

For purposes of further clarification, Landowner and Lessee have attached a map as part of Exhibit A to the Lease showing the Property. In addition, the Landowner and Lessee have attached a map as part of Exhibit A to the Lease showing the "no-build" area near Grants Pond in which Lessee shall not build any improvements.

Based upon the records available to them as of the date of the Lease, Landowner and Lessee have estimated that the portion of the Property that will be subject to the Lease upon the completion of the Windpower Facilities is comprised of that land commonly known as the following tax lots:

Town	**Tax Map/Lot**
Alexandria	410/16
Alexandria	410/18

Alexandria	416/13
Alexandria	416/14
Alexandria	416/4
Danbury	403/19
Danbury	403/20
Danbury	403/18
Danbury	401/1
Orange	4/18
Grafton	8/923
Grafton	8/923-1
Grafton	8/923-2
Grafton	7/106
Grafton	13/1235
Grafton	8/929

All defined terms in this Exhibit shall have the meaning set forth in the Lease.

Doc#: 739344
Book: 3139 Pages: 0703 – 0716
06/26/2009 1:11PM

MCRD Book 3139 Page 703

COPY

Recording requested by,
and after recording, return to:

Iberdrola Renewables, Inc.
1125 NW Couch, Suite 700
Portland, OR 97209
Attention: Toan Nguyen

069

63,834
2

Doc # 0011348 Jul 17, 2009 1:26 PM
Register of Deeds, Grafton County

LT1-2-739344-1

LT2-3139-703-14

(Space above this line for Recorder's use only)

NONDISTURBANCE AND ATTORNMENT AGREEMENT

THIS NONDISTURBANCE AND ATTORNMENT AGREEMENT (this "**Agreement**") is made, dated and effective as of JUNE 2, 2009 (the "**Effective Date**"), by and among H&H Investments, LLC ("**Owner**"), whose address is 1580 Bennington Road, P.O. Box 129, Francestown, NH 03043, the owner of the real property located in Merrimack and Grafton Counties, State of New Hampshire and described in Exhibit A attached hereto and incorporated herein by this reference (the "**Property**"), **D.H. Hardwick & Sons, Inc.** ("**Timber Right Holder**"), whose address is 301 Francestown Road, Bennington NH 03442 (*Mailing: P.O. Box 430, Antrim, NH 03440*), and Iberdrola Renewables USA, Ltd., a Delaware Corporation ("**Iberdrola**"), whose address is 1125 NW Couch, Suite 700, Portland, Oregon 97209, the Lessee under that Wind Energy Lease Agreement dated JUNE 2, 2009, hereinafter described.

WITNESSETH

WHEREAS, Owner and Iberdrola entered into a Wind Energy Lease Agreement with an effective date of JUNE 2, 2009 (the "**Agreement**"); and

WHEREAS, Timber Right Holder is the grantee in two Fiduciary Deeds (one in Merrimack County Registry of Deeds at Book 2910, Page 1277 and one in Grafton County Registry of Deeds at Book 3304, Page 0152) both recorded on July 14, 2006, which transfer timber rights, forest products and other rights from the previous owner "Trust of Charles F. Trumpetto".

NOW, THEREFORE, in consideration of the foregoing and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and of the mutual benefits to accrue to the parties hereto, it is hereby declared, understood and agreed as follows:

1. Timber Right Holder hereby (i) consents to the Agreement, which Agreement is hereby incorporated herein by this reference, for the purposes stated therein, and (ii) agrees that (a) Timber Right Holder shall recognize the Agreement and the rights of Iberdrola, its successors, lessees or assigns thereunder, and Iberdrola's possession of the Property and rights under the Agreement shall not be

diminished or interfered with by Timber Right Holder or its successors or assigns, (b) so long as the Agreement is in full force and effect and Iberdrola (or its successor in interest) is not in material default under the Agreement beyond any applicable cure period, Timber Right Holder will not join Iberdrola as a party defendant in any action or proceeding foreclosing the Timber Contract against the Property unless such joinder is necessary to foreclose the Timber Contract as to the rights of any one or more third parties and then only for such purpose and not for the purpose or with the effect of terminating or limiting the Agreement and that foreclosure or other enforcement of the Timber Contract will not terminate the Agreement entered into pursuant thereto as to any such real property or disturb the rights of Iberdrola or its successors, lessees, or assigns under the Agreement, (c) the Agreement shall survive any foreclosure of, or forfeiture under, the Timber Contract or under any other lien held by Timber Right Holder affecting the Property or any interest therein, and (d) in the event Timber Right Holder or any other purchaser at a foreclosure or trustee's sale succeeds to the interest of Owner in the Property and under the Agreement by reason of any foreclosure of the Timber Contract or the acceptance by Timber Right Holder of a deed in lieu of foreclosure, or by any other manner, it is agreed that the Property shall remain subject to the Agreement and that Timber Right Holder or such other purchaser shall be bound to Iberdrola, and Iberdrola shall attorn to and be bound to Timber Right Holder or such other purchaser rather than Owner under all of the terms, covenants and conditions of the Agreement for the remaining balance of the term thereof, including any extensions therein provided, with the same force and effect as if Timber Right Holder or such other purchaser were the "Owner" under the Agreement. The foregoing agreement shall be effective and self-operating without the execution of any further instruments on the part of any of the parties to this Agreement, immediately upon Timber Right Holder or such other purchaser succeeding to the interest of Owner under the Agreement.

2. Timber Right Holder, in the event of attornment, shall have the same remedies in the event of any default by Iberdrola (beyond any period given Iberdrola to cure such default) in the payment of annual base rent or additional rent or in the performance of any of the terms, covenants, and conditions of the Agreement on Iberdrola's part to be performed that are available to Owner under the Agreement. Iberdrola shall have the same remedies against Timber Right Holder for the breach of an agreement contained in the Agreement that Iberdrola might have had against Owner if Timber Right Holder had not succeeded to the interest of Owner.

3. Owner, as landlord under the Agreement, acknowledges and agrees for itself and it heirs, successors, and assigns to each of the following:

(a) This Agreement does not in any way release Owner from its obligations to comply with the terms, provisions, conditions, covenants, agreements, and clauses of the Timber Contract or any other documents executed in connection with the Timber Contract.

(b) In the event of a default under the Timber Contract, or any of the other documents executed in connection with the Timber Contract, Owner hereby consents to Iberdrola's attornment to Timber Right Holder and, upon such event, following written notice to Iberdrola from Timber Right Holder of such default upon which Iberdrola shall be entitled to conclusively rely, Iberdrola shall pay all rent and all other sums due under the Agreement to Timber Right Holder as provided in the Agreement. All sums so paid shall be credited against the rent and such other sums as may be payable under the Agreement, and Iberdrola shall have no liability to Owner for paying the same to Timber Right Holder.

4. This Agreement shall be governed by and construed in accordance with the laws of the State of Oregon.

5. The agreements contained herein shall run with the land and shall be binding upon and inure to the benefit of the parties hereto and the respective heirs, administrators, executors, legal representatives, successors and assigns of the parties hereto.

6. This Agreement constitutes the entire understanding and agreement of the parties as to the matters set forth in this Agreement. No alteration of or amendment to this Agreement shall be effective unless given in writing and signed by the party or parties sought to be charged or bound by the alteration or amendment.

7. Any person who signs this Agreement on behalf of Owner, Timber Right Holder and Iberdrola represents and warrants that he or she has authority to execute this Agreement.

8. This Agreement may be executed simultaneously or in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same Agreement.

9. Should any action or proceeding be commenced to enforce any of the provisions of this Agreement or in connection with its meaning, the prevailing party in such action shall be awarded, in addition to any other relief it may obtain, its reasonable costs and expenses, not limited to taxable costs, and reasonable attorney's fees.

10. The parties hereby adopt and incorporate into this Agreement fully the Recitals set forth above.

IN WITNESS WHEREOF, the undersigned have executed this Agreement as of the Effective Date.

TIMBER RIGHT HOLDER:

By: Donald H Hardwick SR. Pres
Printed Name: D. H. HARDWICK & SONS, INC
Title: PRESIDENT

OWNER:

By: Donald H Hardwick Mem
Printed Name: H & H INVESTMENTS, LLC
Title: MEMBER

IBERDROLA:

LEGAL
TN

By:
Printed Name: David C Shadle
Title: Authorized Representative

By:
Printed Name: Trevor Mihalik
Title: Authorized Representative

STATE OF NEW HAMPSHIRE)
)ss.
COUNTY OF HILLSBOROUGH)

This instrument was acknowledged before me JUNE 2, 2009, by DONALD H. HARDWICK, SR, Member of Hardwick & Sons, on its behalf.

Marlene Mosher Paulsen
Notary Public
My commission expires: 03/26/2013
Commission No.:

MARLENE MOSHER PAULSEN

STATE OF NEW HAMPSHIRE)
)ss.
COUNTY OF HILLSBOROUGH)

This instrument was acknowledged before me JUNE 2009, by DONALD H. HARDWICK, SR., Member of H&H Investments, LLC, on its behalf.

Marlene Mosher Paulsen
Notary Public
My commission expires: 03/26/2013
Commission No.:

MARLENE MOSHER PAULSEN

Commonwealth of Pennsylvania
~~STATE OF OREGON~~)
)ss.
COUNTY OF ~~MULTNOMAH~~ Delaware)

This instrument was acknowledged before me June 8, 2009, by David C. Shadle and , Authorized Representatives of Iberdrola Renewables USA, Ltd., a Delaware corporation, on its behalf.

Notary Public
My commission expires: 11/9/11
Commission No.:

NOTARIAL SEAL
MARIA ROJAS
Notary Public
RADNOR TWP, DELAWARE COUNTY
My Commission Expires Nov 9, 2011

INDIVIDUAL ACKNOWLEDGMENT

State/Commonwealth of Oregon }
County of Multnomah } ss.

On this the 10th (Day) day of June (Month), 2009 (Year), before me, Kate O'Connell (Name of Notary Public), the undersigned Notary Public, personally appeared Trevor Mihalik (Name(s) of Signer(s)),

☑ personally known to me – **OR** –

☐ proved to me on the basis of satisfactory evidence

to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same for the purposes therein stated.

OFFICIAL SEAL
KATE O'CONNELL
NOTARY PUBLIC - OREGON
COMMISSION NO. 414502
MY COMMISSION EXPIRES FEB 21, 2011

WITNESS my hand and official seal.

Kate O'Connell
Signature of Notary Public

Kate O'Connell
Other Required Information (Printed Name of Notary, Residence, etc.)

Place Notary Seal and/or Any Stamp Above

OPTIONAL

Although the information in this section is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

Right Thumbprint of Signer
Top of thumb here

Description of Attached Document

Title or Type of Document: Wind Energy Lease Agreement

Document Date: ____________ Number of Pages: ____________

Signer(s) Other Than Named Above: David Schadle, Donald Hardwick, Teresa Hardwick

EXHIBIT A

Description of Property

That certain real property situated in Merrimack and Grafton Counties, State of New Hampshire, more particularly described as:

"Picard Lot"

A certain tract of land, with the buildings thereon, situated in the "Wild Meadows" section of the Town of Grafton, Grafton County, State of New Hampshire, bounded and described as follows:

Southerly by the highway; westerly by land formerly owned by Daniel B. Smith and John Tinkham; northerly by land formerly known as the Williams Place; and easterly by land formerly owned by the heirs of Greeley Sulloway.

Excepting and reserving, to the extent that the same still exists, a certain right-of-way or right to a certain lane or cow path, over and across the northwesterly corner of the premises heretofore described.

"Brailey Lot"

Two certain tracts of land with the buildings thereon situated in Alexandria, Grafton County, State of New Hampshire, and bounded and described as follows, to wit:

Tract 1.

Beginning at a stone and iron stake at the Northwest corner of the within described tract, on the Easterly side of the highway leading from Grafton to Alexandria Four Corners, so-called, and on line of land of Edgar (Ned) Haynes; thence running Southeasterly on line of land of said Haynes two hundred twenty-one (221) feet to an iron stake on the Northerly line of the second tract herein described; thence Westerly along said second tract one hundred ninety-two (192) feet to the highway; thence Northerly along said highway seventy-nine (79) feet to the point of beginning. Meaning hereby to describe a triangular piece of land.

Tract 2.

Beginning at the Southwest corner of the within-described tract, on the Easterly side of the highway leading from Grafton to Alexandria Four Corners and on the Grafton-Alexandria Town Line, said Town Line also marking line of land formerly of Alfred Williams and now of the said Charles F. Trumpetto; thence running Northerly along said highway to the Southwest corner of the first tract herein described; thence Easterly along said first tract, and continuing on the same course along land of Edgar (Ned) Haynes to a maple tree standing in an old wire fence at the corner of land of said Haynes, land formerly of one Hodgdon, now of the Sulloway Heirs, and land formerly of Alfred Williams, subsequently of Charles F. Trumpetto; thence Southwesterly along land formerly of said Williams, subsequently of Trumpetto, to the Grafton-Alexandria

Town Line; thence Westerly along said Town Line by land of said Trumpetto to the point of beginning. Excepting from said tract a parcel in the Southwest corner fronting 143 feet on the highway and 250 feet on the Town Line, sold to Ernest Gilman by deed recorded Lib. 882, Fol. 412.

"Danise Lots A"

The following described tracts of land with any improvements thereon in the Town of Alexandria in the County of Grafton, bounded and described as follows, to wit:

Beginning at the Southwesterly corner of lot 9; thence on the head or cross line of said lot to the Southerly corner of said lot, being 165 rods; thence North 13 Degrees West 28 rods on the side line of said lot; thence turning and running about 140 rods to strike a beech tree standing on the Westerly side of said lot 128 rods from the Southwesterly corner of said lot; thence South 13 degrees East on said westerly line to the said Southwesterly corner of said lot, being the bound begun at, excepting and reserving that part of said premises which was deeded to Isaac Bailey.

"Robbins Lots"

TRACTS IN GRAFTON

Certain tracts or parcels of land with any improvements thereon situated in Grafton in the County of Grafton and State of New Hampshire, bounded and described as follows:

TRACT #1: Bounded easterly by Danbury Town line; southerly and westerly by Wild Meadow Pond and land formerly owned by John Tinkham; westerly and northerly by the highway to the easterly line of Nicanor Heath place, so-called; northwesterly by land formerly owned by Nicanor Heath; and northerly by Williams place, so-called, and land formerly of John Tinkham to the Danbury Town line.

TRACT #2: Also another parcel or tract of land known as cow pasture and big woods, bounded and described as follows:

Beginning at the northeast corner, northerly by land formerly owned by D. B. Smith; westerly by land formerly owned by D. B. Smith and Greeley Sulloway Heirs and so-called Smiley lot; southerly by Putney place, so-called, and Dan Peters land, so-called; easterly by Dan Peters land, George Grant, and John Tinkham land to starting point.

TRACT #3: Also another parcel or tract of land known as Mountain Pasture, bounded and described as follows:

Beginning at northeast corner, easterly by land owned by Sulloway Heirs; southerly and westerly by Smiley lot; westerly by old highway; northerly by land formerly owned by D. B. Smith to first mentioned bound.

Excepting and reserving from Tract #2 described above that small portion thereof which was conveyed by G. Wesley Sulloway to Charles Swenson, et als, by deed dated May 14, 1954, and recorded in the Grafton County Registry of Deeds, Book 851, Page 264, to which deed reference is made for a more particular description of the premises hereby excepted and reserved.

TRACTS IN GRAFTON AND ALEXANDRIA

Certain parcels of land, together with all buildings thereon standing, situate in the Town of Grafton and Alexandria in the State of New Hampshire, bounded and described as follows:

Parcel 1. In the Town of Grafton, bounded on the North by land now or formerly of Randolph Lucas; on the East by land owned formerly by Sybil Smith and Daniel B. Smith; on the South by land formerly owned by James R. Smiley and Martin M. Powers; on the West by land owned now or formerly by Randolph Lucas, being all and the same premises conveyed to Gilbert W. Sulloway by the Town of Grafton by its deed dated February 16, 1942, and recorded in Book 704, Page 280.

Parcel 2. In the Towns of Grafton and Alexandria, being all and the same premises described in deed of Winnifred S. Gray, Gdn., to Gilbert W. Sulloway, under date of April 30, 1930, and recorded in Book 620, Page 226. See also deed of Gilbert W. Sulloway to Lucette L. Sulloway of an undivided one-half interest, recorded in Book 639, Page 585.

Parcel 3. In the Towns of Alexandria and Grafton, being described as two parcels, one being the northerly half of a fifty (50) acre lot in the Town of Alexandria, and the second parcel containing about one hundred (100) acres in the Town of Grafton, and being all and the same premises described in deed of Alfred J. Kidder to G. Wesley Sulloway, dated August 18, 1941, and recorded in Book 700, Page 177.

Parcel 4. In the Town of Grafton, being all and the same premises described in a Warranty Deed from Josephine M. Tinkham, widow of John W. Tinkham, and Anna G. Tinkham, et al. children and heirs-at-law of said John W. Tinkham to Gilbert W. Sulloway, dated June 12, 1917, and recorded in Book 523, Page 477, to which deed reference is hereby made and had. See also deed of Gilbert W. Sulloway to Lucette L. Sulloway of an undivided one-half interest, recorded in Book 639, Page 585.

Parcel 5. In the Town of Alexandria, being all and the same premises described in deed from the Town of Alexandria to G. W. Sulloway, dated January 31, 1940, and recorded in Book 688, Page 333.

Parcel 6. In the Town of Grafton, bounded as follows:

Northerly by land now or formerly of George Grant; easterly by land formerly owned by Sybil Smith; southerly by land formerly owned by Sybil Smith and land formerly owned by John Tinkham; westerly by land formerly owned by Daniel B. Smith, known as the Kemp land.

Excepting and reserving, however, from this conveyance the premises conveyed by said Sterling to Raymond W. Martin by deed dated April 25, 1956, and recorded in Grafton County Registry of Deeds, Book 879, Page 378, bounded and described as follows:

> "A certain tract of land with buildings thereon, situated in the Town of Grafton, County of Grafton and State of New Hampshire, and bounded and described as follows, to wit:
>
> Beginning at the brook and running in a northwesterly direction across the highway, along the stone wall to an iron pin in the wall; thence in a southeasterly direction along a stone wall to a yellow birch tree in the end of wall by the brook; thence in a southerly direction along the brook, crossing the highway to the first mentioned bound."

Also the rights to the well of the Dan Smith property, excepted and reserved from the aforementioned deed to Martin to the extent they remain in existence.

Also excepting and reserving from this conveyance the premises previously sold by Edward C. Sterling to Marie E. Landry, bounded and described approximately as follows:

> (For a more particular description, see deed in Book 913, Page 239.) A certain tract of land with the buildings thereon, situate in Grafton, County of Grafton and State of New Hampshire, bounded and described as follows, to wit:
>
> Located on the westerly side of the highway leading from East Grafton to Alexandria and known as the Wild Meadows Road. Beginning at an iron pin at the side of said highway thence running northerly about twelve hundred feet (1200') to another iron pin; thence westerly at a right angle to a third iron pin; thence southerly along a line parallel to the said highway, or roughly so, to a fourth iron pin; thence easterly at a right angle to the point of beginning.

TRACTS IN ORANGE

A certain tract of land, together with the buildings thereon, located in the Town of Orange, County of Grafton and State of New Hampshire, bounded and described as follows:

Commencing at the northerly corner at stake and stone; thence southerly by land now or formerly of Joseph French and one Nelson Gifford to stake and stones; thence easterly by land now or formerly of Sleeper Stevens to stake and stones; thence southerly by said Sleeper Stevens land to stake and stone; thence northerly by land now or formerly of Nelson Gifford and John Bullock to stake and stone; thence northerly by said John Bullock's land to Alexandria's new town line; thence northerly by said Alexandria's new town line to the Gore lot line; thence westerly by the said Gore lot line to point begun at. Being the property formerly owned by Thomas F. Brown and conveyed by will of Thomas F. Brown and heirs.

Also another parcel of land in said Orange, bounded and described as follows:

Commencing at the stake and stones which is the point of beginning of the parcel above described and running westerly by land now or formerly of Joseph French about 160 rods to a stake and stones; thence northerly by land now or formerly owned by William Chellis to stake and stones; thence easterly to a pile of stones at the top of the mountain; thence southerly by land now or formerly owned by Eugene Moore to the point begun at.

Excepting and reserving, however, that portion of the above-described premises estimated to contain one acre, more or less, conveyed by said Sulloways to Alfred B. Therrien, et als, by deed recorded December 3, 1954 at Vol. 857, Page 262, to which reference is made for a more particular description of said excepted portion.

"Brownell Lots"

Tract #3

Certain tracts or parcels of land situate in Alexandria, County of Grafton, and State of New Hampshire, bounded and described as follows:

A certain tract of land situated in said Alexandria bounded on the east by land now or formerly of Samuel A. Patten running to Danbury Corner; on the north by the Washburn Road, so-called, on the west by land now or formerly of S. Scott Patten; on the south running from Danbury Corner parallel with the Washburn Road.

Also a certain other tract of land situate in said Alexandria and bounded and described as follows:

A certain other tract of land on the southerly side of Washburn Road, so-called, and bounded and described as follows:

Northerly by the Washburn Road; easterly by the westerly line of land now or formerly of the General Electric Company, formerly George D. Patten; southerly by land formerly of Jonas Patten formerly known as the Place Farm; and westerly by land now or formerly of Amos Blake, formerly Samuel A. Patten, being the same land conveyed in two tracts one by John and Lovina Patten to Nellie Patten, January 11, 1881. The other by said Lovina Patten, George E. Patten and Mary A. Clough to Hadlet B. Patten, August 21, 1882.

Also a certain other tract of land situated in said Alexandria, bounded and described as follows:

Beginning at the northeast corner of land formerly of Amos A. Blake at the Washburn Road, so-called; thence southerly by said Blake land to land of Edward Blake; thence southwesterly to a stone monument at the town line between Alexandria and Danbury; thence northerly to said Washburn Road; thence easterly by said Road to the bound begun at.

There is excepted and reserved out of the above-described tracts of land the following two described parcels of land:

EXCEPTION NO. 1

A certain tract or parcel of land situated on the southerly side of Washburn Road, so-called, in Alexandria, County of Grafton, and State of New Hampshire, bounded and described as follows:

Beginning at a stake in the ground which is situated 180 feet, more or less, easterly of a "line" tree, blazed; and running thence in an easterly direction along the southerly side of said Washburn Road 400 feet, more or less, to a stake in the ground at other land of Stanley W. Fenerty; thence turning at an internal angle of 55° and running a southwesterly direction approximately 1000 feet to a stone post, which stone post marks the division line between Merrimack County and Grafton County, thence running along other land of Stanley W. Fenerty in a northwesterly direction a distance of approximately 850 feet to the post driven in the ground at the point of beginning.

Meaning and intending hereby to exclude a triangular strip of land which said strip is a part of the premises contained in the first tract of land described in deed of Fred C. Tobey to Stanley W. Fenerty dated April 30, 1959 and recorded in Book 927, Page 143 of Grafton County Registry of Deeds.

Said Exception No. 1 having been conveyed by Stanley W. Fenerty to Ronald A. Davis and Barbara W. Davis by deed dated December, 1966.

EXCEPTION NO. 2

Also a certain tract or parcel of land situated on the southerly side of Washburn Road, so-called, in said Alexandria, bounded and described as follows:

Beginning at the northeasterly corner of land of Ronald and Barbara Davis, above referred to, and at the northwesterly corner of the parcel herein conveyed and running thence in an easterly direction along the southerly side of Washburn Road, so-called, a distance of 100 feet, more or less, to a stake; thence in a southwesterly direction along land conveyed to Wilmer L. Brownell, et ux, to the northerly shore of Patten Brook, so-called; thence in a westerly direction along said Patten Brook 100 feet, more or less, to land of Ronald and Barbara Davis; thence in a northeasterly direction approximately 400 feet, more or less, along said Davis land to the point of beginning.

Meaning and intending hereby to exclude a portion of the premises acquired by Stanley W. Fenerty by Deed of Fred C. Tobey, Jr. dated April 30, 1959 and recorded in Grafton County Records, Book 927, Page 143.

EXCEPTING AND RESERVING therefrom a tract of 25 acres, more or less, conveyed by said Brownells to Robert G. Taylor and Marianna E. Taylor by deeds dated October 9, 1967 and recorded in the Grafton County Registry of Deeds, Book 1069, Page 302, to which reference is made for a more particular description.

Tract #4

A certain tract or parcel of land situated in the Town of Alexandria, in the County of Grafton and State of New Hampshire, bounded and described as follows, to wit:

Beginning at the south corner of the tract on the Danbury Town Line; thence northerly on said Danbury line eighty-five (85) rods to a stake and stones; thence south 65° east to a stake and stone standing on the easterly line of Jacob Patton land, now or formerly; thence southerly to bound begun at.

Also conveying as an appurtenance to the "Brownell Lots" a right-of-way by foot or with vehicle for purposes of ingress and egress over the Dicey Lot, so-called, from the Washburn Road, so-called.

EXCEPTING from the aforementioned "Brownell Lots" located in Alexandria, the following:

1) All of Tax Map 410, Lot 16-2, being a ten (10) acre lot, more or less, located at 1165 Washburn Road, Alexandria, New Hampshire; and

2) All of Tax Map 21, Lot 21-1, being a 7.1 acre lot, more or less situated on Washburn Road, Alexandria, New Hampshire.

"Robbins Lots"

TRACTS IN DANBURY

Certain tracts or parcels of land with any improvements thereon situated in Danbury in the County of Merrimack and State of New Hampshire, bounded and described as follows:

TRACT #1: Commencing at the Town line between Danbury and Grafton at the corner of land now or formerly of one Sulloway; thence northerly by said Town line to land now or formerly owned by Dexter Perkins; thence southerly by land now or formerly of said Perkins to the range line; thence southerly by the range line to land now or formerly owned by C. A. and G. M. Sulloway; thence northerly to the first mentioned bound, said premises being known as the old Tinkham place.

Reference is made to the deed from Florence E. Barrett to G. Wesley Sulloway dated August 23, 1957, duly recorded.

TRACT #2: Containing by estimate thirty acres, more or less, and bounded and described as follows: Bounded northerly and easterly by land supposed to be owned now or formerly by George W. Sawing of Grafton; southerly by the Hale Mountain pasture, so-called, and westerly by the highway leading to the Hopper, so called, in said Danbury.

TRACT #3: Commencing at a stake and stones at the North corner of said lot on the Grafton Town Line; thence South on the Grafton Town Line to land now or formerly owned by Sulloway

Heirs; thence southeasterly on land of Sulloway Heirs to the old highway; thence northerly on said highway to the Tinkham land, so-called; thence northwesterly on said Tinkham land to the first mentioned bound.

TRACT #4: Bounded westerly by land now or formerly of Cyrus A. and the heirs of Gilbert M. Sulloway; northerly and easterly by land now or formerly of Cyrus A. Sulloway and the heirs of Gilbert M. Sulloway and W. Cornell; easterly by land now or formerly of said Cornell and land formerly of John C. Pillsbury; southerly and westerly by land formerly of said Pillsbury and land now or formerly of George S. Tenney, the premises known as the Eastman Place.

TRACT #5: Westerly by the Grafton Town line; thence northerly by the land of the Sulloway heirs to the Eastman Road, so-called; thence by said Eastman Road to land formerly owned by John W. Pillsbury; southerly and westerly by land now or formerly owned by Lewis M. Bean to point of beginning.

Reserving the Town Highway through the above-described premises formerly called the Hopper Road. Also reserving a mining right in the Sanborn Pasture, so-called.

TRACT #6: Westerly by the Grafton Town Line; southerly by land formerly owned by William H. Burleigh and land formerly owned by Lucien Follansbee; easterly and northerly by said Follansbee's land and land now or formerly owned by I. B. Sargent, Peter Kimball and Nicanor Heath.

"Brownell Lots"

Tract #1

Certain tracts or parcels of land situated in Danbury, County of Merrimack, State of New Hampshire and being Lot #10 and Lot #46 as said lots are shown and laid out on the original layout or plan of the Town of Danbury.

Tract #2

A certain tract of land situated in said Danbury, bounded and described as follows, to wit:

Commencing at the southeast corner of Lot No. 46, thence northerly on the east side line of said Lot No. 46 about forty (40) rods to a corner at stake and stones; thence westerly about eighty (80) rods on a straight line to a stake and stones standing on the west line of said lot and parallel with the east side line about forty (40) rods to the southerly line of said Lot No. 46; thence easterly along the south line of said lot eighty (80) rods (said south line supposed to be the range line) to the point of beginning.

Also all of the mineral or inning rights appurtenant to a certain tract of land situated in said Danbury, bounded and described as follows, to wit:

Easterly and northerly by the Alexandria Town Line, westerly land of Dan Braley and Catherine Braley; and southerly by the Rolf Lot, so-called; being known as the I. H. Bailey homestead and being the easterly half of Lot #10. Containing one hundred acres.

Reference is made to deed of Standard Mica to Errol Perkins dated February 19, 1914 and entered in Book 416, Page 133 of Merrimack County Records. Said mining rights were taken by said Town of Danbury for nonpayment of taxes owed by said Standard Mica Company for the years 1915, 1916, 1917 and 1918.

Also conveying as an appurtenance to the "Brownell Lots" a right-of-way by foot or with vehicle for purposes of ingress and egress over the Dicey Lot, so-called, from the Washburn Road, so-called.

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05/20/2013 1:44 PM Pages: 4
REGISTER OF DEEDS, GRAFTON COUNTY

Kelley J Monahan

E-276

NOTICE OF SECOND AMENDMENT TO WIND ENERGY LEASE AGREEMENT

NOTICE IS HEREBY GIVEN of a certain Second Amendment to Wind Energy Lease Agreement by and between the parties identified in this Notice dated as of May 10, 2013 ("Second Amendment"), of property owned by **H & H Investments, LLC** located in the Town of Grafton, Grafton County, New Hampshire, as follows:

LESSORS:

H & H Investments, LLC
P.O. Box 519
Antrim, New Hampshire 03440

LESSEE:

Atlantic Wind, LLC, an Oregon limited liability company, as successor in interest to Iberdrola Renewables USA, Ltd., a Delaware corporation
Two Radnor Corporate Center, Suite 200
100 Matsonford Road
Radnor, Pennsylvania 19087

PREMISES:

An exclusive lease to the use of a portion of the Landlord's land and improvements located in the Town of Grafton, Grafton County, New Hampshire described in that certain deed from Sandra Pierson and Nathan Coronis to H & H Investments, LLC, which deed is dated February 4, 2013 and recorded in the Grafton County Registry of Deeds at Book 3955, Page 695. The premises in the above-named deed is further identified on EXHIBIT A attached to this Notice.

TERM:

The Development Period of the Second Amendment shall be the same as that under the Wind Energy Lease dated June 8, 2009 (Notice of which is recorded in the Grafton County Registry of Deeds at Book 3629, Page 814, and the Merrimack County Registry of Deeds at Book 3139, Page 702), five (5) years with a renewal term of 2 years. The Extended Term of the Lease is twenty-five (25) years beginning on the Commencement of Construction as defined in the Lease, with two (2) renewals terms of ten (10) years each.

LESSORS:

H & H INVESTMENTS, LLC

By:________________________

Teresa J. Hardwick, Member
Duly authorized

STATE OF NEW HAMPSHIRE
COUNTY OF Hillsborough

The foregoing instrument was acknowledged before me this 24th day of April 2013, by Teresa J. Hardwick, a duly authorized Member of H & H Investments, LLC, a New Hampshire limited liability company, on behalf of the said company.

Kristie LaPlante
Notary Public/Justice of the Peace
Print Name: Kristie LaPlante
My Commission Expires:

KRISTIE J. LAPLANTE, Notary Public
My Commission Expires March 24, 2015

LESSEE:

ATLANTIC WIND, LLC

By:____________________
Name: Rany Raviv
Title: Authorized Representative
Duly authorized

By:____________________
Name: Mark Epstein
Title: Authorized Representative
Duly authorized

COMMONWEALTH/STATE OF Oregon
COUNTY OF Multnomah

The foregoing instrument was acknowledged before me this 10th day of May 2013, by Rany Raviv, a duly authorized Representative of Atlantic Wind, LLC, on behalf of the said limited liability company.

OFFICIAL SEAL
AHNYAH D KRUMMENACKER
NOTARY PUBLIC-OREGON
COMMISSION NO. 463239
MY COMMISSION EXPIRES NOVEMBER 01, 2015

Ahnyah D. Krummenacker
Notary Public/Justice of the Peace
Print Name: Ahnyah D. Krummenacker
My Commission Expires: November 1, 2015

COMMONWEALTH/~~STATE~~ OF PA
COUNTY OF Delaware

The foregoing instrument was acknowledged before me this 8 day of May 2013, by Mark Epstein, a duly authorized Representative of Atlantic Wind, LLC, on behalf of the said limited liability company.

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
JAMIE WHITE, Notary Public
Radnor Twp., Delaware County
My Commission Expires September 26, 2015

Notary Public/~~Justice of the Peace~~
Print Name: Jamie White
My Commission Expires: 9-26-15

EXHIBIT A

TO
SECOND AMENDMENT TO WIND ENERGY LEASE AGREEMENT
BETWEEN
H&H INVESTMENTS, LLC
AND
ATLANTIC WIND, LLC
DESCRIPTION OF PROPERTY

A certain tract or parcel of land, with any improvements thereon, located in the Town of Grafton, County of Grafton and State of New Hampshire, situated off of Gifford Road and shown on the Town of Grafton Tax Map Parcel, Map 7, Lot #1168 (.9 acre more or less).

Meaning and intending to describe the property conveyed to H & H Investments, LLC by deed of Sandra Pierson and Nathan Coronis, which deed is dated February 4, 2013 and recorded in the Grafton County Registry of Deeds at Book 3955, Page 695.

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3930-0974
11/08/2012 12:47 PM Pages: 6
REGISTER OF DEEDS, GRAFTON COUNTY

Kelley J Monahan

RETURN TO:
PIERCE ATWOOD LLP
MERRILL'S WHARF
254 COMMERCIAL STREET
PORTLAND, ME 04101

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NOTICE OF WIND ENERGY LEASE AGREEMENT

NOTICE IS HEREBY GIVEN of a certain Wind Energy Lease Agreement by and between the parties identified in this Notice, of property owned by **Michael B. Oeschger** located in the Town of Alexandria in Grafton County, New Hampshire, as follows:

LESSORS:
Michael B. Oeschger
380 Lakeview Heights
Alexandria, NH 03222

LESSEE:
Atlantic Wind LLC
Two Radnor Corporate Center, Suite 200
100 Matsonford Road
Radnor, PA 19087

PREMISES: An exclusive lease to the use of a portion of the Lessors' land and improvements located in the Town of Alexandria, in the County of Grafton, New Hampshire, described in that certain Warranty Deed from Hendrik Houthakker to Helen S. Kaye and Michael B. Oeschger, which deed is dated June 1, 2001 and recorded in the Grafton County Registry of Deeds at Book 2545, Page 503, said premises further identified on EXHIBIT A attached hereto.

TERM: The Development Period of the Lease shall be four (4) years with a renewal term of one (1) year. The Extended Term of the Lease is twenty-five (25) years beginning on the Commencement of Construction as defined in the Lease, with two (2) renewal terms of ten (10) years each.

LESSORS:

Michael B. Oeschger

STATE OF NEW HAMPSHIRE
COUNTY OF Grafton

On Oct 1, 2012 personally appeared the above-named Michael B. Oeschger and acknowledged the foregoing instrument to be his free act and deed.

Ann M. Rominger
Notary Public/Justice of the Peace
Print Name: Ann M. Rominger
My Commission Expires:

ANN M ROMINGER
Notary Public, New Hampshire
My Commission Expires Oct 22, 2013

LESSEE:

ATLANTIC WIND LLC

By:____________________
Name: Rany Raviv
Title: Authorized Representative
Duly authorized

By:____________________
Name: Mark Epstein
Title: Authorized Representative
Duly authorized

COMMONWEALTH/STATE OF Oregon
COUNTY OF Multnomah

The foregoing instrument was acknowledged before me this 26 day of October 2012, by Rany Raviv, a duly authorized Representative of Atlantic Wind LLC, an Oregon limited liability company, on behalf of said Atlantic Wind LLC.

OFFICIAL SEAL
AHNYAH D KRUMMENACKER
NOTARY PUBLIC-OREGON
COMMISSION NO. 463239
MY COMMISSION EXPIRES NOVEMBER 01, 2015

Ahnyah D. Krummenacker
Notary Public/~~Justice of the Peace~~
Print Name: Ahnyah D. Krummenacker
My Commission Expires: November 1, 2015

COMMONWEALTH/~~STATE OF~~ Pennsylvania
COUNTY OF Delaware

The foregoing instrument was acknowledged before me this 16 day of Oct. 2012, by Mark Epstein, a duly authorized Authorized Rep of Atlantic Wind LLC, an Oregon limited liability company, on behalf of said Atlantic Wind LLC.

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
JAMIE WHITE, Notary Public
Radnor Twp., Delaware County
My Commission Expires September 26, 2015

Notary Public/~~Justice of the Peace~~
Print Name: Jamie White
My Commission Expires: 9-26-15

EXHIBIT A

Legal Description

Certain land and premises located in the Town of Alexandria, County of Grafton and State of New Hampshire and described as follows:

Being Lot 15, containing 682 acres, more or less, as depicted on a survey map entitled "Lands of A. James Grace, Estate Lots, Eastman Hill Road, Alexandria, New Hampshire" dated September 20, 1988 with a revision dated February 1, 1989, drawn by Courcelle Surveying Company and recorded as Plan No. 5507 in the Grafton County Registry of Deeds, and further described as follows:

Beginning at an 8" blazed Spruce tree marking the northeasterly corner of the conveyed land and premises and the southeasterly corner of Lot No. 14;

Thence running S 07° 15' E a distance of 1997.0 feet crossing Eastman Hill Road along lands now or formerly of Stefaniak Gardner to a stone monument;

Thence following a crooked blazed line S 03° 30' W a distance of 3087.5 feet crossing an existing wood road along lands now or formerly of Stone to a stone monument;

Thence S 07° 30' E a distance of 2210.5 feet, as per Howard survey crossing an existing wood road along the lands now or formerly of Patten Corporation to a stone monument;

Thence turning and running S 57° 00' W a distance of 2229.0 feet crossing Pine Hill Brook to a stone monument;

Thence S 55° 00' W a distance of 1113.0 feet to a stone monument;

Thence S 54° 30' W a distance of 1131.0 feet to a 12" blazed Spruce tree marking the southwesterly corner of the within conveyed lands;

Thence turning and running N 05° 15' W a distance of 7659.5 feet, more or less, along lands now or formerly of Yorkshire Timber to an unmarked boundary point;

Thence turning and running N 62° 45' E a distance of 4550.0 feet along Lot No. 14 and crossing Eastman Hill Road to the point and place of beginning.

Said parcel to contain 682 acres, more or less.

The above described lands and premises are subject to such other easements and rights-of-way of record as may affect them.

There is also a right-of-way herein conveyed to the Grantee from said tract over land and bounded and described as follows:

Beginning at an intersection of Eastman Hill Road and Newfound Hills Road and thence proceeding easterly and southerly along Newfound Hills Road following courses depicted on a Plan entitled "Subdivision of a portion of lands of A. James Grace Newfound Hills, Alexandria, New Hampshire" prepared by Courcelle Surveying Company, dated November 7, 1988, with revision dates of January 5, 1989 and February 1, 1989 and recorded in the Grafton County Registry of Deeds as Plan No. 5508, to a point, said point is located in the centerline of said Newfound Hills Road being N 69° 04' 45" W a distance of 25.0 feet from an iron pin marking the northerly corner of Lot No. 3 of the before-mentioned subdivision;

Thence following an existing wood road, more or less, in the following courses:

S 20° 55' 15" W a distance of 126.76 feet to a point;

S 17° 29' 15" W a distance of 145.37 feet to the P.C. of a curve to the right;

Thence following the curve to the right with a radius of 294.71 feet and arc distance of 125.32 feet to a point;

Thence following a curve to the left with a radius of 331.81 feet and an arc distance of 154.45 feet to a point;

Thence following a curve to the right with a radius of 205.82 feet and an arc distance of 200.53 feet to a point;

Thence following a curve to the left with a radius of 475.18 feet and an arc distance of 71.81 feet to a point;

Thence following a curve to the right with a radius of 191.35 feet and an arc distance of 127.41 feet to a point;

Thence N 82° 00' 15" W a distance of 256.05 feet to a point;

Thence N 70° 42' 00" W a distance of 81.85 feet to a point marking the intersection of two existing wood roads;

Thence S 15° 23' 45" E a distance of 124.23 feet to a point;

Thence S 30° 21' 45" E a distance of 143.07 feet to a point marking the P.C. of a curve;

Thence following a curve to the right with a radius of 46.00 feet and an arc distance of 64.11 feet to a point;

Thence S 49° 29' 15" W a distance of 185.51 feet to a point;

Thence S 53° 13' 00" W a distance of 197.60 feet to a point;

Thence S 47° 46’ 00” W a distance of 66.10 feet to a point located N 58° 31’ 30” W a distance of 24.55 feet from a marked 8” Spruce tree.

The above described Right-Of-Way is to be 25 feet on each side of the above described centerline.

Section 9.B

USACE Secondary Impacts

US Army Corps
of Engineers ®
New England District

Programmatic General Permit (PGP)
Appendix B - Required Information and Corps Secondary Impacts Checklist

In order for the Corps of Engineers to properly evaluate your application, applicants must submit the following information along with the DES Wetlands Bureau application or permit notification forms. Some projects may require more information. For a more comprehensive checklist, go to www.nae.usace.army.mil/regulatory, "Forms/Publications" and then "Application and Plan Guideline Checklist." Check with the Corps at (978) 318-8832 for project-specific requirements. For your convenience, this Appendix B is also attached to the State of New Hampshire DES Wetlands Bureau application and Permit by Notification forms.

All Projects:

- Corps application form (ENG Form 4345) as appropriate.
- Photographs of wetland/waterway to be impacted.
- Purpose of the project.
- Legible, reproducible black and white (no color) plans no larger than 11"x17" with bar scale. Provide locus map and plan views of the entire property.
- Typical cross-section views of all wetland and waterway fill areas and wetland replication areas.
- In navigable waters, show mean low water (MLW) and mean high water (MHW) elevations. Show the high tide line (HTL) elevations when fill is involved. In other waters, show ordinary high water (OHW) elevation.
- On each plan, show the following for the project:
- Vertical datum and the NAVD 1988 equivalent with the vertical units as U.S. feet. Don't use local datum. In coastal waters this may be mean higher high water (MHHW), mean high water (MHW), mean low water (MLW), mean low lower water (MLLW) or other tidal datum with the vertical units as U.S. feet. MLLW and MHHW are preferred. Provide the correction factor detailing how the vertical datum (e.g., MLLW) was derived using the latest National Tidal Datum Epoch for that area, typically 1983-2001.
- Horizontal state plane coordinates in U.S. survey feet based on the [insert state grid system] for the [insert state] [insert zone] NAD 83.
- Show project limits with existing and proposed conditions.
- Limits of any Federal Navigation Project in the vicinity of the project area and horizontal State Plane Coordinates in U.S. survey feet for the limits of the proposed work closest to the Federal Navigation Project;
- Volume, type, and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below the ordinary high water in inland waters and below the high tide line in coastal waters.
- Delineation of all waterways and wetlands on the project site, including vernal pools:
- Use Federal delineation methods and include Corps wetland delineation data sheets. See GC 2; Endnotes 1, 6, 7 and 15 in Appendix A; and www.nero.noaa.gov/hcd for eelgrass survey guidance.
- Appendix A, (e) Moorings, contains eelgrass survey requirements for the placement of moorings.
- For activities involving discharges of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized, and either a statement describing how impacts to waters of the U.S. are to be compensated for (or a conceptual or detailed mitigation plan) or a statement explaining why compensatory mitigation should not be required for the proposed impacts. Please contact the Corps for guidance.

US Army Corps
of Engineers®
New England District

New Hampshire Programmatic General Permit (PGP)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to “work” include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See PGP, GC 5, regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. <u>Impaired Waters</u>	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*		X
2. <u>Wetlands</u>	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	X	
2.2 Are there proposed impacts to SAS, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.nhnaturalheritage.org, specifically the book Natural Community Systems of New Hampshire.	X	
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	X	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)	X	
2.5 The overall project site is more than 40 acres.	X	
2.6 What is the size of the existing impervious surface area?	14.5 Acres	
2.7 What is the size of the proposed impervious surface area?	30.7 Acres	
2.8 What is the % of the impervious area (new and existing) to the overall project site?	1.1%	
3. <u>Wildlife</u>	Yes	No
3.1 Has the NHB determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require a NHB determination.)	X	
3.2 Would work occur in any area identified as either “Highest Ranked Habitat in N.H.” or “Highest Ranked Habitat in Ecological Region”? (These areas are colored magenta and green, respectively, on NH Fish and Game’s map, “2010 Highest Ranked Wildlife Habitat by Ecological Condition.”) Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.	X	

3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?	X	
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?	X	
3.5 Are stream crossings designed in accordance with the PGP, GC 21?	X	
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		X
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		X
5. Historic/Archaeological Resources		
For a minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) shall be sent to the NH Division of Historical Resources as required on Page 5 of the PGP**	X	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.

** If project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law..

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Wild Meadows Wind Project

Corps Appendix B Supplemental Narrative

1. Impaired Waters

According to the mapping provided on the website linked within the Appendix B form the answer is no. The NHDES OneStop Data and Information site was also reviewed and the results also indicated that the project footprint does not lie within the 1-mile buffer area of any impaired waters.

However, in 2012, the NHDES categorized all surface waters as Category 5 as a result of a statewide fish consumption advisory for mercury in freshwater fish (Edwardson, 2012). Mercury is an example of a regional pollutant usually associated with pollution generated during the combustion of fossil fuels for energy upwind of New Hampshire. Wind energy is an example of a clean renewable energy source that does not contribute to airborne pollution, such as atmospheric mercury deposition into New Hampshire's lake, ponds and watercourses.

The NHDES 2012 list of all impaired waters in New Hampshire was reviewed in the context of the project area. Excluding the impairment associated with mercury discussed above, only one impaired water is located within 1 mile of the final project footprint: Wild Meadows Brook is considered impaired due to mercury in fish and caustic waters, defined by NHDES as a pH value lower than 6.5. Patten Brook, to the north, is listed as impaired due to low pH downstream of the project, as is Bog Brook which is listed as impaired due to aluminum. The Smith River to the south of the project area is listed as impaired due to low pH downstream of its confluence with Taylor Brook, which drains the southern flanks of Tinkham Hill and Forbes Mountain. All of these waters are considered low priority for total maximum daily load (TMDL) studies.

The siting and engineering of the project components has taken into account the projects location and relationship to high elevation headwater streams and drainage, and have been designed to minimize construction and operational erosion and sedimentation. Stormwater and erosion and sediment control measures have been designed to minimize the potential for sediments and the associated nutrients that they might carry from entering the streams within the project area. It is not anticipated that this project will have an adverse impact on the impaired waters located near the project site.

2. Wetlands

2.1 The Wild Meadows study area was investigated for surface waters, including wetlands, streams, waterbodies, special aquatic sites (SAS), and vernal pools throughout the project development process (see Existing Conditions in Appendix I). Atlantic Wind committed to the principals of avoidance and minimization during the project design process and as a result proposed impacts have been reduced to the greatest extent practicable. Direct impacts to 90% of wetlands, 90% of streams, and 96% of vernal pools have been avoided. Streams, wetlands and vernal pools were identified and will be addressed briefly, below. Additional details are included in the Impact Analysis (Appendix II) of the permit application.

Streams

Only three delineated perennial streams are located within 200 feet of the project area, and none are affected by direct permanent impacts. Two perennial streams will be impacted (temporary and secondary impacts only) by clearing for the electrical connector. Wild Meadows Brook and Bog Brook are also located near the project (within 200 feet), however no impacts are proposed. The project footprint does include a number of ephemeral and intermittent streams and impacts have been avoided and minimized to the greatest extent practicable. See Impact Analysis (Appendix II) for further details.

One hundred, fifty and twenty foot buffers were applied to perennial, intermittent and ephemeral streams, respectively, and included in impact calculations. Impacts to riparian buffers were then subsequently included in calculations and mitigation site selection.

Wetlands

A total of 455 wetlands (totaling approximately 70 acres) were delineated with the majority characterized as forested (47%), followed by emergent (21%) and various combinations of either emergent, forested or scrub-shrub (24%). Impacts to wetlands were also minimized as described above for the streams. Where not avoidable, wetland crossings have been designed to maintain hydrology, sediment transport and wildlife passage, often accomplished through the design of associated stream crossing structures.

Vernal Pools

Vernal pools were identified from May 2010 to May 2013. Twelve (12%) of the pools are ranked as highest quality (A) pools, 43 (44%) are ranked as intermediate quality (B) pools, and 42 (43%) are ranked as low quality (C) pools. Wood frogs, spotted salamanders and Jefferson/blue-spotted salamander hydrids were the only primary vernal pool indicators identified. Several secondary indicators were also observed within many pools, including caddisfly, true fly and aquatic beetle larvae. Potential impacts to vernal pools and pool buffer areas were avoided and minimized throughout the project design process.

2.2 No ponds, lakes, special aquatic sites (SAS), special wetlands (excluding vernal pools, see above) or shellfish beds were identified within the project footprint.

2.3 Efforts were made during project design to avoid and minimize impacts to streams and associated riparian buffer areas. Where stream crossings were not avoidable, impacts were focused on the narrowest portion of the stream, were configured to be as perpendicular to the flow direction as possible, and to minimize the length of culverts and extent of clearing associated with each crossing site. Proposed crossings adhere to the New Hampshire Stream Crossing Guidelines (2009). The crossings have been designed to withstand and to prevent the restriction of high flows, to maintain existing low flows, and to not obstruct the movement of aquatic species and other wildlife beyond the actual duration of construction.

2.4 These efforts also served to minimize the amount of adjacent upland and wetland riparian buffer impacts, as described below. See the Existing Conditions (Appendix I) and the Impact Analysis (Appendix II) for further details on each water resource.

2.5 The project will have a disturbed footprint of approximately 150 acres, within the 4,134 acre project area.

2.6 The existing impervious area associated with the leased land is approximately 14.5 acres. The existing site is primarily undeveloped, however some existing impervious area exists that is associated with gravel roads and driveways, and several structures.

2.7 The proposed impervious surface area will total approximately 30.7 acres. Proposed impervious surfaces within the project footprint include those associated with the O&M facility, turbine foundations, gravel roads, and gravel parking/staging areas. Erosion control measures during construction, and operational-phase stormwater control measures will minimize and control stormwater and sediment discharges associated with the project, including those originating on the new impervious surfaces.

2.8 The percent of the 4,134 acre project area that will be impervious (new and existing, or 45.2 acres) will be approximately 1.1%.

3.0 Wildlife

3.1 A report detailing the records of the locations and distribution of protected species, exemplary natural communities, and natural resources of concern within a 10-mile radius of the proposed project was issued by NHNHB on October 4, 2013, and is valid for one year (DES Wetland Application Section C attachment). There are no NHB records for rare species and/or exemplary communities within the proposed project area. However, these records do indicate that a sensitive area of wildlife habitat is present in the vicinity of the project area, as well as a sensitive plant species in two locations, and a medium-level fen system downstream of the project on Bog Brook. NHNHB has requested the project not discuss the specifics of these records.

NHB records indicate that the sensitive wildlife habitat is located within the greater unfragmented forest block that the project area is located in, approximately one-half mile from the nearest proposed turbine. The resource has no legal status in New Hampshire, but NHNHB lists its conservation status as “critically imperiled due to rarity or vulnerability”. This habitat has no legal or conservation ranking at the federal level.

The two records for a sensitive state-threatened plant species are not located near any proposed disturbances associated with any project components. The specific species and location are confidential information per request of NHNHB; however it is known to prefer rocky slopes and the area around cliff bases within rich, mesic forests. It is less common in wet mesic forests that are influenced by high pH bedrock. The bedrock in the area of the known occurrence of this species within the project lands is mapped as Pennsylvanian or Mississipian Intrusive Rocks, according to bedrock geology mapping for the State of NH. This geology is confined to the northeastern flank of Forbes Mountain. The only portion of the project footprint that encroaches on this geological type is a small area of the proposed electrical connector. The NH Wildlife Action Plan (NHWAP) habitat mapping indicates that the area is Hemlock Hardwood Pine forest.

The project area was reviewed for similar habitat and other indicators of high-pH soils that might be suitable for this plant species, and none were identified. With the exception of a small section of the electrical connector, the bedrock geology of the project area is different than that where the known occurrences exist. Our field observations identified a fairly uniform Northern hardwood-conifer community (Sperduto and Kimball 2011) at similar elevations as the occurrences within the project area. Some small pockets of semi-rich woodlands (Sperduto and Kimball 2011) were observed elsewhere within the project area, however no occurrences of this sensitive state-threatened plant species have been observed.

The medium-level fen system is described as small and in excellent condition by NHNHB. This area was not visited because of its one-half mile distance from the project and the minimal disturbance anticipated by the project.

3.2 The proposed project will impact areas that are identified as either “Highest Ranked Habitat in N.H.” or “Highest Ranked Habitat in Ecological Region” in the New Hampshire Wildlife Action plan (NHWAP; 2006). Based on field observations and the NHWAP habitat rankings, the habitat quality of the entire Forest Block surrounding the project site and the Project Footprint itself appears to offer relatively high quality habitat for wildlife species commonly associated with northern hardwood-conifer forest types, especially those that benefit from a mosaic of hardwood forest age classes. Due to the logging activities, the predominant habitat types in and around the project are currently a mosaic of age classes and disturbance regimes, and the specie that use this habitat are largely adapted to these conditions. Therefore, neither the construction-related or operations-related impacts associated with the project are expected to significantly reduce the habitat value of the project area for the wildlife species known to be present. In general, while the proposed project may cause the displacement or mortality of some individual animals, it is not expected to have a population level effect on species known to be present in the region.

3.3 The project does impact a large block of forest defined as unfragmented in the NHWAP with the construction of access roads, turbine pads, turbines and power lines. However, all species of wildlife known to occur in, and expected to use the project area will cross forest openings, including power line ROWs and narrow roads. Additionally, the proposed access roads will have only infrequent traffic after construction, will be single lane and unpaved with no curb.

3.4 The project is a commercial wind energy development.

3.5 Stream crossings are being designed to allow for unimpeded hydrology and to have minimal impact on wildlife passage. There will not be frequent vehicle access along these roads once construction is complete and even during construction the vehicles will be moving slowly and should not pose a danger to wildlife any more so than the existing logging trucks and skidders. The project does not propose a residential subdivision. The project will not change the existing land use.

4.0. Flooding/Floodplain Values

4.1 No mapped 100-year floodplain as identified on the FEMA maps for Merrimack and Grafton Counties occur within the Project Footprint. Floodplains are mapped along Wild Meadows Brook downstream of the main access road to the project and floodplains are similarly mapped along Bog Brook downstream of the proposed substation.

4.2 Because no impacts to the floodplain are proposed, no compensatory flood storage has been provided.

5. Historic/Archaeological Resources

As required, a copy of the Request for Project Review (RPR) Form has been sent to the NH Division of Historical Resources. Historic and archaeological resource reports are provided as Appendices in the SEC filing.

Section 9.C.

NH Natural Heritage Bureau Records

Memo

NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Chris Hernick, Horizons Engineering, Inc.
34 School St
Littleton, NH 03561

From: Melissa Coppola, NH Natural Heritage Bureau
Date: 10/4/2013 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB13-2964
Town: Danbury, Alexandria
Location: The project is located in the northern-most section of the Town of Danbury (approximately north of Pillsbury Mountain) and an area of the Town of Alexandria between said section of Danbury and the national electric grid power lines adjacent to Bog Road.
Description: Iberdrola Renewables wishes to construct a 23 turbine wind farm along ridgelines in the towns of Danbury and Alexandria. The project also includes the construction of an operations and maintenance area, an electrical substation, and transmission lines.
cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments: NHB is requesting surveys for the sensitive plant species. Please contact NHB for further details about the particular habitats that should be searched.

Natural Community	**State[1]**	**Federal**	**Notes**
Medium level fen system	--	--	Level fens are stagnant, and as such are characterized by low nutrient levels, relatively high acidity levels, and accumulations of peat. The primary threats to this community are changes to its hydrology (especially that which causes pooling), increased nutrient input from stormwater runoff, and sedimentation from nearby disturbance.
Sensitive Plant Species (not public information)			Please contact NHB to request details about this species. NHB recommends surveys where appropriate habitat exists.

Vertebrate species	**State[1]**	**Federal**	**Notes**
Sensitive Wildlife Habitat	--	--	Contact the NH Fish & Game Dept (see below).

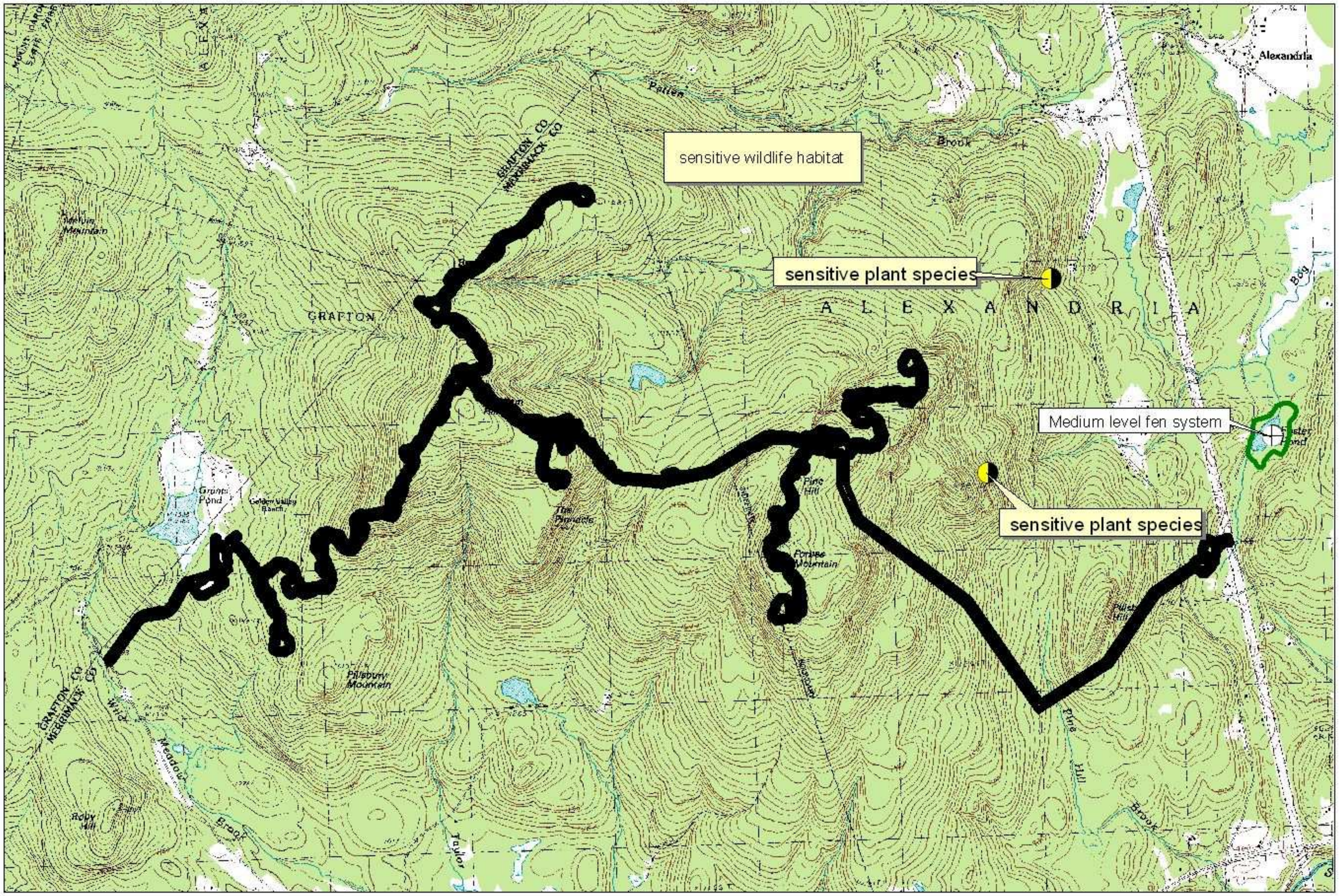
[1] Codes: "E" = Endangered, "T" = Threatened, “SC” = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

NHB13-2964

NH Natural Heritage Bureau



1:39000

Valid for one year from this date: 04 Oct 2013

New Hampshire Natural Heritage Bureau - System Record

Medium level fen system

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	State:	Rare or uncommon

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).

Comments on Rank:

Detailed Description: 1992: A small example of this natural community with some northern (*Ledum groenlandicum*, *Abies balsamea*) and southern (*Woodwardia virginica*, *Toxicodendron vernix*, *Peltandra virginica*) affinities. No rare flora found. Overall, community in excellent condition.

General Area:

General Comments:

Management Comments:

Location

Survey Site Name: Alexandria Bog

Managed By:

County:	Grafton	USGS quad(s):	Danbury (4307157)
Town(s):	Alexandria	Lat, Long:	433519N, 0714727W
Size:	21.2 acres	Elevation:	605 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

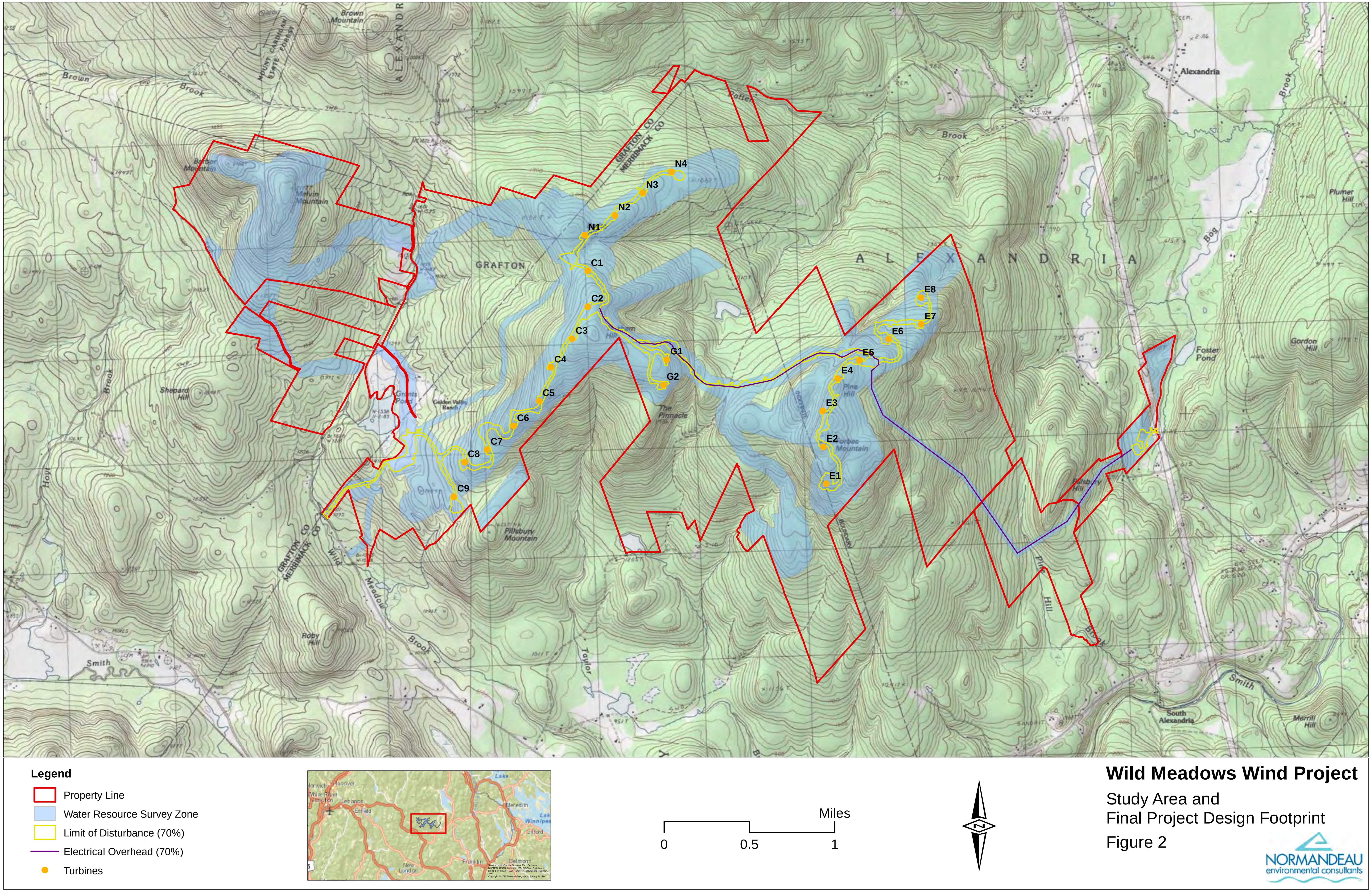
Directions: From Bristol, take Rte 104 west about 1 mile. Bear right onto Pattee Hill Road. Soon, turn right onto Akita Road. Follow Akita Road ca. 0.75 miles to site. Access Foster Pond "Fen" by canoe, or by foot from east upland edge.

Dates documented

First reported:	1992-08-31	Last reported:	1993-06-18

Section 9.E.

USGS Topographic Map of Site



Legend

- 🟥 Property Line
- 🟦 Water Resource Survey Zone
- 🟨 Limit of Disturbance (70%)
- — Electrical Overhead (70%)
- ● Turbines

Wild Meadows Wind Project

Study Area and
Final Project Design Footprint

Figure 2

NORMANDEAU
environmental consultants

Document Path: J:\CAD\JOBS\WildMeadows_NH\21565.006\MXD\WM_DraftReport_Fig2_120213.mxd

Section 9.F.

Photographs of Wetland Resource Impacts

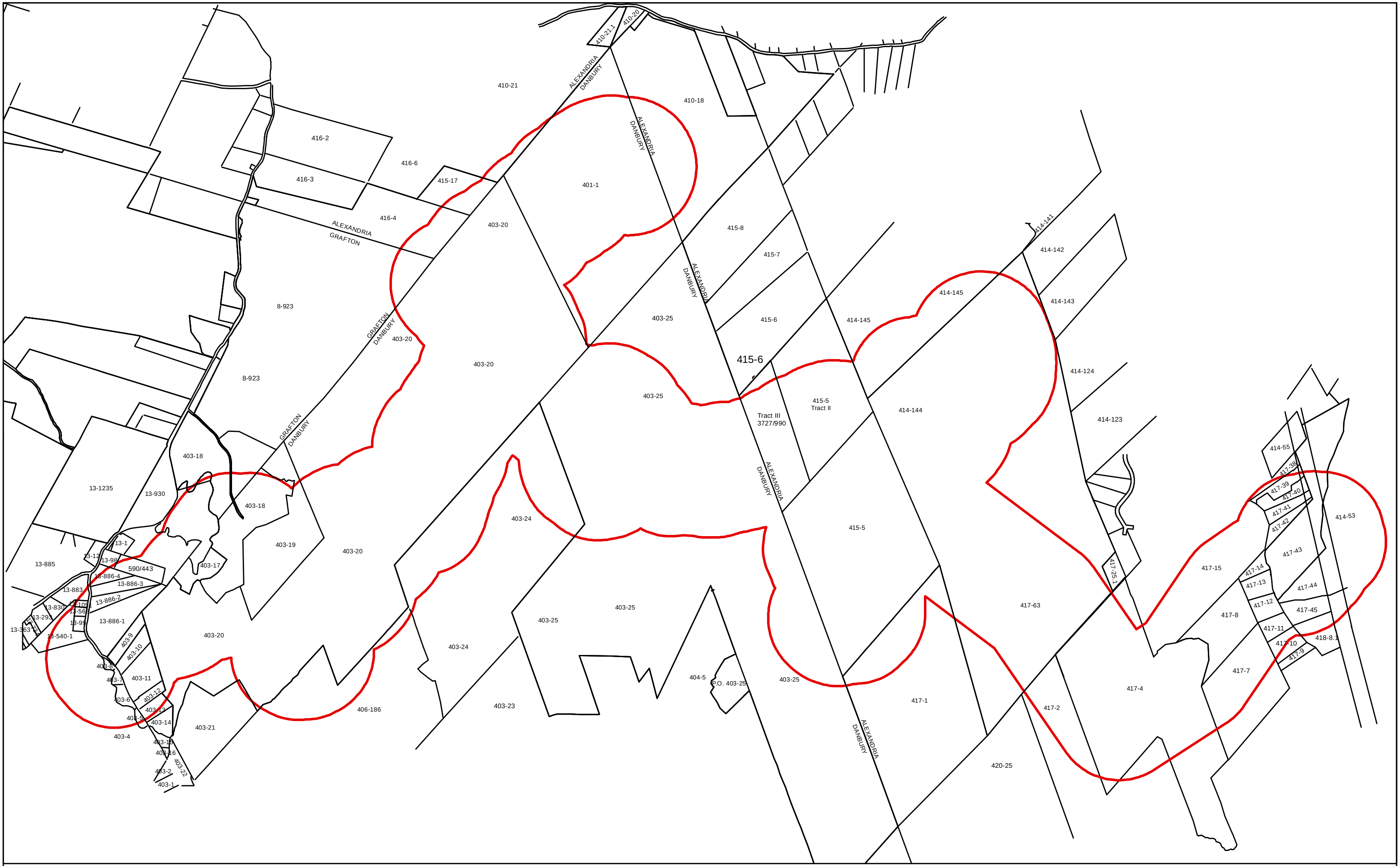
are in Appendix III

Section 9.G

Design Plans are provided in Appendix V

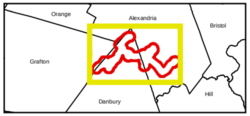
Section 9.H.

Tax Maps, List of Abutters and Proof of Mailing



Legend

- ☐ Parcel Boundary
- 🟥 1/4 Mile Abutter Radius



Feet
0 1,750 3,500

N

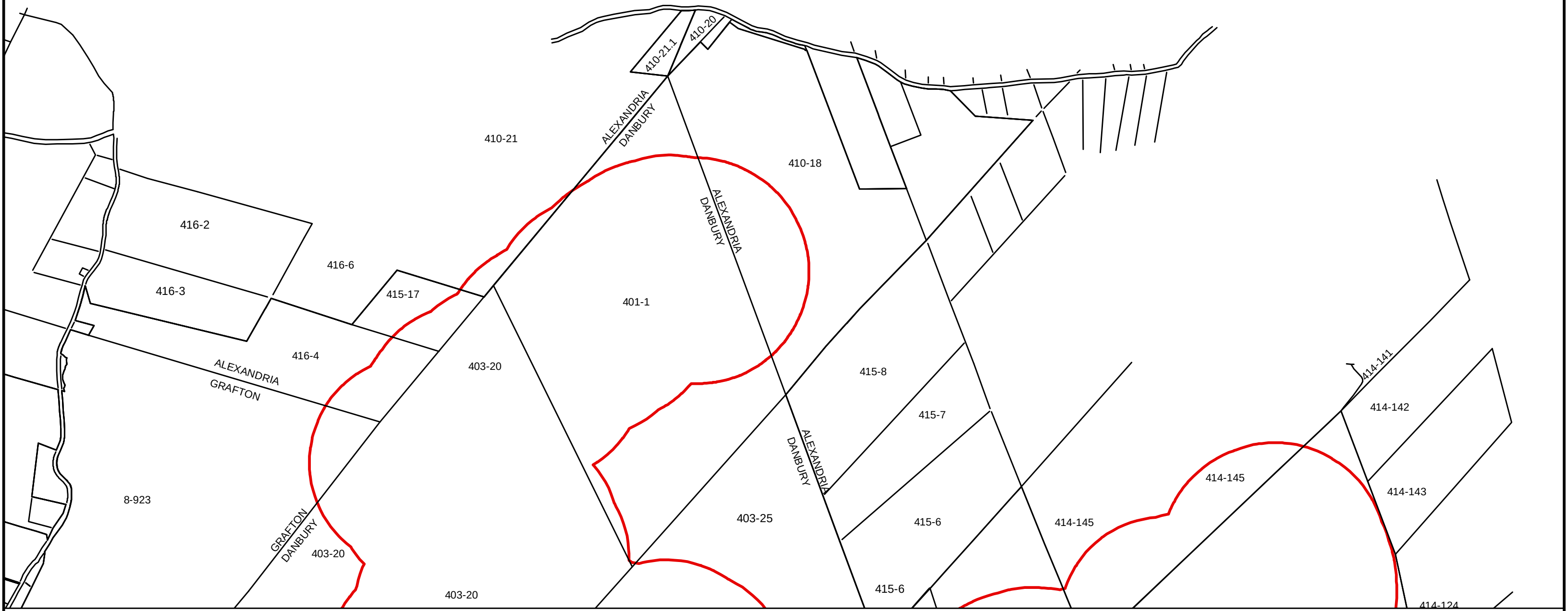
Wild Meadows Wind Project

Tax Map For Abutters

Overview

NORMANDEAU environmental consultants

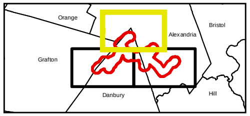
Document Path: J:\CAD\JOBS\WildMeadows_NH\21565.006\MXD\WM_Parcels_8.5x6_Overview_120613.mxd



Legend

▢ Parcel Boundary

🟥 1/4 Mile Abutter Radius



Feet

0 1,200 2,400

N

Wild Meadows Wind Project

Tax Map For Abutters

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environmental consultants

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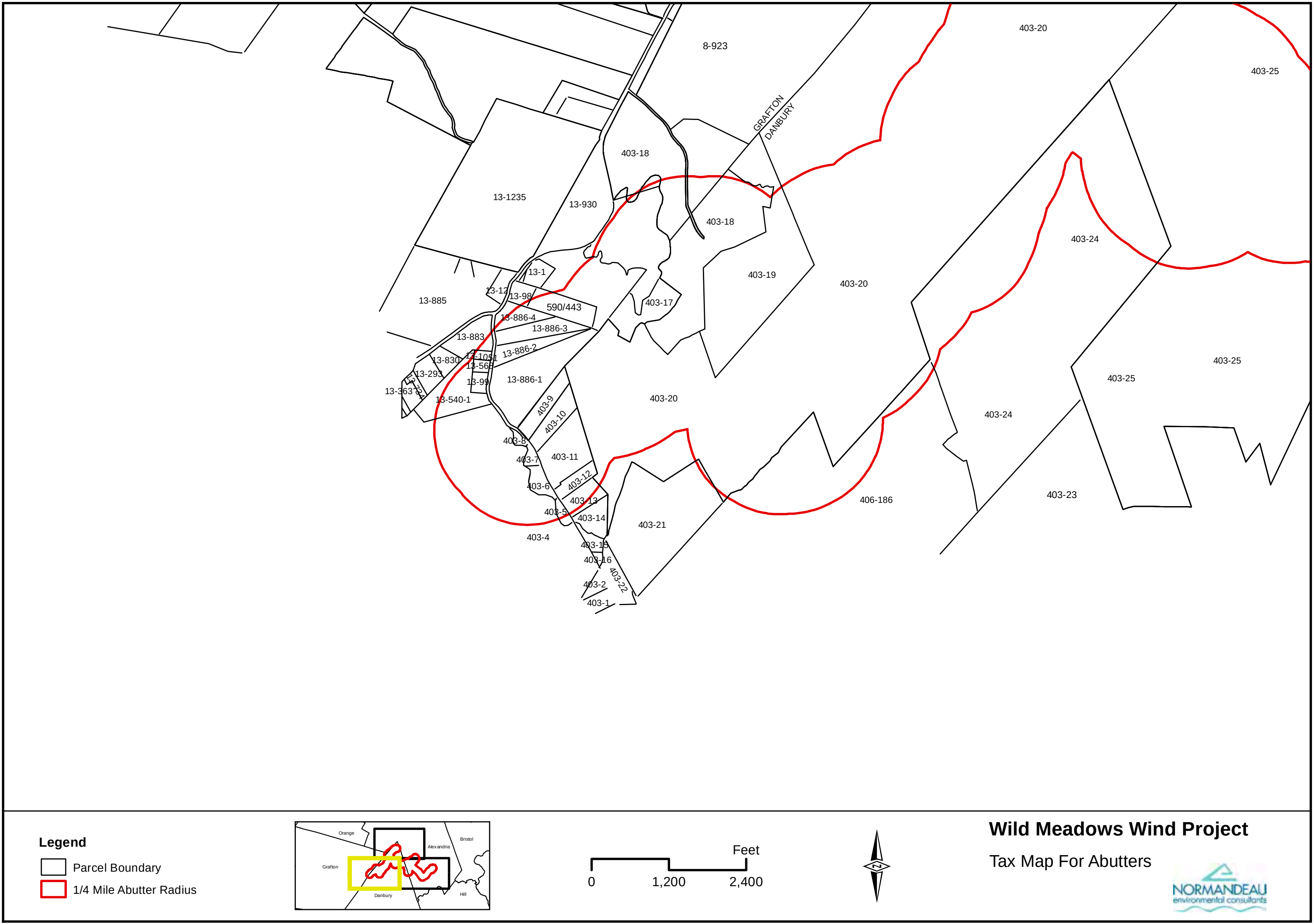

Wild Meadows Wind Project

Tax Map For Abutters

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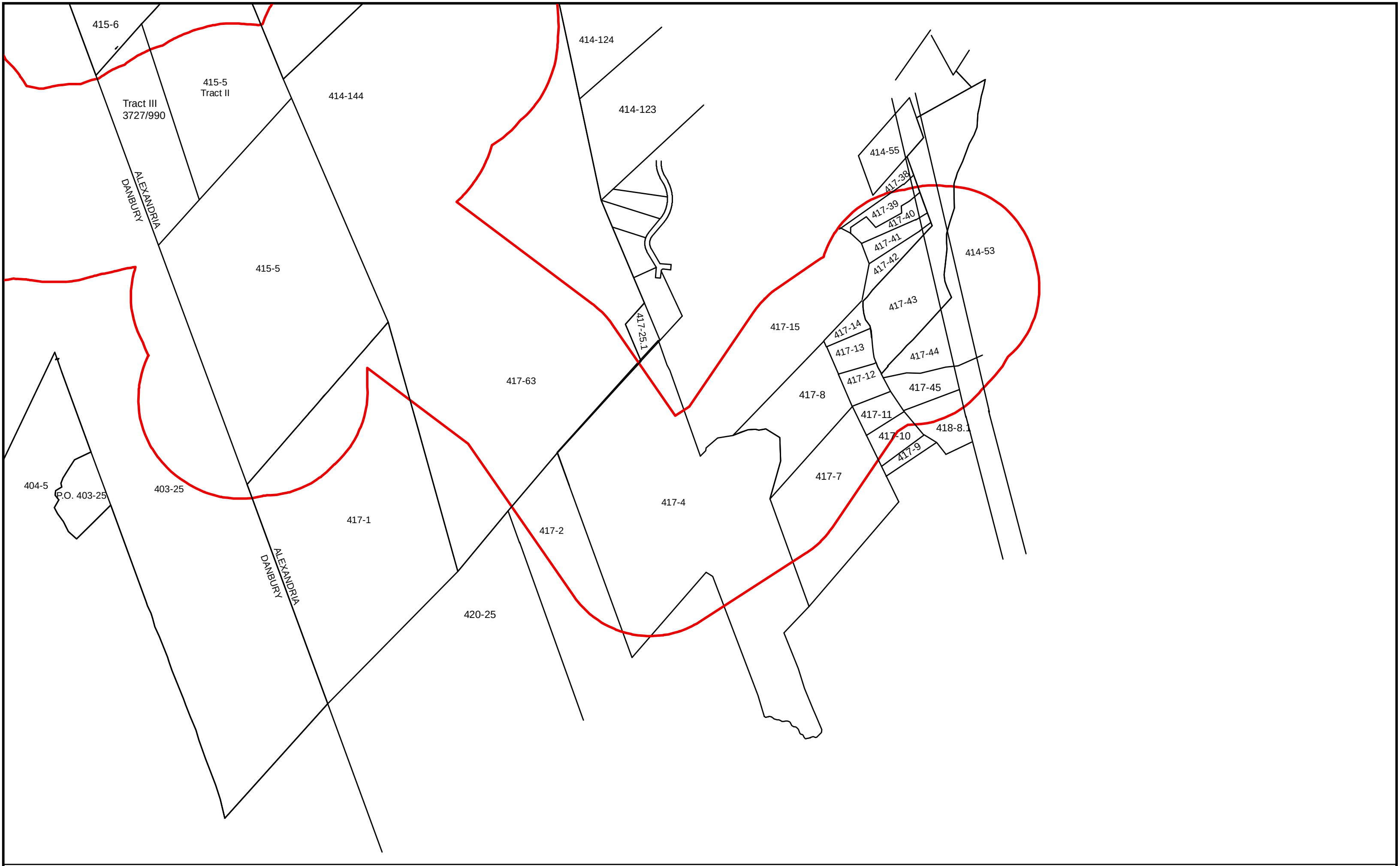
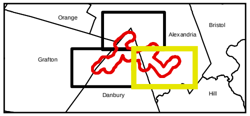


Legend

▭ Parcel Boundary

🟥 1/4 Mile Abutter Radius



Wild Meadows Wind Project

Tax Map For Abutters

NORMANDEAU
environmental consultants

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Map/Block/Lot/Unit	Town	Name	Address	Town	State	Zip Code
414-145	Alexandria	Timothy Troncone	24 Hogg Hill Road	Bradford	NH	03221-3305
414-53	Alexandria	William E. Robie & Kenneth Robie	417 Fowler River Road	Alexandria	NH	03222
415-17	Alexandria	H. & H. Investments, LLC	P.O. Box 519	Antrim	NH	03440
416-4	Alexandria	H. & H. Investments, LLC	P.O. Box 519	Antrim	NH	03440
416-4	Alexandria	H & H Investments Llc	P.O. Box 519	Antrim	NH	03440
417-1	Alexandria	Raymond C. Gauthier & George H. Ricker, Jr.	P.O. Box 2614	South Hamilton	MA	01982
417-12	Alexandria	Steven R. Garon And Paula J Carter	425 Raymond Road	Chester	NH	03028
417-14	Alexandria	Donald R. Lariviere & Carol J. Lariviere	15 King Street	Grafton	MA	01560
417-15	Alexandria	Liebermann-Alexandria Trust Erica V. Mawn, Trustee	80 Spring Road	Concord	MA	01742
417-38	Alexandria	Kathleen Messersmith	961 Cass Mill Road	Alexandria	NH	03222
417-39	Alexandria	Philip M. King	973 Cass Mill Road	Alexandria	NH	03222-6519
417-4	Alexandria	Nelson R. Shaller	506 Bayshore Drive	Osprey	FL	34229-9580
417-40	Alexandria	Sandra Pagani & Mark C. Pagani	991 Cass Mill Road	Alexandria	NH	03222
417-41	Alexandria	Sharon A. Poirier & Thomas H. Poirier	22 Gilbert Street	Dracut	MA	01828
417-42	Alexandria	Town Of Alexandria	47 Washburn Road	Alexandria	NH	03222
417-44	Alexandria	Jeffrey T. Chartier	114 Cross Road	Alexandria	NH	03222
410-21	Alexandria	Maurice M. Dow	P.O. Box 308	Bradford	NH	03221-0308
410-18	Alexandria	H. & H. Investments, LLC	P.O. Box 519	Antrim	NH	03440
403-10	Danbury	Ronald C. Kane	P.O. Box 310	Danbury	NH	03230
403-11	Danbury	Joshua W. & Jessica L. Hatch	250 Wild Meadow Road	Danbury	NH	03230
403-12	Danbury	Jesse & Lorraine Lamos	244 Wild Meadow Road	Danbury	NH	03230
403-13	Danbury	Pamela M. Hartwell	5 Elm Park	Scituate	MA	02066
403-18	Danbury	H&H Investments, LLC	P.O. Box 519	Antrim	NH	03440
403-21	Danbury	Shane R. & Seth J. Offen	40 Old County Road	Danbury	NH	03230
403-24	Danbury	Edgar J. & Nancy H. Michels	438 Penwood Drive	Edgewater	MD	21037
403-4	Danbury	Joshua W. & Jessica L. Hatch	250 Wild Meadow Road	Danbury	NH	03230
403-5	Danbury	Jody Troiano	75 Woodland Drive	Hanover	MA	02339
403-6	Danbury	Kenneth, Kenneth Jr, And Keith Munck	169 Salisbury Road	Canaan	ME	04924
403-7	Danbury	Russell W. & Maryann Ayer	15 Hunter Drive	Bow	NH	03304
403-8	Danbury	Jmk Realty Trust, Jean M Knight Trustee	2483 Main Street	Tewksbury	MA	01876
406-186	Danbury	Patricia B. Agri	6276 Dickinson Road	Placerville	CA	95667
13-1031	Grafton	Lois Miner	28 Wentworth Road	Grafton	NH	03240
13-540-1	Grafton	Ronald L. Shorter And Deborah J. Shorter	58 Wentworth Road	Grafton	NH	03240
13-568	Grafton	Art C. Conkey	P.O. Box 85	Enfield Center	NH	03749
13-883	Grafton	James Keay & Janet A. Keay	22 Temi Road	Raynham	MA	02767
13-886-1	Grafton	Timothy G Donoghue And Pamela J. Donoghue	16 Briggs Street	Hillsborough	NH	03244
13-886-2	Grafton	Timothy G. Donoghue & Pamela J. Donoghue	16 Briggs Street	Hillsborough	NH	03244
13-886-3	Grafton	Sean A. Frost	576 Wild Meadow Road	Grafton	NH	03240
13-886-4	Grafton	Sean A. Frost	576 Wild Meadow Road	Grafton	NH	03240
13-930	Grafton	Douglas C. & Michele M. Fairbrother	631 Wild Meadow Road	Grafton	NH	03240
13-98	Grafton	Robert R. Belanger	369 Sherburne Road	Pelham	NH	03076
13-99	Grafton	Kenneth E. Yeomans & Linda J. Yeomans	17 Putting Green Lane	Prospect	CT	06712
8-923	Grafton	H. & H. Investments, LLC	P.O. Box 519	Antrim	NH	03440

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City, State, ZIP+4 Bow, NH 03304

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City, State, ZIP+4 Danbury, NH 03230

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BEDFORD NH RURAL DEC 10 2013

Sent To Kenneth, Kenneth Jr., & Keith Munck

Street, Apt. No.; or PO Box No. 169 Salisbury Road

City, State, ZIP+4 Canaan, ME 04924

PS Form 3800, August 2006 See Reverse for Instructions

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Section 9.I

Alternatives Analysis for Wild Meadows Wind Project

Section 9.I Siting Alternatives and Wetland Avoidance& Minimization

Siting Criteria

Iberdrola's senior management team has extensive experience developing wind projects throughout the United States, Europe, Mexico, and Central America. Based on this experience, in combination with guidelines established by the National Wind Coordinating Committee, the American Wind Energy Association and the European Wind Energy Association, Iberdrola has developed a comprehensive and practical methodology for selecting proposed wind project sites. In applying this methodology in New Hampshire, Iberdrola's main selection criteria are as follows:

Adequate Wind Resources – Adequacy of wind is a detailed, iterative process that includes evaluation of wind maps, detailed modeling, and on-site data generated from meteorological towers. Adequacy of wind is not merely a function of wind speeds, but also of wind speed stability and consistency, wind direction and directional variability, seasonal and daily variability, wind shear, and turbulence potentially imparted by topographical features. Many areas that exhibit adequate wind speeds (quantity) prove to be inadequate due to the quality of the wind resource. A calculation used in the wind industry, called the Net Capacity Factor, calculates the percentage of the estimated average annual production versus the total possible average annual energy production if the project were to operate at full-rated capacity throughout the year.

The process of evaluating a potential site and determining the expected net capacity factor of a wind project is a long process which often takes several years to complete. The meteorological data collection process takes several years and occurs throughout the life-cycle of the incipient wind project. The initial meteorological towers are strategically located in the project area to determine the scope and breadth of the wind resource throughout the area in representative locations, not just the locations which are expected to have the strongest mean winds. This is done to estimate the production of typical wind turbines, not just the peak performing turbines. After at least a year of meteorological data collection, a turbine layout is designed by the lead meteorologist. The turbine layout is optimized for energy efficiency according to available land, wind direction, and wind speed. Stringent setbacks are applied to prevent detrimental wake effects on nearby turbines. The layout is optimized utilizing state of the art wind modeling computer software to obtain the highest possible energy yield while respecting appropriate setbacks.

Because the strength of the wind resource in New Hampshire is strongly correlated with topographic elevation and orientation, Tinkham Hill and Forbes Mountain initially appeared to have excellent potential for cost-effective and efficient wind-generated electricity in New Hampshire. Meteorological data collected at multiple locations on the various ridgelines over a 4 year period have demonstrated that the net capacity factor for the site is approximately 34%.

Environmental appropriateness – A wind project should fit into the entire local environment. The project location should be consistent with existing land uses on the prospective site as well as on neighboring lands; it should not unduly compromise sensitive conservation lands or unique wildlife habitats. The project should seriously and carefully consider potential effects on local wildlife and vegetation, as well as on the region's scenic and recreational resources.

Community outreach – Community involvement in project development is very important. The active participation of the local community in the development process is essential for a successful wind project. Community outreach is necessary to explain a proposed project, respond to questions, and engage in a conversation about wind power in general, and with respect to a particular site.

Grid-interconnection – Wind farms generally need to be sited in reasonably close proximity to the grid (utility transmission lines and/or 3-phase utility distribution lines), and preferably not on the periphery of the grid where local voltage stability can be a problem (e.g., at the end of smaller radial distribution circuits). It is also preferable to be close to an existing substation, which could simplify the grid-interconnection.

Transmission access – As part of the site selection process, Atlantic Wind performed background transmission and load-impact modeling in order to determine the feasibility of a grid interconnection at the proposed project location with the nearby HVDC transmission line owned by National Grid. Atlantic Wind utilized various models and analytical methods to assess impacts to utility transmission and distribution systems. The Independent System Operator – New England (ISO-NE) conducted a Feasibility Study to confirm available capacity, and an initial System Impact Study (for an earlier turbine type and layout) to identify any potential curtailment scenarios, and whether any line upgrades might be necessary.

During the subsequent engineering and design phase, Atlantic Wind will continue to work with ISO-NE, National Grid, and their consultants to complete the revised System Impact Study, including more detailed load-flow, impact, and stability studies. The host utility will then, in cooperation with Atlantic Wind and its consultants, complete the design engineering needed to interconnect the Project into the transmission system. The final design must comply with the respective host utility requirements and other applicable ISO-NE, IEEE, National Electrical Contractors Association (NECA), and Occupational Safety and Health Administration (OSHA) requirements.

Accessibility – The site must be accessible to construction equipment and heavy machinery, such as 400 ton-cranes, and the special-purpose trailers which transport tower sections, nacelles and other components. In order to limit the construction of new roads, and to minimize environmental impacts, sites with existing road access are usually favored. Often existing secondary private roads, such as logging roads, log landings, and skid trails are utilized through upgrades.

Competitive economics – Competitive project economics will be achieved with sites that have the best combination of key attributes such as a strong wind resource, which is a requirement. Economic feasibility also depends on the presence of interested landowners who are willing to provide rights to the site at reasonable costs. In addition, suitable soil conditions - and in some cases the potential for expansion - are among other considerations. There are a number of fixed costs for a wind farm that do not vary with size, i.e. whether there are 10 turbines or 100 turbines, some costs remain the same for both small and large projects. Such costs include most of the baseline environmental surveys, interconnection filing fees and studies, foundation design, and project engineering. Accordingly, projects must be sized appropriately to spread these fixed costs over a large enough number of turbines to make the project economic.

Other key factors that Atlantic Wind considered during preliminary and final Project placement/configuration include the following:

Distance from residences – The turbine locations maintain a minimum setback of over 2,600 feet between a turbine tower and the nearest non-participating residence. This turbine setback minimizes potential sound effects of the turbines on Project neighbors.

Distance from roads – The turbine locations will also maintain a minimum setback of at least 2,400 feet from all public roads.

Wetlands and waterbodies – Project structures including the O&M Facility, temporary construction staging areas, substation, and turbine foundations have been configured so as to avoid delineated federal jurisdictional or state regulated freshwater wetlands, to the maximum extent possible. In areas where this is not possible, all efforts to minimize the impact have been taken. The Project has worked actively with the USACE and NHDES to review and minimize wetland impacts, including multiple on-site field reviews.

Communication interference– Turbines are sited outside of known microwave pathways and Fresnel zones (area around a line-of-site used to determine obstruction loss to communication signals) to minimize the effect that they may have on local communications. The Project completed all communications studies (Microwave and Enhanced Structures Reports) and details are located in Section I.6.

Cultural resources – All Project components will be sited and Project construction will be conducted in such a way that does not cause any adverse physical effects on prehistoric or historic archeological resources, as recommended by the Project's Cultural Resources Specialists.

Wildlife habitat – During final turbine siting, the Project worked to avoid critical wildlife habitat to the maximum extent practicable and will continue to work closely with the U.S. Fish and Wildlife Service (USFWS), New Hampshire Fish and Game (NH F&G), and other appropriate agencies and entities to minimize the effect the Project may have on critical habitats through minimization, avoidance and/or mitigation measures. The Applicant has consulted with the New Hampshire Natural Heritage Bureau (NHNHB) and has determined that there are no critical habitats within the Project area. The project site is primarily commercial logging and agricultural lands.

On-Site Alternatives Analysis, Avoidance and Minimization

In addition to the above-mentioned factors that influenced the selection of the Wild Meadows Project site, the Applicant considered a wide range of project alternatives, including different sizes and configurations, alternative turbine types and locations, access road options and configurations crane road alignments, O&M building locations, and alternative staging areas.

Alternative 1 – Up to 50 turbine project

One alternative that was carefully considered was a larger project, potentially up to 50 turbines (100 MW in size, depending on turbine type), in which more turbines would be placed along the Melvin Mountain ridge in Grafton, and additional landowners in both Grafton and Alexandria would have been part of the project. The Project had discussions with other landowners to explore this alternative, and performed an evaluation of wind resources. This alternative ultimately was ruled out due to a lack of interested landowners. A number of landowners were interested and lease discussions ensued, but this alternative would have required all of the potential host landowners to have wanted to participate.

Alternative 2 – 40 turbine project

Another alternative evaluated in depth was a 40 turbine (Gamesa 2.0 MW turbine) project. This alternative would have extended potential turbine locations to southern portions of Melvin Mountain and on Shepard Hill in Grafton. Meteorological towers were installed and the wind resource was determined to be suitable for a Project of this size. However, lease negotiations with 3 landowners ultimately achieved agreement with only two of the landowners, and this Alternative was removed from further consideration.

Alternative 3 – 37 turbine project

A 37- turbine (Gamesa 2.0 MW turbines) project was extensively evaluated, including a full engineering layout and design, multiple public meetings and Open Houses. The number of turbines in the proposal was a concern expressed by some members of the public and some groups. This alternative would have placed turbines on three ridgelines: Forbes Mountain in the east; Tinkham/Braley in the central region; and Melvin Mountain in the west.

In evaluating the ability to markedly reduce the number of turbines in the layout, the key factors that led to dropping the western (Melvin) portion of the project were:

- Lesser wind resources in the Melvin area
- The more difficult civil engineering design, due to steep slopes, that was observed in the various Melvin access options
- The original primary Melvin access route (southern) was determined to result in a much greater amount of stream, wetland, vernal pool, and secondary impacts. The southern access route would have upgraded existing logging and skidder roads. Those roads had been rutted over many years of logging use, and the rutting had created drainage that converted skidder ruts into vernal pools. Elimination of the western (Melvin) portion of the project ultimately resulted in a reduction of over 5 miles of access road and over 10,000 square feet of direct wetland impact (Figure 1). In addition, the elimination of

this portion of the project resulted in the avoidance of 3 crossings of Wild Meadows Brook, one additional perennial stream crossing, and six intermittent stream crossings.

- Dropping the western portion of the project and changing the turbine type also allowed for a greater distance from the Cardigan Mountain summit (approximately 4.5 miles) and allowed for a more compact project layout that reduced the amount of roads and electrical collector lines by over 30%.

Alternative 4 – 33 turbine project with Pemi S/S interconnect

A 33 turbine (Gamesa 2.0 MW turbines) project was evaluated, including an initial engineering layout and design. This configuration was evaluated during analysis of an interconnect point with the Northeast Utilities Pemigewassett Substation in Bristol. The interconnection was proposed to be at either 34.5 kV or 115 kV. After study of these options, Northeast Utilities determined that the substation could not accommodate more than 10 MWs, and this Alternative was eliminated from further consideration.

Alternative 5 – Danbury only project

Another alternative briefly considered was a further reduction in project size, and limiting the project turbine locations to the Town of Danbury only. This alternative would have been able to include a maximum of only about 45 MWs, which would not be able to support the capital expenses of the interconnection, and therefore was not pursued further. Any wind project has certain fixed costs regardless of the number of turbines. For this project, the largest fixed costs are the substation/interconnection and the permitting studies and proceedings.

Alternative 6 – Ragged Mountain

The Project had discussions with the ownership of Ragged Mountain Resort, and performed a first order evaluation of wind power potential at that location, as a component of a larger Wild Meadows Project. Ragged Mountain Resort owns approximately 2,100 acres, including ridgeline areas in the Town of Danbury. The initial analysis indicated potential for commercial wind turbines. The key issue that removed this alternative was the distance away from the main project site, and the requirement to run electrical collector lines a long distance to connect prospective turbines in the Ragged Mountain area to the rest of the project. Secondarily, the Ragged Mountain expansion plans would limit the number of potential turbines that could be sited. A significant expansion at Ragged Mountain Resort, including up to 890 residential units, has already been approved.

Alternative 7 – Different turbine types

A number of modern wind turbine models and manufacturers were evaluated before selecting the Vestas V112 3.3 MW model proposed for this Project. Alternative turbine models were evaluated for efficiency, reliability, cost, ease and cost of transport, and construction requirements.

The Project considered Gamesa, Vestas, Siemen, General Electric, and Mitsubishi wind turbines. The primary criterion for the evaluation was unit efficiency. Different wind turbines perform differently depending on the wind regime (speed, variability, wind shear, temperature and humidity).

The Vestas V112 - 3.3 MW turbine was determined to be the best overall fit for the Wild Meadows site as determined by the wind resource, overall project generation capacity, and best fit turbine manufacturer requirements. Within the Vestas family of turbines, the V117 - 3.3 MW turbine is ideally the most efficient for this site. However due to the complexity of the project site and limitations of constructible locations, the turbines would need to be located less than the ideal turbine spacing requirements of three rotor diameters leading to additional wake and sector curtailment losses. In addition, the V117 would have a taller tip height than the V112, with minor improvements in unit efficiency. This results in a net capacity factor (NCF) that is roughly equivalent to the NCF of the Vestas V112 primary scenario.

The Gamesa G97 turbine scenario, due to its maximum rated capacity of 2 MW, results in a much larger number of turbines required to approach the required nameplate capacity, which in turn results in a larger Project footprint and overall area of disturbance. While the NCF per turbine is higher than the V112, the net generation is generally 30-40% per turbine for the V112. Gamesa requires a complete turbine shutdown when the upstream wind is blocked by higher terrain. This results in a 3-4% additional sector curtailment loss than is estimated for the V112.

The Siemens SWT-108 was evaluated for the Wild Meadows project. While the power curve of the SWT-108 turbine is an excellent fit for the onsite wind regime, ambient and turbine added turbulence is estimated to be far higher than the site suitability specifications of the manufacturer.

The General Electric GE-2.85-103 turbine was evaluated for the Wild Meadows project. The estimated NCF for the project with these turbines was the second lowest of those turbines studied. Additionally, ambient and turbine added turbulence is estimated to be far higher than the site suitability specifications of the manufacturer.

The Mitsubishi MWT-102 2.4 MW turbine was evaluated for the Wild Meadows project. The estimated NCF for the project with these turbines was the lowest of those turbines studied, as the maximum hub height is limited to 80m by the manufacturer.

Alternatives 8a/b/c/d/e/f – Alternative road configurations

A number of possible road configurations were evaluated for constructability, with the goals of minimizing wetland impacts, reducing cut/fill, meeting maximum allowable grades, minimizing total road linear feet, and making optimum use of the many logging roads, skidder trails, and landings that have already been constructed on the site. As part of the preliminary engineering effort, design changes were identified that resulted in a reduction of impacts to wetlands, vernal pools, and buffers. Two specific locations where minimization measures were incorporated into the engineering design effort included in the vicinity of turbines C-7, C-8, C-9, and C-10.

In order to understand the possible alternative configurations of the roadways, it is important to consider the engineering criteria required for the Project to be constructed and operated. The following lists the basic engineering design criteria applied to the development of the site plan:

Engineering criteria summary

Access Roads (Non-Crane Roads): "Access Roads" are used to bring construction equipment to the ridgelines. Because of the size of the trailers needed to transport wind turbine components these roads must adhere to specific requirements regarding their horizontal and vertical geometry:

- Finished permanent gravel roads must be 16- feet wide.
- Roads only have a maximum grade of 15 percent.
- Centerline turning radius of horizontal curves shall be 170 feet or more. Radii less than 170 feet may be allowed, but only in special cases. In these special cases, the road grade must typically be reduced below 5 percent and the road may need to be widened beyond 16 feet.
- The distance between horizontal curves must not be less than 150 feet, unless additional widening is provided.
- Vertical curves must be limited to a K value greater than 16.5 (i.e., be relatively smooth transition over the rate of change of grade).

Crane Roads: These roads are constructed to allow equipment to travel between turbine sites, including the fully assembled crane. Because of the size of the assembled crane, the crane roads must adhere to all of the criteria listed above, but must be wider than the access roads.

- Gravel roads must be 40 feet wide and compacted, as well as allowing for installation of the underground electrical collection system within the road and overhead electrical collection system alongside the road.

- Width of clearing shall vary, but typically will be 4-10 feet beyond the limits of disturbance as described above. Area for drainage and stormwater shall be in addition to the dimensions identified above.

- Crane Pads: At each turbine location, a proper surface for the construction of the turbine towers must be created. These crane pads are intended to provide a stable base from which the construction crane can operate. In order to serve this purpose, the crane pads must adhere to the following criteria:

- Crane pads must be approximately 60 feet by 90 feet.

- The turbine foundation should be level with the crane pad, but can be no lower than 2feet below the crane pad.

- Crane pad length must be parallel to access road direction of travel..

- For crane pads at the end of a road, the pad length shall be parallel to access road or spur road direction of travel. Crane pad centerline and road centerline must match.

Alternative access road layouts

The criteria above were used by Project engineers to develop the design plans for the Project. Several different alternatives were considered in arriving at the proposed Project design as described below.

a. Access via Forbes Mountain Road

The Project evaluated an access approach whereby the primary access point would be via the existing Forbes Mountain Road (Figure 1). This alternative would have allowed for fewer linear feet of new road, and a more central access point to the project turbines. This alternative was ruled out due to the long, narrow, and winding nature of Forbes Mountain Road, which would have resulted in proportionally high stream and wetland impacts. Other limitations included existing and new residential development (which has increased markedly in the past year), and very steep grades from the end of Forbes Mountain Road to the project crane roads.

Elimination of using this route resulted in the following:

- Avoidance of using approximately 2 miles of Forbes Mountain Road

- Avoidance of substantial road upgrades and associated impacts to perennial streams, smaller streams, and adjacent wetlands

- Avoidance of potential disturbances to sensitive wildlife habitat
- Avoidance of several vernal pools and associated buffers

b. Access via Washburn Road

The Project evaluated an access approach using Washburn Road as a primary or secondary access point. This alternative was only briefly evaluated and clearly found to be an undesirable option. Washburn Road is generally in poor condition and is narrow. Access from Washburn Road would require bridging Patten Brook and crossing a number of wetlands areas.

Elimination of this route resulted in the following:

- Avoidance of using 4 miles of Washburn Road
- Avoidance of using 2 miles of Cass Mill Road
- Avoidance of Intersection improvements at
  - Washburn and Cass Mill
  - Washburn and Wild meadows Road
  - Cass Mill and State Route 104

c. Access via Wild Meadow Road/Golden Valley Road

The Project area is accessed currently via Wild Meadows Road in Grafton, connecting to Golden Valley Road (private road). Upgrading this existing route was evaluated in some detail, including review of the bridge crossing on Golden Valley Road over Wild Meadow Brook. This route would also require extensive upgrades and replacements of existing culverts and drainage structures located on private land, past the former Airport Road. The approach using Wild Meadows Road in Grafton offered other challenges, principally at least two bridges that may be nearing failure and that do not meet current NH DOT standards. This route would also require a lengthier route to access the project site. Elimination of this route resulted in following:

- Reduction of access road length by 3,200 feet
- Avoided substantial earthwork cuts of approximately
- Avoidance of two town bridges along Wild Meadows Road and one on Golden Valley Road
- Reduction of impacts to one perennial and two intermittent streams
- Reduction of Direct impacts to wetlands and streams by over 4,000 sq. ft.

- Reduction of secondary impacts to streams, wetlands and vernal pools by over 2,000 sq. ft.

d. Access via Wild Meadow Road via Central Access Road North

As part of Alternative 3 (37 turbine layout), the Project evaluated an additional access point off of Wild meadows road. This access was planned in order to provide a second access option to Braley Hill (Figure 1). The access point was located at an existing log landing, and the access road would have to impact several wetlands and vernal pools. After further evaluation and considerations this access option was dropped. This resulted in overall reduced wetland impacts, reduced road lengths and avoided few major cuts along the roadway. Elimination of this route resulted in following:

- Reduction of road length by 6,500 feet
- Avoidance of three town bridges along Wild Meadows Road
- Avoided Overhead electric line crossing Wild Meadows Brook
- Avoided major earthwork cuts and fills
- Reduction of Impacts to one ephemeral stream
- Reduction of Direct impacts to wetlands and streams by over 3,500 sq. ft.
- Reduction of secondary impacts to wetlands and vernal pools by nearly 1,500 sq. ft.

e. Access to Melvin Mountain area via North/South Access Roads

As part of Alternative 3 (37 turbine layout), the Project evaluated multiple access points and routes for the Melvin Mountain area of the project (Figure 1). The primary south access route was designed and preferred initially because it made use of an existing network of logging roads and skidder trails. However, as described above, those log/skidder roads had in some areas become drainage courses and had become vernal pools in some areas. The Melvin south access alternative would have necessitated greater wetlands impacts, and greater vernal pool impacts in particular. The Melvin north routes were drier, but would have required one or two stream crossings, and the access road location would have required another, separate access off of Wild Meadows Road/Grafton Road – essentially another project access point. Elimination of this route resulted in following:

- Reduction of road length by 15,000 feet
- Avoidance of two-three town bridges along Wild Meadows Road
- Avoided overhead electric line crossing Wild Meadows Brook

- Avoided major earthwork cuts and fill of approximately 185,000 and 151,000 CY
- Reduction of Impacts to three perennial, two intermittent and six ephemeral stream
- Reduction of direct impacts to wetlands and streams by 4,788 sq. ft.
- Reduction of secondary impacts to wetlands and Vernal pools by 459 sq. ft.

Multiple corridors were studied prior to selecting the preferred Project Access off of Wild Meadows Road. The selected route resulted in a further reduction in project impacts to wetlands, streams, and vernal pools.

f. Further Wetland Impact Minimization Efforts

After selection of the preferred Project Access off of Wild Meadows Road, the final route was refined to further minimize impacts to wetland resources. Figure 2 includes an example of micro-siting modifications to avoid and minimize wetland and stream impacts that were made during the 50% design planning stage of the Project. Other examples of minimization measures include:

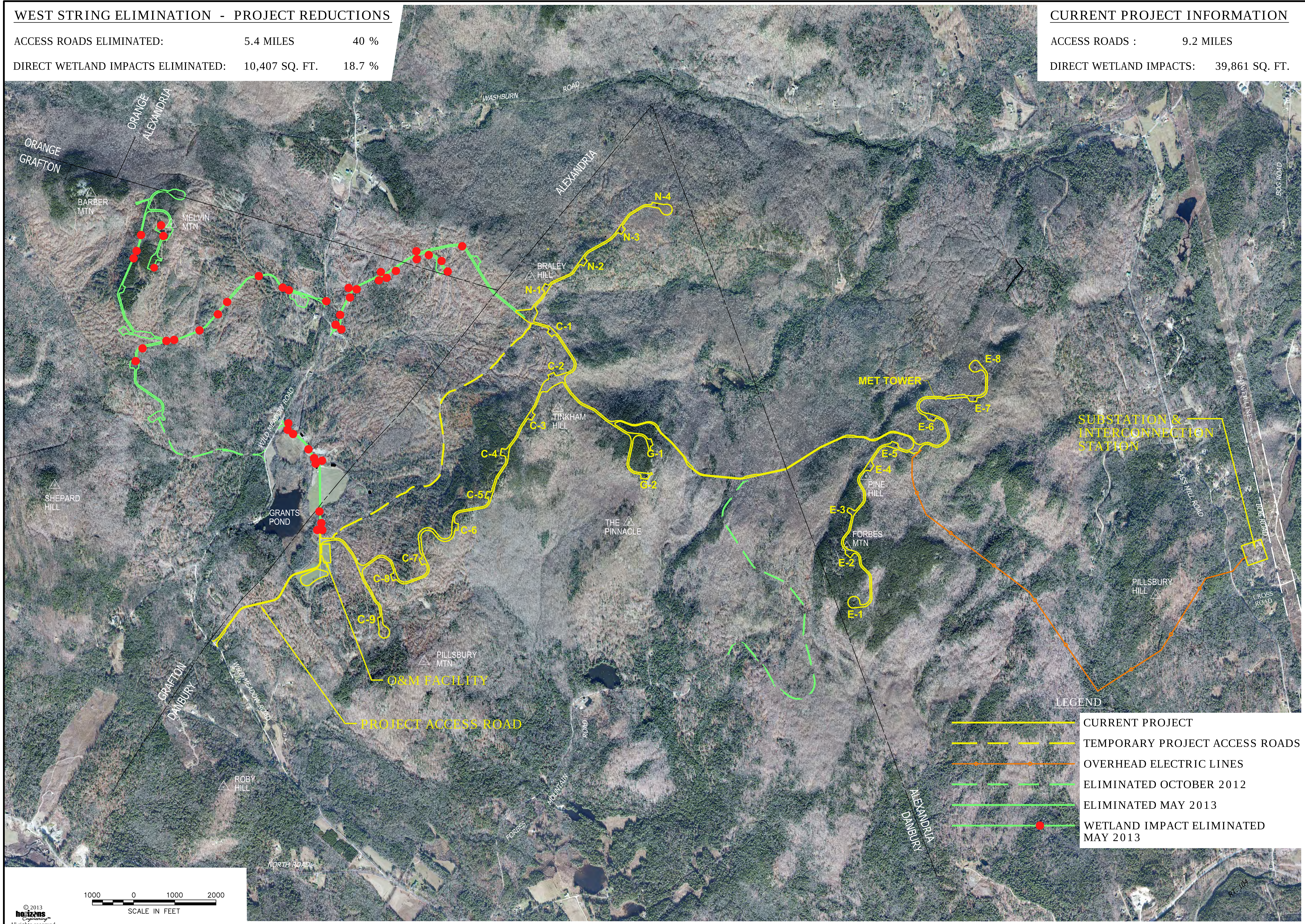
- Micro-siting the access roads and turbine pads to avoid/minimize impacts to wetlands, streams and vernal pools
- Reducing road side slopes for cuts in wetlands to 1.5:1
- Adjusting drainage swales and culverts to match existing drainages
- Maintaining local drainage patterns to wetlands and streams to minimize changes in runoff patterns
- Designing road, turbine pad and shoulder grades and surfaces to minimize impedance to wildlife crossings.

WEST STRING ELIMINATION - PROJECT REDUCTIONS

ACCESS ROADS ELIMINATED:	5.4 MILES	40 %
DIRECT WETLAND IMPACTS ELIMINATED:	10,407 SQ. FT.	18.7 %

CURRENT PROJECT INFORMATION

ACCESS ROADS :	9.2 MILES
DIRECT WETLAND IMPACTS:	39,861 SQ. FT.



LEGEND

━━━	CURRENT PROJECT
━ ━ ━	TEMPORARY PROJECT ACCESS ROADS
━━━	OVERHEAD ELECTRIC LINES
━ ━ ━	ELIMINATED OCTOBER 2012
━━━	ELIMINATED MAY 2013
━━●━━	WETLAND IMPACT ELIMINATED MAY 2013

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IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: DECEMBER 2013
PROJECT #: 13185
ENGIN'D BY:
DRAWN BY: KRP
CHECK'D BY: AJC
ARCHIVE #: EXHIBIT

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Phone 603.444.4111 - Fax 603.444.1343

WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
PROJECT REDUCTION
(WEST STRING)
AND
PROPOSED PROJECT

SHEET NUMBER: DES - 2

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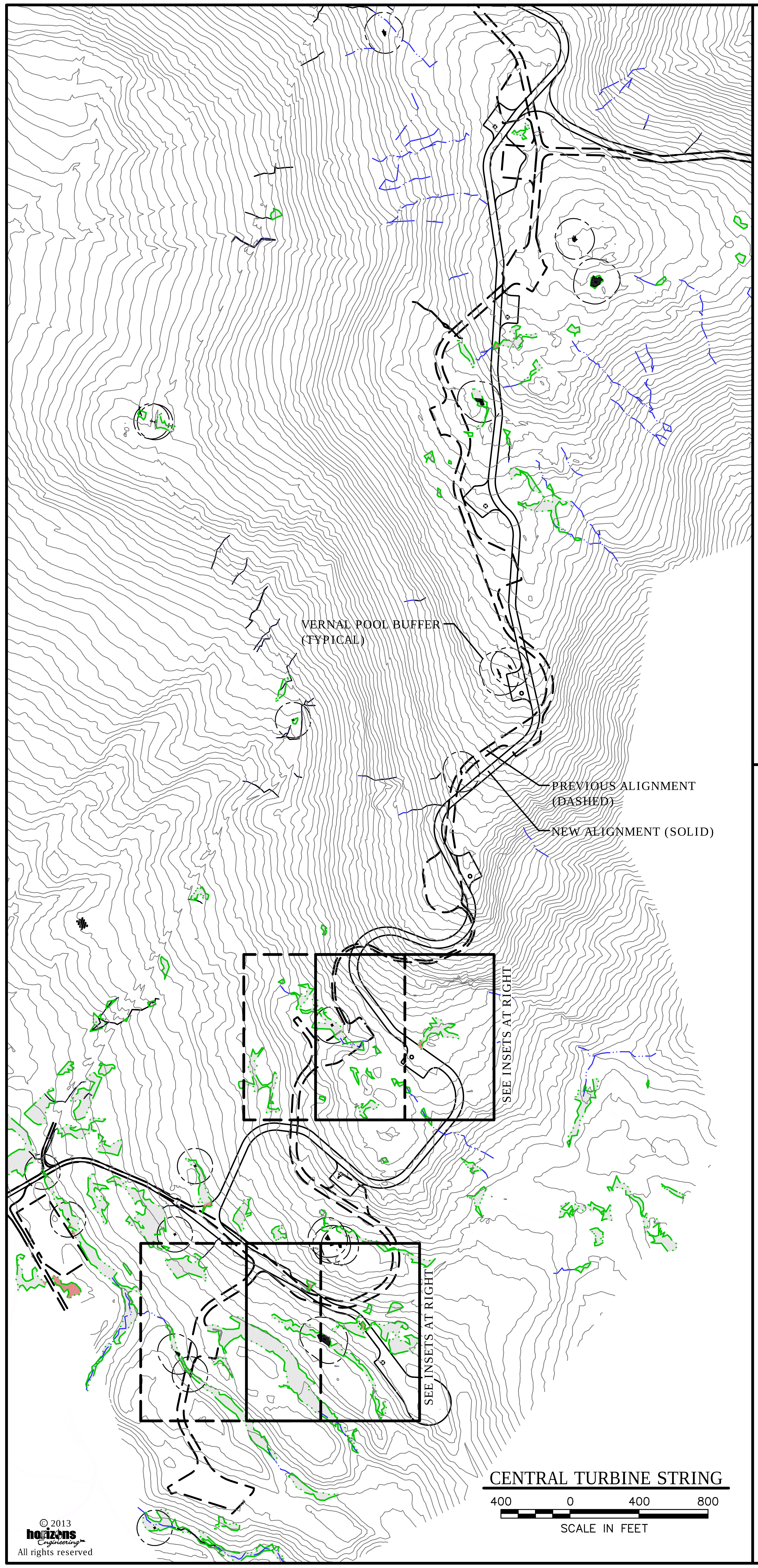
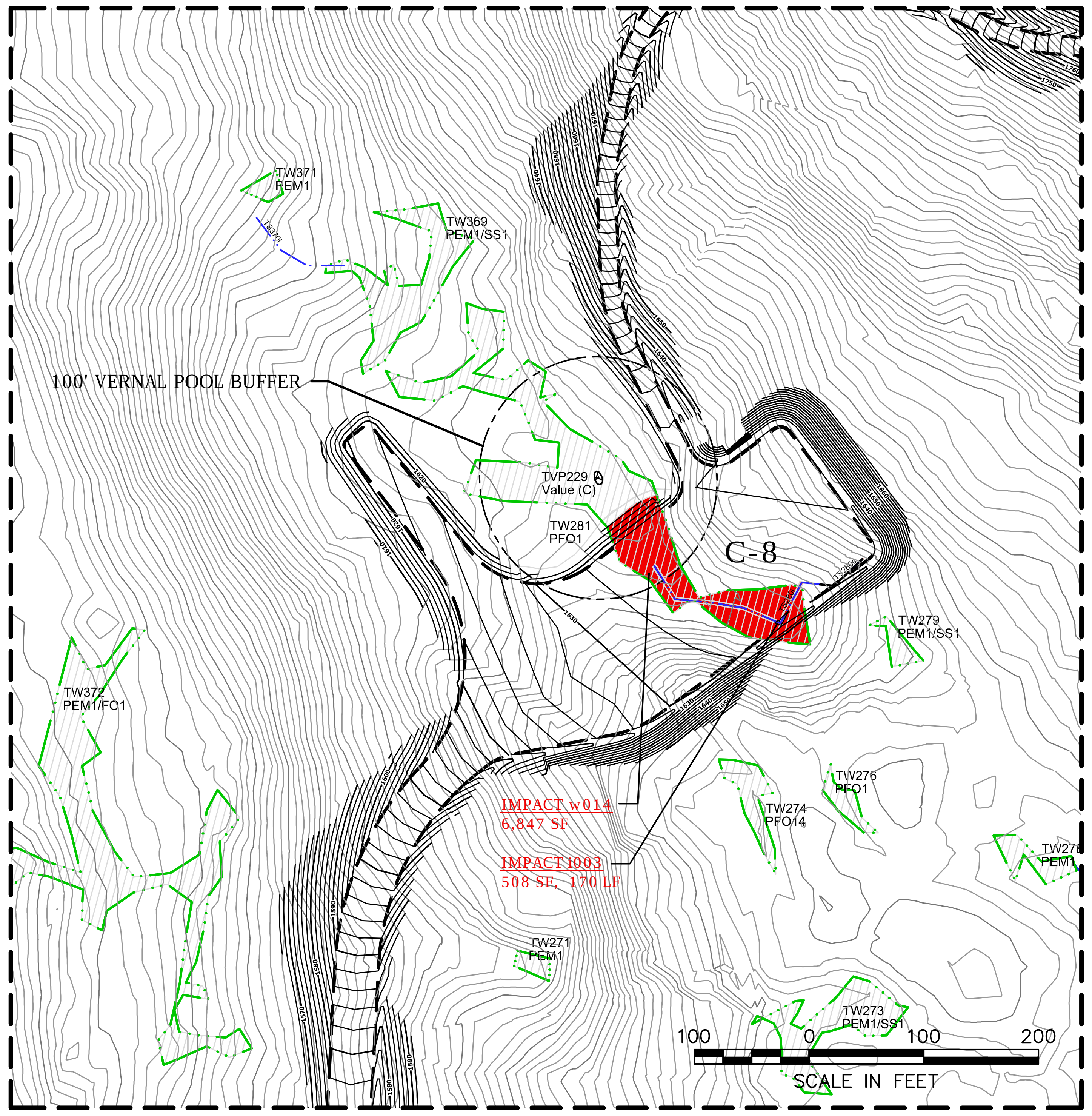
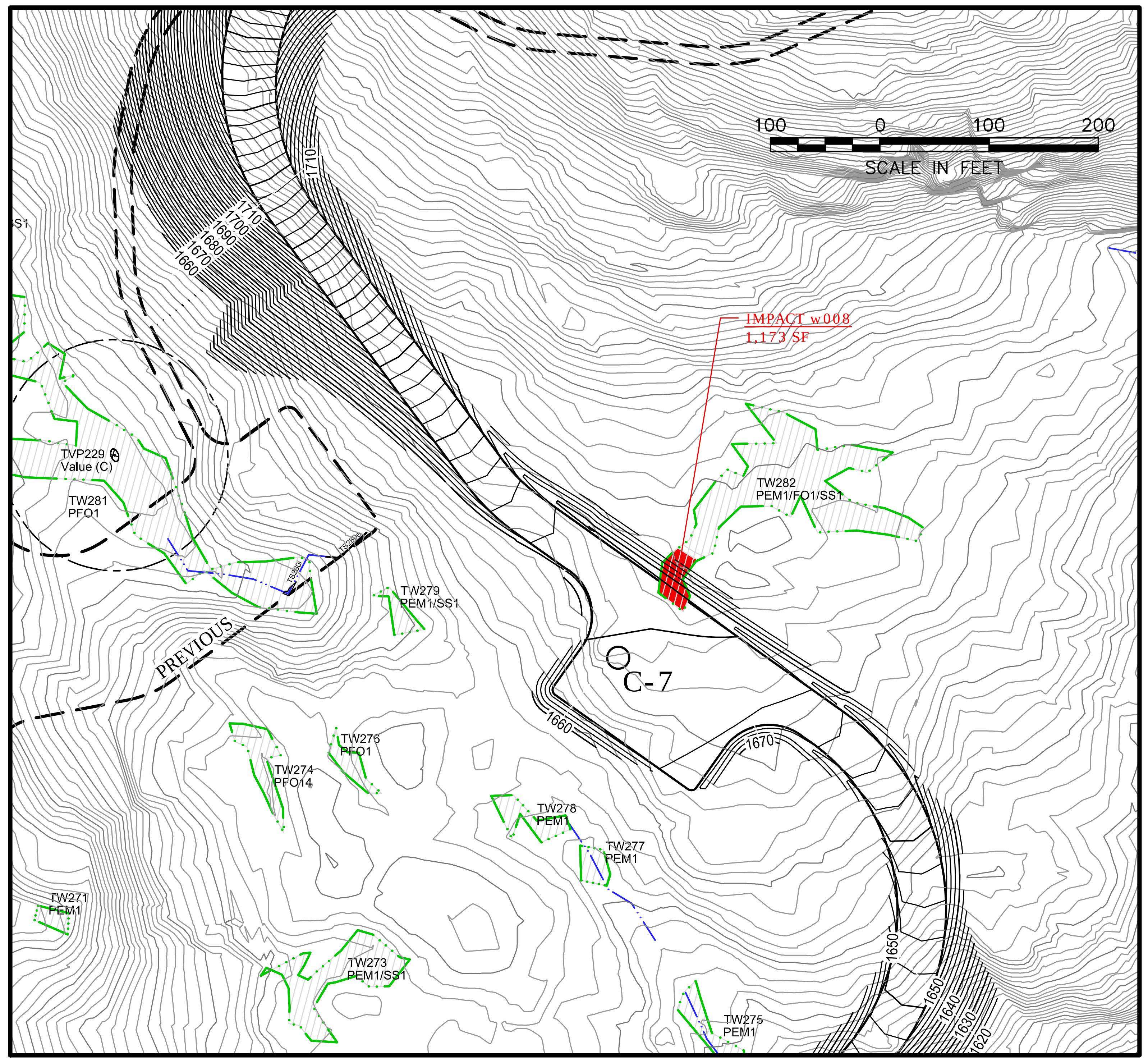


CENTRAL TURBINE STRING



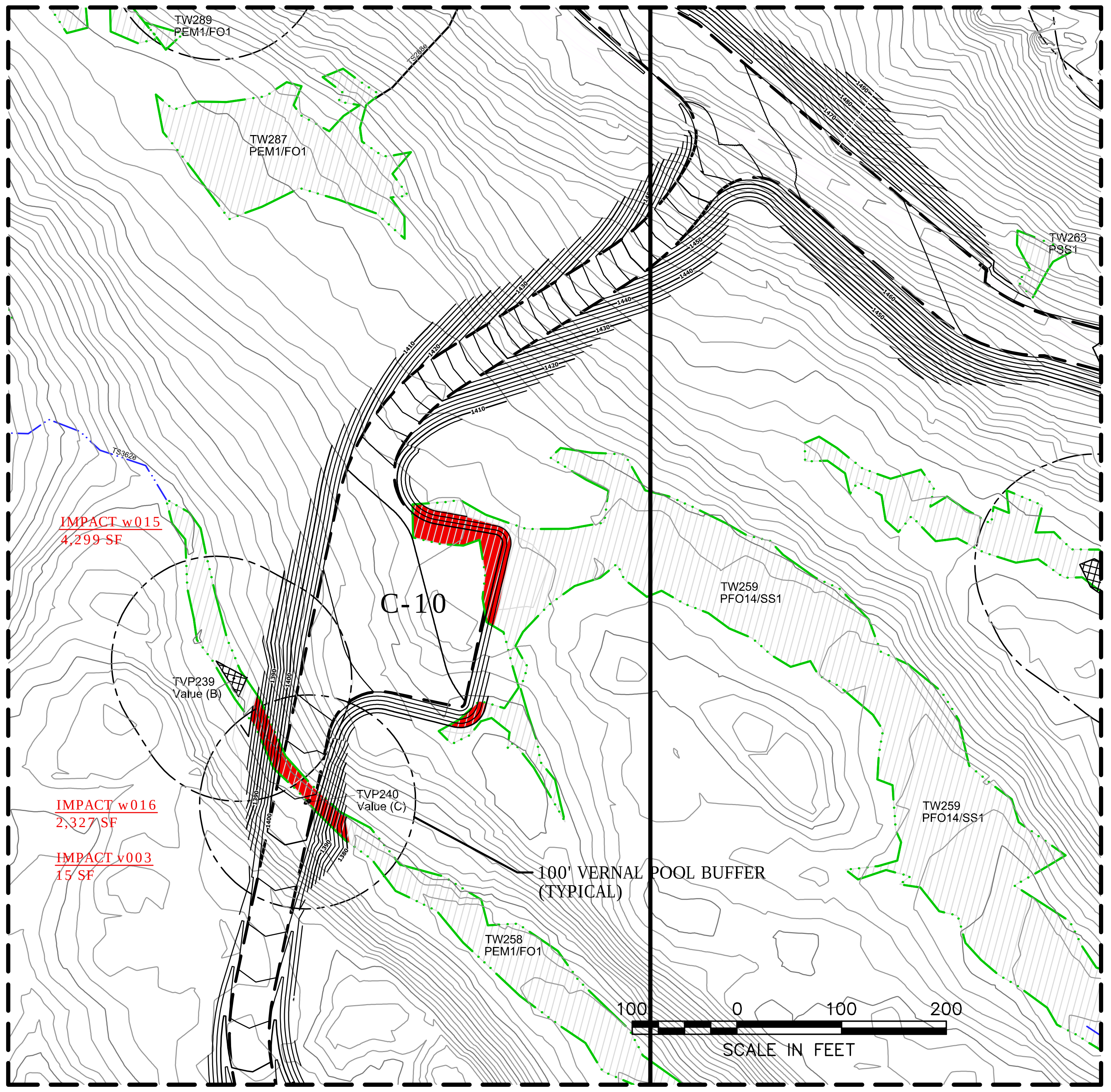
TOTAL WETLAND IMPACT
7,355 SQUARE FEET

PREVIOUS



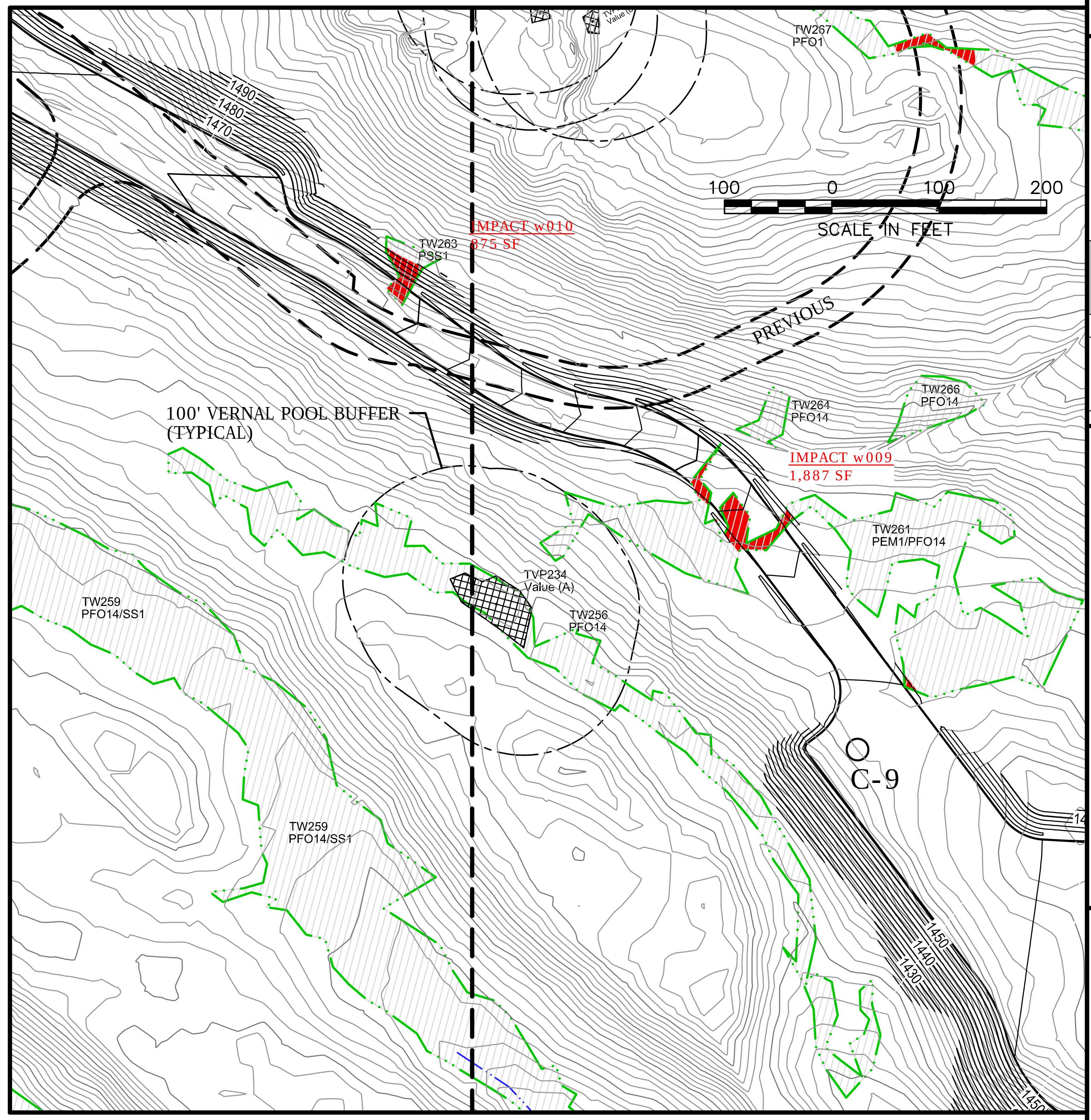
TOTAL WETLAND IMPACT
1,173 SQUARE FEET

NEW



TOTAL WETLAND IMPACT
6,641 SQUARE FEET

PREVIOUS



TOTAL WETLAND IMPACT
2,762 SQUARE FEET

NEW

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IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: OCTOBER 2013
PROJECT #: 13185
ENGIN'D BY: JCD
DRAWN BY: JCD
CHECK'D BY: AJC
ARCHIVE #: H-5100

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WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

50 PERCENT DESIGN

SHEET TITLE:
WETLAND IMPACT
REDUCTION
F-11 AND F-13

SHEET NUMBER:
DES-3

Section 9.J.

Compensatory Wetland Mitigation

Section 9.J. Compensatory Wetland Mitigation

As discussed above, the proposed project will have permanent impacts to approximately 1.14 acres of wetlands. Because this exceeds 10,000 square feet of impact, NHDES rules state that compensatory mitigation must be provided to offset these impacts. The following section describes the mitigation package proposed by Atlantic Wind for the Wild Meadows Wind Project, and explains how the proposed package meets or exceeds NHDES and USACE mitigation rules and guidelines.

Agency Coordination

The Atlantic Wind team met with State and Federal natural resource agencies multiple times in 2012 and 2013, both on site and in meetings, to discuss permittee-responsible mitigation options for the project. Participating agencies included NH DES, NH Fish & Game, US Army Corps of Engineers, and US Environmental Protection Agency. There are limited on-site opportunities for restoration or enhancement on this parcel that would adequately compensate for wetland impacts. The preservation potential is much higher, including several suitable sites that offer quality preservation options for wetland resources, wildlife habitat and watersheds. As a result, the agency interest is focused on a large conservation easement on, or close to, Project lands.

Project Impacts

The impact assessment (Appendix II) showed that direct permanent impacts to wetland and stream resources as a result of the proposed project will be relatively low (1.14 acres). Most of the impacted wetlands would be small forested wetlands, typical of the region. No high value wetland types or habitats occur within the project area. Four vernal pools are directly impacted by the Project, including two intermediate value pools and two least value pools; no highest value pools are directly impacted. Direct permanent impacts to streams include four intermittent stream crossings and 38 ephemeral streams.

Almost all secondary permanent impacts to wetland resources consist of vegetation conversion from the removal of trees and shrubs within the turbine laydown areas that are outside of the turbine pads, and under the electrical collector line. Secondary impacts occur at 23 wetlands, and total 23,862 SF (0.56 ac). Clearing will affect one small vernal pool (105 SF; <0.03 ac). Secondary impacts will affect two perennial streams, twelve intermittent streams and three ephemeral streams, totaling 12,890 SF or 0.30 acres.

Permanent impacts to stream and vernal pool buffers constitute the majority of the wetland resource impacts. As recommended during agency discussions, buffer widths of 20, 50, and 100 feet were assigned to ephemeral, intermittent, and perennial streams, respectively, and impacts within the buffer zones were quantified. Proposed impacts within the vernal pool envelope (0-100 feet from the delineated high water mark of the vernal pool) and the vernal pool buffer (100-250 feet) were also quantified, as required under the USACE Programmatic General Permit rules for the State of New

Hampshire. Permanent impacts to stream buffers total 4.95 acres and impacts to vernal pool buffers that exceeded 25% of the 250-foot vernal pool buffer total 26.1 acres.

The primary wetland function affected by the project is clearly Wildlife Habitat, primarily associated with the vernal pool impacts and the stream and vernal pool buffer impacts (see Wetland Impact Analysis, Appendix II). While the Wildlife Habitat function is relatively low at most individual wetlands due to their small size, forested cover, and frequent logging disturbance, wildlife habitat is collectively high across the project area. The project vicinity provides good habitat for a variety of wildlife typical of the region, and its location in a NHWAP-mapped large unfragmented block further raises wildlife habitat value.

The remaining functions and values determined to be affected by the project include Floodflow Alteration, Groundwater Recharge/Discharge, Sediment/Toxicant Retention, Nutrient Removal, Production Export, and Sediment/Shore Stabilization due to project construction or operation. Across the site, water quality and quantity are unlikely to be substantially affected due to the project's design efforts to minimize changes in flow paths and maximize erosion and sedimentation controls. The small size of the wetlands and their impacts, the lack of direct impacts to perennial streams and only four intermittent stream impacts will further reduce the opportunity for adverse effects to the listed wetland functions.

Site Selection

The important components of a mitigation parcel for this project were identified through agency discussions to aid Atlantic Wind in selecting a suitable site. To summarize, the mitigation parcel should include high value wildlife habitat; be in close proximity to existing conservation land; have a potential threat from development; have a willing landowner; have a willing easement holder; and be in close proximity to, or include portions of, the impacted lands. Atlantic Wind looked at several parcels within the unfragmented habitat block that surrounds the proposed Project in an attempt to identify the best site (Figure 9.J-1). Three sites were identified that offered a range of beneficial components. A summary of the prospective sites includes:

- A 31-acre parcel on Forbes Mountain Road that includes a 7-acre beaver pond with a small heron rookery and at least one stream. This area is potentially at risk from surrounding development, given several construction projects on Forbes Mountain Road. The agency consensus was that the site was too small to adequately compensate for impacts, and it could not be sufficiently enlarged without bisecting a very large parcel.
- A 380-acre parcel on Forbes Mountain that encompasses a section of the project and several streams, wetlands and high value vernal pools. The agency consensus was that it was isolated and did not face threats of any substance.
- The 223-acre Patten Brook parcel that encompasses a large perennial stream plus small streams, wetlands and at least one vernal pool, contains several significant wildlife features, is connected at one end to existing conservation land, and is potentially subject to development threats along

Washburn Road. This site met preliminary agency approval and was taken forward for compensatory mitigation.

Existing Conditions on Patten Brook Parcel

The Patten Brook parcel consists of two properties, both owned by H&H Investments, Inc. Lot 410-18 is approximately 187 acres, and lot 410-16 sublot 1 is approximately 40 acres for a total size of 223 acres.

The parcel lies within the Town of Alexandria, NH, and abuts Washburn Road, which forms the northern boundary of the NHWAP-defined forest block (Figure 9.J-2). It lies within the large unfragmented forest block that encompasses the proposed Wild Meadows project, as defined by the New Hampshire Wildlife Action Plan (NHWAP). The Patten Brook parcel was surveyed for wildlife habitat values on November 20, and December 3, 2013. Two Normandeau field biologists, including a Certified Wildlife Biologist, walked much of the roughly triangular parcel, noting wetland and stream features, potential vernal pools and wildlife sign and habitat. Weather conditions had been generally dry for the past month and a light snow cover was on the ground during both visits.

The elevation of this parcel ranges from just under 1100 feet to about 1840 feet above mean sea level. The terrain is generally steeply sloping with a predominantly north-northeastern exposure, except for the southern corner of the triangle, which lies on the opposite side of the ridge and has a southern exposure. The field survey revealed that softwoods are relatively uncommon, mostly concentrated in the immediate riparian zone of Patten brook, with only scattered, small patches in other locations. Softwoods observed consisted of eastern hemlock (*Tsuga canadensis*), red spruce (*Picea rubens*), balsam fir (*Abies balsamea*), and the occasional white pine (*Pinus strobus*). Hardwoods consisted of sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), red maple *(Acer rubrum*), yellow birch (*Betula alleghaniensis*) and occasionally green ash (*Fraxinus pennsylvanica*). In general, the understory was not dense and consisted of saplings of overstory tree species, hobblebush (*Viburnum alnifolium*), and striped maple *(Acer pennsylvanicum*), as well as red raspberry (*Rubus idaeus*) in recently cut stands. The time of year prevented the observation of herbaceous understory plants.

The parcel includes a series of streams in the lower elevations (Figure 9.J-3), including about 3100 linear feet of Patten Brook, a large coldwater perennial stream. Secondary stream features include approximately 1000 linear feet of perennial streams, 4700 linear feet of intermittent streams, and 2700 feet of ephemeral streams. Several small wetlands were observed along the brooks and on the lower slope. Total wetland acreage sketched on the site was 24,000 square feet, or 0.5 acres. One potential vernal pool location was observed. All of these estimates were based on a dry fall after leaf drop. It is likely that the extent of ephemeral streams, wetlands and vernal pools will increase after a full survey in the growing season.

Like most of the surrounding forest lands, this parcel appears to have an extensive history of logging, based on the presence of old stumps and skidder trials, and while the entire surveyed area qualifies as mature second growth, the age as well as the composition of the forest cover varies across the parcel due to its logging history. In general, the trees are older and the tree species diversity increases with elevation. Much of the surveyed area appears to have been selectively cut, as large, over mature trees are present throughout, though most common at the higher elevations. In particular, larger, older beech trees and large decadent sugar maples were most common at the higher elevations. Old stone walls and foundations are present near the highest elevation on the eastern boundary. The forest around these features appeared to have been cleared historically, and the second growth forest in these former farm fields consists of almost pure maple.

The forest cover on the parcel is mapped by the NHWAP () as predominantly Hardwood-conifer (63%; Figure 9.J-4). The remaining area is mapped as Hemlock-hardwood-pine (29%) and Lowland Spruce-fir (8%). The entire parcels falls within the NHWAP-ranked habitat (Figure 9.J-5). Based on the NHWAP habitat rankings, 25%, 5% and 70% of the parcel is ranked as Tier 1 (Highest Ranked in NH), Tier 2 (Highest Ranked in the Region) and Tier 3 (Supporting) habitat, respectively. The Tier 1 habitat corresponds to the hemlock-dominated cover along Patten Brook that coincides with a deer wintering area (DWA) mapped by NHFG, and the area of lowland spruce-fir cover in the southern corner of the parcel.

Regardless of NHWAP habitat ranking, the habitat value of the surveyed area appears good to excellent over most of the parcel. Directly observed wildlife consisted of just three species [red squirrel (*Tamiasciurus hudsonicus*), chickadees (*Poecile atricapillus*), and ruffed grouse (*Bonasa umbellus*)], but wildlife sign was prevalent. Tracks observed in the snow in and around Patten brook included coyote (*Canis latrans*), red fox (*Vulpes vulpes*), fisher (*Martes pennanti*), bobcat (*Lynx rufus*) , raccoon (*Procyon lotor*), grey squirrel (*Sciurus carolinensis*), red squirrel, white-tailed deer (*Odocoileus virginianus*) , and moose (*Alces alces*). Recent, light to moderate browsing by deer and moose was observed on preferred browse species including sugar maple saplings, hobblebush, and striped maple, though few deer and moose pellet groups were observed. All larger beech trees (12+” dbh) had moderate to heavy scarring by black bears (*Ursus americanus*), and over 25 “nests” of broken branches created by bears feeding on beech nuts in the fall of 2013 were observed throughout the mid to higher elevations on the parcel (Appendix 9.J-1, Photos 5 and 6). Of note, at least a quarter of these “nests” were small in size and located among relatively small tree limbs, indicating widespread use of the area by bear cubs. The numerous snags (e.g., Appendix 9.J-2, Photo 7) and older, declining beeches and sugar maples present at the mid to higher elevations provide abundant resources for hole-nesting birds and tree-roosting bats, as well as denning opportunities for fisher, porcupine (*Erethizon dorsatum*), and squirrels. Holes excavated by feeding pileated woodpeckers (*Dryocopus pileatus*) were common, and porcupine droppings were observed at the base of some of these wildlife trees as well.

A report detailing the records of the locations and distribution of protected species, exemplary natural communities, and natural resources of concern within a 10-mile radius of the proposed Wild Meadows Wind project was issued by NH Natural heritage Bureau (NHNHB) on October 4, 2013, and is valid for one year (Section 9.C of this application). There are no NHNHB records for rare species and/or exemplary communities within the proposed project area. However, these records do indicate that a sensitive area of wildlife habitat is present on the Patten Brook parcel. The NHNHB records indicate that the sensitive wildlife habitat is a bat hibernaculum. When last checked in 2010, 17 bats were observed, consisting of seven little brown bats (*Myotis lucifugus*), four northern long-eared bat (*Myotis septentrionalis*), and six *myotid* spp. dead of White Nose Syndrome. Seven of the remaining 11 were also infected. In 2008, the mine supported 57 northern long-eared bats and three small brown bats. Bat hibernacula have no legal status in New Hampshire, but according to NHNHB their conservation status is ranked as “critically imperiled due to rarity or vulnerability”. They have no legal or conservation ranking at the federal level.

The northwestern corner of the parcel is directly across Washburn Road from the Society for the Protection of New Hampshire Forest’s newly-acquired Butman parcel (486 acres; Figure 9.J-6). A 787-acre Forest Legacy Tract managed by the Department of Resource and Economic Development (DRED) abuts the north side of the Butman tract and lies approximately one-half mile north of the proposed Patten Brook parcel. When combined, the three parcels would create a 1496-acre block of conservation lands.

Preservation Vehicle

Atlantic Wind is proposing to protect the Patten Brook parcel through a conservation easement. The landowners, H & H Investments, Inc, have indicated their willingness to enter into negotiations to sell a conservation easement on the parcel (Appendix 9.J-2). Their primary interest is to retain timber harvesting privileges on most portions of the parcel. DRED’s Forest and Lands Division has indicated a willingness to hold the easement (Appendix 9.J-2). The details of the easement have yet to be negotiated but will be based on the components included in the attached easement template provided by NHDES (Appendix 9.J-2). Atlantic Wind has agreed to provide the deed research and a full ground survey of the parcel boundary. NHDES’s required Preliminary Mitigation Agreement between Atlantic Wind and NHDES has been signed by both parties (Appendix 9.J-2).

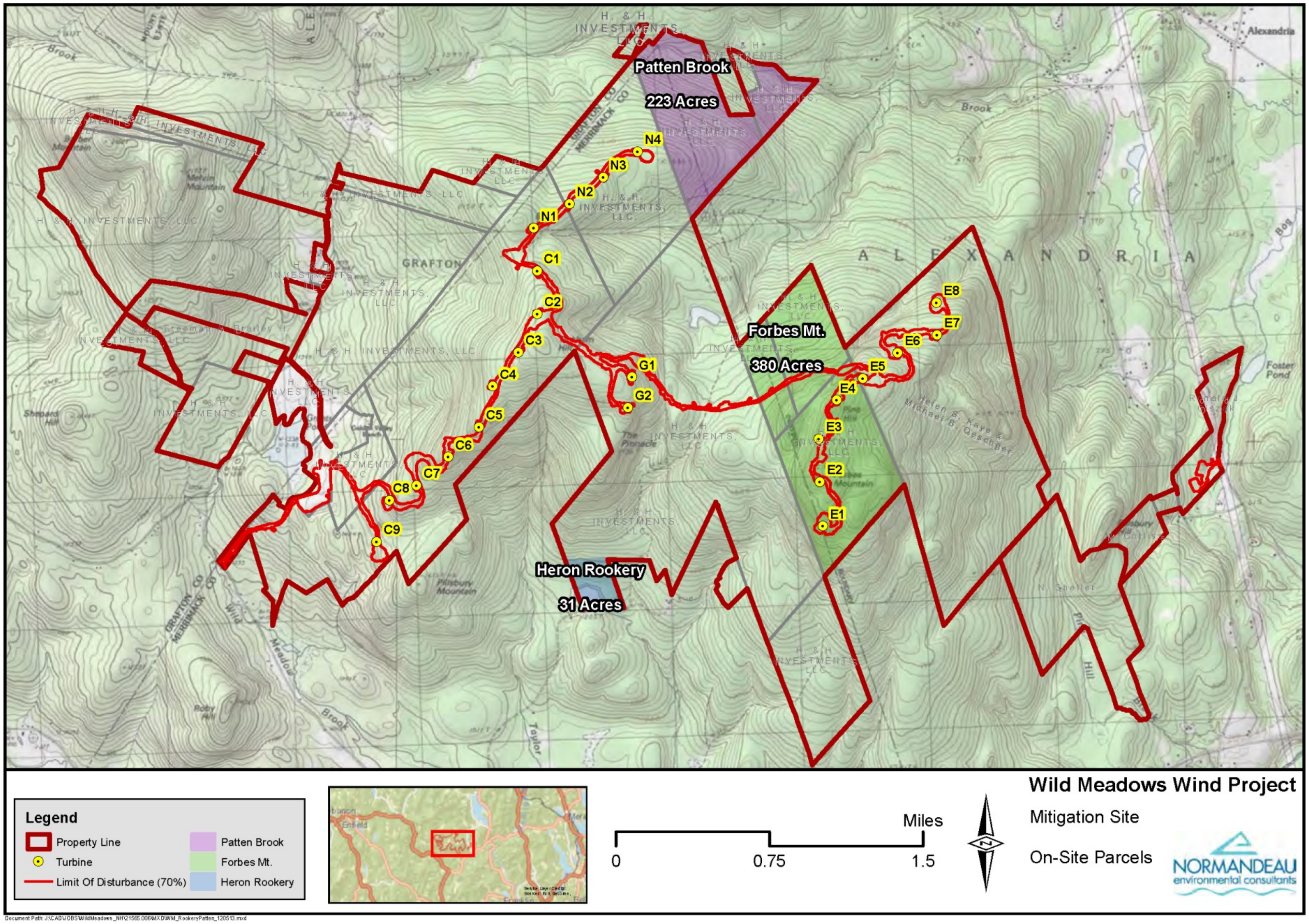


Figure 9.J-1. On-site preservation options for compensatory mitigation for Wild Meadows Wind Project.

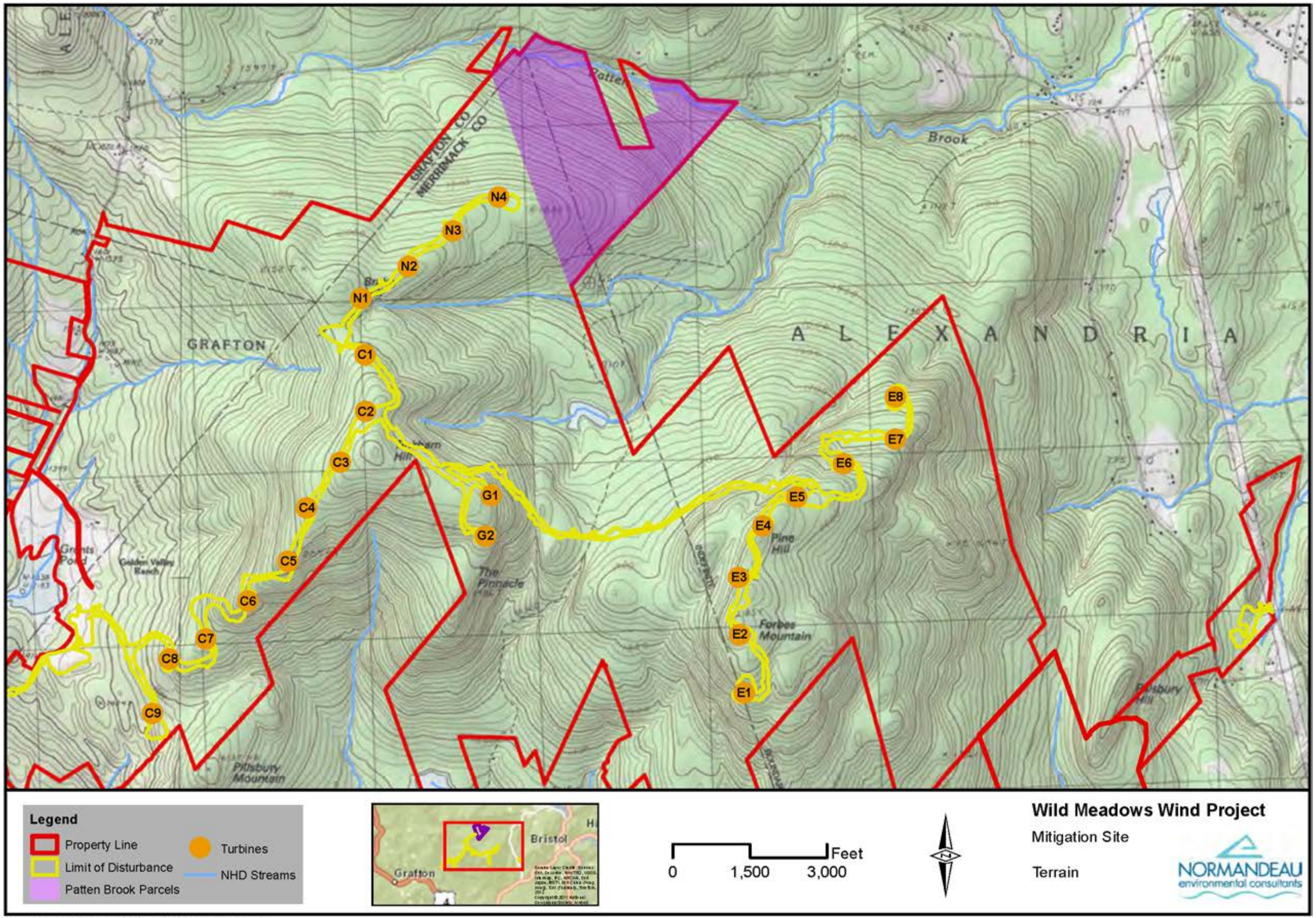


Figure 9.J-2. Location of Patten Brook parcel.

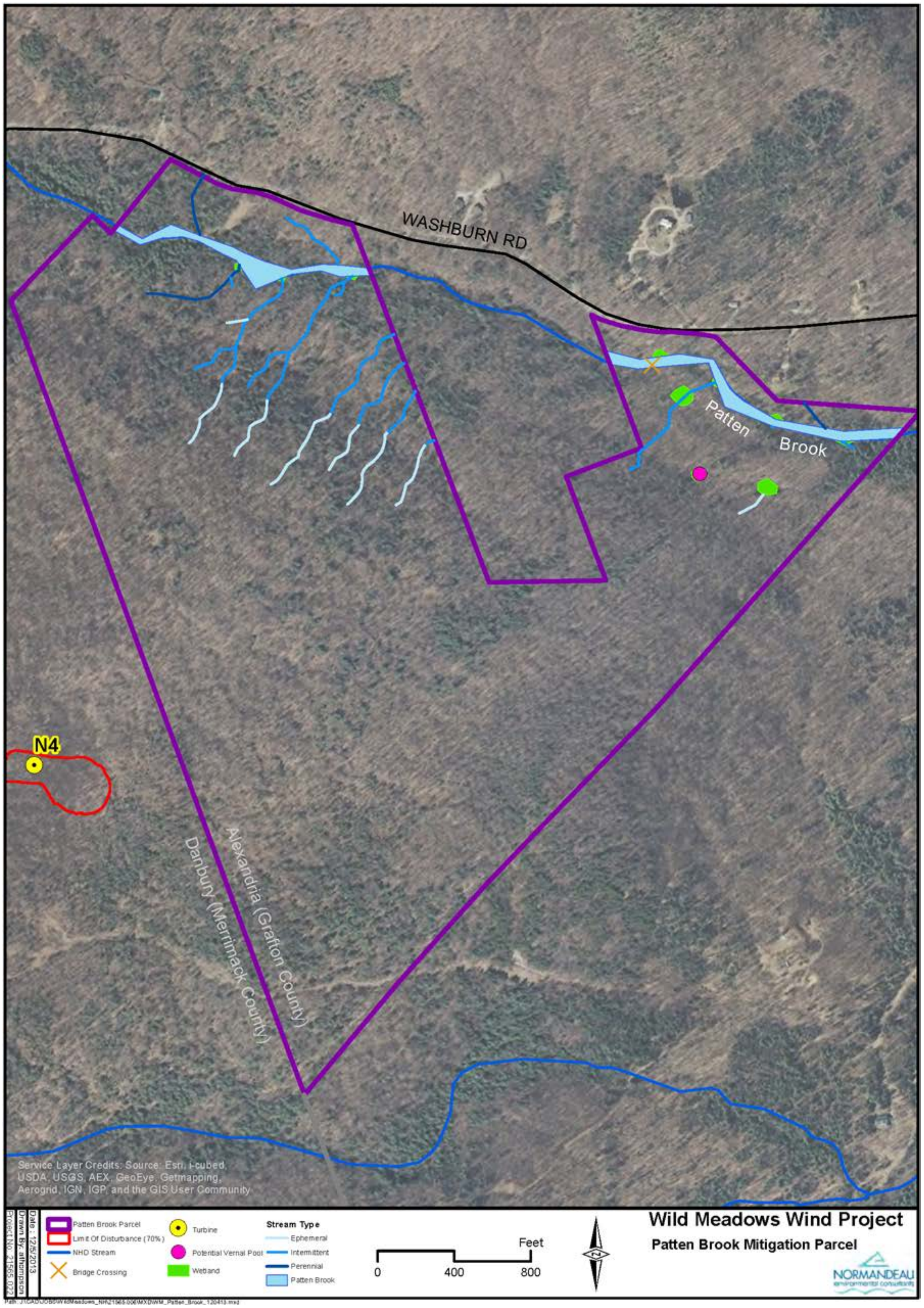


Figure 9.J-3. Existing wetland resources of Patten Brook parcel.

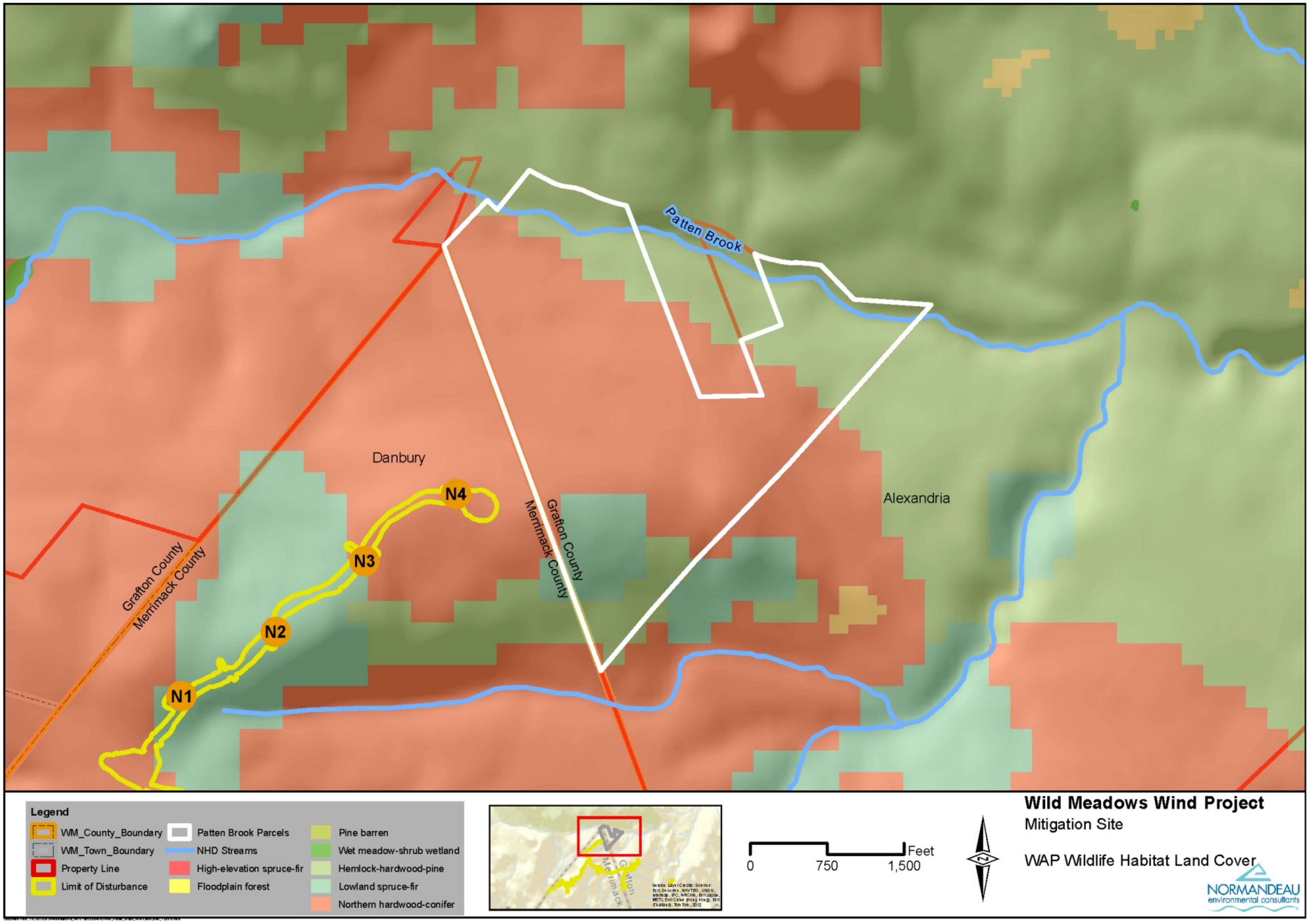
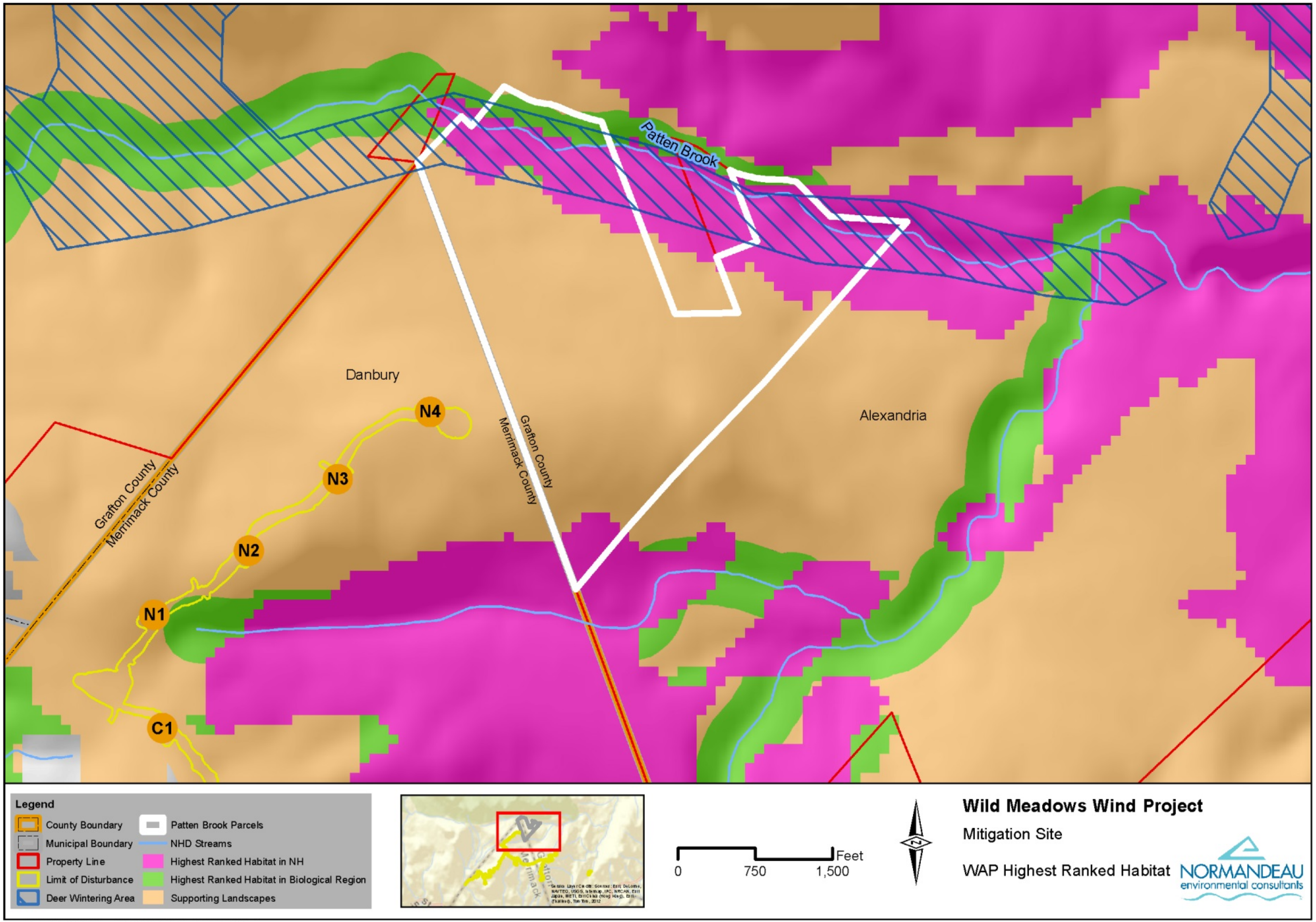


Figure9.J- 4. Forest cover types on the Patten Brook Parcel, based on NHWAP forest cover mapping.



Document Path: J:\CAD\JOBS\WildMeadows_NH\21565.008\MXD\WM_Patten_Brook_WAP_120513.mxd

Figure 9.J-5. Habitat ranking of the Patten Brook Parcel, based on NHWAP habitat ranking.

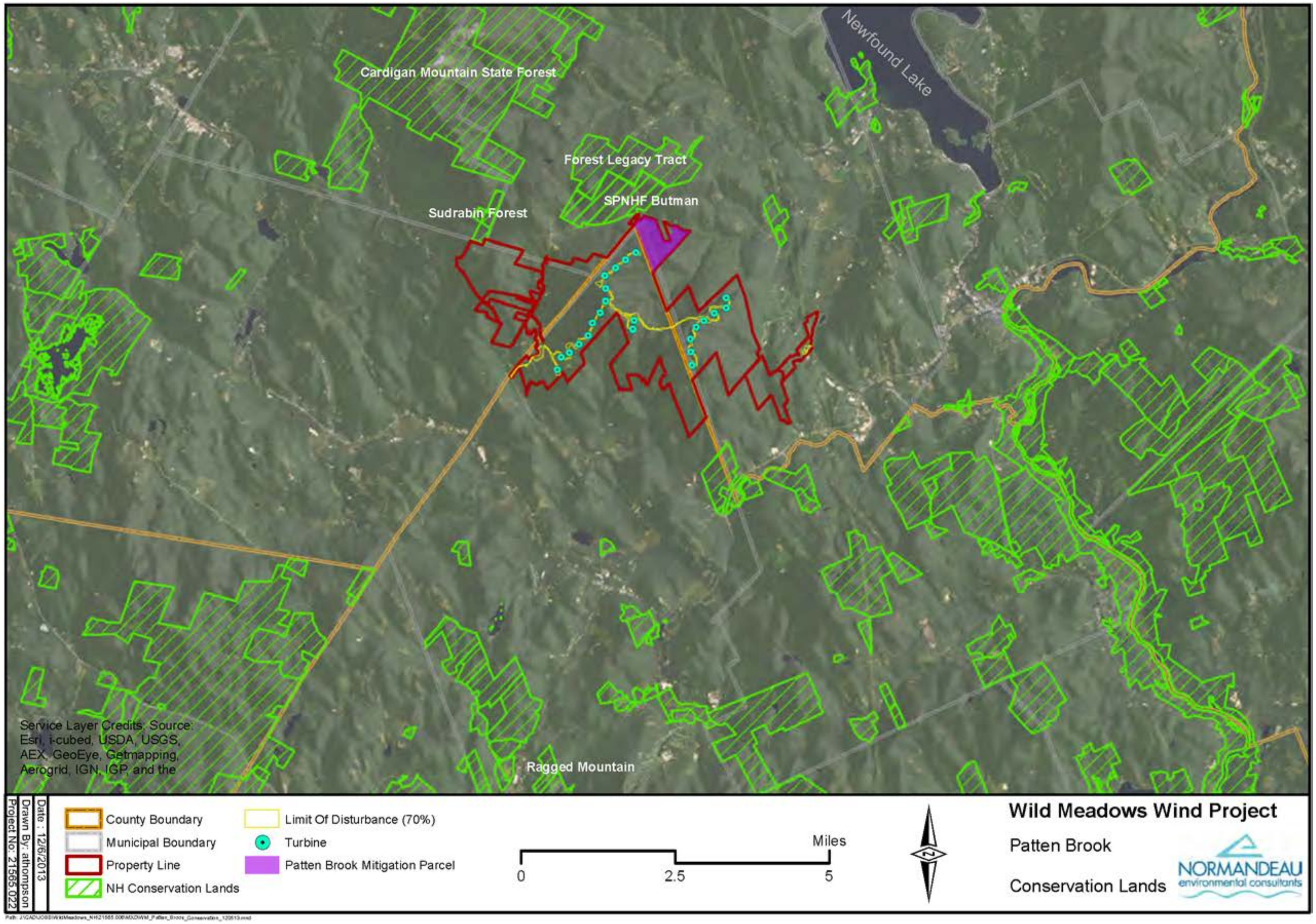


Figure 9.6. Conservation lands in the vicinity of the proposed Patten Brook preservation site.

Appendix 9.J-1.

Patten Brook Site Photographs

Photo 1. Typical forest cover on the Patten Brook parcel

Photo 2. Typical forest cover on the Patten Brook parcel

Photo3. Patten Brook

Photo 4. Patten Brook

Photo 5. Intermittent stream flowing to Patton Brook

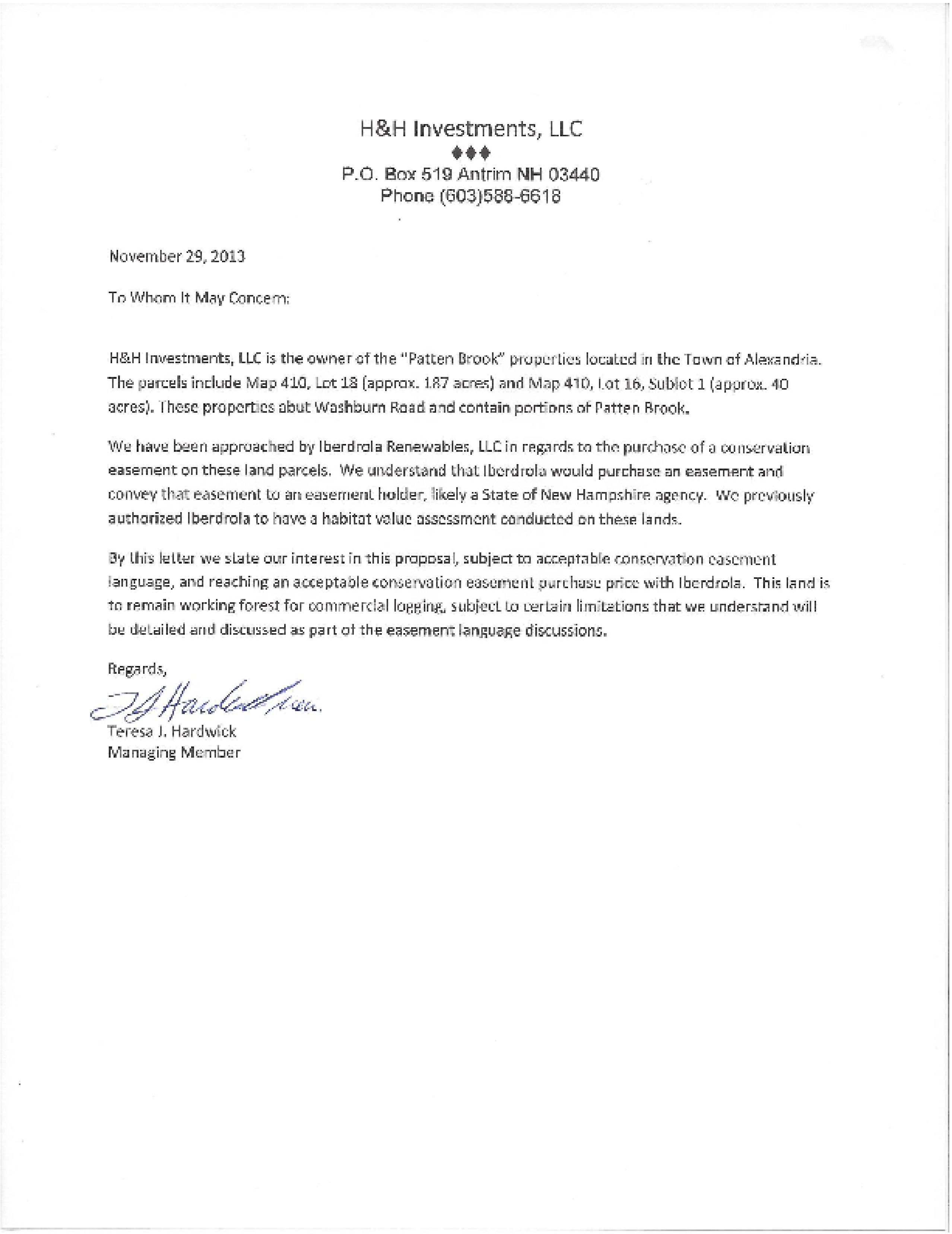
Photo 6. Bear scarred beech. Most BSBs had substantially heavier scarring than this specimen.

Photo 7. Beech tree with a bear “nest’ in the upper branches.

Photo 8. Snag on the Patten brook parcel. Most snags were at least this large, many were larger.

Appendix J-2.

Conservation Easement Documents



H&H Investments, LLC
◆◆◆
P.O. Box 519 Antrim NH 03440
Phone (603)588-6618

November 29, 2013

To Whom It May Concern:

H&H Investments, LLC is the owner of the "Patten Brook" properties located in the Town of Alexandria. The parcels include Map 410, Lot 18 (approx. 187 acres) and Map 410, Lot 16, Sublot 1 (approx. 40 acres). These properties abut Washburn Road and contain portions of Patten Brook.

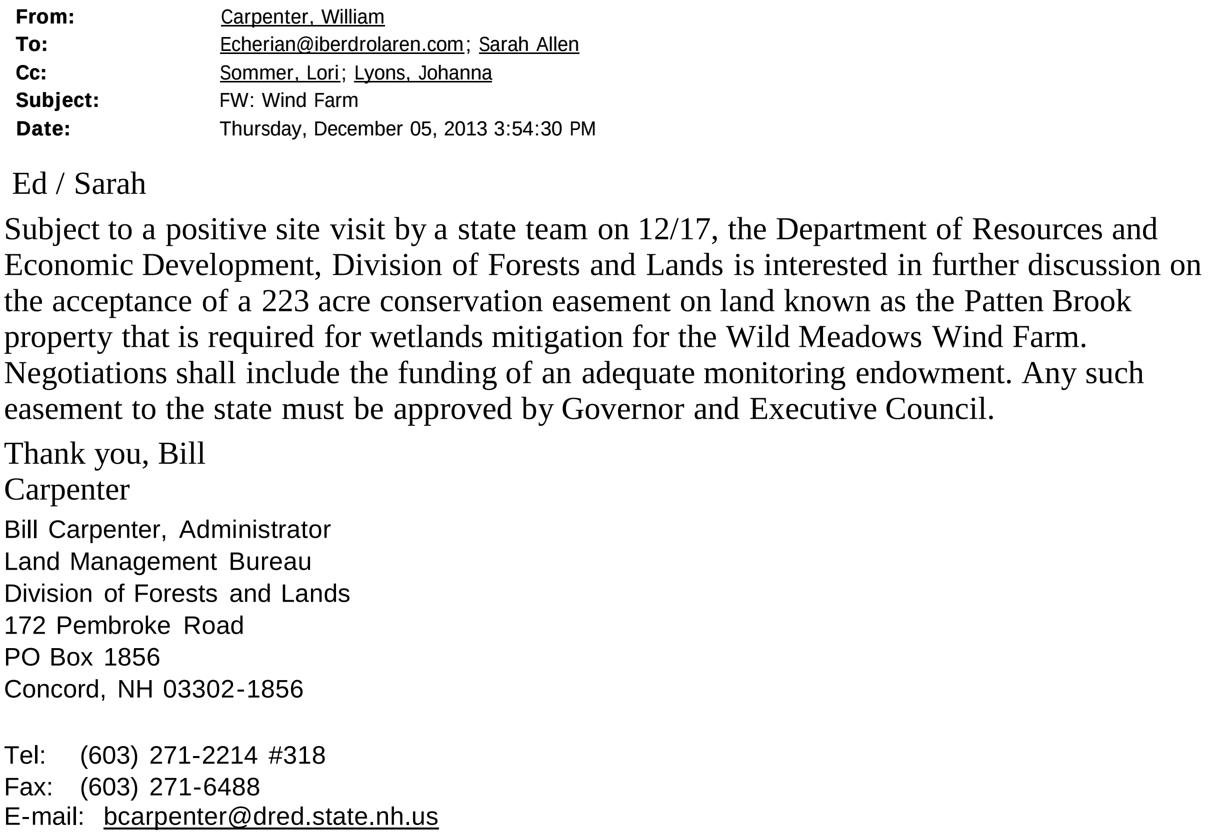
We have been approached by Iberdrola Renewables, LLC in regards to the purchase of a conservation easement on these land parcels. We understand that Iberdrola would purchase an easement and convey that easement to an easement holder, likely a State of New Hampshire agency. We previously authorized Iberdrola to have a habitat value assessment conducted on these lands.

By this letter we state our interest in this proposal, subject to acceptable conservation easement language, and reaching an acceptable conservation easement purchase price with Iberdrola. This land is to remain working forest for commercial logging, subject to certain limitations that we understand will be detailed and discussed as part of the easement language discussions.

Regards,

Teresa J. Hardwick
Managing Member

Landowner letter of interest



From: Carpenter, William
To: Echerian@iberdrolaren.com; Sarah Allen
Cc: Sommer, Lori; Lyons, Johanna
Subject: FW: Wind Farm
Date: Thursday, December 05, 2013 3:54:30 PM

Ed / Sarah

Subject to a positive site visit by a state team on 12/17, the Department of Resources and Economic Development, Division of Forests and Lands is interested in further discussion on the acceptance of a 223 acre conservation easement on land known as the Patten Brook property that is required for wetlands mitigation for the Wild Meadows Wind Farm. Negotiations shall include the funding of an adequate monitoring endowment. Any such easement to the state must be approved by Governor and Executive Council.

Thank you, Bill
Carpenter

Bill Carpenter, Administrator
Land Management Bureau
Division of Forests and Lands
172 Pembroke Road
PO Box 1856
Concord, NH 03302-1856

Tel: (603) 271-2214 #318
Fax: (603) 271-6488
E-mail: bcarpenter@dred.state.nh.us

DRED Letter of interest

DEPARTMENT OF ENVIRONMENTAL SERVICES
STANDARD CONSERVATION EASEMENT DEED
For the Aquatic Resource Mitigation Fund Program

[Name of Grantor(s)], of/with a principal place of business at [street name and number], Town/City of ___________, County of ___________, State of New Hampshire, (hereinafter referred to as the "Grantor," which word where the context requires includes the plural and shall, unless the context clearly indicates otherwise, include the Grantor's executors, administrators, legal representatives, devisees, heirs, successors and assigns), for consideration paid, with WARRANTY covenants, grant[s] in perpetuity to , with a principal mailing address of ______ , County of _______, State of New Hampshire, (hereinafter referred to as the "Grantee" which shall, unless the context clearly indicates otherwise, include the Grantee's successors and assigns), the Conservation Easement (herein referred to as the "Easement") hereinafter described with respect to that certain parcel of land (herein referred to as the "Property") with any and all buildings, structures, and improvements thereon/being unimproved land situated on in the Town/City of, County of _________, State of New Hampshire, with said Property and Easement more particularly bounded and described in Appendix "A" attached hereto and made a part hereof. And on a plan set dated _____ prepared by, titled " _______", Sheets __ through __ inclusive (the "Overlay Plan") on file with the Town and with the NH Department of Environmental Services.

With an Executory Interest (as described in Section 8, below) to **NH DEPARTMENT OF ENVIRONMENTAL SERVICES,** an administrative agency duly organized and existing under the laws of the State of New Hampshire, with a principal place of business at 29 Hazen Drive, City of Concord, County of Merrimack, State of New Hampshire, 03302, having been determined by the Internal Revenue Service to be an income tax exempt, publicly supported corporation, contributions to which are deductible for federal income tax purposes pursuant to the United States Internal Revenue Code, (sometimes referred to as "DES", and otherwise hereinafter referred to as the "Executory Interest Holder"),

OR

With a Secondary Executory Interest therein granted to the **STATE OF NEW HAMPSHIRE** acting through its Department of Environmental Services with a principal place of business at 29 Hazen Drive, City of Concord, County of Merrimack, State of New Hampshire, 03301.

All said Executory Interests being more fully described in Section 20 below entitled "Executory Interests". The Easement has been acquired in part with funds from a financial assistance award from the New Hampshire Aquatic Resources Mitigation Fund. This award placed certain continuing obligations on the Grantee in a Grant Agreement of near or even date.

In accordance with New Hampshire RSA 227-M:14, notwithstanding any other provision of law relating to the disposal of publicly-owned real estate, no deviation in the uses of any resource asset acquired under the Executory Interest Holder's grant to uses or purposes not consistent with the purposes of RSA chapter 227-M shall be permitted. The sale, transfer, conveyance, or release of any resource asset from public trust is prohibited, in accordance with RSA 227-M, except as provided in RSA 227-M:13.

1. CONSERVATION PURPOSES

The Easement hereby granted is pursuant to NH RSA 477:45-47, and in compliance with the New Hampshire Aquatic Resources Mitigation Fund Final In-lieu Fee Program Instrument (U.S. Army Corps of Engineers, New England District, Regulatory Division, File Number . The Easement hereby granted is pursuant to NH RSA 477:45-47, exclusively for the following conservation purposes:

A. The preservation and conservation of wetlands vegetation, soils, hydrology and/or habitat as documented in the baseline documentation report dated _______________ entitled "______________________________________" (the "Report"), which Report is on file at the office of the Department of Environmental Services and is incorporated herein in full.

B. To preserve and protect in perpetuity the natural vegetation, soils, hydrology, natural habitat and the scenic and aesthetic character of the Property so that the Property retains its natural qualities and functions;

C. To prevent any future development, construction, or use that will significantly impair or interfere with the conservation values of the Property while allowing the reserved rights of Grantor as allowed under Section 3;

[choose appropriate section(s) among the following and/or include new language specific to the Property:]

D. To maintain or enhance the water quality and aquatic and wildlife habitat of ______ and other ground and surface water resources including wetlands, streams, riparian areas, aquifers, vernal pools, and ponds on the Property;

E. The preservation of the land [and the water body of (name of water body) to which it provides access and on which it fronts] subject to the Easement granted hereby for outdoor recreation by and/or the education of the general public, through the auspices of the Grantee; and

F. The protection of the natural habitat of __________; and

G. These purposes are consistent with the clearly delineated open space conservation goals and/or objectives as stated in the [date] Master Plan of the Town/City of ___________, which states " " and with New Hampshire RSA 79-A which states: "It is hereby declared to be in the public interest to encourage the preservation of open space, thus providing a healthful and attractive outdoor environment for work and recreation of the state's citizens, maintaining the character of the state's landscape, and conserving the land, water, forest, agricultural and wildlife resources."; and

H. The preservation of that historically important land area which is ________ and/or the historic structure which is __________; and

All of these purposes [this purpose] are [is] consistent and in accordance with the U.S. Internal Revenue Code, Section 170(h).

2. USE LIMITATIONS [Subject to the reserved rights specified in Section 3 below]

A. The Property shall be maintained in perpetuity in an undeveloped and natural condition without there being conducted thereon any industrial or commercial activities, except as described below, and provided that such uses shall not degrade the conservation purposes of this Easement. No use shall be made of the Property, and no activity shall be permitted thereon, which is inconsistent with the intent of this Easement, that being the perpetual protection and preservation of the Property, as more particularly described in Section 1 herein.

B. The Property shall not be subdivided and none of the individual tracts that together comprise the Property shall be conveyed separately from one another.

C. No structure or improvement, including, but not limited to, a dwelling, any portion of a septic system, tennis court, swimming pool, dock, aircraft landing strip, tower, commercial facility, conduit or utility line, billboard or other means of advertising display, driveway or road made of asphalt or other impervious surface, mobile home or other temporary or permanent structure or improvement, shall be constructed, placed, or introduced onto the Property. However, ancillary structures and improvements including, but not limited to, a road, dam, fence, bridge, culvert, barn, maple sugar house, or shed may be constructed, placed, or introduced onto the Property only as necessary in the accomplishment of the agricultural, forestry, conservation, or noncommercial pedestrian outdoor recreational uses of the Property [and provided that they are not detrimental to the (scenic, agricultural, historic, recreational, wildlife habitat protection) purposes of this Easement]. Any such ancillary structure or improvement shall be constructed in a manner least detrimental to the conservation purposes of this Easement.

D. No removal, filling, or other disturbances of soil surface, nor any changes in topography, surface or subsurface water systems, wetlands, or natural habitat shall be allowed unless such activities:

i. Are commonly necessary in the accomplishment of the agricultural, forestry, conservation, habitat management, or noncommercial pedestrian outdoor recreational uses of the Property specifically reserved by Grantor and as allowed under Section 3 of this Easement; and

ii. Do not harm state or federally recognized rare, threatened, or endangered species, such determination of harm to be based upon information from the New Hampshire Natural Heritage Inventory or the agency then recognized by the State of New Hampshire as having responsibility for identification and/or conservation of such species; and

iii. Do not impact wetland soils or hydrology; and

iv. Are not detrimental to the purposes of this Easement.

Prior to commencement of any such activities, all necessary federal, state, and local permits and approvals shall be secured and such notices as may be required under Section 8 of this Easement shall be delivered.

E. No outdoor signs shall be displayed on the Property except as desirable or necessary in the accomplishment of the agricultural, forestry, conservation, or noncommercial pedestrian outdoor recreational uses of the Property, and provided such signs are not detrimental to the purposes of this Easement.

F. There shall be no mining, quarrying, excavation, or removal of rocks, minerals, gravel, sand, topsoil, or other similar materials on the Property, except in connection with any improvements made pursuant to the provisions of sections 2.A., C., D., or E., above. No such rocks, minerals, gravel, sand, topsoil, or other similar materials shall be removed from the Property.

G. There shall be no dumping, injection, burning, or burial of refuse, trash, rubbish, debris, junk, waste, man-made materials or materials then known to be environmentally hazardous, including vehicle bodies or parts, or other similar substances.

H. There shall not be conducted on the Property any industrial or commercial activities, except agriculture and forestry, including timber harvesting, as described below, and provided that the productive capacity of the Property to yield forest shall not be degraded by on-site activities.

i. Definitions:

a. Forestry and Agriculture: For the purposes of this Easement, "agriculture" and forestry" shall include animal husbandry, floriculture, and horticulture activities; the production of plant and animal products for domestic or commercial purposes; the growing of food crops: or forest trees of any size capable of producing timber or other forest products; the construction of roads or other access ways for the purpose of removing forest products from the Property; and the sale of products produced on the Property (such as firewood and maple syrup), all as not detrimental to the Purposes of this Easement.

b. Riparian Buffers: For the purposes of this Easement, “Riparian Buffers” shall be the areas within 100 feet of streams and Significant Wetland Areas as defined below. A map entitled __________ on file with the Grantor, the Grantee, and DES as part of the baseline documentation, designates the approximate locations of the Riparian Buffers. The Riparian Buffer edge shall be measured from the stream edge, measured from the edge of the normal high water mark. In cases where the top of the embankment is less than 50 feet from the stream edge, the riparian edge shall be measured from the top of embankment. In cases where wetlands surround the stream edge, the riparian edge shall be measured from the boundary of the upland edge of the wetland area.

c. Significant Wetland Areas: For the purposes of this Easement, “Significant Wetlands” are those areas that by virtue of their unspoiled condition, unique physical or biological features, rarity, and/or exemplary nature have special value in a particular locale. This value is reflected in a high degree of functioning relative to its ecological integrity, wildlife and aquatic life habitat, flood storage, groundwater interactions, and/or sediment and toxicant attenuation, and special social values such as education, scenic quality, and recreation. Significant wetlands are typically identified and evaluated by wetland scientists, wildlife biologists, or Natural Heritage ecologists through fieldwork and/or high resolution aerial photograph interpretation. Significant wetlands include, but are not necessarily limited to:

   I. Wetland communities or systems that are classified as exemplary due to their high quality as determined by their size, condition, and landscape context (that is, the condition of the surrounding landscape). See [insert web link] for further explanation of the characteristics of an exemplary wetland.
   II. Wetland communities or systems that are classified as exemplary (S1 and S2) due to their rarity in the State of New Hampshire by the NH Natural Heritage Bureau (NHB). Rare wetland types need not be of high quality to qualify as exemplary, but they must be considered viable in light of their size, condition, and landscape context. See [insert weblink] for further explanation of S rankings.
   III. New Hampshire Wildlife Action Plan Tier 1 and Tier 2 wetlands.
   IV. Wetlands providing habitat for Endangered, Threatened and Special Concern wildlife.

   Examples of significant wetland types in New Hampshire include, but are not limited to cedar swamps, black gum swamps, exemplary natural communities tracked in the Natural Heritage Bureau (NHB) database, any wetland community type ranked by the NHB as critically imperiled/or imperiled, bogs, fens (peat lands), and floodplain forests.

ii. Agriculture for industrial or commercial purposes shall be performed, to the extent reasonably practicable, in accordance with a coordinated management plan for the sties and soils of the Property. Said agriculture shall not be detrimental to the Purposes of this Easement, nor materially impair the scenic quality of the Property as viewed from public roads, or public trails. Said agricultural management activities shall be in accordance with the then-current scientifically based practices recommended by the University of New Hampshire's Cooperative Extension Service, by the U.S. Department of Agriculture's Natural Resources Conservation Service, by the New Hampshire Department of Agriculture, Markets, and Food, including but not limited to recommended practices in said NH Department's "Manual of Best Management Practices (BMP's) for Agriculture in New Hampshire" as may be revised, updated, or superseded from time to time, or by other successor governmental natural resource conservation and management agencies then active.

iii. For the purposes of this Easement, forestry shall not be performed in forested wetland areas which is a wetland area dominated by trees or woody vegetation 20 feet or taller; or shall not be performed in significant wetland areas.

iv. For the purposes of this Easement, forestry within the Riparian Buffer as defined in Section 2.H.i.B. shall adhere to the following additional restrictions:

a. No soil disturbance, tree cutting or removal shall occur and no herbicides or pesticides shall be used.
b. No skid trails, log landings, or road construction, except in circumstances where complying with this provision may result in a greater overall environmental impact or would preclude reasonable access to areas suitable for forestry. Existing roads as identified in the baseline documentation may be retained and used but must be maintained to minimize degradation of water quality and aquatic habitat.

v. For the purposes of this Easement, forestry within Significant Wetlands as defined in Section 2.H.i.C.shall adhere to the following additional restrictions:

a. No soil disturbance tree cutting or removal shall occur and no herbicides or pesticides shall be used.
b. No skid trails, log landings, or road construction, except in circumstances where complying with this provision may result in a greater overall environmental impact or would preclude reasonable access to areas suitable for forestry. Existing roads as identified in the baseline documentation may be retained and used but must be maintained to minimize degradation of water quality and aquatic habitat.

vi. Forestry for industrial or commercial purposes shall be performed, to the extent reasonably practicable, as hereinafter specified in accordance with the following goals, and in a manner not detrimental to the Purposes of this Easement.

a. The goals are:
    - protection of wetlands, riparian zones, and water quality;
    - maintenance of soil productivity;
    - protection of unique or fragile natural areas;
    - conservation of native plant and animal species;
    - maintenance or improvement of the overall quality of forest products;

- conservation of scenic quality; and
- protection of unique historic and cultural features.

b. Such forestry for industrial or commercial purposes shall be performed in accordance with a written forest management plan consistent with this Easement, prepared by a licensed professional forester, or by other qualified person approved in advance and in writing by the Grantee. Said Plan shall have been prepared not more than ten years prior to the date any harvesting is expected to commence, or shall have been reviewed and updated as required by such a forester or other qualified person at least thirty (30) days prior to said date.

c. At least thirty (30) days prior to harvesting, Grantor shall submit to Grantee a written certification, signed by a licensed professional forester, or by other qualified person approved in advance and in writing by the Grantee, that such forest management plan has been prepared in compliance with the terms of this Easement. Upon request by the Grantee, the Grantor shall submit the plan itself to Grantee within ten (10) days of such request, with Grantee’s acknowledgment that the plan’s purpose is to guide forest management activities in compliance with this Easement, and that the actual activities will determine compliance therewith.

d. Forestry Management Planning

  I. Timber harvesting with respect to such forestry shall be conducted in accordance with said plan and be supervised by a licensed professional forester, or by other qualified person approved in advance and in writing by the Grantee.

  II. Riparian buffers shall be marked in the field by a licensed professional forester, or by other qualified person approved in advance and in writing by the Grantee prior to timber harvesting.

  III. Such forestry shall be carried out in accordance with all applicable local, state, federal, and other governmental laws and regulations, and, to the extent reasonably practicable, in accordance with then-current, generally accepted best management practices for the sites, soils, and terrain of the Property. For references, see “Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire 2004” , and “Good Forestry in the Granite State: Recommended Voluntary Forest Management Practices for New Hampshire” (Good Forestry in the Granite State Steering Committee, 2010), or similar successor publications.

e. The forest management plan shall include:

  I. Explanation of how significant wetlands, riparian areas, vernal pools, and soils will be protected in association with road construction, other soil disturbing activities, and the implementation of stand prescriptions;

  II. A statement of landowner objectives;

  III. A map showing soil types as determined by the U.S. Natural Resources

Conservation Service, access roads, significant wetlands, vernal pools, and surface waters;

IV. Forest type map showing stands related to the prescriptions provided in the Plan; and

V. Prescriptions for each described stand, including commercial and non-commercial treatments;

and shall specifically address:

- the accomplishment of those Purposes for which this easement is granted;
- the goals in Section 2.H.vi.a. above; and
- Shall maintain an uncut buffer of 100 feet from the wetland edge as noted in the Riparian Buffer and Significant Wetland limitations, Section 2.H.iv. and 2.H.v.

3. RESERVED RIGHTS

A. [The Grantor reserves the right to conduct forestry and forest management activities for non-commercial purposes on the Property, including but not limited to cutting, planting, and thinning. Such activities are subject to the requirements of Section 2.A., and may only be conducted consistently with the conservation purposes of this Easement for the Grantor's personal use and the improvement of the forest resources on the Property and not for the contemporaneous production of sale proceeds or use in barter transactions.]

B. The Grantee reserves the right to control or remove non-native or invasive species.

C. The Grantor must notify the Grantee in writing at least thirty (30) days before any exercise of the aforesaid reserved rights.

4. NOTIFICATION OF TRANSFER, MAINTENANCE OR OTHER ACTIVITIES

A. The Grantor agrees to notify the Grantee in writing 10 days before the transfer of title to the Property [or any division of ownership thereof permitted hereby].

B. This grant creates a perpetual conservation easement that can be modified only in accordance with the provisions of this instrument, including Section 1, Condemnation. The Grantor and the Grantee shall together notify the New Hampshire Department of Environmental Services and the New Englan District of the U.S. Army Corps of Engineers sixty (60) days prior to taking any action under these sections.

C. The Grantee shall be under no obligation to maintain the Property or pay any taxes or assessments thereon.

D. Except as otherwise specifically stated in this Easement, Grantor shall notify Grantee in writing 30 days before exercising any right reserved herein. The notice shall describe the nature, scope, design, location, timetable and any other material aspect of the proposed activity in sufficient detail to permit Grantee to evaluate the proposed activity with the purposes of this Easement.

5. BENEFITS, BURDENS, AND ACCESS

A. The burden of the Easement conveyed hereby shall run with the Property and shall be enforceable against all future owners and tenants in perpetuity; the benefits of this Easement shall not be appurtenant to any particular parcel of land but shall be in gross and assignable or transferable only to the State of New Hampshire, the U.S. Government, or any subdivision of either of them, consistent with Section 170(c)(1) of the U.S. Internal Revenue Code of 1986, as amended, or to any qualified organization within the meaning of Section 170(h)(3) of said Code, which organization has among its purposes the conservation and preservation of land and water areas and agrees to and is capable of enforcing the conservation purposes of this Easement. Any such assignee or transferee shall have like power of assignment or transfer.

B. The Grantee shall have access to the Property and all of its parts for such inspection as is necessary to determine compliance with and to enforce this Easement and exercise the rights conveyed hereby and fulfill the responsibilities and carry out the duties assumed by the acceptance of this Easement.

C. Members of the general public shall [shall not] have access to the Property for outdoor recreation and education activities.

6. LEGAL REMEDIES OF GRANTEE

A. When a breach of this Easement, or conduct by anyone inconsistent with this Easement, comes to the attention of the Grantee, it shall notify the Grantor in writing of such breach or conduct, delivered in hand or by certified mail, return receipt requested.

B. The Grantor shall, within thirty (30) days after receipt of such notice or after otherwise learning of such breach or conduct, undertake those actions, including restoration, which are reasonably calculated to cure swiftly said breach, or to terminate said conduct, and to repair any damage. The Grantor shall promptly notify the Grantee of its actions taken under this section.

C. If the Grantor fails to take such proper action under the preceding paragraph, the Grantee shall, as appropriate to the purposes of this Easement, undertake any actions that are reasonably necessary to cure such breach or to repair any damage in the Grantor's name or to terminate such conduct. The cost thereof, including, but not limited to, the Grantee's reasonable expenses, expert fees, court costs, and legal fees, shall be paid by the Grantor, provided that the Grantor is directly or primarily responsible for the breach.

D. Nothing contained in this Easement shall be construed to entitle the Grantee to bring any action against the Grantor for any injury to or change in the Property resulting from causes beyond the Grantor's control, including, but not limited to, unauthorized actions by third parties, natural disasters such as fire, flood, storm, and earth movement, or from any prudent action taken by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Property resulting from such causes.

E. The Grantee and the Grantor reserve the right, separately or collectively, to pursue all legal remedies against any third party responsible for any actions detrimental to the conservation purposes of this Easement.

F. No delay or omission by Grantee in the exercise of any right or remedy upon any breach by Grantor shall impair Grantee's rights or remedies or be construed as a waiver.

G. Grantee shall have the right to enforce this Easement by appropriate legal means and to obtain injunctive and other equitable relief against any violations, including without limitation, relief requiring restoration of the Property to its condition prior to the time of the violation, and shall be in addition to, and not limitation of, any other rights and remedies available to the Grantee.

H. Grantee, by its acceptance of this Easement, does not undertake any liability or obligation relating to the condition of the Property.

I. The State of the New Hampshire shall have standing to seek mandamus or such other relief against Grantee and/or Grantor as may be necessary in the event Grantee and/or Grantor has not, in the State's opinion, taken steps necessary under this section to adequately preserve and protect the conservation purposes of this Easement.

7. COVENANTS TO "RUN WITH THE LAND"

A. The terms and conditions of this Easement shall run with the Property in perpetuity, and shall be enforceable against the Grantor or any other person or entity holding any interest in the Property.

B. The Grantee is authorized to record or file any notices or instruments appropriate to assuring the perpetual enforceability of this Easement. The Grantor agrees to execute any such instrument upon the Grantee's request.

C. The benefits of this Easement shall be in gross and the Grantee shall not assign them, except in the following instances and from time to time:

i. As a condition of any assignment, the Grantee requires that the conservation purposes of this Easement continue to be enforced, and

ii. The assignee, at the time of assignment, qualifies under Sections 501(c) (3) and 170(h) of the Internal Revenue Code of 1986 (as amended or replaced) and applicable regulations thereunder as an eligible donee to receive this Easement directly.

8. EXECUTORY INTEREST

A. If the Grantee ceases to enforce the Easement conveyed hereby or fails to enforce it within thirty (30) days after receipt of written notice from the New Hampshire Department of Environmental Services, a qualified organization as specified in Section 6 above (sometimes herein referred to as the "Executory Interest Holder"), requesting such enforcement delivered in hand or by certified mail, return receipt requested, then the Executory Interest Holder shall have the right to enforce this Easement. All reasonable costs of such enforcement shall be paid by the Grantee. In such circumstance, the Executory Interest Holder shall then also have the right to terminate the interest of the Grantee in the Property by recording a notice to that effect in the Registry of Deeds referring hereto and shall thereupon assume and thereafter have all interests, rights, responsibilities and duties granted to and incumbent upon the Grantee in this Easement.

B. The interests held by the Executory Interest Holder are assignable or transferable to any party qualified to become the Grantee's assignee or transferee as specified in Section 6**.** above. Any such assignee or transferee shall have like power of assignment or transfer.

OR when DES is holding rights to enforce

20. EXECUTORY INTEREST

A. If the Grantee ceases to enforce the Easement conveyed hereby or fails to take timely and appropriate steps to enforce it within thirty (30) days after receipt of written notice from an Executory Interest Holder requesting such enforcement, then the notifying Executory Interest Holder shall have all of the rights heretofore granted to the Grantee to enforce this Easement. All reasonable costs of such enforcement shall be paid by the Grantee.

B. In the circumstance of the immediately preceding paragraph A, or in the event the Grantee acquires the underlying fee interest in the Property, the notifying Executory Interest Holder shall then also have the right to terminate the Easement interest of the Grantee in the Property, after providing written notice to the Grantee, by recording a notice to that effect in the Registry of Deeds referring hereto. The notifying Executory Interest Holder shall thereupon assume and thereafter have all interests, rights, responsibilities and duties granted to and incumbent upon the Grantee in this Easement. In such circumstance, the Grantee shall promptly transfer to the stewardship fund of the notifying Executory Interest Holder, no less than $2,500, constituting the funds Grantee will have raised and dedicated toward perpetual stewardship of this Protected Property. The Executory Interest Holder will hold and manage such funds consistent with its then existing Stewardship Fund policies and practices.

C. The interests held by the Executory Interest Holder are assignable or transferable to any party qualified to become the Grantee's assignee or transferee as specified in the Section “Benefits & Burdens” above. Any such assignee or transferee shall have like power of assignment or transfer. Any holder of an interest in this Easement desiring to transfer or assign its interest shall send written notice describing said intention to all other holders of any interest in this Easement at least thirty (30) days prior to such transfer or assignment taking effect.

9. NOTICES

All notices, requests and other communications, required or permitted to be given under this Easement shall be in writing, except as otherwise provided herein, and shall be delivered in hand or sent by certified mail, postage prepaid, return receipt requested to the appropriate address set forth above or at such other address as the Grantor or the Grantee may hereafter designate by notice given in accordance herewith. Notice shall be deemed to have been given when so delivered or so mailed.

10. SEVERABILITY

If any provision of this Easement, or the application thereof to any person or circumstance, is found to be invalid by a court of competent jurisdiction, by confirmation of an arbitration award or otherwise, the remainder of the provisions of this Easement or the application of such provision to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.

11. CONDEMNATION

A. The Grantor and the Grantee agree that the donation of this Easement gives rise to a real property right, immediately vested in the Grantee with a fair-market value that is equal to the proportionate value that this Easement, determined at the time of the gift, bears to the value of the unrestricted Property at that time. Such proportionate value of the Grantee’s property right shall remain constant. Grantor’s conveyance of any portion of the Property “subject to” this Easement will not entitle the Grantee to share in any proceeds of sale.

B. Notwithstanding the foregoing, whenever all or part of the Property is taken in exercise of eminent domain by public authority so as to abrogate in whole or in part the Easement conveyed hereby, the

Grantor, the Grantee and any other party to this Easement shall thereupon act jointly or severally to recover the full damages resulting from such taking with all incidental or direct damages and expenses incurred by them thereby to be paid out of the damages recovered.

[Alternative subparagraph B - B. Notwithstanding the foregoing, if all or any part of the Property or any interest therein is taken by public authority under power of eminent domain and all or any part of the interests created by this Easement are thereby extinguished by act of public authority, then the owner(s) of the fee title shall be entitled to eighty percent (80%) of any award and the Grantee shall be entitled to twenty percent (20%) of such award, and such owner(s) and the Grantee shall cooperate in recovering the full value of all direct and consequential damages resulting from such action.]

C. The balance of the land damages recovered (including, for purposes of this subsection, proceeds from any lawful sale, in lieu of condemnation, of the Property unencumbered by the restrictions hereunder) shall be divided between the Grantor and the Grantee in proportion to the fair market value, at the time of condemnation, of their respective interests in that part of the Property condemned. The values of the Grantor's and Grantee's interest shall be determined by an appraisal prepared by a qualified appraiser at the time of condemnation.

D. The Grantee shall use its share of the proceeds in a manner consistent with and in furtherance of one or more of the conservation purposes set forth herein.

12. ADDITIONAL EASEMENT

Should the Grantor determine that the expressed purposes of this Easement could better be effectuated by the conveyance of an additional easement, the Grantor may execute an additional instrument to that effect, provided that the conservation purposes of this Easement are not diminished thereby and that a public agency or qualified organization, described in Section 5.A. above, accepts and records the additional easement.

13. SEPARATE PARCEL

The Grantor agrees that for the purpose of determining compliance with any present or future bylaw, order, ordinance, or regulation (within this section referred to as “legal requirements") of the Town/City of ____, the State of New Hampshire or any other governmental unit, the Property shall be deemed a separate parcel of land and shall not be taken into account in determining whether any land of the Grantor, other than the Property, complies with any said legal requirements. The Property shall not be taken into account to satisfy in whole or in part any of said legal requirements or any area, density, setback or other dimensional standard applicable to such land.

14. MERGER

The Grantor and Grantee explicitly agree that it is their express intent, forming a part of the consideration hereunder, that the provisions of the Easement set forth herein are to last in perpetuity, and that to that end no purchase or transfer of the underlying fee interest in the Property by or to the Grantee or any successor or assign shall be deemed to eliminate the Easement, or any portion thereof, granted hereunder under the doctrine of □merger□or any other legal doctrine.

The Grantee, by accepting and recording this Easement, agrees to be bound by and to observe and enforce the provisions hereof and assumes the rights and responsibilities herein granted to and incumbent upon the Grantee, all in the furtherance of the conservation purposes for which this Easement is delivered.

This is a conveyance to the state, a state agency, a county, a city, a town and/or village district pursuant to NH RSA 78-B:2 and is exempt from the New Hampshire Real Estate Transfer Tax.

IN WITNESS WHEREOF, I (We) have hereunto set my (our) hand(s) this ______ day of
, 20__.

Name of Grantor

Name of Grantor

The State of New Hampshire
County of

Personally appeared _____________________________________ and

_____________________ this ______ day of ______________, 20__ and

acknowledged the foregoing to be his/her/their voluntary act and deed.

Before me,

Justice of the Peace/Notary Public

My commission expires:

ACCEPTED: [Name of Grantee]

By:

Title:

Duly Authorized

Date:

The State of New Hampshire
County of

Personally appeared

Title

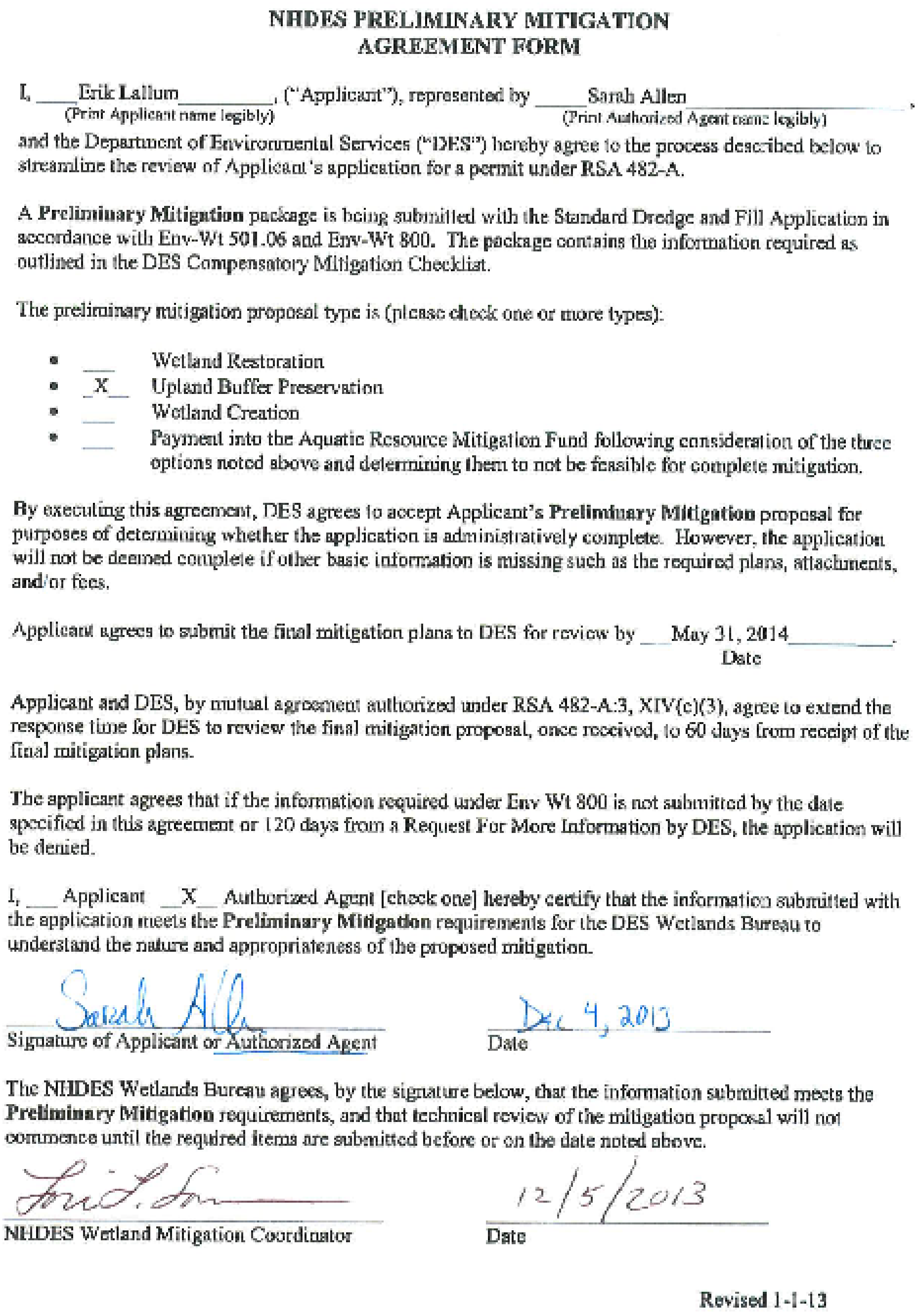
of the [Name of Grantee] , this ______ day of _________________, [month and year] and acknowledged the foregoing on behalf of the [Name of Grantee]

.

Before me,

Justice of the Peace/Notary Public

My commission expires:



NHDES PRELIMINARY MITIGATION AGREEMENT FORM

I, ____Erik Lallum__________, ("Applicant"), represented by _____Sarah Allen__________________.
(Print Applicant name legibly) (Print Authorized Agent name legibly)

and the Department of Environmental Services ("DES") hereby agree to the process described below to streamline the review of Applicant's application for a permit under RSA 482-A.

A **Preliminary Mitigation** package is being submitted with the Standard Dredge and Fill Application in accordance with Env-Wt 501.06 and Env-Wt 800. The package contains the information required as outlined in the DES Compensatory Mitigation Checklist.

The preliminary mitigation proposal type is (please check one or more types):

- ___ Wetland Restoration
- _X__ Upland Buffer Preservation
- ___ Wetland Creation
- ___ Payment into the Aquatic Resource Mitigation Fund following consideration of the three options noted above and determining them to not be feasible for complete mitigation.

By executing this agreement, DES agrees to accept Applicant's **Preliminary Mitigation** proposal for purposes of determining whether the application is administratively complete. However, the application will not be deemed complete if other basic information is missing such as the required plans, attachments, and/or fees.

Applicant agrees to submit the final mitigation plans to DES for review by ___May 31, 2014__________.
Date

Applicant and DES, by mutual agreement authorized under RSA 482-A:3, XIV(c)(3), agree to extend the response time for DES to review the final mitigation proposal, once received, to 60 days from receipt of the final mitigation plans.

The applicant agrees that if the information required under Env Wt 800 is not submitted by the date specified in this agreement or 120 days from a Request For More Information by DES, the application will be denied.

I, ___ Applicant __X__ Authorized Agent [check one] **hereby certify** that the information submitted with the application meets the **Preliminary Mitigation** requirements for the DES Wetlands Bureau to understand the nature and appropriateness of the proposed mitigation.

Sarah All
Signature of Applicant or Authorized Agent

Dec 4, 2013
Date

The NHDES Wetlands Bureau agrees, by the signature below, that the information submitted meets the **Preliminary Mitigation** requirements, and that technical review of the mitigation proposal will not commence until the required items are submitted before or on the date noted above.

NHDES Wetland Mitigation Coordinator

12/5/2013
Date

Revised 1-1-13

Attachment A.

20 Questions for

Wild Meadows Wind Project

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF ENVIRONMENTAL SERVICES
LAND RESOURCES MANAGEMENT
WETLANDS BUREAU
29 Hazen Drive, PO Box 95, Concord, NH 03302-0095
Phone: (603) 271-2147 Fax: (603) 271-6588
Website: http://des.nh.gov/organization/divisions/water/wetlands/index.htm
Permit Application Status: http://des.nh.gov/onestop/index.htm

WETLANDS PERMIT APPLICATION – ATTACHMENT A
Minor & Major 20 Questions

Env-Wt 302.04 Requirements for Application Evaluation - For any major or minor project, the applicant shall demonstrate by plan and example that the following factors have been considered in the project's design in assessing the impact of the proposed project to areas and environments under the department's jurisdiction. Respond with statements demonstrating:

1. The need for the proposed impact.

The proposed wetland impacts are necessary for the construction and operation of a proposed wind farm in Danbury and Alexandria that will provide renewable electrical energy. The impacts are associated with the construction of approximately 8.9 miles of access roads, many of which follow existing logging roads, and the construction of project related components including 23 wind turbine sites, a permanent meteorological tower on Forbes Mountain, temporary laydown and equipment storage areas, overhead/buried electrical collection lines, an operation & maintenance building and a electrical substation.

"Renewable energy generation technologies can provide fuel diversity to the state and New England generation supply through use of local renewable fuels and resources that serve to displace and thereby lower regional dependence on fossil fuels. This has the potential to lower and stabilize future energy costs by reducing exposure to rising and volatile fossil fuel prices. The use of renewable energy technologies and fuels can also help to keep energy and investment dollars in the state to benefit our own economy. In addition, employing low emission forms of such technologies can reduce the amount of greenhouse gases, nitrogen oxides, and particulate matter emissions transported into New Hampshire and also generated in the state, thereby improving air quality and public health, and mitigating against the risks of climate change. It is therefore in the public interest to stimulate investment in low emission renewable energy generation.

2. That the alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site.

Based on Iberdrola Renewables' extensive experience in developing wind projects throughout the United States, Europe, and Central America, in combination with guidelines established by the National Wind Coordinating Committee, the American Wind Energy Association and the European Wind Energy Association, Iberdrola has developed a comprehensive and practical methodology for selecting wind project sites. This selection process indicates that the Wild Meadows Wind Project offers excellent potential for wind resources, environmental appropriateness and community acceptance.

The on-site alternatives analysis included a number of different potential turbine layouts, road configurations, electrical collector system designs, wind turbine types, and various potential locations for the O&M building, switchyard, and construction staging areas. Four primary alternatives were evaluated: a larger Project size, different interconnection points, different turbine types and alternative road layouts. See Section 9.I for a more detailed narrative.

3. The type and classification of the wetlands involved.

Most of the wetlands within the Project Area are deciduous, coniferous or mixed forested wetlands, and typically small in size due to the hilly terrain. They are predominantly hillside seeps or depressions, often with limited soil development from shallow bedrock at higher elevations, or stony till soils on the slopes. Many of these wetlands are technically classified as a mix of forested and scrub-shrub or emergent wetland due to removal of the canopy layer during recent logging activity. Other wetland types include wet meadow and scrub-shrub wetlands that occur on the more level terrain near the proposed operation and maintenance facility and the substation. The wet meadow wetlands predominant in the active hayfields surrounding Golden Valley Road. The scrub-shrub wetland near the substation was formerly part of a larger wetland system, but is currently bisected by Bog Road. See Attachment A Supplement and the Existing Conditions Report for additional information.

4. The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters.

Most of the wetlands have either surface or subsurface connections to ephemeral and intermittent streams, and in relatively few cases, small perennial streams. These in turn drain to one of five main perennial streams in the project vicinity: Wild Meadow Brook, Taylor Brook, Pine Hill Brook, Bog Brook and Patten Brook. Wild Meadow Brook, Pine Hill Brook and Taylor Brook drain south to the Smith River and ultimately to the Pemigewasset River. Bog Brook and Patten Brook flow north and east to enter Newfound Lake.

Three small ponds occur within the vicinity of the Project. The largest is Grants Pond, a 39-acre pond along Wild Meadows Road. A 7-acre beaver impoundment on Forbes Mountain Road supports a heron rookery. Another 6-acre, multi-tiered beaver impoundment lies in the saddle between Forbes Mountain and Braley Hill.

See the Attachment A Supplement for additional information on the larger drainages and watersheds surrounding the project.

5. The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area.

None of the wetland resources within the project are considered rare. Most are relatively small, with the exception of the emergent and scrub-shrub wetlands bordering Grants Pond in Danbury, and Bog Brook in Alexandria, Wetlands TW301 and TW303, and OW-20, respectively. Portions of these wetlands lay within the Wetland Survey Zone and only three small impacts to Wetland OW-20 are proposed, totalling 2,544 square feet in areas; no impacts will occur to Wetlands TW301 or TW303. The remaining wetlands are primarily forested of typical composition and functional value for the region. These wetlands are small due to the hilly terrain.

The large named streams or their buffers in the project vicinity are not directly or indirectly affected by the project. Direct impacts occur to intermittent and ephemeral streams only.

Vernal pools within the project area exhibit the typical range of use by breeding vernal pool amphibians.

6. The surface area of the wetlands that will be impacted.

The total permanent direct impact to wetlands and surface water resources is approximately 1.1 acres, a very small amount given the construction/upgrade of 8.9 miles of access roads and a total land disturbance of approximately 150 acres. The 1.1 acres of permanent direct wetland impact is approximately 0.73 percent of the lands to be disturbed by this project and less than 0.1 percent of the total project area. Significant wetlands were avoided altogether. Wetland impacts are also small, averaging 891 square feet. The largest wetland impact is 8,223 square feet within the active hayfield in Danbury (Wetland TW386). See the attached Impact Analysis in Appendix II.

7. The impact on plants, fish and wildlife including, but not limited to:
   - a. Rare, special concern species;
   - b. State and federally listed threatened and endangered species;
   - c. Species at the extremities of their ranges;
   - d. Migratory fish and wildlife;
   - e. Exemplary natural communities identified by the DRED-NHB; and
   - f. Vernal pools.

The details for this section are provided in the Attachment A Supplement. To summarize: a. Based on NHNHB records, no rare or special concern species occur within the proposed impact areas, and site specific surveys have not identified additional populations or habitats, therefore no impacts are anticipated.

b. No state or federally listed species are known to occur or were identified during site specific surveys.

c. Site-specific winter tracking and photographic surveys for American marten, which typically occur north of the site, found no evidence that this species utilizes the project area, therefore no impacts are anticipated.

d. The primary migratory groups that use the Project Area are night migrating neotropical passerines, migratory bats, and diurnally migrating raptors. Some mortality of migrants is anticipated due to turbine strikes, but the level of use by these species indicates that the project willl have limited population-level impacts.

e. Based on NHB records, no exemplary communities occur within the proposed project area. The medium-level fen system listed on Bog Brook occurs one-half mile downstream of the Project Area, and no impacts are anticipated.

f. Only 4 vernal pools are directly impacted (2 intermediate value pools and 2 least value pools) ; no direct impacts will occur to the highest value pools pools on the site. Impacts to vernal pool buffers are expected to be minimal due to the narrow, low gravel roads and the light vehicle traffic during project operation.

8. The impact of the proposed project on public commerce, navigation and recreation.

The proposed project will not impact public commerce or navigation.

The proposed project will not affect recreation as the project-leased parcels are privately owned and public access is limited.

The project is expected to have a positive effect on commerce because the project will contribute to the local economy construction jobs and permanent jobs associated with the operation and maintenance of the proposed wind farm, and through PILOT payments to Danbury and Alexandria.

A detailed analysis can be found in the SEC application.

9. The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake, the applicant shall be required to indicate the type of material to be used and the effect of the construction of the wall on the view of other users of the lake.

Most of the ground portions of the site, including the internal access roads, O&M building and the staging areas, will be obscured from public view by the ridges and trees surrounding the site. The general public may have views of some or all of the wind turbines, depending on location. The visual impact analysis indicated that over 96% of the study area will not have daytime or nighttime views of the proposed turbines when factoring in the screening from topography and mapped forest vegetation. Newfound Lake (approximately 3.8 miles to the northeast) and its eastern shoreline, as well as some scattered higher elevation openings and larger open fields in valleys to the south and east of the proposed Project area, are the areas most likely to have views that include the majority of the proposed turbines. Visual simulations indicated that the Project's overall contrast with the visual/aesthetic character of the area will generally be moderate. See additional detail in the Attachment A Supplement and the full report in the SEC Application.

10. The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel, the applicant shall be required to document the extent to which the dock would block or interfere with the passage through this area.

The site is privately owned and public access is by permission of the landowners. The proposed project will not have any effect on the manner in which the landowner allows public access to the site, except for safety limitations on public access to wind turbine facilities.

11. The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties.

No wetland impacts will occur within 20 feet of adjacent property boundaries. All abutting property owners have been notified of the proposed project in accordance with NHDES rules. Documentation of this notification is found in Section 9.H.

12. The benefit of a project to the health, safety, and well being of the general public.

The project will benefit the public by providing an important new source of emission-free renewable energy. The project is compatible with the existing commercial forest operations on the site, which itself is a renewable resource. The net benefit will create renewable energy for New Hampshire, will preserve the sustainable harvesting of renewable timber resources, and create new jobs and economic benefits due to the multiplier effect of salaries and wages. The project is not expected to result in any substantial adverse effects to the health, safety, or well being of the general public. Atlantic Wind, LLC is owned by Iberdrola Renewables, LLC, which owns and operates over 40 wind farms in the U.S., including the Lempster Wind Farm and the Groton Wind Farm, and has the depth of experience and technical resources to operate the proposed Wild Meadows Wind Project in a safe and responsible manner.

13. The impact of a proposed project on quantity or quality of surface and ground water. For example, where an applicant proposes to fill wetlands the applicant shall be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site.

This project is not expected to have any direct impacts on groundwater drinking resources due to the lack of such resources in the project area. A small stratified drift aquifer is mapped under the eastern part of the proposed substation associated with Bog Brook. There are no other stratified drift or till aquifers on the project site or within the vicinity of the project, nor are there source water protection and/or well head protection areas. The project does not rely on or propose to make large groundwater withdrawals and thus will have no effect on groundwater supply.

A site specific drainage analysis was conducted as part of the Alteration of Terrain permit and may be found in the SEC application. This analysis demonstrates that all reasonable efforts were taken during project design to maintain water quantity and quality at a sub-watershed level.

A summary of the drainage analyses and surface water treatments, including stump grinding berms, treatment swales, rock sandwiches, level spreaders, and sediment traps is provided in the Attachment A Supplement and the Alteration of Terrain permit application.

14. The potential of a proposed project to cause or increase flooding, erosion, or sedimentation.

According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Program Flood Insurance Rate Map (FIRM), the entire Wild Meadows project lies outside the 500-year floodplain. Flood storage for the project area will not be affected as there will be no direct impact on the 100-year floodplain for any watercourse.

As discussed in more detail in the Drainage Report submitted as part of the Alteration of Terrain permit application, the project will not significantly change the peak stormwater runoff discharge rates between the pre- and post-development conditions for the 2, 10, and50 year storm events.

As indicated on the Erosion Control Plan sheets included in the Alteration of Terrain design plan set, measures to reduce the potential impact to wetlands and surface waters include the installation of temporary erosion and sedimentation controls such as pervious barriers consisting of bark mulch and stump grinding, stone check dams and erosion control blankets. Riprap aprons will be installed at the outlet end of proposed circular culverts, as necessary, to minimize the potential for erosion. Other surface water treatments include treatment swales, level spreaders, and rock sandwiches to minimize channelization and reduce erosion potential.

15. The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards.

This criterion typically applies to projects involving shoreline alterations. Since there are no large open bodies of water or flowing streams in the vicinity of the project, the proposed construction and operation of Wild Meadows will not redirect current or wave energy. The four proposed intermittent stream crossings have been designed in accordance with the New Hampshire Stream Crossing Guidelines to the extent practicable to minimize the potential for erosion.

16. The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted.

Most of the proposed impacts are to wetlands that are completely contained within the interior of the site. Many of the wetlands on the site have already been affected by commercial logging operations. Numerous skidder roads and log yards cross the wetlands and streams in numerous locations causing ruts that allow water to channelize and runoff at a greater velocity, and in some cases, expand the wetland. All of the proposed direct wetland impacts will be due to crossings for the construction and/or upgrade of gravel access roads and/or crane pads. In many places these are crossings currently in place remaining along old skidder roads. The upgraded crossings will be more stable and less subsequent erosion will occur, thus providing a long term benefit to the stream channels along the proposed access roads previously impacted by skidder roads.

Two large wetlands adjoining Grants Pond and Bog Brook extend onto other properties. No impacts are proposed to the wetlands adjoining Grants Pond in Danbury. At OW-20 near Bog Brook, three small impacts are proposed which are not anticipated to negatively affect the wetland, due to existing disturbance from a former mining operation. Less than 1% of the on-property portion of the wetland is impacted, none of which are expected to lower its current functional value.

17. The impact of the proposed project on the values and functions of the total wetland or wetland complex.

The total permanent direct impact to wetlands and surface water resources is approximately 1.1 acres, a very small amount given the construction/upgrade of a total land disturbance of approximately 150 acres, including 8.9 miles of access. The 1.1 acres of permanent direct wetland impact is approximately 0.73 percent of the lands to be disturbed by this project and less than 0.1 percent of the total project area. Significant wetlands were avoided altogether.

Most of the wetland impacts are associated with very small wetlands that have been previously disturbed by logging. The principal function of many of these wetlands is related to wildlife habitat and the proposed gravel roads and associated impacts will have limited impact to these functions. Stream crossings are designed to mimic the natural flow paths and to allow for unrestricted flows along the natural channels.

Four vernal pools, 2 of intermediate value and 2 of least value, will be impacted by the project. Additional impacts to the vernal pool envelope of 17 pools and to the vernal pool buffer of 27 pools will occur. In all cases, the facility has been designed to minimize impacts where possible. After construction, the narrow, curb-free, lightly traveled access roads and gravel pads are expected to present only minimal obstruction to the passage of vernal pool amphibians between their breeding habitat and terrestrial habitat.

A more detailed discussion of functions and values is provided in the Impact Assessment

18. The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication.

Wild Meadows Wetland Permit Application

Attachment A Supplement

1) Need for the proposed impact

The Wild Meadows Wind Project is a commercial wind project expected to produce, on average, enough electricity to power more than 30,000 homes. At peak production, the wind farm is expected to produce enough electricity to power more than 90,000 homes. This power is a renewable resource with zero emissions, and will offset approximately 340 million pounds per year of carbon dioxide emissions. The project will be located on private lands that are largely in timber production, a use which is compatible with the wind project, and allows the landowners to keep their land intact.

The proposed wetland impacts are necessary for the construction and operation of a proposed wind farm in Danbury and Alexandria that will provide renewable electrical energy. The impacts are associated with the construction of approximately 8.9 miles of access roads, some of which follow existing logging roads, and the construction of project related components including 23 wind turbine sites, a permanent meteorological tower on Forbes Mountain, temporary laydown and equipment storage areas, overhead/buried electrical collection lines, a 5,500 sq ft operations & maintenance building and an electrical substation.

This project meets the purpose set forth in the Electric Renewable Energy Portfolio Standard (RSA 362-F:1)

"Renewable energy generation technologies can provide fuel diversity to the state and New England generation supply through use of local renewable fuels and resources that serve to displace and thereby lower regional dependence on fossil fuels. This has the potential to lower and stabilize future energy costs by reducing exposure to rising and volatile fossil fuel prices. The use of renewable energy technologies and fuels can also help to keep energy and investment dollars in the state to benefit our own economy. In addition, employing low emission forms of such technologies can reduce the amount of greenhouse gases, nitrogen oxides, and particulate matter emissions transported into New Hampshire and also generated in the state, thereby improving air quality and public health, and mitigating against the risks of climate change. It is therefore in the public interest to stimulate investment in low emission renewable energy generation technologies in New England and, in particular, New Hampshire, whether at new or existing facilities."

2) The alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site

The siting alternatives analysis is provided under Section 9.I of the application.

3) The type and classification of the wetlands involved.

All wetlands fit the National Wetlands Inventory's Palustrine classification, symbolized by the letter "P" and defined as Freshwater Nontidal wetlands. Table 3-1 lists the distribution of the different dominant cover types delineated within the study area. The majority of the wetlands were forested (47%), followed by emergent (21%) and various combinations of either emergent, forested or scrub-shrub (24%). As forested wetlands were common, subclasses of this wetland class were described individually. The emergent and scrub shrub wetlands on the ridges were early successional wetlands recovering from recent logging activity. Wet meadows in the vicinity of Golden Valley Road occur in active hay fields and are mown several times per year. Classifications which include more than one cover type include plant communities described in both cover classes. More detailed information on wetlands, streams and vernal pools is provided in the Water Resources Report in Appendix 1).

Table 3-1. Cover type of wetlands delineated within the study area of the Wild Meadows Wind Project.

	#	%
Emergent	96	21.3%
Emergent & Forested	48	10.7%
Emergent & Forested & Scrub-Shrub	11	2.4%
Emergent & Scrub-Shrub	44	9.8%
Forested (Mixed Needle-Leaved Evergreen & Coniferous)	89	19.8%
Forested (Broad-leaved Deciduous)	81	18.0%
Forested (Needle-leaved Evergreen)	40	8.9%
Forested & Scrub-Shrub	5	1.1%
Scrub-Shrub	20	4.4%
Unconsolidated Bottom	14	3.1%
Other Combinations	2	0.4%

4) The relationship of the proposed wetlands to be impacted to nearby wetlands and surface waters.

The Project is located in the watershed of the Pemigewasset sub-basin (HUC8) of the larger Merrimack River basin (HUC6; Figure 5 in Appendix I) . Northernmost portions of the Project, as well as the entire substation area, are located in the Newfound River watershed (HUC10). The northern slopes of the project drain into Patten Brook which leads to Bog Brook and ultimately to Newfound Lake. The eastern slopes drain directly to Bog Brook. All waters in the southern portions of the study area flow to the Smith River (HUC10) by way of Wild Meadows Brook, Taylor Brook and Pine Hill Brook. The Smith River as well as the Newfound River flow into the Pemigewasset River near Bristol, NH. The Pemigewasset River is designated as Essential Fish Habitat (EFH) for Atlantic salmon.

Many of the streams in the project area are small headwater drainages. The majority of the impacted streams are ephemeral or intermittent. On the ridges, the streams are scoured channels resulting from flashy, high flows from rapid runoff. Lower on the slopes, the streamflow becomes more intermittent and perennial, and channels are composed of boulders and coarse mineral material. The larger perennial streams in the area, Wild Meadows Brook and Patten Brook continue as high velocity, scoured channels. No 100-year floodplains are mapped in the project area, with the exception of the substation adjacent to Bog Brook.

5) The rarity of the wetland, surface water, sand dunes or tidal buffer area.

No supplemental information is needed for the text in Section 5 in Attachment A.

6) The surface area of the wetlands that will be impacted.

This section is addressed in detail in Appendix II.

7) The impact on plants, fish and wildlife including, but not limited to:

General Conditions: Normandeau biologists conducted a Wildlife Habitat Assessment of the project site in association with Stantec's studies of specific wildlife species and guilds (see wildlife reports in SEC Application). In general, the assessment found that the project site provides suitable wildlife habitat, albeit modified substantially by the timber harvesting operations that have occurred on this site since the 1940s and earlier. Abundant moose and bear sign (sighting, tree bark damage, tracks, and scats) were observed especially in regenerating areas previously disturbed by logging, but also in more mature forest stands. Timber harvesting has also had other impacts on the habitat composition at the site. For example, conifers appear to have been preferentially harvested in many locations, lowering or eliminating the potential value of remaining conifer stands as deer wintering habitat. Because the Wild Meadows wind project will alter habitat, and introduce new disturbance and permanent structures to the site, some level of impact to wildlife habitat will occur. However, the amount of habitat that will be altered is limited and the project will not significantly increase vehicle traffic to the area or significantly increase use by humans during operation. Therefore, the effects that can displace wildlife or fragment habitat will be relatively minor, and a substantial change in the patterns of wildlife habitat use and movement around the site is not anticipated.

a. Rare, special concern species

Per written correspondence received from the NH Natural Heritage Bureau (November 2103; Section 9.C), four records of listed species of habitats occur within or in close proximity to the project area: a sensitive wildlife habitat, 2 locations of a sensitive plant species, and a medium-level fen system. NHNHB has asked that the specifics of the sensitive species records be kept confidential. The sensitive wildlife habitat is located approximately ½ mile from the nearest turbine. It does not have legal status in New Hampshire, but its conservation status is ranked as "critically imperiled due to rarity or vulnerability". This habitat has no legal or conservation ranking at the federal level.

Two records for a sensitive state-threatened plant species are within the vicinity of the project but are not located near any proposed disturbances associated with any project components. The specific species and location are confidential information per request of NHNHB; however it is known to prefer rocky slopes and the area around cliff bases within rich, mesic forests. It is less common in wet mesic forests that are influenced by high pH bedrock. The project area was reviewed for similar habitat and other indicators of high-pH soils that might be suitable for this plant species, and none were identified. With the exception of a small section of the electrical connector, the bedrock geology of the project area is different than that where the known occurrences exist. Our field observations within the project area identified a fairly uniform Northern hardwood-conifer community at similar elevations as the occurrences. Some small pockets of semi-rich woodlands were observed elsewhere within the project area, however no occurrences of this sensitive state-threatened plant species have been observed (see Wildlife Habitat Report in SEC Application).

b. State and federally listed threatened and endangered species

Discussions with US Fish and Wildlife Service and NH Fish and Game identified three possible species of interest with the potential to be present in and around the project site: the State threatened American marten (*Martes americana*), the State endangered eastern small-footed bat (*Myotis leibii*) and the State Species of Special Concern northern long-eared bat. None of these species currently have federal status, but the USFWS has formally proposed listing the northern long-eared bat as endangered. The 60-day comment period on this proposal began October 2, 2013, and the USFWS will make a final decision on the proposal within 12 months

Results of the on-site habitat assessment indicated that most forest stands have relatively low structure, making them unsuitable for marten (see Wildlife Habitat Report in SEC Application). Additionally, the proposed project area is south of the known marten range in New Hampshire, which is generally restricted to the White Mountains and north. Overall these factors indicate low suitability for marten in the Project area. A site-specific camera survey for marten was conducted in 2010, and did not record any marten (See 2010 Remote Camera Survey report in SEC application).

The project site is within the known range of northern long-eared bats and eastern small-footed bats, and a mist nest survey for bats was conducted in 2011 (see Wildlife Habitat Report in SEC Application). Only a single bat (a female juvenile big brown bat [*Eptesicus fuscus*]) was captured over 28 net nights. Standard acoustic surveys for bats were also conducted in fall 2009 and spring 2010. Generally, activity levels and patterns documented in the Project Area were similar to those documented elsewhere in the region, including the Lempster, Granite Reliable, and Groton Projects in New Hampshire.

c. Species at the extremities of their ranges

If present, the American marten discussed in Section 9.i.b, would be at the southern extremity of its range in the Northeast, but neither a camera survey or habitat conditions indicate that its occurrence is likely (see 2010 Remote Camera Survey and Wildlife Habitat Reports in SEC Application. No other species potentially present meets this definition.

d. Migratory fish and wildlife

The primary migratory groups that use the Project Area are night migrating neotropical passerines, migratory bats, and diurnally migrating raptors. The migratory activity of these three groups was assessed in the fall of 2009 and spring of 2010, and in all three cases, the volume of animals moving and their general behavior (height flight, temporal and special distribution and density) was determined to be consistent with results from similar studies conducted for other wind projects in the northeast in general, and New Hampshire specifically (see bird and bat risk assessment report in the SEC application).

e. Exemplary natural communities identified by the DRED_NHB.

There are no NHB records for exemplary communities in the proposed project area (Section 3). The medium-level fen system is listed as occurring on Bog Brook downstream of the Project Area. It is described as small and in excellent condition by NHNHB . This area was not visited because of its one-half mile distance from the project and the minimal disturbance anticipated by the project.

f. Vernal pools

A total of 97 vernal pools were identified within the approximately 2,000 acre wetland study area from May 2010 to May 2013 (see Water Resources Report, Appendix I). The majority of the vernal pools are man-made (48 pools, or 49%) or influenced by anthropogenic activities (22 pools, or 23%) with 27 pools (28%) considered natural. This is consistent with the level of disturbance observed within the study area associated with current and historical logging activity. Twelve (12%) of these pools are ranked as highest value (A) pools, 43 (44%) are ranked as intermediate value (B) pools, and 42 (43%) are ranked as least value (C) pools. The highest value pools were primarily natural depressions, or in one case, a man-made excavation. Many of the least value pools occurred in manmade depressions (skidder ruts, drainage features).

Direct impacts to 96% of the delineated vernal pools were avoided, and unavoidable impacts were minimized to the extent possible (see Impact Analysis, Appendix II). Direct impacts to all of the highest value (A) pools were successfully avoided, while direct impacts to two intermediate value (B) and two least value (C) pools were unavoidable. The effects of the project on vernal pool amphibians are expected to be relatively low, given the project design and operation. Once construction is complete, the access roads will be between 16 and 22 feet wide, gravel, and with no barriers to passage except in areas of steep cuts and fill, where stone riprap may inhibit some species. Vernal pool amphibians are expected to readily cross these roads during migrations to and from breeding pools. Additionally, traffic will be very light, limited to 1 or 2 vehicles on most days and virtually none at night, which will minimize mortality of amphibians crossing the roads. Water quality deterioration is another development threat to vernal pools which is unlikely at Wild Meadows due to the multiple design features to stabilize slopes during construction, and minimize concentrated flows and treat runoff from the roads and turbine pads.

8) The impact of the proposed project on public commerce, navigation and recreation.

No supplemental information is needed for the text in Section 8 in Attachment A.

9) The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake,the applicant shall be required to indicate the type of material to be used and the effect of theconstruction of the wall on the view of other users of the lake.

A Visual Impact Assessment (VIA) was prepared for the Wild Meadows Project and concluded that the proposed Project will not have an unreasonable adverse visual impact. The VIA determined that the Project is likely to be visible from only a small portion of the visual study area. In addition, views of the Project are likely to be fully screened by topography alone from approximately half of the identified historic sites, state parks, state forest, designated scenic areas, and other public resources of potential state or local significance within the 10-mile radius study area. Because forest land is the dominant land use within the study area, the Project's viewshed is largely restricted to areas within or directly adjacent to water bodies, agricultural fields and other clearings (e.g., utility corridors) that provide the opportunity for unscreened views. The VIA indicated that over 96% of the study area will not have daytime or nighttime views of the proposed turbines when factoring in the screening from topography and mapped forest vegetation. Newfound Lake (approximately 3.8 miles to the northeast) and its eastern shoreline, as well as some scattered higher elevation openings and larger open fields in valleys to the south and east of the proposed Project area, are the areas most likely to have views that include the majority of the proposed turbines. Visual simulations indicated that the Project's overall contrast with the visual/aesthetic character of the area will generally be moderate. Based on experience with currently operating wind power projects elsewhere, public reaction to the Project is likely to be highly variable based on viewer proximity to the turbines, the affected landscape, and the viewer's personal attitude regarding wind power.

Proposed mitigation measures include turbine design and operation to limit visual impact, minimizing FAA lighting and utilizing a radar-operated light system, minimizing forest clearing, and locating the substations, O&M building and other infrastructure in remote, well-screened areas..

10) The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel, the applicant shall be required to document the extent to which the dock would block or interfere with the passage through this area.

No supplemental information is needed for the text in Section 10 in Attachment A.

11) The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties.

No supplemental information to the text in Section 11 in Attachment A.

12) The benefit of a project to the health, safety and well being of the general public.

No supplemental information is needed for the text in Section 12 in Attachment A.

13) The impact of a proposed project on quantity or quality of surface and ground water. For example, where an applicant proposes to fill wetlands the applicant shall be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site.

This project is not expected to have any direct impacts on groundwater drinking resources due to the lack of such resources in the project area (. A small stratified drift aquifer is mapped under the eastern part of the proposed substation associated with Bog Brook. There are no other stratified drift or till aquifers on the project site or within the vicinity of the project, nor are there source water protection and/or well head protection areas. The project does not rely on or propose to make large groundwater withdrawals and thus will have no effect on groundwater supply.

A site specific drainage analysis was conducted as part of the Alteration of Terrain permit and may be found in the SEC application. This analysis demonstrates that all reasonable efforts were taken during project design to maintain water quantity and quality at a sub-watershed level.

A summary of the drainage analyses and surface water treatments, including pervious berms, treatment swales, level spreaders, and sediment traps is provided in the Attachment A Supplement and the Alteration of Terrain permit application.

There is very limited potential for interactions between wetlands on the site and groundwater recharge due to the high percentage of the site with soils that are either shallow to lithic bedrock, fine textured soils and/or a dense hardpan layer. Limited ability of the site wetlands to recharge groundwater combined with limited sources of potential project pollutants that would adversely affect the quality of the groundwater results in a very low potential for this project to adversely affect groundwater quality.

Most of the wetlands within the project site rely on surface waters (channel inputs/outputs and/or sheet flow inputs) and/or have shallow depths to impervious soils for maintenance of wetland hydrology. There are a few wetlands occurring along benches at the toe of locally steep slopes where the hydrology of the wetland relies primarily on the discharge of groundwater from breakout seeps.

Because the project has minimized wetland impacts and proposes to maintain natural flow patterns to the extent practical, there should be minimal change in groundwater discharge patterns to wetlands.

The project has been designed to minimize surface water and stormwater runoff impacts by maintaining natural drainage patterns where possible through the use of culverts and treatment swales. Use of the gravel access roads will be limited after construction is complete; the roads will be gated to the public and project traffic will be very light. Roadway surfaces will not have deposits of pollutants normally associated with roads and therefore intensive treatment of runoff from gravel roads is not proposed.

Design measures to protect surface water quality during construction of this project have focused on control of erosion during construction through use of sediment barriers (such as siltsock and permeable barriers) and the use of soil stabilization measures including erosion control blankets, spray-on polymer emulsions, and prompt stabilization of exposed surfaces.

Sedimentation/erosion control best management practices (BMPs) will be employed during construction to avoid and minimize adverse effects on the quality and quantity of surface and ground water. All areas of stockpiled construction materials, debris, and refuse will be disposed of in accordance with state and federal laws to further reduce the potential of these materials to affect water quality.

Stockpile areas (also to be used for laydown of construction materials) are noted on the Design Plans in Appendix V.

The proposed development will alter approximately 150 acres of land including existing roads and disturbed areas. In order to evaluate the project's effect on peak stormwater runoff rates, a hydrologic model was developed to evaluate the existing and proposed drainage conditions on the site. The results of the analyses indicate that there is no significant change in peak discharge rates between the pre- and postdevelopment conditions for the 2, 10, and 50 year storm events.

14) The potential of a proposed project to cause or increase flooding, erosion, or sedimentation.

No supplemental information is needed for the text in Section 14 in Attachment A. More detailed stormwater management is provided in the Drainage Report in the Alteration of Terrain permit application.

15) The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards.

No supplemental information is needed for the text in Section 15 in Attachment A.

16) The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted.

No supplemental information is needed for the text in Section 16 in Attachment A.

17) The impact of the proposed project on the values and functions of the total wetland or wetland complex.

No supplemental information is needed for the text in Section 17 in Attachment A. See more detail on functions and values of impacted wetlands in the Impact Assessment narrative (Appendix II).

18) The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication.

No supplemental information is needed for the text in Section 18 in Attachment A.

19) The impact upon the value of areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.

No supplemental information is needed for the text in Section 19 in Attachment A.

20) The degree to which a project redirects water from one watershed to another.

No supplemental information is needed for the text in Section 20 in Attachment A.

NH has eleven sites listed on the National Register of Natural Landmarks. The closest of these is Heath Pond Bog in Center Ossippee, approximately 40 miles to the east of the Wild Meadows site. There will be no impacts to any Natural Landmark resulting from this project.

19. The impact upon the value of areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.

There will be no impact to these named national resources as none are located on or in the vicinity of the project site.

20. The degree to which a project redirects water from one watershed to another.

No water will be redirected from one watershed to another for the proposed project. As described in the Drainage Report included in the Alteration of Terrain permit application, post-construction stormwater runoff will flow in a manner similar to preconstruction conditions.

Additional comments

Attachment B.

Design Criteria and General Plan Requirements for Wild Meadows Wind Project

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF ENVIRONMENTAL SERVICES
LAND RESOURCES MANAGEMENT
WETLANDS BUREAU
29 Hazen Drive, PO Box 95, Concord, NH 03302-0095
Phone: (603) 271-2147 Fax: (603) 271-6588
Website: http://des.nh.gov/organization/divisions/water/wetlands/index.htm
Permit Application Status: http://des.nh.gov/onestop/index.htm

WETLANDS PERMIT APPLICATION – ATTACHMENT B

Design Criteria and General Plan Requirements

Project Type	Design Criteria
Refer to the listed wetland rule, using the link below, for design considerations Wetland Rules Env-Wt 100 - 900 Link: http://des.nh.gov/organization/commissioner/legal/rules/documents/env-wt100-900.pdf	
Rock Removal	Env-Wt 304.02
Beach construction & replenishment	Env-Wt 304.08
Dredging Projects	Env-Wt 304.11
Filling Projects	Env-Wt 304.12
Dock configuration	Env-Wt 402.01
Dock dimensions	Env-Wt 402.03
Seasonal docks	Env-Wt 402.05
Seasonal dock maintenance	Env-Wt 402.02(c)
Permanent docks	Env-Wt 402.06
Breakwaters	Env-Wt 402.07
Stairways to access docks	Env-Wt 402.10
Marinas	Env-Wt 402.16
Dikes, Tide Dams and Tide Gates	Env-Wt 403.03
Shoreline stabilization (Vegetative, Riprap, Walls)	Env-Wt 404

General Plan Requirements

By checking the box you are confirming that the outlined information is provided with your application.

Minimum Impact Plan Requirements (Env-Wt 505.01):

☐ 1. An accurate drawing with detailed dimensions clearly annotated to document existing site conditions and to show the impact of the proposed activity on areas in department jurisdiction and detailing the precise location of the project;

☐ 2. Identification of the type of landform to be affected as follows: salt marsh, tidal water, sand dune, bog, freshwater marsh, swamp, wet meadow, river, perennial stream, seasonal stream, lake, upland tidal buffer zone or other;

☐ 3. The number of linear feet of shoreline frontage for projects located on water bodies;

☐ 4. The linear distance of project from abutting property boundaries;

☐ 5. Type of docking structure;

☐ 6. The diameter of culvert(s) to be used for road or driveway crossings;

Minor and Major Plan and Wetland Delineation Requirements (501.02):

A drawing or drawings not to exceed 28 inches by 40 inches in size showing:

☒ 7. The name of the owner or applicant;

☒ 8. The tax map(s) and lot number(s);

☒ 9. The date of each plan and revision date if revised.

☒ 10. The person responsible for each portion of the plan, such as the wetland delineation, the survey, and the engineering;

☒ 11. An overview of the property and proposed impact areas in relation to the property lines;

☒ 12. The scale, if any, used on the plan, using standard measures of whole units such as an engineering rule of 1 to 10, metric engineering rule of 1 to 2.5, or architectural rule which clearly states the unit of measure. If the drawing is not to scale, the dimensions of all existing and proposed structures and all other relevant features necessary to clearly define the project;

☒ 13. A labeled north-pointing arrow to indicate orientation;

☒ 14. A legend that clearly indicates all symbols, line types, and shading used on the plan;

☒ 15. The location of wetlands delineated in accordance with Env-Wt 301.01, and whether any wetlands are designated as prime wetlands in accordance with RSA 482-A:15;

☒ 16. The shoreline, surface waters, areas within 100 feet from the highest observable tideline, and sand dunes on site, and their relation to the proposed project;

☒ 17. The location of the 100-year floodplain, if applicable to the proposed project;

☒ 18. If the topography is to be permanently altered, the existing proposed topography, including a reference elevation;

☒ 19. Labeled and lightly shaded or stippled areas indicating limits of all temporary and permanent impacts in jurisdiction, including wetlands, surface water and their banks, areas within 100 feet from the highest observable tide, and sand dunes;

☒ 20. Proposed methods of erosion and siltation control indicated graphically and labeled, or annotated and necessary;

☒ 21. The location of any wetland delineation observation plots if required by the Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, January 1987;

☒ 22. Plans shall be:
   a. Stamped by a certified wetlands scientist as certified by the New Hampshire board of natural scientists, when that individual prepares the plan(s);
   b. Accompanied by a report that includes an existing conditions plan stamped by a certified wetlands scientist as certified by the New Hampshire board of natural scientists, when another individual has prepared the plan(s); or
   c. Signed by a homeowner acting on his or her own behalf, when the homeowner prepares the plan for the development of the homeowner's primary residence, showing the impacts resulting from such development

☒ 23. Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 100. To assist in the delineation, individuals may use "Identification and Documentation of Vernal Pools in New Hampshire", 2nd Ed., 2004, published by the New Hampshire fish and game department.

☒ 24. Wetlands classifications shall be identified on plans for all major projects involving dredge and/or fill of wetlands.

☒ 25. Construction sequence - A narrative that describes the sequence of construction including pre-construction through post-construction activities and the relative timing and progression of all work;

Subdivisions (Env-Wt 304.09):

☐ 26. Plans submitted with a wetlands application associated with a proposed subdivision shall indicate the boundaries of all wetlands and surface waters, the footprint of all proposed impacts, existing and proposed topography, and the location of all proposed lot lines. Plans shall be stamped by a licensed land surveyor or a professional engineer pursuant to RSA 310-A, and parties responsible for the wetlands delineation shall be recorded on the plan.

☐ 27. There shall be no further wetlands impact for lot development on any subdivision approval. If the approval is for a single phase of a multiphase subdivision, the applicant shall provide a master plan identifying all wetlands on the property and a conceptual layout for future phases of development.

Riprap (Env-Wt 404.04):

☒ 28. A description of anticipated turbulence, flows, restricted space, or similar factors that would render vegetative and diversion methods physically impractical.

☒ 29. Cross-section and plan views of the proposed installation;

☒ 30. Sufficient plans to clearly indicate the relationship of the project to fixed points of reference, abutting properties, and features of the natural shoreline; and

☒ 31. Designation of a minimum and maximum stone size;

☒ 32. Gradation;

☒ 33. Minimum rip-rap thickness;

☒ 34. Type of bedding for stone;

☐ 35. Applications to use rip-rap adjacent to great ponds or water bodies where the state holds fee simple ownership shall include a stamped surveyed plan showing the location of the normal high water shoreline and the footprint of the proposed project.

☐ 36. Rip-rap shall be located shoreward of the normal high water shoreline, where practical, and shall not extend more than 2 feet lakeward of that line at any point.

☒ 37. Stamped engineering plans shall be provided as part of any application for rip-rap in excess of 100 linear feet along the bank of a stream or river.

Shoreline (Freshwater & Tidal) (Env-Wt 501.02):

☐ 38. The general shape of the shoreline including the length of frontage and either:

☐ 39. The full water body elevation; or

☐ 40. The highest observable tidal line for tidal waters;

☐ 41. The footprint of all existing and proposed structures on the property;

☐ 42. The intended use of each proposed structure; and

☐ 43. The distance from existing and proposed work to abutting property lines.

☐ 44. The boundaries of the tidal buffer zone, edge of salt marsh vegetation, and sand dunes in the project vicinity shown on the drawing;

☐ 45. If the proposed project is located within 200 feet of any Federal Navigation Project, provide the distance between any structure(s) associated with the proposed project and the Federal Navigation Project site;

Shoreland (Env-Wt 501.02):

☐ 46. The reference line;

☐ 47. The location of all existing structures between the primary building line and the reference line;

☐ 48. The location of all proposed structures; and

☐ 49. The total disturbed area within the protected shoreline.

<u>Breakwaters (Env-Wt 404):</u>

☐ 50. Toe of slope dimensions;

☐ 52. The dimensions visible at normal high water level;

☐ 53. The direction of prevailing wave activity;

☐ 54. A minimum gap of 6 feet between the breakwater and shoreline;

☐ 55. A reference line identifying the 50 foot distance from the shoreline;

☐ 56. All docking structures on the property or otherwise associated with the property;

☐ 57. Cross-section showing the breakwater height:

☐ 58. Cross-section showing the breakwater slope;

☐ 59. Cross-section showing normal high water level;

☐ 60. A list of construction materials.

☐ 61. The owner of a breakwater that causes significant adverse effects on abutting property owners or on public use of the water shall modify the breakwater so as to eliminate such adverse effects. If modification is impossible or ineffective, the owner of the breakwater shall remove the breakwater.

☐ 62. Breakwaters shall not exceed 3 feet above normal full lake elevation, and shall not exceed 3 feet in width at the highest point of the structure.

Rip Rap

Rip rap will not generally be used at any location on the project. Stone fill meeting NH Department of Transportation specifications will be used at various locations on the project in ditches and on slopes where velocities or slope stability concerns are present.

As questions regarding the use of rip rap along shorelines are presumed to include the use of stone fill along watercourses, there are two such locations where stone fill is proposed:

1. At the outlet of a Tier one stream crossing (CV -1) at the substation; and
2. at proposed culvert CV CEC 12.0 outlet.

We offer the following responses to Attachment B as it relates to Riprap (Env-Wt 404.04):

☒ 28. A description of anticipated turbulence, flows, restricted space, or similar factors that would render vegetative and diversion methods physically impractical.

These proposed locations will be at culvert outlets and may be subject to periodic inundation and will be subject to high water velocities. Establishing vegetative stabilization at these outlets may take considerable time and undergo appreciable scour during this establishment period. Ultimately a vegetative approach may not be successful given the periods of inundation and equipment access for repair will be difficult once the slopes from the roadway crossing each stream are complete. Stone sizing calculations at both culverts are contained in the NH DES Alteration of Terrain (AoT) application (but are attached to this document for reference).

☒ 29. Cross-section and plan views of the proposed installation;

See plans contained in AoT application

☒ 30. Sufficient plans to clearly indicate the relationship of the project to fixed points of reference, abutting properties, and features of the natural shoreline; and

See plans contained in AoT application

☒ 31. Designation of a minimum and maximum stone size;

See d50 stone sizing calculations and extents of coverage in the NH DES AoT application and plans (calculations are attached for reference)

☒ 32. Gradation;

Gradations are per NH DOT specification

☒ 33. Minimum rip-rap thickness;

See plans contained in AoT application

☒ 34. Type of bedding for stone;

See plans contained in AoT application

☐ 35. Applications to use rip-rap adjacent to great ponds or water bodies where the state holds fee simple ownership shall include a stamped surveyed plan showing the location of the normal high water shoreline and the footprint of the proposed project.
N/A

☐ 36. Rip-rap shall be located shoreward of the normal high water shoreline, where practical, and shall not extend more than 2 feet lakeward of that line at any point.
N/A

☒ 37. Stamped engineering plans shall be provided as part of any application for rip-rap in excess of 100 linear feet along the bank of a stream or river.
See plans contained in AoT application

Attachment C.

Stream Crossing Analysis for Wild Meadows Wind Project

12/5/2013

Wild Meadows Wind Project

Stream Crossings

This document describes the basis of design for developing stream crossing structures consistent with the New Hampshire Department of Environmental Services (NH DES) Stream Crossing Rules (Env-Wt-900) for the Wild Meadows Wind Project located in Alexandria and Danbury, New Hampshire.

Project Overview

The proposed wind power project contains miles of roads that traverse mountainous terrain (generally below 2,300 feet in elevation) to access viable wind resources. Significant design effort was spent to avoid crossing streams, or to use existing access roads, thereby reducing the number of crossings from approximately 30 crossings of perennial and intermittent streams to 18. Subsequent efforts to reduce the project footprint, and additional alignment and grading refinement, reduced the number of stream crossings to a total of 4 crossings of intermittent streams and no crossings of perennial streams. The 4 crossings are classified as Tier One crossings by the NH DES. **Figure 1** shows the location of the 4 proposed Tier One stream crossings and the associated drainage area of each crossing.

Stream Crossing Rules

A Tier One stream crossings is a classification given by NH DES to the smallest of the three regulated stream crossing Tiers that have drainage areas less than 200 acres. In addition to meeting the General Design Criteria specified in Env-Wt 904.01 that apply to all Tier crossings, the following additional standards apply to Tier One crossings:

- They must be sized to accommodate the 50 year frequency flood or higher storm if specified elsewhere by applicable local, state, or federal requirements.
- They may be a span structure, pipe arch, open bottom culvert or closed bottom culvert, with or without being embedded with stream simulation.

Hydrology

The 50 year frequency flood flow has been predicted using proprietary software (Hydro CAD) that is based upon the United States Department of Agriculture Natural Resource Conservation Service's (formerly Soil Conservation Services) Technical Release 20. Pertinent data sources for this model include NRCS Hydrologic Soil Groups, two foot topography, and surface cover types that reflect proposed project development. Storms necessary to produce a 50 year flood flow, are considered as 50 year rainfall events which NH DES has indicated is 5.59 inches in 24 hours for the towns in which the project is located. Hydrographs are based upon a type III rainfall distribution. Please see Hydro CAD predicted flows in **Appendix A** for each of the stream crossings.

Field Data Collection and Use

Field data collection is an essential step in developing an appropriate crossing design as it provides information about the channel and habitat quality that can be emulated in the crossing design so as to meet the overall DES Stream Crossing Rule intent of making the crossing as “transparent” as possible with respect to channel integrity, aquatic organism movement, and their habitat. **Table 1** contains a summary of data for all project stream crossings. While collection of some of these parameters exceeds that required by Rule, experience has proven that this additional field effort often yields important insight that leads to crossing designs with improved habitat and characteristics. Field data and photos for each crossing can be found in **Appendix A**. The following describes the types of field data collected at a proposed crossing and how such data is generally utilized in developing a design that meets the intent of the stream crossing rules.

1. If an **existing culvert/structure** is present, field crews note culvert size, type, slope, and evidence of aggradation/scour. This can prove to be a valuable field indicator of the adequacy of the existing culvert as aggradation upstream of the culvert, and scour downstream of the culvert, can indicate that the culvert is undersized, perhaps set too steep, or possibly set too high. Such observations can then provide field insight into the culvert size that does not work and allow one to start to anticipate the nominal size of its replacement while still in the field. Culvert slope is derived from culvert invert elevations collected with field instrumentation.

2. If an existing structure is present at a crossing where structure replacement is proposed, one must determine the upstream influence of an existing culvert. The upstream influence of a culvert is typically considered to extend upstream from the existing structure to a point where the channel bed is equal to the elevation of fill overlying the existing culvert. Because an existing improperly sized culvert can cause a host of problems within this influence area, it would be unwise to consider channel characteristics within this zone as representing natural conditions that should be relied upon in a design that is intended to emulate natural conditions. Information in this reach, however, is useful in estimating for instance, the extent of a headcut that may occur to an aggraded channel once a properly sized culvert is installed.

3. One then moves upstream of the influence of an existing culvert to locate a suitable reference reach of the stream that is indicative of the stream where the crossing is proposed, and note any relic human channel influences such as man-made berms, etc. Channel characteristics within this reference reach are intended to be used as a basis for creating a crossing design that has similar characteristics as this representative natural channel. **Channel slope** within this reference reach was collected using field instrumentation and becomes the starting point for determining what the slope of the proposed culvert should be. Care should be taken to discern any previous human influences such as man-made berms, or rock armoring that, while being upgradient of the influence of an existing culvert, can influence the channel characteristics making it a poor reference from which to

base a design. Channel slope is also measured in the area downstream of the existing culvert, and because the proposed culvert slope must blend into the channel slope, it provides a logical means of determining a culvert’s outlet invert.

Where no culvert currently exists and human perturbations are not present, one need not find a reference reach; instead the area of the proposed crossing directly provides the data needed to emulate the slope of the channel in the proposed crossing structure (as opposed to a reference reach which serves as an imperfect analog of that hidden by an existing culvert that is to be replaced).

4. Bankfull indicators are found using EPA and DES protocols and based upon field experience. Three **bankfull width** measurements are taken within the selected reference reach (or proposed crossing location, as applicable). Bankfull flows are considered by many to represent the flow which, over time, has the greatest influence on channel morphology and thus, these flows with a typical reoccurrence interval of 1.5 to 2 years, are considered the channel forming flow.

   While bankfull width measurements alone (without an accompanying crossectional area) may not form the basis of a crossing design, they do provide a starting point from which to begin selecting the nominal width of the structure to be designed and constructed. In certain instances with larger channels and drainage areas, measured bankfull widths can be compared to NH’s Regional Hydraulic Geometry Curves as a means of checking, or solving, other unknown channel parameters. For this project, the streams (and there associated drainage areas) fall outside of the range of predictive capabilities of the Curves, and therefore, no comparison has been made.

5. **Bankfull crossectional area** is measured (see **Figure 2** showing tape-down method) within the reference reach (or proposed crossing location, as applicable), and when combined with slope, provides very valuable insight into the crosssectional area that must be accommodated by the proposed structure for these relatively frequent (1.5 to 2 year return interval) storms. As one can imagine, even if a culvert is placed to match the slope of the natural channel, if the crossectional area of the channel is constrained within (or at the entrance to) the culvert, water velocities and force can be altered. This can lead to appreciable channel aggradation and accompanying channel integrity disruptions upstream of culvert. In certain instances channel integrity downstream of the culvert can be affected as well.

   The deepest portion of the channel is referred to as the thalweg and the bankfull depth of the thalweg has been shown through empirical relationships to be approximately 50 to 67 percent of the depth of the elevation of the floodprone area (generally taken to be the 50 year flood flow), and thus, allows one in the field to instantly visualize the conceptual area of inundation during a 50 year storm.

While on larger channels, changes in Manning's roughness coefficients are noted as one moves across a crossection, the narrow crossection of the channels associated with Tier One crossings supports the notion of using a composite Manning's for the channel (typically 0.04), and that is what has been used for this project.

6. Measuring the **dominant and largest bedload particle** within the reference reach (or proposed location, as applicable) can be a helpful field indicator or relic of the force that is experienced in the channel during bankfull or overbank flows. These particles are those that move during such storms and can later be compared to shear stress measurements predicted to occur during 1.5 to 2 year storms at the proposed crossing. We have found this technique to have a lower level of corroboration confidence on intermittent streams, as well as on steeper streams where the channel bed material is more consolidated or founded on ledge. The approach used to collect and measure representative particles is a modified form of the Wolman Pebble Count. In most cases 25 particles were sampled within the crossing reach.

7. Making qualitative assessments of the value of the riverine **habitat** and likelihood for aquatic organism passage is helpful in determining the type of organisms likely to utilize a crossing, and whether the inclusion of certain design features will provide a reasonable benefit to such organisms. For example, consider a crossing location that is on a relatively steep step-pool channel of 10% slope that provides Brook trout habitat. Simply matching the channel slope with an appropriately sized smooth wall culvert will likely prevent Brook trout from ascending the culvert as the roughness (quantified by Manning's 'n') in the pipe will never approach that of the natural channel and therefore the flow will generally be too fast and shallow for successful ascension by Brook trout. When one notes suitable habitat such as this, crossing designs can include step pool features to increase the tailwater controlled depth of water in a culvert or specify that channel substrate be placed within the floor of the culvert to increase the channel roughness to better support Brook trout movement.

Proposed Crossings

4 Tier One stream crossings are proposed. Concrete box culverts are proposed at three crossing locations and the forth involves the replacement of existing culvert with a High Density Polyethylene (HDPE) pipe. Please refer to **Table 1** for proposed culvert dimensions.

The 3 concrete box culverts have been designed to maintain the force needed to convey sediment and freely pass the 50 year storm and thereby not cause an increase in the frequency of flooding, scour, or aggradation. Because these intermittent channels dry up during certain times of the year, and based upon field observation, it appears highly unlikely that the channels provide suitable habitat for Brook trout or other fishes. Some amphibian or aquatic macroinvertebrate habitat may however be supported . While not strictly required by Rule for Tier One or Tier Two crossings, the combination of setting the invert of these proposed culverts below the existing channel bed (and with culvert inverts containing substrate) will provide habitat for a range of organisms. The use of headwalls and construction of the crossings during low flow periods will prevent erosion and reduce the likelihood of water quality impacts. Please refer to **Appendix B** for stream crossing details

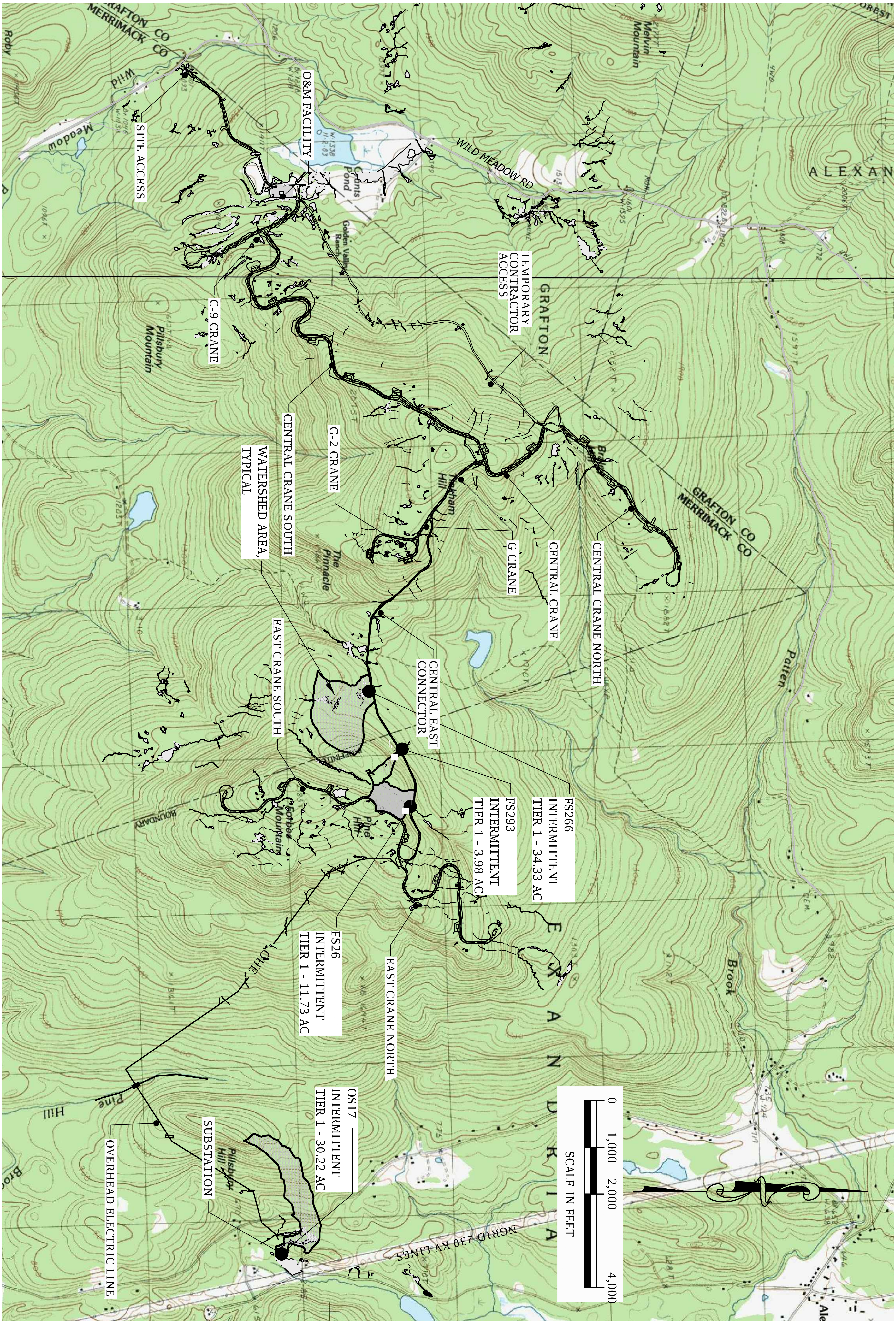
The existing culverted crossing that will be replaced with a 48” diameter HDPE pipe likely provides little existing habitat connectivity as much of the channel appears to have been artificially steepened 30+ years ago and is buried under large boulders. In an effort to improve the crossing, the proposed culvert will be set at a flatter slope than the 17% slope that exists today, and will match the bankfull width of the existing channel. The proposed culvert will pass the 50 year storm and has included headwalls and outlet protection to prevent erosion, minimize scour and reduce the likelihood of water quality impacts.

Conclusions

Design efforts reduced the number of crossings along the approximately 9 miles of project access roads to a total of 4 crossings of intermittent streams. Extensive field efforts to collect pertinent data at these 4 Tier One stream crossings led to the design of 3 box culverts at the three new crossings, and replacement of an existing culvert with a large diameter pipe at one existing impacted crossing. These proposed structures meet, or exceed, NH DES standards for crossing Tier One streams and provide a reliable means of safely conveying the flows from large storm events without compromising roadway integrity.

P:\13185 IRF12\DOCS\PERMITS\Streams\13185_StreamTierWatersheds01.dwg, fIGURE_1, 12/5/2013 4:59:03 PM, chernick

NOTE:
1. STREAM DATA AS PROVIDED BY NORMANDEAU ASSOCIATES INC., DATED 9/17/2012.



WILD MEADOWS WIND PROJECT

ALEXANDRIA AND DANBURY, NH

FIGURE 1:
STREAM CROSSING LOCATIONS

horizons Engineering inc
34 School Street
Littleton, NH 03561
Phone 603.444.4111 - Fax 603.444.1343

IBERDROLA RENEWABLES

WILD MEADOWS WIND PROJECT

Table 1:

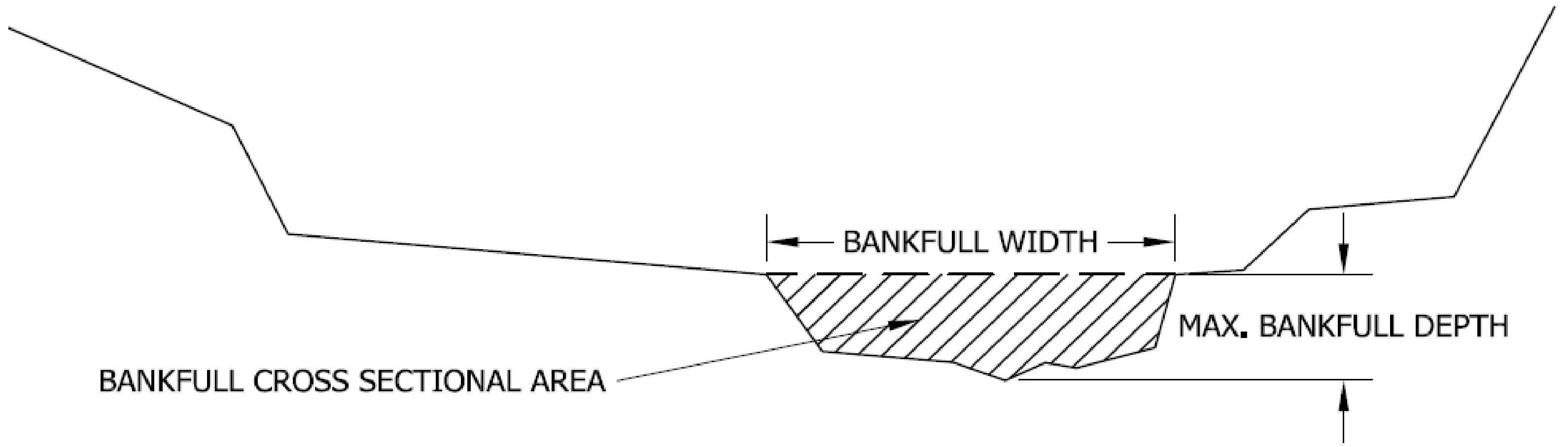
Stream Crossing Data Summary

CROSSING ID	CHARACTER	TIER	DRAINAGE AREA[1] [ACRE]	2YR FLOW [CFS]	50YR FLOW [CFS]	EXISTING STRUCTURE	BANKFULL WIDTH [FT]	MAX BANKFULL DEPTH [FT]	BANKFULL CROSS SECTIONAL AREA [FT^2]	REFERENCE SLOPE[2] [%]	UPSTREAM SLOPE [%]	IN CROSSING SLOPE [%]	DOWNSTREAM SLOPE [%]	MEDIAN PARTICLE SIZE [mm]	ESTIMATED LARGEST MOBILE PARTICLE SIZE [mm]	PROPOSED STRUCTURE	STRUCTURE INV. IN	STRUCTURE INV. OUT	LENGTH [FT]	SLOPE [%]	INFILL [IN]
FS266	INTERMITTENT	1	34.33	5.5	46.3	N	5.5	1.00	3.45	N/A	10%	9%	19%	100	170	72"x48" BOX	1828.90	1824.94	44.0	9.0%	12
FS293	INTERMITTENT	1	4.22	1.4	8.2	N	4.0	0.63	1.54	N/A	27%	21%	17%	90	105	48"x48" BOX	1894.81	1883.20	58.0	20.0%	12
FS26	INTERMITTENT	1	11.49	5.5	28.0	N	5.0	0.88	1.95	N/A	13%	8%	11%	17.5	35	48"x48" BOX	1972.16	1968.64	44.0	8.0%	12
OS17	INTERMITTENT	1	30.22	8.9	50.7	Y	4.0	0.80	1.91	9%	17%	17%	6%	64	150	48" HDPE	623.00	606.00	120.0	14.2%	0

1: AREAS ARE POST-DEVELOPMENT DRAINAGE AREAS.

2: REFERENCE SLOPE DATA IS COLLECTED OUTSIDE OF THE INFLUENCE OF AN EXISITING CULVERT.
WHERE NO CULVERT OR CROSSING STRUCTURE CURRENTLY EXISTS, CHANNEL INFORMATION AT THE PROPOSED CROSSING IS CONSIDERED ADEQUATE.

3: UPSTREAM AND DOWNSTREAM SLOPES COLLECT OVER A MINUMUM DISTANCE OF 10 BANKFULL WIDTHS.



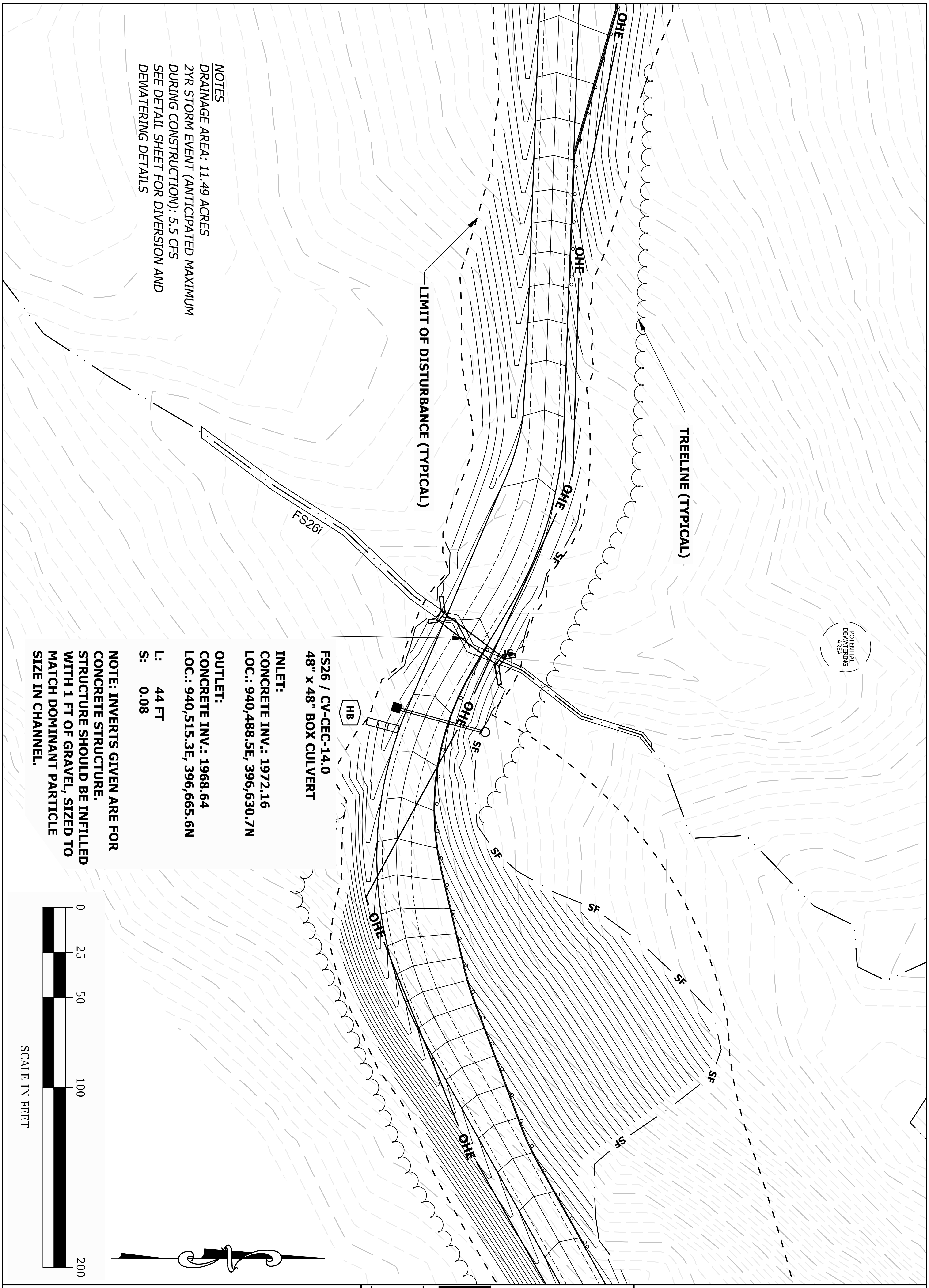
REVISION DATE 12/6/2013

Figure 2. Measuring bankfull cross sectional area

APPENDIX A

STREAM CROSSING

FS26



NOTES
DRAINAGE AREA: 11.49 ACRES
2YR STORM EVENT (ANTICIPATED MAXIMUM
DURING CONSTRUCTION): 5.5 CFS
SEE DETAIL SHEET FOR DIVERSION AND
DEWATERING DETAILS

FS26 / CV-CEC-14.0
48" x 48" BOX CULVERT

INLET:
CONCRETE INV.: 1972.16
LOC.: 940,488.5E, 396,630.7N

OUTLET:
CONCRETE INV.: 1968.64
LOC.: 940,515.3E, 396,665.6N

L: 44 FT
S: 0.08

NOTE: INVERTS GIVEN ARE FOR CONCRETE STRUCTURE. STRUCTURE SHOULD BE INFILLED WITH 1 FT OF GRAVEL, SIZED TO MATCH DOMINANT PARTICLE SIZE IN CHANNEL.

WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

FS26

horizons Engineering Inc
34 School Street
Littleton, NH 03561
Phone 603.444.4111 - Fax 603.444.1343

IBERDROLA RENEWABLES

Field Data for
FS26

Collected on: 11/27/2012
Collected by: TBP, CJH

BANKFULL WIDTH		
4.0	FT	US OF PROPOSED CROSSING
5.0	FT	CL
4.0	FT	DS OF PROPOSED CROSSING

BANKFULL CROSS SECTION		
	STA	DEPTH [FT]
LEFT BANK	0.0	0.00
|	0.5	0.25
|	1.0	0.33
|	1.5	0.31
|	2.0	0.83
|	2.5	0.88
|	3.0	0.42
|	3.5	0.25
|	4.0	0.42
\/	4.5	0.21
RIGHT BANK	5.0	0.00

BANKFULL AREA

1.95 FT^2

AVG BANKFULL DEPTH

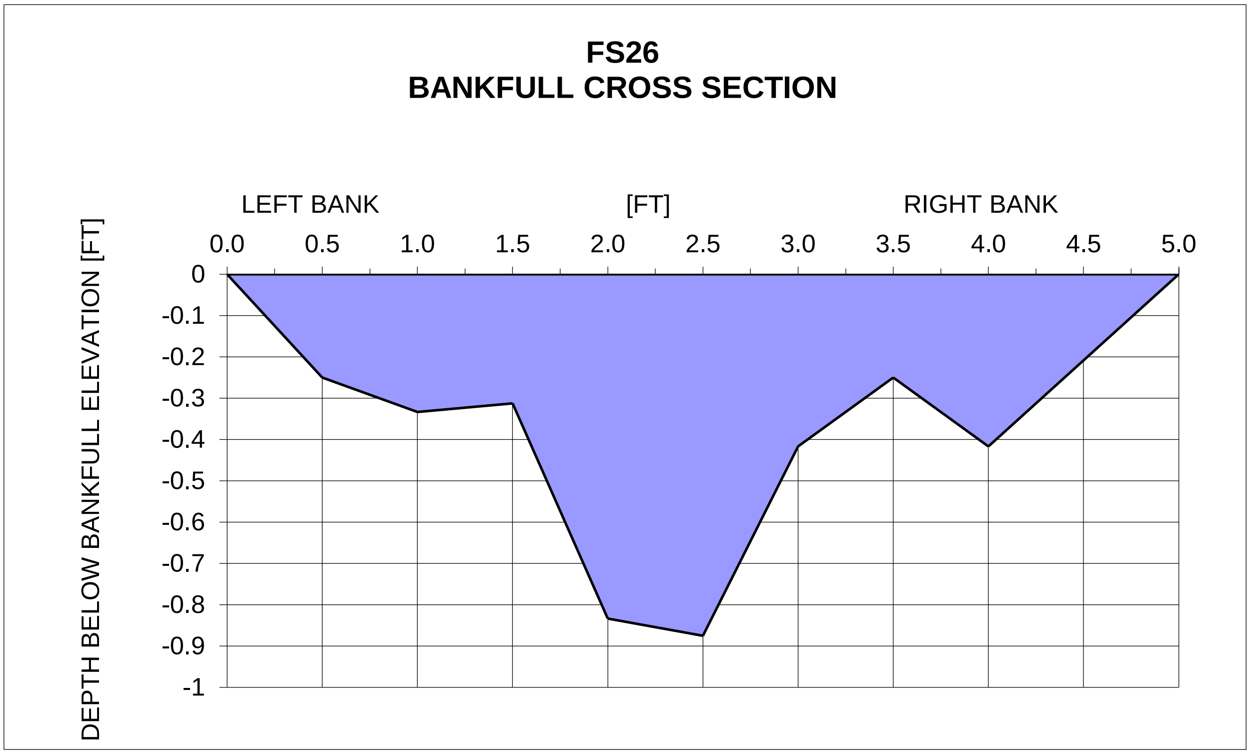
0.39 FT

MAXIMUM BANKFULL DEPTH

0.88 FT

FLOOD PRONE WIDTH

10.00 FT



Field Data for
FS26

Collected on: 11/27/2012
Collected by: TBP, CJH

PEBBLE COUNT
ORGANIC
ORGANIC
ORGANIC
ORGANIC
1
2
5
5
8
10
10
10
25
25
25
35
45
50
90
130
LEDGE
LEDGE
LEDGE
LEDGE
LEDGE

MEDIAN PARTICLE SIZE
18 mm

MEAN PARTICLE SIZE
30 mm

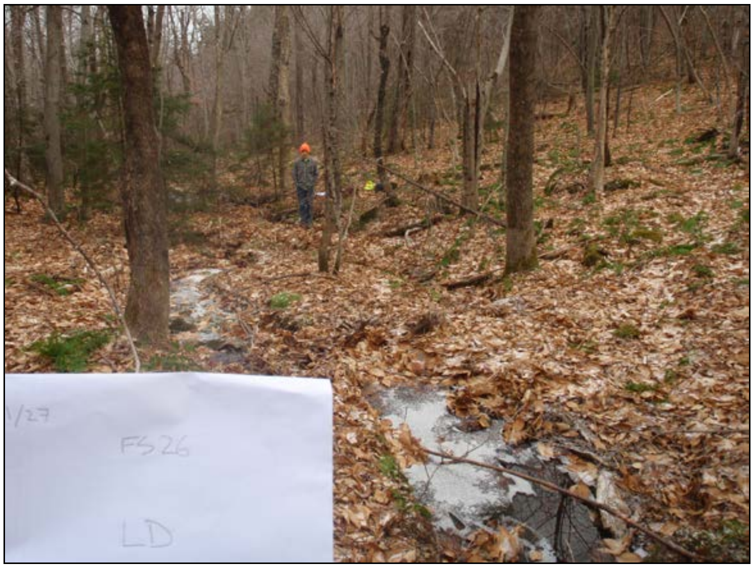
LARGEST MOBILE PARTICLE
35 mm

LIKELY INFLUENCED BY MULTIPLE STEP POOLS, DEBRIS JAMS

NOTES
MIXED AGE/SPECIES FOREST
FAIR-GOOD CONDITION
STEP POOLS
SOME FINER SUBSTRATE, WOODY DEBRIS AND LEAF LOAD
GENERALLY CONFINED CHANNEL

Wild Meadows – Stream Crossing Photos

Site: FS 26



Looking Downstream

Looking Upstream

Looking East

Looking West

Summary for Subcatchment CEC-14.0: CEC-14.0

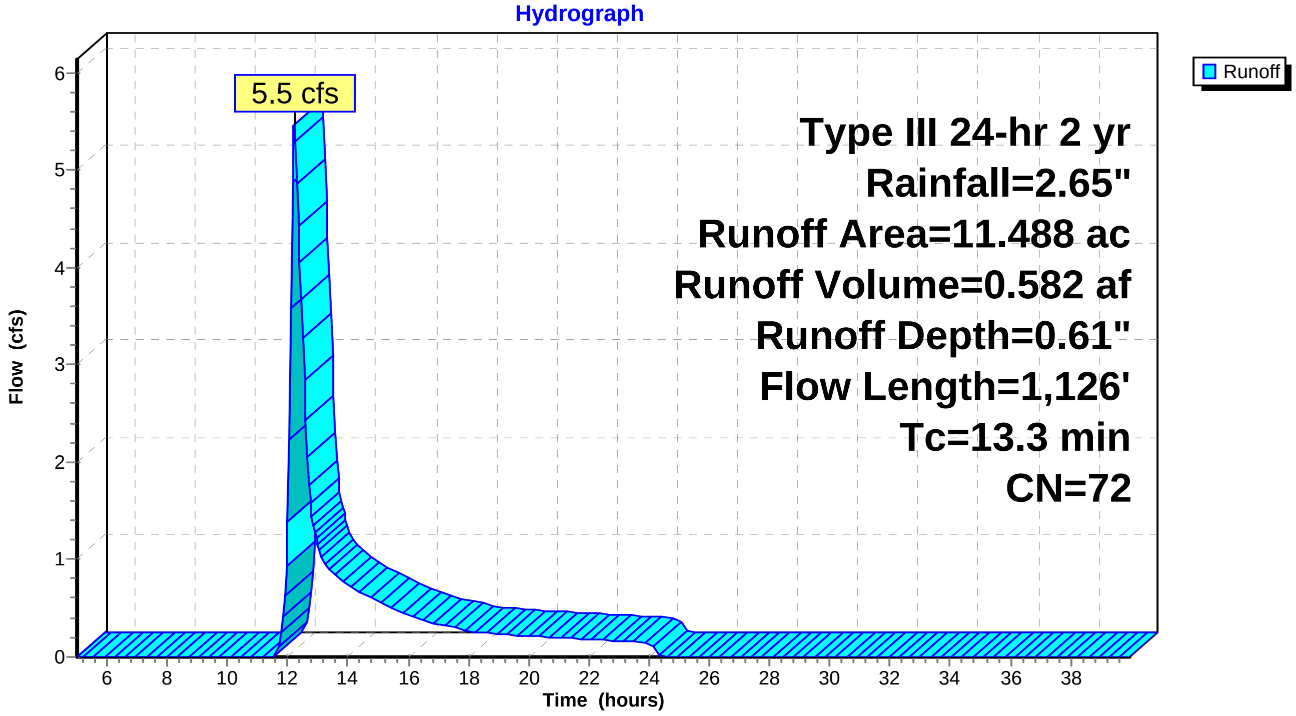
Runoff = 5.5 cfs @ 12.21 hrs, Volume= 0.582 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-39.95 hrs, dt= 0.05 hrs
Type III 24-hr 2 yr Rainfall=2.65"

	Area (ac)	CN	Description
	0.982	71	Meadow, non-grazed, HSG C
	0.289	71	Meadow, non-grazed, HSG C
*	0.660	96	Gravel
*	0.083	96	Gravel
	9.474	70	Woods, Good, HSG C
	11.488	72	Weighted Average
	11.488		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.2700	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.65"
2.0	307	0.2570	2.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	719	0.0680	4.03	6.04	**Channel Flow,** Area= 1.5 sf Perim= 5.6' r= 0.27' n= 0.040
13.3	1,126	Total			

Subcatchment CEC-14.0: CEC-14.0



Summary for Pond CV-FS26: CEC-14.0

Inflow Area = 11.488 ac, 0.00% Impervious, Inflow Depth = 0.61" for 2 yr event
Inflow = 5.5 cfs @ 12.21 hrs, Volume= 0.582 af
Outflow = 5.5 cfs @ 12.22 hrs, Volume= 0.583 af, Atten= 0%, Lag= 0.1 min
Primary = 5.5 cfs @ 12.22 hrs, Volume= 0.583 af

Routing by Stor-Ind method, Time Span= 5.00-39.95 hrs, dt= 0.05 hrs / 3
Starting Elev= 1,973.16' Surf.Area= 43 sf Storage= 36 cf
Peak Elev= 1,973.70' @ 12.22 hrs Surf.Area= 53 sf Storage= 62 cf (26 cf above start)

Plug-Flow detention time= 1.5 min calculated for 0.582 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (889.9 - 889.7)

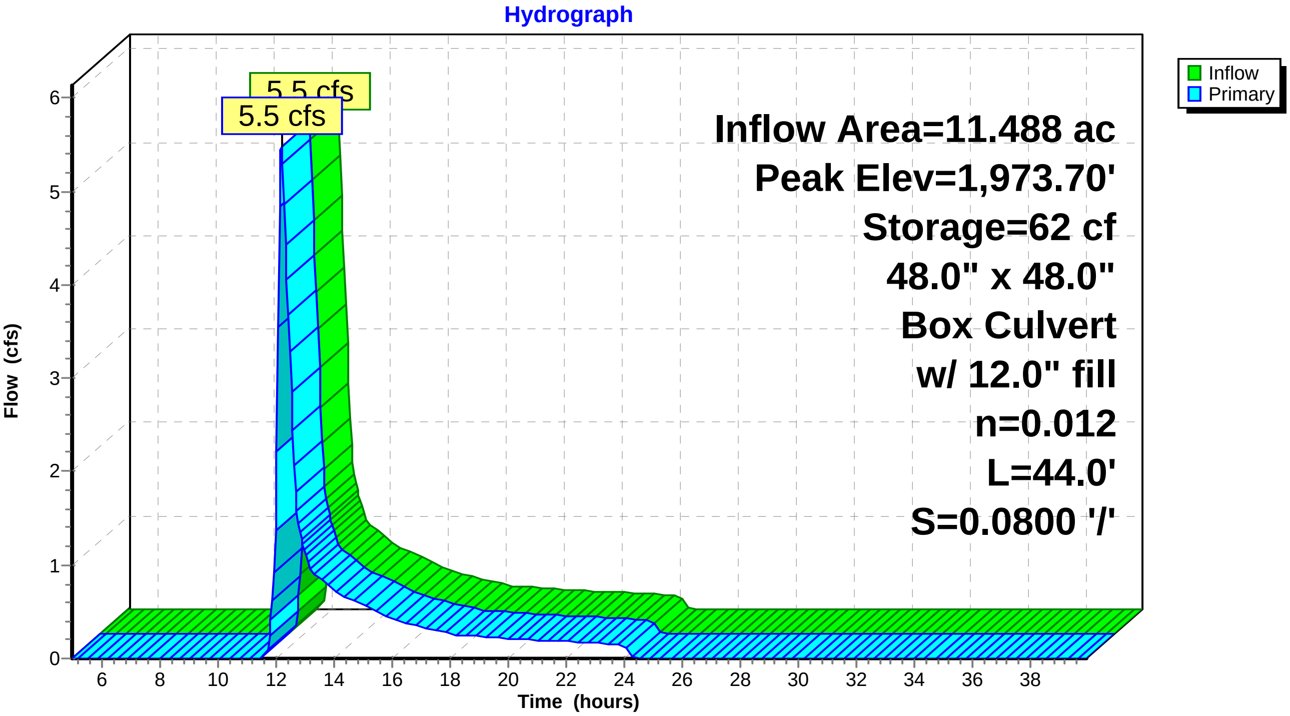
Volume	Invert	Avail.Storage	Storage Description
#1	1,972.00'	3,304 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,972.00	20	0	0
1,974.00	59	79	79
1,976.00	692	751	830
1,978.00	1,782	2,474	3,304

Device	Routing	Invert	Outlet Devices
#1	Primary	1,973.16'	**48.0" W x 48.0" H Box 48" x 48" BOX w/ 12.0" fill** L= 44.0' Box, 30-75° wingwalls, square crown, Ke= 0.400 Inlet / Outlet Invert= 1,972.16' / 1,968.64' S= 0.0800 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished

Primary OutFlow Max=5.4 cfs @ 12.22 hrs HW=1,973.70' (Free Discharge)
└─**1=48" x 48" BOX** (Inlet Controls 5.4 cfs @ 2.52 fps)

Pond CV-FS26: CEC-14.0



Summary for Subcatchment CEC-14.0: CEC-14.0

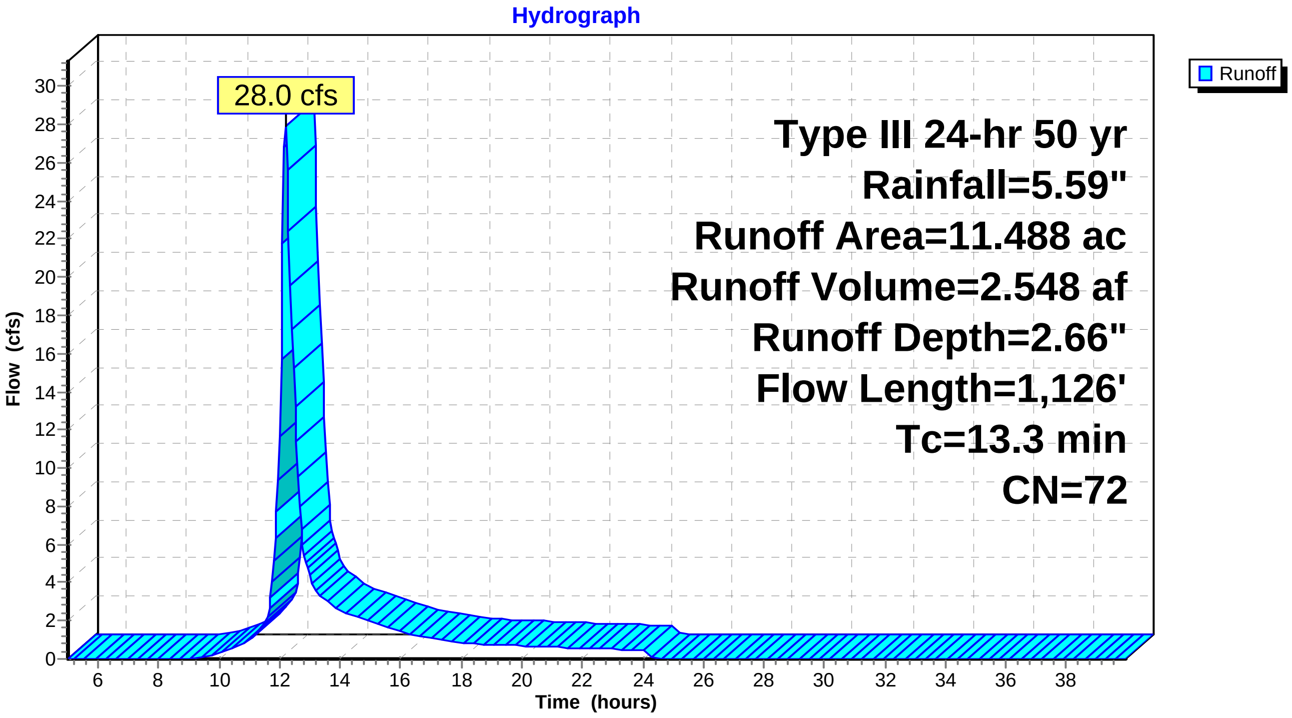
Runoff = 28.0 cfs @ 12.19 hrs, Volume= 2.548 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-39.95 hrs, dt= 0.05 hrs
Type III 24-hr 50 yr Rainfall=5.59"

	Area (ac)	CN	Description
	0.982	71	Meadow, non-grazed, HSG C
	0.289	71	Meadow, non-grazed, HSG C
*	0.660	96	Gravel
*	0.083	96	Gravel
	9.474	70	Woods, Good, HSG C
	11.488	72	Weighted Average
	11.488		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.2700	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.65"
2.0	307	0.2570	2.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	719	0.0680	4.03	6.04	**Channel Flow,** Area= 1.5 sf Perim= 5.6' r= 0.27' n= 0.040
13.3	1,126	Total			

Subcatchment CEC-14.0: CEC-14.0



Summary for Pond CV-FS26: CEC-14.0

```
Inflow Area =       11.488 ac,    0.00% Impervious,  Inflow Depth =   2.66"    for  50 yr event
Inflow      =         28.0 cfs @   12.19 hrs,  Volume=            2.548 af
Outflow     =         27.9 cfs @   12.19 hrs,  Volume=            2.547 af,  Atten= 0%,  Lag= 0.2 min
Primary     =         27.9 cfs @   12.19 hrs,  Volume=            2.547 af
```

Routing by Stor-Ind method, Time Span= 5.00-39.95 hrs, dt= 0.05 hrs / 3
Starting Elev= 1,973.16' Surf.Area= 43 sf Storage= 36 cf
Peak Elev= 1,974.76' @ 12.19 hrs Surf.Area= 300 sf Storage= 216 cf (179 cf above start)

Plug-Flow detention time= 0.7 min calculated for 2.543 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (843.8 - 843.7)

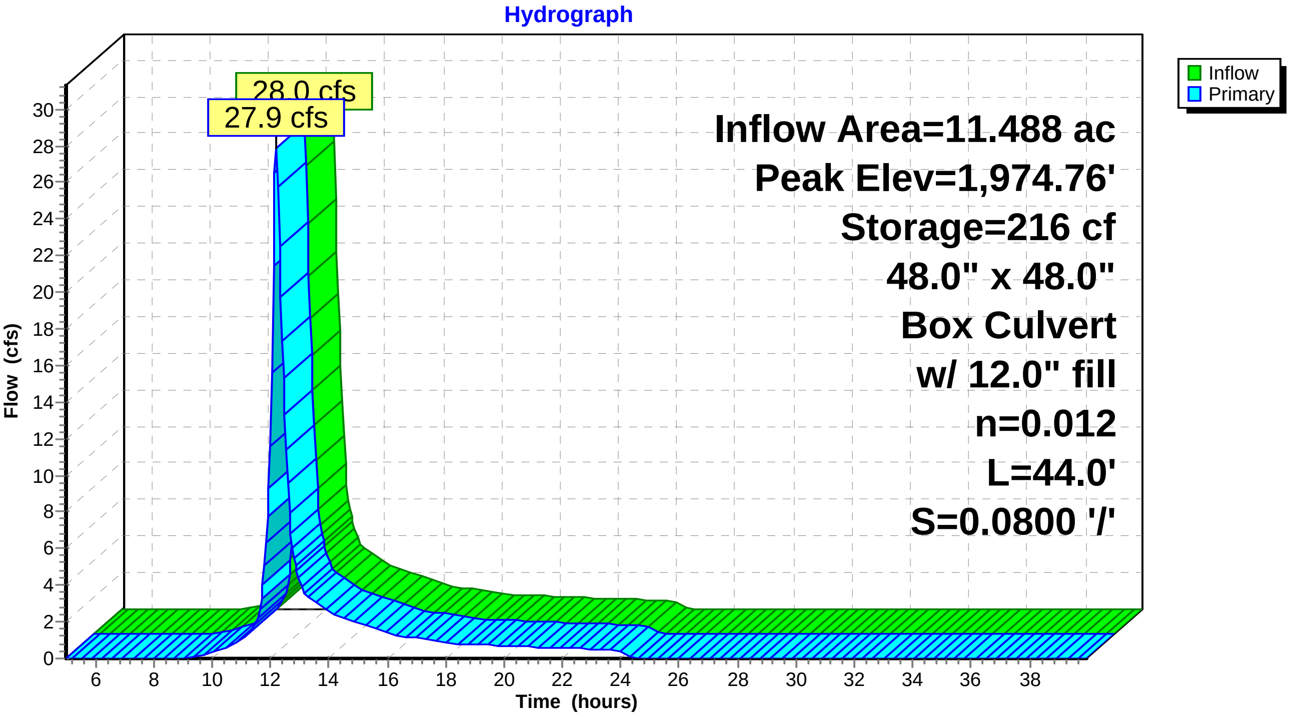
Volume	Invert	Avail.Storage	Storage Description
#1	1,972.00'	3,304 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,972.00	20	0	0
1,974.00	59	79	79
1,976.00	692	751	830
1,978.00	1,782	2,474	3,304

Device	Routing	Invert	Outlet Devices
#1	Primary	1,973.16'	**48.0" W x 48.0" H Box 48" x 48" BOX w/ 12.0" fill** L= 44.0' Box, 30-75° wingwalls, square crown, Ke= 0.400 Inlet / Outlet Invert= 1,972.16' / 1,968.64' S= 0.0800 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished

Primary OutFlow Max=27.7 cfs @ 12.19 hrs HW=1,974.75' (Free Discharge)
↑—**1=48" x 48" BOX** (Inlet Controls 27.7 cfs @ 4.34 fps)

Pond CV-FS26: CEC-14.0



STREAM CROSSING

FS266

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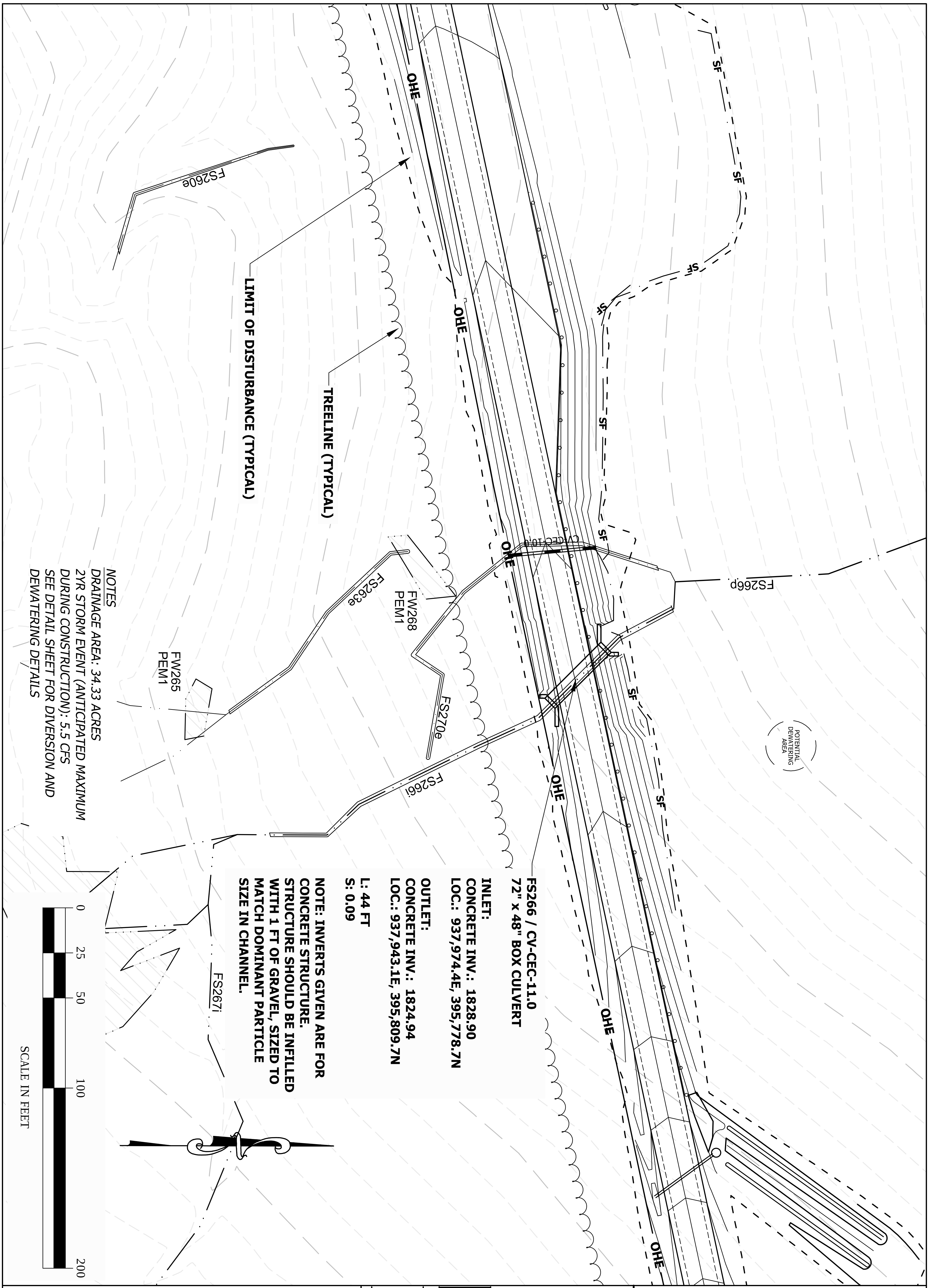


FS266 / CV-CEC-11.0
72" x 48" BOX CULVERT

INLET:
CONCRETE INV.: 1828.90
LOC.: 937,974.4E, 395,778.7N

OUTLET:
CONCRETE INV.: 1824.94
LOC.: 937,943.1E, 395,809.7N

L: 44 FT
S: 0.09

NOTE: INVERTS GIVEN ARE FOR CONCRETE STRUCTURE. STRUCTURE SHOULD BE INFILLED WITH 1 FT OF GRAVEL, SIZED TO MATCH DOMINANT PARTICLE SIZE IN CHANNEL.

NOTES
DRAINAGE AREA: 34.33 ACRES
2YR STORM EVENT (ANTICIPATED MAXIMUM DURING CONSTRUCTION): 5.5 CFS
SEE DETAIL SHEET FOR DIVERSION AND DEWATERING DETAILS

WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

FS266

horizons
Engineering Inc
34 School Street
Littleton, NH 03561
Phone 603.444.4111 - Fax 603.444.1343

IBERDROLA
RENEWABLES

Field Data for
FS266

Collected on: 11/21/2012
Collected by: TBP, CJH

BANKFULL WIDTH		
5.5	FT	US OF EXISTING ROAD, MORE INDICATIVE OF NATURAL CONDITION
4.5	FT	US OF EXISTING ROAD, MORE INDICATIVE OF NATURAL CONDITION

BANKFULL CROSS SECTION		
	STA	DEPTH [FT]
LEFT BANK	0.0	0.00
|	0.5	0.25
|	1.0	0.40
|	1.5	0.80
|	2.0	1.00
|	2.5	0.85
|	3.0	0.85
|	3.5	0.75
|	4.0	0.80
|	4.5	0.90
\/	5.0	0.30
RIGHT BANK	5.5	0.00

BANKFULL AREA

3.45 FT^2

AVG BANKFULL DEPTH

0.86 FT

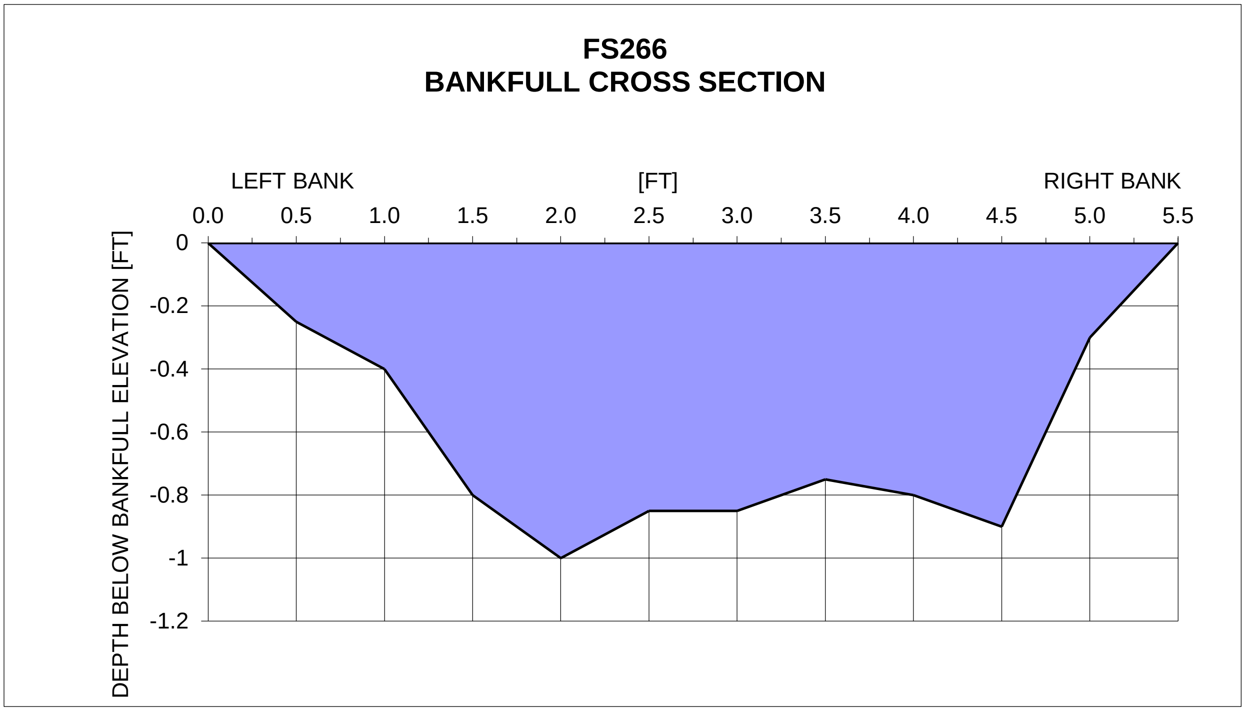
MAXIMUM BANKFULL DEPTH

1.00 FT

FLOOD PRONE WIDTH

~20 FT

MORE LIKELY TO FLOW LATERALLY INTO ADJACENT REMANENT CHANNELS



Field Data for
FS266

Collected on: 11/21/2012
Collected by: TBP, CJH

PEBBLE COUNT
<1
1
2
2
5
8
12
20
30
40
50
90
100
100
120
120
130
150
160
170
180
220
250
350
650

MEDIAN PARTICLE SIZE
100 mm

MEAN PARTICLE SIZE
118 mm

LARGEST MOBILE PARTICLE
170 mm

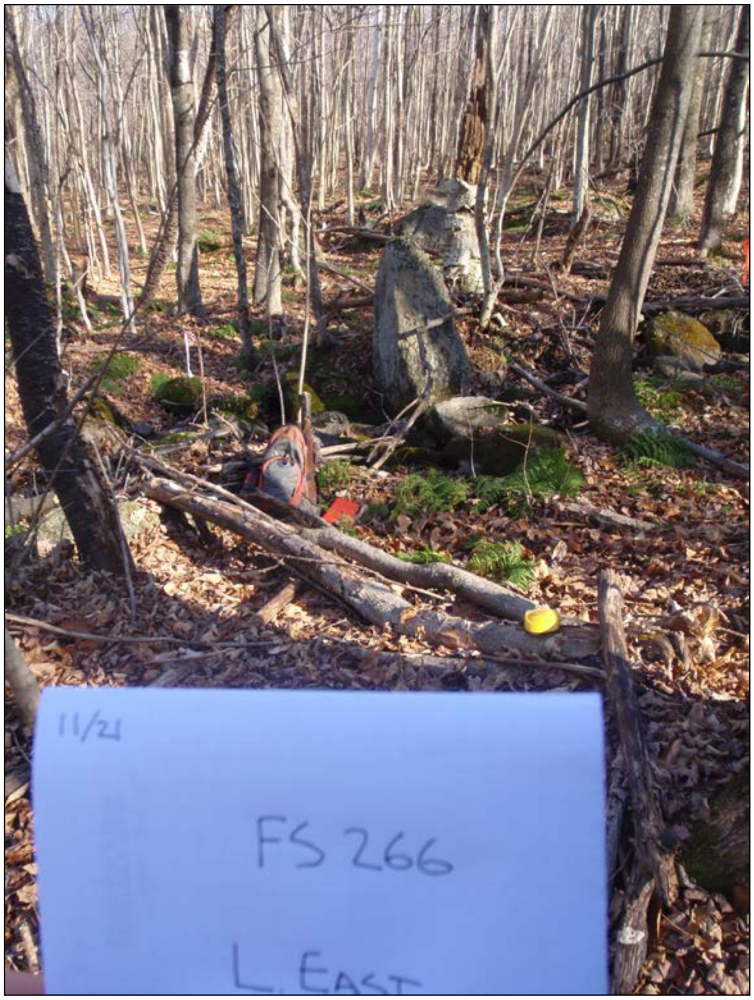
NOTES
SIGNIFICANT FOREST BUFFER, BUT RELATIVELY EVEN-AGE FOREST MAY LACK DIVERSITY
CHANNEL HABITAT GENERALLY BETTER US OF EXISTING ROAD (~50FT US OF PROPOSED)

Wild Meadows – Stream Crossing Photos

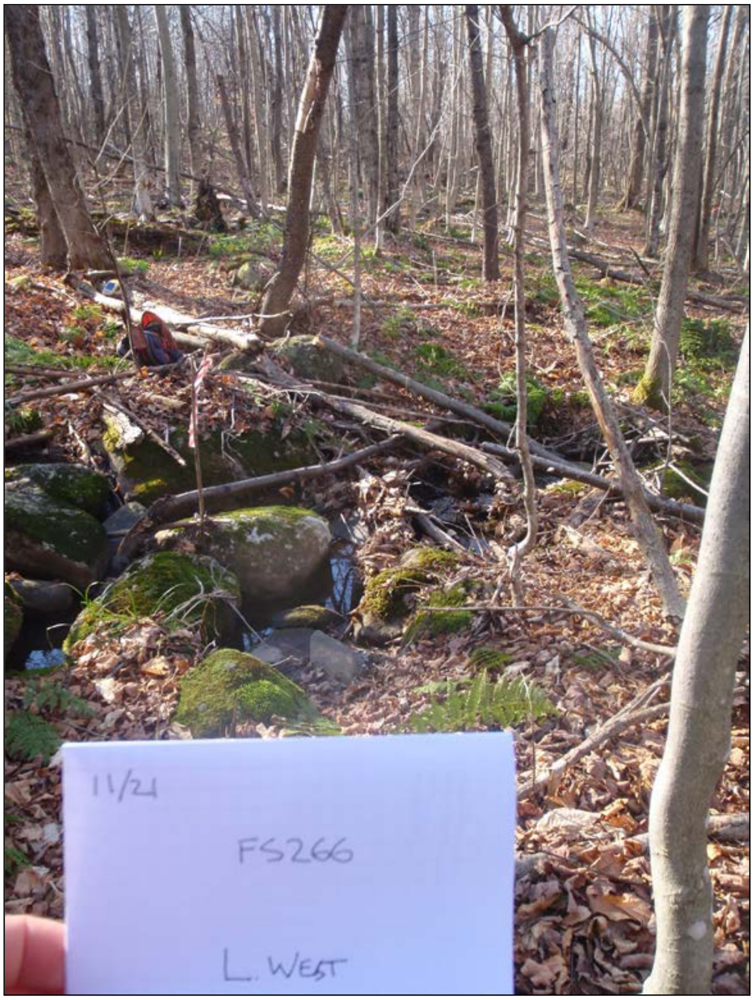
Site: FS 266

Looking Downstream

Looking Upstream



Looking East



Looking West

Summary for Subcatchment CEC-11.0: CEC-11.0

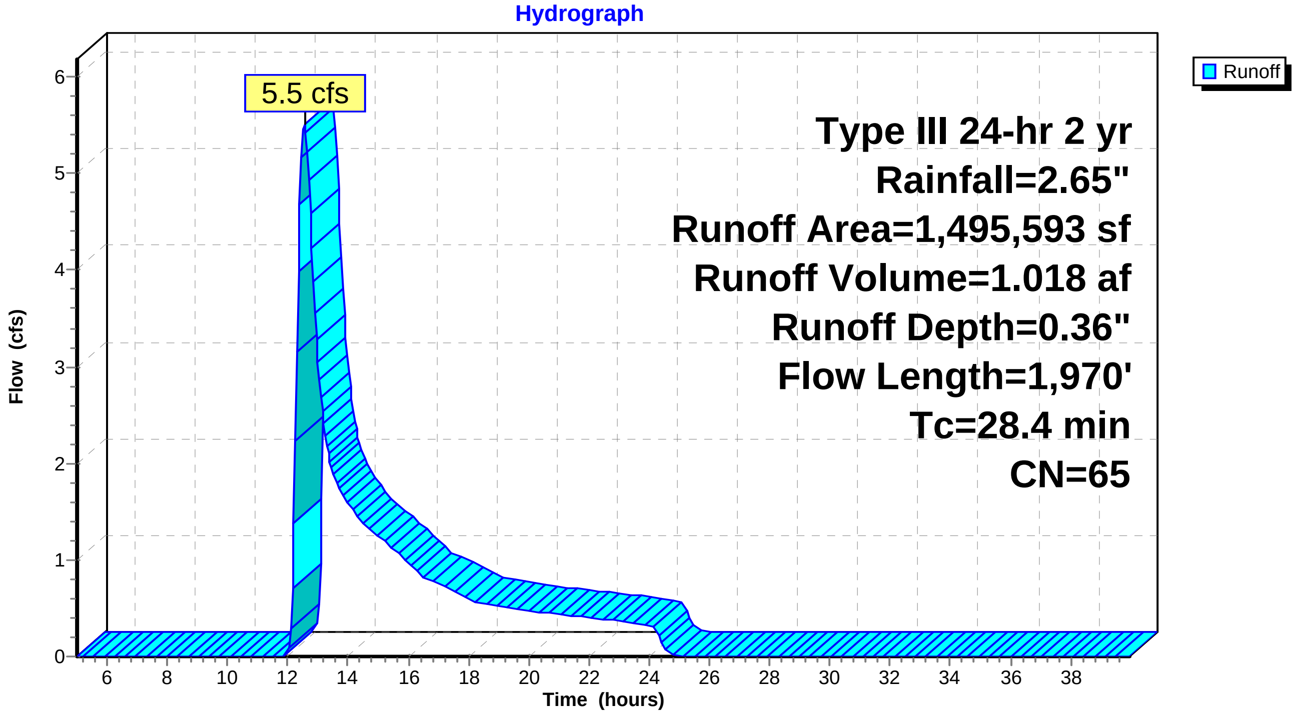
Runoff = 5.5 cfs @ 12.55 hrs, Volume= 1.018 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-39.95 hrs, dt= 0.05 hrs
Type III 24-hr 2 yr Rainfall=2.65"

	Area (sf)	CN	Description
	13,832	71	Meadow, non-grazed, HSG C
*	2,031	96	Gravel
	635,196	55	Woods, Good, HSG B
	477,193	70	Woods, Good, HSG C
	367,341	77	Woods, Good, HSG D
	1,495,593	65	Weighted Average
	1,495,593		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0800	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.65"
13.7	1,535	0.1390	1.86		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	335	0.0900	4.89	16.62	**Channel Flow,** Area= 3.4 sf Perim= 11.7' r= 0.29' n= 0.040
28.4	1,970	Total			

Subcatchment CEC-11.0: CEC-11.0



Summary for Pond FS-266: CEC-11.0

```
Inflow Area =        34.334 ac,    0.00% Impervious,  Inflow Depth =   0.36"    for  2 yr event
Inflow       =          5.5 cfs @   12.55 hrs,  Volume=            1.018 af
Outflow      =          5.5 cfs @   12.55 hrs,  Volume=            1.018 af,  Atten= 0%,  Lag= 0.2 min
Primary      =          5.5 cfs @   12.55 hrs,  Volume=            1.018 af
```

Routing by Stor-Ind method, Time Span= 5.00-39.95 hrs, dt= 0.05 hrs / 3
Starting Elev= 1,829.90' Surf.Area= 126 sf Storage= 75 cf
Peak Elev= 1,830.31' @ 12.55 hrs Surf.Area= 166 sf Storage= 135 cf (61 cf above start)

Plug-Flow detention time= 1.8 min calculated for 1.015 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (938.0 - 937.8)

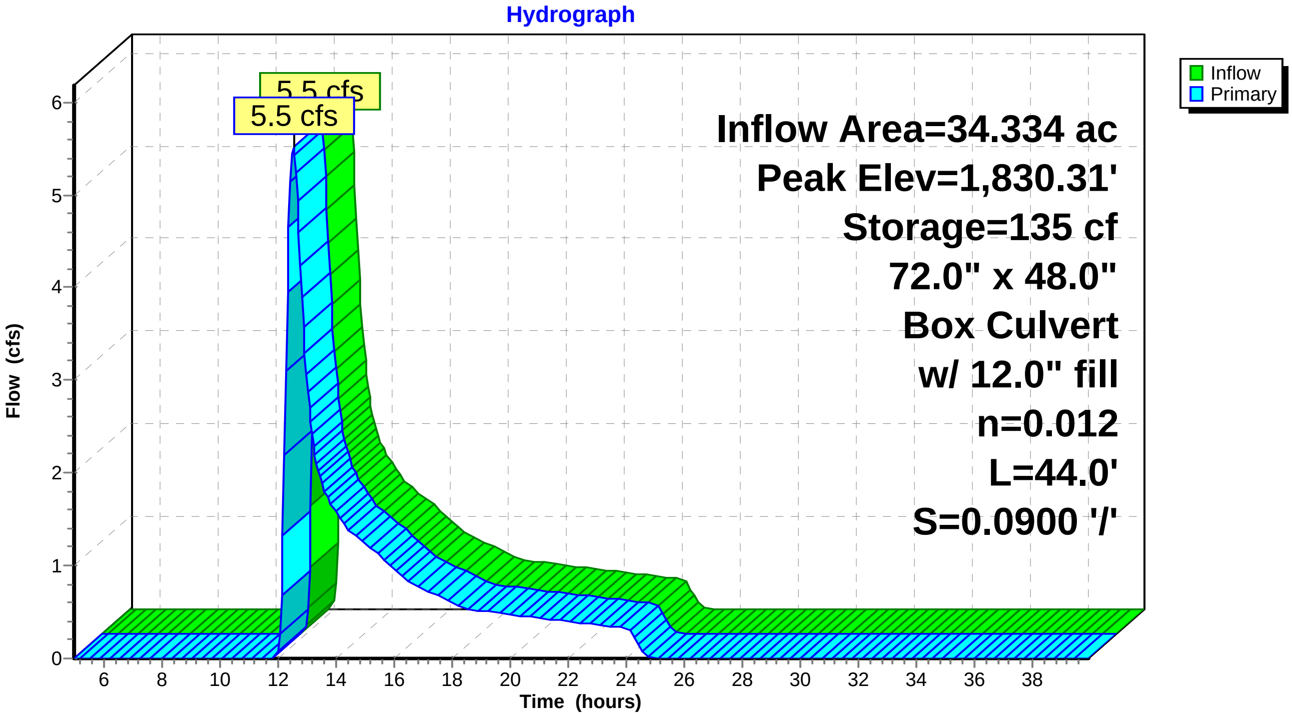
Volume	Invert	Avail.Storage	Storage Description
#1	1,829.00'	1,678 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,829.00	40	0	0
1,832.00	327	551	551
1,834.00	800	1,127	1,678

Device	Routing	Invert	Outlet Devices
#1	Primary	1,829.90'	**72.0" W x 48.0" H Box 72" x 48" BOX w/ 12.0" fill** L= 44.0' Box, 30-75° wingwalls, square crown, Ke= 0.400 Inlet / Outlet Invert= 1,828.90' / 1,824.94' S= 0.0900 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished

Primary OutFlow Max=5.5 cfs @ 12.55 hrs HW=1,830.31' (Free Discharge)
↑—**1=72" x 48" BOX** (Inlet Controls 5.5 cfs @ 2.21 fps)

Pond FS-266: CEC-11.0



Summary for Subcatchment CEC-11.0: CEC-11.0

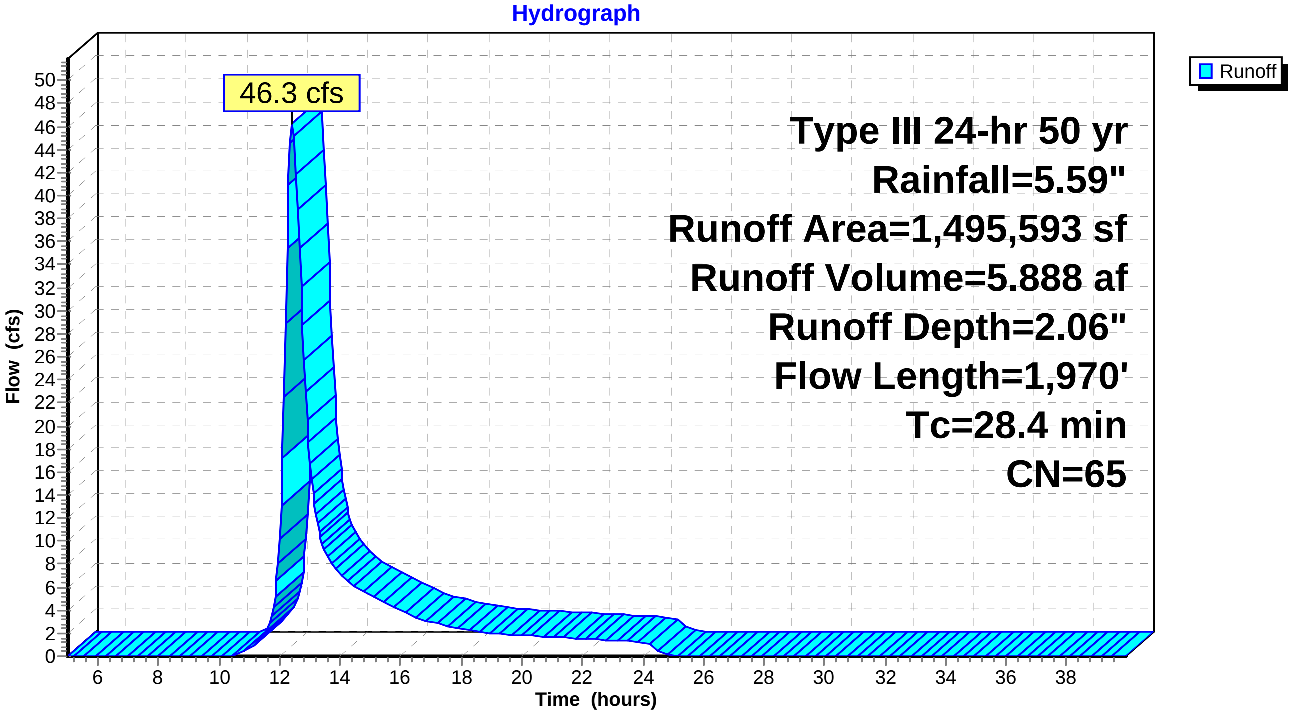
Runoff = 46.3 cfs @ 12.42 hrs, Volume= 5.888 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-39.95 hrs, dt= 0.05 hrs
Type III 24-hr 50 yr Rainfall=5.59"

	Area (sf)	CN	Description
	13,832	71	Meadow, non-grazed, HSG C
*	2,031	96	Gravel
	635,196	55	Woods, Good, HSG B
	477,193	70	Woods, Good, HSG C
	367,341	77	Woods, Good, HSG D
	1,495,593	65	Weighted Average
	1,495,593		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0800	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.65"
13.7	1,535	0.1390	1.86		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	335	0.0900	4.89	16.62	**Channel Flow,** Area= 3.4 sf Perim= 11.7' r= 0.29' n= 0.040
28.4	1,970	Total			

Subcatchment CEC-11.0: CEC-11.0



Summary for Pond FS-266: CEC-11.0

Inflow Area = 34.334 ac, 0.00% Impervious, Inflow Depth = 2.06" for 50 yr event
Inflow = 46.3 cfs @ 12.42 hrs, Volume= 5.888 af
Outflow = 46.3 cfs @ 12.42 hrs, Volume= 5.888 af, Atten= 0%, Lag= 0.1 min
Primary = 46.3 cfs @ 12.42 hrs, Volume= 5.888 af

Routing by Stor-Ind method, Time Span= 5.00-39.95 hrs, dt= 0.05 hrs / 3
Starting Elev= 1,829.90' Surf.Area= 126 sf Storage= 75 cf
Peak Elev= 1,831.61' @ 12.42 hrs Surf.Area= 290 sf Storage= 431 cf (357 cf above start)

Plug-Flow detention time= 0.6 min calculated for 5.878 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (875.1 - 874.9)

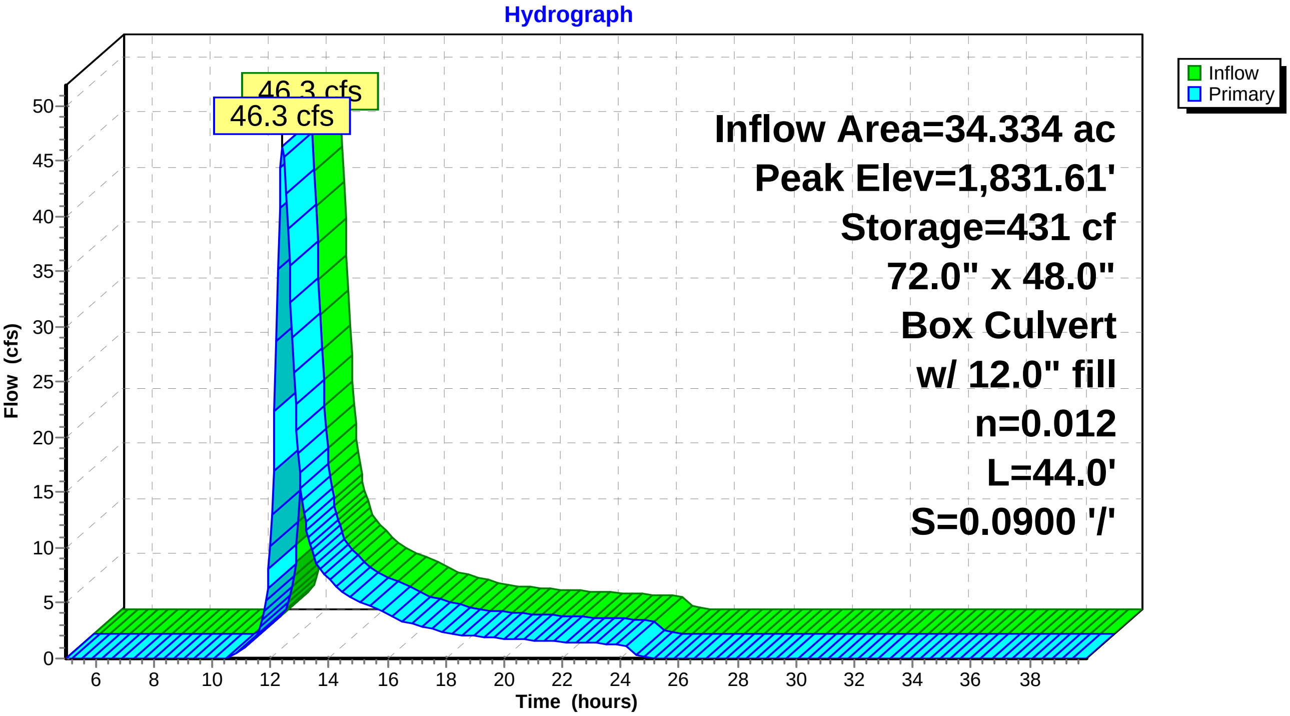
Volume	Invert	Avail.Storage	Storage Description
#1	1,829.00'	1,678 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,829.00	40	0	0
1,832.00	327	551	551
1,834.00	800	1,127	1,678

Device	Routing	Invert	Outlet Devices
#1	Primary	1,829.90'	**72.0" W x 48.0" H Box 72" x 48" BOX w/ 12.0" fill** L= 44.0' Box, 30-75° wingwalls, square crown, Ke= 0.400 Inlet / Outlet Invert= 1,828.90' / 1,824.94' S= 0.0900 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished

Primary OutFlow Max=46.1 cfs @ 12.42 hrs HW=1,831.61' (Free Discharge)
↑—**1=72" x 48" BOX** (Inlet Controls 46.1 cfs @ 4.50 fps)

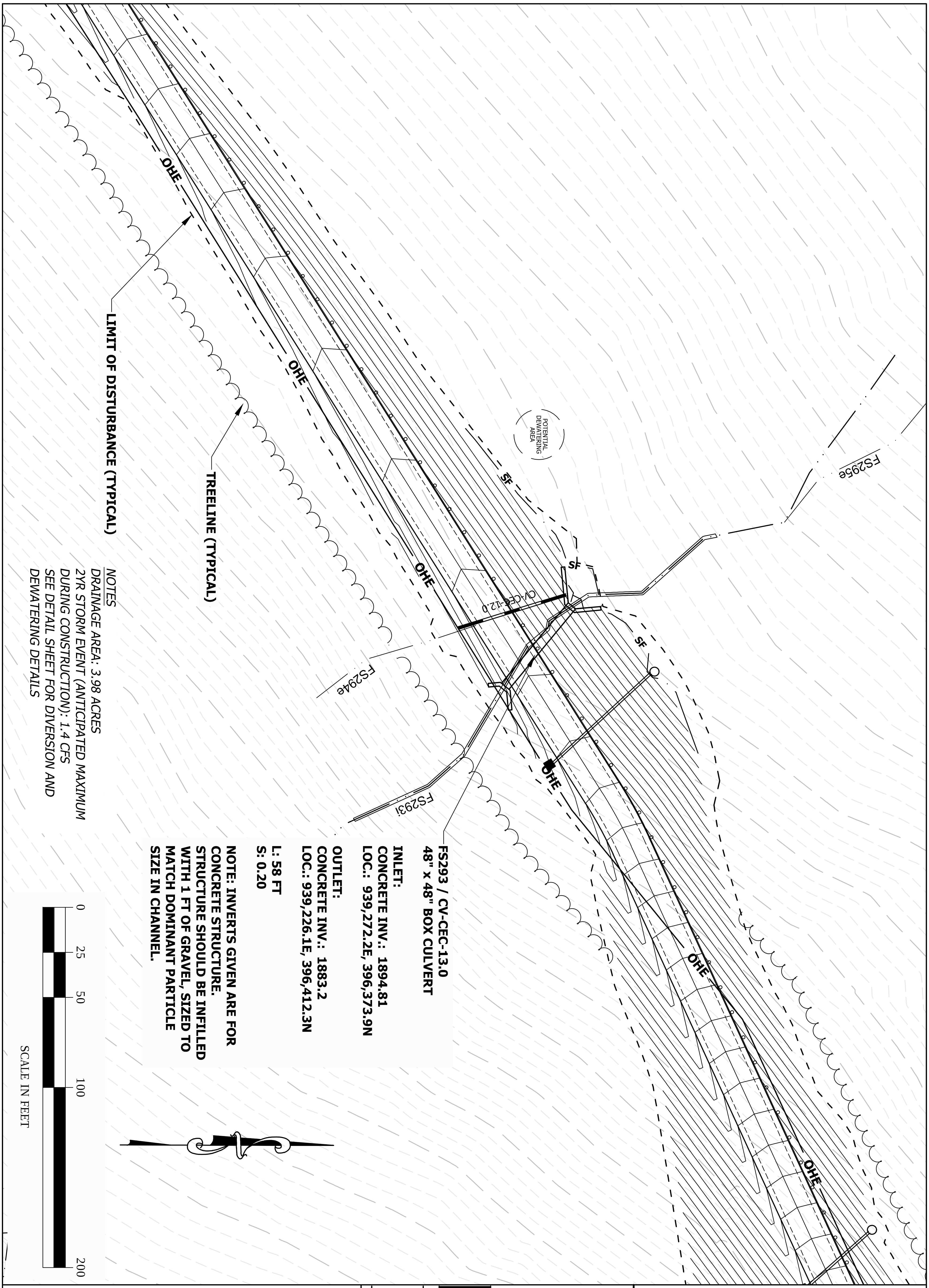
Pond FS-266: CEC-11.0



STREAM CROSSING

FS293

P:\13185 IRF12\DOCS\PERMITS\Streams\13185_StreamTierWatersheds01.dwg, FS293, 12/6/2013 9:25:13 AM, chernick



FS293 / CV-CEC-13.0
48" x 48" BOX CULVERT

INLET:
CONCRETE INV.: 1894.81
LOC.: 939,272.2E, 396,373.9N

OUTLET:
CONCRETE INV.: 1883.2
LOC.: 939,226.1E, 396,412.3N

L: 58 FT
S: 0.20

NOTE: INVERTS GIVEN ARE FOR CONCRETE STRUCTURE. STRUCTURE SHOULD BE INFILLED WITH 1 FT OF GRAVEL, SIZED TO MATCH DOMINANT PARTICLE SIZE IN CHANNEL.

NOTES
DRAINAGE AREA: 3.98 ACRES
2YR STORM EVENT (ANTICIPATED MAXIMUM DURING CONSTRUCTION): 1.4 CFS
SEE DETAIL SHEET FOR DIVERSION AND DEWATERING DETAILS

WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

FS293

horizons Engineering Inc
34 School Street
Littleton, NH 03561
Phone 603.444.4111 - Fax 603.444.1343

IBERDROLA RENEWABLES

Field Data for
FS293

Collected on: 11/27/2012
Collected by: TBP, CJH

BANKFULL WIDTH		
3.5	FT	US OF PROPOSED CROSSING
4.0	FT	CL
4.0	FT	DS OF PROPOSED CROSSING

BANKFULL CROSS SECTION

	STA	DEPTH [FT]
LEFT BANK	0.0	0.00
|	0.5	0.46
|	1.0	0.63
|	1.5	0.58
|	2.0	0.58
|	2.5	0.38
|	3.0	0.29
\/	3.5	0.17
RIGHT BANK	4.0	0.00

BANKFULL AREA

1.54 FT^2

AVG BANKFULL DEPTH

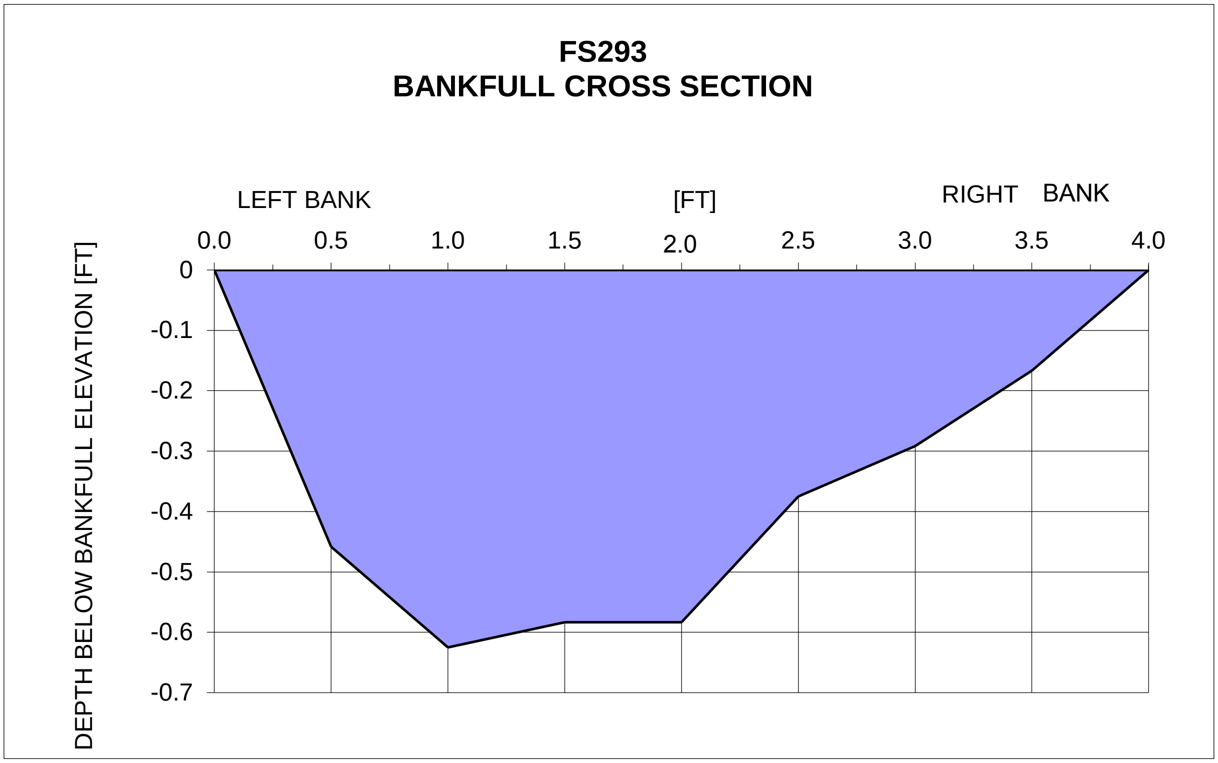
0.39 FT

MAXIMUM BANKFULL DEPTH

0.63 FT

FLOOD PRONE WIDTH

14 FT



Field Data for
FS293

Collected on: 11/27/2012
Collected by: TBP, CJH

PEBBLE COUNT
<1
1
1
10
45
60
60
70
70
90
90
105
110
111
140
155
170
180
190
190
200
250
260
ORG
ORG

MEDIAN PARTICLE SIZE
90 mm

MEAN PARTICLE SIZE
102 mm

LARGEST MOBILE PARTICLE
105 mm

NOTES
MIXED AGE/SPECIES FOREST. GENERALLY GOOD HABITAT FOR INTERMITTENT
SOME FLOW ABOVE, BUT DISAPPEARS BEFORE CROSSING, PROBABLY SUB-SURFACE
STEEP, WITH US EDGE OF FILL AT BASE OF STEEPER SECTION
SIGNIFICANT WOODY DEBRIS, *MAY NEED LARGER STRUCTURE TO PASS*

Wild Meadows – Stream Crossing Photos

Site: FS 293

Looking Downstream

Looking Upstream

Looking East

Looking West

Summary for Subcatchment CEC-13.0: CEC-13.0

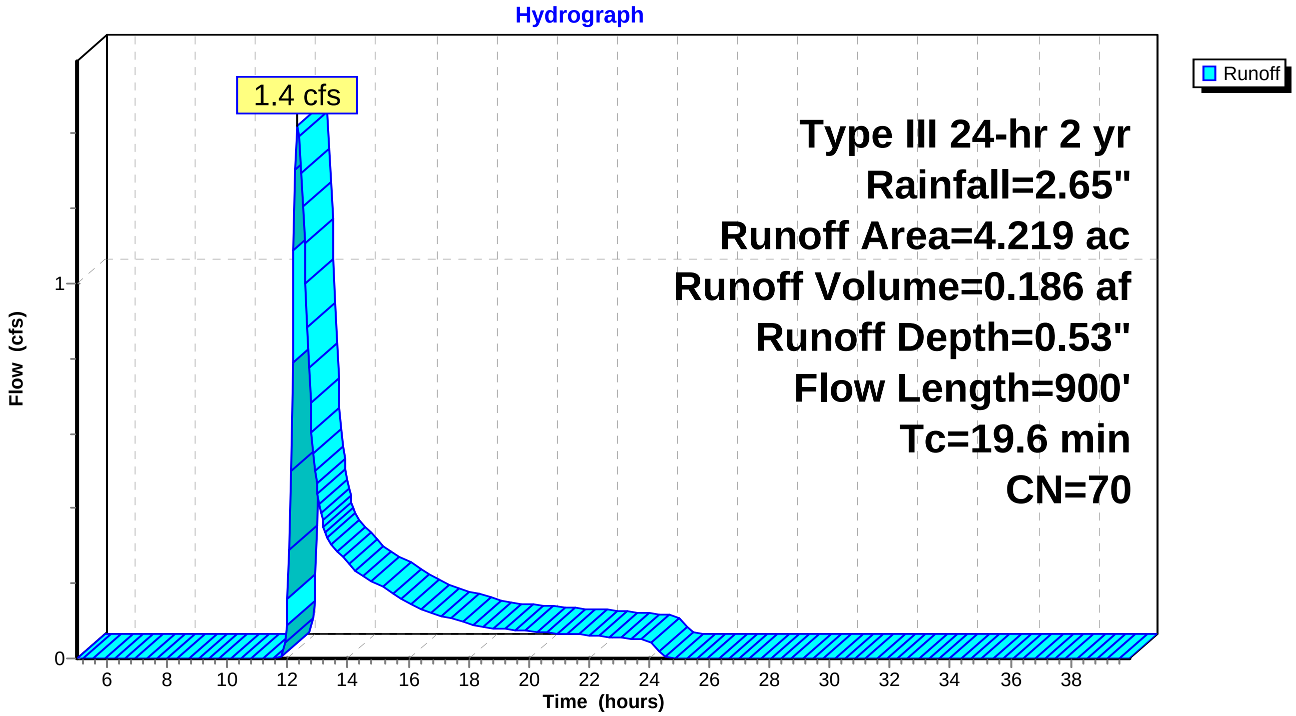
Runoff = 1.4 cfs @ 12.33 hrs, Volume= 0.186 af, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-39.95 hrs, dt= 0.05 hrs
Type III 24-hr 2 yr Rainfall=2.65"

	Area (ac)	CN	Description
	0.064	71	Meadow, non-grazed, HSG C
*	0.012	96	Gravel
	4.143	70	Woods, Good, HSG C
	4.219	70	Weighted Average
	4.219		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0700	0.12		**Sheet Flow, 293A** Woods: Light underbrush n= 0.400 P2= 2.65"
4.9	569	0.1480	1.92		**Shallow Concentrated Flow, 293B** Woodland Kv= 5.0 fps
0.4	231	0.2940	10.84	16.26	**Channel Flow, 293C** Area= 1.5 sf Perim= 3.8' r= 0.39' n= 0.040
19.6	900	Total			

Subcatchment CEC-13.0: CEC-13.0



Summary for Pond FS-293: CEC-13.0

```
Inflow Area =          4.219 ac,    0.00% Impervious,  Inflow Depth =   0.53"    for  2 yr event
Inflow       =           1.4 cfs @   12.33 hrs,  Volume=            0.186 af
Outflow      =           1.4 cfs @   12.34 hrs,  Volume=            0.186 af,  Atten= 0%,  Lag= 0.2 min
Primary      =           1.4 cfs @   12.34 hrs,  Volume=            0.186 af
```

Routing by Stor-Ind method, Time Span= 5.00-39.95 hrs, dt= 0.05 hrs
Starting Elev= 1,895.81' Surf.Area= 70 sf Storage= 35 cf
Peak Elev= 1,896.03' @ 12.34 hrs Surf.Area= 85 sf Storage= 52 cf (17 cf above start)

Plug-Flow detention time= 3.8 min calculated for 0.185 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (904.5 - 904.2)

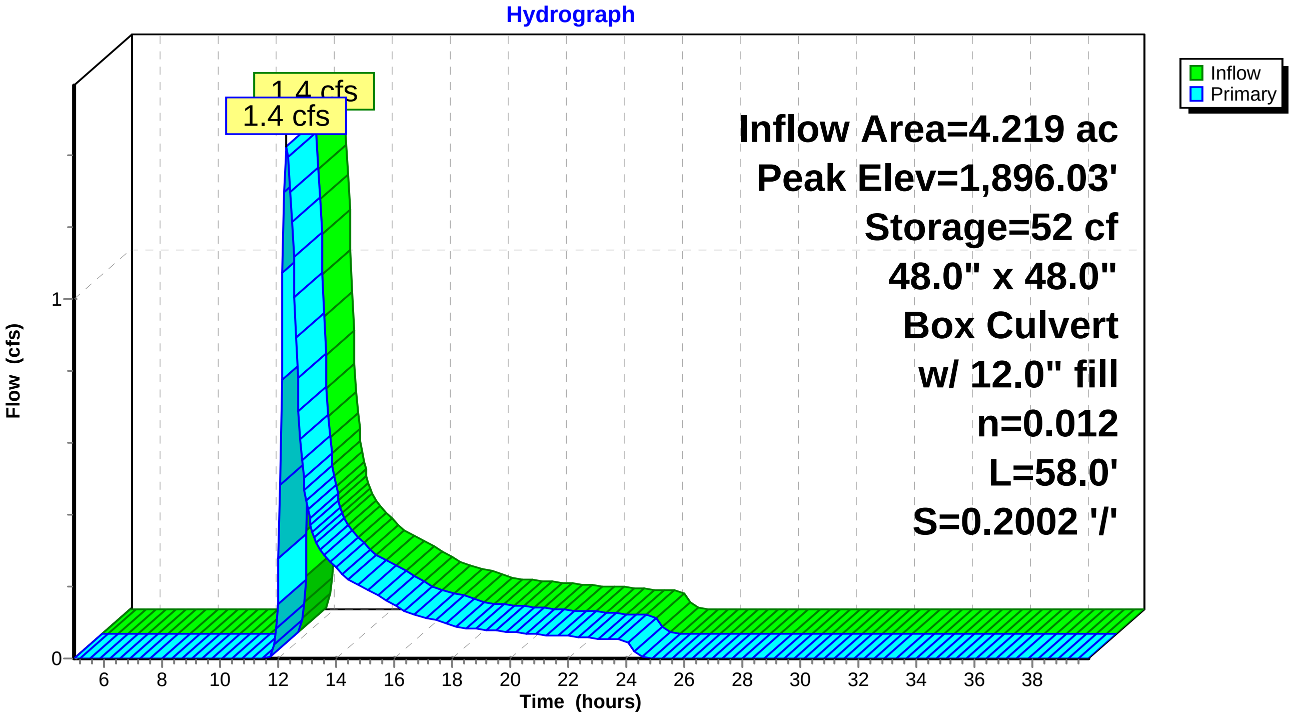
Volume	Invert	Avail.Storage	Storage Description
#1	1,895.00'	1,168 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,895.00	15	0	0
1,898.00	220	353	353
1,900.00	595	815	1,168

Device	Routing	Invert	Outlet Devices
#1	Primary	1,895.81'	**48.0" W x 48.0" H Box 48" x 48" BOX w/ 12.0" fill** L= 58.0' Box, 30-75° wingwalls, square crown, Ke= 0.400 Inlet / Outlet Invert= 1,894.81' / 1,883.20' S= 0.2002 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished

Primary OutFlow Max=1.4 cfs @ 12.34 hrs HW=1,896.03' (Free Discharge)
└─**1=48" x 48" BOX** (Inlet Controls 1.4 cfs @ 1.61 fps)

Pond FS-293: CEC-13.0



Summary for Subcatchment CEC-13.0: CEC-13.0

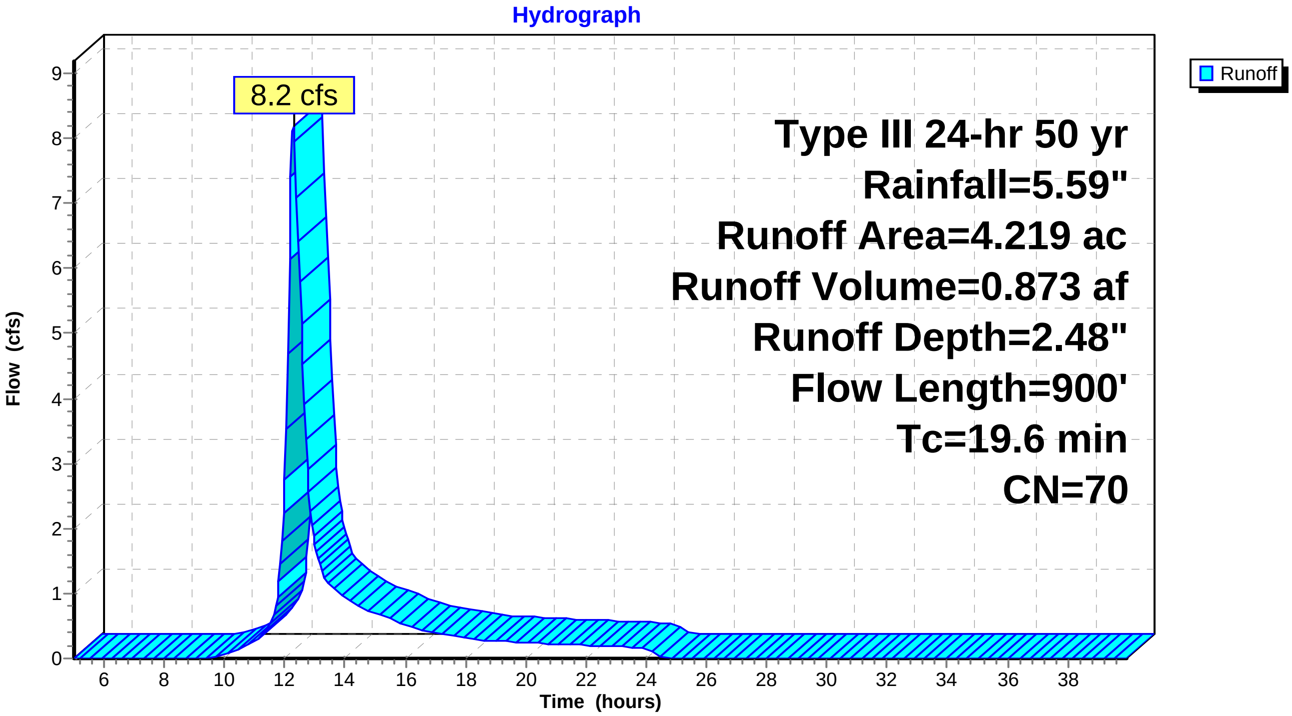
Runoff = 8.2 cfs @ 12.28 hrs, Volume= 0.873 af, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-39.95 hrs, dt= 0.05 hrs
Type III 24-hr 50 yr Rainfall=5.59"

	Area (ac)	CN	Description
	0.064	71	Meadow, non-grazed, HSG C
*	0.012	96	Gravel
	4.143	70	Woods, Good, HSG C
	4.219	70	Weighted Average
	4.219		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0700	0.12		**Sheet Flow, 293A** Woods: Light underbrush n= 0.400 P2= 2.65"
4.9	569	0.1480	1.92		**Shallow Concentrated Flow, 293B** Woodland Kv= 5.0 fps
0.4	231	0.2940	10.84	16.26	**Channel Flow, 293C** Area= 1.5 sf Perim= 3.8' r= 0.39' n= 0.040
19.6	900	Total			

Subcatchment CEC-13.0: CEC-13.0



Summary for Pond FS-293: CEC-13.0

Inflow Area = 4.219 ac, 0.00% Impervious, Inflow Depth = 2.48" for 50 yr event
Inflow = 8.2 cfs @ 12.28 hrs, Volume= 0.873 af
Outflow = 8.2 cfs @ 12.28 hrs, Volume= 0.873 af, Atten= 0%, Lag= 0.1 min
Primary = 8.2 cfs @ 12.28 hrs, Volume= 0.873 af

Routing by Stor-Ind method, Time Span= 5.00-39.95 hrs, dt= 0.05 hrs
Starting Elev= 1,895.81' Surf.Area= 70 sf Storage= 35 cf
Peak Elev= 1,896.52' @ 12.28 hrs Surf.Area= 119 sf Storage= 102 cf (67 cf above start)

Plug-Flow detention time= 1.2 min calculated for 0.871 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (854.6 - 854.4)

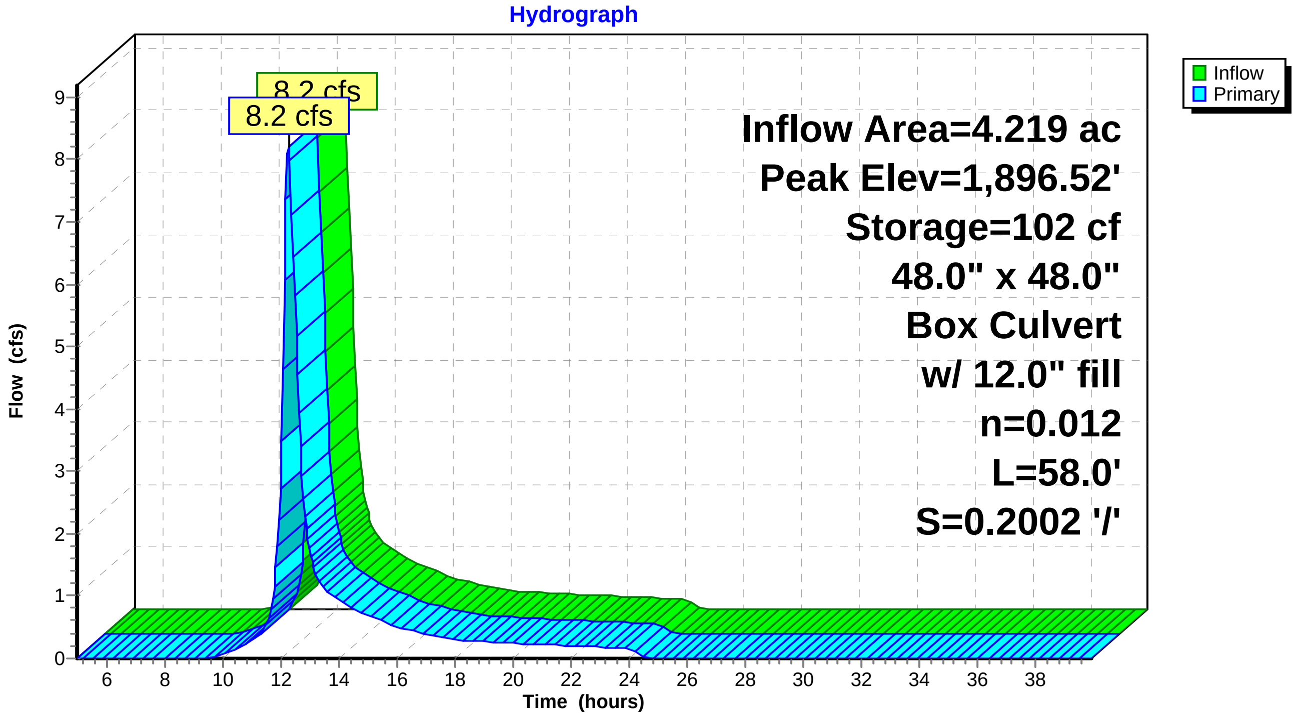
Volume	Invert	Avail.Storage	Storage Description
#1	1,895.00'	1,168 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,895.00	15	0	0
1,898.00	220	353	353
1,900.00	595	815	1,168

Device	Routing	Invert	Outlet Devices
#1	Primary	1,895.81'	**48.0" W x 48.0" H Box 48" x 48" BOX w/ 12.0" fill** L= 58.0' Box, 30-75° wingwalls, square crown, Ke= 0.400 Inlet / Outlet Invert= 1,894.81' / 1,883.20' S= 0.2002 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished

Primary OutFlow Max=8.1 cfs @ 12.28 hrs HW=1,896.52' (Free Discharge)
↑—**1=48" x 48" BOX** (Inlet Controls 8.1 cfs @ 2.89 fps)

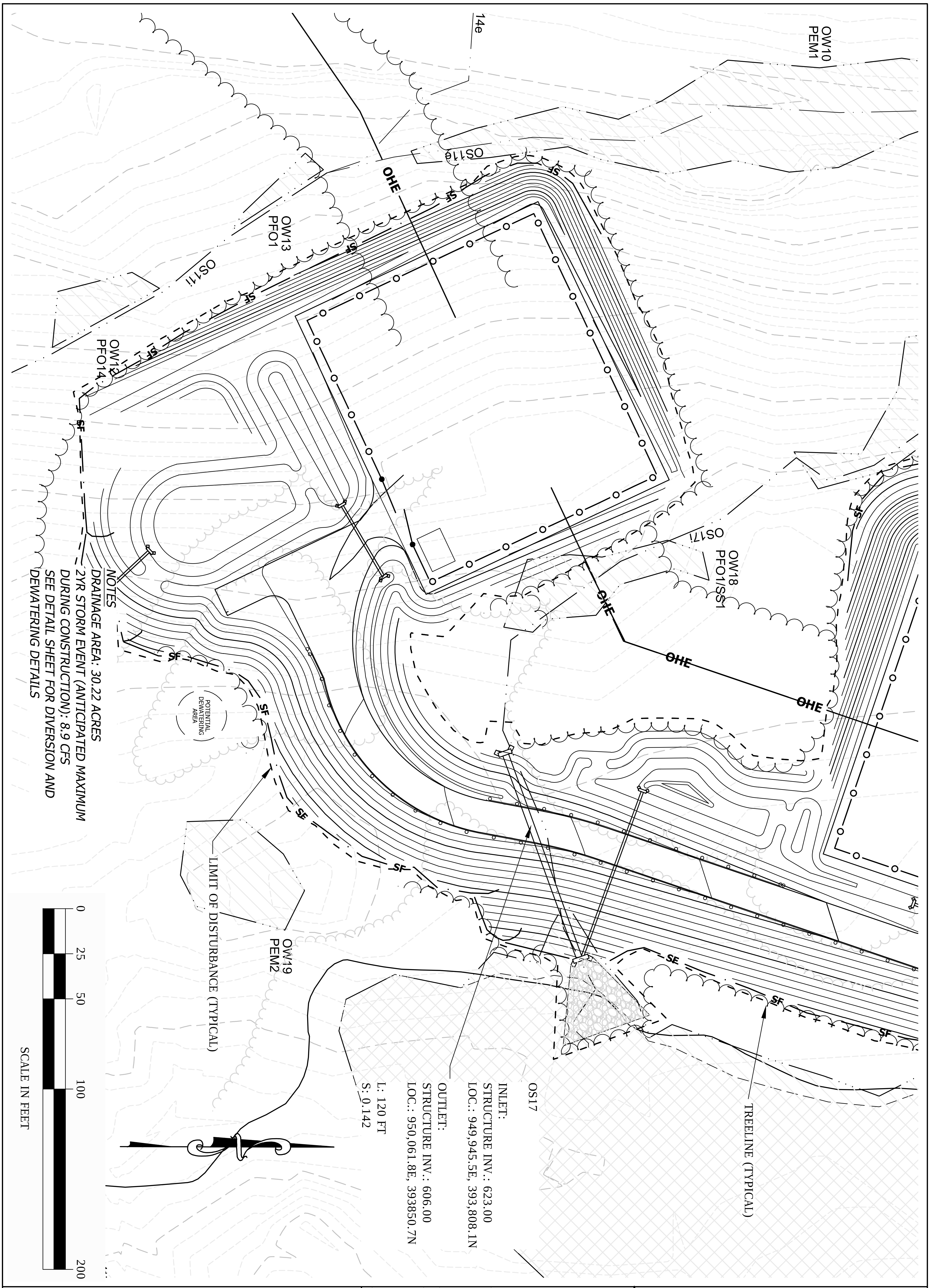
Pond FS-293: CEC-13.0



STREAM CROSSING

OS17

P:\13185 IRF12\DWGS\70 Percent\DES_SubStation70 drainage.dwg, OS17, 12/5/2013 4:52:23 PM, chernick



NOTES
DRAINAGE AREA: 30.22 ACRES
2YR STORM EVENT (ANTICIPATED MAXIMUM DURING CONSTRUCTION): 8.9 CFS
SEE DETAIL SHEET FOR DIVERSION AND DEWATERING DETAILS

OS17
INLET:
STRUCTURE INV.: 623.00
LOC.: 949,945.5E, 393,808.1N
OUTLET:
STRUCTURE INV.: 606.00
LOC.: 950,061.8E, 393850.7N
L: 120 FT
S: 0.142

WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

OS17

horizons Engineering Inc
34 School Street
Littleton, NH 03561
Phone 603.444.4111 - Fax 603.444.1343

IBERDROLA RENEWABLES

Field Data for
OS17

Collected on: 12/11/2012
Collected by: TBP, CJH

BANK FULL WIDTH		
4.0	FT	US OF EXISTING, PROSPOSED CROSSING
3.5	FT	US OF EXISTING, PROSPOSED CROSSING
4.5	FT	US OF EXISTING, PROSPOSED CROSSING

BANKFULL CROSS SECTION		
	STA	DEPTH [FT]
LEFT BANK	0.0	0.00
|	0.5	0.50
|	1.0	0.70
|	1.5	0.60
|	2.0	0.80
|	2.5	0.73
\/	3.0	0.50
RIGHT BANK	3.5	0.00

BANK FULL AREA
1.91 FT^2

AVG BANK FULL DEPTH
0.55 FT

MAXIMUM BANK FULL DEPTH
0.80 FT

FLOOD PRONE WIDTH
8.00 FT

PEBBLE COUNT
ORGANIC
ORGANIC
2
2
5
10
10
15
32
45
45
64
64
64
90
90
128
128
128
150
180
200
200
300
600

MEDIAN PARTICLE SIZE
64 mm

MEAN PARTICLE SIZE
102 mm

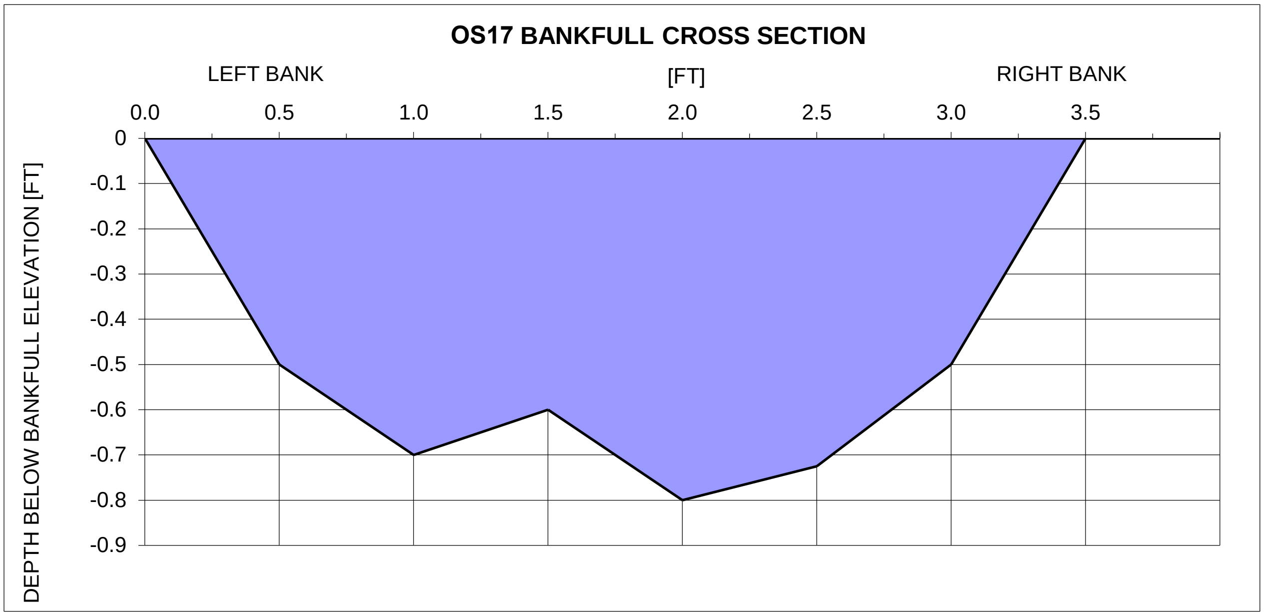
LARGEST MOBILE PARTICLE
150 mm

Field Data for
OS17

Collected on: 12/11/2012
Collected by: TBP, CJH

FIELD CONCEPTUAL STRUCTURE
5FT x 4FT BOX IDEAL 3FT HDPE LIKELY SUFFICIENT FOR FLOW

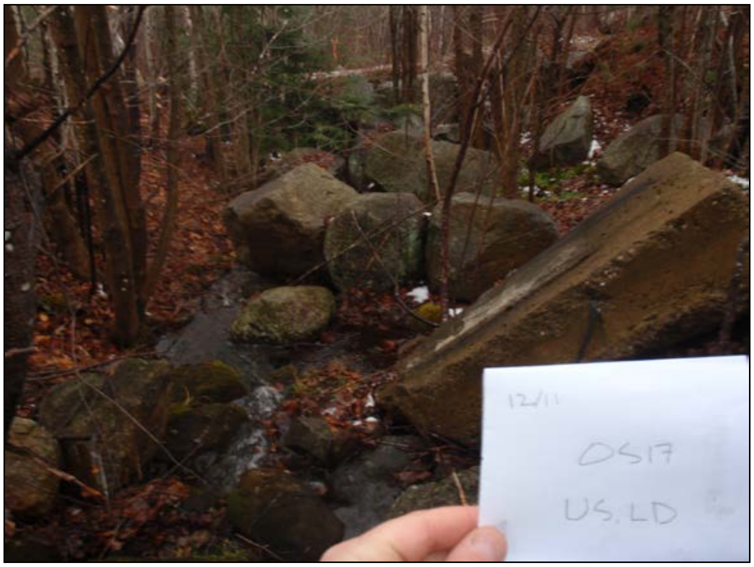
NOTES
EXISTING CROSS, CULVERT BURIED BENEATH LARGE BOULDERS
US OF EXISTING CROSSING CHANNEL APPEARS TO HAVE BEEN STRAIGHTENED APPROX 20 YRS AGO. NARROW EVEN-AGED FORESTED BUFFER OF PIONEER SPECIES. MANMADE BERMS.
LITTLE WOODY DEBRIS, SOME LEAF TRANSPORT
DS CHANNEL CONNECTS TO MARSHY WETLANDS, FLOW DISPERSES. NO DEFINED CHANNEL 50FT DS OF THE TOE OF THE EXSTING FILL.ALDER. FORMERLY USED AS REFUSE DUMPING AREA.



Wild Meadows – Stream Crossing Photos

Site: OS 17

Upstream, Looking Up



Upstream, Looking Down

Downstream, Looking Down

Downstream, Looking Up

Summary for Subcatchment Po2: Post Area 2

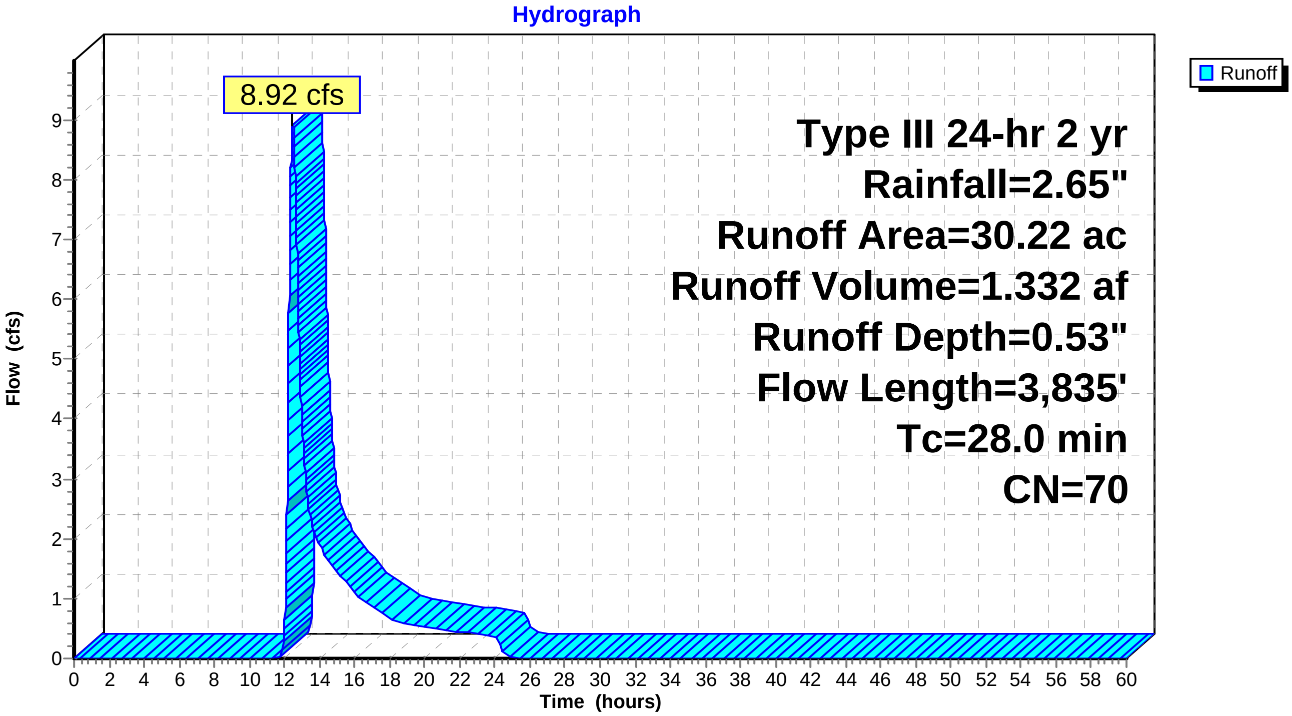
Runoff = 8.92 cfs @ 12.47 hrs, Volume= 1.332 af, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=2.65"

	Area (ac)	CN	Description
	0.06	30	Woods, Good, HSG A
	0.06	55	Woods, Good, HSG B
	28.42	70	Woods, Good, HSG C
	0.44	77	Woods, Good, HSG D
	0.01	30	Meadow, non-grazed, HSG A
	0.01	58	Meadow, non-grazed, HSG B
	0.73	71	Meadow, non-grazed, HSG C
	0.23	78	Meadow, non-grazed, HSG D
*	0.25	98	x Paved roads
*	0.01	98	x Roofs
*	0.00	96	Proposed Roads Gravel
	30.22	70	Weighted Average
	29.96		99.14% Pervious Area
	0.26		0.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.2200	0.18		**Sheet Flow, Post 2** Woods: Light underbrush n= 0.400 P2= 2.65"
15.7	2,185	0.2150	2.32		**Shallow Concentrated Flow, Post 2** Woodland Kv= 5.0 fps
0.1	40	0.0300	6.49	20.38	**Pipe Channel, Post 2** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.025 Corrugated metal
3.2	1,510	0.0832	7.77	31.10	**Trap/Vee/Rect Channel Flow, Post 2** Bot.W=2.00' D=1.00' Z= 2.0 '/' Top.W=6.00' n= 0.040
28.0	3,835	Total			

Subcatchment Po2: Post Area 2



Summary for Pond CV1: 48" Culvert

Inflow Area = 30.22 ac, 0.86% Impervious, Inflow Depth = 0.53" for 2 yr event
Inflow = 8.92 cfs @ 12.47 hrs, Volume= 1.332 af
Outflow = 8.89 cfs @ 12.49 hrs, Volume= 1.332 af, Atten= 0%, Lag= 1.0 min
Primary = 8.89 cfs @ 12.49 hrs, Volume= 1.332 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 624.03' @ 12.49 hrs Surf.Area= 1,134 sf Storage= 898 cf

Plug-Flow detention time= 3.4 min calculated for 1.332 af (100% of inflow)
Center-of-Mass det. time= 3.3 min (915.2 - 911.9)

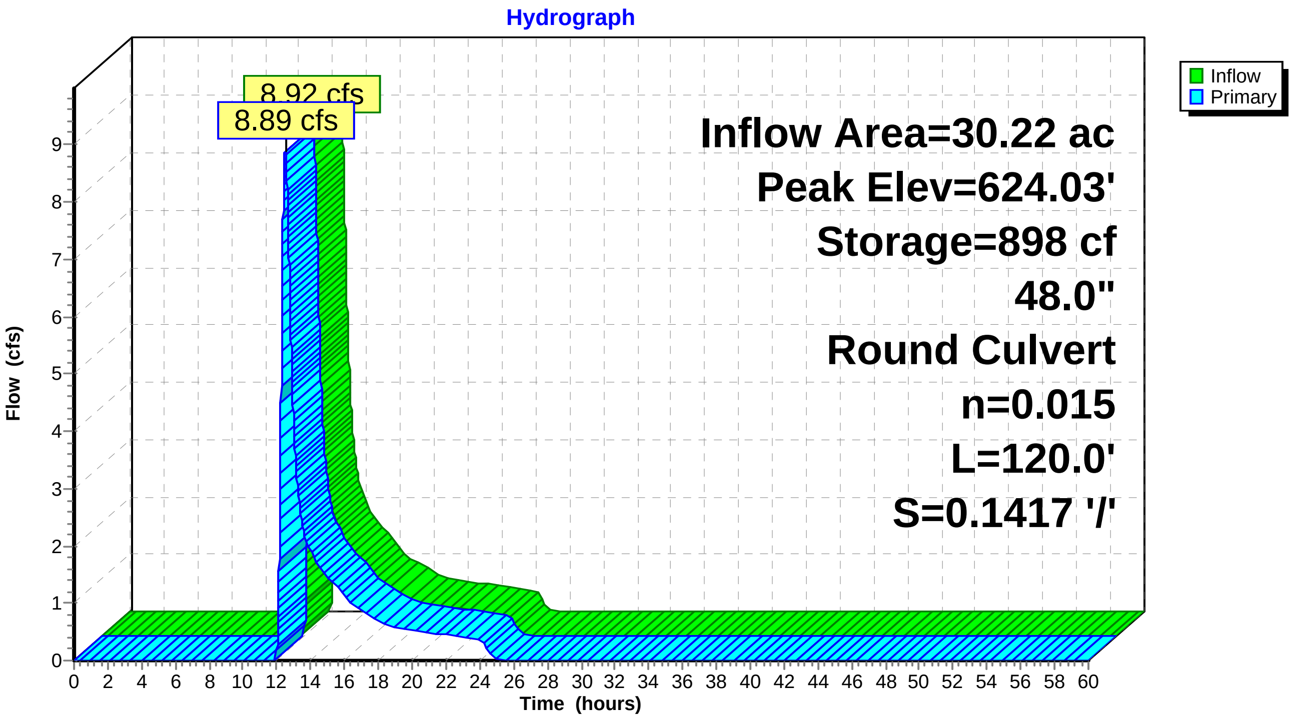
Volume	Invert	Avail.Storage	Storage Description
#1	623.00'	5,168 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
623.00	625	0	0
624.00	1,100	863	863
626.00	3,205	4,305	5,168

Device	Routing	Invert	Outlet Devices
#1	Primary	623.00'	**48.0" Round Culvert** L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 623.00' / 606.00' S= 0.1417 '/' Cc= 0.900 n= 0.015 Corrugated PE, smooth interior

Primary OutFlow Max=8.89 cfs @ 12.49 hrs HW=624.03' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 8.89 cfs @ 3.46 fps)

Pond CV1: 48" Culvert



Summary for Subcatchment Po2: Post Area 2

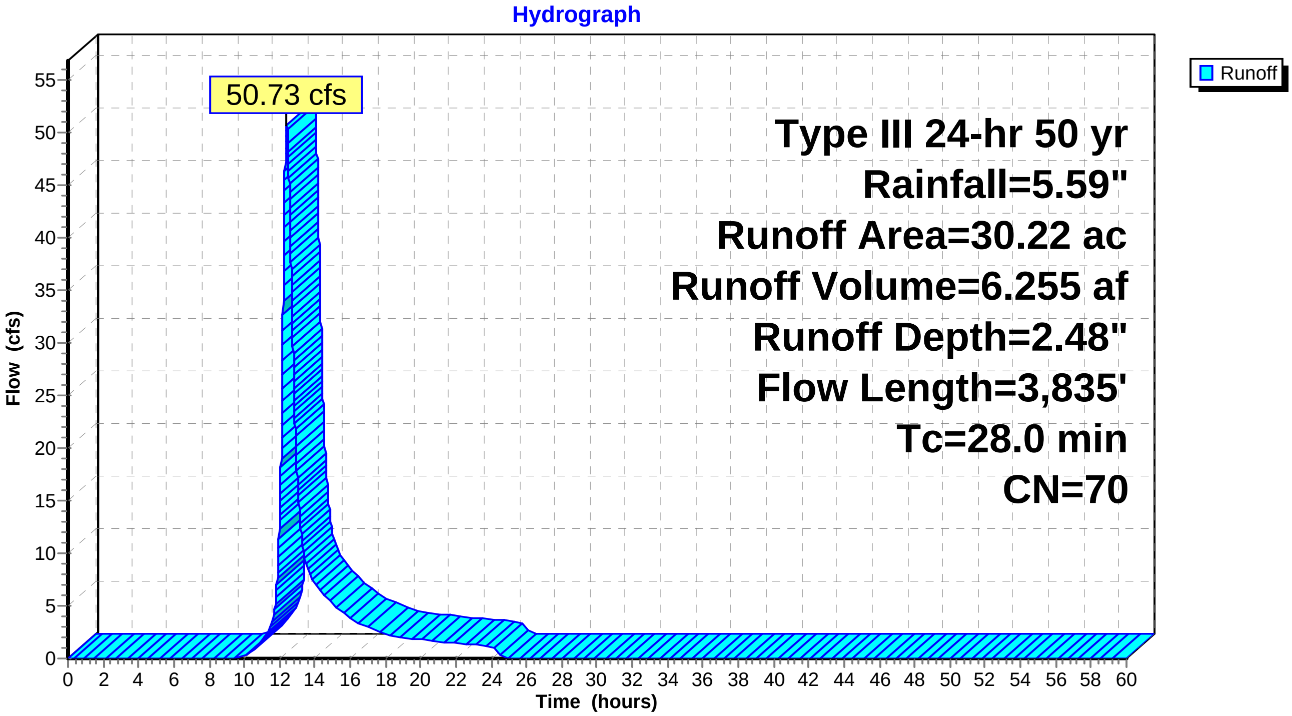
Runoff = 50.73 cfs @ 12.41 hrs, Volume= 6.255 af, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 yr Rainfall=5.59"

	Area (ac)	CN	Description
	0.06	30	Woods, Good, HSG A
	0.06	55	Woods, Good, HSG B
	28.42	70	Woods, Good, HSG C
	0.44	77	Woods, Good, HSG D
	0.01	30	Meadow, non-grazed, HSG A
	0.01	58	Meadow, non-grazed, HSG B
	0.73	71	Meadow, non-grazed, HSG C
	0.23	78	Meadow, non-grazed, HSG D
*	0.25	98	x Paved roads
*	0.01	98	x Roofs
*	0.00	96	Proposed Roads Gravel
	30.22	70	Weighted Average
	29.96		99.14% Pervious Area
	0.26		0.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.2200	0.18		**Sheet Flow, Post 2** Woods: Light underbrush n= 0.400 P2= 2.65"
15.7	2,185	0.2150	2.32		**Shallow Concentrated Flow, Post 2** Woodland Kv= 5.0 fps
0.1	40	0.0300	6.49	20.38	**Pipe Channel, Post 2** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.025 Corrugated metal
3.2	1,510	0.0832	7.77	31.10	**Trap/Vee/Rect Channel Flow, Post 2** Bot.W=2.00' D=1.00' Z= 2.0 '/' Top.W=6.00' n= 0.040
28.0	3,835	Total			

Subcatchment Po2: Post Area 2



Summary for Pond CV1: 48" Culvert

Inflow Area = 30.22 ac, 0.86% Impervious, Inflow Depth = 2.48" for 50 yr event
Inflow = 50.73 cfs @ 12.41 hrs, Volume= 6.255 af
Outflow = 50.43 cfs @ 12.43 hrs, Volume= 6.255 af, Atten= 1%, Lag= 1.2 min
Primary = 50.43 cfs @ 12.43 hrs, Volume= 6.255 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 625.70' @ 12.43 hrs Surf.Area= 2,887 sf Storage= 4,247 cf

Plug-Flow detention time= 1.9 min calculated for 6.254 af (100% of inflow)
Center-of-Mass det. time= 1.9 min (864.1 - 862.2)

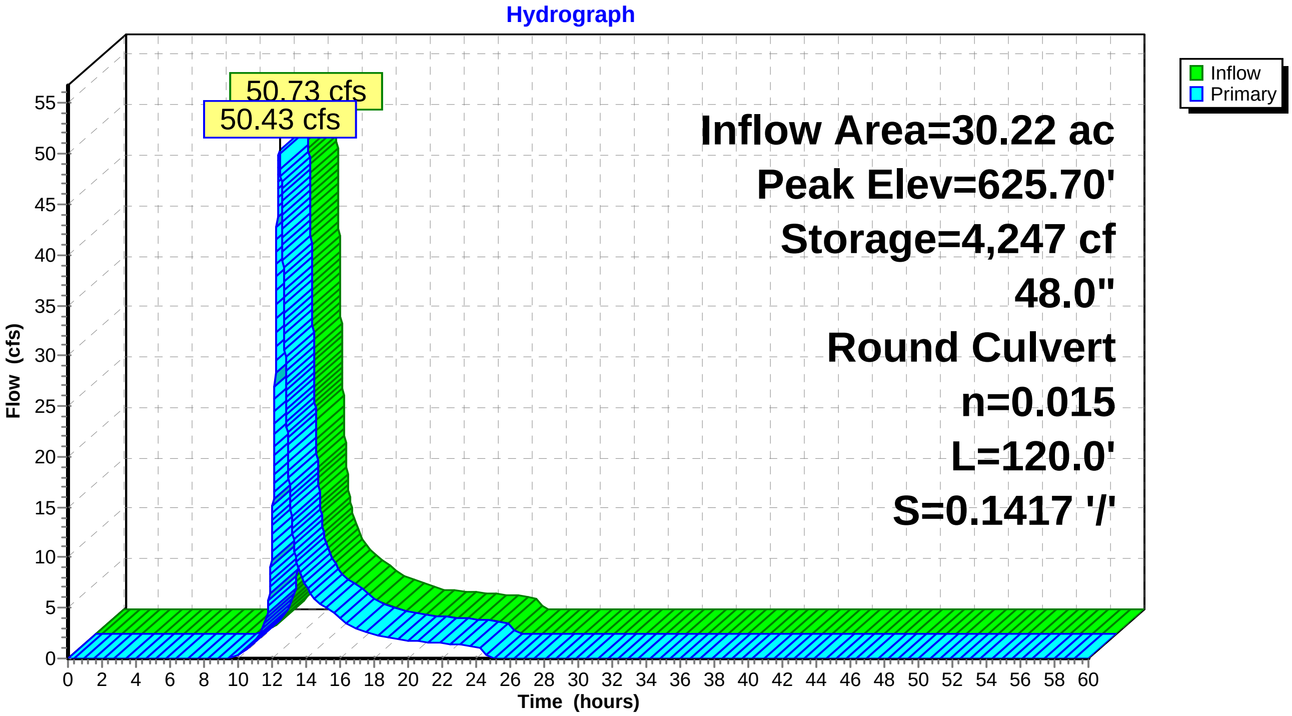
Volume	Invert	Avail.Storage	Storage Description
#1	623.00'	5,168 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
623.00	625	0	0
624.00	1,100	863	863
626.00	3,205	4,305	5,168

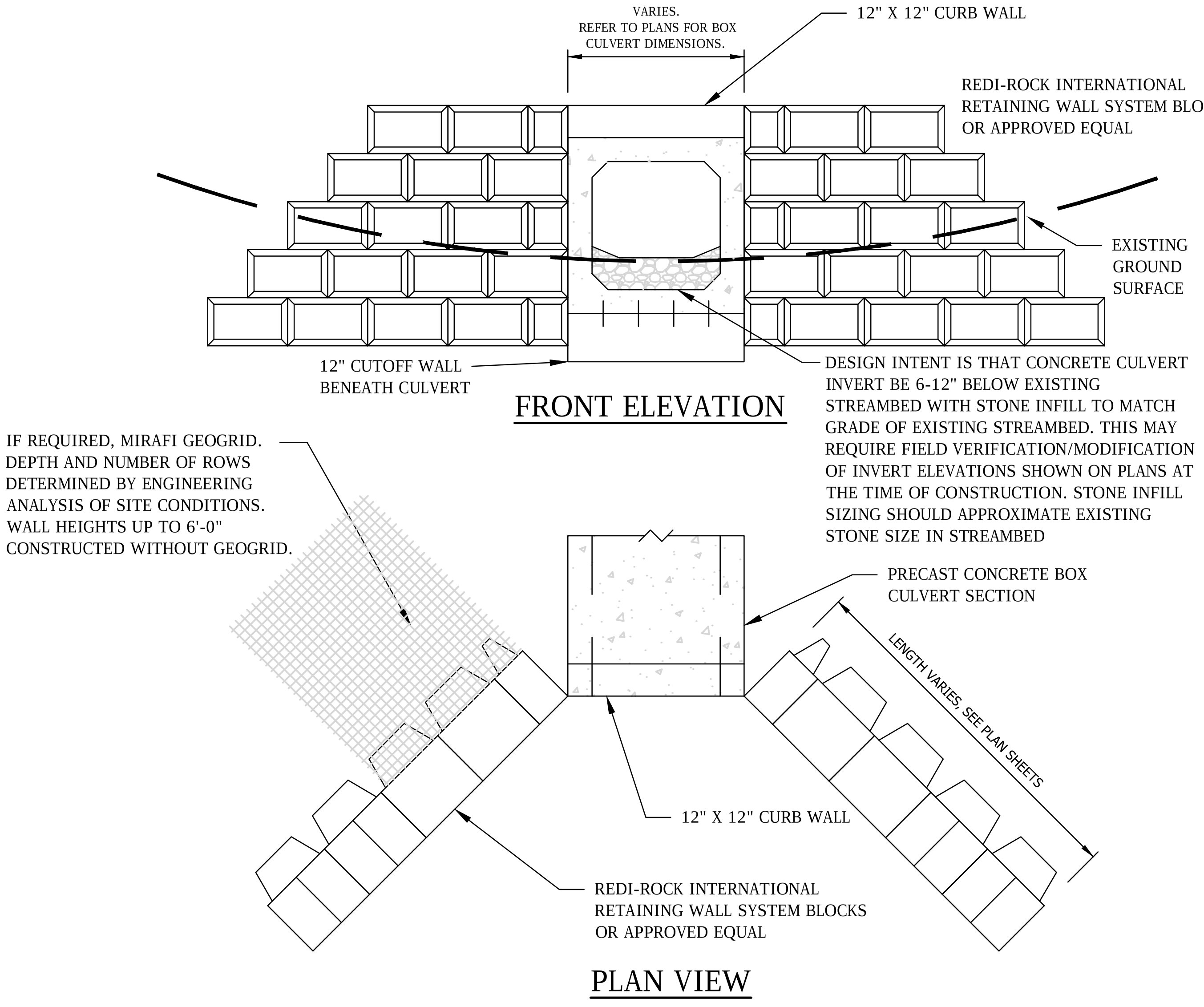
Device	Routing	Invert	Outlet Devices
#1	Primary	623.00'	**48.0" Round Culvert** L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 623.00' / 606.00' S= 0.1417 '/' Cc= 0.900 n= 0.015 Corrugated PE, smooth interior

Primary OutFlow Max=50.42 cfs @ 12.43 hrs HW=625.70' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 50.42 cfs @ 5.59 fps)

Pond CV1: 48" Culvert

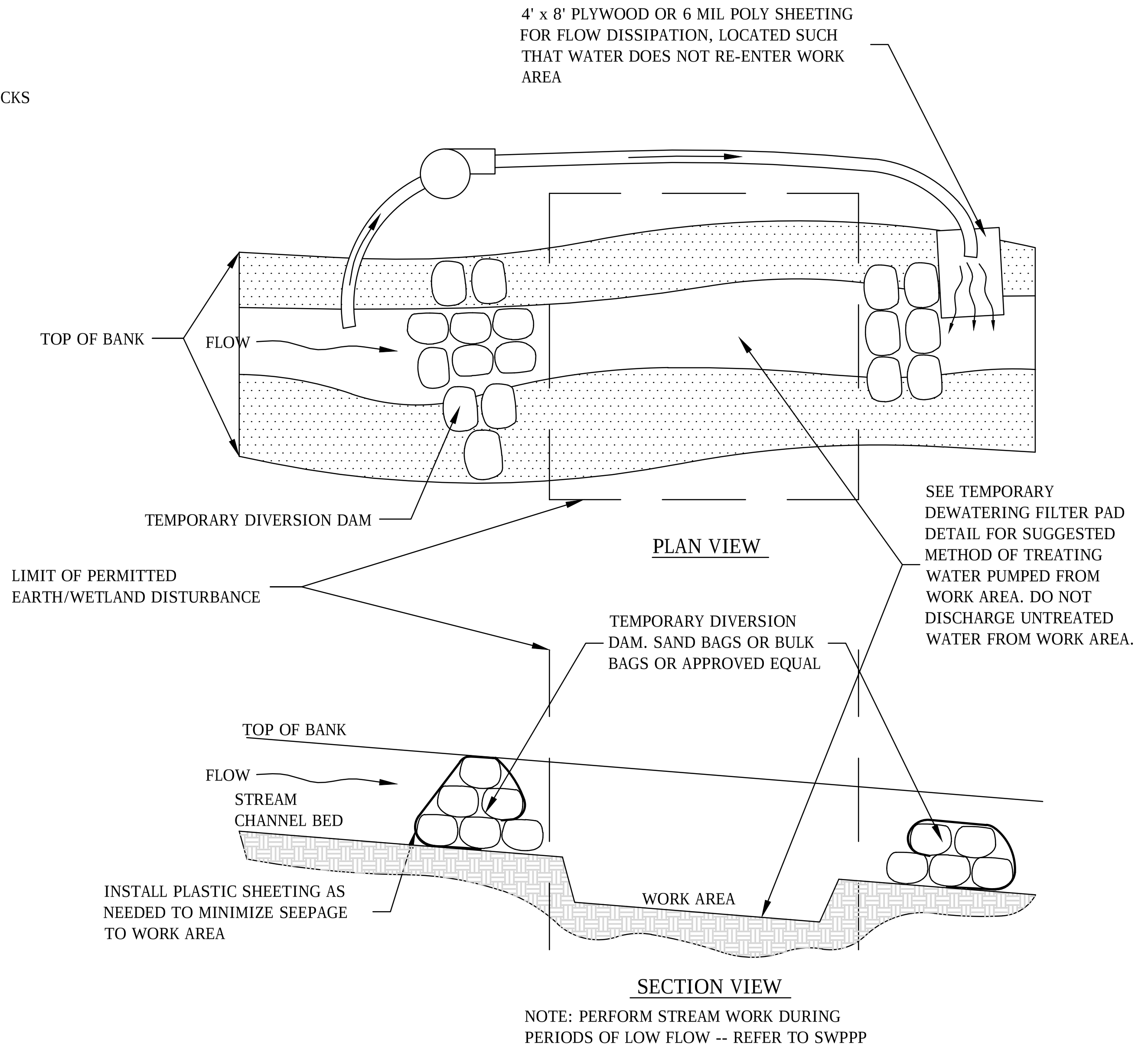


APPENDIX B



PRECAST CONCRETE BOX CULVERT WITH REDI-ROCK WING WALLS (TYPICAL)

NOT TO SCALE



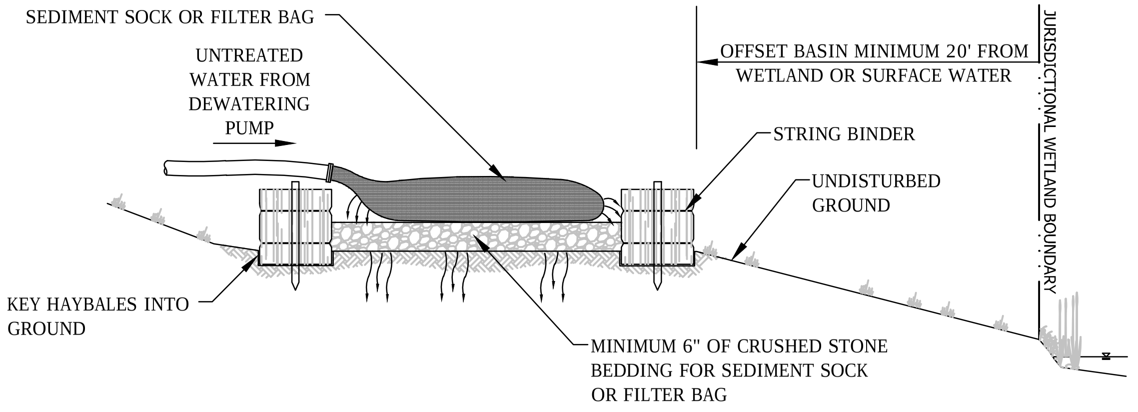
NOTE: PERFORM STREAM WORK DURING PERIODS OF LOW FLOW -- REFER TO SWPPP

WORK AREA STREAM BYPASS DETAIL

NOT TO SCALE

NOTES:

1. SEE SWPPP FOR ADDITIONAL METHODS OF EROSION CONTROL, STORMWATER MANAGEMENT PLAN, AND POLLUTION CONTROL METHODS FOR PETROCHEMICALS



TEMPORARY DEWATERING FILTER PAD DETAIL

NO SCALE

NOTE:

1. DESIGN INTENT FOR TEMPORARY DEWATERING FILTER PAD IS TO ENHANCE PUMP WATER QUALITY PRIOR TO INFILTRATION INTO UNDISTURBED GROUND.
2. CONTRACTOR TO OPERATE PUMPS AND SIZE TEMPORARY DEWATERING FILTER PAD TO ENCOURAGE INFILTRATION AND PREVENT DISCHARGE TO SURFACE WATERS OR WETLANDS. USE ADDITIONAL SEDIMENT CONTROLS AS NEEDED
3. COVERAGE UNDER EPA'S CONSTRUCTION DEWATERING GENERAL PERMIT OR CONSTRUCTION GENERAL PERMIT MUST BE OBTAINED IF DEWATERING ACTIVITIES RESULT IN A DISCHARGE TO SURFACE WATERS OR WETLANDS.

WILD MEADOWS WIND PROJECT

ALEXANDRIA AND DANBURY, NH

STREAM TIER CROSSING DETAILS

horizons Engineering inc
34 School Street
Littleton, NH 03561
Phone 603.444.4111 - Fax 603.444.1343

IBERDROLA RENEWABLES

Appendix I.

Water Resources Report

Wild Meadows Wind Project
Danbury & Alexandria, NH

Water Resources Report

View of Tinkham Hill Ridge, 2013

Presented To:
Atlantic Wind LLC
1125 NW Couch St., Suite 700
Portland, OR 97209

Submitted:
December 2013

Submitted By:
Normandeau Associates, Inc.
25 Nashua Road
Bedford, NH 03110

www.normandeau.com

Wild Meadows Wind Project
Water Resources Report

Prepared for
Atlantic Wind LLC
1125 NW Couch St., Suite 700
Portland, OR 97209

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25 Nashua Road
Bedford, NH 03110

R-21565.006

December 2013

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Executive Summary

Normandeau Associates (Normandeau) delineated wetlands, streams and vernal pools across an approximately 2,000 acre wetland study area (study area) that is located within the leased project lands associated with the proposed Atlantic Wind, LLC (Atlantic Wind) Wild Meadows Wind Project (Project) (Figure 2). The Wild Meadows Project Area (project area) includes a subset of the wetland study area, and is located in the central and eastern parts of the site. The project area encompasses the lands associated with final project design components (e.g. access roads, turbines, collection line, and substation). The final design footprint is limited to the area within the Limit of Disturbance (LOD) associated with clearing and grading for all project components. Water resource delineations were completed between 2010 and 2013 and followed guidelines and methodologies recommended by the New Hampshire Department of Environmental Services (NHDES) and U.S. Army Corps of Engineers (USACE).

Vegetation and Habitat Types

Based on the NH Fish & Game 2010 Wildlife Action Plan (WAP) cover type map and field observations, habitat cover types within the study area consist mostly of Northern Hardwood-coniferous Forest, Hemlock-hardwood-pine Forest, and Lowland Spruce-fir Forest (Figure 3). The Lowland Spruce-fir Forest is generally found on the ridge tops, while the two mixed forests cover types occur on both the ridge-sides and valleys. In addition, areas of Rocky Ridge or Talus slope are mapped on the summit of Barber Mountain and the Melvin Mountain ridge top. Areas classified as Wet Meadow/Shrub Wetlands are associated with the lowlands surrounding Grants Pond and Wild Meadow Brook. The Grassland areas northeast of Grants Pond are large, actively mown hay fields. The Grassland area intersecting the substation parcel in Cass Mill Valley is an existing transmission line right-of-way. The large Wet Meadow-Shrub Wetland area mapped east of the substation parcel extended into the southeast corner of the parcel.

Surface Waters

The majority of the streams identified in the wetland study area are ephemeral or intermittent (95%), which is consistent with the topography and elevation of the site. Twenty-one perennial stream segments (5%) were delineated, including portions of Wild Meadow Brook and Pine Hill Brook. No streams subject to the NH Shoreland Water Quality Protection Act (SWQPA) are located within the study area. No surface water bodies (ponds) occur within the study area.

Wetlands

Wetlands were delineated between 2010 and 2013, with 455 wetlands identified in entire the wetland study area. The majority of the wetlands were forested (47%), followed by emergent (21%) and various combinations of either emergent, forested or scrub-shrub (28%). Many of the wetlands were disturbed to some extent due to historical and current timber management activities. The most common principal functions and values identified across the study area include wildlife habitat, floodflow alteration, groundwater discharge, sediment retention, nutrient removal and sediment/shoreline stabilization.

Vernal Pools

A total of 97 vernal pools were identified within the entire wetland study area between May 2010 and May 2013. The majorities of the vernal pools are man-made or influenced by anthropogenic activities with approximately 30 % considered natural. To aid in distinguishing the relative value of the vernal pools, the vernal pool resources were ranked according to habitat value. This ranking system was developed by Normandeau staff based on published resources and assesses the presence of biological indicators, estimated hydroperiod, and landscape position. Pools that meet the thresholds of all three criteria were given an "A" rank of highest value. A rank of "B" was given to pools that met two out of three, and a "C" rank to those that met one or none. This provides a useful metric for rapidly evaluating the pools, however individual evaluations are necessary in instances where certain criteria are of exceedingly high quality, although it fails to meet others. Twelve (12%) of the pools are ranked as highest value (A) pools, 43 (44%) are ranked as intermediate value (B) pools, and 42 (43%) are ranked as least value (C) pools. Wood frogs, spotted salamanders and Jefferson/blue-spotted salamander hydrids were the only primary vernal pool indicators identified. Several secondary indicators were also observed within many pools, including caddisfly, true fly and aquatic beetle larvae.

1.0 Introduction

Atlantic Wind, LLC (Atlantic Wind) is proposing to develop the 75.9 megawatt (MW) Wild Meadows Wind Project in the Towns of Danbury and Alexandria, Merrimack and Grafton Counties, New Hampshire. Normandeau Associates (Normandeau) was contracted by Atlantic Wind to delineate and evaluate jurisdictional water resources including wetlands, streams and vernal pools for the project. This report summarizes the methodology used by Normandeau and the existing conditions at the Wild Meadows site.

1.1 Project Description

The Wild Meadows Wind Project will include up to twenty-three (23) wind turbines, each rated at 3.3 megawatts (MWs), for a total of up to 75.9 MWs. The proposed turbine type is the Vestas V112 turbine or similar, which have a hub height of 94 meters (approximately 308 feet), a rotor diameter of 112 meters (approximately 367 feet), and a total height of 150 meters (approximately 492 feet). The Project will include associated infrastructure including collector lines, access roads, a substation, a permanent meteorological tower, and an operations and maintenance building. The western portion of the Project includes Tinkham Hill (2,270 feet) and Braley Hill (2,083 feet), the central portion of the Project includes the Pinnacle (1,981 feet), and the eastern portion of the Project includes Forbes Mountain (2,159 feet) and Pine Hill (2,091 feet). The primary access route to the project will be located off of Wild Meadows Road in Danbury and the electrical interconnection point will be at an existing 230 kilovolt (kV) transmission line that passes through Alexandria to the east of the proposed turbine array.

2.2 Site Description

The Project is located in the Towns of Alexandria and Danbury in Grafton and Merrimack Counties in central New Hampshire (Figure 1). The project lands include approximately 4,850 acres of leased land on several privately-owned parcels (Figure 2). Within the leased project lands, Normandeau investigated approximately 2,000 acres for wetlands, streams and vernal pools; these lands are referred to as the wetland study area (or study area) throughout this report. The Project Area, as it is referred to in this report, is a sub-set of the greater wetland study area and includes the area surrounding the final proposed project. The final design footprint lies within the project area and is confined within the area within the project limit of disturbance (LOD). The final footprint encompasses approximately 150 acres and includes the final project clearing, grading, stormwater control measures, and infrastructure.

The project lands extend from the northwest near the Grafton/Orange/Alexandria Town boundaries east to Cass Mill and Bog Road. Turbines are proposed within the Project Area on the ridges associated with Braley Hill, Tinkham Hill ridge, the Pinnacle and Forbes Mountain. An overhead collector line will originate near the Pinnacle and follow a proposed access road to Forbes Mountain. From Forbes Mountain, the collector line will continue to the southeast towards Pillsbury Hill and then bend to the northeast to the proposed electrical substation and interconnection point located near Cass Mill and Bog Roads. The primary access to the Project will be located off Wild Meadows Road in Danbury south of Tinkham Hill.

The proposed Project is located in rural, generally undeveloped areas that have been and continue to be managed intensively for timber and forestry. The Project lands include a vast network of logging roads and skidder trails. Many of the logging roads have been well maintained and provide various access points throughout the area. Some of the lands are currently posted against unauthorized access for recreation and hunting, although there are existing snowmobile trails that cross through portions of the site. Evidence of historical uses are present throughout the area and include stonewalls, old roadways, cellar holes and scattered, small mica mines. Several meteorological towers were installed in the early stages of the Project and remain to collect wind speed, wind direction and other variables throughout the site.

No structures occur within the Project lands, with the exception of a landowner's seasonal camp and some associated outbuildings and abandoned houses. The surrounding residential development is relatively sparse and limited to the periphery of the Project lands. Most of the residential properties are associated with the gravel roads that cross through the area, including Wild Meadows Road to the west, Washburn Road to the north, Forbes Mountain Road to the south, and Cass Mill and Bog Roads to the east. The project area does not include, nor is it adjacent to, any conserved lands.

2.3 Agency Pre-Application Meetings and Site Walks

Multiple pre-application meetings and site walks regarding the wetland resources of the proposed project have been held with the US Army Corps of Engineers (USACE), US Environmental Protection Agency (USEPA), and NH Department of Environmental Services (NHDES). Dates of pre-application meetings include May 15, 2012, September 19, 2012, and August 29, 2013, November 7, 2013, and November 26, 2013. Pre-application meetings with New Hampshire Fish and Game Department (NHF&G) have been on-going regarding wildlife and bird studies, as well as potential wildlife habitat impacts.

Agency site walks were conducted October 9 and 10, 2012, and December 4, 2012. Dave Keddell (USACE) was present both October dates, Mark Kern (USEPA) and Craig Rennie (NHDES Alteration of Terrain and NHDES Wetlands Bureau) were present on October 10. The Golden Valley Road access area was observed during both dates. On October 9, the group toured the southern end of Tinkham, and two proposed access roads and ridges at the northern ends of Melvin and Braley Hills. On October 10, the group drove up the proposed temporary construction road and walked to the central Tinkham met tower. On December 4, 2012, Dave Keddell (USACE), Lori Sommer (NHDES Wetlands) and John Kanter (NH Fish & Game) walked the site with the Iberdrola team. Golden Valley Road, the southern end of Tinkham, the Melvin access road and the proposed substation were all visited.

3.0 Methodology

Normandeau Certified Wetland Scientists and junior wetland staff investigated the study area from the spring of 2010 to the fall of 2013. Approximately 1,975 acres were reviewed for wetland resources and numerous features, particularly vernal pools and streams, were visited multiple times in order to verify conditions. The majority of the field delineations were subjected to field Quality Assurance/Quality Control reviews by senior Normandeau biologists and other wetland staff throughout the field data collection effort. All delineated boundaries were located with a Trimble® Global Positioning System (GPS) that is capable of sub-meter accuracy. A project specific data dictionary was used with each GPS unit to supplement the data recorded on the field data sheet. The dictionary aided in maintaining consistency for data collection between field teams. The GPS files were post processed and incorporated into a geodatabase using ESRI ArcMap 10.2.

3.1 Surface Waters

All jurisdictional streams and waterbodies within the study area were delineated and located with GPS. A project-specific data form was utilized to standardize the collection of stream characteristics. The centerlines of streams less than six feet wide were delineated with orange flagging, GPS located and approximate channel width noted. The tops of bank for streams greater than six feet wide were individually flagged and GPS located. Logging road drainage swales and skidder ruts in uplands were not considered jurisdictional streams when it was apparent that water flow only occurred during precipitation events and the ditch or swale was not functioning as a wetland, or did not provide a connection between wetlands. The data forms included basic information such as flow regime, apparent flow (at the time of delineation), width, depth and relationship to other streams and wetlands. The following guidance was used in determining the watercourse type, which is based on Federal definitions (Federal Register, March 12, 2007) and is generally consistent with NH regulations:

- *Ephemeral stream*: Flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.
- *Intermittent stream*: Flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.
- *Perennial stream*: Flowing water year round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

The NH Shoreland Water Quality Protection Act (SWQPA; RSA 483-B) provides oversight of activities within designated buffers that range between 50 to 250 feet from an established reference line, either the ordinary high water mark for rivers or a defined surface elevation for lakes and ponds (NHDES 2011a). Waterbodies include lakes and ponds greater than 10 acres in size, tidal waters, fourth order and greater streams and rivers and, “designated rivers” under the Rivers Management and Protection Act of 1988 (RSA 483). No streams or waterbodies subject to the SWQPA are located within the study area; however Grant’s Pond located in Grafton and just to the west of Airport Road and its associated buffer area is subject to the SWQPA. No project development is proposed to be located within its SWQPA.

3.2 Wetlands

The USACE has jurisdiction over wetlands and waterways under Section 404 of the Clean Water Act. The NHDES has jurisdiction under RSA 482-A and New Hampshire Code of Administrative Rules (Env-Wt.100-900). Field protocols were developed to ensure consistency during the delineation of wetlands and the documentation of wetland characteristics. Wetland boundaries were delineated by, or with oversight by, a New Hampshire Certified Wetland Scientist (NHCWS). Wetland delineations were completed in the field using the routine determination according to the criteria established by the USACE in the *1987 Corps of Engineers Wetlands Delineation Manual* and the relevant version of the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (1987, 2012). The manual and regional supplement both utilize a three parameter approach to the field determination of wetland boundaries and requires the presence of hydric soils, hydrophytic vegetation and hydrology under normal circumstances.

Wetland boundaries were flagged with pink and black "Wetland Delineation" flagging and numbered with an identifier for the wetland and a flagging sequence. The wetland boundary flags were located with GPS and a project-specific data form was completed for each wetland. The data form included an evaluation of the functions and values of each wetland according to the USACE "Highway Methodology" (USACE, 1999). Functions and values considered principal for the wetland, as well as those considered suitable were noted. Other field information gathered and recorded on the data forms included wetland associations with water bodies, streams, vernal pools and dominant cover type class based on the USFWS classification system (Cowardin, et al. 1979).

3.3 Vernal Pools

For four consecutive field seasons, beginning in May of 2010 and concluding in May of 2013, the study area was surveyed for vernal pools in a systematic manner by a team of field biologists during the spring, typically between mid-April and May 30. Each potential vernal pool encountered was visually inspected for egg masses and/or larvae of amphibian vernal pool indicator species. A dip net was also used to survey for amphibian larvae and invertebrates. Vernal pools were identified in accordance with the NHDES Wetland Rules (Env-Wt) 101.99 and Env-Wt 301.01, and procedures described in *Identification and Documentation of Vernal Pools in New Hampshire*, 2nd Ed. 2004, published by the New Hampshire Fish and Game Department.

Primary and secondary vernal pool indicator species were identified as described in Env-Wt 101.71 and Env-Wt 101.82, respectively. Under these rules, primary vernal pool indicators refer to:

> *"the presence or physical evidence of breeding by marbled salamander (Ambystoma opacum), wood frog (Rana sylvatica), spotted salamander (Ambystoma maculatum), Jefferson-blue spotted salamander complex (Ambystoma jeffersonianum/A. laterale complex), or fairy shrimp (Eubranchipus sp.)"*. [Env-Wt 101.71]

Secondary vernal pool indicators are:

> *"physical evidence used by wildlife biologists or certified wetlands scientists who are familiar with vernal pool habitats as evidence of the presence of a vernal pool, if primary vernal pool indicators are absent and other vernal pool characteristics suggest vernal pool habitat. Secondary vernal pool indicators include, but are not limited to, caddisfly larvae and cases (Limnephilidae, Phyrganeidae, or Polycentropodidae), clam shrimp and their shells (Laevicaudata, Spinicaudata), fingernail clams and their shells (Sphaeriidae), aquatic beetle larvae (Dytiscidae, Gyrinidae, Haliplidae, and Hydrophilidae), dragonfly larvae and exuviae*

> *(Aeshnidae, Libellulidae), spire-shaped snails and their shells (Physidae, Lymnaeidae), flat-spire snails exuviae (Coenagrionidae, Lestidae), and true fly larvae and pupae (Culicidae, Chaoboridae, and Chironomidae).”* [Env-Wt 101.82]

At locations where one or more primary indicators and/or three or more secondary indicators were observed, photographs were taken of the pool and data were collected (e.g., pool size, hydrology, vegetation, surrounding habitat, etc.) and recorded on a field data form. Blue flagging was used to mark the locations of these pools. The boundaries of the high water mark for the vernal pools were surveyed using GPS. In instances where the pool was less than 5 feet in diameter, a single point was taken at the approximate center and the size and orientation of the pool was recorded for conversion to a polygon after the completion of field work. Out-of-season surveys were often conducted in conjunction with other field surveys, such as wetland delineations. When a site likely to support vernal pool species was encountered, the location was recorded and the site was labeled a potential vernal pool (PVP) until a survey could be performed during the spring when indicator species would be present.

Ranking and Value

After field data collection was completed, all of the vernal pool resources were ranked according to habitat value. This ranking system was developed by Normandeau staff based on published resources and assesses the presence of biological indicators, estimated hydroperiod, and landscape position. The following is a discussion of each of these criteria.

> **Biological indicators** – The presence of obligate vernal pool species is necessary to examine the value of the pool. Guidelines from the Maine Department of Environmental Protection (MEDEP) regarding significance criteria (MEDEP 2009) were used due to a lack of quantitative criteria under New Hampshire regulations. These thresholds are used in Maine to determine the significance and thus the regulatory needs of vernal pools. The presence of 40 or more wood frog egg masses, 20 or more spotted salamander egg masses, or 10 or more Jefferson/blue-spotted salamander egg masses meets or exceeds these criteria, as well as the presence of fairy shrimp in any life stage. Especially productive pools are given greater value than those that have a lower level of use by breeding amphibians.
>
> **Hydroperiod** – The hydroperiod of a pool will determine the success of the breeding amphibians. Permanent and semi-permanent pools lacking a permanent inlet or outlet are given greater value than ephemeral pools that will likely dry completely in many years and act as a biological sink for eggs and larvae.
>
> **Level of Disturbance** – Level of disturbance refers to the surrounding habitat as well as the origin of the pool itself. A higher ranking is given to pools of natural or natural-modified origin. This excludes the pools that form in ditches, ruts, and excavated pits. The surrounding areas must also be able to support a large adult population. Pools that are within generally undisturbed areas are given greater value.

Pools that meet the thresholds of all three criteria were given an “A” rank of highest value. A rank of “B” was given to pools that met two out of three, and a “C” rank to those that met one or none. This provides a useful metric for rapidly evaluating the pools, however individual evaluations are necessary in instances where certain criteria are of exceedingly high quality, although it fails to meet others. An example would be an exceptionally productive pool in a man-made of frequently disturbed context. This pool may be elevated from a "B" rank to an "A" rank based on the extremely high level of productivity, despite being man-made.

Mapping Analysis

To address the USACE requirements regarding impacts to the habitats surrounding vernal pools, the mapped vernal pools were given vernal pool envelopes of 100 feet and vernal pool habitat buffers of 250 feet (USACE NH Programmatic General Permit, 2012). The value of the vernal pool assigned through the ranking process was extrapolated to the envelopes and the buffers. In reality, vernal pool species are known to utilize the habitats surrounding the breeding pools unevenly so that not all portions of an envelope or buffer will receive the same level of use by vernal pool amphibians. In areas where 100-foot envelopes of several pools overlapped, the highest value was applied to all pools. In areas where the 250-foot buffers overlapped, the overlap was split evenly between the pools .

4.0 Existing Conditions

Normandeau investigated the entire wetland study area from the spring of 2010 to the fall of 2013. Approximately 2,000 acres were assessed and a total of 455 wetlands, 433 stream channel segments, and 97 vernal pools were delineated. Most streams were ephemeral or intermittent in flow, but several perennial streams were found on the site. Wetlands were predominantly forested or emergent depending on their landscape position and proximity to various land uses including recent logging or hay fields. In general, the majority of the wetlands and streams exhibited some level of historic disturbance associated with timber management throughout the study area. Rutting from skidders and other equipment, alteration of the hydrology from rutting, the removal of mature trees and overstory, the inadvertent rerouting of small drainages, and other manmade impacts on the landscape associated with mining, road building, ditching and gravel/sand extraction resulted in a relatively high level of cumulative disturbance. In contrast, portions of the study area that had not been logged in the recent past frequently contained wetlands that exhibited higher functions and values and streams with fewer signs of degradation. Below are more detailed descriptions on the existing conditions of the study area.

4.1 Soils

The soils within the project area were mapped by the Natural Resources Conservation Service (NRCS) Figure 3. Data on soil physical properties were reviewed at the NRCS website (Soil Survey Staff 2012, NRCS 2011). The majority of the map units are mapped as either complexes or associations, which are defined by the NRCS as consisting of two or more dissimilar components that cannot be readily separated out and are sufficiently different in morphology or behavior that the map unit cannot be called by a single soil series name. The total amount of inclusions in a map unit that are dissimilar to any of the major components does not exceed approximately 15%, if limiting, and 25%, if non-limiting. Soils are considered limiting if some important diagnostic properties have different use or management requirements, e.g. a higher seasonal water table, than the major components. The NRCS soil surveys are made for planning purposes at a scale of 1:20,000. Due to mapping scale, inclusions of less than 3 acres may not be identified without detailed field surveys. The project field delineations of wetlands, streams and vernal pools, completed by Normandeau (see Sections 4.3-4.5) provide more detail on hydric soil inclusions overlooked by the NRCS soil survey.

NRCS soil data and Normandeau's wetland delineations highlight the variation in soils within the Project Area. These differences are a result of variations in parent materials, landscape position, elevation, slope, aspect and vegetation. Deeper soils with larger areas of poorly drained (hydric) soils are found at low elevations while shallow to bedrock soils with hillside wetland seeps are found at higher elevations. Wetlands found at higher elevations tend to be either bedrock controlled pockets, seeps, or fringe wetlands associated with watercourses. The soils within the higher elevations of the Project Area are more sensitive to disturbance due to factors such as: low annual temperatures limiting evapotranspiration and biological activity; parent material formed from glacial till containing impermeable layers that impede permeability; and shallow to bedrock soils. All the soils have formed primarily in glacial till over bedrock with limited soils formed in glacial fluvial materials in the valleys. The till soils range from loose to firm consistence in sandy to loamy textures. The following is an overview of the soils within the Project Area. The map unit name and numeric unit in parentheses are provided for reference to Figure 3.

Melvin-Barber Mountains

The Melvin and Barber Mountain ridgelines are dominated by shallow to bedrock soils, with exposed bedrock occurring along the center of the ridge. Soil depths range from 0 to 20 inches within the Rock outcrop-Lyman complex (726D) to greater than 60 inch depth in adjacent map units (e.g., Beckett-Monadnock Association (720D); Table 4-1). The ridgeline of Melvin and Barber Mountains are generally gently rolling with steeper slopes to the east and west along the Melvin ridgeline and to the north and south of the Barber ridgeline. The soils on the ridgeline are predominately somewhat excessively to well drained. Proceeding west from Wild Meadows Road, the northern flank of Melvin contains gently sloping Hermon-Monadnock (712B) and Peru-Marlow associations (721B). These soils are very stony (rock fragments 10 to 24 inches in diameter and 1 to 3% surface cover) to extremely bouldery (rock fragments greater than 24 inches and 3 to 15% surface cover) with slopes of 3 to 8%. Shallow to bedrock soils become more prevalent as the slope increases to 15 to 25%.

Table 4-1. Melvin and Barber Soil Map Units

Location	Map Unit[1]	Slope (%)	Drainage Class[2]	Depth to Bedrock (Inches)
59B	Waumbek, very stony	3-8	MW	>60
90D	Tunbridge-Lyman complex	15-25	W/SE	10- >60
703D	Becket-Monadnock Association, very stony	15-25	W	>60
710D	Becket-Lyman-Rock outcrop complex	15-25	W-SE	0 - >60
710E	Becket-Lyman-Rock outcrop complex	25-50	W-SE	0 - >60

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[1] USDA Natural Resources Conservation Service. 2011. New Hampshire State-Wide Numerical Soils Legend. Issue #10. Durham, NH.

[2] SE- Somewhat excessively drained; W- Well drained; MW- Moderately well drained

712B	Hermon-Monadnock association, extremely bouldery	3-8	SE/W	>60
720D	Marlow-Lyman-Rock outcrop complex	15-25	W	0 - >60
721B	Peru-Marlow association, very stony	3-8	MW/W	>60
724B	Skerry-Tunbridge association, very stony	3-8	MW/W	20 - >60
726D	Rock outcrop-Lyman complex	15-25	SE	0-20
730B	Skerry-Lyman-Rock outcrop complex	3-8	MW/SE	0 - >60

At the southern end, shallow to bedrock soils are common within the Tunbridge- Lyman (90D), Becket-Lyman-rock outcrop and Skerry-Lyman-rock outcrop (730B) complexes. These soils are somewhat excessively to well drained with inclusions of hydric soils within hillside seeps and along streams. Broader areas of wetlands were mapped at lower elevations.

Braley-Tinkham Hills

US Geologic Survey (USGS) bedrock mapping indicate the ridges and valleys to the west of Forbes Mountain are primarily formed from metasedimentary formations of the Rangeley formation. Glacial till deposits overly the bedrock in varying depths. The ridgeline of Braley and Tinkham Hills are dominated by shallow to bedrock soils, including Tunbridge-Lyman-Becket complex, very stony (380), the Lyman-Tunbridge-Rock outcrop complex (161), and the Marlow-Lyman-Rock outcrop complex (720, Table 4-2). These soils generally occur on steep (15 to 25%) to very steep (25 to 50%) slopes and are somewhat excessively to well drained. Deeper soils (>60 inches) occur where the slopes are between 3 to 8% and 8 to 15%. Mapped wetlands were generally small and confined to bedrock pockets. During the field review, Normandeau scientists encountered several pits on Tinkham Hill, which are part of three old mica mines (Olson 1942) mined in the 1800's.

The northern flank of Braley is mapped with moderate slopes (8 to 15%) within the Hermon-Monadnock (712B), Monadnock-Hermon (711B) and Peru-Marlow (721B) associations. The soils are somewhat excessively to well drained with inclusions of poorly drained hydric soils. These map units are considered either extremely bouldery (712B)

Table 4-2. Braley and Tinkham Soil Map Units

Numeric Unit	Map Unit	Slope (%)	Drainage Class	Depth to Bedrock (Inches)
28A	Madawaska	0-3	MW	>60
36E	Adams	25-50	SE	>60
57B	Becket, very stony	3-8	W	>60
57C	Becket, very stony	8-15	W	>60
72B	Berkshire	3-8	W	>60
73B	Berkshire, very stony	3-8	W	>60
143E	Monadnock, very stony	25-50	W	>60
161C	Lyman-Tunbridge-Rock outcrop complex	8-15	SE/W	0-40
161D	Lyman-Tunbridge-Rock outcrop complex	15-25	SE/W	0-40
161E	Lyman-Tunbridge-Rock outcrop complex	25-50	SE/W	0-40

379C	Dixfield, very stony	8-15	MW	>60
380C	Tunbridge-Lyman-Becket complex, very stony	8-15	W/SE/W	10 - >60
380D	Tunbridge-Lyman-Becket complex, very stony	15-25	W/SE/W	10 - >60
380E	Tunbridge-Lyman-Becket complex, very stony	25-50	W/SE/W	10 - >60
394A	Chocorua Variant	0-3	VP	>60
543C	Monadnock-Becket-Skerry complex, very stony	8-15	W/W/MW	>60
559B	Skerry, very stony	3-8	MW	>60
559C	Skerry, very stony	8-15	MW	>60
559D	Skerry, very stony	15-25	MW	>60
647B	Pillsbury, very stony	8-15	PD	>60
709D	Becket-Tunbridge association, very stony	15-25	W/W	>60
710D	Becket-Lyman-Rock outcrop complex	15-25	W-SE	0 - >60
710E	Becket-Lyman-Rock outcrop complex	25-50	W-SE	0 - >60
711B	Monadnock-Hermon association, very stony	3-8	W/SE	>60
712B	Hermon-Monadnock association, extremely bouldery	3-8	SE/W	>60
720D	Marlow-Lyman-Rock outcrop complex	15-25	W/SE	0 - >60
721B	Peru-Marlow association, very stony	3-8	MW/W	>60

or very stony (711B and 721B) with greater than 60 inches to bedrock. Climbing to the peak of Braley the gradient increases to 15 to 25% within the Marlow-Lyman-Rock outcrop complex (720D). This map unit ranges from exposed bedrock to greater than 60 inches over bedrock. Diverse wetlands were mapped within the lower elevations along streams and within an old borrow pit near the intersection with Wild Meadows Road.

The Golden Valley Road is nearly level with the southern end used as a small aircraft runway in the past. Soils mapped along the road include Madawaska (28A), Berkshire (72B) and Becket, very stony (57B) map units. A large wetland complex was delineated to the west of the road. Additional wetlands were delineated at the toe-of-slope of Tinkham. From the Golden Valley Road, an existing timber haul road heads northeast to the ridge between Braley and Tinkham. This road is steep, with slopes ranging from 15 to 25%. The mapped soils include Dixfield (379C), Skerry (559D) and Tunbridge-Lyman Becket complex (380E). All are very stony with slopes ranging from 25 to 50%. Dixfield and Skerry soils are moderately well drained while Tunbridge and Lyman are well to somewhat excessively drained. The southern proposed access road gently climbs to the southern ridge of Tinkham, crossing primarily Skerry, very stony (559C) soils with 8 to 15% slopes.

Forbes Mountain

USGS bedrock mapping indicate that Forbes Mountain is primarily formed from igneous formations overlain by glacial till. The ridgeline of Forbes Mountain is dominated by Becket-Lyman-Rock outcrop complex (710D) and Lyman-Tunbridge-rock outcrop complex (161E, Table 4-3). These soils are primarily shallow to bedrock with depths ranging from 0 to greater than 60 inches, with areas of exposed bedrock. The ridges are hilly with slope gradients ranging from 15 to 25%. The proposed access from Tinkham to Forbes follows the ridgeline east from Tinkham. The soils are mapped Monadnock, very stony, (143E) and Hermon, very stony

(55E) with very steep slopes of 25 to 50% before reaching a narrow valley floor where wetlands were mapped. The eastern side of the valley is not quite as steep with soils ranging from Dixfield, very stony, with slopes of 3 to 8% (379B) to the steeper Becket-Lyman-Rock outcrop complex (710E).

The proposed electrical connector line from the substation to Forbes Mountain will cross slopes ranging from 8 to 50%. The dominant soil type is the Becket-Lyman-Rock outcrop complex (701D,E). The proposed route has been selected to minimize grade and avoid wetland impacts where feasible.

Table 4-3. Forbes Mountain Soil Map Units

Numeric Unit	Map Unit	Slope (%)	Drainage Class	Depth to Bedrock (Inches)
55B	Hermon, very stony	3-8	SE	>60
55C	Hermon, very stony	8-15	SE	>60
55E	Hermon, very stony	25-50	SE	>60
56E	Becket	25-50	W	>60
143B	Monadnock, very stony	3-8	W	>60
143D	Monadnock, very stony	15-25	W	>60
143E	Monadnock, very stony	25-50	W	>60
161D	Lyman-Tunbridge-Rock outcrop complex	15-25	SE/W	0-40
161E	Lyman-Tunbridge-Rock outcrop complex	25-50	SE/W	0-40
244D	Hermon-Monadnock complex, very stony	15-25	SE/W	>60
379B	Dixfield, very stony	3-8	MW	>60
380B	Tunbridge-Lyman-Becket complex, very stony	3-8	W/SE/W	10 - >60
380D	Tunbridge-Lyman-Becket complex, very stony	15-25	W/SE/W	10 - >60
415B	Moosilauke, very stony	3-8	P	>60
543C	Monadnock-Becket-Skerry complex, very stony	8-15	W/W/MW	>60
558B	Skerry, very stony	3-8	MW	>60
559C	Skerry, very stony	8-15	MW	>60
647B	Pillsbury, very stony	3-8	P	>60
709D	Becket-Tunbridge association, very stony	15-25	W/W	>60
710D	Becket-Lyman-Rock outcrop complex	15-25	W/SE	0 - >60
710E	Becket-Lyman-Rock outcrop complex	25-50	W/SE	0 - >60
730B	Skerry-Lyman-Rock outcrop complex	3-8	MW/SE	0 - >60

Substation (Olszak) Parcel

The soils within the parcel are dominated by shallow to bedrock Tunbridge-Lyman-Rock outcrop complex (61E, 61D, Table 4-4) with soil depths of 0 to 40 inches and Tunbridge-Lyman-Rock outcrop complex (90C, 90D) with depths of 10 to greater than 60 inches. Wetlands delineated in the southeast corner of the south parcel are mapped as very poorly drained Chocorua (395), with up to 34 inches of organic material over sand formed in outwash plains. A gravel pit to the north and east of this wetland is mapped Adams (36C, 36E) sand, which also formed in glacial-fluvial or glacio-lacustrine sand. The soils within the northern end of the north parcel are predominantly deep Monadnock and Hermon, very stony, (255D, 255D) soils with a narrow linear wetland flowing to the northeast.

Table 4-4. Substation (Olszak) Parcel Soil Map Units

Numeric Unit	Map Unit	Slope (%)	Drainage Class[2]	Depth to Bedrock (Inches)
36C	Adams	8-15	SE	>60
36E	Adams	25-50	SE	>60
61D	Tunbridge-Lyman-Rock outcrop complex	15-25	W/SE	0-40
61E	Tunbridge-Lyman-Rock outcrop complex	25-50	W/SE	0-40
90C	Tunbridge-Lyman complex	8-15	W/SE	10- >60
90D	Tunbridge-Lyman complex	15-25	W/SE	10- >60
255C	Monadnock and Hermon soils, very stony	8-15	W/SE	>60
255E	Monadnock and Hermon soils, very stony	25-50	W/SE	>60
255D	Monadnock and Hermon soils, very stony	15-25	W/SE	>60
395	Chocorua	0-3	VP	>60

4.2 Vegetation and Habitat Types

Based on the NH Fish & Game 2010 Wildlife Action Plan (WAP) cover type map and field observations, habitat cover types within the study area consist mostly of Northern Hardwood-coniferous Forest, Hemlock-hardwood-pine Forest, and Lowland Spruce-fir Forest (Figure 4). The Lowland Spruce-fir Forest is generally found on the ridge tops, while the two mixed forests cover types occur on both the ridge-sides and valleys. In addition, areas of Rocky Ridge or Talus slope are mapped on the summit of Barber Mountain and the Melvin Mountain ridge top. Areas classified as Wet Meadow/Shrub Wetlands are associated with the lowlands surrounding Grants Pond and Wild Meadow Brook. The Grassland areas northeast of Grants Pond are large, actively mown hay fields. The Grassland area intersecting the substation parcel in Cass Mill Valley is an existing transmission line right-of-way. The large Wet Meadow-Shrub Wetland area mapped east of the substation parcel extended into the southeast corner of the parcel. For further discussion on habitat types within the Project Area please consult the Wild Meadows Project Wildlife Habitat Assessment Report (Normandeau, 2013).

All ridge sites were generally forested, with the exception of several rock outcrops, including the western area of Rocky Ridge mapped by the WAP on Barber, and several others (unmapped) on Tinkham. The forests are heavily managed, with the most recent cuts 4 to 5 years ago with the exception of Forbes and Braley Mountains, where harvests took place in 2012 along the southwestern slope of Forbes and the lower western slope of Braley. Woods roads are abundant, and the forest is multi-aged with relatively small harvested blocks. Despite the intensive forestry, large diameter trees could be found scattered across the site, often on steep slopes or ledge. Blow-downs and topped trees were common across the site. Plant species composition appeared driven by a combination of soils and management history. In areas of thin soil, including steep slopes and some of the ridges with very shallow bedrock, conifers dominated. Red spruce (*Picea rubens*) was predominant, although balsam fir (*Abies balsamea*) was also common. White pine (*Pinus strobus*) and eastern hemlock (*Tsuga canadensis*) were much less frequent and typically lower in elevation.

Hardwood and mixed hardwood-softwood communities were much more diverse. American beech (*Fagus grandifolia*) and yellow birch (*Betula alleghaniensis*) were almost ubiquitous, but their relative abundance varied with soil richness. In the saddles between hills and where slopes were gentle, the soils were well developed and these species were dominant along with sugar maple (*Acer saccharum*), paper birch (*Betula papyrifera*), red spruce and the occasional balsam fir. On the southeastern slopes of Tinkham and Melvin, the vegetation community indicated rich soils. These areas supported predominantly sugar maple, some of which were large diameter (24 inches or greater), with lesser amounts of beech and yellow birch. Herbaceous species typically indicative of higher pH soils such as spring beauty (*Claytonia caroliniana*), trout lily (*Erythronium americanum*) and Dutchman's breeches (*Dicentra cucullaria*) were locally common. An area on top of the south ridge of Tinkham was dominated almost exclusively by red oak (*Quercus rubra*). The stand was multi-aged, but with some very large diameters trees (24 inches or greater). Much of the overstory was dead or dying, with mosses, sedges, red raspberry (*Rubus ideaus*) and regenerating oaks in the understory. This area may have burned many years previously, hence the thin soils and dead trees.

In recently cut areas, regenerating canopy species included red spruce, beech, paper birch, and black cherry. Striped maple (*Acer pennsylvanica*) was a dominant understory species. Hobblebush (*Viburnum lantanoides*) and red raspberry were very common shrub layer species.

The herbaceous species included forbs typical of rich northern woods: Canada mayflower (*Maianthemum canadense*), wild oats (*Uvularia sessifolia*), bunchberry (*Chamaepericlymenum canadense*), and yellow bluebead-lily (*Clintonia borealis*). Mosses were prevalent under conifers, and peat moss (*Sphagnum ssp*.) dominated wetlands and non-wetlands with sufficient moisture and very shallow bedrock. Fern species were diverse within wetlands and included sensitive fern (*Onoclea sensibilis),* interrupted fern (*Osmunda claytoniana*), cinnamon fern (*Osmundastrum cinnamomeum*), intermediate wood fern (*Dryopteris intermedia*), and narrow lady fern (*Athyrium angustum*).

4.3 Surface Waters

The approximately 2,000 acre wetland study area was reviewed for streams and waterbodies from the spring of 2010 to the fall of 2013. Existing surface water resources are described in further detail below.

Watersheds

The entire study area is located in the Pemigewasset sub-basin (HUC8) of the larger Merrimack River basin (HUC6) (Figure 5). Northernmost portions of the study area, as well as the entire substation area, are located in the Newfound River watershed (HUC10) which drains to Newfound Lake. The northern slopes of Forbes Mountain drain into Patten Brook which leads to Bog Brook and eventually to Newfound Lake. All waters in the southern portions of the study area flow to the Smith River (HUC10) by way of Wild Meadows Brook, Taylor Brook, Hoyt Brook, and Pine Hill Brook. The Smith River as well as the Newfound River flow into the Pemigewasset River near Bristol, NH. The Pemigewasset River is designated as Essential Fish Habitat (EFH) for Atlantic salmon.

Streams

Stream morphology was documented based on variables included in the Rosgen classification system (Rosgen, 1994) such as bed form and composition, channel path and slope, and bank height, width and depth; however a formal study of each stream was not conducted and the reviews focused on a qualitative review based on field conditions at the time of delineation. Additionally, streams were classified using the Cowardin classification system (Cowardin et al, 1979). A total of 433 stream segments were delineated within study area (Figure 6). Many streams had multiple channels, tributaries, or transitioned from one flow regime to another throughout their course within the study area; and each of these sections are documented separately as individual "segments" to better characterize the drainage as a whole. A summary table of the delineated streams is included in Appendix 1-B.

The study area contained 21 perennial stream segments (Table 4-5). Only two perennial streams, Wild Meadow Brook and Pine Hill Brook, have official names. Four perennial streams flowed from the slopes of Melvin Mountain and fed Wild Meadow Brook (Figure 6). Two perennial streams originated on Braley Hill as well as three perennial streams from Tinkham Hill also flowed into Wild Meadow Brook. One perennial stream, located on the southeast lower slope of Tinkham ended at a wetland which is associated with Grants Pond. A total of six perennial streams within the study area were found on Forbes Mountain during field surveys. Perennial streams from Forbes Mountain flowed into Patten Brook or Taylor Brook and one stream to the far north flowed into an unnamed pond north of the Pinnacle and eventually into Patten Brook. Most of the streams associated with the collector line are associated with Pine Hill Brook, which is crossed by the corridor and drains into the Smith River. The substation site is located near Bog Brook, which flows north, eventually to Newfound Lake. Small streams associated with the proposed access route off of Wild Meadows Road drain into Wild Meadow Brook.

Table 4-5. Number and percent of stream segments by flow regime within the wetland study area of the Wild Meadows Wind Project.

Stream Flow Regime	#	%
Perennial	21	5%
Intermittent	116	27%
Ephemeral	296	68%
Total:	433	100%

In general, the perennial streams exhibited signs of rapidly fluctuating or "flashy" flow; responding rapidly to precipitation or melt events. Portions of Wild Meadow Brook showed signs of heavy sediment loads from carrying the flood waters of Tropical Storm Irene in the late summer of 2011. A portion of Airport Road was severely eroded by a perennial stream during the same storm. Boulder and bedrock substrates were found in perennial streams located on upper slopes of this project. Cobble and sandy substrates were found in perennial streams with a gentler gradient and were generally within the valleys.

The remainder of the streams had intermittent (116) or ephemeral (296) flow regimes. Most intermittent streams began as seeps or ephemeral flow in the upper reaches, with increasingly frequent flow down the slopes. Most of the streams were narrow and incised in the upper elevations. Very few fine sediments remained in these stream sections. Boulders, stones and gravel were the typical substrates in the till areas of the site. Sand and gravel predominated in the more gently sloping lower elevations. The stream channels were well defined, and typically lacked vegetation. In the steeper reaches, upland vegetation frequently bordered the channels, except in seep areas. Where slopes allow, some wetland development occurred, but the hydrology of these sites was more dependent on groundwater than on surface flows.

Approximately seventy percent of streams segments were ephemeral. Ephemeral streams often transitioned into an intermittent stream, diffused into wetlands, or ended where the surface water infiltrated into better drained soils or rocky areas often on terraces and at the toe of slope. The substrates consisted of organics and channels were shallow (general less than 1 foot deep) and most often defined by pushed leaves and exposed mineral soil. The ephemeral streams only flowed during times of heavy precipitation or during spring melt.

No streams in the study area are located within 0.25 miles of any National Wild and Scenic Rivers, are Essential Fish Habitat (EFH) for Atlantic salmon or are subject to the New Hampshire SWQPA.

Ponds

No ponds were identified within the study area. A few small ponds lie in the vicinity of the Project. Grants Pond, between Wild Meadows Road and Airport Road, is impounded by a manmade dam and is the largest pond (approximately 39 acres) in the immediate vicinity of the study area (Figure 5). A smaller unnamed beaver impoundment supporting a small heron rookery is located south of the Pinnacle on Forbes Mountain Road and is approximately 7 acres in size. A 6-acre beaver impoundment is located between Tinkham Hill and Forbes Mountain.

Water Quality

In 2012, the NHDES categorized all surface waters as Category 5 as a result of a statewide fish consumption advisory for mercury in freshwater fish (Edwardson, 2012). Fourteen impaired waters are located within one mile of the project site. All impairments are generated from regional pollutants as opposed to local pollutants. Wild Meadows Brook is considered impaired due to mercury in fish and caustic waters, defined by NHDES as a pH value lower than 6.5.

4.4 Wetlands

A total of 455 wetlands were delineated within the approximately 2,000 acre wetland study area (Figure 6). Delineations were completed over a four year period beginning in the spring of 2010 and finishing in the fall of 2013. Each wetland was classified according to the Cowardin system (1979). Functions and values were assessed using the USACE's 1996 Highway Methodology. A summary table of each cover type and functions and values is included in Appendix 1-B.

The hydrology of the site drove wetland structure and species composition. In general, the mountain slopes were low-permeability, bouldery, till soils, therefore runoff was rapid and stream flow was flashy. The slope wetlands were consequently seasonally saturated due to the flashy hydrologic nature of these till soils. Slope wetlands were often small and confined to groundwater discharge areas. Along Golden Valley and Airport Roads was a large, flat (<5% slope) lowland within the study area. Here wetlands, which bordered Grants Pond, were large, seasonally flooded and saturated for most of the year. The long-term saturation was reflected in the organic accumulation at the surface of the soils. Natural areas of these wetlands were scrub-shrub to forested with a dense shrub understory. A second similar low-lying wetland occurred near the substation parcel. This wetland was part of the Bog River wetland complex, although its hydrologic connection was partially isolated by Bog Road.

Land use also governed wetland structure and species composition within the study area. The site has been heavily managed of timber for decades, and harvests have been completed as recent as 2012. Woods roads were abundant, and the forest was multi-aged with relatively small harvested blocks. The complexity of cover strata was directly related to time since harvest. For example, the majority of Forbes Mountain has not been harvested in the recent past and wetlands contained emergent, shrub, and multi-level forest canopy. Wetlands on Melvin Mountain were generally associated with recent logging disturbances and forested wetlands contained a more disrupted and patchy forest canopy, a reflection of selective cutting within the past four years. Evidence of ruts and soil compaction due to harvesting equipment was visible in numerous wetlands, and in some cases created seasonal pools. Compacted soil around a wetland can increase the size of the wetland to include skidder trails when sufficient time has allowed conditions to change. Patches of emergent wetland were typically present in forested swamps due to the partial harvests and patchy harvests conducted in the study area. Agricultural use within the project is restricted to hay fields along Golden Valley and Airport Roads. Wetlands within these hay fields predominantly consisted of wet meadow grass and sedge species.

Table 4-6. Cover type of wetlands delineated within the study area of the Wild Meadows Wind Project.

Wetland Cover Type	#	%
Emergent	96	21.3%
Emergent & Forested	48	10.7%
Emergent & Forested & Scrub-Shrub	11	2.4%
Emergent & Scrub-Shrub	45	10.0%
Forested (Mixed Needle-Leaved Evergreen & Coniferous)	89	19.6%
Forested (Broad-leaved Deciduous)	82	18.2%
Forested (Needle-leaved Evergreen)	41	9.1%
Forested & Scrub-Shrub	7	1.5%
Scrub-Shrub	20	4.4%
Unconsolidated Bottom	14	3.1%
Other Combinations	2	0.4%
Total:	455	100.0%

Wetland Cover Types

Table 4-2 lists the distribution of the different dominant cover types delineated within the study area. All wetlands fit the Palustrine classification, symbolized by the letter "P" and defined as Freshwater Nontidal wetlands (Cowardin 1979). The majority of the wetlands were forested

(47%), followed by emergent (21%) and various combinations of either emergent, forested or scrub-shrub (24%). As forested wetlands were common, subclasses of this wetland class were described individually. Classifications which include more than one cover type include plant communities described in both cover classes. Latin names used in this document are from Flora Novae Anglia (Haines 2012), which includes the most current plant taxonomy. Photographs of common cover types are included below.

Broad-leaved Deciduous Forested Wetland (PFO1)

Deciduous forested wetlands were located mainly along lower slopes of the Tinkham/Braley ridge and scattered throughout Forbes Mountain. The hydrology was highly variable, ranging from seeps on slopes, shallow depressions and streamside wetlands. Soils were typically depleted below a dark A horizon and were often deep. Throughout the study area, the vegetation species composition changed with forest maturity and frequent timber harvesting has resulted in a mosaic of ages of this wetland type. Middle-aged to mature deciduous forested wetlands were typically co-dominated by red maple and yellow birch, but may have included green or black ash (*Fraxinus pennsylvanicum* and *F.nigra*). Due to micro-relief and boulders, upland species such as American beech and sugar maple were infrequent components of these wetlands. Around the peaks of Melvin Mountain and Tinkham Hill black cherry (*Prunus serotina*) was also found on hummocks. Within the shrub layer the dominant species were regenerating trees and hobblebush. The herbaceous layer was diverse and its density was dependent on the degree of shading provided by the canopy and shrub layers. Herbaceous species included several ferns: narrow lady fern, cinnamon fern, sensitive fern, interrupted fern, and New York fern (*Parathelypteris novoboracensis*). In mature areas, low herbaceous growth was sparse and included goldthread (*Coptis trifolia*), Canada mayflower and intermediate woodfern. Peat mosses were typically only present where soils were seasonally flooded/saturated. Seeps typically contained a lush fern understory, such as Braley Wetland BW220, where the dominant species were red maple, yellow birch, narrow lady fern, interrupted fern, cinnamon fern and jewelweed (*Impatiens capensis*). Streamside forested wetlands contained more mosses in the understory and more tree blowdowns. Forbes Wetland FW264 was an example of a streamside wetland. The rocky till soils of this wetland created pit-mound micro topography where dry boulder summits were inhabited by mosses or small herbs such as Canada mayflower.

Deciduous forested wetlands regenerating from logging were typically dominated by red maple in the overstory, and a sapling layer with yellow and grey birch (*Betula populifolia*) was common. Hobblebush was uncommon in the understory, as red raspberry, a fast growing pioneer, had taken its niche. Speckled alder (*Alnus incana ssp rugosa*) was prevalent in wetter areas of larger wetlands like in the forested sections of Tinkham Wetland T303. Ferns, such as sensitive and interrupted, were common in the understory as well as bristly dewberry (*Rubus hispidus*) and fringed sedge (*Carex crinita*). Tinkham Wetland TW299 along Airport Road is a good example of a large regenerating forested wetland. Here, red maple was dominant but green ash and trembling aspen were also common. Saplings of red maple are dense, shading most of the understory. Interrupted and sensitive ferns were present where light penetrates the forest floor, with other herbaceous species less common, including bristly dewberry and sedges (*Carex* spp.).

Coniferous Forested Wetland (PFO4)

Several wetlands within the study area were classified as coniferous forested wetland, principally on Forbes and Tinkham Mountains. Coniferous wetlands existed where topographic depressions and shallow soil conditions were found.

Balsam fir and red spruce dominated the canopies with red maple frequently present. The understories of these wetlands tend to be sparse, with few shrubs and herbs except for regenerating canopy species. Hair-cap moss (*Polytrichum* sp.) and peat mosses are also found in the understory. Three-seeded sedge (*Carex trisperma*) and velvet-leaved blueberry (*Vaccinium myrtilloides*) are common in openings. Shallow soil and saturated conditions made blowdowns a common occurrence and the resulting additional light typically allowed more understory species to grow here than in the neighboring upland. Because of the specific conditions required for coniferous forests within the region (i.e. higher elevations, poor soils) there was little variation among wetlands. Younger forests were typically dominated by balsam fir and forests at lower elevations contained some eastern hemlock.

Tinkham Wetland TW5 had a dominance of red spruce and balsam fir in the overstory, red spruce in the shrub-sapling layer, and peat moss in the understory. Other common understory species included sedges, Canada mayflower, bunchberry, and red spruce. Bedrock perched the water table and enabled organics to accumulate so that the soils were histic.

Mixed Deciduous-Coniferous Forested Wetland (PFO14)

The majority of the wetlands delineated within the study area were mixed deciduous-coniferous forested wetlands. The hydrology of these wetlands was typically seepage and/or confined depressions, with age classes ranged from regenerating to mature second growth. Red maple, yellow birch and red spruce dominated the overstory in mature forests whereas paper birch, balsam fir, and red maple were the common species in regenerating forests. Red spruce was more common in the upper elevations, whereas eastern hemlock was more frequent in the lower. The shrub/sapling layer consisted of saplings of canopy species and hobblebush in more mature wetlands. Red raspberry was common in regenerating forests. The understory was generally less dense than the deciduous forested wetlands, but more diverse. Dominant in the understory were narrow lady fern, cinnamon fern, intermediate wood fern, New York fern, fowl mannagrass (*Glyceria striata*) and bunchberry. In the shady portion of the wetlands where peat moss dominated, three-seeded sedge and goldthread were also common.

Forbes Wetland FW269 is a good example of a mixed forested seepage. Soils were histic and presumably rich based on rich site herbs such as golden carpet (*Chrysosplenium americanum*) and bristle-stalk sedge (*Carex leptalia*). The tree layer was dominated by red maple, yellow birch and red spruce. Hobblebush and red spruce dominated the shrub layer. Herbaceous species included interrupted, sensitive, and New York ferns, yellow bluebead-lily, and goldthread.

Shrub-Scrub Wetland (PSS1)

This class of wetland was governed primarily by land use. Scrub-shrub wetlands were found wherever proper hydrology existed and forests were at the early stages of regeneration from logging activities or wherever shrubs out-competed trees. In many scrub-shrub wetlands the soil has been compacted by harvesting equipment. Soils were typically mucky-mineral or histic in the upper horizon. Hillside seepages and streamside wetland hydrology were most common for this wetland type. Young red maple and grey birch were dominant saplings along with shrubs of willows (*Salix* ssp.) and speckled alder. Red raspberries and green ash saplings were common throughout this community. Disturbance-tolerant species such as fringed sedge, soft rush (*Juncus effusus*), jewelweed and sensitive fern thrive in the understory.

Substation Wetland OW20 located in the Cass Mill Valley at the base of Forbes Mountain was a scrub-shrub wetland. Off-site the wetland was connected to a large wetland complex bordering Bog Brook and Foster Pond. Soils were organic to twelve inches and very poorly drained. In this wetland, red maple, speckled alder and willows were the dominant shrubs. Horsetail (*Equisetum sp.*), broadleaf cattail (*Typha latifolia*), meadowsweet (Spiraea alba var. latifolia), and grasses were dominant herbs.

Tinkham wetland TW302 was a mixed scrub-shrub wetland. Balsam fir, red maple, eastern hemlock, speckled alder, winterberry (*Ilex verticillata*), and hobblebush were dominate species in this diverse wetland. The understory contained many ferns such as sensitive, cinnamon, interrupted, and narrow lady fern. Eastern rough sedge (*Carex scabrata*), fringed sedge and rough-stemmed goldenrod (*Solidago rugosa*) were also dominant.

Emergent (PEM1)

Emergent wetlands were common throughout the site, and were particularly associated with recent clearings and logging roads along lower slopes. The hydrology was mainly hillside seeps and shallow depressions. Most emergent wetlands within the study area had some tree cover; however because the overstory trees were rooted outside of the wetland and within a different soil type (non-hydric) these areas were classified as emergent and not forested. The species composition in the shaded areas generally consisted of jewelweed, fowl mannagrass, whorled aster (*Oclemena acuminate*) and peat moss (Wetland TW287). Often in the open there was sensitive fern, dark-green bulrush (*Scirpus atrovirens*) and fringed sedge. Ferns such as narrow lady fern and interrupted fern were in either canopy setting.

Substation Wetland OW10 was an example of an emergent wetland with a forested overstory originating from trees rooted outside of the wetland. Within this large wetland was a range of hydrology. The northern half was frequently flooded, and the southern half was shallowly sloped and drained by streams. Consequentially, soils within the northern portion of the wetland consisted of a deep organic horizon, which became thinner and underlain by a depleted horizon within the southern portions. The surrounding uplands were mixed forests with eastern hemlock and yellow birch. The wetland was dominated by peat mosses, sensitive fern, jewelweed, and goldenrod (*Solidago sp.*). Tinkham Wetland number TW301, one of the largest wetlands on the site, was predominantly wet meadow with forested patches. It was one of the four emergent wetlands (including TW386) which were periodically mowed for hay. All were located along Golden Valley and Airport Roads. Grasses and sedges were the dominant species in these wetlands.

Wetland FW264: Broad-leaved deciduous forested wetland on slope with associated stream

Wetland BW220: Broad-leaved deciduous forested wetland

Wetland TW5: Coniferous forested wetland

Wetland FW269: Mixed forested wetland

Wetland OW20: Scrub-shrub wetland

Wetland TW287: Seep Emergent Wetland in Forested Area (no trees rooted in wetland)

Wetland TW386: Wet meadow wetland

Wetland TW145: Unconsolidated bottom wetland and natural vernal pool

Unconsolidated Bottom Wetland (PUB)

An uncommon wetland class found within the study area was unconsolidated bottom wetland. Wetlands of this type were semi-permanently to seasonally flooded with a high accumulation of organic material. These wetlands were all shaded from adjacent upland trees and had little to no emergent vegetation (generally less than 30 percent) with water depths ranging from 6 to more than 24 inches. These wetlands do not easily fit into one of the classes defined within the Cowardin system; with many of them including characteristics of both emergent wetlands and unconsolidated bottom features. Along the fringes and on hummocks within the wetland one could typically find Canada mayflower, cinnamon fern and three-seeded sedge. Peat moss was common in seasonally flooded areas. Tinkham Wetland TW145 was the largest PUB found at Wild Meadows. Soils were histic in the center of the wetland and depleted below dark surface along the edges. Peat moss was found throughout the wetland. Three-seeded sedge, bladder sedge (*Carex intumescens*), and whorled aster were found in hummocks and wetland edge along with yellow birch, red maple and mountain holly (*Ilex mucronata*) shrubs/saplings.

Wetland Functions and Values

Representative wetland functions and values were assessed for each wetland using the US Army Corps of Engineers Highway Methodology (USACE 1995). This methodology evaluates 13 functions and values potentially provided by individual wetlands. The assessment relies on professional judgment that is documented according to characteristics provided within the methodology for each function. The methodology indicates whether a wetland provides a specific function, and if that function is considered Principal. Principal functions are those that provide “an important physical component of a wetland ecosystem (function only) and /or are considered of special value to society, from a local, regional and/or national perspective”. The functions and values for all wetlands are provided in the summary table in Appendix 1-B. While multiple functions were provided to some degree by most wetlands, the principal functions were the distinguishing features among the wetland types. The principal functions identified across the study area included: Wildlife Habitat, Floodflow Alteration, Groundwater Recharge/Discharge, Sediment/Toxicant Retention, Nutrient Removal, Production Export, and Sediment/Shore Stabilization. The following descriptions address the principle functions in general terms.

Wildlife Habitat Function

Wildlife habitat is a very broad term applicable to many wetland types, and for a variety of wildlife species. This was the most universal function in the study area, applying to almost all cover types. Representative wildlife species at Wild Meadows that benefit from these wetlands include moose, white-tailed deer, raccoon, black bear, turkey, ruffed grouse, snowshoe hare, many passerine bird species, American toad, wood frog, spotted salamander, Jefferson/blue-spotted salamander, and red-backed salamander. The vernal pools provide breeding habitat for wood frog, spotted salamander, blue-spotted salamander and obligate invertebrates, as well as valuable stopover habitat for several species of reptiles and amphibians.

The larger scrub-shrub wetlands provide breeding habitat for a number of passerine species: red-winged blackbird, swamp sparrow, yellowthroat and black and white warbler. Very small disturbed wetlands with no pooling were considered low wildlife habitat value as they were not expected to support much wildlife. Almost all stream-associated wetlands were assigned a high wildlife value based on their likely significance as wildlife travel corridors. All wetlands containing a vernal pool were considered to have wildlife habitat as its principle function.

Floodflow Alteration

Wetlands with depressions or dense vegetation are typically valuable for detaining and storing surface water and reducing downstream flooding. The majority of wetlands did not serve this function due to their slope and small size. Cover type was less of a consideration for this function as vegetation minimally changes flood storage capacity. Around one third of wetlands were considered suitable for this function, including low gradient streamside wetlands and pit-and-mound forested wetlands. Tinkham Wetland TW301 along Golden Valley Road is an example of a wetland with floodflow alteration as a principal function. This wetland was adjacent to Grants Pond, contained two streams and was large in area and low in gradient. Exposed sediment along Wild Meadow Brook was evidence of this wetland serving as overflow storage when Tropical Storm Irene impacted the area in 2011.

Groundwater Recharge/Discharge

This function combines recharge and discharge into a single function, based on the concept that many wetlands provide both recharge and discharge depending on seasonality and the relative position of ground and surface waters. However, in a mountainous landscape this is seldom true. The steep topography and till soils on the slopes of the study area provide significant discharge in both the perennial and intermittent streams but preclude much recharge. The low gradient and stratified drift at the lower elevations received recharge from the same streams. Nearly all wetlands (91%) were suitable for either groundwater recharge, discharge, or both. Braley Wetland BW239 was a very small emergent feature which discharged groundwater into an adjacent perennial stream. At the bottom of a slope, Tinkham Wetland TW303 discharged ground water which flowed into streams and towards Grants Pond. Although the wetland was large and flat, it was serving more as discharge than recharge based on stream flow. Further from the stream (off site and down slope) the wetland may have been performing principally as groundwater recharge.

Sediment/Shore Stabilization

Densely vegetated wetlands occurring along streams are well suited to stabilize banks and prevent soil erosion from reaching waterbodies. One quarter of all wetlands in the study area along streams served this function. As waterbodies became larger downslope, wetland function was rated higher as flow in streams was greater. On Forbes Mountain, the emergent wetland FW216 was small and heavily disturbed by skidder traffic. Its only function was shore stabilization as it held the sloped banks of a stream in place. Tinkham forested wetland TW355 was larger and less disturbed than FW216 and also functioned as shore stabilization. It provided a wetland fringe for perennial stream TS356 and was well vegetated in the understory.

Sediment/Toxicant Retention and Nutrient Removal

These two functions are combined because they are provided by similar wetland conditions – those that have the exposure to the pollutant and the structure and vegetation to treat it.

Suitable wetlands in the study area were limited to scrub-shrub wetlands associated with low-gradient stream sections, emergent wetlands that were seasonally to semi-permanently flooded, and forested wetlands with dense understory. Sediment/toxicant retention and nutrient removal was the principle function of Tinkham's emergent/scrub-shrub wetland TW286. This seepage wetland was partially within a log landing and nearly extended to a roadside ditch. Because the wetland ended before the ditch, and was heavily vegetated, it provided protection from soil disturbance of logging operations. Tinkham Wetland TW363 is an isolated small emergent feature which is mostly disturbed by skidder traffic and functions as sediment/toxicant retention and nutrient removal. It receives surface flow for adjacent disturbed uplands and traps sediment and nutrients.

Production Export

The ability for a wetland to produce food or useable products is considered when evaluating this function. Other functions are considered when rating this function: wildlife habitat and fish or shellfish habitat for the consideration of food; and sediment/shore stabilization for the consideration of export by stream. Twenty-two percent of wetlands were suitable for production export within the study area. Most were connected to streams while others contained vernal pool habitat. Wetland MW268 had a high organic accumulation which presumably flushed into and enriched the adjacent stream during major rain events. Tinkham Wetland TW303 contained two vernal pools, streams and general sheet flow towards Grants Pond. MW268 and TW303 were both considered production export wetlands.

Other Functions and Values

In general, the majority of the identified wetlands within the study area were common for the region, slightly disturbed, not easily accessible and the leased lands were generally posted against unauthorized access for hunting, hiking, and other forms of recreation. These factors contributed to the very low levels of function and values associated with visual quality and aesthetics, education, uniqueness and heritage and rare, threatened, and endangered species.

4.5 Vernal Pools

A total of 97 vernal pools were identified within the approximately 2,000-acre wetland study area from May 2010 to May 2013, of which approximately 31 lay within close proximity to the Project footprint (see Figure 6 and Figure 7). Appendix 1-B includes a summary table of all identified vernal pools within the study area including pool rank, origin, hydroperiod and observed indicator species. The majority of the vernal pools are man-made (48 pools, or 49%) or influenced by anthropogenic activities (22 pools, or 23%) with 27 pools (28%) considered natural (see Table 4-7). This is consistent with the level of disturbance observed within the study area associated with current and historical logging activity. Twelve (12%) of these pools are ranked as highest value (A) pools, 43 (44%) are ranked as intermediate value (B) pools, and 42 (43%) are ranked as least value (C) pools (see Table 4-7). Wood frogs, spotted salamanders and Jefferson/blue-spotted salamander hydrids were the only primary vernal pool indicators identified. Several secondary indicators were also observed within many pools, including caddisfly, true fly and aquatic beetle larvae. American toads, red efts and green frogs were other amphibians encountered in the vernal pools that are not regarded as vernal pool obligate species. The highest value pools were primarily natural depressions, or in one case, a manmade excavation. Many of the least value pools occurred in manmade depressions (skidder ruts, drainage features).

Table 4-7. Summary of vernal pool rank and origin delineated within the study area of the Wild Meadows Wind Project.

VP Rank and Origin	#
A - Highest Value	
Manmade	2
Natural	5
Natural Modified	5
Sub-total:	12
B - Intermediate Value	
Manmade	16
Natural	16
Natural Modified	11
Sub-total:	43
C - Least Value	
Manmade	30
Natural	6
Natural Modified	6
Sub-total:	42
Total:	**97**

Highest Value Pools – "A" Rank

The twelve pools determined to be of the highest value were ranked as such due to a high egg mass count of indicator species during surveys, low disturbance of the surrounding terrestrial habitat, and a hydroperiod determined to provide habitat throughout the larval stage of amphibian indicator species. Eleven of these pools are natural landscape depressions or natural depressions modified by human activity, such as rutting by logging activity. The single manmade pool that was ranked as highest value had extremely high productivity of indicator species. This Tinkham pool (TVP231) is an historic, excavated mica mine that has been abandoned for greater than 40 years, as estimated by the age of the surrounding forest. All three indicator species were found in this pool at a single survey event.

Intermediate Value Pools – "B" Rank

Pools ranked as intermediate value typically represented those that lacked one of the three criteria listed above. All of the pools contained egg masses of primary indicator species. Of the 43 intermediate value pools, 16 were determined to be manmade pools in skidder ruts, abandoned gravel pits, excavated mica mines, or borrow pits. Of the 27 remaining natural and natural-modified pools, 14 possessed an ephemeral hydroperiod and the remainder had inlets or outlets, low egg mass counts or were within a disturbed forested habitat, typically the result of recent clearing.

Least Value Pools – "C" Rank

The 42 pools of least value were those that possessed some biological indicators, but lacked sufficient numbers, habitat quality, or hydroperiod to provide for a routinely successful amphibian breeding location. These pools were often of a very small size and could not accommodate a high amount of amphibian use. Manmade pools represented 30 of the 42 least value pools, the majority of which occurred in skidder ruts and ditches. The 12 natural or natural modified pools were generally small, and ten had an ephemeral hydroperiod. Small size and high amounts of recent disturbance in the pool and surrounding landscape were the primary reasons for the low ranking, indicating that these pools were unlikely to be utilized by high numbers of vernal pool obligate species.

5.0 References

Cowardin, L.M, V.Carter, F.C. Golet, and E.T.LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Office of Biological Services, Fish & Wildlife Service, US. Department of Interior. FWS/OBS-79/31

Edwardson, K. 2012. 2012 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology. State of New Hampshire, Concord, NH. p 81.

Haines, A. 2012. Flora Novae Angliae. New England Wildflower Society and Yale University Press, New Haven, CT. 973pp.

MEDEP 2009. Maine Department of Environmental Protection. Natural Resources Protection Act, Chapter 335: Significant Wildlife Habitat Rules.

NHCAR 2012. New Hampshire Code of Administrative Rules: Wetland Rules. (Env-Wt 100-900).

NH Fish and Game, 2004. Identification and Documentation of Vernal Pools in New Hampshire. 2nd Ed. 76pp. New Hampshire Fish and Game Department, Concord, NH

Olson, J.C. 1942. Mica-Bearing Pegmatites of New Hampshire, A Preliminary Report. US Department of the Interior, Geological Survey, Bulletin 931-P. Washington, D.C.

Rosgen, D. L. 1994. A classification of natural rivers. Catena, 22, 169–199.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed [November 19, 2012].

U.S. Army Corps of Engineers. 1987. Corps of Engineers Wetlands Delineation Manual. U.S. Army Corps of Engineers, Vicksburg, MS.

U.S. Army Corps of Engineers. 1995. The highway methodology workbook. Supplement to Wetland functions and values; a descriptive approach. US Army Corps of Engineers, New England Division, Concord, MA.

U.S. Army Corps of Engineers. 2009. Interim Regional Supplement to the Army Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region. U.S. Army Engineer Research and Development Center, Vicksburg, MS.

U.S. Army Corps of Engineers. 2012. Regional Supplement to the Army Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region version 2. U.S. Army Engineer Research and Development Center, Vicksburg, MS.

U.S. Army Corps of Engineers. 2012. Department of the Army Programmatic General Permit, State of New Hampshire. General Permit No: NAE-R-2012-00339. Effective date: August 3, 2012.

USDA Natural Resources Conservation Service. 2011. New Hampshire State-Wide Numerical Soils Legend. Issue #10. Durham, NH.

Appendix I-A

Figures

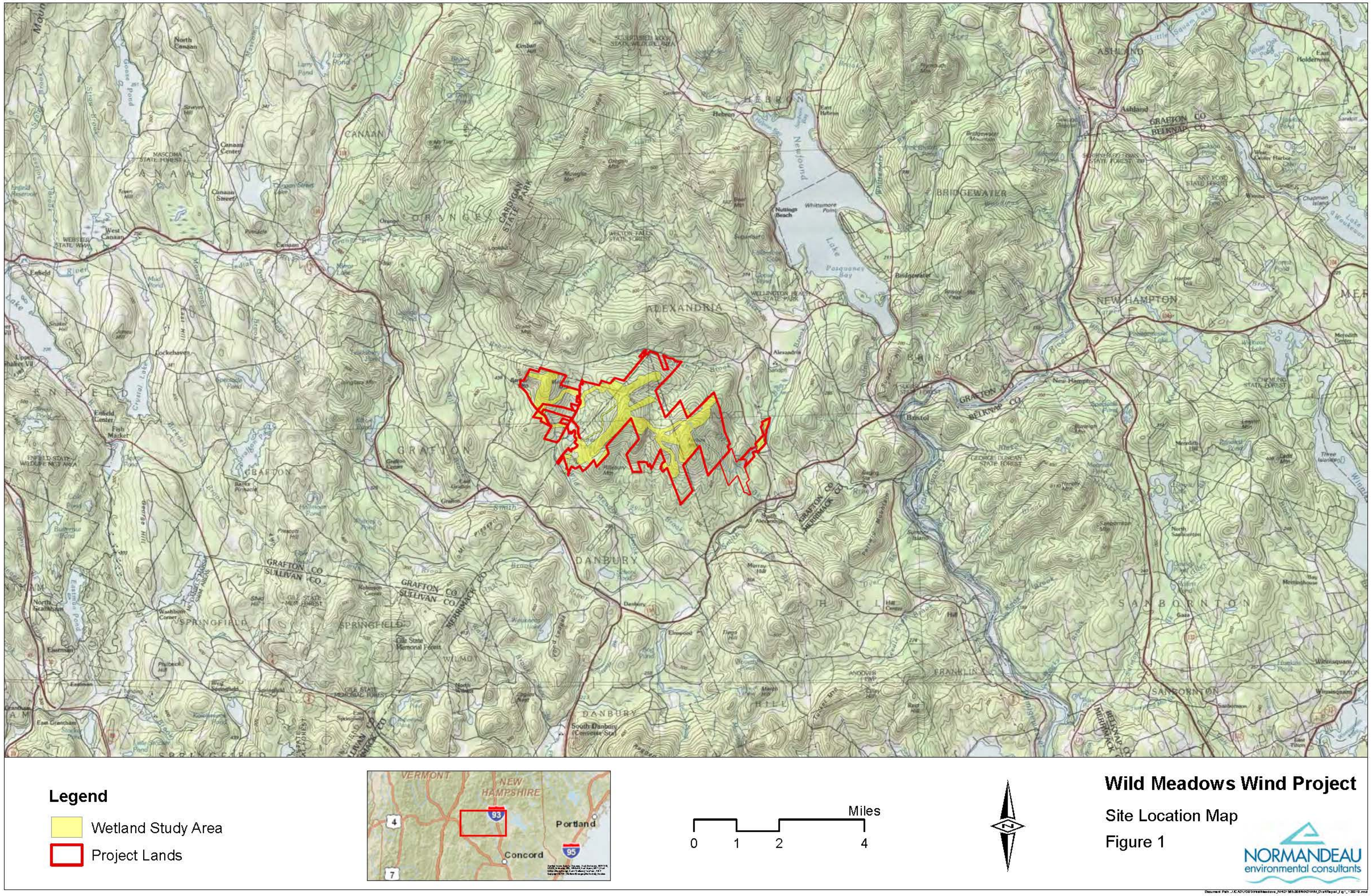


Figure 1: Site Location Map.

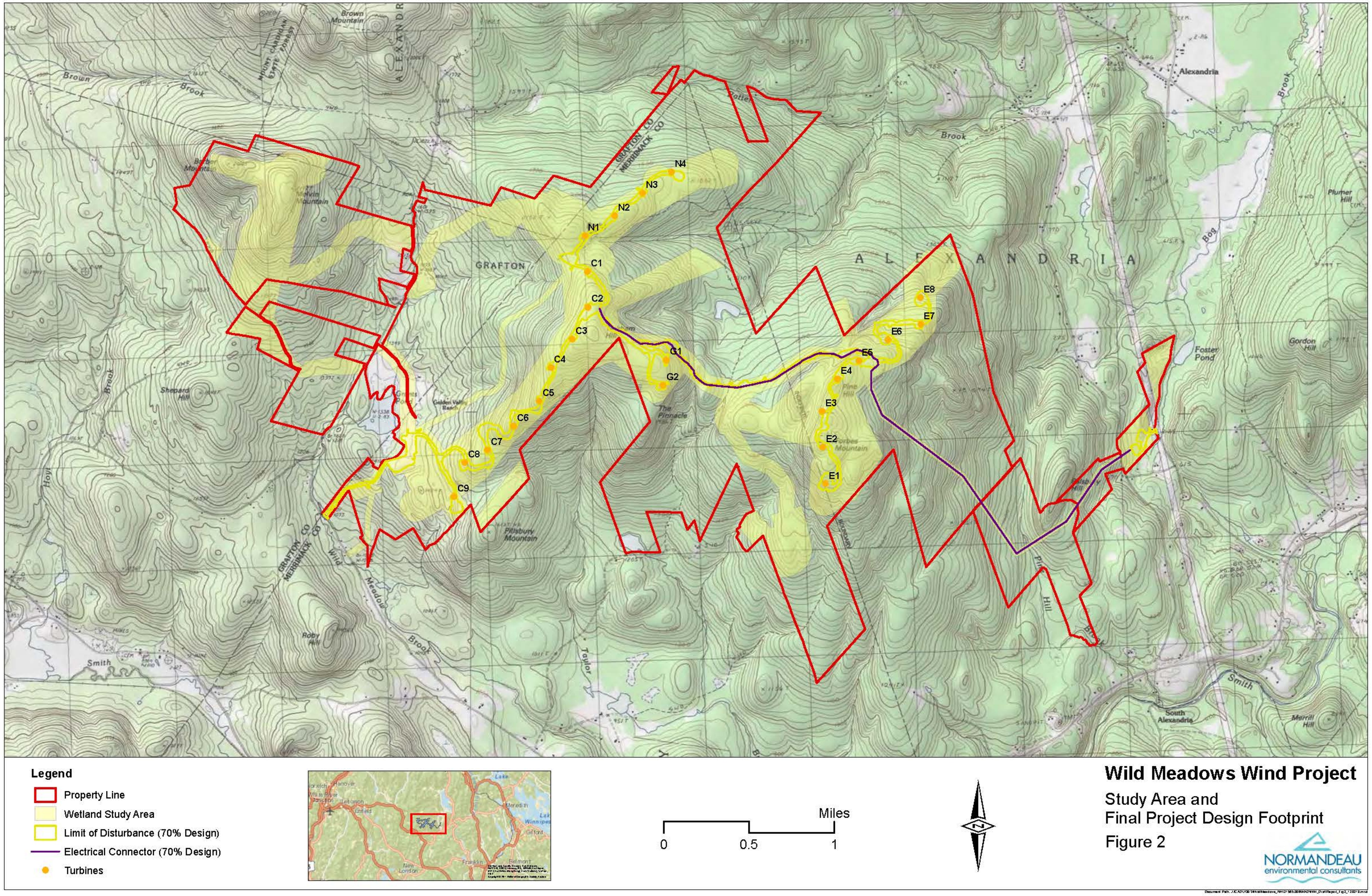


Figure 2: Study Area and Final Project Footprint.

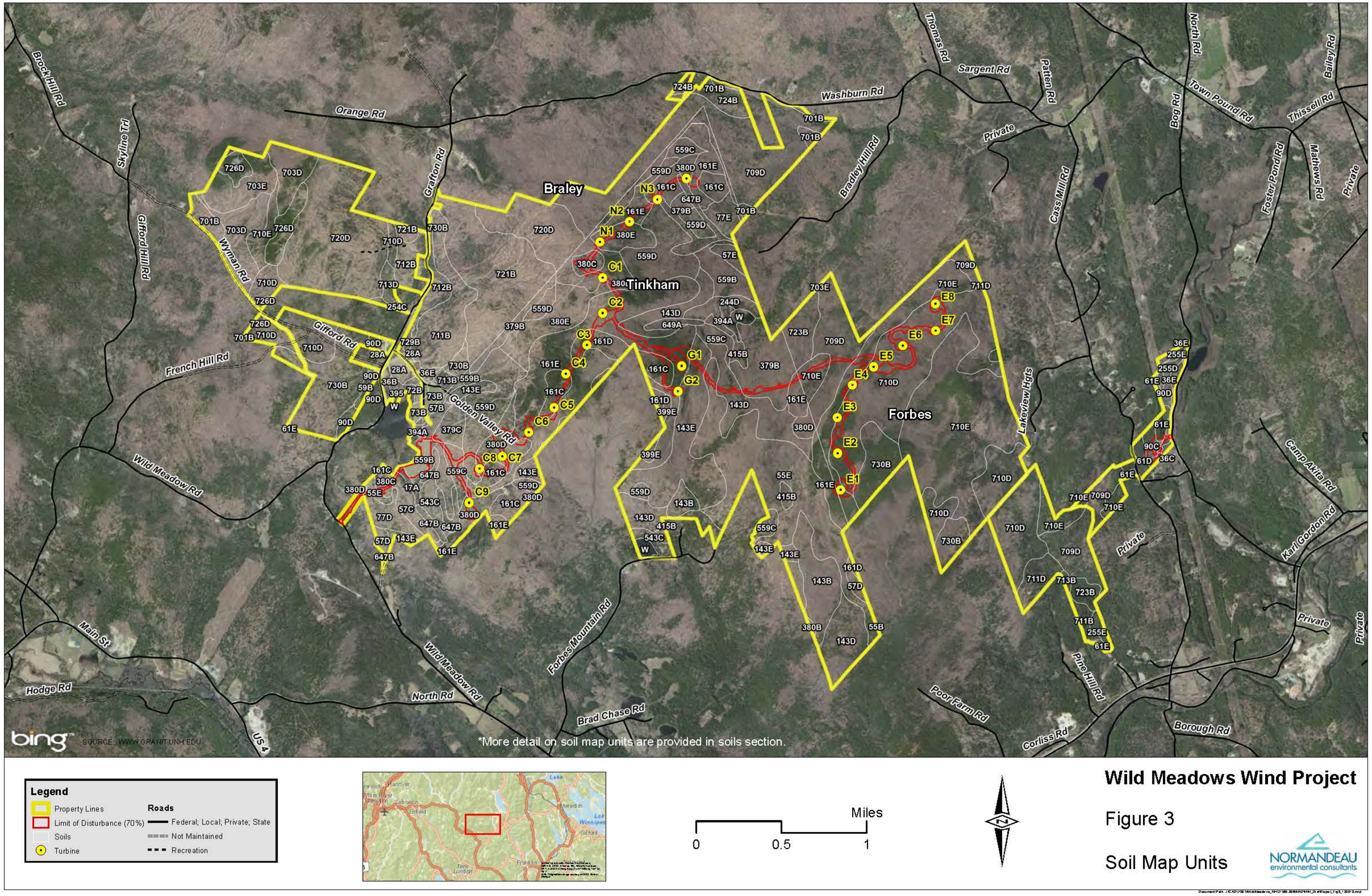


Figure 3: Soil Map Units for the project vicinity.

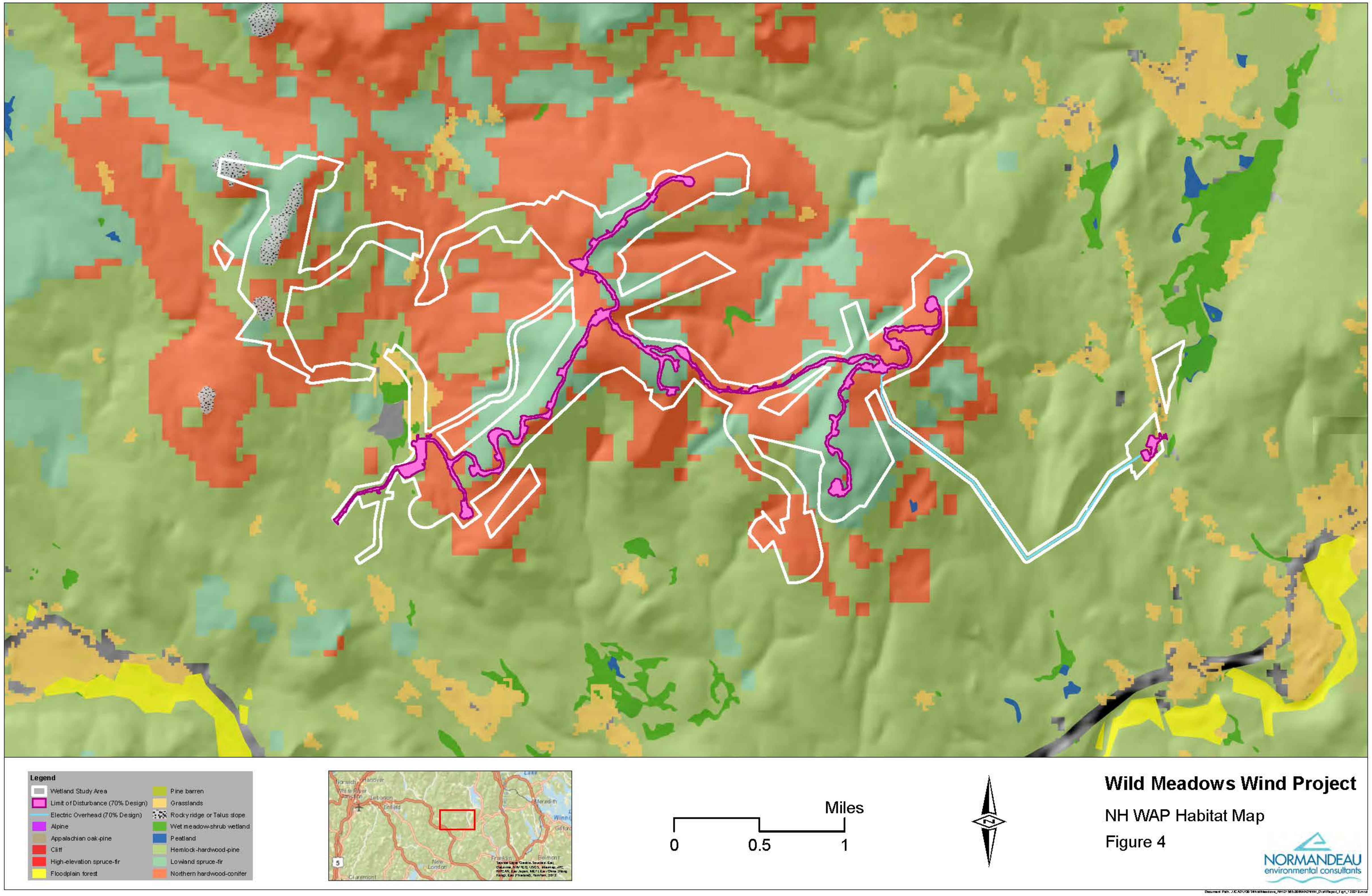


Figure 4: NH WAP Habitat Map for the project vicinity.

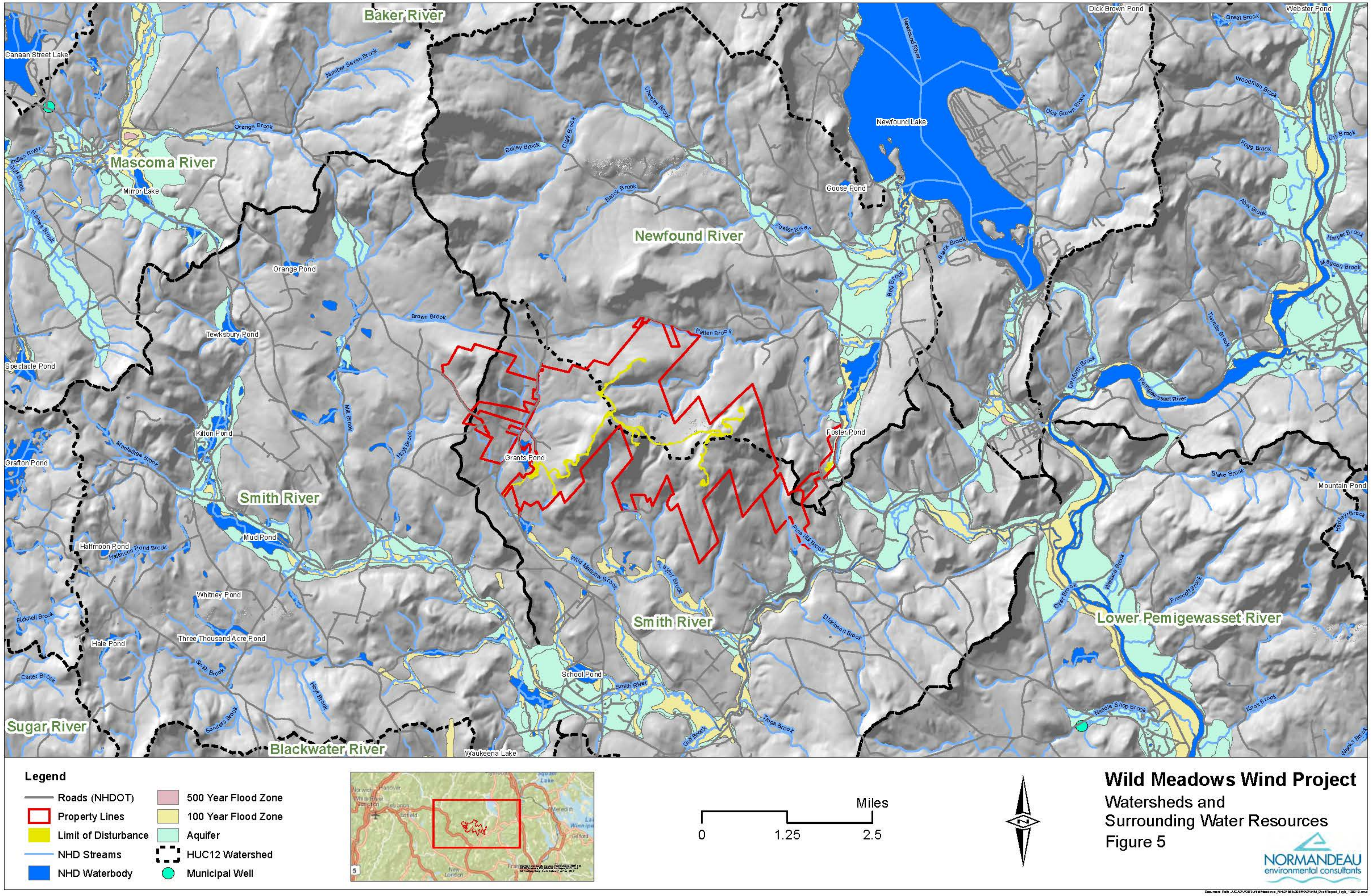


Figure 5: Watersheds and Surface and Subsurface Water Resources.

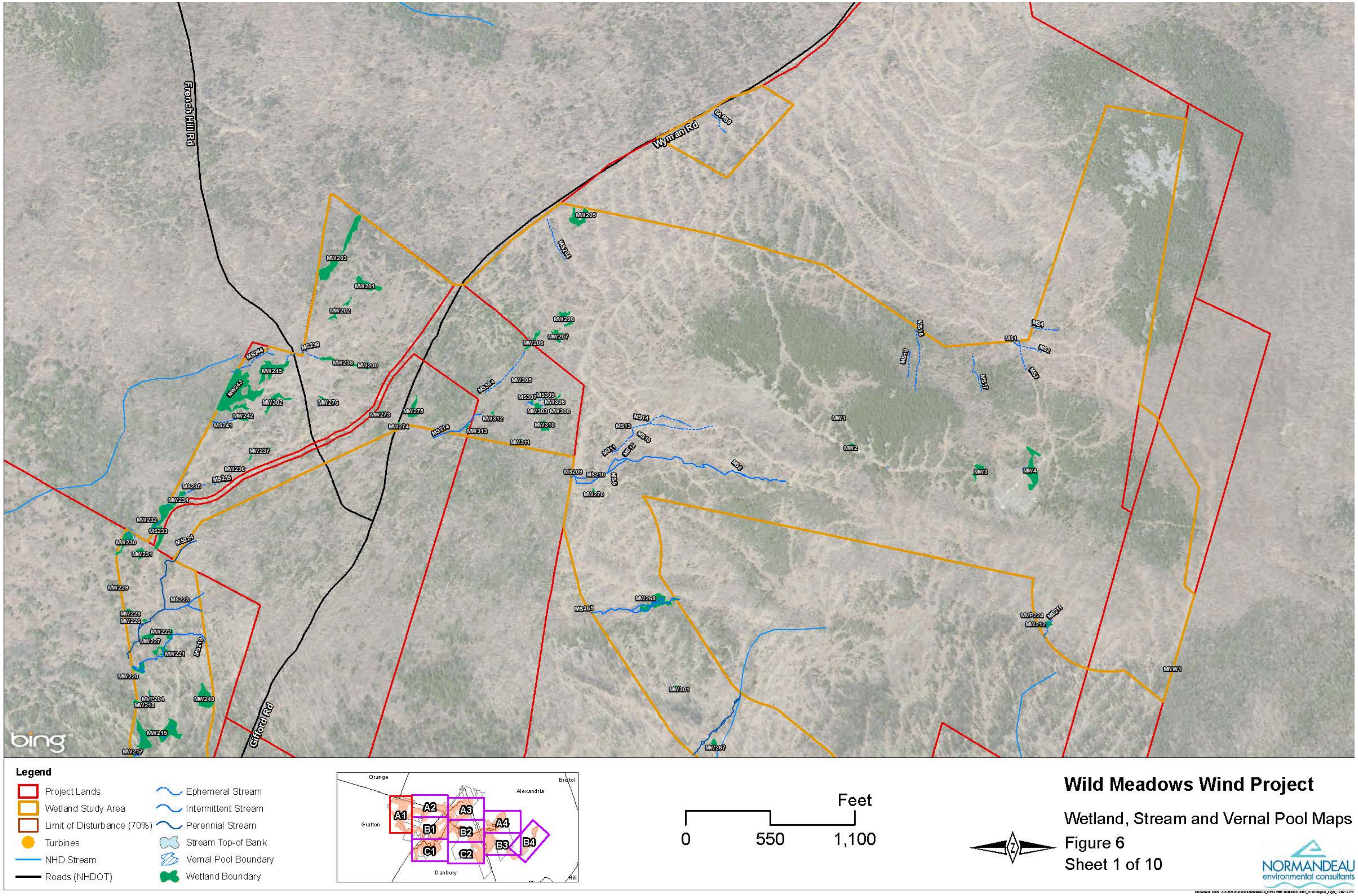
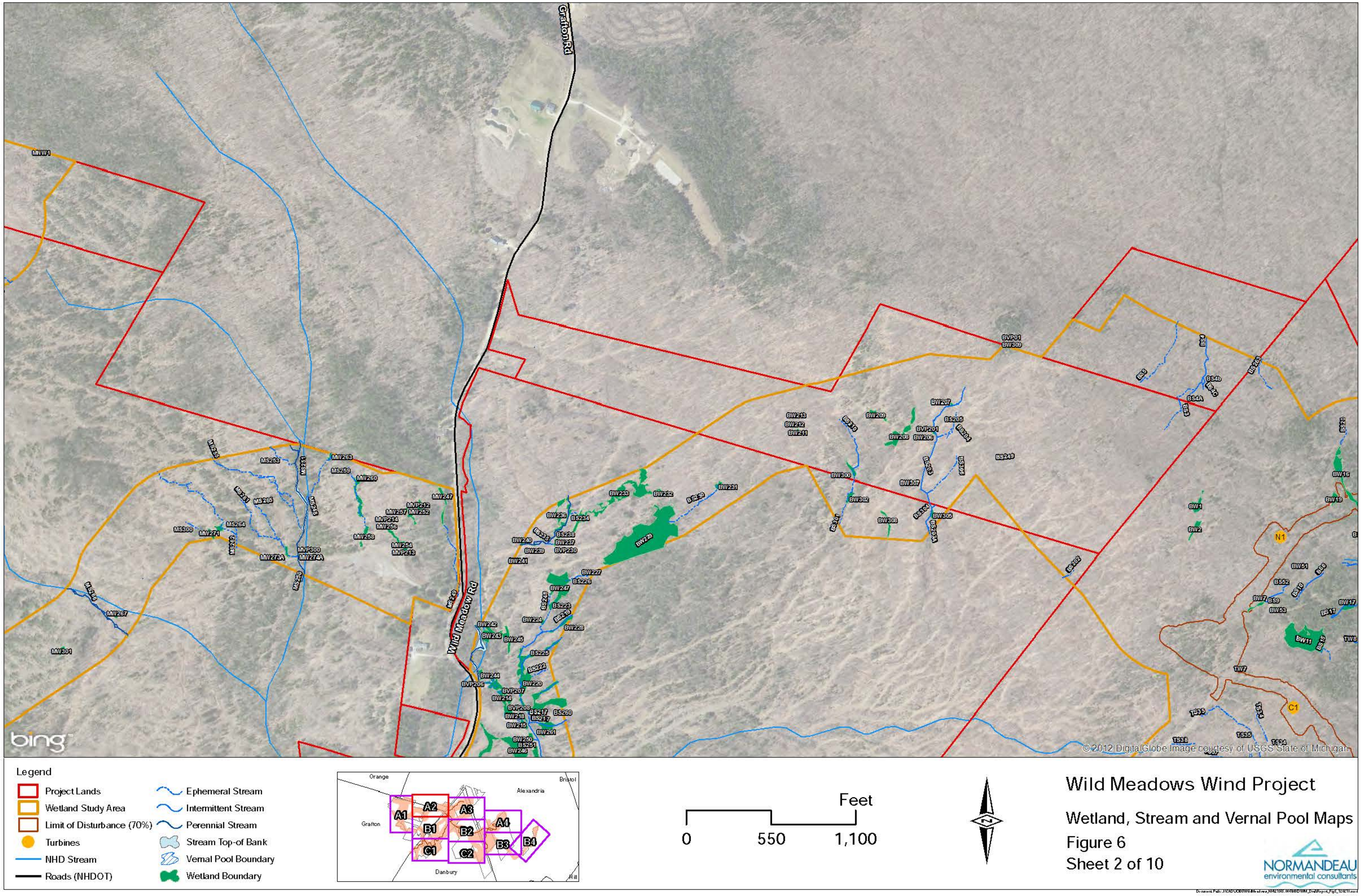


Figure 6: Wetland, Stream and Vernal Pool Maps



Wild Meadows Wind Project

Wetland, Stream and Vernal Pool Maps

Figure 6

Sheet 2 of 10

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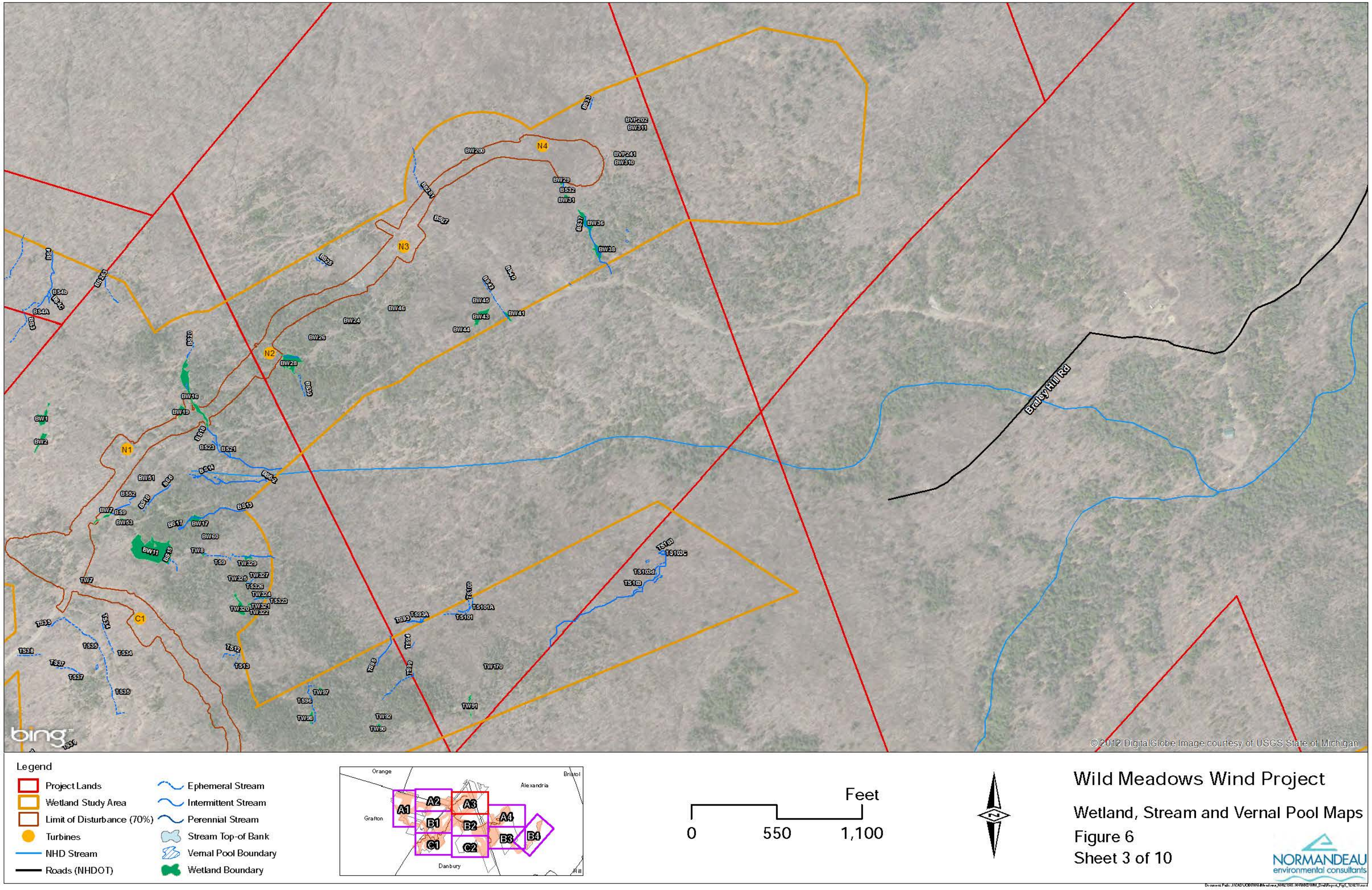

Wild Meadows Wind Project

Wetland, Stream and Vernal Pool Maps

Figure 6

Sheet 3 of 10

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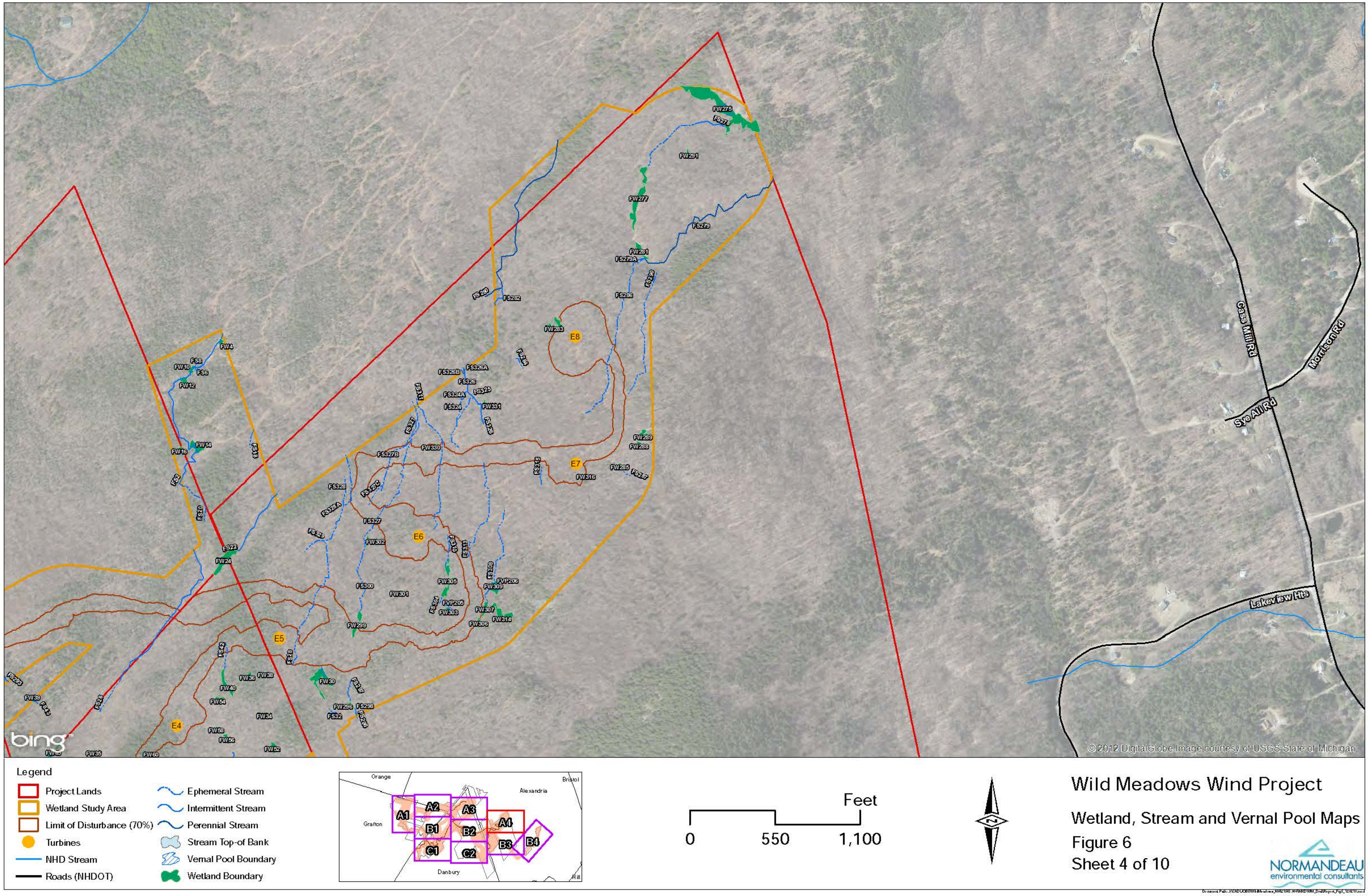
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FW291
FW24
FW30
FW301
FW302
FW305
FW307
FW309
FW314
FW316
FW330
FVP205
FVP206
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© 2012 DigitalGlobe Image courtesy of USGS State of Michigan
Legend
Project Lands
Wetland Study Area
Limit of Disturbance (70%)
Turbines
NHD Stream
Roads (NHDOT)
Ephemeral Stream
Intermittent Stream
Perennial Stream
Stream Top-of Bank
Vernal Pool Boundary
Wetland Boundary
Orange
Bristol
Alexandria
Grafton
Danbury
Hill
A1
A2
A3
A4
B1
B2
B3
B4
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Feet
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Wild Meadows Wind Project
Wetland, Stream and Vernal Pool Maps
Figure 6
Sheet 4 of 10
NORMANDEAU
environmental consultants

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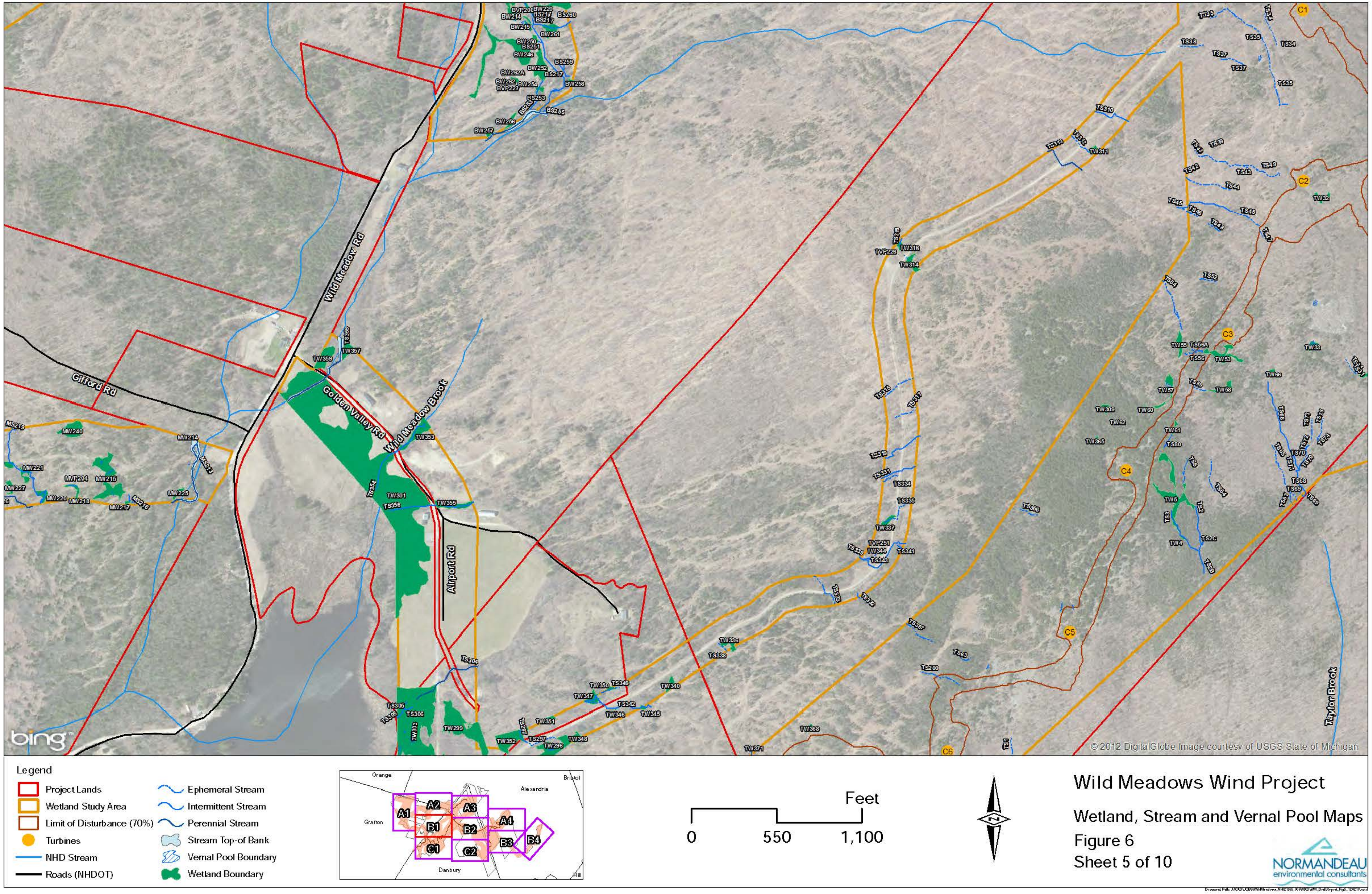
Wild Meadow Rd
Golden Valley Rd
Gifford Rd
Airport Rd
Wild Meadow Brook
Taylor Brook
C1
C2
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C5
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© 2012 DigitalGlobe Image courtesy of USGS State of Michigan
Legend
Project Lands
Wetland Study Area
Limit of Disturbance (70%)
Turbines
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Perennial Stream
Stream Top-of Bank
Vernal Pool Boundary
Wetland Boundary
Orange
Bristol
Alexandria
Grafton
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Wild Meadows Wind Project
Wetland, Stream and Vernal Pool Maps
Figure 6
Sheet 5 of 10
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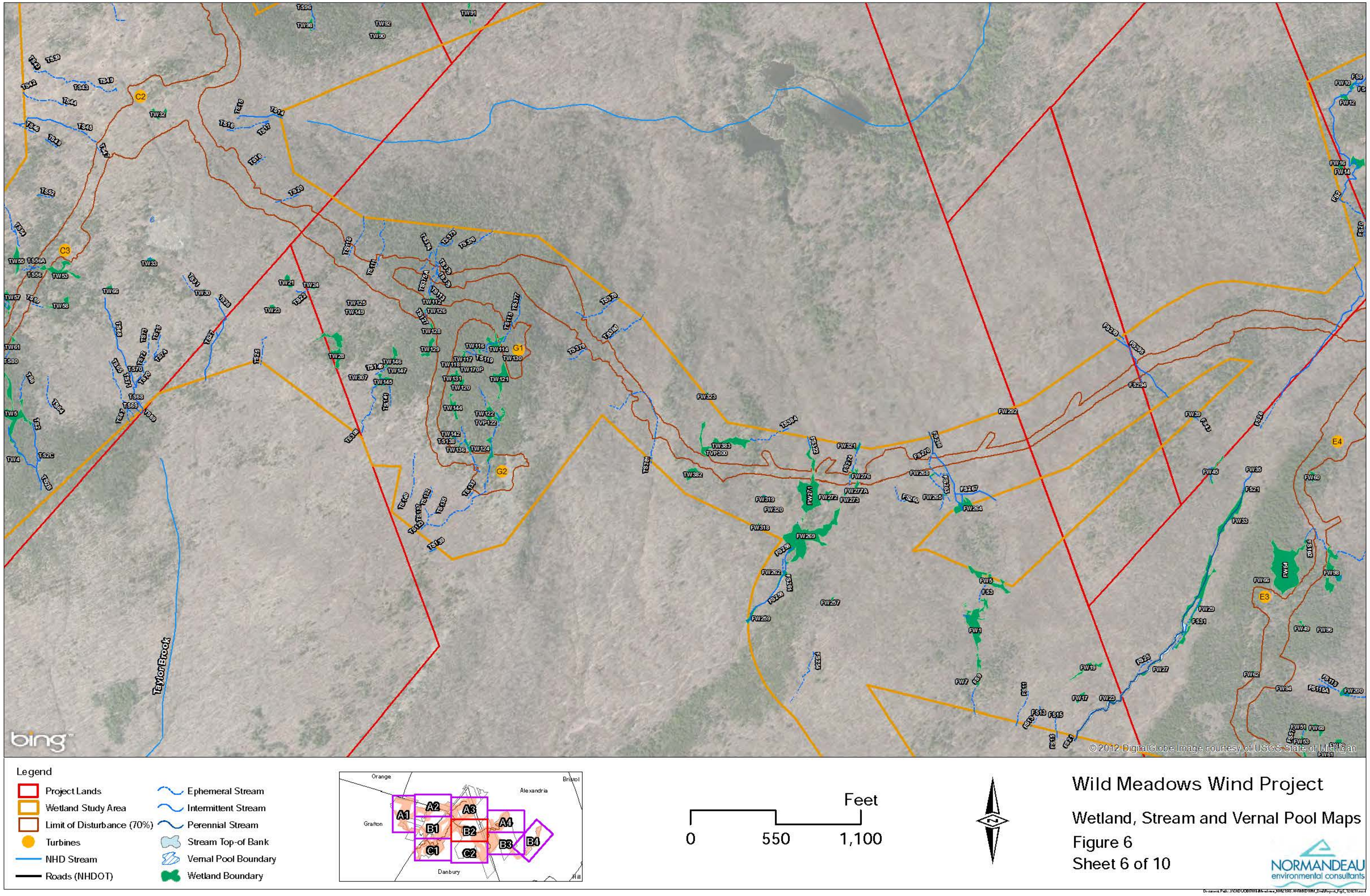
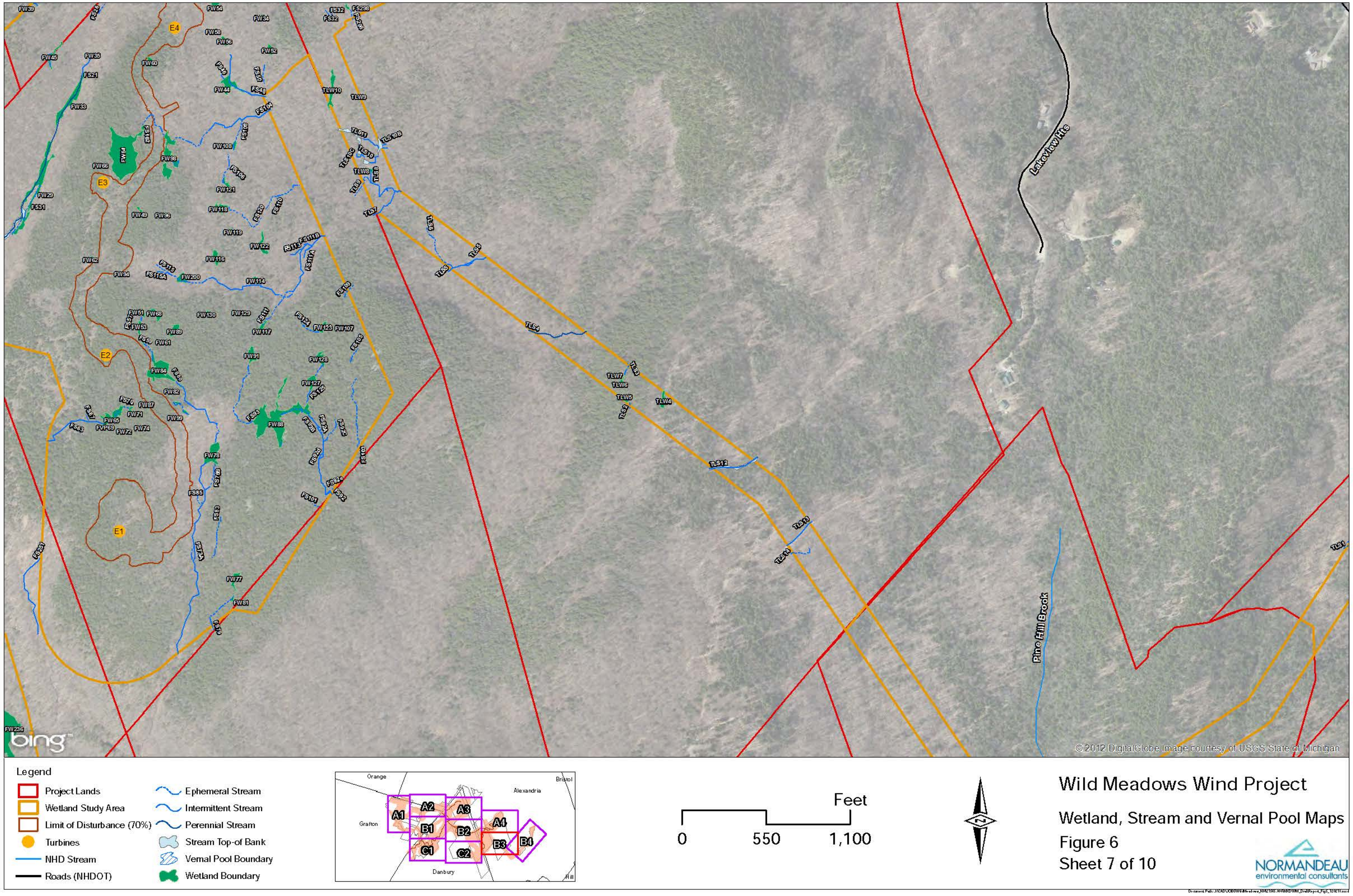

Taylor Brook
bing
© 2012 DigitalGlobe Image courtesy of USGS State of Michigan
Legend
Project Lands
Wetland Study Area
Limit of Disturbance (70%)
Turbines
NHD Stream
Roads (NHDOT)
Ephemeral Stream
Intermittent Stream
Perennial Stream
Stream Top-of Bank
Vernal Pool Boundary
Wetland Boundary
Orange
Bristol
Alexandria
Grafton
Danbury
Hill
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
Feet
0
550
1,100
Wild Meadows Wind Project
Wetland, Stream and Vernal Pool Maps
Figure 6
Sheet 6 of 10
NORMANDEAU
environmental consultants

(continued)



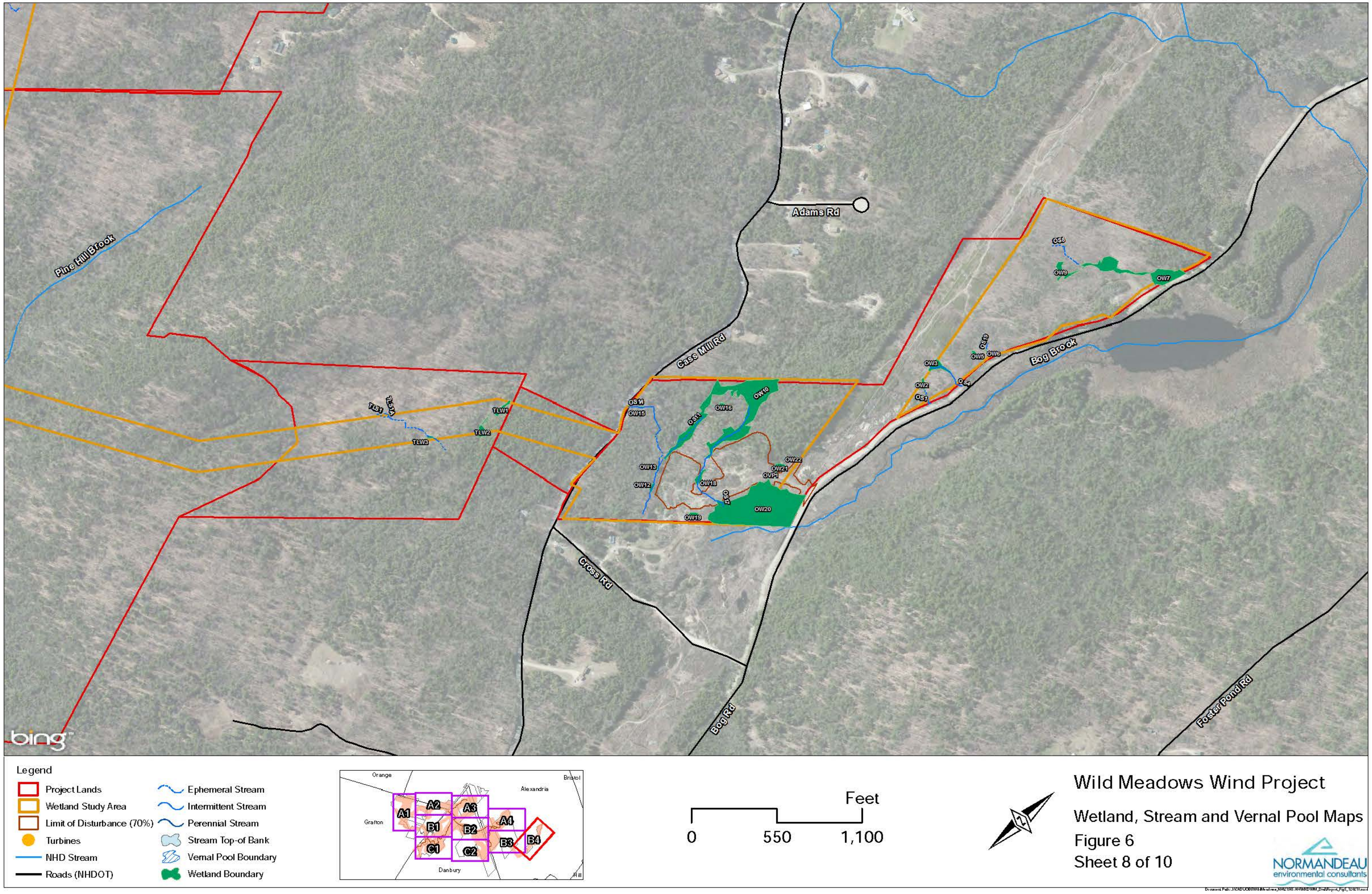
Wild Meadows Wind Project

Wetland, Stream and Vernal Pool Maps

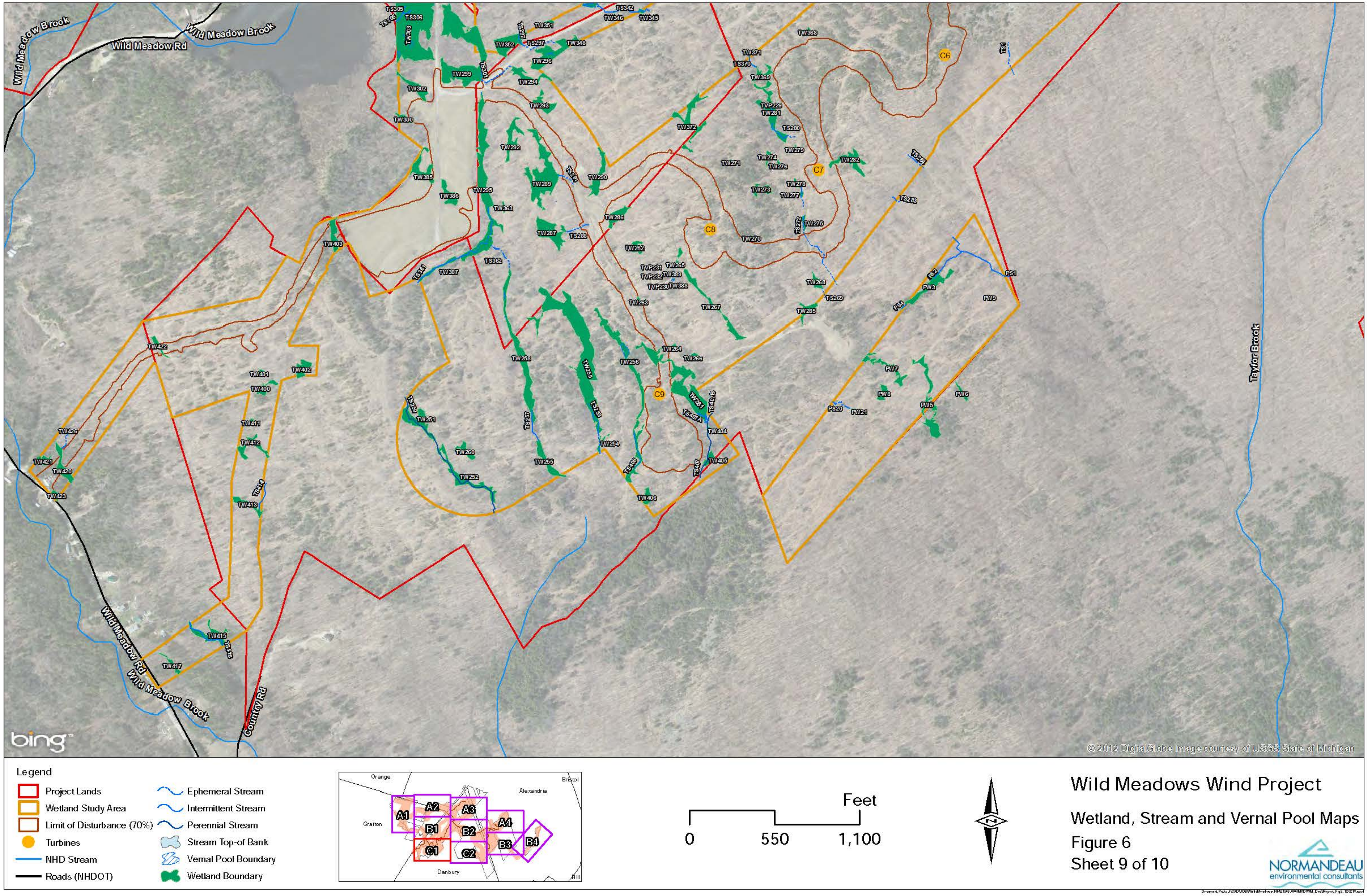
Figure 6

Sheet 7 of 10

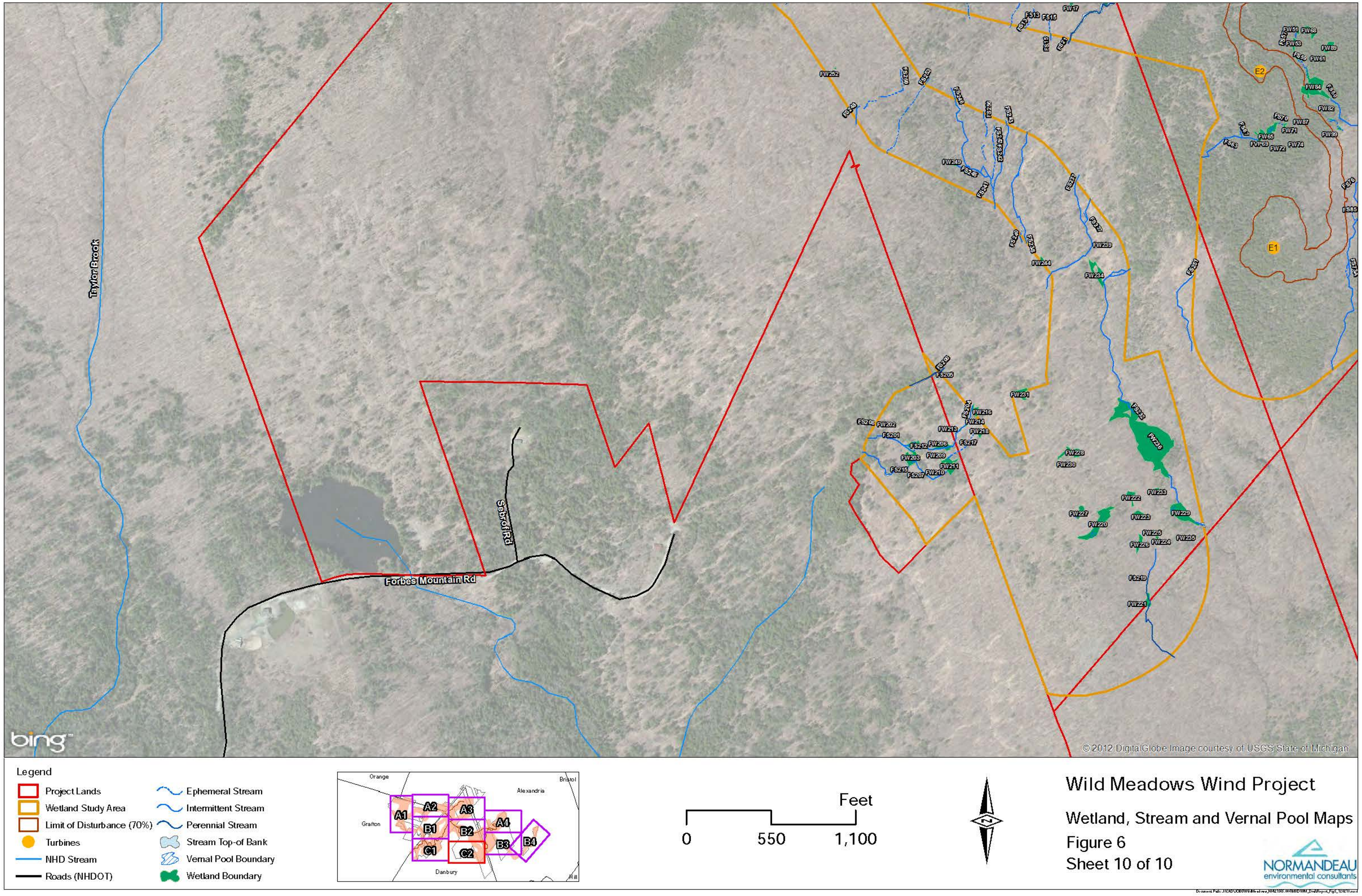
(continued)


Pine Hill Brook
Adams Rd
Cass Mill Rd
Cross Rd
Bog Rd
Bog Brook
Foster Pond Rd
TLS1
TLS1A
TLW1
TLW2
TLW3
OS14
OW15
OS11
OW16
OW10
OW13
OW12
OW18
OS17
OW19
OW20
OW21
OVP1
OW22
OW2
OS1
OW3
OS4
OW5
OW6
OS19
OS8
OW9
OW7
bing
Legend
Project Lands
Wetland Study Area
Limit of Disturbance (70%)
Turbines
NHD Stream
Roads (NHDOT)
Ephemeral Stream
Intermittent Stream
Perennial Stream
Stream Top-of Bank
Vernal Pool Boundary
Wetland Boundary
Orange
Bristol
Alexandria
Grafton
Danbury
Hill
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
Feet
0
550
1,100
N
Wild Meadows Wind Project
Wetland, Stream and Vernal Pool Maps
Figure 6
Sheet 8 of 10
NORMANDEAU
environmental consultants

(continued)


Wild Meadow Brook
Wild Meadow Rd
Wild Meadow Brook
Wild Meadow Rd
Wild Meadow Brook
Country Rd
Taylor Brook
C6
C7
C8
C9
bing
© 2012 DigitalGlobe Image courtesy of USGS State of Michigan
Legend
Project Lands
Wetland Study Area
Limit of Disturbance (70%)
Turbines
NHD Stream
Roads (NHDOT)
Ephemeral Stream
Intermittent Stream
Perennial Stream
Stream Top-of Bank
Vernal Pool Boundary
Wetland Boundary
Orange
Bristol
Alexandria
Grafton
Danbury
Hill
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
Feet
0
550
1,100
N
Wild Meadows Wind Project
Wetland, Stream and Vernal Pool Maps
Figure 6
Sheet 9 of 10
NORMANDEAU
environmental consultants

(continued)


Taylor Brook
Sebrof Rd
Forbes Mountain Rd
E1
E2
bing
© 2012 DigitalGlobe Image courtesy of USGS State of Michigan
Legend
Project Lands
Wetland Study Area
Limit of Disturbance (70%)
Turbines
NHD Stream
Roads (NHDOT)
Ephemeral Stream
Intermittent Stream
Perennial Stream
Stream Top-of Bank
Vernal Pool Boundary
Wetland Boundary
Orange
Bristol
Alexandria
Grafton
Danbury
Hill
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
Feet
0
550
1,100
N
Wild Meadows Wind Project
Wetland, Stream and Vernal Pool Maps
Figure 6
Sheet 10 of 10
NORMANDEAU
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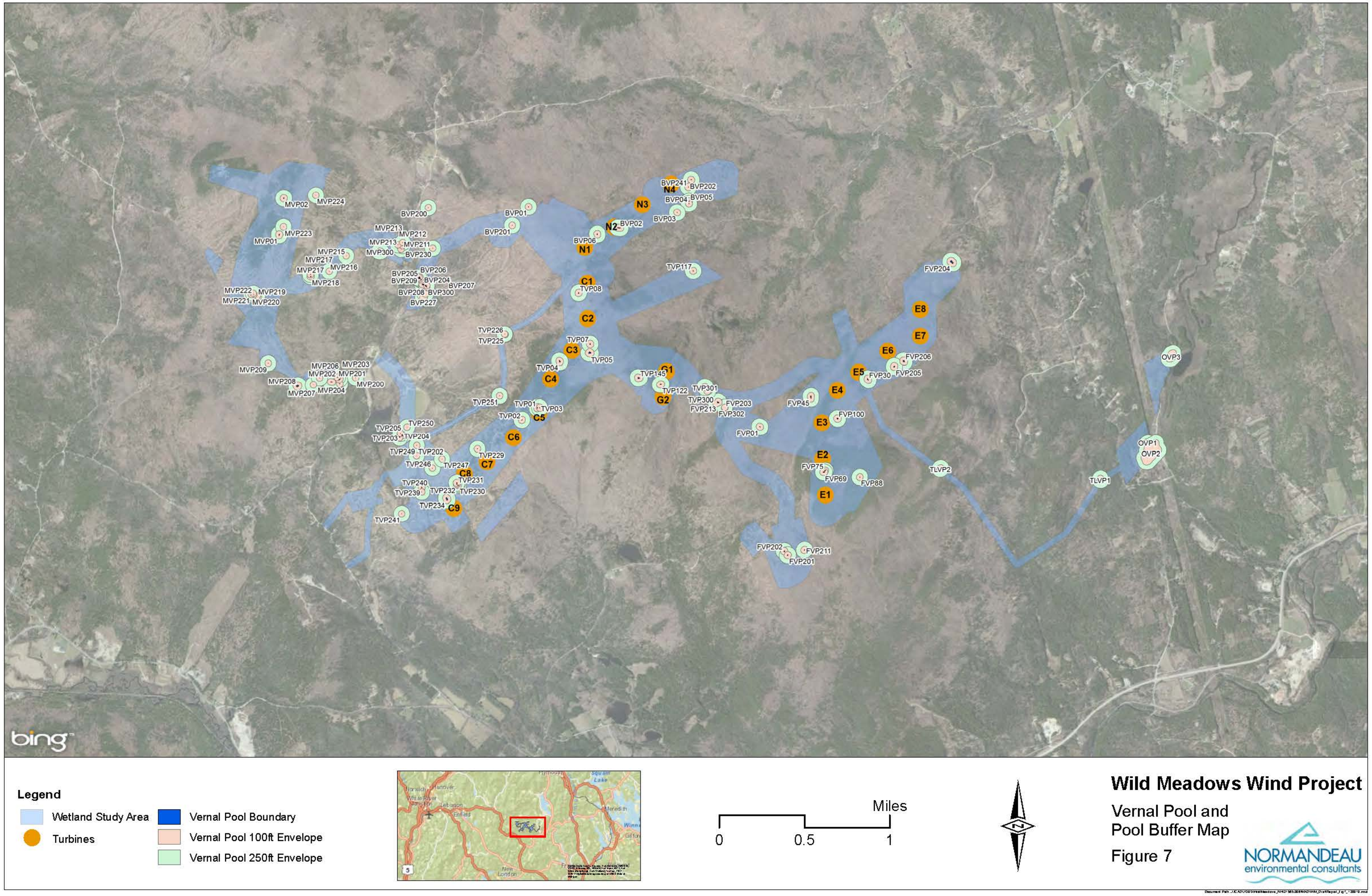


Figure 7: Vernal Pool and Pool Buffer Map for Project Area.

Appendix I-B

Summary of Delineated Streams within Study Area

Stream ID†	Flow Regime	Cowardin Class	Stream Segment Length (Ft.)
BARS9	Ephemeral	Riverine*	175
BS004	Ephemeral	Riverine*	391
BS004	Intermittent	R4SB3	395
BS004A	Ephemeral	Riverine*	71
BS004B	Intermittent	R4SB3	77
BS004C	Ephemeral	Riverine*	34
BS005	Ephemeral	Riverine*	530
BS006	Intermittent	R4SB13	156
BS006-2	Intermittent	R4SB13	524
BS009	Intermittent	R4SB5	148
BS010	Ephemeral	Riverine*	105
BS012	Ephemeral	Riverine*	87
BS013	Intermittent	R4SB134	500
BS014	Ephemeral	Riverine*	99
BS015	Ephemeral	Riverine*	135
BS017	Ephemeral	Riverine*	50
BS018	Intermittent	R4SB3	635
BS020	Ephemeral	Riverine*	121
BS021	Ephemeral	Riverine*	158
BS023	Ephemeral	Riverine*	45
BS025	Ephemeral	Riverine*	94
BS030	Ephemeral	Riverine*	166
BS032	Ephemeral	Riverine*	75
BS033	Ephemeral	Riverine*	88
BS037	Intermittent	R4SB346	471
BS042	Ephemeral	Riverine*	247
BS042	Intermittent	R4SB6	59
BS052	Ephemeral	Riverine*	70
BS201	Ephemeral	Riverine*	295
BS202	Ephemeral	Riverine*	93
BS203	Intermittent	R4SB26	1,159
BS203A	Ephemeral	Riverine*	51
BS204	Ephemeral	Riverine*	130
BS205	Ephemeral	Riverine*	197
BS210	Ephemeral	Riverine*	168
BS210	Intermittent	R4SB3	233
BS216	Perennial	R3UB1/2	453
BS217	Intermittent	R4SB34	827
BS219	Ephemeral	Riverine*	476
BS219	Intermittent	R4SB3	449
BS221	Ephemeral	Riverine*	168
BS222	Ephemeral	Riverine*	112
BS223	Ephemeral	Riverine*	290

Stream ID†	Flow Regime	Cowardin Class	Stream Segment Length (Ft.)
BS225	Intermittent	R4SB345	350
BS226	Ephemeral	Riverine*	156
BS230	Ephemeral	Riverine*	472
BS234	Ephemeral	Riverine*	59
BS235	Perennial	R3UB1/2	668
BS238	Ephemeral	Riverine*	53
BS248	Ephemeral	Riverine*	77
BS251	Ephemeral	Riverine*	30
BS253	Intermittent	R4SB45	218
BS255	Perennial	R3UB1/2	473
BS259	Intermittent	R4SB45	226
BS260	Intermittent	R4SB34	211
BS263	Ephemeral	Riverine*	243
BS301	Ephemeral	Riverine*	388
BS304	Intermittent	R4SB3	30
BS306	Ephemeral	Riverine*	323
FS002	Intermittent	R4SB3	1,410
FS003	Ephemeral	Riverine*	137
FS006	Ephemeral	Riverine*	84
FS008	Ephemeral	Riverine*	78
FS009	Ephemeral	Riverine*	205
FS011	Ephemeral	Riverine*	241
FS013	Ephemeral	Riverine*	144
FS015	Ephemeral	Riverine*	152
FS018	Ephemeral	Riverine*	125
FS020	Ephemeral	Riverine*	342
FS021	Intermittent	R4SB3	128
FS021	Perennial	R3UB1	2,138
FS022	Intermittent	R4SB23	459
FS025	Ephemeral	Riverine*	136
FS026	Ephemeral	Riverine*	275
FS026	Intermittent	R4SB34	1,054
FS028	Ephemeral	Riverine*	811
FS031	Ephemeral	Riverine*	391
FS032	Ephemeral	Riverine*	66
FS042	Ephemeral	Riverine*	180
FS043	Ephemeral	Riverine*	40
FS046	Intermittent	R4SB3	36
FS048	Intermittent	R4SB3	447
FS050	Ephemeral	Riverine*	128
FS057	Ephemeral	Riverine*	35
FS059	Ephemeral	Riverine*	144
FS063	Intermittent	R4SB3	445

Stream ID†	Flow Regime	Cowardin Class	Stream Segment Length (Ft.)
FS067	Ephemeral	Riverine*	53
FS070	Ephemeral	Riverine*	39
FS073A	Ephemeral	Riverine*	104
FS076	Intermittent	R4SB34	1,390
FS076B	Ephemeral	Riverine*	193
FS079	Ephemeral	Riverine*	322
FS080	Ephemeral	Riverine*	164
FS080	Intermittent	R4SB4	415
FS083	Ephemeral	Riverine*	287
FS085	Ephemeral	Riverine*	94
FS092	Ephemeral	Riverine*	232
FS092	Intermittent	R4SB13	631
FS092A	Ephemeral	Riverine*	65
FS092B	Ephemeral	Riverine*	16
FS092C	Ephemeral	Riverine*	188
FS092D	Intermittent	R4SB3	44
FS092E	Ephemeral	Riverine*	68
FS093	Ephemeral	Riverine*	506
FS095	Ephemeral	Riverine*	148
FS101	Ephemeral	Riverine*	68
FS102	Ephemeral	Riverine*	280
FS103	Ephemeral	Riverine*	482
FS104	Ephemeral	Riverine*	313
FS104	Intermittent	R4SB3	500
FS105	Ephemeral	Riverine*	120
FS106	Ephemeral	Riverine*	210
FS108	Ephemeral	Riverine*	211
FS109	Ephemeral	Riverine*	104
FS110	Ephemeral	Riverine*	193
FS111	Ephemeral	Riverine*	325
FS111	Intermittent	R4SB34	502
FS111A	Intermittent	R4SB4	100
FS111B	Intermittent	R4SB4	22
FS113	Intermittent	R4SB4	90
FS115	Ephemeral	Riverine*	507
FS115	Intermittent	R4SB3	528
FS115A	Ephemeral	Riverine*	98
FS120	Ephemeral	Riverine*	411
FS124	Ephemeral	Riverine*	139
FS125	Intermittent	R4SB34	89
FS126	Ephemeral	Riverine*	93
FS200	Perennial	R3UB1	260
FS201	Intermittent	R4SB2	318

Stream ID†	**Flow Regime**	**Cowardin Class**	**Stream Segment Length (Ft.)**
FS204	Intermittent	R4SB5	655
FS205	Perennial	R3UB1	47
FS207	Intermittent	R4SB23	297
FS212	Ephemeral	Riverine*	115
FS215	Intermittent	R4SB4	410
FS217	Ephemeral	Riverine*	249
FS219	Intermittent	R4SB3	152
FS219	Perennial	R3UB1	682
FS232	Intermittent	R4SB34	1,597
FS237	Ephemeral	Riverine*	50
FS237	Intermittent	R4SB3	1,111
FS238	Intermittent	R4SB23	847
FS240	Ephemeral	Riverine*	81
FS241	Intermittent	R4SB2	332
FS242	Ephemeral	Riverine*	66
FS242	Intermittent	R4SB2	223
FS243	Intermittent	R4SB1	256
FS245	Intermittent	R4SB2	243
FS246	Intermittent	R4SB34	593
FS247	Ephemeral	Riverine*	349
FS248	Intermittent	R4SB3	123
FS250	Ephemeral	Riverine*	410
FS251	Intermittent	R4SB3	574
FS253	Ephemeral	Riverine*	590
FS254	Ephemeral	Riverine*	365
FS256	Ephemeral	Riverine*	289
FS258	Intermittent	R4UB1	613
FS260	Ephemeral	Riverine*	136
FS261	Ephemeral	Riverine*	95
FS263	Ephemeral	Riverine*	327
FS266	Intermittent	R4SB3	439
FS266	Perennial	R3UB1	144
FS267	Intermittent	R4SB4	360
FS270	Ephemeral	Riverine*	244
FS274	Ephemeral	Riverine*	246
FS278	Ephemeral	Riverine*	467
FS278	Intermittent	R4SB3	197
FS279	Perennial	R3RB2/UB1	1,259
FS279A	Ephemeral	Riverine*	47
FS280	Perennial	R3RB1/UB12	1,311
FS282	Intermittent	R4SB46	154
FS284	Ephemeral	Riverine*	82
FS286	Ephemeral	Riverine*	1,173

Stream ID†	Flow Regime	Cowardin Class	Stream Segment Length (Ft.)
FS287	Ephemeral	Riverine*	56
FS290	Ephemeral	Riverine*	871
FS293	Intermittent	R4SB3	541
FS294	Ephemeral	Riverine*	99
FS295	Ephemeral	Riverine*	112
FS297	Ephemeral	Riverine*	146
FS298	Ephemeral	Riverine*	73
FS300	Ephemeral	Riverine*	504
FS304	Ephemeral	Riverine*	115
FS308	Ephemeral	Riverine*	614
FS310	Ephemeral	Riverine*	210
FS311	Ephemeral	Riverine*	948
FS313	Ephemeral	Riverine*	725
FS315	Ephemeral	Riverine*	117
FS322	Intermittent	R4SB3	76
FS324	Ephemeral	Riverine*	427
FS324A	Ephemeral	Riverine*	63
FS325	Ephemeral	Riverine*	186
FS326	Ephemeral	Riverine*	38
FS326	Intermittent	R4SB3	376
FS326A	Ephemeral	Riverine*	51
FS326B	Ephemeral	Riverine*	52
FS327	Ephemeral	Riverine*	1,169
FS327B	Ephemeral	Riverine*	436
FS327C	Ephemeral	Riverine*	165
FS328	Ephemeral	Riverine*	579
FS328A	Ephemeral	Riverine*	364
FS329	Ephemeral	Riverine*	154
MS001	Ephemeral	Riverine*	93
MS002	Ephemeral	Riverine*	267
MS003	Ephemeral	Riverine*	159
MS004	Ephemeral	Riverine*	186
MS008	Ephemeral	Riverine*	54
MS008	Intermittent	R4SB356	274
MS009	Intermittent	R4SB3	1,022
MS009	Intermittent	R4SB3	72
MS011	Ephemeral	Riverine*	181
MS012	Intermittent	R4SB3	96
MS013	Ephemeral	Riverine*	463
MS014	Ephemeral	Riverine*	443
MS017	Ephemeral	Riverine*	269
MS018	Ephemeral	Riverine*	418
MS019	Ephemeral	Riverine*	191

Stream ID†	Flow Regime	Cowardin Class	Stream Segment Length (Ft.)
MS204	Ephemeral	Riverine*	301
MS209	Intermittent	R4SB23	71
MS210	Intermittent	R4SB2	354
MS211	Ephemeral	Riverine*	150
MS213	Perennial	R3UB2	695
MS216	Ephemeral	Riverine*	81
MS219	Intermittent	R4SB5	794
MS223	Intermittent	R4SB56	394
MS224	Perennial	R3UB12	1,117
MS233	Ephemeral	Riverine*	121
MS235	Ephemeral	Riverine*	226
MS239	Ephemeral	Riverine*	216
MS241	Ephemeral	Riverine*	171
MS244	Ephemeral	Riverine*	366
MS248	Ephemeral	Riverine*	394
MS249	Ephemeral	Riverine*	510
MS250	Perennial	R3RB2/UB1	981
MS251	Perennial	R3RB2	107
MS253	Ephemeral	Riverine*	212
MS255	Ephemeral	Riverine*	1,196
MS259	Ephemeral	Riverine*	443
MS261	Ephemeral	Riverine*	435
MS262	Ephemeral	Riverine*	924
MS264	Ephemeral	Riverine*	97
MS265	Ephemeral	Riverine*	488
MS266	Perennial	R3RB2/UB1	760
MS269	Intermittent	R4SB3	981
MS300	Ephemeral	Riverine*	95
MS304	Ephemeral	Riverine*	380
MS307	Ephemeral	Riverine*	40
MS309	Ephemeral	Riverine*	36
MS314	Ephemeral	Riverine*	383
MS314	Intermittent	R4SB3	372
OS01	Ephemeral	Riverine*	109
OS04	Intermittent	R4SB26	279
OS08	Ephemeral	Riverine*	239
OS11	Ephemeral	Riverine*	441
OS11	Intermittent	R4SB26	341
OS14	Ephemeral	Riverine*	214
OS14	Intermittent	R4SB3	374
OS17	Intermittent	R4SB236	916
OS19	Ephemeral	Riverine*	57
PS001	Intermittent	R4SB3	503

Stream ID†	**Flow Regime**	**Cowardin Class**	**Stream Segment Length (Ft.)**
PS002	Intermittent	R4SB3	260
PS004	Intermittent	R4SB56	44
PS020	Ephemeral	Riverine*	144
TLS01	Ephemeral	Riverine*	557
TLS02	Ephemeral	Riverine*	56
TLS03	Ephemeral	Riverine*	86
TLS04	Intermittent	R4SB3	416
TLS05	Intermittent	R4SB3	81
TLS05	Intermittent	R4SB3	278
TLS06	Ephemeral	Riverine*	341
TLS07	Intermittent	R4SB3	286
TLS08	Intermittent	R4SB3	375
TLS09	Ephemeral	Riverine*	204
TLS10	Intermittent	R4SB3	104
TLS10	Intermittent	R4SB3	27
TLS10A	Intermittent	R4SB3	36
TLS10B	Intermittent	R4SB3	31
TLS10C	Intermittent	R4SB3	57
TLS11	Ephemeral	Riverine*	127
TLS12	Perennial	R2RB2	337
TLS13	Ephemeral	Riverine*	237
TLS14	Ephemeral	Riverine*	178
TLS1A	Ephemeral	Riverine*	49
TS001	Ephemeral	Riverine*	229
TS002	Intermittent	R4SB1	448
TS002b	Intermittent	R4SB3	18
TS002c	Ephemeral	Riverine*	38
TS003	Intermittent	R4SB1	355
TS006	Ephemeral	Riverine*	184
TS009	Ephemeral	Riverine*	181
TS012	Ephemeral	Riverine*	127
TS013	Ephemeral	Riverine*	89
TS014	Intermittent	R4SB3	289
TS015	Ephemeral	Riverine*	33
TS016	Ephemeral	Riverine*	289
TS017	Ephemeral	Riverine*	57
TS018	Ephemeral	Riverine*	83
TS020	Ephemeral	Riverine*	160
TS022	Ephemeral	Riverine*	106
TS025	Ephemeral	Riverine*	205
TS026	Intermittent	R4SB3	586
TS027	Ephemeral	Riverine*	26
TS031	Ephemeral	Riverine*	133

Stream ID†	Flow Regime	Cowardin Class	Stream Segment Length (Ft.)
TS034	Ephemeral	Riverine*	215
TS035	Ephemeral	Riverine*	943
TS037	Ephemeral	Riverine*	178
TS038	Ephemeral	Riverine*	156
TS043	Ephemeral	Riverine*	416
TS044	Ephemeral	Riverine*	312
TS045	Ephemeral	Riverine*	221
TS045	Intermittent	R4SB3	378
TS046	Ephemeral	Riverine*	131
TS047	Ephemeral	Riverine*	58
TS048	Ephemeral	Riverine*	95
TS049	Ephemeral	Riverine*	278
TS052	Ephemeral	Riverine*	119
TS054	Ephemeral	Riverine*	436
TS056	Ephemeral	Riverine*	138
TS056A	Ephemeral	Riverine*	43
TS059	Ephemeral	Riverine*	91
TS063	Ephemeral	Riverine*	73
TS064	Ephemeral	Riverine*	212
TS065	Ephemeral	Riverine*	427
TS067	Ephemeral	Riverine*	77
TS068	Intermittent	R4SB34	858
TS069	Ephemeral	Riverine*	81
TS070	Ephemeral	Riverine*	98
TS070	Intermittent	R4SB3	77
TS071	Ephemeral	Riverine*	59
TS072	Ephemeral	Riverine*	46
TS073	Ephemeral	Riverine*	136
TS074	Ephemeral	Riverine*	36
TS075	Ephemeral	Riverine*	154
TS080	Ephemeral	Riverine*	99
TS093	Intermittent	R4SB3	233
TS093a	Intermittent	R4SB3	24
TS094	Ephemeral	Riverine*	65
TS095	Intermittent	R4SB3	225
TS096	Ephemeral	Riverine*	312
TS099	Ephemeral	Riverine*	290
TS100	Ephemeral	Riverine*	70
TS101	Ephemeral	Riverine*	270
TS101a	Ephemeral	Riverine*	112
TS103	Ephemeral	Riverine*	117
TS103	Intermittent	R4SB3	1,176
TS103b	Ephemeral	Riverine*	119

Stream ID†	Flow Regime	Cowardin Class	Stream Segment Length (Ft.)
TS103c	Ephemeral	Riverine*	44
TS103d	Ephemeral	Riverine*	183
TS110	Ephemeral	Riverine*	289
TS111	Ephemeral	Riverine*	329
TS113	Ephemeral	Riverine*	35
TS115	Ephemeral	Riverine*	344
TS119	Ephemeral	Riverine*	139
TS123	Ephemeral	Riverine*	1,224
TS127	Ephemeral	Riverine*	103
TS132	Ephemeral	Riverine*	82
TS133	Ephemeral	Riverine*	55
TS134	Ephemeral	Riverine*	355
TS135	Ephemeral	Riverine*	108
TS137	Ephemeral	Riverine*	64
TS138	Ephemeral	Riverine*	99
TS139	Intermittent	R4SB4	50
TS140	Ephemeral	Riverine*	296
TS141	Ephemeral	Riverine*	136
TS143	Ephemeral	Riverine*	42
TS148	Ephemeral	Riverine*	103
TS200	Ephemeral	Riverine*	282
TS250	Perennial	R3RB2	1,100
TS253	Ephemeral	Riverine*	349
TS257	Intermittent	R4SB5	212
TS269	Ephemeral	Riverine*	60
TS272	Ephemeral	Riverine*	679
TS280	Ephemeral	Riverine*	62
TS280	Intermittent	R4SB46	170
TS283	Ephemeral	Riverine*	75
TS284	Ephemeral	Riverine*	144
TS288	Ephemeral	Riverine*	165
TS291	Ephemeral	Riverine*	130
TS297	Ephemeral	Riverine*	304
TS298	Ephemeral	Riverine*	61
TS301	Ephemeral	Riverine*	294
TS304	Perennial	R3UB2	492
TS305	Intermittent	R4SB4	124
TS306	Intermittent	R4SB4	65
TS308	Ephemeral	Riverine*	331
TS310	Intermittent	R4SB12	262
TS312	Ephemeral	Riverine*	161
TS313	Perennial	R3RB12	306
TS315	Ephemeral	Riverine*	228

Stream ID†	Flow Regime	Cowardin Class	Stream Segment Length (Ft.)
TS317	Ephemeral	Riverine*	176
TS318	Ephemeral	Riverine*	56
TS319	Intermittent	R4SB23	301
TS323	Ephemeral	Riverine*	103
TS326	Ephemeral	Riverine*	84
TS328	Ephemeral	Riverine*	161
TS328	Intermittent	R4SB36	179
TS331	Intermittent	R4SB3	242
TS332	Ephemeral	Riverine*	52
TS333	Ephemeral	Riverine*	250
TS334	Ephemeral	Riverine*	124
TS335	Ephemeral	Riverine*	274
TS338	Ephemeral	Riverine*	86
TS339	Intermittent	R4SB3	431
TS341	Ephemeral	Riverine*	65
TS342	Intermittent	R4SB34	534
TS342A	Ephemeral	Riverine*	109
TS343	Ephemeral	Riverine*	115
TS349	Ephemeral	Riverine*	144
TS354	Intermittent	R4SB4	592
TS356	Intermittent	R4SB3	503
TS358	Perennial	R3UB1	600
TS361	Ephemeral	Riverine*	342
TS361	Intermittent	R4SB3	471
TS362	Ephemeral	Riverine*	208
TS366	Ephemeral	Riverine*	130
TS367	Ephemeral	Riverine*	228
TS370	Intermittent	R4SB234	94
TS373	Ephemeral	Riverine*	387
TS374	Ephemeral	Riverine*	186
TS375	Ephemeral	Riverine*	225
TS375A	Ephemeral	Riverine*	123
TS376	Ephemeral	Riverine*	163
TS377	Ephemeral	Riverine*	192
TS378	Ephemeral	Riverine*	349
TS379	Ephemeral	Riverine*	149
TS380	Ephemeral	Riverine*	315
TS381	Ephemeral	Riverine*	769
TS384	Ephemeral	Riverine*	298
TS407	Perennial	R3SB6	456
TS407A	Intermittent	R4SB6	118
TS407B	Ephemeral	Riverine*	56
TS408	Ephemeral	Riverine*	260

Stream ID†	Flow Regime	Cowardin Class	Stream Segment Length (Ft.)
TS414	Intermittent	R4SB34	184
TS416	Intermittent	R4SB45	308
TS430	Ephemeral	Riverine*	114
† = Duplicates indicate streams with multiple flow regimes			
* = There is no Cowardin classification for ephemeral streams			

Summary of Delineated Wetlands within Study Area

Wetland ID	Cowardin Class	Area (Sq. Ft)	Area (Acres)	GW	FF	FSH	STR	NUT	PE	SSS	WH	REC	EDU	UH	VQ	RTE
BW001	PEM1/FO1	4,391	0.101	0	0	0	0	1	0	1	1	0	1	0	1	0
BW002	PEM1	2,369	0.054	1	1	0	1	1	0	0	1	0	0	0	0	0
BW007	PFO1	2,305	0.053	2	1	0	1	1	0	0	1	0	0	0	0	0
BW011	PEM1/SS14/FO14	32,104	0.737	2	2	0	1	1	0	0	2	0	0	0	0	0
BW016	PFO4/FO1/EM1	11,385	0.261	1	1	0	1	1	0	1	1	0	0	0	0	0
BW017	PEM1/FO4	2,730	0.063	1	1	1	1	0	0	1	1	0	0	0	0	0
BW019	PEM1	1,952	0.045	1	1	0	1	1	0	1	1	0	0	0	0	0
BW024	PEM1	495	0.011	0	0	0	0	0	0	0	1	0	0	0	0	0
BW026	PFO41	629	0.014	0	0	0	0	0	0	0	1	0	0	0	0	0
BW028	PFO4	8,998	0.207	1	1	0	1	1	0	0	1	0	1	0	1	0
BW029	PFO1	959	0.022	1	0	0	1	1	0	0	1	0	0	0	0	0
BW031	PFO1	1,024	0.024	1	1	0	1	1	0	0	1	0	1	0	1	0
BW036	PEM1/FO1/SS1	5,737	0.132	1	0	0	1	1	0	0	1	0	0	0	0	0
BW038	PFO41	3,194	0.073	2	1	0	0	0	0	1	1	0	0	0	0	0
BW041	PFO1/SS1/EM1	1,189	0.027	1	1	0	1	1	0	0	0	0	0	0	0	0
BW043	PEM1/FO1	4,215	0.097	1	0	0	1	1	0	0	0	0	0	0	0	0
BW044	PEM1	468	0.011	0	1	0	0	1	0	0	0	0	0	0	0	0
BW045	PFO1/EM1	591	0.014	1	0	0	0	0	0	0	0	0	0	0	0	0
BW046	PEM1	467	0.011	1	0	0	0	0	0	0	0	0	0	0	0	0
BW051	PEM1	148	0.003	1	1	0	0	0	0	0	0	0	0	0	0	0
BW053	PEM1	912	0.021	1	0	0	0	0	0	0	0	0	0	0	0	0
BW060	PFO14	708	0.016	2	2	0	1	1	0	0	1	0	0	0	0	0
BW200	PFO1B	561	0.013	2	0	0	0	0	0	0	1	0	0	0	0	0
BW206	PEM1E	648	0.015	0	0	0	1	0	1	0	2	0	0	0	0	0
BW207	PEM1B	434	0.010	1	0	0	1	0	1	0	1	0	0	0	0	0
BW208	PEM1B	9,647	0.221	1	0	0	1	1	0	0	2	0	0	0	0	0
BW209	PEM1B	2,038	0.047	1	0	0	1	0	0	0	1	0	0	0	0	0
BW211	PEM1B	696	0.016	2	0	0	0	0	0	0	1	0	0	0	0	0
BW212	PEM1B	563	0.013	1	0	0	1	0	0	0	0	0	0	0	0	0
BW213	PEM1B	349	0.008	1	0	0	1	0	0	0	0	0	0	0	0	0
BW214	PEM1Ex	13,570	0.312	1	1	0	2	1	1	0	2	0	0	0	0	0
BW215	PEM1E	1,505	0.035	1	0	0	1	1	1	0	2	0	0	0	0	0
BW218	PSS1Ex	812	0.019	1	0	0	1	0	0	0	1	0	0	0	0	0
BW220	PFO1B	34,875	0.801	2	1	0	2	1	0	1	1	0	0	0	0	0
BW224	PEM1B	706	0.016	1	1	0	1	0	0	0	1	0	0	0	0	0
BW227	PFO1B	953	0.022	1	0	0	0	0	0	0	1	0	0	0	0	0
BW228	PFO1E	2,948	0.068	1	1	0	0	0	0	1	1	0	0	0	0	0
BW229	PFO14B	78,762	1.808	2	0	0	1	1	0	0	1	0	0	0	0	0
BW231	PFO1B	1,706	0.039	2	0	0	1	0	0	0	1	0	0	0	0	0
BW232	PFO1B	854	0.020	2	1	0	1	0	0	0	1	0	0	0	0	0
BW233	PFO1E	26,419	0.607	2	1	0	1	1	0	0	1	0	0	0	0	0
BW236	PFO1E	7,154	0.164	2	2	1	1	1	1	2	1	0	0	0	0	0
BW237	PEM1E	799	0.018	2	1	0	1	1	0	0	2	0	0	0	0	0
BW239	PEM1E	148	0.003	2	1	1	1	1	0	0	1	0	0	0	0	0
BW240	PSS1E	446	0.010	2	1	0	1	1	0	1	1	0	0	0	0	0
BW241	PSS1E	813	0.019	0	0	0	1	1	0	0	0	0	0	0	0	0
BW242	PEM1E	650	0.015	1	2	1	2	1	0	1	1	0	0	0	0	0
BW243	PEM1E	5,605	0.129	2	2	1	1	1	0	1	1	0	0	0	1	0

Wetland ID	Cowardin Class	Area (Sq. Ft)	Area (Acres)	GW	FF	FSH	STR	NUT	PE	SSS	WH	REC	EDU	UH	VQ	RTE
BW244	PFO1E	1,437	0.033	0	1	0	2	2	0	2	0	0	0	0	0	0
BW245	PEM1E	4,268	0.098	1	0	0	1	1	0	0	1	0	0	0	0	0
BW246	PEM1E/FO1E	27,822	0.639	1	0	0	2	1	0	0	1	0	0	0	0	0
BW247	PFO1E	17,808	0.409	1	2	0	2	1	1	0	1	0	0	0	0	0
BW250	PEM1B	1,120	0.026	2	1	0	1	1	1	1	1	0	0	0	0	0
BW252	PEM1B/SS1B	11,115	0.255	2	1	0	1	1	1	0	1	0	0	0	0	0
BW254	PFO4/EM1B	1,619	0.037	2	1	0	2	2	1	1	1	0	0	0	0	0
BW256	PEM1	2,413	0.055	2	0	0	2	1	1	0	1	0	0	0	0	0
BW257	PFO14B/EM1B	2,067	0.047	2	0	0	0	0	1	0	1	0	0	0	0	0
BW258	PEM1B/FO1B	1,584	0.036	2	0	0	1	1	0	0	0	0	0	0	0	0
BW261	PFO1/EM1B	5,581	0.128	2	1	0	2	2	1	1	1	0	0	0	0	0
BW262	PEM1A/SS1B	1,607	0.037	2	0	0	1	1	0	0	2	0	0	0	0	0
BW262A	PEM1A/SS1B	217	0.005	2	0	0	1	1	0	0	2	0	0	0	0	0
BW300	PEM2	1,848	0.042	1	1	0	2	1	0	1	1	0	0	0	0	0
BW302	PEM2	1,699	0.039	1	1	0	2	1	0	1	0	0	0	0	0	0
BW303	PEM1	128	0.003	1	1	0	2	1	0	1	1	0	0	0	0	0
BW305	PEM1	1,224	0.028	1	1	0	2	1	0	1	1	0	0	0	0	0
BW307	PEM2	442	0.010	1	0	0	1	1	0	0	1	0	0	0	0	0
BW308	PEM2	2,047	0.047	1	0	0	1	1	0	0	1	0	0	0	0	0
BW309	PUB	147	0.003	0	0	0	0	0	1	0	2	0	0	0	0	0
BW310	PUB	245	0.006	0	0	0	0	0	1	0	2	0	0	0	0	0
BW311	PUBC	241	0.006	0	0	0	0	0	0	0	2	0	0	0	0	1
FW001	PEM1	20,796	0.477	2	1	1	2	0	0	2	0	0	0	0	0	0
FW004	PEM1	704	0.016	2	0	0	1	0	0	2	1	0	0	0	0	0
FW005	PFO1	9,711	0.223	2	0	0	2	2	0	0	1	0	0	0	0	0
FW007	PFO1	256	0.006	0	0	0	0	0	0	0	0	0	0	0	0	0
FW010	PFO14	1,439	0.033	1	1	0	1	0	1	2	1	0	0	0	0	0
FW012	PEM1	1,730	0.040	1	0	0	1	0	0	2	1	0	0	0	0	0
FW014	PFO14/EM1	4,806	0.110	1	1	0	1	0	1	2	2	0	0	0	0	0
FW016	PFO14	1,444	0.033	2	0	0	0	0	1	0	1	0	0	0	0	0
FW017	PFO1/EM1	1,885	0.043	2	0	0	0	0	0	0	0	0	0	0	0	0
FW019	PFO1/EM1	4,476	0.103	2	0	0	1	1	0	0	1	0	0	0	0	0
FW023	PEM1E	608	0.014	1	2	0	1	1	1	1	0	0	0	0	0	0
FW024	PFO14	7,751	0.178	2	1	0	1	1	0	1	2	0	0	0	0	0
FW027	PFO1	2,721	0.062	1	1	0	0	0	1	2	1	0	0	0	1	0
FW029	PFO1/EM1	21,779	0.500	2	2	1	1	1	1	2	2	0	0	0	0	0
FW030	PFO14	8,952	0.205	1	1	0	1	1	1	0	2	0	0	0	1	0
FW033	PFO1/EM1	10,426	0.239	2	2	1	2	1	0	2	2	0	0	0	0	0
FW034	PFO1	345	0.008	1	0	0	0	0	0	0	1	0	0	0	0	0
FW035	PFO1	400	0.009	1	0	0	0	0	0	0	1	0	0	0	0	0
FW036	PFO14	1,468	0.034	1	0	0	1	0	0	0	2	0	0	0	0	0
FW038	PFO14E	194	0.004	0	0	0	0	0	0	0	1	0	0	0	0	0
FW039	PFO14/EM1	472	0.011	2	1	0	1	0	1	0	1	0	0	0	0	0
FW040	PFO1/FO4	4,643	0.107	2	0	0	1	0	0	0	2	0	0	0	0	0
FW044	PFO1	6,533	0.150	2	1	0	0	0	0	1	1	0	0	0	0	0
FW045	PFO14	2,602	0.060	2	0	0	1	0	1	0	1	0	0	0	0	0
FW049	PFO4	1,093	0.025	2	0	0	1	0	0	0	1	0	0	0	0	0
FW051	PFO4	372	0.009	2	0	0	1	0	0	0	2	0	0	0	0	0

Wetland ID	Cowardin Class	Area (Sq. Ft)	Area (Acres)	GW	FF	FSH	STR	NUT	PE	SSS	WH	REC	EDU	UH	VQ	RTE
FW052	PFO14	2,089	0.048	1	0	0	0	0	1	0	2	0	0	0	1	0
FW053	PFO4	2,099	0.048	2	2	0	1	1	0	0	0	0	0	0	0	0
FW054	PFO14	1,958	0.045	1	0	0	1	0	0	0	2	0	0	0	0	0
FW056	PFO1	1,038	0.024	2	0	0	0	0	0	0	1	0	0	0	0	0
FW058	PFO1	649	0.015	2	0	0	0	0	0	0	1	0	0	0	0	0
FW060	PFO41	1,384	0.032	1	0	0	1	1	1	0	2	0	0	0	0	0
FW061	PFO4	434	0.010	2	0	0	1	1	0	0	1	0	0	0	0	0
FW062	PFO14	677	0.016	2	0	0	0	0	1	0	1	0	0	0	0	0
FW064	PFO4	42,494	0.976	2	1	0	1	1	0	1	2	0	1	1	1	1
FW065	PFO14	7,502	0.172	2	0	0	1	1	0	0	1	0	0	0	1	0
FW066	PFO4	195	0.004	1	0	0	0	0	0	0	0	0	0	0	0	0
FW068	PFO4	3,347	0.077	1	0	0	0	0	1	0	2	0	0	0	1	0
FW071	PFO14	1,297	0.030	2	1	0	1	0	0	1	1	0	0	0	0	0
FW072	PFO4	902	0.021	2	0	0	1	0	1	0	1	0	0	0	0	0
FW074	PFO14	635	0.015	2	0	0	1	1	0	0	1	0	0	0	0	0
FW077	PFO14	2,908	0.067	2	0	0	0	0	0	0	1	0	0	0	0	0
FW078	PFO14/EM1	8,470	0.194	2	1	0	2	1	1	0	1	0	0	0	0	0
FW081	PFO4	491	0.011	1	0	0	0	0	0	0	1	0	0	0	0	0
FW082	PFO41	115	0.003	2	1	0	1	0	1	0	0	0	0	0	0	0
FW084	PFO4	14,162	0.325	1	2	0	1	0	1	0	1	0	0	0	1	0
FW087	PFO4	799	0.018	1	0	0	0	0	0	0	2	0	0	0	0	0
FW088	PFO41	37,010	0.850	1	0	0	0	0	0	0	1	0	0	0	1	0
FW089	PFO4	2,982	0.068	1	0	0	0	0	0	0	2	0	0	0	1	0
FW091	PFO41	4,120	0.095	1	0	0	0	0	0	0	2	0	0	0	1	0
FW094	PFO14	444	0.010	0	0	0	0	0	0	0	0	0	0	0	0	0
FW096	PFO14	252	0.006	2	0	0	0	0	0	0	1	0	0	0	0	0
FW097	PFO4	316	0.007	1	0	0	0	0	0	1	2	0	0	0	0	0
FW098	PFO14/EM1	13,073	0.300	2	1	0	1	1	1	1	1	0	0	0	1	0
FW099	PFO1	515	0.012	1	2	0	0	0	0	1	1	0	0	0	0	0
FW107	PFO4	170	0.004	1	0	0	0	0	0	0	0	0	0	0	0	0
FW108	PFO1	1,075	0.025	2	0	0	0	0	0	0	1	0	0	0	0	0
FW114	PFO14	729	0.017	1	2	0	1	1	0	1	1	0	0	0	0	0
FW116	PFO14	2,922	0.067	2	0	0	0	0	0	0	1	0	0	0	0	0
FW117	PFO4	1,186	0.027	1	0	0	0	0	0	0	1	0	0	0	1	0
FW118	PFO1	3,782	0.087	2	0	0	1	0	0	0	1	0	0	0	0	0
FW119	PFO14	719	0.017	2	0	0	1	1	0	0	1	0	0	0	0	0
FW121	PFO1	1,228	0.028	2	1	0	0	0	0	0	1	0	0	0	0	0
FW122	PFO14	3,440	0.079	2	0	0	1	1	0	0	1	0	0	0	0	0
FW123	PFO4	1,668	0.038	2	0	0	1	0	0	0	1	0	0	0	0	0
FW127	PFO4	3,413	0.078	2	1	0	0	1	0	1	0	0	0	0	0	0
FW128	PFO41	2,968	0.068	2	1	0	1	0	0	0	1	0	0	0	0	0
FW129	PFO14	154	0.004	1	0	0	0	0	0	0	0	0	0	0	0	0
FW130	PFO14	895	0.021	1	0	0	0	0	0	0	1	0	0	0	0	0
FW200	PFO1Y	3,170	0.073	2	0	0	1	0	0	1	1	0	0	0	0	0
FW202	PSS1C	394	0.009	1	0	0	2	0	0	0	1	0	0	0	0	0
FW203	PFO14C	7,727	0.177	2	0	0	1	0	1	1	1	0	0	0	0	0
FW206	PFO14B	3,078	0.071	2	0	0	0	0	1	1	1	0	0	0	0	0
FW209	PFO1E	260	0.006	1	0	0	0	0	0	0	1	0	0	0	0	0

Wetland ID	Cowardin Class	Area (Sq. Ft)	Area (Acres)	GW	FF	FSH	STR	NUT	PE	SSS	WH	REC	EDU	UH	VQ	RTE
FW210	PEM1E	230	0.005	1	0	0	1	0	1	1	1	0	0	0	0	0
FW211	PEM1E/FO14B	6,016	0.138	2	0	0	1	0	1	0	1	0	0	0	0	0
FW213	PEM1	264	0.006	1	0	0	0	0	1	2	1	0	0	0	0	0
FW214	PEM1B	368	0.008	0	0	0	0	0	0	2	0	0	0	0	0	0
FW216	PEM1	2,027	0.047	0	0	0	0	0	0	2	0	0	0	0	0	0
FW218	PEM1	1,091	0.025	1	0	0	2	0	1	0	1	0	0	0	0	0
FW220	PFO14C	12,747	0.293	1	1	0	1	1	0	0	2	0	0	0	1	0
FW221	PSS1B/FO1B	2,234	0.051	1	2	1	1	1	1	1	1	0	0	0	0	0
FW222	PFO1A	2,267	0.052	2	0	0	1	0	0	0	1	0	0	0	0	0
FW223	PSS1E	3,604	0.083	1	0	0	1	1	0	0	2	0	0	0	1	0
FW224	PEM1E	293	0.007	2	0	0	1	1	0	0	1	0	0	0	0	0
FW225	PEM1E	405	0.009	2	0	0	1	1	0	0	1	0	0	0	0	0
FW226	POW/EM1E	2,729	0.063	2	0	0	1	1	0	0	2	0	0	0	0	0
FW227	PFO1E/EM1C	2,909	0.067	1	0	0	1	1	0	0	2	0	0	0	0	0
FW228	PFO1B	4,173	0.096	2	0	0	1	0	0	0	1	0	0	0	0	0
FW229	PSS1E	11,763	0.270	2	1	0	1	1	1	2	2	0	0	0	0	0
FW230	PEM1B	720	0.017	1	0	0	2	0	0	0	0	0	0	0	0	0
FW231	PFO14B	3,847	0.088	1	0	0	1	1	0	0	2	0	0	0	1	0
FW233	PFO14E	1,098	0.025	1	0	0	2	1	0	0	0	0	0	0	0	0
FW234	PEM1E/FO1E	5,955	0.137	2	0	0	1	1	1	0	1	0	0	0	0	0
FW235	PEM1E	224	0.005	0	0	0	0	0	0	0	0	0	0	0	0	0
FW236	PFO14	69,855	1.604	2	1	1	1	1	1	1	1	0	0	0	0	0
FW239	PEM1E/SS1E	123	0.003	2	0	0	1	1	0	1	1	0	0	0	0	0
FW244	POW1E	1,479	0.034	2	0	0	2	1	0	0	1	0	0	0	0	0
FW249	PFO14	492	0.011	2	0	0	0	0	1	0	1	0	0	0	0	0
FW252	POWE	715	0.016	2	0	0	1	1	0	0	1	0	0	0	0	0
FW257	POW	923	0.021	2	0	0	1	1	0	0	1	0	0	0	0	0
FW259	PFO1B	1,907	0.044	0	0	0	1	1	1	2	0	0	0	0	0	0
FW262	PFO1B	1,919	0.044	0	0	0	0	0	1	2	1	0	0	0	0	0
FW264	PFO1E	6,665	0.153	2	0	0	1	1	0	1	1	0	0	0	0	0
FW265	PEM1B	361	0.008	2	1	0	1	1	0	0	1	0	0	0	0	0
FW268	PEM1B	498	0.011	2	1	0	1	1	0	0	1	0	0	0	0	0
FW269	PFO14E	39,454	0.906	2	1	0	1	1	1	1	1	0	0	0	1	0
FW271	PEM1E	25,551	0.587	1	0	0	1	1	0	0	1	0	0	0	0	1
FW272	PFO1B	2,354	0.054	1	0	0	1	0	0	0	1	0	0	0	0	0
FW273	PFO1B	762	0.017	2	0	0	0	0	0	0	0	0	0	0	0	0
FW275	PFO14E	33,414	0.767	2	0	0	1	1	0	0	2	0	0	0	0	0
FW276	PFO1	1,850	0.042	0	0	0	0	0	1	2	1	0	0	0	0	0
FW277	PEM1E	10,799	0.248	2	0	0	1	1	0	0	1	0	0	0	0	0
FW277A	PEM1/FO1E	1,018	0.023	2	0	0	0	0	0	0	1	0	0	0	0	0
FW281	PEM1B	2,449	0.056	2	0	0	1	0	0	0	1	0	0	0	0	0
FW283	PEM1E	4,600	0.106	2	0	0	1	1	0	0	1	0	0	0	0	0
FW285	PFO1B	712	0.016	2	0	0	0	0	0	0	1	0	0	0	0	0
FW288	PFO1B	599	0.014	0	0	0	0	0	0	0	1	0	0	0	0	0
FW289	PEM1B	1,975	0.045	1	0	0	1	0	0	0	1	0	0	0	0	0
FW291	PFO1B	1,000	0.023	2	0	0	0	0	0	0	1	0	0	0	0	0
FW292	PFO1B	324	0.007	2	0	0	1	0	0	0	1	0	0	0	0	0
FW296	PFO1E	573	0.013	2	1	0	0	0	0	0	1	0	0	0	0	0

Wetland ID	Cowardin Class	Area (Sq. Ft)	Area (Acres)	GW	FF	FSH	STR	NUT	PE	SSS	WH	REC	EDU	UH	VQ	RTE
FW299	PFO1B	3,177	0.073	2	0	0	1	0	0	0	1	0	0	0	0	0
FW301	PEM1B	588	0.013	2	0	0	0	0	0	0	1	0	0	0	0	0
FW302	PFO1B	723	0.017	2	0	0	0	0	0	0	1	0	0	0	0	0
FW303	PFO4C	1,258	0.029	2	0	0	1	0	0	0	2	0	0	0	0	0
FW305	PFO14E	5,520	0.127	1	0	0	1	0	1	0	2	0	0	0	0	0
FW306	PFO1B	896	0.021	0	0	0	0	0	0	0	1	0	0	0	0	0
FW307	PFO14B	1,737	0.040	2	0	0	0	0	0	0	1	0	0	0	0	0
FW309	PFO1E	3,364	0.077	1	0	0	1	0	0	0	2	0	0	0	0	0
FW314	PFO14E	5,736	0.132	0	0	0	0	0	0	0	1	0	0	0	0	0
FW316	PFO1B	101	0.002	2	0	0	1	0	0	0	1	0	0	0	0	0
FW318	PUBA	734	0.017	1	0	0	1	1	0	0	2	0	0	0	0	0
FW319	PFO1E	1,671	0.038	1	0	0	1	0	0	0	1	0	0	0	0	0
FW320	PUBA	264	0.006	2	0	0	1	1	0	0	1	0	0	0	0	0
FW321	PSS1B/EM1B	1,124	0.026	2	2	0	1	1	1	1	2	0	0	0	0	0
FW323	PEM1B	509	0.012	1	0	0	1	0	0	0	1	0	0	0	0	0
FW330	PSS1/EM1B	469	0.011	2	0	0	1	1	0	0	2	0	0	0	0	0
FW331	PSS1BE/EM1B	597	0.014	2	0	0	1	1	0	0	2	0	0	0	0	0
MNW001	PFO14Y	202	0.005	2	0	0	1	1	0	0	1	0	0	0	0	0
MW001	PFO4	468	0.011	1	1	0	1	1	0	0	1	0	0	0	0	0
MW002	PEM1	1,765	0.041	1	0	0	1	1	0	0	2	0	0	0	0	0
MW003	PEM1	3,857	0.089	1	0	0	1	1	0	0	2	0	0	0	0	0
MW004	PEM1/SS14	13,552	0.311	2	0	0	2	1	0	1	0	0	0	0	0	0
MW200	PFO1B	539	0.012	2	0	0	0	0	0	0	1	0	0	0	0	0
MW201	PFO14/EM1B	8,165	0.187	1	0	0	1	0	0	0	1	0	0	0	0	0
MW202	PEM1B	3,334	0.077	1	0	0	0	0	0	0	1	0	0	0	0	0
MW203	PFO14B	18,688	0.429	1	0	0	1	0	0	0	1	0	0	0	0	0
MW205	PEM1B	9,039	0.208	1	0	0	1	1	0	0	1	0	0	0	0	0
MW206	PFO1B	3,590	0.082	1	0	0	0	0	0	0	1	0	0	0	0	0
MW207	PFO1B	3,858	0.089	1	0	0	0	0	0	0	1	0	0	0	0	0
MW208	PFO1/EM1B	3,936	0.090	1	0	0	0	0	0	0	1	0	0	0	0	0
MW212	PEM1/FO1B	3,108	0.071	1	0	0	0	0	0	0	1	0	0	0	0	0
MW214	PEM1B	506	0.012	2	0	0	1	1	0	0	1	0	0	0	0	0
MW215	PFO14B/SS4B/EM1E	24,247	0.557	2	1	0	1	1	0	0	2	0	0	0	0	0
MW217	PEM1E	592	0.014	2	0	0	1	1	0	0	1	0	0	0	0	0
MW218	PSS1B/EM1E	2,971	0.068	2	0	0	0	0	0	0	2	0	0	0	0	0
MW220	PSS1B/EM1E	3,651	0.084	2	0	0	1	1	0	0	1	0	0	0	0	0
MW221	PSS1B/EM1E	4,066	0.093	2	2	0	2	2	1	1	2	0	0	0	0	0
MW222	PSS1/EM1B	2,582	0.059	2	1	0	1	1	0	0	1	0	0	0	0	0
MW225	PEM1B	2,142	0.049	2	0	0	1	1	0	1	1	0	0	0	0	0
MW226	POW	520	0.012	2	1	0	1	1	0	1	1	0	0	0	0	0
MW227	PEM1B	2,417	0.055	2	1	0	1	1	0	1	1	0	0	0	0	0
MW228	PEM1E/SS1B	3,378	0.078	2	0	0	1	1	1	0	1	0	0	0	0	0
MW229	PEM1E	110	0.003	2	1	0	1	1	1	1	1	0	0	0	0	0
MW230	PEM1E/SS14B	6,548	0.150	2	0	0	1	1	1	0	2	0	0	0	0	0
MW231	PEM1E	2,840	0.065	2	0	0	1	1	0	0	1	0	0	0	0	0
MW232	PEM1/SS1B	14,614	0.335	2	1	0	1	1	0	1	1	0	0	0	0	0
MW234	PEM1B	3,090	0.071	2	1	0	1	1	0	0	1	0	0	0	0	0
MW236	PEM1/SS1/FO1B	1,229	0.028	2	0	0	1	1	0	0	1	0	0	0	0	0

Wetland ID	Cowardin Class	Area (Sq. Ft)	Area (Acres)	GW	FF	FSH	STR	NUT	PE	SSS	WH	REC	EDU	UH	VQ	RTE
MW237	PEM1/FO1B	2,685	0.062	2	0	0	1	1	0	0	1	0	0	0	0	0
MW238	PEM1/SS1E	6,477	0.149	2	0	0	1	1	0	0	1	0	0	0	0	0
MW240	PEM1E/SS14B	11,164	0.256	2	0	0	1	1	0	0	1	0	0	0	0	0
MW242	PEM1B/SS1B	1,255	0.029	2	0	0	1	1	0	0	1	0	0	0	0	0
MW243	PEM1/SS1/FO14B	38,801	0.891	2	0	0	2	2	0	0	2	0	0	0	0	0
MW245	PEM1/FO1/FSS1B	13,739	0.315	2	2	0	2	2	0	0	2	0	0	0	0	0
MW247	PFO1/SS1B	3,299	0.076	1	0	0	1	0	0	0	1	0	0	0	0	0
MW252	PEM1B	4,193	0.096	1	0	0	1	0	0	0	1	0	0	0	0	0
MW254	PEM1B	4,027	0.092	1	0	0	1	0	0	0	1	0	0	0	0	0
MW256	PEM1/SS1B	447	0.010	0	0	0	1	0	0	0	1	0	0	0	0	0
MW257	PEM1B	918	0.021	1	0	0	1	0	0	0	0	0	0	0	0	0
MW258	PFO1/EM1B	2,169	0.050	1	0	0	1	0	0	0	1	0	0	0	0	0
MW260	PFO1E	6,404	0.147	2	0	0	1	1	1	0	1	0	0	0	0	0
MW263	PFO1E	736	0.017	2	0	0	1	0	1	0	1	0	0	0	0	0
MW267	PEM1B	1,320	0.030	2	0	0	1	0	0	0	1	0	0	0	0	0
MW268	PFO14E	12,770	0.293	2	1	1	1	1	2	0	1	0	0	0	0	0
MW270	PEM1B	1,500	0.034	1	0	0	1	0	0	0	1	0	0	0	0	0
MW271	PEM1E	3,226	0.074	2	0	0	1	1	1	0	1	0	0	0	0	0
MW273	PEM1B	1,835	0.042	2	0	0	1	1	0	1	1	0	0	0	0	0
MW273A	PEM1B/SS1B	1,010	0.023	2	0	0	1	1	0	0	1	0	0	0	0	0
MW274A	PEM1Bd/PUB	720	0.017	2	1	0	2	2	1	1	0	0	0	0	0	0
MW275	PEM1B/SS1B	950	0.022	2	0	0	1	1	0	0	1	0	0	0	0	0
MW275	PFO1/EM1B	5,451	0.125	2	1	0	1	1	0	0	1	0	0	0	0	0
MW276	PEM1B/SS1B	2,374	0.055	2	0	0	1	1	0	0	1	0	0	0	0	0
MW301	PEM1E	1,260	0.029	2	0	0	2	2	0	0	2	0	0	0	0	0
MW302	PEM1B/SS1B	5,672	0.130	2	0	0	1	1	0	0	1	0	0	0	0	0
MW303	PSS1	3,470	0.080	1	1	0	1	1	0	1	1	0	0	0	0	0
MW305	PEM2	304	0.007	2	0	0	2	1	0	0	1	0	0	0	0	0
MW306	PFO1	1,864	0.043	1	0	0	1	1	0	0	2	1	0	0	0	0
MW308	PEM2	96	0.002	1	0	0	1	1	0	0	1	0	0	0	0	0
MW310	PFO1	2,859	0.066	1	0	0	2	1	0	0	1	0	0	0	0	0
MW311	PEM2	523	0.012	1	0	0	2	1	0	0	1	0	0	0	0	0
MW312	PEM1	381	0.009	1	2	0	1	1	0	1	0	0	0	0	0	0
MW313	PEM2	653	0.015	1	2	0	1	1	0	1	0	0	0	0	0	0
OW02	PFO1/4B	1,533	0.035	2	0	0	1	1	1	0	1	0	0	0	0	0
OW03	PFO1/4 B/A	4,831	0.111	2	0	0	1	1	1	0	1	0	0	0	0	0
OW05	PSS1/4B	1,038	0.024	2	0	0	0	1	0	0	1	0	0	0	0	0
OW06	PFO1	189	0.004	1	0	0	0	1	0	0	1	0	0	0	0	0
OW07	PFO1/4B, PSS1E	31,393	0.721	1	1	0	2	1	0	0	1	1	0	0	0	0
OW09	PSS1/4B	5,010	0.115	2	0	0	0	0	0	0	0	0	0	0	0	0
OW10	PEM1	87,877	2.017	1	2	0	2	1	0	1	1	0	0	0	0	0
OW12	PFO14	1,325	0.030	1	1	0	2	1	0	1	1	0	0	0	0	0
OW13	PFO1	620	0.014	1	1	0	1	1	0	1	1	0	0	0	0	0
OW15	PFO14	296	0.007	1	1	0	2	1	0	1	1	0	0	0	0	0
OW16	PFO14	1,647	0.038	1	0	0	1	1	0	0	1	0	0	0	0	0
OW18	PSS1/PFO1	2,699	0.062	1	2	0	1	1	0	1	1	0	0	0	0	0
OW19	PEM2	2,945	0.068	1	0	0	1	1	0	0	1	0	0	0	0	0
OW20	PSS1	114,678	2.633	1	1	0	1	1	0	1	1	0	0	0	0	0

Wetland ID	Cowardin Class	Area (Sq. Ft)	Area (Acres)	GW	FF	FSH	STR	NUT	PE	SSS	WH	REC	EDU	UH	VQ	RTE
OW21	PEM1	3,631	0.083	1	0	0	1	1	0	0	1	0	0	0	0	0
OW22	PFO1	804	0.018	1	1	0	2	1	0	0	1	0	0	0	0	0
PW03	PEM1/FO1/FO4	15,965	0.367	2	1	0	1	1	0	1	1	0	0	0	0	0
PW05	PFO14	19,084	0.438	2	1	0	1	1	0	0	1	0	0	0	0	0
PW06	PEM1/SS1/FO14	2,440	0.056	2	0	0	1	1	1	0	1	0	0	0	0	0
PW07	PFO14	9,954	0.229	2	0	0	1	1	0	0	1	0	0	0	0	0
PW08	PEM1	4,292	0.099	2	1	0	1	1	0	0	2	0	0	0	0	0
PW09	PEM1Y	306	0.007	0	0	0	0	0	0	0	0	0	0	0	0	0
PW21	PEM1Y	1,677	0.039	1	0	0	1	0	0	0	1	0	0	0	0	0
TLW01	PFO1/PFO4B	3,002	0.069	2	0	0	1	0	2	0	2	0	0	0	0	0
TLW02	PFO4E	2,953	0.068	2	0	0	1	0	1	0	1	0	0	0	0	0
TLW03	PFO4B	663	0.015	1	1	0	0	0	0	0	0	0	0	0	0	0
TLW04	PFO4E	2,496	0.057	1	0	0	0	0	2	0	2	0	0	0	0	0
TLW05	PFO4B	1,086	0.025	2	0	0	0	0	1	0	2	0	0	0	0	0
TLW06	PFO1B	1,060	0.024	2	0	0	0	0	0	0	0	0	0	0	0	0
TLW07	PFO1B	92	0.002	2	0	0	0	0	0	0	0	0	0	0	0	0
TLW08	PFO1B	721	0.017	2	0	0	0	0	0	0	1	0	0	0	0	0
TLW09	PEM1E	300	0.007	2	0	0	0	1	0	0	2	0	0	0	0	0
TLW10	PFO1B	5,151	0.118	2	2	0	0	0	0	0	2	0	0	0	0	0
TW004	PFO4	418	0.010	0	2	0	1	1	0	1	1	0	0	0	0	0
TW005	PFO4	22,833	0.524	0	1	0	1	1	0	1	1	0	0	0	0	0
TW007	PEM1	775	0.018	1	0	0	1	1	0	0	0	0	0	0	0	0
TW008	PEM1	966	0.022	1	1	0	1	1	0	0	0	0	0	0	0	0
TW021	PFO1/SS1	2,318	0.053	1	0	0	1	1	0	0	1	0	0	0	0	0
TW023	PFO1	1,852	0.043	1	0	0	0	0	0	0	1	0	0	0	0	0
TW024	PFO41/SS41	630	0.014	0	1	0	1	1	0	0	0	0	0	0	0	0
TW028	PFO4B	10,992	0.252	1	0	0	1	1	0	0	1	0	0	0	0	0
TW030	PFO14	1,261	0.029	0	0	0	0	0	1	0	1	0	0	0	0	0
TW032	PFO1	2,424	0.056	0	0	0	0	0	0	0	1	0	0	0	0	0
TW033	PUB/FO1	3,365	0.077	0	0	0	1	1	1	0	2	0	0	1	1	0
TW053	PFO4/EM1	9,884	0.227	0	1	0	0	1	0	0	1	0	0	0	0	0
TW055	PFO14	4,472	0.103	0	0	0	0	0	1	0	2	0	0	0	0	0
TW057	PEM1/FO41	5,441	0.125	1	1	0	0	0	1	0	1	0	1	0	0	0
TW058	PFO41/EM1	3,349	0.077	1	1	0	1	1	1	0	1	0	0	0	0	0
TW060	PSS1	626	0.014	1	0	0	0	0	0	0	0	0	0	0	0	0
TW061	PFO4/EM1	1,230	0.028	1	1	0	1	1	0	0	1	0	0	0	0	0
TW062	PFO4	215	0.005	1	0	0	0	0	0	0	0	0	0	0	0	0
TW066	PFO1	2,153	0.049	1	0	0	1	1	0	0	1	0	0	0	0	0
TW090	PFO14	1,529	0.035	1	0	0	1	1	0	0	2	0	0	0	0	0
TW091	PFO14	1,112	0.026	1	0	0	0	0	0	0	0	0	0	0	0	0
TW092	PFO4	234	0.005	1	0	0	1	1	0	2	0	0	0	0	0	0
TW097	PFO4	1,210	0.028	1	0	1	1	1	0	0	2	0	0	0	0	0
TW098	PFO14	1,633	0.037	2	0	0	1	0	1	1	2	0	0	0	0	0
TW112	PFO14	866	0.020	2	0	0	1	0	0	0	1	0	0	0	0	0
TW114	PFO14	5,108	0.117	2	0	0	1	0	0	1	2	0	0	0	0	0
TW116	PFO4	611	0.014	2	0	0	1	0	0	0	1	0	0	0	0	0
TW117	PFO4	1,321	0.030	2	0	0	0	0	0	0	0	0	0	0	0	0
TW118	PFO14	165	0.004	1	0	0	0	0	1	0	2	0	0	0	0	0

Wetland ID	Cowardin Class	Area (Sq. Ft)	Area (Acres)	GW	FF	FSH	STR	NUT	PE	SSS	WH	REC	EDU	UH	VQ	RTE
TW120	PFO4	1,207	0.028	2	0	0	0	0	1	0	0	0	0	0	0	0
TW121	PFO14	9,046	0.208	1	1	0	1	0	1	0	2	0	0	0	0	0
TW122	PFO4	6,708	0.154	2	1	0	1	1	1	1	2	0	0	0	1	0
TW124	PFO4E	3,528	0.081	1	1	0	1	1	0	0	2	0	0	0	0	0
TW125	PFO41	426	0.010	2	0	0	1	0	0	0	0	0	0	0	0	0
TW126	PFO41	287	0.007	1	0	0	0	0	0	0	1	0	0	0	0	0
TW128	PFO41	634	0.015	2	1	0	1	0	0	0	1	0	0	0	0	0
TW129	PFO41	3,624	0.083	2	0	0	0	0	0	0	1	0	0	0	0	0
TW130	PFO14	269	0.006	1	0	0	0	0	0	0	1	0	0	0	0	0
TW131	PFO4	3,024	0.069	1	0	0	0	0	0	0	1	0	0	0	0	0
TW136	PFO14	2,757	0.063	2	1	0	1	1	0	1	1	0	0	0	0	0
TW142	PFO14	1,118	0.026	2	1	0	1	1	0	1	1	0	0	0	0	0
TW144	PFO14	3,810	0.087	2	1	0	1	1	0	0	2	0	0	0	0	0
TW145	PUB4	4,982	0.114	2	0	0	2	1	1	0	2	0	1	0	1	1
TW146	PFO14E	3,865	0.089	1	0	0	1	1	0	0	1	0	0	0	0	0
TW147	PFO4	436	0.010	1	0	0	0	0	0	0	2	0	0	0	0	0
TW149	PFO14	208	0.005	1	0	0	0	0	0	0	1	0	0	0	0	0
TW170	PFO1B	237	0.005	0	0	0	0	0	0	0	1	0	0	0	0	0
TW170P	PFO4E	650	0.015	1	0	0	1	1	0	0	1	0	0	0	0	0
TW251	PFO14B	15,745	0.361	2	1	1	0	0	1	1	2	0	0	0	0	0
TW252	PFO14B	17,581	0.404	2	1	1	0	0	1	1	2	0	0	0	0	0
TW254	PSS1B	2,338	0.054	2	0	0	1	1	1	1	1	0	0	0	0	0
TW255	PEM1E/SS1B	9,914	0.228	2	2	1	2	2	1	1	2	0	0	0	0	0
TW256	PFO14E	25,629	0.588	2	1	0	1	1	1	0	2	0	0	0	0	0
TW258	PEM1E/FO1B	32,398	0.744	2	2	1	1	1	1	1	2	0	0	0	0	0
TW259	PFO14A/SS1B	83,337	1.913	1	0	0	1	1	1	1	2	0	0	0	0	0
TW260	PEM1/SS1B	4,634	0.106	2	0	0	0	0	0	0	1	0	0	0	0	0
TW261	PFO14/EM1E	31,401	0.721	2	0	0	1	1	0	0	1	0	0	0	0	0
TW262	PEM1E/SS1B	3,765	0.086	2	0	0	2	2	0	0	1	0	0	0	0	0
TW263	PSS1E	1,445	0.033	1	0	0	0	0	1	0	2	0	0	0	0	0
TW264	PFO14B	1,200	0.028	2	0	0	0	0	0	0	1	0	0	0	0	0
TW265	PEM1/SS1E	2,898	0.067	2	0	0	1	1	0	0	1	0	0	0	0	0
TW266	PFO14B	2,870	0.066	2	0	0	0	0	1	0	1	0	0	0	0	0
TW267	PFO1E	13,293	0.305	1	0	0	1	0	0	0	1	0	0	1	0	0
TW268	PFO1B	3,108	0.071	2	0	0	0	0	0	0	1	0	0	0	0	0
TW270	PEM1/FO41	617	0.014	2	0	0	0	0	0	0	0	0	0	0	0	0
TW271	PEM1E	505	0.012	1	0	0	0	0	0	0	1	0	0	0	0	0
TW273	PSS1/EM1E	4,557	0.105	2	0	0	1	1	0	0	1	0	0	0	0	0
TW274	PFO14C	1,702	0.039	1	0	0	0	0	0	0	1	0	0	0	0	0
TW275	PEM1B	1,680	0.039	1	0	0	1	0	0	1	0	0	0	0	0	0
TW276	PFO1E	842	0.019	1	0	0	0	0	0	0	1	0	0	0	0	0
TW277	PEM1B	785	0.018	1	0	0	0	0	0	0	0	0	0	0	0	0
TW278	PEM1B	1,258	0.029	1	0	0	0	0	0	0	0	0	0	0	0	0
TW279	PEM1E/SS1B	707	0.016	2	0	0	1	1	0	0	1	0	0	0	0	0
TW281	PFO1E	18,737	0.430	2	0	0	1	0	1	1	2	0	0	0	0	0
TW282	PEM1E/SS1E/FO1B	12,809	0.294	2	0	0	1	1	0	0	1	0	0	0	0	0
TW285	PFO1/EM1B	5,344	0.123	2	0	0	2	0	0	0	1	0	0	0	0	0
TW286	PEM1/SS1B	8,574	0.197	2	0	0	2	2	0	0	1	0	0	0	0	0

Wetland ID	Cowardin Class	Area (Sq. Ft)	Area (Acres)	GW	FF	FSH	STR	NUT	PE	SSS	WH	REC	EDU	UH	VQ	RTE
TW287	PFO1/EM1B	19,303	0.443	2	0	0	2	0	0	0	0	0	0	0	0	0
TW289	PEM1B/FO1B	41,619	0.955	2	0	0	1	0	0	0	1	0	0	0	0	0
TW290	PEM1E/SS1B	11,422	0.262	2	0	0	2	2	0	0	2	0	0	0	0	0
TW292	PEM1E/SS1E	12,536	0.288	1	0	0	1	0	0	0	1	0	0	0	0	0
TW293	PEM1/SS1B	8,593	0.197	2	0	0	2	2	0	0	1	0	0	0	0	0
TW294	PSS1/EM1B	10,165	0.233	2	0	0	1	1	0	0	1	0	0	0	0	0
TW295	PFO14E	51,400	1.180	2	0	0	2	1	1	1	2	0	0	0	0	0
TW296	PEM1/SS1B	18,956	0.435	2	0	0	2	1	0	0	1	0	0	0	0	0
TW299	PFO1E	67,793	1.556	1	2	0	1	1	1	1	1	1	0	0	0	0
TW300	PFO1B	3,385	0.078	1	0	0	1	0	0	0	1	0	0	0	0	0
TW301	PEM1Ef/FO1B	370,619	8.508	1	2	1	2	1	1	1	2	1	0	0	1	0
TW302	PSS1E	8,427	0.193	1	0	0	1	0	0	0	0	0	0	0	0	0
TW303	PSS1E/FO1B	98,404	2.259	2	2	1	1	1	2	1	2	0	0	0	1	0
TW307	PEM1E	945	0.022	1	0	0	1	0	0	0	1	0	0	0	0	0
TW309	PFO4B	1,789	0.041	2	0	0	1	1	0	0	1	0	0	0	0	0
TW311	PFO1B	2,373	0.054	2	0	0	1	0	1	0	1	0	0	0	0	0
TW314	PFO14B	4,251	0.098	2	0	0	0	0	1	0	1	0	0	0	0	0
TW316	PFO1E	1,618	0.037	1	0	0	2	1	1	1	1	0	0	0	0	0
TW320	PFO14E	4,019	0.092	1	0	0	0	0	1	0	1	0	0	0	0	0
TW321	PSS1E	566	0.013	1	0	0	1	0	0	0	1	0	0	0	0	0
TW322	PEM1C	24	0.001	1	0	0	1	0	0	0	1	0	0	0	0	0
TW324	PFO14B	697	0.016	0	0	0	0	0	1	0	1	0	0	0	0	0
TW325	PSS1	578	0.013	0	0	0	1	0	1	0	1	0	0	0	0	0
TW327	PSS14E	715	0.016	1	0	0	0	0	0	0	1	0	0	0	0	0
TW329	PFO14B	1,203	0.028	0	0	0	1	0	1	2	1	0	0	0	0	0
TW336	PFO1E	3,822	0.088	2	0	0	1	0	0	0	1	0	0	0	0	0
TW337	PFO1/EM1B	3,486	0.080	1	0	0	2	1	1	1	1	0	0	0	0	0
TW340	PFO1/EM1E	2,960	0.068	2	0	0	1	0	0	0	1	0	0	0	0	0
TW344	PSS1E	698	0.016	1	0	0	1	1	0	0	2	0	0	0	0	0
TW345	PFO1E	997	0.023	1	1	0	1	0	0	1	0	0	0	0	0	0
TW346	PEM1E	195	0.004	1	1	0	1	0	0	1	1	0	0	0	0	0
TW347	PFO1E	4,827	0.111	1	0	0	1	0	0	1	1	0	0	1	0	0
TW348	PFO14B	3,851	0.088	1	0	0	1	1	0	0	1	0	0	0	0	0
TW350	PEM1B	1,073	0.025	1	0	0	2	0	0	1	0	0	0	0	0	0
TW351	PFO1E	3,172	0.073	1	0	0	2	1	0	0	1	0	0	0	0	0
TW352	PFO1/EM1B	16,259	0.373	1	2	0	1	1	0	0	2	0	0	0	0	0
TW353	PFO1E	11,586	0.266	0	1	0	1	0	1	1	1	0	0	0	1	0
TW355	PEM1/SS1C	7,596	0.174	1	2	1	1	1	1	2	2	0	0	0	0	0
TW357	PFO1C	5,526	0.127	1	2	1	1	1	0	2	1	0	0	1	0	0
TW359	PFO14C	9,690	0.222	1	2	1	1	1	1	2	1	0	0	0	0	0
TW363	PEM1B	920	0.021	2	1	0	2	2	0	0	1	0	0	0	0	0
TW365	PFO4E	762	0.017	0	0	0	1	1	0	0	1	0	0	0	0	0
TW368	PSS1E	940	0.022	0	0	0	1	1	0	0	1	0	0	0	0	0
TW369	PEM1B/SS1	5,340	0.123	2	0	0	1	1	0	0	1	0	0	0	0	0
TW371	PEM1B	514	0.012	2	0	0	1	1	0	0	0	0	0	0	0	0
TW372	PEM1/FO1B	15,885	0.365	2	0	0	1	1	0	0	2	0	0	0	0	0
TW382	PSS14/EM1B	4,595	0.105	2	0	0	1	1	0	0	2	0	0	0	1	0
TW383	PEM1/FO14E	14,858	0.341	2	1	0	1	1	0	0	2	0	0	0	1	0

Wetland ID	**Cowardin Class**	**Area (Sq. Ft)**	**Area (Acres)**	**GW**	**FF**	**FSH**	**STR**	**NUT**	**PE**	**SSS**	**WH**	**REC**	**EDU**	**UH**	**VQ**	**RTE**
TW385	PEM1/SS1Bf	12,196	0.280	1	0	0	1	1	1	0	1	0	0	0	0	0
TW386	PEM1Bf	8,223	0.189	1	0	0	1	1	1	0	0	0	0	0	0	0
TW387	PFO14E	5,421	0.124	2	2	0	1	1	0	2	2	0	0	0	0	0
TW388	PUB	254	0.006	0	0	0	0	0	1	0	2	0	0	0	0	0
TW389	PUB	453	0.010	0	0	0	0	0	1	0	2	0	0	0	0	0
TW390	PUB	229	0.005	0	0	0	0	0	1	0	2	0	0	0	0	0
TW400	PFO1/PEM1E	4,754	0.109	2	0	0	1	0	0	0	1	0	0	0	0	0
TW401	PSS1E	1,562	0.036	2	0	0	1	0	0	0	1	0	0	0	0	0
TW402	PEM1/PFO1	7,565	0.174	2	0	0	0	0	2	0	2	0	0	0	0	0
TW403	PFO1/PFO4	8,633	0.198	1	1	0	0	0	0	0	0	0	0	0	0	0
TW404	PFO1	863	0.020	1	0	0	0	0	0	1	0	0	0	0	0	0
TW405	PFO1	3,575	0.082	2	2	0	0	0	0	2	0	0	0	0	0	0
TW406	PFO1	4,504	0.103	2	0	0	0	0	2	0	0	0	0	0	0	0
TW411	PEM1/PFO1	943	0.022	2	0	0	1	1	0	0	2	0	0	0	0	0
TW412	PEM1/PSS1	8,656	0.199	2	0	0	1	1	0	0	1	0	0	0	0	0
TW413	PEM1/PSS1	5,818	0.134	2	2	0	1	1	1	1	1	0	0	0	0	0
TW415	PEM1/PSS1/PFO1	12,217	0.280	2	2	0	1	1	2	2	2	0	0	0	0	0
TW417	PEM1/PSS1/PFO2	2,646	0.061	2	0	0	1	0	0	0	1	0	0	0	0	0
TW420	PFO14/SS14	9,807	0.225	1	1	0	1	1	1	0	1	1	0	0	0	0
TW421	PSS14/FO14	3,944	0.091	2	1	0	1	1	1	0	1	1	0	0	0	0
TW422	PSS1/PEM1E	3,117	0.072	1	1	0	1	1	0	0	2	0	0	0	0	0
TW423	PFO4	2,066	0.047	1	1	0	1	1	0	0	1	0	0	0	0	0
TW426	PFO1	542	0.012	1	1	0	1	1	0	0	1	0	0	0	0	0

Functions and Values: 0 = Not Suitable, 1 = Suitable, 2 = Principle; GW = Groundwater Recharge/Discharge; FF = Floodflow Alteration; FSH = Fish/Shellfish Habitat; STR = Sediment/Toxicant Retention; NUT = Nutrient Removal; PE = Production Export; SSS = Sediment/Shoreline Stabilization; WH = Wildlife Habitat; REC = Recreation; EDU = Educational/Scientific Value; UH = Uniqueness/Heritage; VQ = Visual Quality/Aesthetics; RTE = Endangered Species Habitat

Summary of Delineated Vernal Pools within Study Area

Pool ID	**Rank**	**Pool Area (Sq. Ft.)**	**Origin**	**Hydroperiod**	**WFE**	**WFL**	**WFA**	**SSE**	**SSL**	**SSA**	**BSSE**	**BSSL**	**BSSA**
BVP01	B - Intermediate Value	147	Manmade	Semi-Permanent	5	0	0	4	0	0	0	0	0
BVP02	B - Intermediate Value	1,019	Natural Modified	Ephemeral	9	0	0	0	0	0	0	0	0
BVP03	B - Intermediate Value	52	Manmade	Semi-Permanent	1	Yes	0	8	0	0	0	0	0
BVP04	B - Intermediate Value	168	Manmade	Permanent	0	Yes	0	20	0	0	0	0	0
BVP05	C - Least Value	160	Manmade	Semi-Permanent	0	0	0	1	0	0	0	0	0
BVP06	C - Least Value	291	Natural	Ephemeral	2	0	0	0	0	0	0	0	0
BVP200	C - Least Value	20	Manmade	Ephemeral	10	0	0	0	0	0	0	0	0
BVP201	C - Least Value	20	Manmade	Ephemeral	2	0	0	0	0	0	0	0	0
BVP202	B - Intermediate Value	241	Manmade	Permanent	39	0	0	0	0	0	0	0	0
BVP204	B - Intermediate Value	1,148	Manmade	Semi-Permanent	0	Yes	0	31	0	0	0	0	0
BVP205	B - Intermediate Value	1,910	Manmade	Permanent	0	Yes	0	133	Yes	0	0	0	0
BVP206	B - Intermediate Value	355	Manmade	Permanent	0	Yes	0	51	0	0	0	0	0
BVP207	B - Intermediate Value	284	Manmade	Semi-Permanent	0	Yes	0	0	0	0	0	0	0
BVP208	C - Least Value	1,042	Manmade	Ephemeral	0	0	0	12	0	0	0	0	0
BVP209	C - Least Value	20	Manmade	Ephemeral	0	Yes	0	3	0	0	0	0	0
BVP227	C - Least Value	816	Manmade	Ephemeral	0	100	0	2	0	0	0	0	0
BVP230	C - Least Value	20	Manmade	Ephemeral	0	0	0	9	0	0	0	0	0
BVP241	A - Highest Value	245	Manmade	Permanent	0	10,000	0	5	0	0	107	0	0
BVP300	C - Least Value	329	Natural Modified	Ephemeral	0	100	0	9	0	0	4	0	0
FVP01	A - Highest Value	313	Natural Modified	Semi-Permanent	0	Yes	0	23	0	0	0	0	0
FVP100	B - Intermediate Value	1,104	Natural	Semi-Permanent	16	Yes	0	4	0	0	0	0	0
FVP201	B - Intermediate Value	668	Natural	Ephemeral	23	0	0	1	0	0	0	0	0

Pool ID	Rank	Pool Area (Sq. Ft.)	Origin	Hydroperiod	WFE	WFL	WFA	SSE	SSL	SSA	BSSE	BSSL	BSSA
FVP202	B - Intermediate Value	692	Natural	Semi-Permanent	5	0	0	0	0	0	0	0	0
FVP203	C - Least Value	20	Natural Modified	Ephemeral	48	0	0	0	0	0	0	0	0
FVP204	A - Highest Value	3,468	Natural	Semi-Permanent	36	Yes	0	30	0	0	0	0	0
FVP205	B - Intermediate Value	852	Natural	Semi-Permanent	0	0	0	1	0	0	0	0	0
FVP206	B - Intermediate Value	1,753	Natural	Semi-Permanent	0	0	0	9	0	0	0	0	0
FVP211	B - Intermediate Value	237	Natural	Ephemeral	0	0	0	6	0	0	0	0	0
FVP213	C - Least Value	1,657	Natural Modified	Ephemeral	0	0	0	1	0	0	7	0	0
FVP30	B - Intermediate Value	757	Natural	Semi-Permanent	5	Yes	0	8	0	0	0	0	0
FVP302	A - Highest Value	176	Natural Modified	Semi-Permanent	0	500	0	2	0	0	35	0	0
FVP45	B - Intermediate Value	962	Natural Modified	Semi-Permanent	5	Yes	0	16	0	0	0	0	0
FVP69	B - Intermediate Value	769	Manmade	Semi-Permanent	0	0	0	1	0	0	0	0	0
FVP75	B - Intermediate Value	461	Natural	Ephemeral	0	0	0	2	0	0	0	0	0
FVP88	C - Least Value	104	Natural	Semi-Permanent	0	0	0	3	0	0	0	0	0
MVP01	B - Intermediate Value	664	Manmade	Ephemeral	3	0	0	18	0	0	0	0	0
MVP02	B - Intermediate Value	511	Manmade	Semi-Permanent	16	0	0	8	0	0	0	0	0
MVP200	C - Least Value	28	Manmade	Semi-Permanent	6	0	0	0	0	0	0	0	0
MVP201	A - Highest Value	405	Natural Modified	Semi-Permanent	100	0	0	7	0	0	0	0	0
MVP202	B - Intermediate Value	89	Natural	Semi-Permanent	2	0	0	0	0	0	0	0	0
MVP203	B - Intermediate Value	91	Natural Modified	Permanent	54	0	0	0	0	0	0	0	0
MVP204	B - Intermediate Value	437	Natural Modified	Ephemeral	30	0	0	0	0	0	0	0	0
MVP206	C - Least Value	20	Manmade	Semi-Permanent	2	0	0	0	0	0	0	0	0
MVP207	C - Least Value	20	Natural Modified	Ephemeral	5	0	0	0	0	0	0	0	0

Pool ID	Rank	Pool Area (Sq. Ft.)	Origin	Hydroperiod	WFE	WFL	WFA	SSE	SSL	SSA	BSSE	BSSL	BSSA
MVP208	A - Highest Value	2,620	Natural	Semi-Permanent	49	0	0	0	0	0	0	0	0
MVP209	C - Least Value	28	Natural Modified	Ephemeral	10	0	0	0	0	0	0	0	0
MVP211	C - Least Value	20	Manmade	Ephemeral	6	0	0	0	0	0	0	0	0
MVP212	B - Intermediate Value	20	Manmade	Ephemeral	18	0	0	4	0	0	0	0	0
MVP213	C - Least Value	20	Manmade	Ephemeral	12	0	0	0	0	0	0	0	0
MVP214	C - Least Value	20	Manmade	Ephemeral	22	0	0	0	0	0	0	0	0
MVP215	C - Least Value	20	Manmade	Ephemeral	7	0	0	9	0	0	0	0	0
MVP216	C - Least Value	20	Manmade	Ephemeral	1	0	0	0	0	0	0	0	0
MVP217	B - Intermediate Value	146	Natural Modified	Ephemeral	11	0	0	0	0	0	0	0	0
MVP218	B - Intermediate Value	308	Natural Modified	Ephemeral	9	0	0	0	0	0	0	0	0
MVP219	C - Least Value	20	Manmade	Ephemeral	4	0	0	0	0	0	0	0	0
MVP220	C - Least Value	20	Manmade	Ephemeral	7	0	0	0	0	0	0	0	0
MVP221	C - Least Value	20	Manmade	Ephemeral	20	0	0	0	0	0	0	0	0
MVP222	C - Least Value	20	Manmade	Ephemeral	2	0	0	0	0	0	0	0	0
MVP223	C - Least Value	20	Manmade	Ephemeral	8	0	0	0	0	0	0	0	0
MVP224	C - Least Value	20	Manmade	Ephemeral	4	0	0	0	0	0	0	0	0
MVP300	B - Intermediate Value	400	Natural Modified	Ephemeral	0	0	0	27	0	0	1	0	0
OVP1	B - Intermediate Value	1,354	Natural Modified	Semi-Permanent	0	1,000	0	18	0	0	19	0	0
OVP2	B - Intermediate Value	114,651	Natural	Permanent	0	1000	0	7	0	0	0	0	0
OVP3	B - Intermediate Value	14,114	Natural	Permanent	0	0	0	30	0	0	7	0	0
TLVP1	B - Intermediate Value	1,213	Natural	Ephemeral	0	0	0	18	0	0	0	0	0
TLVP2	B - Intermediate Value	1,165	Natural Modified	Ephemeral	0	0	0	4	0	0	73	0	0

Pool ID	Rank	Pool Area (Sq. Ft.)	Origin	Hydroperiod	WFE	WFL	WFA	SSE	SSL	SSA	BSSE	BSSL	BSSA
TVP01	C - Least Value	209	Manmade	Ephemeral	0	0	0	13	0	0	1	0	0
TVP02	C - Least Value	167	Manmade	Ephemeral	0	0	0	5	0	0	0	0	0
TVP03	C - Least Value	117	Manmade	Ephemeral	2	0	0	2	0	0	1	0	0
TVP04	A - Highest Value	920	Natural Modified	Ephemeral	0	Yes	0	9	0	0	0	0	0
TVP05	B - Intermediate Value	2,541	Natural	Ephemeral	0	Yes	0	14	0	0	0	0	0
TVP07	C - Least Value	577	Manmade	Ephemeral	2	0	0	0	0	0	0	0	0
TVP08	C - Least Value	386	Manmade	Ephemeral	3	0	0	0	0	0	0	0	0
TVP117	B - Intermediate Value	212	Manmade	Semi-Permanent	7	0	0	8	0	0	0	0	0
TVP122	B - Intermediate Value	558	Natural	Semi-Permanent	14	0	0	0	0	0	0	0	0
TVP145	A - Highest Value	1,564	Natural	Permanent	15	Yes	0	40	0	0	0	0	0
TVP202	C - Least Value	20	Manmade	Semi-Permanent	2	0	0	0	0	0	0	0	0
TVP203	A - Highest Value	355	Natural	Semi-Permanent	50	Yes	0	76	0	0	0	0	0
TVP204	B - Intermediate Value	687	Natural	Semi-Permanent	6	0	0	0	0	0	0	0	0
TVP205	C - Least Value	50	Natural	Ephemeral	4	0	0	0	0	0	0	0	0
TVP225	C - Least Value	20	Manmade	Ephemeral	4	0	0	0	0	0	0	0	0
TVP226	B - Intermediate Value	20	Manmade	Ephemeral	32	0	0	0	0	0	0	0	0
TVP229	C - Least Value	62	Natural	Ephemeral	3	0	0	0	0	0	0	0	0
TVP230	B - Intermediate Value	254	Manmade	Permanent	3	0	0	2	0	0	0	0	0
TVP231	A - Highest Value	453	Manmade	Permanent	32	0	1	100	0	0	13	0	0
TVP232	B - Intermediate Value	229	Manmade	Semi-Permanent	6	0	0	0	0	0	6	0	0
TVP234	A - Highest Value	2,678	Natural	Semi-Permanent	17	0	1	131	0	0	0	0	0
TVP239	B - Intermediate Value	328	Natural Modified	Ephemeral	44	15	0	17	0	0	0	0	0

Pool ID	Rank	Pool Area (Sq. Ft.)	Origin	Hydroperiod	WFE	WFL	WFA	SSE	SSL	SSA	BSSE	BSSL	BSSA
TVP240	C - Least Value	15	Natural	Ephemeral	0	0	0	1	0	0	0	0	0
TVP241	C - Least Value	20	Natural	Semi-Permanent	0	0	0	5	0	0	0	0	0
TVP246	C - Least Value	20	Manmade	Ephemeral	1	0	0	0	0	0	0	0	0
TVP247	C - Least Value	20	Manmade	Ephemeral	0	Yes	0	5	0	0	0	0	0
TVP249	B - Intermediate Value	20	Natural	Ephemeral	7	0	0	9	0	0	0	0	0
TVP250	C - Least Value	20	Manmade	Semi-Permanent	0	0	0	5	0	0	0	0	0
TVP251	C - Least Value	20	Natural Modified	Ephemeral	0	0	0	2	0	0	0	0	0
TVP300	A - Highest Value	315	Natural Modified	Semi-Permanent	0	100	0	5	0	0	22	0	0
TVP301	B - Intermediate Value	444	Natural Modified	Ephemeral	0	100	0	0	0	0	22	0	0

WF = Wood Frog; SS = Spotted Salamander; BSS = Blue-spotted/Jefferson Salamander Hydrid; E = Egg mass; L = Larvae; A = Adult

Appendix II.

Water Resources Impact Analysis and Functions and Values Assessment

Water Resource Impact Analysis

Atlantic Wind was committed to the principals of avoidance and minimization throughout the project siting and design processes, and as a result proposed impacts have been reduced to the greatest extent practicable. Direct impacts to 90% of wetlands, 90% of streams, and 96% of vernal pools within the wetland study area have been avoided. Alternatives to the project siting and design are included in the Alternatives Analysis section (see Section I of the Wetland Permit Application). Detailed descriptions of the water resources identified within the wetland study area are included in the Water Resources Report (see Appendix I).

Permanent and temporary direct and secondary impacts have been calculated for streams, wetlands, and vernal pools. Direct impacts typically include dredge and fill in the resource. Secondary impacts of the project are largely the result of vegetation conversion from forest to shrub or emergent wetland as a result of turbine lay-down areas and the electrical collector, with no associated grading or other soil disturbance. A few secondary impacts are the result of altered drainage within the wetland or immediately up-gradient of it. Permanent and temporary impacts were also calculated for resource buffers associated with streams and vernal pools. Based on agency guidance during pre-application meetings, buffers of 20, 50, and 100 feet were assigned to ephemeral, intermittent, and perennial streams, respectively, and impacts within the buffers were quantified. Proposed impacts within the vernal pool envelope (0-100 feet from the delineated high water mark of the vernal pool) and the vernal pool buffer (100-250 feet) were also quantified.

Direct and secondary impacts are considered permanent if they would not be restored at the end of construction. Temporary impacts include areas which will be restored following completion of construction and allowed to revert back to a naturally vegetated state. The primary example of this type of impact is the narrow area between the edge of grading and the limit of disturbance due to erosion controls, typically approximately 5 feet in width.

Total proposed direct permanent impacts to water resources are 49,489 SF (square feet) or 1.14 acres (Table 1). Total direct temporary impacts are 37,594 SF (0.86 acres) with an additional 38,136 SF (0.87 acres) of secondary permanent impacts to wetlands. Impacts to stream buffers total 215,514 SF (4.95 acres) and impacts to vernal pool buffers total 1,408,996 SF (32.35 acres). Using the USACE's guideline of avoiding impacts to more than 25% of the 250-foot vernal pool buffer, a total of 26.1 acres of vernal pool buffers exceeded that threshold.

A more detailed review of the proposed impacts to each type of water resource is included below. Impacts to surface waters, wetlands and vernal pools are tabulated in Appendix II-A.

Surface Waters

Small streams are the only surface waters occurring within the project footprint. All permanent direct impacts to perennial streams have been avoided through careful project design and engineering, although some temporary direct and permanent secondary impacts are proposed to two perennial streams under the electrical collector due to clearing of the 75-foot wide corridor. Proposed temporary direct and permanent secondary impacts to perennial streams are identical, and total 1,764 SF (544 LF) for each (Table 2). In addition, several intermittent and ephemeral streams were unavoidable and some direct and secondary impacts will occur. Permanent direct impacts to four intermittent stream segments total approximately 1,319 SF (378 LF) with 7,832 SF (1,046 LF) of temporary direct impacts also proposed (Table 3). Secondary impacts include approximately 8,291 SF (1,186 LF) of impacts, mostly associated with clearing. For ephemeral streams, which are not regulated as streams by the NHDES, approximately 7,058 SF and 3,174 SF of permanent and temporary direct impacts are proposed, respectively (Table 4). 2,835 SF of secondary permanent impacts to ephemeral drainages are also proposed. For the purposes of the NHDES Standard Dredge and Fill permit application form, proposed impacts to ephemeral streams have been added to the wetland impacts under the forested wetland category because the majority of the ephemeral drainages are located in forested natural communities.

For the four unavoidable intermittent stream crossings, impacts were focused on the narrowest portion of the stream. The crossings were configured to be as perpendicular to the flow direction as possible, and to minimize the length of culverts and extent of clearing associated with each crossing site. Proposed crossings adhere to the New Hampshire Stream Crossing Guidelines (2009) and the analyses are summarized in Attachment C of the Wetland Permit Application. The crossings have been designed to withstand and to prevent the restriction of high flows, to maintain existing low flows, and to not obstruct the movement of aquatic life indigenous to the stream beyond the actual duration of construction. These efforts also served to minimize the amount of adjacent upland and wetland riparian buffer impacts.

Ephemeral streams are the most numerous surface water features in the Project Area. Direct permanent impacts are proposed to 38 ephemeral streams for a total of 7,058 square feet of impact (Table 4). Given the narrow width of most of these streams, the average size of a direct permanent ephemeral stream impact is small (approximately 186 SF).

Secondary impacts to streams included permanent impacts only. Secondary impacts will affect two perennial streams (1,764 SF), twelve intermittent streams (8,291 SF) and three ephemeral streams (2,835 SF; Tables 2, 3 and 4), totaling 12,890 SF or 0.30 acres. All secondary stream impacts are vegetation conversion consisting of removal of trees and shrubs within the turbine laydown areas that are outside of the turbine pads, and under the electrical connector line. After completion of construction, these areas will be allowed to regrow to shrub height, and thus in the long term, will again provide shade for streams to minimize water quality impacts.

Not all stream buffer impacts were avoidable given the abundance of ephemeral and intermitted stream segments delineated within the project area and the sum of the buffer areas associated with each. As a result, approximately 54,139 SF, 100,281 SF, and 39,910 SF of perennial, intermittent, and ephemeral stream buffers will be permanently impacted totaling194,330 SF, or 4.46 acres, with an additional 1,925 SF, 5,326 SF, and 13,933 SF of these buffer areas impacted temporarily (Tables 2, 3, and 4).

Wetlands

Impacts to wetlands were also minimized as described above for the streams. Where unavoidable, wetland crossings have been designed to maintain hydrology, sediment transport and wildlife passage, often accomplished through the design of associated stream crossing structures. Permanent direct impacts to wetlands total approximately 39,861 SF (0.92 acres) with 22,572 SF (0.52 acres) of direct temporary impacts (Table 5). Secondary permanent impacts total approximately 23,862 SF (0.55 acres) and are mostly associated with clearing within wetlands.

Most of the direct permanent impacts to wetlands throughout the project area are forested or have a forested component (Table 6). The exceptions are several impacts to wet meadow wetlands in the active hayfields in Danbury, and a scrub-shrub wetland adjacent to the proposed substation. Most of the direct permanent wetland impacts are small (average 891 SF or 0.02 acres), as are the proposed direct temporary impacts (average 404 SF or 0.01 acres). The average total size of the wetlands delineated within the wetland study area is nearly 6,700 SF for comparison. Nearly 70 acres of wetlands were delineated within the wetland study area and direct permanent impacts total only 1.3-percent of the total delineated wetland area.

Similar to streams, all secondary impacts to wetlands are permanent and consist of vegetation conversion from the removal of trees and shrubs within the turbine laydown areas that are outside of the turbine pads, and under the electrical connector line. Secondary impacts occurred at 23 wetlands, and totaled 23,862 SF (0.56 ac; Tables 5 and 6).

Vernal Pools

Impacts to vernal pools were also avoided and minimized as described above for surface waters and wetlands. Direct and secondary impacts to all of the highest value (A) pools were successfully avoided, while some direct or secondary impacts to three intermediate value (B) and three least value (C) pools were unavoidable (Table 7; see Water Resources Report for more detail on the vernal pool classifications). Direct permanent impacts to four vernal pools total approximately 1,251 SF (0.03 acres), with an additional 2,252 SF (0.05 acres) of direct temporary impacts to two of those same pools plus two others also proposed (Table 8). Permanent secondary impacts to three vernal pools total 1,384 SF (0.03 acres).

Impacts to the 100-foot vernal pool envelope and the 250-foot vernal buffer were also evaluated. Permanent and temporary impacts to the vernal pool envelope total approximately 198,876 SF and 12,732 SF respectively (4.57/ and 0.29 acres). The Corps vernal pool guidelines require that impacts to the vernal pool buffer be avoided where possible. Although all reasonable avoidance measures were taken, seventeen vernal pools had unavoidable impacts within the vernal pool envelope. Permanent and temporary impacts to the 250-foot buffer total 1,154,189 SF and 43,199 SF, respectively (26.50 and 0.99 acres). The Department of the Army Programmatic General Permit (NHPGP) for the State of New Hampshire (2012) cites that impact minimization should be in accordance with *Best Development Practices: Conserving pool-breeding amphibians in residential and commercial development in the northeastern U.S.* (Calhoun and Klemens, 2002) and that site clearing, grading and construction activities should be limited to less than 25% of the VP seasonal pool terrestrial habitat, and roads and driveways should be excluded from the VP envelope. Impacts that exceed 25% of the 250-foot buffer are considered potentially deleterious to vernal pool amphibians during the terrestrial phases of their life cycle. Twenty-seven pools had impacts within the vernal pool buffer, with only nine having impacts exceeding 25%. Of the nine pools with greater than 25% of their 250-foot buffer impacted, two were classified as A (highest value) five were B, and two were C.

The effects of the project on vernal pool amphibians are expected to be relatively low, given the project design and operation. Once construction is complete, the access roads will be between 16 and 22 feet wide, will have a relatively smooth gravel surface, and there should be few barriers to passage except in areas of steep cuts and fill. Vernal pool amphibians are expected to readily cross these roads during migrations to and from breeding pools. Additionally, traffic will be very light during project operation, limited to 1 or 2 vehicles on most days and virtually none at night, which will minimize mortality of amphibians crossing the roads. Water quality deterioration is another development threat to vernal pools. This is unlikely at Wild Meadows due to the multiple design features to stabilize slopes during construction, and to minimize concentrated flows and treat runoff from the roads and turbine pads.

The relatively limited final footprint of the project, in concert with the appropriate design of stream and wetland crossings that adhere to the required standards for aquatic organism passage, should result in a minimal impact to the overall populations of obligate vernal pool amphibians and other species in the vicinity of the project.

Impacts to Wetland Functions and Values

Based on the USACE Highway Methodology, the principal functions identified across wetland resources in the study area included: Wildlife Habitat, Floodflow Alteration, Groundwater Recharge/Discharge, Sediment/Toxicant Retention, Nutrient Removal, Production Export, and Sediment/Shore Stabilization (see Water Resources Report, Appendix I). The primary function affected by the project is clearly wildlife habitat. This function is the single most prevalent function provided throughout the site, included the impacted wetland resources. While even this function is relatively low at most wetlands due to their small size and forested, frequently logged, cover, wildlife habitat is collectively high across the project area. The site provides good habitat for a variety of wildlife typical of the region, and its location in a large unfragmented block further raises wildlife habitat value. No rare species or species at the extremity of their range are known to occur within the project area, and site-specific bird and bat studies have not identified any species or guild that is at risk from the project. The impacted vernal pools and vernal pool buffers represent the greatest single impact to wetland-dependent wildlife, but the types of impacts and the linear nature of the project is not expected to adversely affect populations of obligate vernal pool amphibians.

The remaining functions and values determined to be affected by the project are related to water quality and quantity. Given the small size of the wetlands and the limited opportunity for sedimentation and pollution through project design, minimal adverse impacts are anticipated to Floodflow Alteration, Groundwater Recharge/Discharge, Sediment/Toxicant Retention, Nutrient Removal, Production Export, and Sediment/Shore Stabilization due to project construction or operation. Stream flow quality and quantity are also unlikely to be adversely affected due to the project's design efforts to minimize changes in flow paths and maximize erosion and sedimentation controls. No direct impacts to perennial streams and only four intermittent stream impacts will further reduce the opportunity for adverse effects to the listed wetland functions.

Table 1. Summary of Proposed Water Resource and Buffer Impacts by Town

	Danbury		Alexandria		Total	
	SF	Acres	SF	Acres	SF	Acres
Direct Permanent Wetland/Stream/VP Impacts	38,061	0.87	10,177	0.23	48,238	1.12
Direct Temporary Wetland/Stream/VP Impacts	6,446	0.15	28,896	0.66	35,342	0.81
Secondary Permanent Wetland/Stream/VP Impacts	5,859	0.14	30,893	0.71	36,752	0.84
Secondary Temporary Wetland/Stream/VP Impacts	0	0.00	0	0.00	0	0.00
Permanent Stream Buffer Impacts	28,400	0.65	165,930	3.81	194,330	4.46
Temporary Stream Buffer Impacts	8,776	0.20	12,408	0.28	21,184	0.49
Permanent 0-100' VP Buffer Impact	60,445	1.38	138,431	3.19	198,876	4.57
Temporary 0-100' VP Buffer Impact	5,804	0.13	6,928	0.16	12,732	0.29
Permanent 100-250' VP Buffer Impact	701,505	16.10	452,684	10.39	1,154,189	26.50
Temporary 100-250' VP Buffer Impact	34,737	0.80	8,462	0.19	43,199	0.99

Table 2. Impacts to perennial streams by town at Wild Meadows Wind Project.

Perennial Stream ID	suffix	Town	Sheet No.	Direct Permanent (SF)	Direct Permanent (LF)	Direct Temporary (SF)	Direct Temporary (LF)	Secondary Permanent (SF)	Secondary Permanent (LF)	Secondary Temporary (SF)	Secondary Temporary (LF)	Buffer 100' Permanent (SF)	Buffer 100' Temporary (SF)
TS407p		Danbury	C- 3.3									12,825	1,925
TLS4p		Alexandria	C- 10.2			630	316	630	316			26,192	0
Pine Hill Brk		Alexandria	C- 10.5			1,134	228	1,134	228			15,122	0
	Subtotal Danbury:			0	0	0	0	0	0	0	0	12,825	1,925
	Subtotal Alexandria:			0	0	1,764	544	1,764	544	0	0	41,314	0
	Total:			0	0	1,764	544	1,764	544	0	0	54,139	1,925

Table 3. Impacts to intermittent streams by town at Wild Meadows Wind Project.

Intermittent Stream ID	Town	Sheet No.	Direct Permanent (SF)	Direct Permanent (LF)	Direct Temporary (SF)	Direct Temporary (LF)	Secondary Permanent (SF)	Secondary Permanent (LF)	Secondary Temporary (SF)	Secondary Temporary (LF)	Buffer 50' Permanent (SF)	Buffer 50' Temporary (SF)
BS9i	Danbury	C- 5.6									0	50
FS266i	Danbury	C- 7.5	173	58	40	14	109	37			4,287	342
FS293i	Alexandria	C- 7.6	174	87	11	6	75	37			3,583	533
FS26i	Alexandria	C- 7.7	272	58	42	10	86	25			5,413	1,102
FS76i	Alexandria	C- 8.1									3,338	1,164
OS17i	Alexandria	C- 9.1	700	175	21	5	303	76			10,800	1,144
OS11i	Alexandria	C- 9.1			29	7	29	7			4,455	991
TLS10i	Alexandria	C- 10.1			2,570	275	2,570	275			15,591	
TLS11i	Alexandria	C- 10.1			269	32	269	32			4,253	
TLS8i	Alexandria	C- 10.1			1,503	260	1,503	260			13,708	0
TLS7i	Alexandria	C- 10.1			312	77	312	77			6,731	0
TLS5i	Alexandria	C- 10.2			915	171	915	171			8,694	0
TLS12i	Alexandria	C- 10.3			1,662	113	1,662	113			11,785	0
TLS13i	Alexandria	C- 10.3			458	76	458	76			7,643	0
	Subtotal Danbury:		173	58	40	14	109	37	0	0	4,287	392
	Subtotal Alexandria:		1,146	320	7,792	1,032	8,182	1,149	0	0	95,994	4,934
	Total:		1,319	378	7,832	1,046	8,291	1,186	0	0	100,281	5,326

Table 4. Impacts to ephemeral streams by town at Wild Meadows Wind Project.

Ephemeral Stream ID	Town	Sheet No.	Direct Permanent (SF)	Direct Permanent (LF)	Direct Temporary (SF)	Direct Temporary (LF)	Secondary Permanent (SF)	Secondary Permanent (LF)	Secondary Temporary (SF)	Secondary Temporary (LF)	Buffer 20' Permanent (SF)	Buffer 20' Temporary (SF)
TS430e	Danbury	C- 2.1									239	458
TS301e	Danbury	C- 3.2	414	125	99	62					0	115
TS291e	Danbury	C- 3.2	95	95	5	5					0	165
TS288e	Danbury	C- 3.3	56	56	7	7					0	280
TS408e	Danbury	C- 3.3									595	359
TS272e	Danbury	C- 5.1	412	206	21	10					0	289
TS200e	Danbury	C- 5.2	270	150	26	13					0	476
TS59e	Danbury	C- 5.3									316	199
TS56e	Danbury	C- 5.4	119	60	16	8					218	187
TS56Ae	Danbury	C- 5.4	21	11	10	6					0	143
TS47e	Danbury	C- 5.4	117	58								
TS45e	Danbury	C- 5.4									116	151
BS201e	Danbury	C- 6.2									26	128
BS32e	Danbury	C- 6.3									0	81
TS20e	Danbury	C- 7.1	36	36	5	5	96	96			3,860	0
TS110e	Danbury	C- 7.1	74	73	8	8	45	45			1,809	0
TS111e	Danbury	C- 7.2	77	78	5	5					0	206
TS374e	Danbury	C- 7.2	78	78	5	5					0	142
TS373e	Danbury	C- 7.2	64	64								
TS375Ae	Danbury	C- 7.2	122	69	11	6					0	129
TS375e	Danbury	C- 7.2	174	106	18	11					302	0
TS127e	Danbury	C- 7.2	50	24	11	6					126	314
TS115e	Danbury	C- 7.2	275	138	20	10					0	206
TS378e	Danbury	C- 7.2	55	55	10	10					0	589
TS379e	Danbury	C- 7.2									394	202
TS134e	Danbury	C- 7.3	171	171	5	5					0	141

Table 4 Continued.

Ephemeral Stream ID	Town	Sheet No.	Direct Permanent (SF)	Direct Permanent (LF)	Direct Temporary (SF)	Direct Temporary (LF)	Secondary Permanent (SF)	Secondary Permanent (LF)	Secondary Temporary (SF)	Secondary Temporary (LF)	Buffer 20' Permanent (SF)	Buffer 20' Temporary (SF)
TS123e	Danbury	C- 7.3	262	263	33	33					320	1,081
TS380e	Danbury	C- 7.4									0	67
TS381e	Danbury	C- 7.4	678	400	10	5					0	166
FS274e	Danbury	C- 7.5	132	43	15	5	49	15			1,290	0
FS270e	Danbury	C- 7.5	141	71	21	11	73	36			1,599	185
FS263e	Danbury	C- 7.5									78	0
FS294e	Alexandria	C- 7.6	19	19	5	5	29	30			1,318	0
FS28e	Alexandria	C- 7.7	227	114	20	10					0	690
FS28e	Alexandria	C- 7.7	596	199	51	18					581	1,689
FS42e	Alexandria	C- 7.7	127	64	13	7					4	120
FS297e	Alexandria	C- 7.7,10.1					83	41			2,527	0
FS59e	Alexandria	C- 8.1									145	253
FS102e	Alexandria	C- 8.2	352	177								
FS308e	Alexandria	C- 8.3									120	197
FS313e	Alexandria	C- 8.3	36	36	6	6					81	287
FS310e	Alexandria	C- 8.3	100	99	8	8					98	149
FS311e	Alexandria	C- 8.3	185	92	10	5					0	251
FS327e	Alexandria	C- 8.3	257	129	20	10					0	832
FS327Ce	Alexandria	C- 8.3	45	22	12	6					79	231
FS328Ae	Alexandria	C- 8.3			86	43					1,114	1,010
FS327Be	Alexandria	C- 8.3	361	181	47	24					594	518
FS327e	Alexandria	C- 8.3	293	146	20	10					0	130
FS311e	Alexandria	C- 8.3	282	138	21	11					29	230
FS313e	Alexandria	C- 8.3	30	14	11	6					91	217
FS286e	Alexandria	C- 8.4	255	128	23	11					0	389

Table 4 Continued.

Ephemeral Stream ID	Town	Sheet No.	Direct Permanent (SF)	Direct Permanent (LF)	Direct Temporary (SF)	Direct Temporary (LF)	Secondary Permanent (SF)	Secondary Permanent (LF)	Secondary Temporary (SF)	Secondary Temporary (LF)	Buffer 20' Permanent (SF)	Buffer 20' Temporary (SF)
OS11e	Alexandria	C- 9.1			130	70	130	70			1,891	281
OS14e	Alexandria	C- 9.1			132	71	132	71			1,830	0
FS32e	Alexandria	C- 10.1			43	21	43	21			1,527	0
TLS6e	Alexandria	C- 10.2			844	139	844	139			6,271	0
TLS3e	Alexandria	C- 10.2			14	2	14	2			852	0
TLS14e	Alexandria	C- 10.3			135	67	135	67			3,386	0
TLS1e	Alexandria	C- 10.7			1,162	146	1,162	146			6,084	0
	Subtotal Danbury:		3,893	2,430	361	236	263	192	0	0	11,288	6,459
	Subtotal Alexandria:		3,165	1,558	2,813	696	2,572	587	0	0	28,622	7,474
	Total:		7,058	3,988	3,174	932	2,835	779	0	0	39,910	13,933

Table 5. Impacts to wetlands by town at Wild Meadows Wind Project.

Wetland ID	Classification	Sheet No.	Wetland Size (SF)	Direct Permanent (SF)	Direct Temporary (SF)	Secondary Permanent (SF)	Secondary Temporary (SF)	Function and Value Provided[1]
Danbury, NH								
TW420	PFO4/1	C-2.1	9,807	3,205	398			GW, STR,NUT,PE,
TW423	PFO4	C-2.1	2,066	833	323			GW, FF, STR, NUT, WH
TW422	PSS/PEM	C-2.2	3,117	717	193			GW,FF,STR,NUT,WH
TW403	PFO1/4	C-3.1	8,633	3,785	505			GW, FF, STR, NUT, **WH**
TW386	PEM1	C-3.1,3.2	8,223	8,223	0			GW, FF
TW385	PEM1/SS1	C-3.2	12,196	177	260			GW, STR, NUT, PE
TW300	PFO1	C-3.2	3,385	0	81			GW, STR, NUT, PE, WH
TW302	PSS1	C-3.2	8,427	0	48			GW, STR, WH
TW295	PFO14	C-3.2	51,400	909	993			GW, STR
TW299	PFO1	3.2	67,793	528	298			**GW, STR**, NUT, PE, SSS, **WH**
TW290	PEM1/SS1	3.2	11,422	1,498	271			**GW, STR, NUT, WH**
TW263	PSS1	3.3	1,445	875	226			GW, PE, **WH**
TW261	PEM1/PFO14	3.3	31,401	1,889	484	724	0	**GW**, STR, NUT, WH
TW256	PEM1/FO1/SS	3.3	25,629	78	203			GW, FF, STR, NUT, PE, **WH**
TW282	PEM1/FO1/SS	5.1	12,809	944	112			**GW**, STR, NUT, WH
TW61	PEM1/FO4	5.3	1,230	0	8			GW, FF, STR, NUT, WH
TW53	PEM1/FO4	5.4	9,884	1,029	111	1,501	0	FF,NUT
TW32	PFO1	5.5	2,424	2,424				WH
BW7	PFO1	5.6	2,305	210	149			**GW**, FF, STR, NUT, WH
BW19	PEM1	6.1	1,952	156	136			GW, FF, STR, NUT, SSS, WH
BW16	PEM1/FO14	6.1	11,385	2,230	279			GW, FF, STR, NUT, SSS, WH
BW28	PFO4	6.1	8,998	22	37	440	0	GW, FF, STR, NUT, WH,
BW29	PFO1	6.3	959	0	26			GW, STR, NUT, WH
TW126	PFO14	7.2	287	278	0			GW, WH
TW112	PFO13	7.2	866	296	51			**GW**, STR, WH
TW114	PFO14	7.2	5,108	852	207			**GW**, STR, SSS, **WH**
TW130	PFO14	7.2	269	269	0			GW, WH
TW136	PFO14	7.3	2,757	36	72			**GW**, FF, STR,NUT, SSS, WH
TW124	PFO4	7.3	5,421	1,066	137			GW, FF, STR, NUT, **WH**
TW382	PEM1/SS14	7.4	4,595			29	0	**GW**, STR, NUT, **WH**
TW383	PEM1/PFO14	7.4	14,858	8	34			**GW**, FF, STR, NUT, **WH**
FW271	PEM1	7.4	25,551	739	151	1,974	0	GW, STR, NUT, WH
FW276	PFO1	7.5	1,850	645	161			PE, **SSS**, WH

Table 5 Continued.

Wetland ID	Classification	Sheet No.	Wetland Size (SF)	Direct Permanent (SF)	Direct Temporary (SF)	Secondary Permanent (SF)	Secondary Temporary (SF)	Function and Value Provided[1]
FW277A	PEM1/PFO14	7.5	1,018	74	91	813	0	**GW**
FW268	PEM1	7.5	498			6	0	**GW**, FF, STR, NUT, WH
Alexandria, NH								
FW299	PFO1	7.7	3,177	1,409	45	169	0	**GW**, STR, WH
FW87	PFO4	8.1	799	34	82			GW, **WH**
FW84	PFO4	8.1	14,162	444	232			GW, **FF**, STR, PE, WH, VQ
FW94	PFO14	8.2	444	19	63			
FW64	PFO4	8.2	42,494			203	0	**GW**, FF, STR, NUT, SSS, WH, UH, VQ
FW98	PEM1/FO14	8.2	13,073	74	234			**GW**, FF, STR, NUT, PE, SSS, WH, VQ
FW306	PFO1	8.3	896	58	111			WH
FW307	PFO14	8.3	1,737	0	32			**GW**, WH
FW60	PFO14	8.2	1,384	0	1			GW, STR, NUT, PE, **WH**
FW330	PEM1/SS1	8.3	469	266	126			GW, STR, NUT, **WH**
FW316	PFO1	8.4	101			101	0	GW, STR, WH
FW283	PEM1	8.4	4,600	705	245			**GW**, STR, NUT WH
OW20	PSS1	9.1	114,678	2,544	1245			GW, FF, STR, NUT, SSS, WH
OW21	PEM1	9.1	3,631	77	239	2,187	0	GW, STR, NUT, WH
OW22	PFO1	9.1	804			804	0	GW, FF, **STR**, NUT WH
OW10	PEM1	9.1	87,877	0	157	141	0	GW, **FF**, **STR**, NUT, SSS, WH
OW18	PFO1/SS1	9.1	2,699	236	220	1,275	0	GW, **FF**
OW13	PFO1	9.1	620	0	50	50	0	GW, FF, STR, NUT, SSS, WH
TLW10	PFO1	10.1	5,151	0	728	728	0	**GW, FF, WH**
TLW8	PFO1	10.1	721	0	429	429	0	**GW**, WH
TLW7	PFO1	10.2	92	0	91	91	0	**GW**
TLW6	PFO1	10.2	1,060	0	837	837	0	**GW**
TLW4	PFO4	10.2, 10.3	2,496	0	613	613	0	GW, **PE**, **WH**
Est. wetland 1	PFO14	10.5	3,694	0	3,694	3,694	0	Site visit pending
Est. wetland 2	PFO14	10.6	4,458	0	4,458	4,458	0	Site visit pending
TLW1	PFO14	10.7	3,002	0	2,595	2,595	0	**GW**, STR, **PE**, **WH**

Table 5 Continued.

Subtotal Danbury:	**33,995**	**6,045**	**5,487**	**0**
Subtotal Alexandria:	**5,866**	**16,527**	**18,375**	**0**
Total:	**39,861**	**22,572**	**23,862**	**0**

Function and Values Symbology using USACE Highway Methodology: GW-groundwater, FF- floodflow alteration, STR-sediment and toxic retention, NUT-nutrient removal, SSS-sediment/shore stabilization, PE-production export, WH-wildlife habitat, UH-Uniqueness/heritage, VQ-Visual quality/aesthetics.

Bolded functions are principal functions.

Table 6. Summary of proposed wetland impacts by cover type and town.

Town and NWI Wetland Code	Wetland Cover Class	Direct Permanent (SF)	Direct Temporary (SF)	Secondary Permanent (SF)	Secondary Temporary (SF)
Alexandria					
PEM1	Wet meadow	782	641	2,328	0
PEM1/SS1	Wet meadow/ scrub-shrub	266	126		
PSS1	Scrub-shrub	2,544	1,245		
PFO1	Deciduous Forested	1,467	2,291	3,209	0
PFO14	Mixed forested	19	10,843	10,747	0
PFO4	Coniferous forested	478	927	816	0
PFO14/EM1	Forested/wet meadow	74	234		
PFO1/SS1	Forested/scrub-shrub	236	220	1,275	0
Sub-total:		5,866	16,527	18,375	0
Danbury					
PEM1	Wet meadow	9,118	287	1,980	0
PEM1/SS1	Wet meadow/ scrub-shrub	1,675	531		
PEM1/SS14	Wet meadow/ scrub-shrub			29	0
PSS/PEM	Wet meadow/ scrub-shrub	717	193		
PSS1	Scrub-shrub	875	274		
PFO1	Deciduous Forested	3,807	715		
PFO14	Mixed forested	9,708	2,429		
PFO4	Coniferous forested	1,921	497	440	0
PEM1/FO1/SS1	Forested/scrub-shrub/wet meadow	944	112		
PEM1/FO14	Forested/wet meadow	4,201	888	1,537	0
PEM1/FO4	Forested/wet meadow	1,029	119	1,501	0
Sub-total:		33,995	6,045	5,487	0
Total:		39,861	22,572	23,862	0

Table 7. Impacts to vernal pools by town at Wild Meadows Wind Project.

Town	Value Class	Plan Sheet	Direct Permanent (SF)	Direct Temporary (SF)	Secondary Permanent (SF)	Secondary Temporary (SF)	Buffer 0-100' Permanent (SF)	Buffer 0-100' Temporary (SF)	Buffer 100-250' Permanent (SF)	Buffer 100-250' Temporary (SF)	TOTAL Area 0-250' (SF)	% OF 0-250' Area Impacted
Danbury	C	C-3.2	20									100%
Danbury	B	C-3.2							1,487	593	223,317	1%
Danbury	B	C-3.2					11,866	1,010	77,730	1,571	200,174	46%
Danbury	C	C-3.2,3.3							43,442	2,616	200,174	23%
Danbury	C	C-3.2,5.1							23,340	2,566	181,938	14%
Danbury	A	C-3.3							367	691	264,094	0%
Danbury	A	C-3.3							51,284	2,573	254,853	21%
Danbury	A	C-5.1							16,466	5,026	264,094	8%
Danbury	C	C-5.1,5.2					210	816	43,287	3,768	203,785	24%
Danbury	C	C-5.2,5.3					5,562	919	27,661	4,436	214,501	18%
Danbury	C	C-5.3					15,031	502	77,530	1,130	228,013	41%
Danbury	C	C-5.3	117									100%
Danbury	A	C-5.3,5.4					9,961	1,186	80,843	1,622	233,991	40%
Danbury	C	C-6.1					1,972	752	38,545	3,111	219,429	20%
Danbury	B	C-6.1			105	0	14,363	0	69,603	1,453	249,660	34%
Danbury	A	C-6.3							22,989	1,721	222,238	11%
Danbury	B	C-7.3,7.2								135	225,068	0%
Danbury	B	C-7.4							17,256	456	220,298	8%
Danbury	A	C-7.4					1,150	619	54,668	1,269	214,997	27%
Danbury	C	C-7.4					330	0	54,885	0	254,485	22%
Danbury	A	C-7.4							122		214,177	0%
Alexandria	B	C-7.7					15,206	1,169	104,839	996	236,986	52%

Table 7 Continued.

Town	Value Class	Plan Sheet	Direct Permanent (SF)	Direct Temporary (SF)	Secondary Permanent (SF)	Secondary Temporary (SF)	Buffer 0-100' Permanent (SF)	Buffer 0-100' Temporary (SF)	Buffer 100-250' Permanent (SF)	Buffer 100-250' Temporary (SF)	TOTAL Area 0-250' (SF)	% OF 0-250' Area Impacted
Alexandria	B	C-8.1							11,441	1,492	219,345	6%
Alexandria	B	C-8.2					945	587	44,346	1,871	231,027	21%
Alexandria	B	C-8.3					1,675	968	80,476	1,505	227,356	37%
Alexandria	B	C-8.3					1,993	809	53,673	935	240,880	24%
Alexandria	B	C-9.1	1,075	898			40,987	3,395	67,783	927	694,754	16%
Alexandria	B	C-9.1	39	75			44,029	0	42,845	736	234,433	37%
Alexandria	B	C-10.2,10.3	0	306	306	0	15,619	0	23,503	0	231,313	17%
Alexandria	C	C-10.7	0	973	973	0	17,977	0	23,778	0	236,645	18%
		Subtotal Danbury:	137	0	105	0	60,445	5,804	701,505	34,737		
		Subtotal Alexandria:	1,114	2,252	1,279	0	138,431	6,928	452,684	8,462		
		Total:	1,251	2,252	1,384	0	198,876	12,732	1,154,189	43,199		

Table 8. Summary of proposed vernal pool and vernal pool buffer impacts.

Pool Class	# Pools Impacted	Direct Permanent (SF)	Direct Temporary (SF)	Secondary Permanent (SF)	Buffer 0-100' Permanent (SF)	Buffer 0-100' Temporary (SF)	Buffer 100-250' Permanent (SF)	Buffer 100- 250' Temporary (SF)
A	7	0	0	0	11,111	1,805	226,739	12,902
B	13	1,114	1,279	411	146,683	7,938	594,982	12,670
C	10	137	973	973	41,082	2,989	332,468	17,627
Total	30	1,251	2,252	1,384	198,876	12,732	1,154,189	43,199
Alexandria	9	137	0	105				
Danbury	21	1,114	2,252	1,279				

Appendix III

Photographs of Impacted Wetlands

EPHEMERAL STREAMS:

Photo ES01: Stream TS301 looking North (May 18, 2012)

Photo ES02: Stream TS288 (May 15, 2012)

Photo ES03: Stream TS408 looking South (Sept 20, 2013)

Photo ES04: Stream TS272 (May 15, 2012)

Photo ES05: Stream TS200 looking Southeast (April 19, 2012)

Photo ES06: Stream TS291 (May 15, 2012)

Photo ES07: Stream TS59 looking Northwest (May 25, 2010)

Photo ES08: Stream TS45 looking Northwest (May 24, 20104)

Photo ES09: Stream TS47 looking Southeast (May 24, 2010)

Photo ES10: Stream TS56 looking (May 24, 2010)

Photo ES11: Stream BS201 looking Northwest (May 23, 2012)

Photo ES12: Stream BS32 looking South (May 18, 2010)

Photo ES13: Stream TS110 (Aug 28, 2010)

Photo ES14: Stream TS20 looking (May 20, 2010)

Photo ES15: Stream TS111 (May 28, 2012)

Photo ES16: Stream TS115 (Sept 30, 2010)

Photo ES17: Stream TS127 looking (Oct 4, 2010)

Photo ES18: Stream TS373 (Aug 20, 2012)

Photo ES19: Stream TS374 (Aug 28, 2012)

Photo ES21: Stream TS375A looking South (Aug 28, 2012)

Photo ES22: Stream TS375 looking South (Aug 28, 2012)

Photo ES23: Stream TS378 (Aug 28, 2012)

Photo ES24: Stream TS123 (Oct 4, 2010)

Photo ES25: Stream TS134 (Oct 4, 2010)

Photo ES26: Stream TS381 (Aug 28, 2012)

Photo ES27: Stream FS270 (May 17, 2012)

Photo ES28: Stream FS274 looking Northeast (May 17, 2012)

Photo ES29: Stream FS294 looking North (May 22, 2012)

Photo ES30: Stream FS28 (Oct 6, 2010)

Photo ES31: Stream FS42 (Oct 6, 2010)

Photo ES32: Stream FS59 looking (Oct 12, 2010)

Photo ES33: Stream FS102 (Oct 13, 2010)

Photo ES34: Stream FS311 looking South (May 22, 2012)

Photo ES35: Stream FS313 (May 22, 2012)

Photo ES36: Stream FS327 looking North (Aug 29, 2012)

Photo ES37: Stream FS311 (-2) (May 22, 2012)

Photo ES38: Stream FS313 (-2) (May 22, 2012)

Photo ES39: Stream FS327 (Aug 29, 2012)

Photo ES40: Stream FS308 looking South (May 22, 2012)

Photo ES41: Stream FS310 looking South (May 22, 2012)

Photo ES42: Stream Fs327B looking North (Aug 29, 2012)

Photo ES43: Stream FS327C looking North (Aug 29, 2012)

Photo ES44: Stream FS328A (Aug 29, 2012)

Photo ES45: Stream FS286 looking North (May 21, 2012)

Photo ES46: Stream OS11 (Oct 11, 2012)

Photo ES47: Stream OS14 (Oct 11, 2012)

Photo ES48: Stream FS297 (May 22, 2012)

Photo ES49: Stream TS56A looking (Aug 10, 2012)

Photo ES50: Stream FS28 (Aug 10, 2012)

Photo ES51: Stream TLS6 (May 15, 2013)

Photo ES52: Stream TLS3 looking (May 15, 2013)

Photo ES53: Stream TLS14 (May 2013)

Photo ES54: Stream TLS1 (May 14, 2013)

Photo ES46: Stream TS379 (May 14, 2013)

INTERMITTENT STREAMS:

Photo IS01: Stream BS9 (May 14, 2010)

Photo IS02: Stream FS266 (May 17, 2012)

Photo ES03: Stream FS293 (May 22, 2012)

Photo IS04: Stream FS26 (Oct 6, 2010)

Photo IS05: Stream FS76 (May 18, 2012)

Photo IS06: Stream OS11 (Oct 11, 2012)

Photo IS07: Stream OS17 (Oct 11, 2012)

Photo IS08: Stream TLS10 (May 15, 2013)

Photo IS09: Stream TLS11 (May 15, 2013)

Photo IS10: Stream TLS8 (May 15, 2013)

Photo IS11: Stream TLS7 (May 15, 2013)

Photo IS12: Stream TLS5 (May 15, 2013)

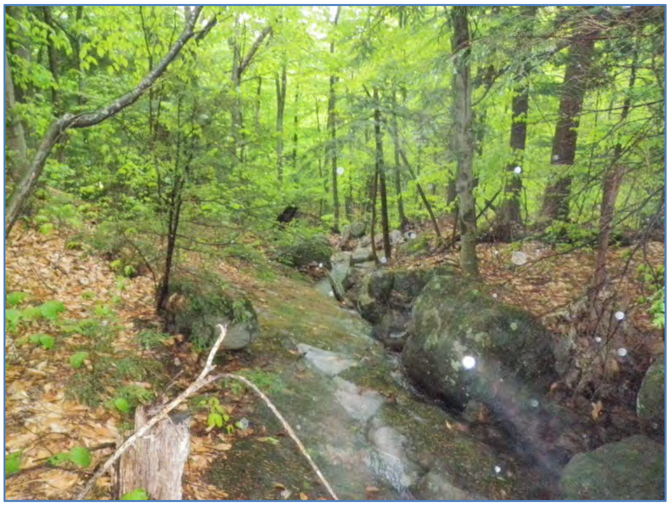


Photo IS13: Stream TLS12 (May 15, 2013)

PERENNIAL STREAMS:

Photo PS01: Stream TS407 looking North (Sept 19, 2013)

Photo PS02: Stream TLS4 (May 15, 2013)

Missing Stream Impact Photos: FS32, TS430, TS380, FS263, TLS13, Pine Hill Brook

Photo W01: Wetland TW420 looking Southeast (November 3, 2013)

Photo W02: Wetland TW422 looking Southeast (November 3, 2013)

Photo W03: Wetland TW403 looking South (September 20, 2013)

Photo W04: Wetland TW295 looking North (May 15, 2012)

Photo W5: Wetland TW290 looking East (May 15, 2012)

Photo W6: Wetland TW300 looking Southeast (May 18, 2012)

Photo W7: Wetland TW302 looking South (May 18, 2012)

Photo W8: Wetland TW385 looking Northeast (August 29, 2012)

Photo W9: Wetland TW261 looking South (May 14, 2012)

Photo W10: Wetland TW256 looking North (May 14, 2012)


Photo W11: Wetland TW263 looking South (May 14, 2012)


Photo W12: Wetland TW282 looking North (May 15, 2012)

Photo W13: Wetland TW61 (May 25, 2010)

Photo W14: Wetland TW53 (May 24, 2010)

Photo W15: Wetland TW32 (May 20, 2010)

Photo W16: Wetland BW7 (May 14, 2010)

Photo W17: Wetland BW16 (May 17, 2010)

Photo W18: Wetland BW19 (May 17, 2010)

Photo W19: Wetland BW28 (May 11, 2010)

Photo W20: Wetland BW29 looking South (May 18, 2010)

Photo W21: Wetland TW112 (Sept 29, 2010)

Photo W22: Wetland TW114 (Sept 30, 2010)

Photo W23: Wetland TW126 (Oct 4, 2010)

Photo W24: Wetland TW130 looking West (Oct 4, 2010)

Photo W25: Wetland TW124 looking Northeast (Sept 30, 2010)

Photo W26: Wetland TW136 (October 4, 2010)

Photo W27: Wetland FW271 looking West (May 17, 2012)

Photo W28: Wetland TW382 looking South (Aug 28, 2012)

Photo W29: Wetland TW383 looking Southeast (Aug 28, 2012)

Photo W30: Wetland FW277A looking 2010 (June 28, 2012)

Photo W31: Wetland FW299 looking North (May 22, 2012)

Photo W32: Wetland FW84 (Oct 12, 2010)

Photo W33: Wetland FW87 (Oct 12, 2010)

Photo W34: Wetland FW60 looking North (Oct 7, 2010)

Photo W35: Wetland FW64 (Apr 18, 2012)

Photo W36: Wetland FW98 (Apr 18, 2012)

Photo W37: Wetland FW306 looking North (May 22, 2012)

Photo W38: Wetland FW307 looking South (May 22, 2012)

Photo W39: Wetland FW330 looking North (Aug 29, 2012)

Photo W40: Wetland FW283 (May 21, 2012)

Photo W41: Wetland FW316 looking East (May 22, 2012)

Photo W42: Wetland OW10 looking North (Oct 8, 2012)

Photo W43: Wetland OW13 (Oct 11, 2012)

Photo W44: Wetland OW18 (Oct 11, 2012)

Photo W45: Wetland OW20 (Oct 11, 2012)

Photo W46: Wetland OW21 (Oct 11, 2012)

Photo W47: Wetland OW22 (Oct 11, 2012)

Photo W48: Wetland TW386 (Aug 29, 2012)

Photo W49: Wetland TLW10 looking North (May 15, 2013)

Photo W50: Wetland TLW8 (May 15, 2013)

Photo W51: Wetland TLW6 looking West (May 15, 2013)

Photo W52: Wetland TLW4 looking North (May 15, 2013)

Photo W53: Wetland TLW1 looking South (May 14, 2013)

Photo W54: Wetland TW423 looking Southeast (November 3, 2013)

Wetland impact photos missing for Wetlands FW276, FW268, TLW7, TW299, FW94

Photo VP01: Vernal Pool TVP202 (Apr 14, 2012)

Photo VP02: Vernal Pool TVP204 (Apr 14, 2012)

Photo VP03: Vernal Pool TVP246 (May 15, 2012)

Photo VP04: Vernal Pool TVP249 (May 15, 2012)

Photo VP05: Vernal Pool TVP247 (May 15, 2012)

Photo VP06: Vernal Pool TVP230 overview (April 19, 2012)

Photo VP07: Vernal Pool TVP232 overview (April 19, 2012)

Photo VP08: Vernal Pool TVP234 (Apr 19, 2012)

Photo VP09: Vernal Pool TVP229 (Jul 3, 2012)

Photo VP10: Vernal Pool TVP02 looking southwest (May 25, 2010)

Photo VP11: Vernal Pool TVP04 (Apr 17, 2012)

Photo VP12: Vernal Pool TVP01 (May 25, 2010)

Photo VP13: Vernal Pool TVP03 looking South (May 6, 2010)

Photo VP14: Vernal Pool BVP02 looking North (Apr 17, 2012)

Photo VP15: Vernal Pool BVP06 (Apr 17, 2012)

Photo VP16: Vernal Pool BVP241 (May 16, 2013)

Photo VP17: Vernal Pool TVP122 (Oct 4, 2010)

Photo VP18: Vernal Pool FVP213 (May 16, 2013)

Photo VP19: Vernal Pool TVP300 (May 16, 2013)

Photo VP20: Vernal Pool TVP301 (May 16, 2013)

Photo VP21: Vernal Pool FVP302 (May 16, 2013)

Photo VP22: Vernal Pool FVP30 (May 1, 2012)

Photo VP23: Vernal Pool FVP75 (October 11, 2010)

Photo VP24: Vernal Pool FVP100 (Oct 12, 2010)

Photo VP25: Vernal Pool FVP205 (May 1, 2012)

Photo VP26: Vernal Pool FVP206 (May 1, 2012)

Photo VP27: Vernal Pool OVP2 (May 14, 2013)

Photo VP28: Vernal Pool OVP1 (May 14, 2013)

Photo VP29: Vernal Pool TLVP2 (May 14, 2013)

Photo VP30: Vernal Pool TLVP1 (May 14, 2013)

Appendix IV.

Relevant USACE Wetland Plots for Wild Meadows Wind Project

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project
City/County: Danbury
Sampling Date: 9/27/13
Applicant/Owner: Atlantic Wind LLC
State: NH
Sampling Point: TW400 A Up
Investigator(s): W. McCloy
Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope
Local relief (concave, convex, none): Concave
Slope (%): 20
Lat.:
Long.:
Datum:
Soil Map Unit Name: Hermon fine sandy loam, 25-35% slope
NWI Classification: Upland
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ___, soil ___, or hydrology ___ significantly disturbed?
Are vegetation ___, soil ___, or hydrology ___ naturally problematic?
Are "normal circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? N
Hydric soil present? N
Indicators of wetland hydrology present? N

Is the sampled area within a wetland? N

If yes, optional wetland site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

No wetland hydrology indicators

VEGETATION - Use scientific names of plants

Sampling Point: TW400 A Up

	Tree Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Quercus rubra*	30	Y	FACU
2	*Acer saccharum*	30	Y	FACU
3	*Fagus grandifolia*	20	Y	FACU
4	*Betula alleghaniensis*	10	N	FAC
5	*Tsuga canadensis*	5	N	FACU
6				
7				
8				
9				
10				
		95	= Total Cover	

	Sapling/Shrub Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Fagus grandifolia*	20	Y	FACU
2	*Betula alleghaniensis*	5	N	FAC
3	*Fraxinus americana*	3	N	FACU
4	*Ostrya virginiana*	1	N	FACU
5				
6				
7				
8				
9				
10				
		29	= Total Cover	

	Herb Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Dennstaedtia punctilobula*	5	Y	UPL
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		5	= Total Cover	

	Woody Vine Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	19	48
Sapling/Shrub Stratum	6	15
Herb Stratum	1	3
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	15	x 3 =	45	
FACU species	109	x 4 =	436	
UPL species	5	x 5 =	25	
Column totals	129	(A)	506	(B)

Prevalence Index = B/A = 3.92

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
___ Dominance test is >50%
___ Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** TW400 A Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-1	10YR/3/2	100					SL	O/A - dry, friable
2-8	2.5Y/4/3	100					SL	A/B, dry, friable

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 8

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Danbury Sampling Date: 9/27/13
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: TW400 B Wet
Investigator(s): W. McCloy Section, Township, Range: ___
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave
Slope (%): 5-10 Lat.: ___ Long.: ___ Datum: ___
Soil Map Unit Name: Hermon fine sandy loam, 25-35% slope NWI Classification: PFO1/EM1E
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ___, soil ___, or hydrology ___ significantly disturbed? Are "normal
Are vegetation ___, soil ___, or hydrology ___ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y
Hydric soil present? Y
Indicators of wetland hydrology present? Y

Is the sampled area within a wetland? Y

If yes, optional wetland site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
X High Water Table (A2)
X Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)

___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Microtopographic Relief (D4)

Field Observations:
Surface water present? Yes ___ No X Depth (inches): ___
Water table present? Yes X No ___ Depth (inches): 5
Saturation present? Yes X No ___ Depth (inches): 0
(includes capillary fringe)

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

Saturated at surface; Water @ 5" in pit after 15 minutes.

VEGETATION - Use scientific names of plants

Sampling Point: TW400 B Wet

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Tsuga canadensis*	5	Y	FACU
2	*Betula alleghaniensis*	5	Y	FAC
3				
4				
5				
6				
7				
8				
9				
10				
		10	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Salix bebbiana*	5	Y	FACW
2	*Acer rubrum*	5	Y	FAC
3	*Fraxinus pennsylvanica*	5	Y	FACW
4	*Betula populifolia*	2	N	FAC
5	*Fagus grandifolia*	2	N	FACU
6				
7				
8				
9				
10				
		19	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Equisetum pratense*	30	Y	FACW
2	*Onoclea sensibilis*	30	Y	FACW
3	*Carex crinita*	20	N	OBL
4	*Symphyotrichum lanceolatum*	10	N	FACW
5	*Athyrium angustum*	10	N	FAC
6	*Rubus idaeus*	5	N	FACU
7	*Geum aleppicum*	5	N	FAC
8				
9				
10				
11				
12				
13				
14				
15				
		110	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	2	5
Sapling/Shrub Stratum	4	10
Herb Stratum	22	55
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 85.71% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	20	x 1 =	20	
FACW species	80	x 2 =	160	
FAC species	27	x 3 =	81	
FACU species	12	x 4 =	48	
UPL species	0	x 5 =	0	
Column totals	139	(A)	309	(B)

Prevalence Index = B/A = 2.22

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
X Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: TW400 B Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-6	2.5Y/3/1	100	10YR/4/4	5	C	M	LS	A - moist/saturated; redox@4
6-12	Gley1/5/5GY	100	10YR/4/4	8	C	M	FS	B - fine sand; saturated

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
X Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: None
Depth (inches):

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Danbury Sampling Date: 10/12/12
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: TW300 A Up
Investigator(s): I. Broadwater Section, Township, Range: ______
Landform (hillslope, terrace, etc.): Small Ridge Local relief (concave, convex, none): Convex
Slope (%): ~8% Lat.: ______ Long.: ______ Datum: ______
Soil Map Unit Name ______ NWI Classification: Upland
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ______ , soil ______ , or hydrology ______ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ______ , soil ______ , or hydrology ______ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	______

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	______	No	X	Depth (inches): ______
Water table present?	Yes	______	No	X	Depth (inches): ______
Saturation present? (includes capillary fringe)	Yes	______	No	X	Depth (inches): ______

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

No wetland hydrology indicators observed

VEGETATION - Use scientific names of plants

Sampling Point: TW300 A Up

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Quercus rubra*	40	Y	FACU
2	*Acer saccharum*	15	N	FACU
3	*Abies balsamea*	15	N	FAC
4	*Acer rubrum*	5	N	FAC
5	*Pinus strobus*	2	N	FACU
6				
7				
8				
9				
10				
		77	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Abies balsamea*	10	Y	FAC
2	*Ilex verticillata*	1	N	FACW
3	*Prunus pensylvanica*	1	N	FACU
4				
5				
6				
7				
8				
9				
10				
		12	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Vaccinium angustifolium*	0.5	Y	FACU
2	*Prunus serotina*	0.5	Y	FACU
3	*Pinus strobus*	0.5	Y	FACU
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		1.5	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	15	39
Sapling/Shrub Stratum	2	6
Herb Stratum	0	1
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 20.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	0	x 1 =	0	
FACW species	1	x 2 =	2	
FAC species	30	x 3 =	90	
FACU species	59.5	x 4 =	238	
UPL species	0	x 5 =	0	
Column totals	90.5	(A)	330	(B)

Prevalence Index = B/A = 3.65

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: TW300 A Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-1	Various						60% fibrous	O, slightly decomp organic m
1-3	10YR/3/2	99					FSL	A, friable
3-5	7.5YR/7/1	99					FSL	E horizon
5-20	5YR/4/4	99					SL	no redox

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: None
Depth (inches):

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Danbury Sampling Date: 10/12/12
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: TW300 B Wet
Investigator(s): I. Broadwater Section, Township, Range: ______
Landform (hillslope, terrace, etc.): Bog Local relief (concave, convex, none): None
Slope (%): ~2% Lat.: ______ Long.: ______ Datum: ______
Soil Map Unit Name ______ NWI Classification: PFO1
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ______ , soil ______ , or hydrology ______ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ______ , soil ______ , or hydrology ______ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y
Hydric soil present? Y
Indicators of wetland hydrology present? Y

Is the sampled area within a wetland? Y

If yes, optional wetland site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes	X	No	X	Depth (inches):	8
Saturation present? (includes capillary fringe)	Yes	X	No	X	Depth (inches):	3

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: TW300 B Wet

	Tree Stratum Plot Size (30)	Absolute % Cover	Dominant Species	Indicator Status
1	*Acer rubrum*	30	Y	FAC
2	*Quercus rubra*	20	Y	FACU
3	*Abies balsamea*	20	Y	FAC
4	*Alnus incana*	5	N	FACW
5				
6				
7				
8				
9				
10				
		75	= Total Cover	

	Sapling/Shrub Stratum Plot Size (15)	Absolute % Cover	Dominant Species	Indicator Status
1	*Ilex verticillata*	20	Y	FACW
2	*Acer rubrum*	10	Y	FAC
3	*Abies balsamea*	5	N	FAC
4	*Alnus incana*	5	N	FACW
5				
6				
7				
8				
9				
10				
		40	= Total Cover	

	Herb Stratum Plot Size (5)	Absolute % Cover	Dominant Species	Indicator Status
1	*Equisetum arvense*	5	Y	FAC
2	*Athyrium angustum*	5	Y	FAC
3	*Unknown Grass*	5	Y	NI
4	*Solidago canadensis*	3	N	FACU
5	*Matteuccia struthiopteris*	2	N	FAC
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		20	= Total Cover	

	Woody Vine Stratum Plot Size (30)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	15	38
Sapling/Shrub Stratum	8	20
Herb Stratum	4	10
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 8 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	0	x 1 =	0	
FACW species	30	x 2 =	60	
FAC species	77	x 3 =	231	
FACU species	23	x 4 =	92	
UPL species	0	x 5 =	0	
Column totals	130	(A)	383	(B)

Prevalence Index = B/A = 2.95

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
X Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: TW300 B Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-10	10YR/2/1	99					Mucky Sandy Loam	Saturated at 3 inches
10-12	10YR/7/2	99					Sandy Loam	Saturated

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
X Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Boulders, cobble, bedrock
Depth (inches): 12

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Danbury Sampling Date: 10/12/12
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: TW299 A Up
Investigator(s): I. Broadwater Section, Township, Range: ___
Landform (hillslope, terrace, etc.): Small Ridge Local relief (concave, convex, none): Convex
Slope (%): ~5% Lat.: ___ Long.: ___ Datum: ___
Soil Map Unit Name ___ NWI Classification: Upland
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ___, soil X, or hydrology X significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ___, soil ___, or hydrology ___ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y
Hydric soil present? N
Indicators of wetland hydrology present? N

Is the sampled area within a wetland? N

If yes, optional wetland site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)

Soil is fill material; hydrology altered with fill material

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Microtopographic Relief (D4)

Field Observations:
Surface water present? Yes ___ No X Depth (inches): ___
Water table present? Yes ___ No X Depth (inches): ___
Saturation present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

No wetland hydrology indicators observed

VEGETATION - Use scientific names of plants

Sampling Point: TW299 A Up

Tree Stratum	Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Populus deltoides*	25	Y	FAC
2	*Fraxinus pennsylvanica*	5	N	FACW
3	*Acer saccharum*	5	N	FACU
4	*Prunus serotina*	3	N	FACU
5				
6				
7				
8				
9				
10				
		38	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Populus deltoides*	20	Y	FAC
2	*Salix bebbiana*	8	Y	FACW
3	*Alnus incana*	5	N	FACW
4	*Quercus rubra*	2	N	FACU
5	*Rubus occidentalis*	2	N	
6				
7				
8				
9				
10				
		37	= Total Cover	

Herb Stratum	Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Solidago canadensis*	30	Y	FACU
2	*Rubus occidentalis*	10	Y	
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		40	= Total Cover	

Woody Vine Stratum	Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Vitis labrusca*	2	Y	FACU
2				
3				
4				
5				
		2	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	8	19
Sapling/Shrub Stratum	7	19
Herb Stratum	8	20
Woody Vine Stratum	0	1

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	0	x 1 =	0	
FACW species	18	x 2 =	36	
FAC species	45	x 3 =	135	
FACU species	42	x 4 =	168	
UPL species	0	x 5 =	0	
Column totals	105	(A)	339	(B)

Prevalence Index = B/A = 3.23

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Landscape dominated by FAC plants

SOIL

Sampling Point: TW299 A Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-11	10YR/3/2	95	None				SL	dry, fill material
>11	refusal							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Boulder/Cobble/Bedrock
Depth (inches): 11

Hydric soil present? N

Remarks:

There are no indicators of wetness in profile. Based on the tree sizes nearby and in plot; soil disturbance was

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Danbury Sampling Date: 10/12/12
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: TW299 B Wet
Investigator(s): I. Broadwater Section, Township, Range:
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None
Slope (%): ~3% Lat.: Long.: Datum:
Soil Map Unit Name NWI Classification: PFO1E
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation , soil , or hydrology naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y
Hydric soil present? Y
Indicators of wetland hydrology present? Y

Is the sampled area within a wetland? Y

If yes, optional wetland site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

Soil is fill material; hydrology altered with fill material

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- X Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Microtopographic Relief (D4)

Field Observations:
Surface water present? Yes No X Depth (inches):
Water table present? Yes No X Depth (inches):
Saturation present? Yes X No Depth (inches): 8
(includes capillary fringe)

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

No wetland hydrology indicators observed

VEGETATION - Use scientific names of plants

Sampling Point: TW299 B Wet

	Tree Stratum Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Populus deltoides*	20	Y	FAC
2	*Betula papyrifera*	10	Y	FACU
3	*Alnus incana*	2	N	FACW
4				
5				
6				
7				
8				
9				
10				
		32	= Total Cover	

	Sapling/Shrub Stratum Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Alnus incana*	30	Y	FACW
2	*Populus deltoides*	15	Y	FAC
3	*Betula papyrifera*	5	N	FACU
4	*Spiraea alba*	3	N	FACW
5	*Quercus rubra*	2	N	FACU
6	*Salix bebbiana*	2	N	FACW
7				
8				
9				
10				
		57	= Total Cover	

	Herb Stratum Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Solidago canadensis*	5	Y	FACU
2	*Symphyotrichum novae-angliae*	2	Y	FACW
3	*Impatiens capensis*	2	Y	FACW
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		9	= Total Cover	

	Woody Vine Stratum Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Vitis labrusca*	1	Y	FACU
2				
3				
4				
5				
		1	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	6	16
Sapling/Shrub Stratum	11	29
Herb Stratum	2	5
Woody Vine Stratum	0	1

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 8 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 62.50% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	0	x 1 =	0	
FACW species	41	x 2 =	82	
FAC species	35	x 3 =	105	
FACU species	23	x 4 =	92	
UPL species	0	x 5 =	0	
Column totals	99	(A)	279	(B)

Prevalence Index = B/A = 2.82

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
X Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: TW299 B Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-8	10YR/2/2	98	10YR/7/1	2	D	M	Mucky Loam	Saturated at 7-8 inches
>8	refusal							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
X Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Boulder/Cobble/Bedrock
Depth (inches): 8

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Danbury Sampling Date: 5/21/10
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: TW32 A Up
Investigator(s): J. West, L. Lapierre Section, Township, Range: ___
Landform (hillslope, terrace, etc.): Ridge Local relief (concave, convex, none): Convex
Slope (%): 3-6 Lat.: ___ Long.: ___ Datum: ___
Soil Map Unit Name ___ NWI Classification: Upland
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ___, soil ___, or hydrology ___ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ___, soil ___, or hydrology ___ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? N
Hydric soil present? N
Indicators of wetland hydrology present? N

Is the sampled area within a wetland? N

If yes, optional wetland site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:
Surface water present? Yes ___ No X Depth (inches): ___
Water table present? Yes ___ No X Depth (inches): ___
Saturation present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

No wetland hydrology indicators observed

VEGETATION - Use scientific names of plants

Sampling Point: TW32 A Up

Tree Stratum	Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Fagus grandifolia*	40	Y	FACU
2	*Betula alleghaniensis*	15	N	FAC
3	*Acer rubrum*	15	N	FAC
4	*Acer saccharum*	10	N	FACU
5				
6				
7				
8				
9				
10				
		80	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Fagus grandifolia*	20	Y	FACU
2	*Acer pensylvanicum*	10	Y	FACU
3	*Picea rubens*	10	Y	FACU
4				
5				
6				
7				
8				
9				
10				
		40	= Total Cover	

Herb Stratum	Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Fagus grandifolia*	15	Y	FACU
2	*Clintonia borealis*	5	Y	FAC
3	*Maianthemum canadense*	5	Y	FACU
4	*Trillium erectum*	0	N	FACU
5	*Aralia nudicaulis*	0	N	FACU
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		25	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	16	40
Sapling/Shrub Stratum	8	20
Herb Stratum	5	13
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 14.29% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	35	x 3 =	105	
FACU species	110	x 4 =	440	
UPL species	0	x 5 =	0	
Column totals	145	(A)	545	(B)

Prevalence Index = B/A = 3.76

Hydrophytic Vegetation Indicators:

____ Rapid test for hydrophytic vegetation

____ Dominance test is >50%

____ Prevalence index is ≤3.0*

____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: TW32 A Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-1	10YR/2/1							A horizon
1-3	10YR/3/1	50					Very FSL	E horizon
1-3	7.5YR/3/1	50					Very FSL	E horizon
3-5	5YR/2.5/1						Very FSL	BHS1
5-12	7.5YR/2.5/1						Very FSL	BHS2
12-18	7.5YR/2.5/3		Redox evident				Very FSL	
>18	10YR/4/4						Very FSL	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: None
Depth (inches):

Hydric soil present? N

Remarks:

Lacks hydric morphology; redox evident at approx. 18"

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Danbury Sampling Date: 5/21/10
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: TW32 B Wet
Investigator(s): L. Lapierre Section, Township, Range:
Landform (hillslope, terrace, etc.): Ridgetop Local relief (concave, convex, none): None
Slope (%): 0 Lat.: Long.: Datum:
Soil Map Unit Name NWI Classification: PFO1
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ___, soil ___, or hydrology ___ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ___, soil ___, or hydrology ___ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	TW32

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- __ Aquatic Fauna (B13)
- __ Marl Deposits (B15)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres on Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Drainage Patterns (B10)
- __ Moss Trim Lines (B16)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Stunted or Stressed Plants (D1)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)
- __ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	<1
Water table present?	Yes	X	No		Depth (inches):	0, @ surf
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0, @ surf

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: TW32 B Wet

Tree Stratum	Plot Size (Within wet)	Absolute % Cover	Dominant Species	Indicator Status
1	*Acer rubrum*	5	Y	FAC
2	*Fagus grandifolia*	4	Y	FACU
3				
4				
5				
6				
7				
8				
9				
10				
		9	= Total Cover	

Sapling/Shrub Stratum	Plot Size (Wetland)	Absolute % Cover	Dominant Species	Indicator Status
1	*Viburnum lantanoides*	3	Y	FACU
2	*Fagus grandifolia*	2	Y	FACU
3				
4				
5				
6				
7				
8				
9				
10				
		5	= Total Cover	

Herb Stratum	Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Osmunda claytoniana*	50	Y	FAC
2	*Sphagnum sp.*	25	Y	OBL
3	*Uvularia sessilifolia*	4	N	FACU
4	*Carex pedunculata*	2	N	FACU
5	*Dryopteris intermedia*	2	N	FAC
6	*Maianthemum canadense*	2	N	FACU
7	*Trientalis borealis*	1	N	FAC
8	*Acer pensylvanicum*	1	N	FACU
9	*Acer spicatum*	1	N	FACU
10				
11				
12				
13				
14				
15				
		88	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	2	5
Sapling/Shrub Stratum	1	3
Herb Stratum	18	44
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	25	x 1 =	25	
FACW species	0	x 2 =	0	
FAC species	58	x 3 =	174	
FACU species	19	x 4 =	76	
UPL species	0	x 5 =	0	
Column totals	102	(A)	275	(B)

Prevalence Index = B/A = 2.70

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

X Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Did not include those species with <1 percent

SOIL

Sampling Point: TW32 B Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-1							Organic	O Horizon
1-6	10YR/3/1						Very FSL	A Horizon

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)
X Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 6 inches

Hydric soil present? Y

Remarks:

Problematic soil; low quality wetland in depression with shallow bedrock. Wetland has distinct hydrology and

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Danbury Sampling Date: 5/12/10
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: TW5 A Up
Investigator(s): J. West, S. Allen Section, Township, Range:
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex
Slope (%): 1-5 Lat.: Long.: Datum:
Soil Map Unit Name NWI Classification: Upland
Are climatic/hydrologic conditions of the site typical for this time of the year? No (If no, explain in remarks)
Are vegetation ___, soil ___, or hydrology ___ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ___, soil X, or hydrology ___ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? N
Hydric soil present? N
Indicators of wetland hydrology present? N

Is the sampled area within a wetland? N

If yes, optional wetland site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

Dry spring; Very shallow soils over bedrock

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):
Water table present?	Yes		No	X	Depth (inches):
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

No wetland hydrology indicators observed

VEGETATION - Use scientific names of plants

Sampling Point: TW5 A Up

	Tree Stratum Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Abies balsamea*	50	Y	FAC
2	*Picea rubens*	25	Y	FACU
3	*Acer rubrum*	10	N	FAC
4				
5				
6				
7				
8				
9				
10				
		85	= Total Cover	

	Sapling/Shrub Stratum Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Picea rubens*	25	Y	FACU
2				
3				
4				
5				
6				
7				
8				
9				
10				
		25	= Total Cover	

	Herb Stratum Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Unidentified bryophytes*	50	Y	NI
2	*Maianthemum canadense*	20	Y	FACU
3	*Cornus canadensis*	10	N	FAC
4	*Abies balsamea*	5	N	FAC
5	*Picea rubens*	5	N	FACU
6	*Dryopteris intermedia*	3	N	FAC
7	*Sorbus americana*	1	N	FAC
8				
9				
10				
11				
12				
13				
14				
15				
		94	= Total Cover	

	Woody Vine Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	17	43
Sapling/Shrub Stratum	5	13
Herb Stratum	19	47
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 20.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	79	x 3 =	237	
FACU species	75	x 4 =	300	
UPL species	0	x 5 =	0	
Column totals	154	(A)	537	(B)

Prevalence Index = B/A = 3.49

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** TW5 A Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-1	7.5YR/3/3							OE
1-3	10YR/2/1							OA

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 1-4

Hydric soil present? N

Remarks:

Very shallow soils over bedrock

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Danbury Sampling Date: 5/12/10
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: TW5 B Wet
Investigator(s): J. West, S. Allen Section, Township, Range: ___
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave
Slope (%): ___ Lat.: ___ Long.: ___ Datum: ___
Soil Map Unit Name ___ NWI Classification: PFO4
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ___ , soil ___ , or hydrology ___ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ___ , soil X , or hydrology ___ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y
Hydric soil present? Y
Indicators of wetland hydrology present? Y

Is the sampled area within a wetland? Y

If yes, optional wetland site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)

Very shallow soils over bedrock with follists and Sphagnum moss species

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	2-Jan
Water table present?	Yes	X	No		Depth (inches):	0
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

Seepy Sphagnum dominated wetland. Water perched on rock - draining to east through two outlets (T-S-2 and T-S-3). Several standing pools.

VEGETATION - Use scientific names of plants

Sampling Point: TW5 B Wet

	Tree Stratum Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Picea rubens*	30	Y	FACU
2	*Abies balsamea*	30	Y	FAC
3	*Acer rubrum*	10	N	FAC
4	*Betula populifolia*	5	N	FAC
5				
6				
7				
8				
9				
10				
		75	= Total Cover	

	Sapling/Shrub Stratum Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Picea rubens*	10	Y	FACU
2				
3				
4				
5				
6				
7				
8				
9				
10				
		10	= Total Cover	

	Herb Stratum Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Sphagnum sp.*	60	Y	OBL
2	*Maianthemum canadense*	10	Y	FACU
3	*Cornus canadensis*	10	Y	FAC
4	*Acer rubrum*	10	Y	FAC
5	*Picea rubens*	10	Y	FACU
6	*Pteridium aquilinum*	10	Y	FACU
7	*Carex sp.*	10	Y	FACW
8	*Coptis trifolia*	5	N	FACW
9	*Abies balsamea*	5	N	FAC
10	*Sorbus americana*	3	N	FAC
11	*Amelanchier canadensis*	3	N	FAC
12				
13				
14				
15				
		136	= Total Cover	

	Woody Vine Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	15	38
Sapling/Shrub Stratum	2	5
Herb Stratum	27	68
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 10 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	60	x 1 =	60	
FACW species	15	x 2 =	30	
FAC species	76	x 3 =	228	
FACU species	70	x 4 =	280	
UPL species	0	x 5 =	0	
Column totals	221	(A)	598	(B)

Prevalence Index = B/A = 2.71

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
___ Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: TW5 B Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-1	7.5YR/3/3						Hemic	OE
1-12	10YR/2/1						Sapric	OA
12-16	10YR/2/1						FSL	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 16

Hydric soil present? Y

Remarks:

Pit and mound wetland topography; Sphagnum moss dominates wetland

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Alexandria Sampling Date: 10/11/12
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: OW16 A Up
Investigator(s): I. Broadwater Section, Township, Range:
Landform (hillslope, terrace, etc.): Knoll Local relief (concave, convex, none): Convex
Slope (%): 3-8 Lat.: Long.: Datum:
Soil Map Unit Name NWI Classification: Upland
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ____, soil ____, or hydrology ____ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y
Hydric soil present? N
Indicators of wetland hydrology present? N

Is the sampled area within a wetland? N

If yes, optional wetland site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

No wetland hydrology indicators observed

VEGETATION - Use scientific names of plants

Sampling Point: OW16 A Up

Tree Stratum	Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Abies balsamea*	50	Y	FAC
2	*Ulmus rubra*	2	N	FAC
3	*Acer rubrum*	2	N	FAC
4	*Acer saccharum*	1	N	FACU
5				
6				
7				
8				
9				
10				
		55	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Abies balsamea*	25	Y	FAC
2	*Acer saccharum*	2	N	FACU
3	*Ulmus rubra*	2	N	FAC
4				
5				
6				
7				
8				
9				
10				
		29	= Total Cover	

Herb Stratum	Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Abies balsamea*	5	Y	FAC
2	*Lycopodium dendroidum*	3	Y	NI
3	*Aralia nudicaulis*	1	N	FACU
4	*Athyrium angustum*	0.5	N	FAC
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		9.5	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	11	28
Sapling/Shrub Stratum	6	15
Herb Stratum	2	5
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	86.5	x 3 =	259.5	
FACU species	4	x 4 =	16	
UPL species	0	x 5 =	0	
Column totals	90.5	(A)	275.5	(B)

Prevalence Index = B/A = 3.04

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

X Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: OW16 A Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-4	10YR/2/2	98					Organic	Fibric
4-6	7.5YR/3/4	100	None				FSL	Friable, roots 10%
6-11	7.5YR/5/6	100	None				FSL	friable, roots 5%
11"	Refusal							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Rock, boulders, cobble, dense gravel
Depth (inches): 11

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Alexandria Sampling Date: 10/11/12
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: OW16 B Wet
Investigator(s): I. Broadwater Section, Township, Range: ______
Landform (hillslope, terrace, etc.): Streambed/banka Local relief (concave, convex, none): comcave
Slope (%): 0 Lat.: ______ Long.: ______ Datum: ______
Soil Map Unit Name ______ NWI Classification: Upland
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ______, soil ______, or hydrology ______ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ______, soil ______, or hydrology ______ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y
Hydric soil present? Y
Indicators of wetland hydrology present? Y

Is the sampled area within a wetland? Y

If yes, optional wetland site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)

Plot is 2-3 feet lower in elevation than upland plot

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

X Surface Water (A1)
X High Water Table (A2)
X Saturation (A3)
___ Water Marks (B1)
X Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
X Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
X Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
X Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Microtopographic Relief (D4)

Field Observations:
Surface water present? Yes X No ______ Depth (inches): 0
Water table present? Yes X No ______ Depth (inches): 0
Saturation present? Yes X No ______ Depth (inches): 0
(includes capillary fringe)

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: OW16 B Wet

	Tree Stratum Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Abies balsamea*	30	Y	FAC
2	*Betula alleghaniensis*	25	Y	FAC
3	*Quercus alba*	10	N	FACU
4	*Acer rubrum*	5	N	FAC
5	*Ulmus rubra*	5	N	FAC
6				
7				
8				
9				
10				
		75	= Total Cover	

	Sapling/Shrub Stratum Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Abies balsamea*	15	Y	FAC
2	*Betula alleghaniensis*	5	Y	FAC
3	*Ulmus rubra*	5	Y	FAC
4				
5				
6				
7				
8				
9				
10				
		25	= Total Cover	

	Herb Stratum Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Sphagnum angustifolium*	40	Y	OBL
2	*Abies balsamea*	30	Y	FAC
3	*Betula alleghaniensis*	5	N	FAC
4	*Athyrium angustum*	2	N	FAC
5	*Unidentified grass*	2	N	NI
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		79	= Total Cover	

	Woody Vine Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	15	38
Sapling/Shrub Stratum	5	13
Herb Stratum	16	40
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:			
OBL species	40	x 1 =	40
FACW species	0	x 2 =	0
FAC species	127	x 3 =	381
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column totals	177 (A)		461 (B)

Prevalence Index = B/A = 2.60

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
X Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: OW16 B Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-15	10YR/2/1	99					Organic, hemic	
15-17	Gley1/7/N	95	10YR/6/1	5	D	M	LS	
>17	Refusal							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Rock, boulders, cobble, dense gravel
Depth (inches): 17

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Alexandria Sampling Date: 5/17/12
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: FW269 A Up
Investigator(s): L. Lapierre Section, Township, Range: ____
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex
Slope (%): 10 Lat.: ____ Long.: ____ Datum: ____
Soil Map Unit Name ____ NWI Classification: Upland
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ____, soil ____, or hydrology ____ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes ____	No	X	Depth (inches):	
Water table present?	Yes ____	No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes ____	No	X	Depth (inches):	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

10% slope prevents water from collecting

VEGETATION - Use scientific names of plants

Sampling Point: FW269 A Up

	Tree Stratum	Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Acer pensylvanicum*		45	Y	FACU
2	*Betula alleghaniensis*		20	Y	FAC
3	*Acer rubrum*		20	Y	FAC
4	*Picea rubens*		10	N	FACU
5					
6					
7					
8					
9					
10					
			95	= Total Cover	

	Sapling/Shrub Stratum	Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Acer pensylvanicum*		30	Y	FACU
2	*Viburnum lantanoides*		5	N	FACU
3	*Picea rubens*		4	N	FACU
4	*Fagus grandifolia*		2	N	FACU
5	*Acer rubrum*		2	N	FAC
6	*Tsuga canadensis*		1	N	FACU
7					
8					
9					
10					
			44	= Total Cover	

	Herb Stratum	Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Maianthemum canadense*		6	Y	FACU
2	*Aralia nudicaulis*		5	Y	FACU
3	*Clintonia borealis*		3	Y	FAC
4	*Trillium undulatum*		2	N	FACU
5	*Oxalis montana*		2	N	FACU
6	*Fagus grandifolia*		2	N	FACU
7	*Dryopteris intermedia*		2	N	FAC
8	*Maianthemum racemosum*		1	N	FACU
9					
10					
11					
12					
13					
14					
15					
			23	= Total Cover	

	Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1					
2					
3					
4					
5					
			0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	19	48
Sapling/Shrub Stratum	9	22
Herb Stratum	5	12
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 42.86% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	47	x 3 =	141	
FACU species	115	x 4 =	460	
UPL species	0	x 5 =	0	
Column totals	162	(A)	601	(B)

Prevalence Index = B/A = 3.71

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: FW269 A Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-3	5YR/2.5/1		None				Mucky mineral	O
3-4	10YR/4/2		10YR/4/3	7	C	M	SL	
4-6	7.5YR/4/4		None				SL	
>6	Refusal							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 6

Hydric soil present? N

Remarks:
Soil surface in area is rocky

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Danbury Sampling Date: 5/17/12
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: FW269 B Wet
Investigator(s): L. Lapierre, E. Lema Section, Township, Range:
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave
Slope (%): 5 Lat.: Long.: Datum:
Soil Map Unit Name NWI Classification: PFO14E
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ___, soil ___, or hydrology ___ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ___, soil ___, or hydrology ___ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y
Hydric soil present? Y
Indicators of wetland hydrology present? Y

Is the sampled area within a wetland? Y

If yes, optional wetland site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

Wetland terrace near the slope of a very steep grade

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes	X	No		Depth (inches):	1
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

Seeps throughout, some standing water

VEGETATION - Use scientific names of plants

Sampling Point: FW269 B Wet

	Tree Stratum Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Betula alleghaniensis*	35	Y	FAC
2	*Abies balsamea*	10	N	FAC
3	*Acer rubrum*	10	N	FAC
4				
5				
6				
7				
8				
9				
10				
		55	= Total Cover	

	Sapling/Shrub Stratum Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Fraxinus pennsylvanica*	10	Y	FACW
2	*Viburnum lantanoides*	10	Y	FACU
3	*Picea rubens*	5	Y	FACU
4				
5				
6				
7				
8				
9				
10				
		25	= Total Cover	

	Herb Stratum Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Chrysosplenium americanum*	20	Y	OBL
2	*Clintonia borealis*	15	Y	FAC
3	*Carex trisperma*	10	N	OBL
4	*Viola renifolia*	5	N	FACW
5	*Osmundastrum cinnamomeum*	5	N	FACW
6	*Equisetum palustre*	2	N	FACW
7	*Solidago rugosa*	2	N	FAC
8				
9				
10				
11				
12				
13				
14				
15				
		59	= Total Cover	

	Woody Vine Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	11	28
Sapling/Shrub Stratum	5	13
Herb Stratum	12	30
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	30	x 1 =	30	
FACW species	22	x 2 =	44	
FAC species	72	x 3 =	216	
FACU species	15	x 4 =	60	
UPL species	0	x 5 =	0	
Column totals	139	(A)	350	(B)

Prevalence Index = B/A = 2.52

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

20% bare soil in herb layer

SOIL

Sampling Point: FW269 B Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-9	10YR/2/1		None				Muck	O-horizon

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 9

Hydric soil present? Y

Remarks:

Histic/sapric peat over bedrock, no subsoil found

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Alexandria Sampling Date: 10/8/10
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: FW64 A Up
Investigator(s): W. McCloy, L. Lapierre Section, Township, Range: ____
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex
Slope (%): 0-10 Lat.: ____ Long.: ____ Datum: ____
Soil Map Unit Name ____ NWI Classification: Upland forest
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ____, soil ____, or hydrology ____ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? N
Hydric soil present? N
Indicators of wetland hydrology present? N

Is the sampled area within a wetland? N

If yes, optional wetland site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:
Surface water present? Yes ____ No X Depth (inches): ____
Water table present? Yes ____ No X Depth (inches): ____
Saturation present? Yes ____ No X Depth (inches): ____
(includes capillary fringe)

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

No hydrology indicators observed

VEGETATION - Use scientific names of plants

Sampling Point: FW64 A Up

Tree Stratum	Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Picea rubens*	60	Y	FACU
2	*Betula papyrifera*	20	Y	FACU
3	*Acer rubrum*	10	N	FAC
4	*Abies balsamea*	5	N	FAC
5				
6				
7				
8				
9				
10				
		95	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Picea rubens*	50	Y	FACU
2	*Acer pensylvanicum*	5	N	FACU
3	*Acer rubrum*	1	N	FAC
4				
5				
6				
7				
8				
9				
10				
		56	= Total Cover	

Herb Stratum	Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Dryopteris intermedia*	0.5	Y	FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		0.5	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	19	48
Sapling/Shrub Stratum	11	28
Herb Stratum	0	0
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 25.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	16.5	x 3 =	49.5	
FACU species	135	x 4 =	540	
UPL species	0	x 5 =	0	
Column totals	151.5	(A)	589.5	(B)

Prevalence Index = B/A = 3.89

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
___ Dominance test is >50%
___ Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: FW64 A Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-3	10YR/2/1	100					FSL	O/A, few fine roots,
								moist, some leaf litter
3-16	7.5YR/3/4	100					SL	B, moist, friable, few roots
>16	rock refusal							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: bedrock
Depth (inches): 16

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Alexandria Sampling Date: 10/8/10
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: FW64 B Wet
Investigator(s): W. McCloy, L. Lapierre Section, Township, Range: ___
Landform (hillslope, terrace, etc.): Ridge Local relief (concave, convex, none): Concave
Slope (%): 0-2 Lat.: ___ Long.: ___ Datum: ___
Soil Map Unit Name ___ NWI Classification: PFO4
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ___, soil ___, or hydrology ___ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ___, soil ___, or hydrology ___ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y
Hydric soil present?	Y
Indicators of wetland hydrology present?	Y

Is the sampled area within a wetland? Y

If yes, optional wetland site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
X High Water Table (A2)
X Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes	X	No		Depth (inches):	1
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

shallow water at 1 inch and saturated at surface

VEGETATION - Use scientific names of plants

Sampling Point: FW64 B Wet

Tree Stratum	Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Picea rubens***	70	Y	FACU
2	*Acer rubrum*	15	N	FAC
3	*Betula alleghaniensis*	10	N	FAC
4	*Populus balsamifera*	5	N	FACW
5				
6				
7				
8				
9				
10				
		100	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Picea rubens***	25	Y	FACU
2	*Nemopanthus mucronatus*	10	Y	OBL
3				
4				
5				
6				
7				
8				
9				
10				
		35	= Total Cover	

Herb Stratum	Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Sphagnum sp.*	100	Y	OBL
2	*Carex trisperma*	20	N	OBL
3	*Osmundastrum cinnamomeum*	3	N	FACW
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		123	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	20	50
Sapling/Shrub Stratum	7	18
Herb Stratum	25	62
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	130	x 1 =	130	
FACW species	8	x 2 =	16	
FAC species	25	x 3 =	75	
FACU species	95	x 4 =	380	
UPL species	0	x 5 =	0	
Column totals	258	(A)	601	(B)

Prevalence Index = B/A = 2.33

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Wetland dominated by red spruce - possibly black spruce. If red spruce - the plants are morphologically adapted to life in the wetland with raised root morphology. Core of wetland is dominated by spruce. Form missing - this was generated from notes, photos and recollections from the wetland.

SOIL

Sampling Point: FW64 B Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-30	10YR/2/1	100	None				Sapric/mucky	Organic, fibric and sapric mu

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

X Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: None
Depth (inches): ___

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Danbury Sampling Date: 5/14/10
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: BW11 A Up
Investigator(s): J. West Section, Township, Range:
Landform (hillslope, terrace, etc.): Gentle slope Local relief (concave, convex, none): Convex
Slope (%): 3-8 Lat.: Long.: Datum:
Soil Map Unit Name NWI Classification: Upland - deciduous for.
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation , soil , or hydrology significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation , soil , or hydrology naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? N
Hydric soil present? N
Indicators of wetland hydrology present? N

Is the sampled area within a wetland? N

If yes, optional wetland site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Microtopographic Relief (D4)

Field Observations:
Surface water present? Yes No X Depth (inches):
Water table present? Yes No X Depth (inches):
Saturation present? Yes No X Depth (inches):
(includes capillary fringe)

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

No wetland hydrology indicators observed

VEGETATION - Use scientific names of plants

Sampling Point: BW11 A Up

Tree Stratum	Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Betula alleghaniensis*	40	Y	FAC
2	*Fagus grandifolia*	25	Y	FACU
3				
4				
5				
6				
7				
8				
9				
10				
		65	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Fagus grandifolia*	35	Y	FACU
2	*Betula alleghaniensis*	5	N	FAC
3	*Picea rubens*	5	N	FACU
4	*Acer pensylvanicum*	1	N	FACU
5				
6				
7				
8				
9				
10				
		46	= Total Cover	

Herb Stratum	Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		0	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	13	33
Sapling/Shrub Stratum	9	23
Herb Stratum	0	0
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.33% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	45	x 3 =	135	
FACU species	66	x 4 =	264	
UPL species	0	x 5 =	0	
Column totals	111	(A)	399	(B)

Prevalence Index = B/A = 3.59

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** BW11 A Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
4-0	7.5YR/2.5/1						Organic, litter	OE
0-8	7.5YR/2.5/2							A1
8-18	10YR/3/2	90						A2
	10YR/2/2	10						A2
>18	Refusal							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Bedrock
Depth (inches): 1-4

Hydric soil present? N

Remarks:

Probably somewhat poorly drained; receives flow from adjacent hillslope; lacks hydric morphology

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Wild Meadows Wind Project City/County: Danbury Sampling Date: 5/14/10
Applicant/Owner: Atlantic Wind LLC State: NH Sampling Point: BW11 B Wet
Investigator(s): J. West Section, Township, Range: ___
Landform (hillslope, terrace, etc.): Gentle slope Local relief (concave, convex, none): Concave
Slope (%): 1 Lat.: ___ Long.: ___ Datum: ___
Soil Map Unit Name ___ NWI Classification: PFO14
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ___, soil ___, or hydrology ___ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ___, soil ___, or hydrology ___ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y
Hydric soil present? Y
Indicators of wetland hydrology present? Y

Is the sampled area within a wetland? Y

If yes, optional wetland site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)

Broad flat wetland within saddle - bedrock controlled uplands. Outlets to stream B-S-13.

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
X High Water Table (A2)
X Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
X Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
X Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	1, pools
Water table present?	Yes	X	No		Depth (inches):	0
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No recorded data.

Remarks:

High water, ephemeral drainage flows into wetland from south (B-S-15).

VEGETATION - Use scientific names of plants

Sampling Point: BW11 B Wet

	Tree Stratum Plot Size (30' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Betula alleghaniensis*	20	Y	FAC
2	*Acer rubrum*	15	Y	FAC
3	*Picea rubens**	15	Y	FACU
4	*Abies balsamea*	5	N	FAC
5				
6				
7				
8				
9				
10				
		55	= Total Cover	

	Sapling/Shrub Stratum Plot Size (15' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Picea rubens*	35	Y	FACU
2	*Fagus grandifolia*	5	N	FACU
3	*Viburnum nudum*	0.5	N	FACW
4				
5				
6				
7				
8				
9				
10				
		40.5	= Total Cover	

	Herb Stratum Plot Size (5' r)	Absolute % Cover	Dominant Species	Indicator Status
1	*Sphagnum sp*	30	Y	OBL
2	*Veratrum viride*	15	Y	FACW
3	*Osmundastrum cinnamomeum*	15	Y	FACW
4	*Viburnum nudum*	5	N	FACW
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		65	= Total Cover	

	Woody Vine Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	11	28
Sapling/Shrub Stratum	8	20
Herb Stratum	13	33
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 71.43% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	30	x 1 =	30	
FACW species	35.5	x 2 =	71	
FAC species	40	x 3 =	120	
FACU species	55	x 4 =	220	
UPL species	0	x 5 =	0	
Column totals	160.5	(A)	441	(B)

Prevalence Index = B/A = 2.75

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: BW11 B Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-8	7.5YR/2.5/2						Organic mucky	Oe Hemic
8-20	7.5YR/2.5/1						Organic mucky	Oa, sapric

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

X Histisol (A1)
X Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ 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)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: ____________________
Depth (inches): ____________________

Hydric soil present? Y

Remarks:

Deep organic soils

Appendix V.

Project Design Plans

Sheets C 1.0 – C 9.1

(See Alteration of Terrain permit application for additional detail)

WILD MEADOWS WIND PROJECT

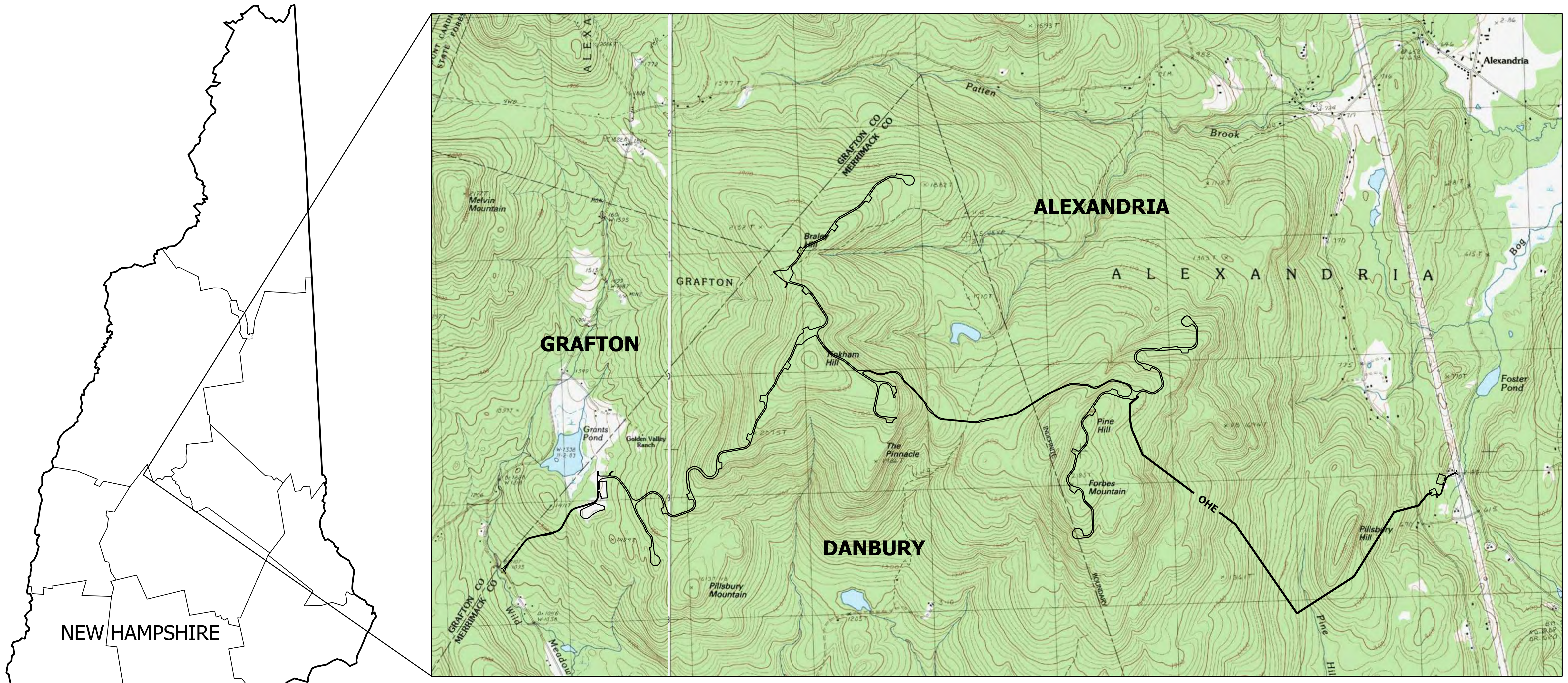
DANBURY AND ALEXANDRIA, NEW HAMPSHIRE

NOVEMBER 2013

IBERDROLA PROJECT DATA:

TURBINE TYPE____________	VESTAS V-112
NUMBER OF TURBINES_____	23
TURBINE & MET LAYOUT___	F-14 (OCTOBER 2013)
ALTA SURVEY____________	WILD MEADOWS PRELIMINARY BOUNDARY SURVEY IN DANBURY, ALEXANDRIA, GRAFTON & ORANGE MERRIMACK & GRAFTON COUNTY, NEW HAMPSHIRE, DATED AUGUST 8, 2010, REVISED JANUARY 7, 2011, PREPARED BY VANASSE HANGEN BRUSTLIN, INC.
LAND CONTROL FILE______	GIS_20121002
TOPOGRAPHIC SURVEY____	PROVIDED BY WSP SELLS & ECKMAN ENGINEERING
WETLAND FILES__________	PROVIDED BY NORMANDEAU ASSOCIATES, INC. 25 NASHUA ROAD, BEDFORD, NH

FILE NAMES: draftsubmittal101513.zip, draftsubmittal110513.zip



LOCATION PLAN

SCALE: 1" = 2000'

SHEET INDEX

SITE PLANS

C 1.0	COVER SHEET / SHEET INDEX
C 1.1	AERIAL OVERVIEW
C 1.2	OVERVIEW PLAN - SHEET LAYOUT
C 1.3	GENERAL NOTES, LEGEND, SITE AND ROADWAY DESIGN CRITERIA
C 2.1	SITE ACCESS
C 2.2	SITE ACCESS
C 3.1	SITE ACCESS / LAYDOWN AREA
C 3.2 Ex	EXISTING CONDITIONS: OPERATIONS AND MAINTENANCE AREA
C 3.2	CENTRAL ACCESS SOUTH / TEMPORARY CONTRACTOR ACCESS / CENTRAL CRANE SOUTH
C 3.3	CENTRAL ACCESS SOUTH / TURBINE SITE C-9
C 4.1	NOTES FOR TEMPORARY CONTRACTOR ACCESS
C 5.1	CENTRAL CRANE SOUTH / TURBINE SITES C-7 & C-8
C 5.2	CENTRAL CRANE SOUTH / TURBINE SITE C-6
C 5.3	CENTRAL CRANE SOUTH / TURBINE SITES C-4 & C-5
C 5.4	CENTRAL CRANE SOUTH / TURBINE SITE C-3
C 5.5	CENTRAL CRANE SOUTH / TURBINE SITE C-2 / CENTRAL CRANE / G CRANE
C 5.6	CENTRAL CRANE / CENTRAL CRANE NORTH / TURBINE SITE C-1

SITE PLANS

C 6.1	CENTRAL CRANE NORTH / TURBINE SITES N-1 & N-2
C 6.2	CENTRAL CRANE NORTH / TURBINE SITE N-3
C 6.3	CENTRAL CRANE NORTH / TURBINE SITE N-4
C 7.1	G CRANE
C 7.2	G CRANE / CENTRAL EAST CONNECT. / TURBINE SITE G-1 / G-2 CRANE
C 7.3	G-2 CRANE / TURBINE SITE G-2
C 7.4	CENTRAL EAST CONNECTOR
C 7.5	CENTRAL EAST CONNECTOR
C 7.6	CENTRAL EAST CONNECTOR
C 7.7	CENTRAL EAST CONNECTOR / TURBINE SITE E-5 EAST CRANE SOUTH / EAST CRANE NORTH
C 8.1	EAST CRANE SOUTH / TURBINE SITES E-1 & E-2
C 8.2	EAST CRANE SOUTH / TURBINE SITES E-3 & E-4
C 8.3	EAST CRANE NORTH / TURBINE SITE E-6 / MET TOWER SITE
C 8.4	EAST CRANE NORTH / TURBINE SITES E-7 & E-8
C 9.1 Ex	SUBSTATION AND INTERCONNECTION STATION EXISTING CONDITIONS
C 9.1	SUBSTATION & INTERCONNECTION STATION SITE PLAN

ROAD PROFILES

P 2.1	PROFILE:	SITE ACCESS
P 3.1	PROFILE:	CENTRAL ACCESS SOUTH TEMPORARY CONTRACTOR ACCESS
P 5.1	PROFILE:	CENTRAL CRANE SOUTH
P 5.2	PROFILE:	CENTRAL CRANE SOUTH / CENTRAL CRANE
P 6.1	PROFILES:	CENTRAL CRANE NORTH TEMPORARY CONTRACTOR ACCESS
P 7.1	PROFILES:	G CRANE / G-2 CRANE
P 7.2	PROFILE:	CENTRAL EAST CONNECTOR
P 7.3	PROFILE:	CENTRAL EAST CONNECTOR
P 8.1	PROFILE:	EAST CRANE SOUTH
P 8.2	PROFILE:	EAST CRANE NORTH
P 9.1	PROFILE:	SUBSTATION ACCESS

OVERHEAD ELECTRIC LINE

C 10.1	OVERHEAD ELECTRIC LINE
C 10.2	OVERHEAD ELECTRIC LINE
C 10.3	OVERHEAD ELECTRIC LINE
C 10.4	OVERHEAD ELECTRIC LINE
C 10.5	OVERHEAD ELECTRIC LINE
C 10.6	OVERHEAD ELECTRIC LINE
C 10.7	OVERHEAD ELECTRIC LINE
E1.1	ELECTRICAL DETAILS (RLC ENGINEERING)
E1.2	ELECTRICAL DETAILS (RLC ENGINEERING)

DETAILS

D 1.1	SITE DETAILS
D 1.2	SITE DETAILS
D 1.3	SITE DETAILS
D 1.4	STORM WATER PONDS - SECTIONS AND DETAILS
D 1.5	SITE DETAILS
D 1.6	SITE DETAILS
D 2.1	EROSION CONTROL DETAILS
D 2.2	EROSION CONTROL DETAILS

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IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
PROJECT #: 13185
ENGIN'D BY:
DRAWN BY:
CHECK'D BY:
ARCHIVE #: H-5107

STATE OF NEW HAMPSHIRE
ARTHUR JOHN COLVIN No.13828
11/21/13

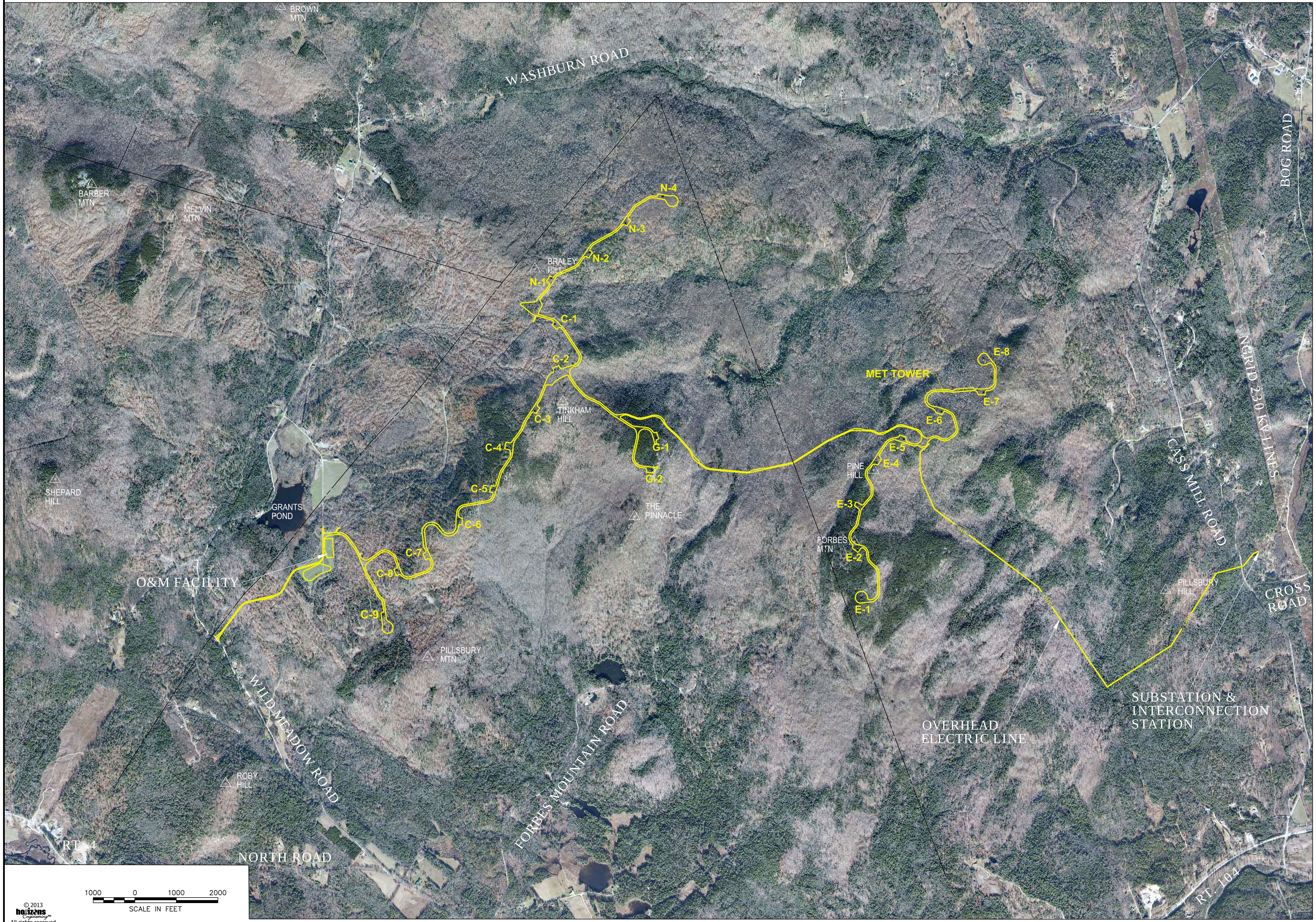
horizons Engineering Inc
34 School Street
Littleton, NH 03561
Phone 603.444.4111 - Fax 603.444.1343

WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
COVER SHEET
SHEET INDEX

SHEET NUMBER: C 1.0



IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
PROJECT #: 13185
ENGIN'D BY: JCD
DRAWN BY: JCD
CHECK'D BY: AJC
ARCHIVE #: H-5107

STATE OF NEW HAMPSHIRE
ARTHUR JOHN COLVIN
No. 13828
LICENSED PROFESSIONAL ENGINEER
11/21/13

horizons Engineering Inc
34 School Street
Littleton, NH 03561
Phone 603.444.4111 - Fax 603.444.1343

WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
AERIAL OVERVIEW

SHEET NUMBER: C 1.1

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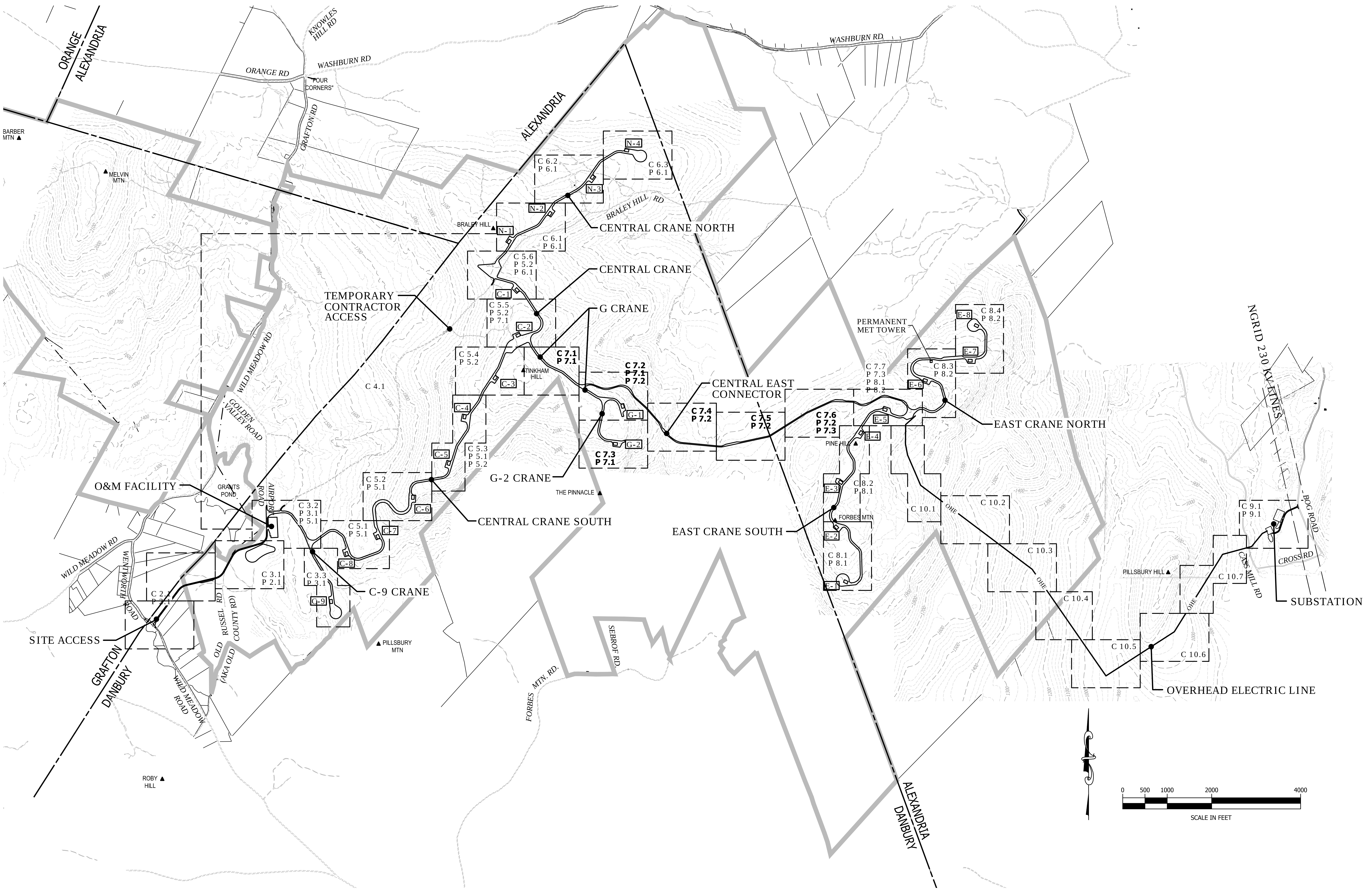


IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
PROJECT #: 13185
ENGIN'D BY:
DRAWN BY: KRP
CHECK'D BY: AJC
ARCHIVE #: H-5107

ARTHUR JOHN COLVIN No.13828
11/21/13

horizons Engineering Inc
34 School Street
Littleton, NH 03561
Phone 603.444.4111 - Fax 603.444.1343

WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
OVERVIEW PLAN
SHEET LAYOUT

SHEET NUMBER: C 1.2

P:\13185 IRF\21\DWGS\70 Percent\C_1-2_Overall-70.dwg, C_1-1 File layouts, 11/22/2013 11:24:24 AM, KRPhilbrick

GENERAL NOTES

1. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THESE PLANS AND TECHNICAL SPECIFICATIONS FOR "IBERDROLA RENEWABLES - WILD MEADOWS WIND PROJECT".
2. NO EXISTING MONUMENTS, BOUNDS, OR BENCHMARKS SHALL BE DISTURBED WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.
3. ALL WORK SHALL BE PERFORMED WITHIN THE PROPERTY OF, AND EASEMENTS SECURED BY, THE OWNER.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DATA COLLECTION AND PREPARATION OF RECORD DRAWINGS.
5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONTROLLING EROSION IN ALL AREAS DISTURBED BY HIS ACTIONS. COSTS FOR REQUIRED EROSION CONTROL, REGARDLESS OF WHETHER OR NOT SUCH MEASURES ARE SHOWN ON THE ENGINEERING DRAWINGS, SHALL BE BORNE BY HIM.
6. UTILITY LOCATIONS ARE BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR IS RESPONSIBLE FOR LOCATION AND PROTECTION OF EXISTING UTILITIES AND SHALL REPAIR ANY DAMAGE AS QUICKLY AS POSSIBLE AT HIS OWN EXPENSE. ALL UTILITIES ENCOUNTERED SHALL BE LOCATED BY DEPTH AND TIES AND SHOWN BY THE CONTRACTOR ON HIS "AS BUILT" DRAWINGS. HAND EXCAVATION SHALL BE DONE WHEREVER UNDERGROUND UTILITIES ARE SHOWN OR ANTICIPATED. THE CONTRACTOR SHALL CONTACT DIG SAFE AND THE APPROPRIATE AUTHORITIES PRIOR TO ANY CONSTRUCTION IN ORDER TO VERIFY EXISTING CONDITIONS AND UTILITY LOCATIONS.
7. THE OWNER IS RESPONSIBLE FOR ALL FEDERAL AVIATION ADMINISTRATION (FAA) PERMITS AND FILINGS.

   WIND TURBINE GENERATOR (WTG) LOCATIONS ARE BASED ON THE BEST INFORMATION AVAILABLE. DUE TO THE POSSIBILITY OF UNFORSEEN SUBSURFACE CONDITIONS OR CONSTRUCTABILTY CONCERNS WTG LOCATIONS MAY BE MICROSITED. THESE MOVES SHALL BE LIMITED AND NO MORE THAN ALLOWABLE BY THE FAA. THE FINAL WTG LOCATIONS SHALL BE SHOWN BY THE CONTRACTOR ON HIS "AS BUILT" DRAWINGS.
8. BASE MAP INFORMATION INCLUDING BOUNDARY AND TOPOGRAPHY ON THESE PLANS IS FROM PLANS PREPARED BY:
   BOUNDARY AND ALTA SURVEY BY : VANASSE HANGEN BRUSTLIN, INC.
   TOPOGRAPHY BY: WSP SELLS & ECKMAN ENGINEERING
9. CONTRACTOR IS RESPONSIBLE FOR ALL SAFETY MEASURES DURING AND UP TO THE COMPLETION OF CONSTRUCTION OF THE PROJECT.

LEGEND

	EXISTING
	EXISTING MINOR CONTOUR
1610	EXISTING MAJOR CONTOUR
	TOWN BOUNDARY LINE
	LEASE BOUNDARY LINE
	PROPERTY LINE
	NON-PARTICIPATING LANDOWNER
	EXISTING TREELINE
	EXISTING STONE WALL
	EXISTING PATH
	EXISTING ROAD
	WETLANDS
TS304p	DELINEATED PERENNIAL STREAM WITH DELINEATED TOP OF BANK
FS266i IMPACT FS266i PERM. 214 SF / 72 LF TEMP. 109 SF / 37 LF	DELINEATED INTERMITTENT STREAM WITH ESTIMATED BANK (TEMPORARY AND PERMANENT IMPACTS)
FS102e	DELINEATED EPHEMERAL STREAM
FW276 PFO1 IMPACT FW276 PERM. 568 SF TEMP. 233 SF	DELINEATED WETLAND WITH LABEL AND IMPACTS (TEMPORARY AND PERMANENT)
TVP03 Value (C) IMPACT TVP03 PERM. 117 SF TEMP. 0 SF	DELINEATED VERNAL POOL WITH LABEL AND IMPACTS (TEMPORARY AND PERMANENT)

DIRECT PERMANENT IMPACTS ARE HATCHED. DIRECT TEMPORARY IMPACTS ARE OUTLINED
SECONDARY AND BUFFER IMPACTS ARE TABULATED BUT NOT SHOWN ON CIVIL DESIGN PLANS

APPROXIMATE LOCATION OF MICA MINE ⚒	LOCATION AND DESCRIPTION OF EXISTING MINE

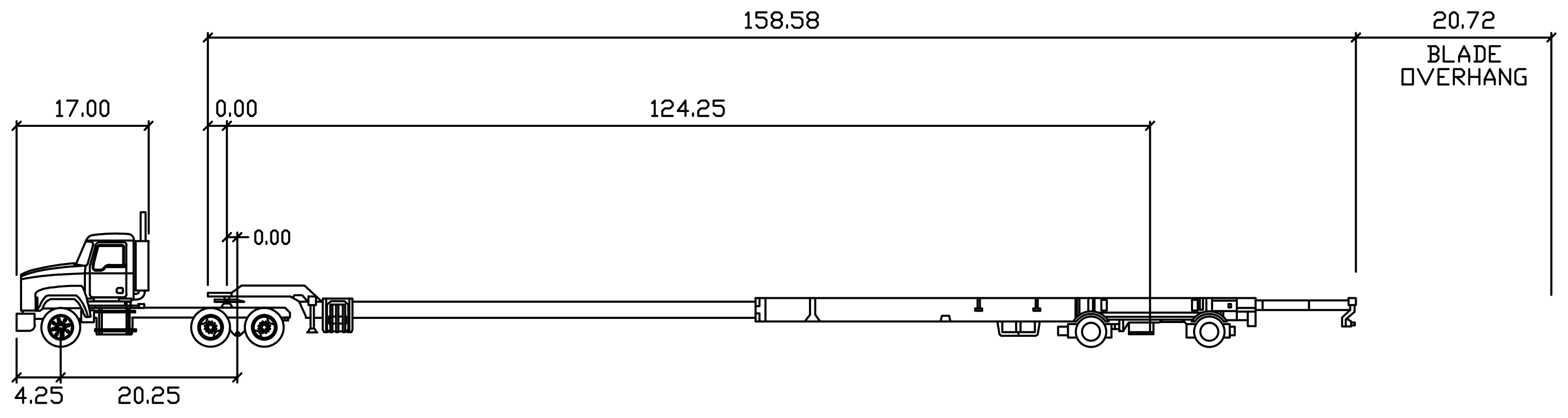
	PROPOSED
1610	PROPOSED MAJOR CONTOUR
1608	PROPOSED MINOR CONTOUR
	EDGE OF GRAVEL PERMANENT ROAD
	EDGE OF GRAVEL CONSTRUCTION ROAD
	PROPOSED LIMIT OF DISTURBANCE AND CLEARING LIMIT
OHE	PROPOSED OVERHEAD ELECTRIC LINE (34.5 KV)
UGE	PROPOSED UNDERGROUND ELECTRIC LINE
	PROPOSED CULVERT
	PROPOSED CULVERT WITH OUTLET PROTECTION. USE EROSION TYPE STONE FILL UNLESS OTHERWISE SPECIFIED
■	PROPOSED CULVERT WITH SEDIMENT TRAP
■	PROPOSED SEDIMENT TRAP
	SHEET MATCHLINE
E-2	TURBINE ID
C 16.7	SITE PLAN SHEET NUMBER
P 16.3	PROFILE SHEET NUMBER
	SITE PLAN DRAWING LIMITS
	PROPOSED FENCE
	PROPOSED GUARDRAIL
LLS	PROPOSED LEVEL LIP SPREADER
	LIMITED CLEARING AREA (STUMPS REMAIN, NO GRUBBING) [OUTSIDE LIMIT OF DISTURBANCE CLEARING]
HB	HAYBALES (TEMPORARY)
	OUTLET PROTECTION
SF	SEDIMENT FENCE
PT	PERC TEST LOCATION AND ID
TP-2	TEST PIT LOCATION AND ID
WS	PROPOSED WATER SERVICE
FM	PROPOSED FORCE MAIN
UFO	PROPOSED UNDERGROUND FIBER OPTIC LINE
UGU	PROPOSED UTILIY SUPPLIED POWER/ FIBER OPTIC

WETLAND NOTES

1. WETLAND DELINEATION AND LOCATION WAS PERFORMED BY NORMANDEAU ASSOCIATES, INC, CERTIFIED WETLAND SCIENTISTS.
2. WETLAND IMPACTS SHOWN ON THIS PLAN SET ARE BASED UPON THE LINEWORK PROVIDED BY NORMANDEAU ASSOCIATES, INC.

SITE AND ROAD DESIGN

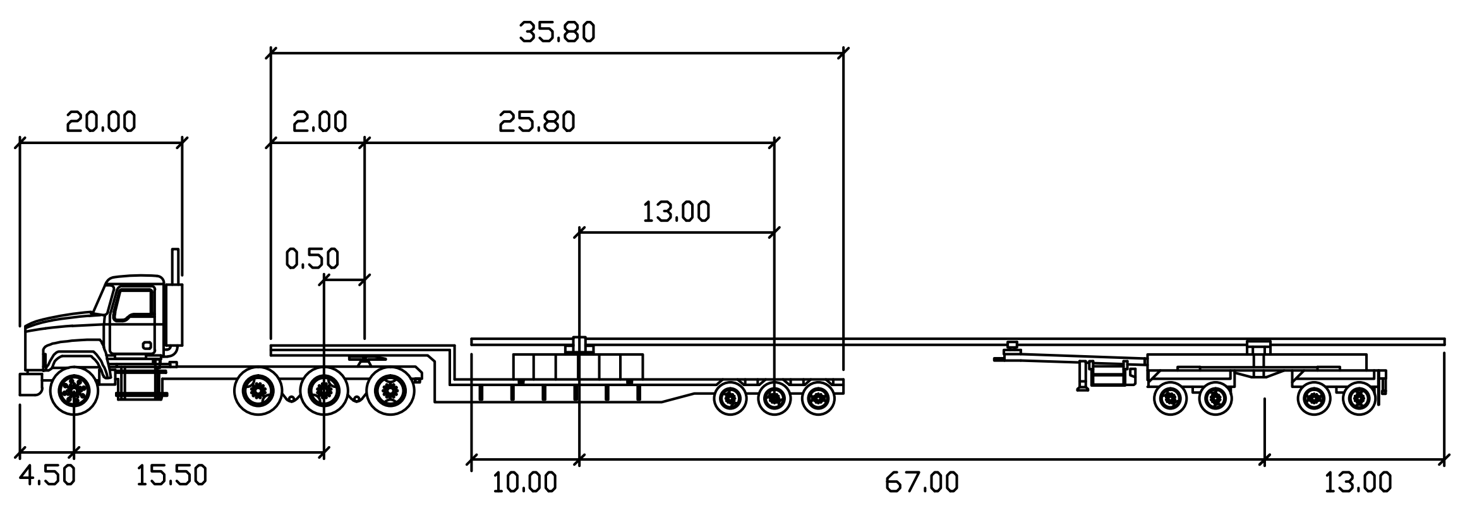
1. PLANS SHOW ACCESS ON THE PROJECT SITE AND THE LAYOUT OF THE PROPOSED VESTAS V112 TURBINE LOCATIONS, CRANE PADS, DELIVERY ROADS, STAGING AREAS, OPERATIONS AND MAINTENANCE BUILDING AND ELECTRICAL SUBSTATION BUILDING. CONSTRUCTION PLANS FOR THE FOUNDATIONS, WIND TURBINES AND ELECTRICAL LINES BY OTHERS.
2. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS WITHIN THE PUBLIC RIGHT OF WAYS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
3. PROPOSED SITE GRADING SHOWN ON THESE PLANS ARE FOR GENERAL INFORMATION ONLY ACTUAL SITE GRADING FOR ROADWAY SLOPES AND DITCHES MAY VARY BASED ON EXISTING SOILS CONDITIONS, TO DEPTH TO BEDROCK AND TYPE OF ROADWAY SLOPE PROPOSED.
4. STAGING AREAS AND VEHICLE PULL-OFFS SHALL BE LOAMED AND SEEDED UPON COMPLETION OF CONSTRUCTION - UNLESS NOTED OTHERWISE.
5. HORIZONTAL ROAD GEOMETRY:
   ACCESS ROADS WIDTH = 22 FEET TEMPORARY 16 FEET PERMANENT
   CRANE ROADS WIDTH = 40 FEET TEMPORARY 16 FEET PERMANENT
   MINIMUM CENTERLINE RADIUS = 185 FEET
   DEAD END TURN AROUND = 165 FEET OUTSIDE RADIUS
6. VERTICAL ROAD GEOMETRY:
   MAXIMUM ACCESS AND CRANE ROAD GRADE = 15%
   MINIMUM ACCESS AND CRANE ROAD = 1%
   MINIMUM VERTICAL CURVE K = 16.5
7. CRANE PAD SHALL BE 60 FEET BY 90 FEET AND HAVE A MAXIMUM GRADE OF 1% IN ANY DIRECTION.
8. ACCESS & CRANE ROADS HAVE BEEN DESIGNED TO ACCOMODATE TURBINE COMPONENTS AND TRANSPORT VEHICLES.



TYPICAL V112 BLADE TRAILER TRANSPORT VEHICLE

TRACTOR WIDTH: 8 FT
TRAILER WIDTH: 8'-6"
TRACTOR TRACK: 8 FT
TRAILER TRACK: 8 FT

LOCK TO LOCK TIME : 6.0
STEERING ANGLE: 36.3
ARTICULATING ANGLE: 70.0



TYPICAL V112 TOWER BASE TRANSPORT VEHICLE

TRACTOR WIDTH: 10 FT
TRAILER WIDTH: 10 FT
TRACTOR TRACK: 10 FT
TRAILER TRACK: 10 FT

LOCK TO LOCK TIME : 6.0
STEERING ANGLE: 40.0
ARTICULATING ANGLE: 70.0

IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
PROJECT #: 13185
ENGIN'D BY: DEB
DRAWN BY: DEB
CHECK'D BY: SML
ARCHIVE #: H-5107

ARTHUR JOHN COLVIN No.13828
11/27/13

horizons Engineering Inc
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Phone 603.444.4111 - Fax 603.444.1343

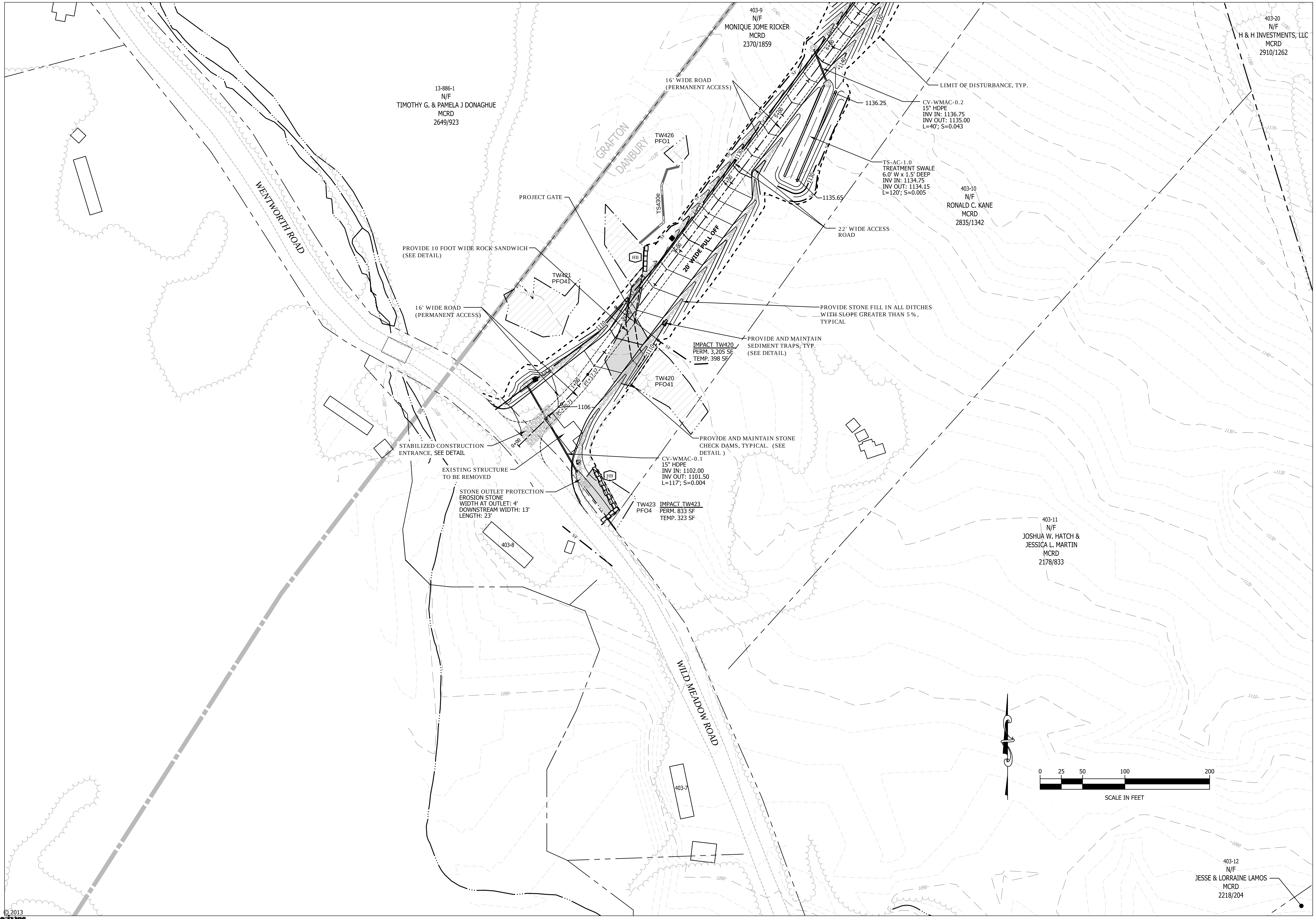
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
GENERAL NOTES, LEGEND, SITE AND ROAD DESIGN CRITERIA

SHEET NUMBER: C 1.3

MATCH LINE - SHEET C 2.2



(SEE PROFILE SHEET: P 2.1)

IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
PROJECT #: 13185
ENGIN'D BY: JCD
DRAWN BY: JCD
CHECK'D BY: AJC
ARCHIVE #: H-5107

STATE OF NEW HAMPSHIRE
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12/3/13

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WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE: SITE ACCESS

SHEET NUMBER: C 2.1

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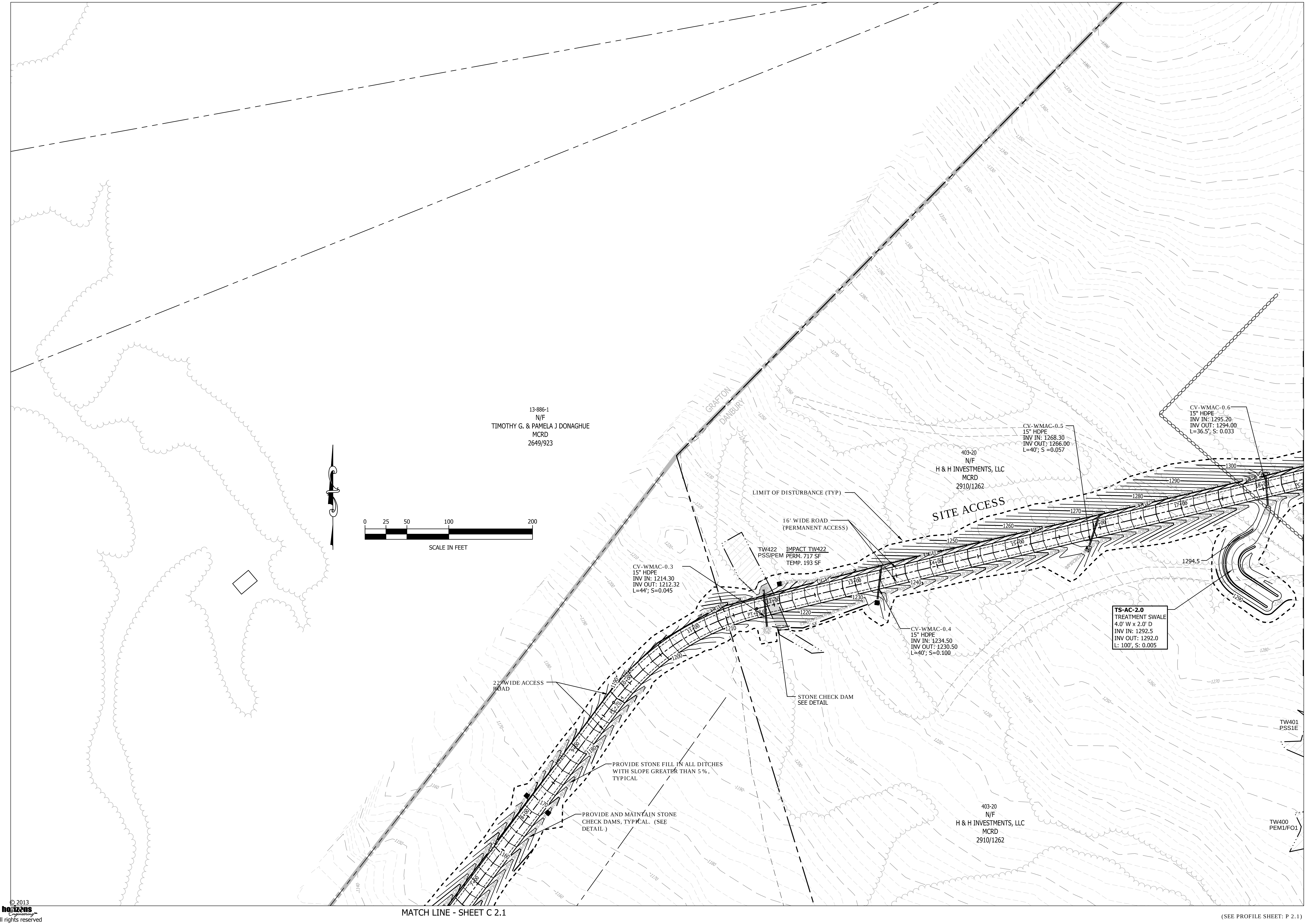

MATCH LINE - SHEET C 3.1

MATCH LINE - SHEET C 2.1

(SEE PROFILE SHEET: P 2.1)

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IBERDROLA RENEWABLES

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DATE: NOVEMBER 2013
PROJECT #: 13185
ENGIN'D BY: JCD
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CHECK'D BY: AJC
ARCHIVE #: H-5107

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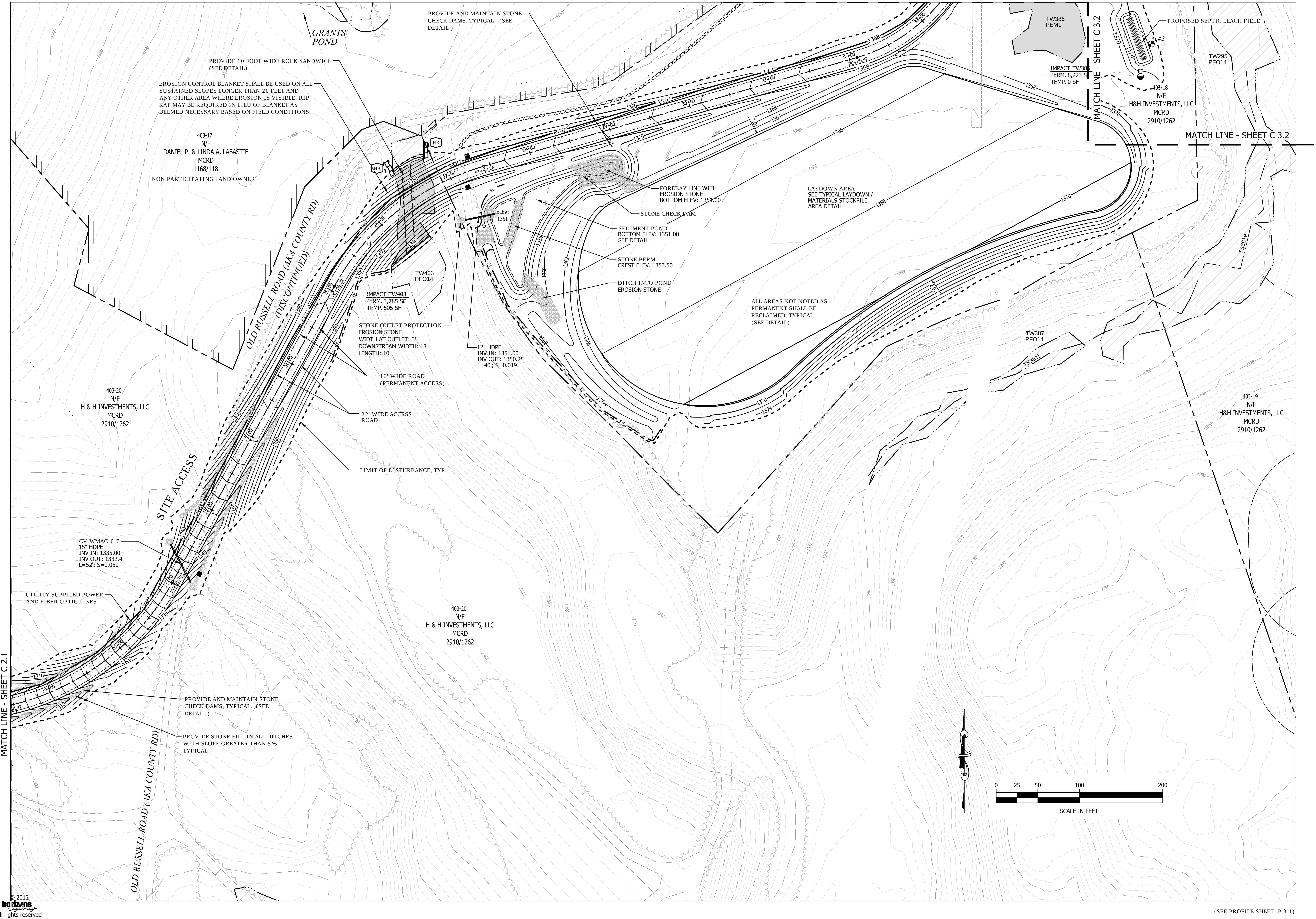
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH
70 PERCENT DESIGN

SHEET TITLE:
SITE ACCESS

SHEET NUMBER: C 2.2



PROVIDE AND MAINTAIN STONE CHECK DAMS, TYPICAL. (SEE DETAIL)

PROVIDE 10 FOOT WIDE ROCK SANDWICH (SEE DETAIL)

EROSION CONTROL BLANKET SHALL BE USED ON ALL SUSTAINED SLOPES LONGER THAN 20 FEET AND ANY OTHER AREA WHERE EROSION IS VISIBLE. RIP RAP MAY BE REQUIRED IN LIEU OF BLANKET AS DEEMED NECESSARY BASED ON FIELD CONDITIONS.

PROPOSED SEPTIC LEACH FIELD

IMPACT TW386
PERM. 8,223 SF
TEMP. 0 SF

FOREBAY LINE WITH
EROSION STONE
BOTTOM ELEV: 1351.00

STONE CHECK DAM

SEDIMENT POND
BOTTOM ELEV: 1351.00
SEE DETAIL

STONE BERM
CREST ELEV. 1353.50

DITCH INTO POND
EROSION STONE

LAYDOWN AREA
SEE TYPICAL LAYDOWN / MATERIALS STOCKPILE AREA DETAIL

ALL AREAS NOT NOTED AS PERMANENT SHALL BE RECLAIMED, TYPICAL (SEE DETAIL)

IMPACT TW403
PERM. 3,785 SF
TEMP. 505 SF

STONE OUTLET PROTECTION
EROSION STONE
WIDTH AT OUTLET: 3'
DOWNSTREAM WIDTH: 18'
LENGTH: 10'

12" HDPE
INV IN: 1351.00
INV OUT: 1350.25
L=40'; S=0.019

16' WIDE ROAD
(PERMANENT ACCESS)

22' WIDE ACCESS ROAD

LIMIT OF DISTURBANCE, TYP.

CV-WMAC-0.7
15" HDPE
INV IN: 1335.00
INV OUT: 1332.4
L=52'; S=0.050

UTILITY SUPPLIED POWER AND FIBER OPTIC LINES

PROVIDE AND MAINTAIN STONE CHECK DAMS, TYPICAL. (SEE DETAIL)

PROVIDE STONE FILL IN ALL DITCHES WITH SLOPE GREATER THAN 5%, TYPICAL

(SEE PROFILE SHEET: P 3.1)

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IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
PROJECT #: 13185
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DRAWN BY: JCD
CHECK'D BY: AJC
ARCHIVE #: H-5107

STATE OF NEW HAMPSHIRE
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WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
SITE ACCESS
LAYDOWN AREA

SHEET NUMBER: C 3.1

LEGEND

- - - - - SOIL BOUNDARY
647B SOIL CLASSIFICATION
LIMIT OF SITE SPECIFIC SOIL DELINEATION
OM-A PHOTO LOCATION & ID
TP #1 TEST PIT LOCATION & ID
INF INFILTRATION TEST LOCATION
PT PERC TEST LOCATION
STREAM
WETLAND BOUNDARY
TW270 PEM1/FO14 WETLAND CLASSIFICATION
VERNAL POOL

SITE-SPECIFIC SOILS INFORMATION

(USED WITHIN THE AREA OF PROPOSED DEVELOPMENT, AS DELINEATED BY RAYMOND LOBDELL, CSS.)

MAPPING UNIT	SOIL TYPE(S)	DRAINAGE CLASS	HSG
56B	BECKET	WELL DRAINED	C
56C	BECKET	WELL DRAINED	C
57C	BECKET, VERRY STONY	WELL DRAINED	C
57D	BECKET, VERRY STONY	WELL DRAINED	C
57E	BECKET, VERRY STONY	WELL DRAINED	C
299Ccaabc	UDORTHENTS	WELL DRAINED	C
299Cccccc	UDORTHENTS	WELL DRAINED	C
299Dccccc	UDORTHENTS	WELL DRAINED	C
299Ceaacc	UDORTHENTS	WELL DRAINED	C
549B	PEACHMAN	VERY POORLY DRAINED	D
558B	SKERRY	MODERATELY WELL DRAINED	C
559B	SKERRY, VERY STONY	MODERATELY WELL DRAINED	C
646B	PILLSBURY	POORLY DRAINED	C
647B	PILLSBURY, VERY STONY	POORLY DRAINED	C
647C	PILLSBURY, VERY STONY	POORLY DRAINED	C

670D
INDICATES SOIL NAME
INDICATES SLOPE OF LAND
A = 0 TO 3 PERCENT SLOPE
B = 3 TO 8 PERRECENT SLOPE
C = 8 TO 15 PERCENT SLOPE
D = 15 TO 25 PERCENT SLOPE

SITE-SPECIFIC SOILS NOTES

1. THIS DETAILED SITE SPECIFIC SOIL MAP CONFIRMS TO THE STANDARDS OF SSSNNE PUBLICATIONS NO.3, AS AMENDED, "SITE-SPECIFIC SOIL MAPPING STANDARDS FOR NH AND VT"
2. MAPPING COMPLETED IN DECEMBER 2012 BY RAYMOND LOBDELL, CSS.
3. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS. THIS MAP WAS COMPLETED TO CONFORM TO THE REQUIREMENTS OF THE NHDES, AOT RULES.

SARAH ALLEN
No. 083

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IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 7, 2013
PROJECT #: 13185
ENGIN'D BY: RL
DRAWN BY: JCD
CHECK'D BY: AJC
ARCHIVE #: H-5107

RAYMOND D LOBDELL
No. 007

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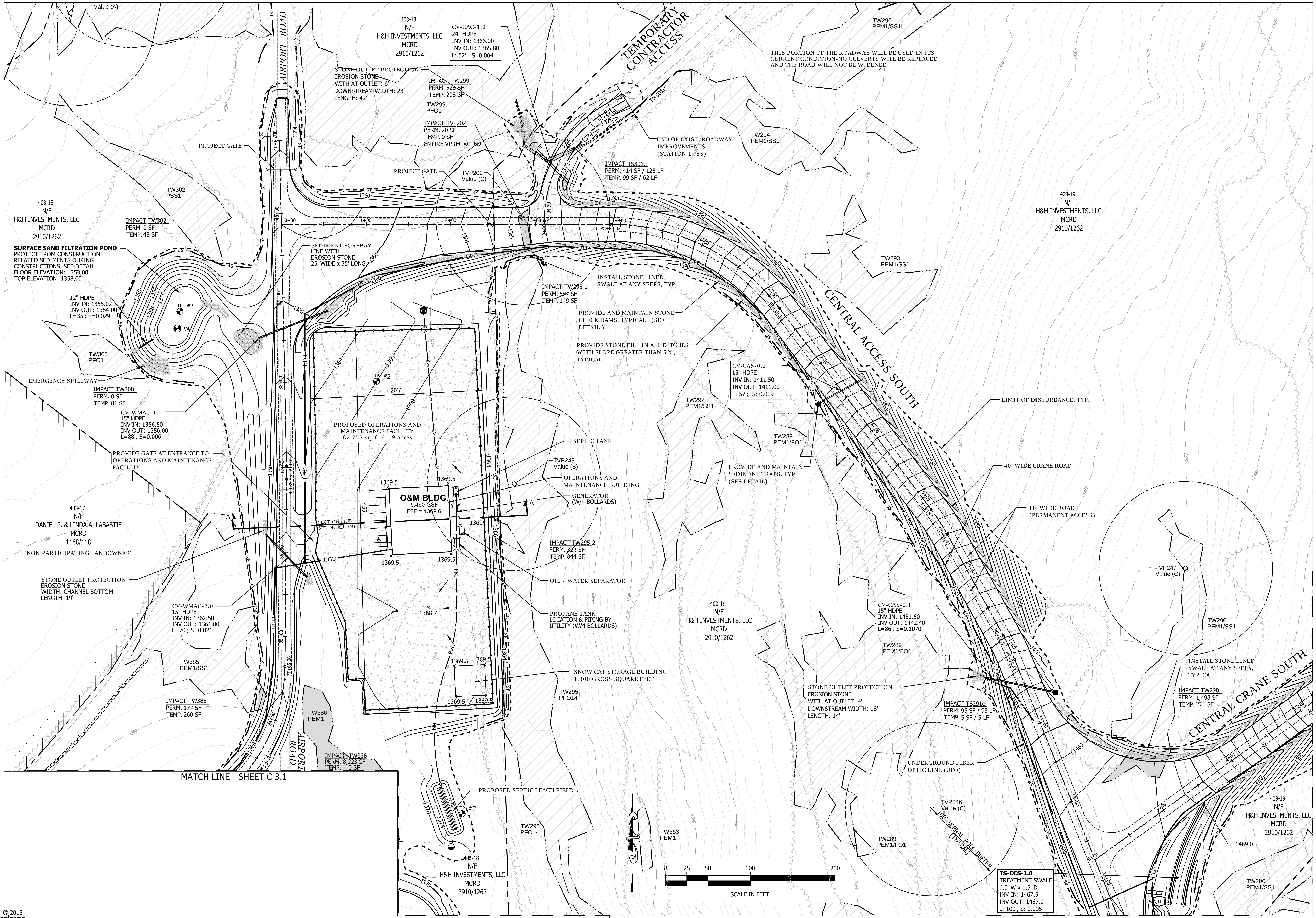
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

SHEET TITLE:
EXISTING CONDITIONS PLAN
OPERATIONS AND MAINTENANCE FACILITY

SHEET NUMBER: C 3.2 Ex



MATCH LINE - SHEET C 3.1

MATCH LINE - SHEET C 3.3

(SEE PROFILE SHEET: P 3.1)

IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
PROJECT #: 13185
ENGIN'D BY: JCD
DRAWN BY: JCD
CHECK'D BY: AJC
ARCHIVE #: H-5107

ARTHUR JOHN COLVIN No.13828
12/3/13

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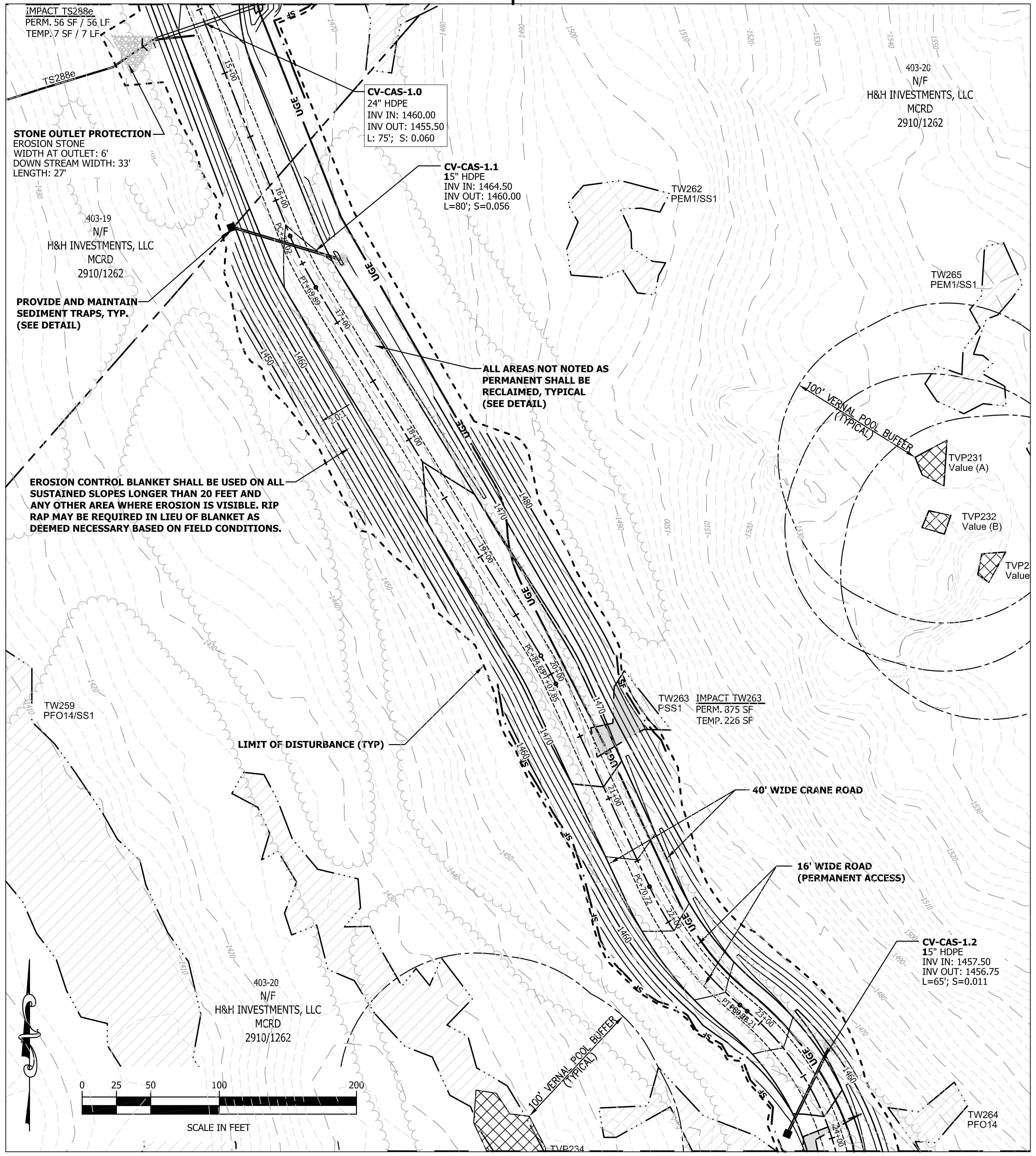
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL ACCESS SOUTH / TEMPORARY CONTRACTOR ACCESS / CENTRAL CRANE SOUTH

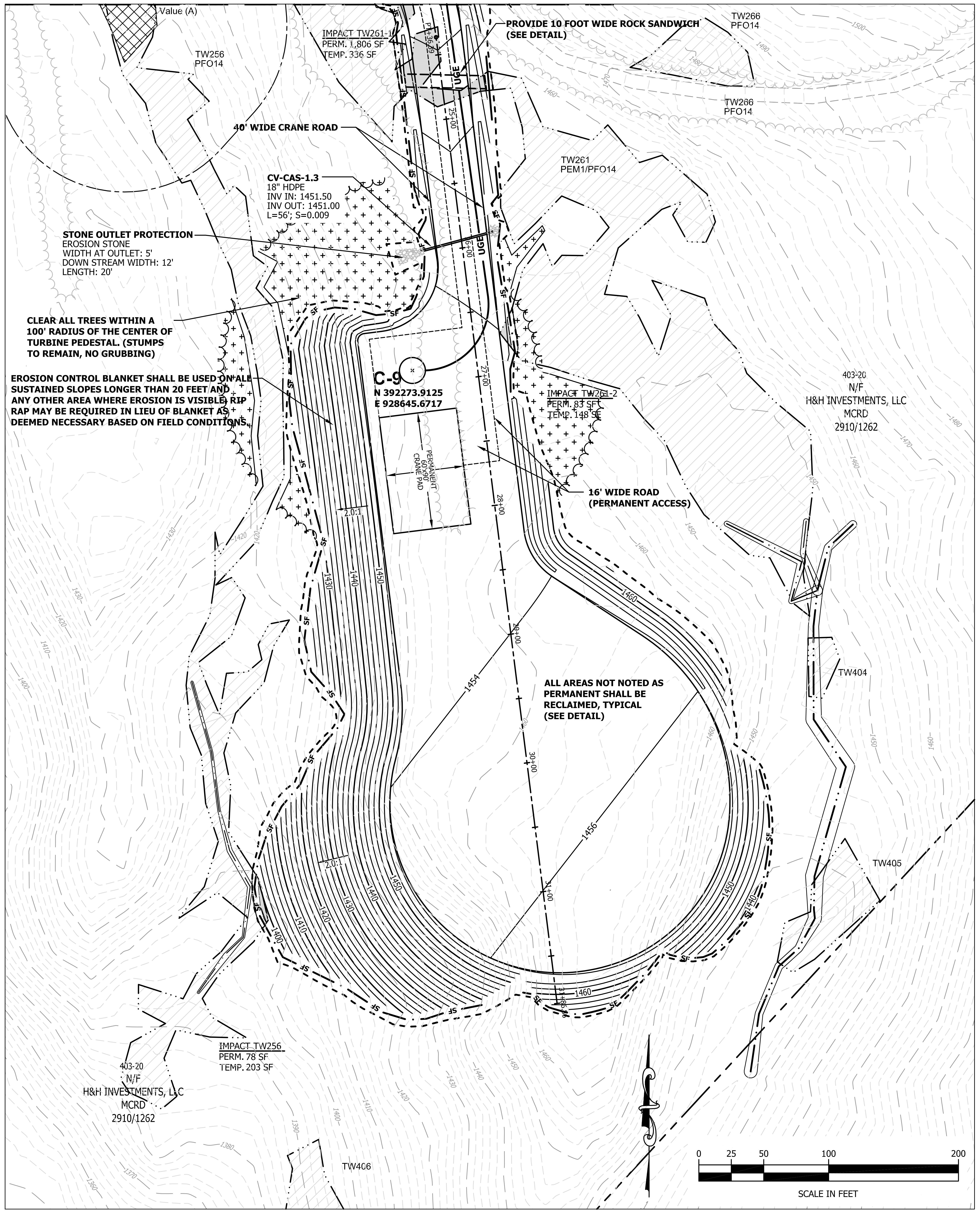
SHEET NUMBER: C 3.2

MATCH LINE - SHEET C 3.2 | MATCH LINE - SHEET C 5.1



MATCH LINE - THIS SHEET

MATCH LINE - THIS SHEET



(SEE PROFILE SHEET: P 3.1)

IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
PROJECT #: 13185
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DRAWN BY: JCD
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ARCHIVE #: H-5107

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WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL ACCESS SOUTH
TURBINE SITE C-9

SHEET NUMBER: C 3.3

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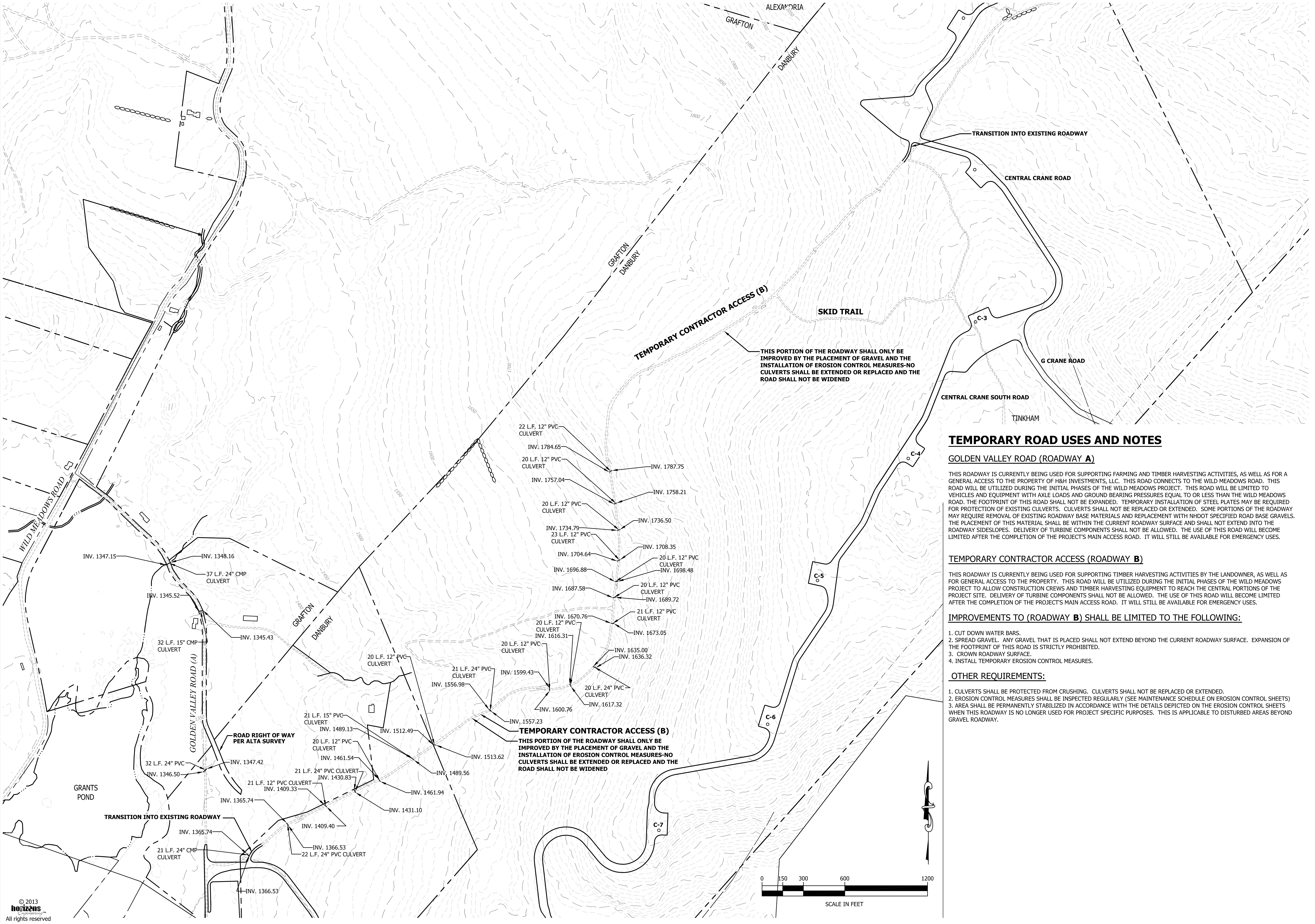

TEMPORARY ROAD USES AND NOTES

GOLDEN VALLEY ROAD (ROADWAY **A**)

THIS ROADWAY IS CURRENTLY BEING USED FOR SUPPORTING FARMING AND TIMBER HARVESTING ACTIVITIES, AS WELL AS FOR A GENERAL ACCESS TO THE PROPERTY OF H&H INVESTMENTS, LLC. THIS ROAD CONNECTS TO THE WILD MEADOWS ROAD. THIS ROAD WILL BE UTILIZED DURING THE INITIAL PHASES OF THE WILD MEADOWS PROJECT. THIS ROAD WILL BE LIMITED TO VEHICLES AND EQUIPMENT WITH AXLE LOADS AND GROUND BEARING PRESSURES EQUAL TO OR LESS THAN THE WILD MEADOWS ROAD. THE FOOTPRINT OF THIS ROAD SHALL NOT BE EXPANDED. TEMPORARY INSTALLATION OF STEEL PLATES MAY BE REQUIRED FOR PROTECTION OF EXISTING CULVERTS. CULVERTS SHALL NOT BE REPLACED OR EXTENDED. SOME PORTIONS OF THE ROADWAY MAY REQUIRE REMOVAL OF EXISTING ROADWAY BASE MATERIALS AND REPLACEMENT WITH NHDOT SPECIFIED ROAD BASE GRAVELS. THE PLACEMENT OF THIS MATERIAL SHALL BE WITHIN THE CURRENT ROADWAY SURFACE AND SHALL NOT EXTEND INTO THE ROADWAY SIDESLOPES. DELIVERY OF TURBINE COMPONENTS SHALL NOT BE ALLOWED. THE USE OF THIS ROAD WILL BECOME LIMITED AFTER THE COMPLETION OF THE PROJECT'S MAIN ACCESS ROAD. IT WILL STILL BE AVAILABLE FOR EMERGENCY USES.

TEMPORARY CONTRACTOR ACCESS (ROADWAY **B**)

THIS ROADWAY IS CURRENTLY BEING USED FOR SUPPORTING TIMBER HARVESTING ACTIVITIES BY THE LANDOWNER, AS WELL AS FOR GENERAL ACCESS TO THE PROPERTY. THIS ROAD WILL BE UTILIZED DURING THE INITIAL PHASES OF THE WILD MEADOWS PROJECT TO ALLOW CONSTRUCTION CREWS AND TIMBER HARVESTING EQUIPMENT TO REACH THE CENTRAL PORTIONS OF THE PROJECT SITE. DELIVERY OF TURBINE COMPONENTS SHALL NOT BE ALLOWED. THE USE OF THIS ROAD WILL BECOME LIMITED AFTER THE COMPLETION OF THE PROJECT'S MAIN ACCESS ROAD. IT WILL STILL BE AVAILABLE FOR EMERGENCY USES.

IMPROVEMENTS TO (ROADWAY **B**) SHALL BE LIMITED TO THE FOLLOWING:

1. CUT DOWN WATER BARS.
2. SPREAD GRAVEL. ANY GRAVEL THAT IS PLACED SHALL NOT EXTEND BEYOND THE CURRENT ROADWAY SURFACE. EXPANSION OF THE FOOTPRINT OF THIS ROAD IS STRICTLY PROHIBITED.
3. CROWN ROADWAY SURFACE.
4. INSTALL TEMPORARY EROSION CONTROL MEASURES.

OTHER REQUIREMENTS:

1. CULVERTS SHALL BE PROTECTED FROM CRUSHING. CULVERTS SHALL NOT BE REPLACED OR EXTENDED.
2. EROSION CONTROL MEASURES SHALL BE INSPECTED REGULARLY (SEE MAINTENANCE SCHEDULE ON EROSION CONTROL SHEETS)
3. AREA SHALL BE PERMANENTLY STABILIZED IN ACCORDANCE WITH THE DETAILS DEPICTED ON THE EROSION CONTROL SHEETS WHEN THIS ROADWAY IS NO LONGER USED FOR PROJECT SPECIFIC PURPOSES. THIS IS APPLICABLE TO DISTURBED AREAS BEYOND GRAVEL ROADWAY.

IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
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ENGIN'D BY: AJC
DRAWN BY: AJC
CHECK'D BY: AJC
ARCHIVE #: H-5107

ARTHUR JOHN COLVIN No.13828
11/21/13

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WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
NOTES FOR TEMPORARY CONTRACTOR ACCESS

SHEET NUMBER: C 4.1

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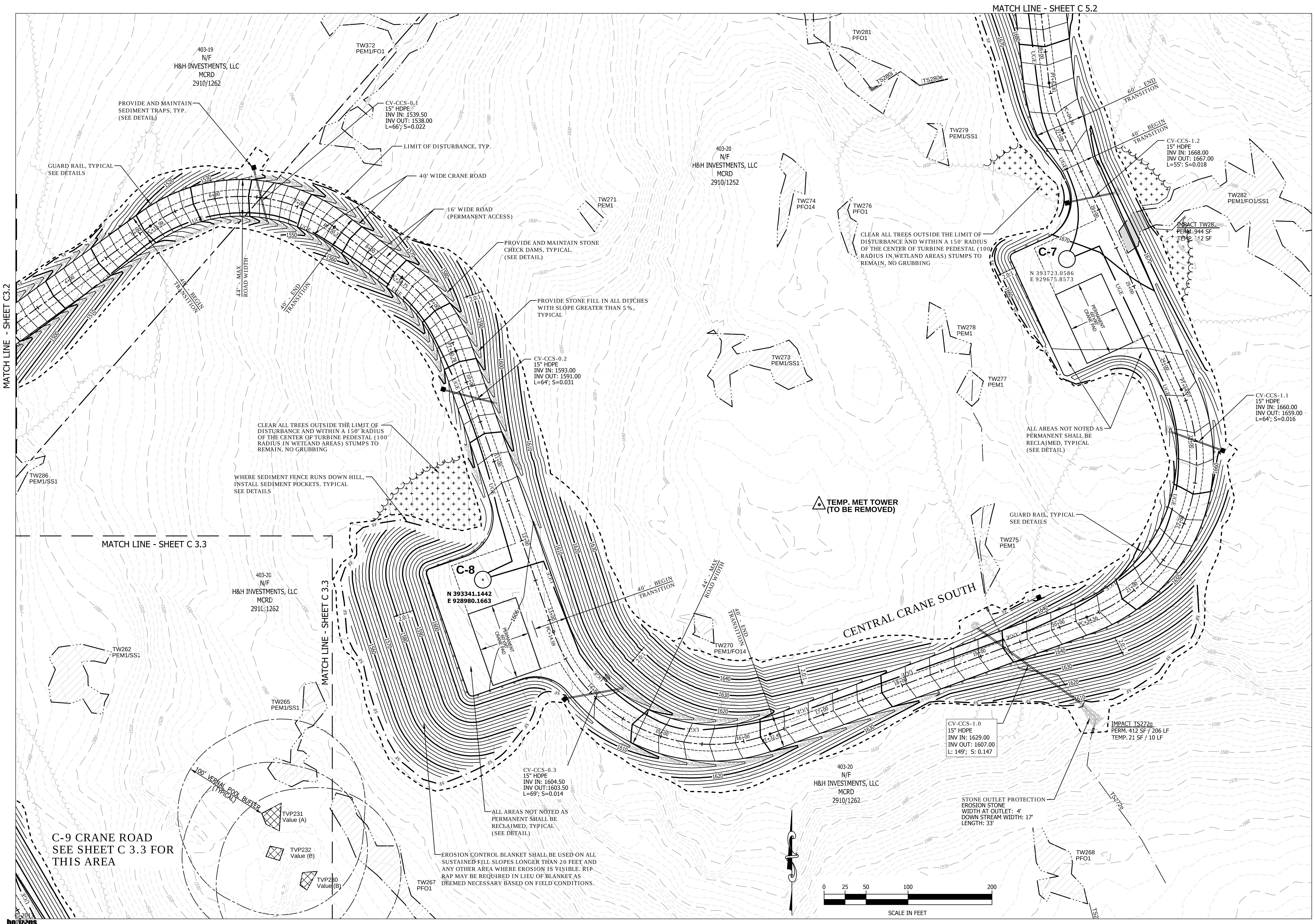

PROVIDE AND MAINTAIN SEDIMENT TRAPS, TYP. (SEE DETAIL)

CV-CCS-0.1
15" HDPE
INV IN: 1539.50
INV OUT: 1538.00
L=66'; S=0.022

PROVIDE AND MAINTAIN STONE CHECK DAMS, TYPICAL. (SEE DETAIL)

PROVIDE STONE FILL IN ALL DITCHES WITH SLOPE GREATER THAN 5 %, TYPICAL

CV-CCS-0.2
15" HDPE
INV IN: 1593.00
INV OUT: 1591.00
L=64'; S=0.031

CLEAR ALL TREES OUTSIDE THE LIMIT OF DISTURBANCE AND WITHIN A 150' RADIUS OF THE CENTER OF TURBINE PEDESTAL (100' RADIUS IN WETLAND AREAS) STUMPS TO REMAIN, NO GRUBBING

WHERE SEDIMENT FENCE RUNS DOWN HILL, INSTALL SEDIMENT POCKETS. TYPICAL SEE DETAILS

CLEAR ALL TREES OUTSIDE THE LIMIT OF DISTURBANCE AND WITHIN A 150' RADIUS OF THE CENTER OF TURBINE PEDESTAL (100' RADIUS IN WETLAND AREAS) STUMPS TO REMAIN, NO GRUBBING

CV-CCS-1.2
15" HDPE
INV IN: 1668.00
INV OUT: 1667.00
L=55': S=0.018

IMPACT TW282
PERM. 944 SF
TEMP. 12 SF

ALL AREAS NOT NOTED AS PERMANENT SHALL BE RECLAIMED, TYPICAL (SEE DETAIL)

CV-CCS-1.1
15" HDPE
INV IN: 1660.00
INV OUT: 1659.00
L=64'; S=0.016

CV-CCS-1.0
15" HDPE
INV IN: 1629.00
INV OUT: 1607.00
L: 149'; S: 0.147

IMPACT TS272e
PERM. 412 SF / 206 LF
TEMP. 21 SF / 10 LF

STONE OUTLET PROTECTION
EROSION STONE
WIDTH AT OUTLET: 4'
DOWN STREAM WIDTH: 17'
LENGTH: 33'

CV-CCS-0.3
15" HDPE
INV IN: 1604.50
INV OUT:1603.50
L=69'; S=0.014

ALL AREAS NOT NOTED AS PERMANENT SHALL BE RECLAIMED, TYPICAL (SEE DETAIL)

EROSION CONTROL BLANKET SHALL BE USED ON ALL SUSTAINED FILL SLOPES LONGER THAN 20 FEET AND ANY OTHER AREA WHERE EROSION IS VISIBLE. RIP RAP MAY BE REQUIRED IN LIEU OF BLANKET AS DEEMED NECESSARY BASED ON FIELD CONDITIONS.

C-9 CRANE ROAD
SEE SHEET C 3.3 FOR
THIS AREA

(SEE PROFILE SHEET: P 5.1)

P:\13185 IRF12\DWGS\70 Percent\cut\CS-70.dwg, CAS 5-1, 11/22/2013 10:03:06 AM, KRPhilbrick

IBERDROLA
RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE:	NOVEMBER 2013
PROJECT #:	13185
ENGIN'D BY:	JCD
DRAWN BY:	JCD
CHECK'D BY:	AJC
ARCHIVE #:	H-5107

STATE OF NEW HAMPSHIRE
ARTHUR JOHN COLVIN
No.13828
LICENSED PROFESSIONAL ENGINEER
11/21/13

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34 School Street
Littleton, NH 03561
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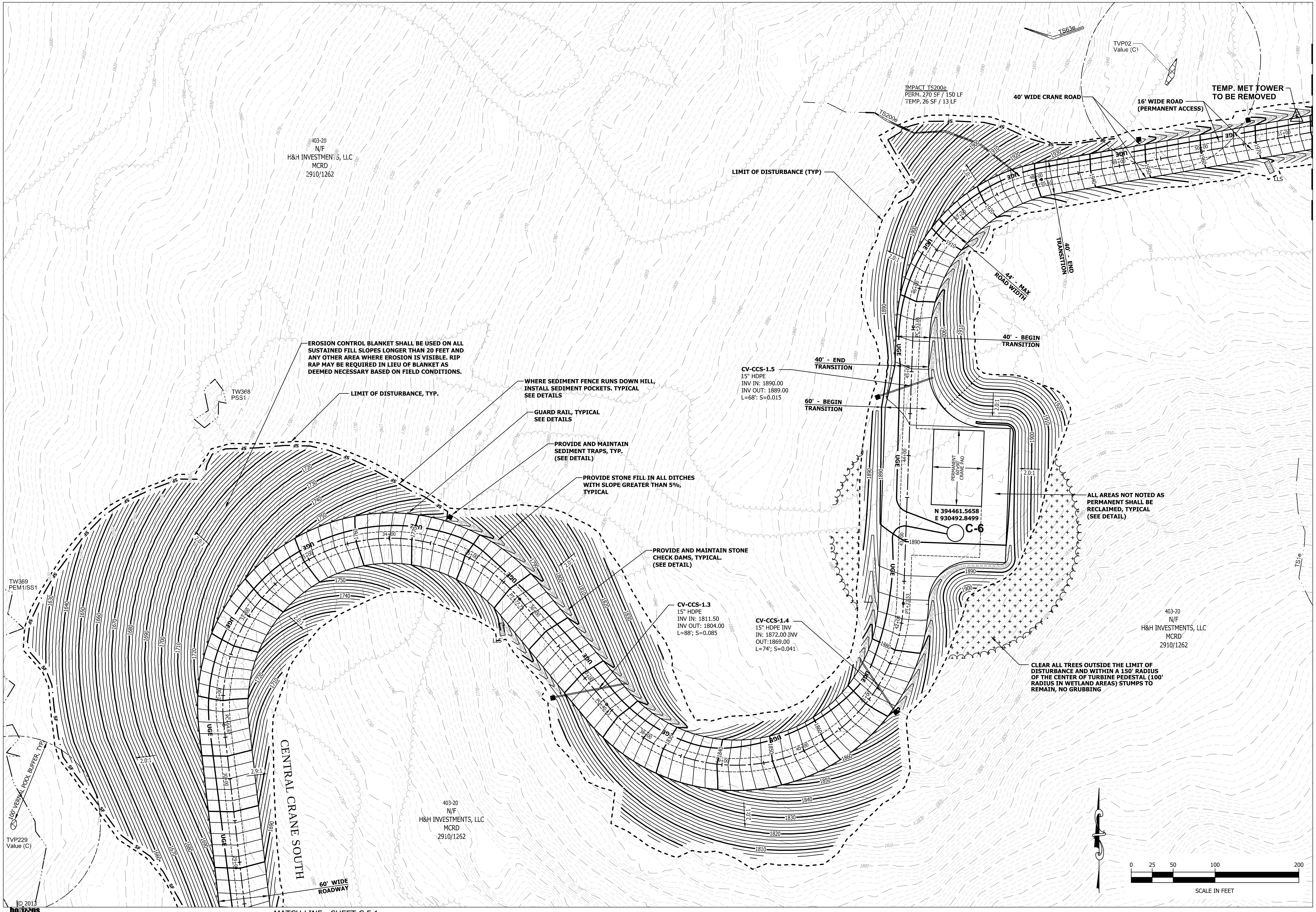
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL CRANE SOUTH
TURBINE SITES C-7 & C-8

SHEET NUMBER: C 5.1



(SEE PROFILE SHEET: P 5.1)

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IBERDROLA
RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE:	NOVEMBER 2013
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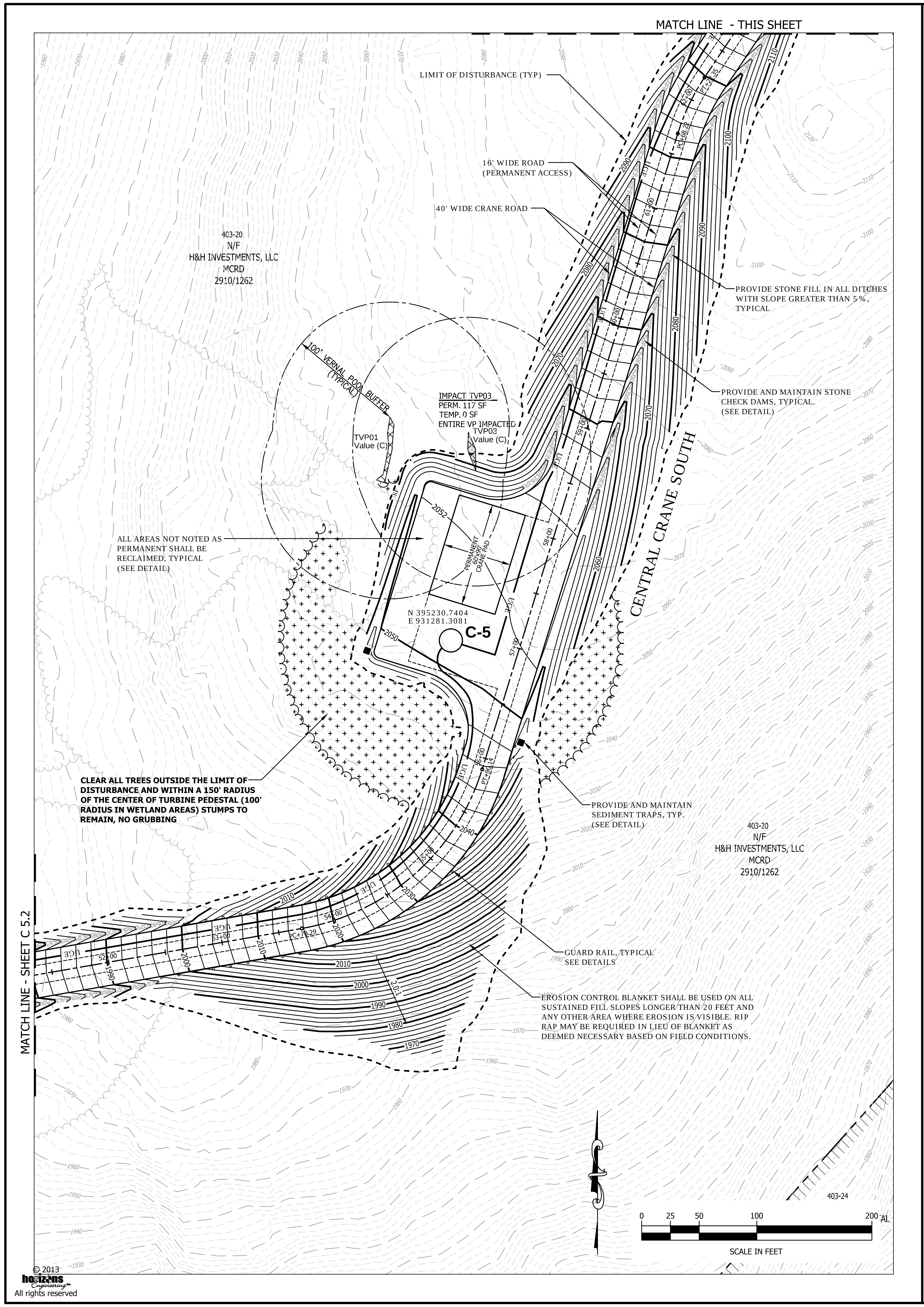
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

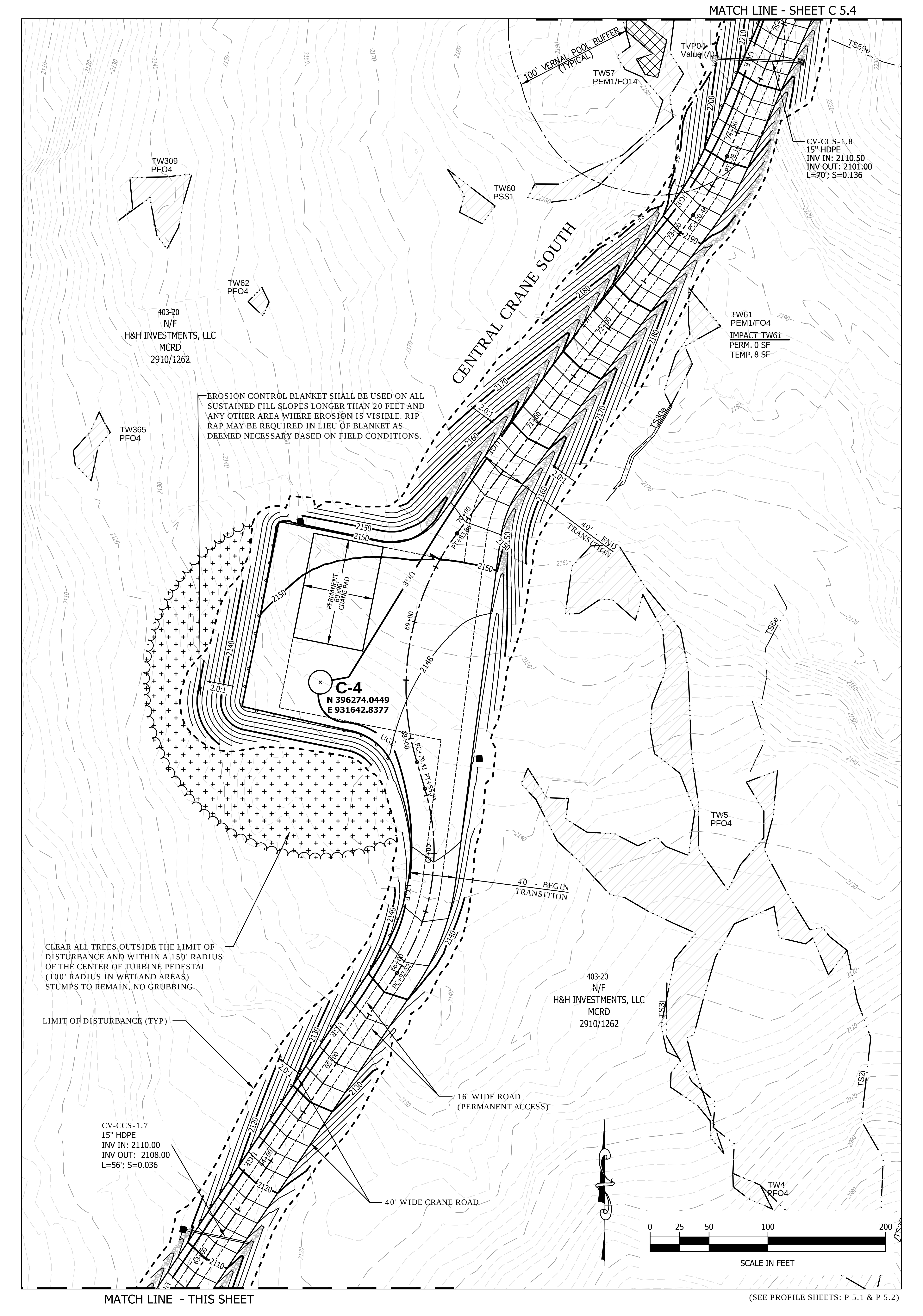
70 PERCENT DESIGN

SHEET TITLE:

CENTRAL CRANE SOUTH
TURBINE SITE C-6

SHEET NUMBER: C 5.2





(SEE PROFILE SHEETS: P 5.1 & P 5.2)

IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
PROJECT #: 13185
ENGIN'D BY: JCD
DRAWN BY: JCD
CHECK'D BY: AJC
ARCHIVE #: H-5107

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WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL CRANE SOUTH
TURBINE SITES C-4 & C-5

SHEET NUMBER: C 5.3

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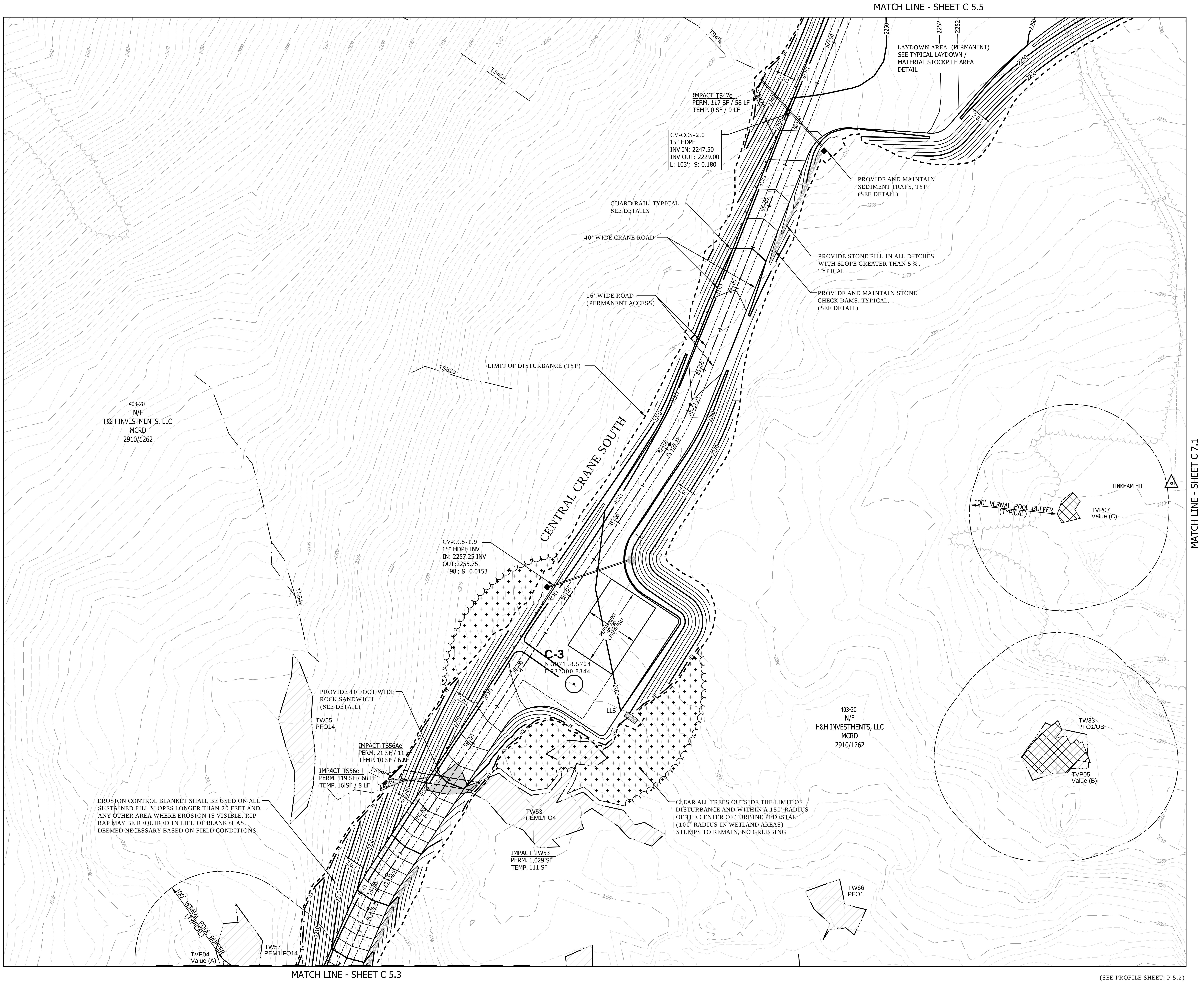

(SEE PROFILE SHEET: P 5.2)

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IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE:	NOVEMBER 2013
PROJECT #:	13185
ENGIN'D BY:	JCD
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CHECK'D BY:	AJC
ARCHIVE #:	H-5107

STATE OF NEW HAMPSHIRE
ARTHUR JOHN COLVIN
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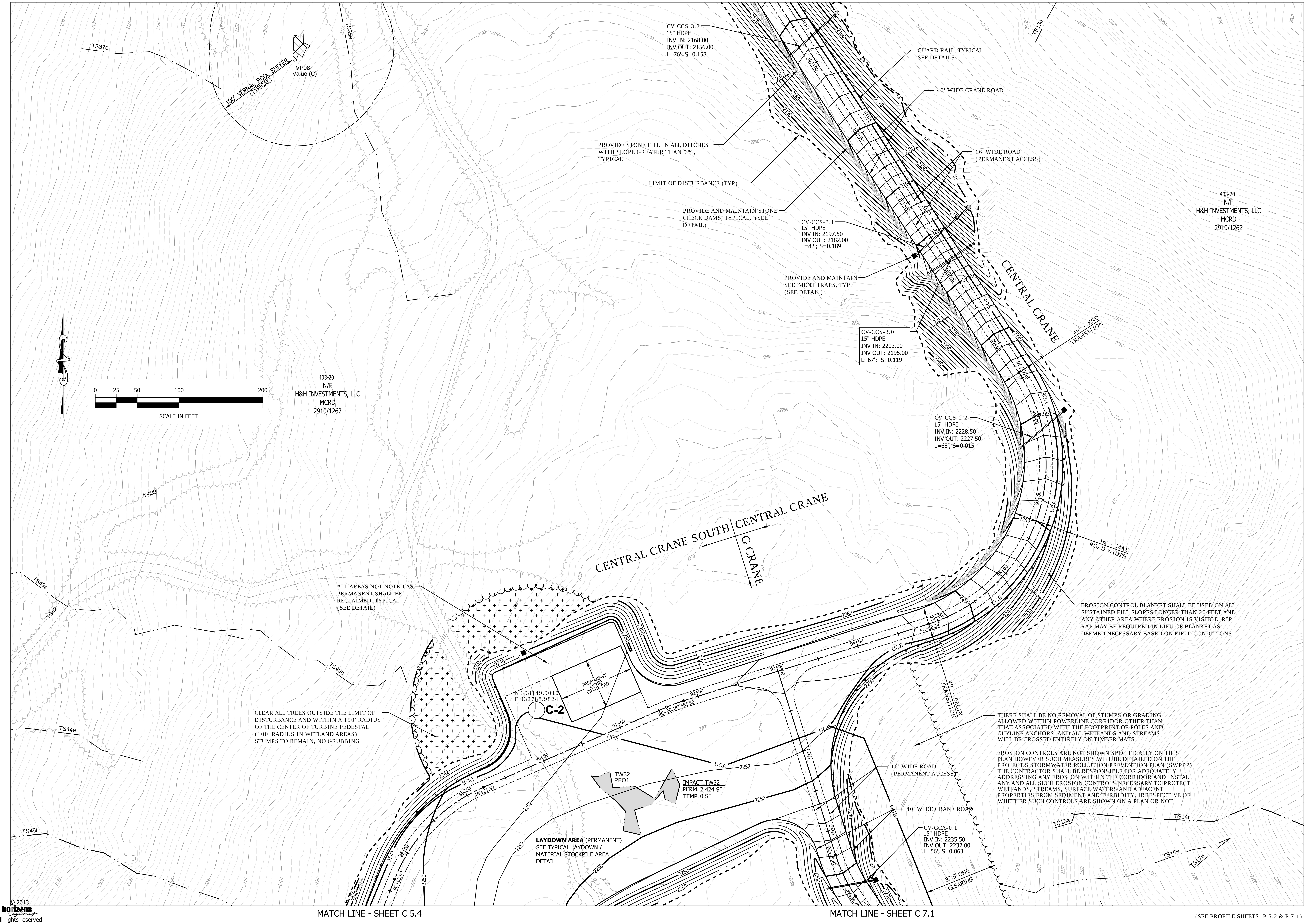
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL CRANE SOUTH
TURBINE SITE C-3

SHEET NUMBER: C 5.4

MATCH LINE - SHEET C 5.6



CV-CCS-3.2
15" HDPE
INV IN: 2168.00
INV OUT: 2156.00
L=76'; S=0.158

GUARD RAIL, TYPICAL
SEE DETAILS

40' WIDE CRANE ROAD

PROVIDE STONE FILL IN ALL DITCHES WITH SLOPE GREATER THAN 5%, TYPICAL

LIMIT OF DISTURBANCE (TYP)

16' WIDE ROAD (PERMANENT ACCESS)

PROVIDE AND MAINTAIN STONE CHECK DAMS, TYPICAL. (SEE DETAIL)

CV-CCS-3.1
15" HDPE
INV IN: 2197.50
INV OUT: 2182.00
L=82'; S=0.189

PROVIDE AND MAINTAIN SEDIMENT TRAPS, TYP. (SEE DETAIL)

CV-CCS-3.0
15" HDPE
INV IN: 2203.00
INV OUT: 2195.00
L: 67'; S: 0.119

CV-CCS-2.2
15" HDPE
INV IN: 2228.50
INV OUT: 2227.50
L=68'; S=0.015

EROSION CONTROL BLANKET SHALL BE USED ON ALL SUSTAINED FILL SLOPES LONGER THAN 20 FEET AND ANY OTHER AREA WHERE EROSION IS VISIBLE. RIP RAP MAY BE REQUIRED IN LIEU OF BLANKET AS DEEMED NECESSARY BASED ON FIELD CONDITIONS.

ALL AREAS NOT NOTED AS PERMANENT SHALL BE RECLAIMED, TYPICAL (SEE DETAIL)

CLEAR ALL TREES OUTSIDE THE LIMIT OF DISTURBANCE AND WITHIN A 150' RADIUS OF THE CENTER OF TURBINE PEDESTAL (100' RADIUS IN WETLAND AREAS) STUMPS TO REMAIN, NO GRUBBING

THERE SHALL BE NO REMOVAL OF STUMPS OR GRADING ALLOWED WITHIN POWERLINE CORRIDOR OTHER THAN THAT ASSOCIATED WITH THE FOOTPRINT OF POLES AND GUYLINE ANCHORS, AND ALL WETLANDS AND STREAMS WILL BE CROSSED ENTIRELY ON TIMBER MATS

EROSION CONTROLS ARE NOT SHOWN SPECIFICALLY ON THIS PLAN HOWEVER SUCH MEASURES WILL BE DETAILED ON THE PROJECT'S STORMWATER POLLUTION PREVENTION PLAN (SWPPP). THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY ADDRESSING ANY EROSION WITHIN THE CORRIDOR AND INSTALL ANY AND ALL SUCH EROSION CONTROLS NECESSARY TO PROTECT WETLANDS, STREAMS, SURFACE WATERS AND ADJACENT PROPERTIES FROM SEDIMENT AND TURBIDITY, IRRESPECTIVE OF WHETHER SUCH CONTROLS ARE SHOWN ON A PLAN OR NOT

IMPACT TW32
PERM. 2,424 SF
TEMP. 0 SF

16' WIDE ROAD (PERMANENT ACCESS)

40' WIDE CRANE ROAD

CV-GCA-0.1
15" HDPE
INV IN: 2235.50
INV OUT: 2232.00
L=56'; S=0.063

LAYDOWN AREA (PERMANENT)
SEE TYPICAL LAYDOWN / MATERIAL STOCKPILE AREA DETAIL

MATCH LINE - SHEET C 5.4

MATCH LINE - SHEET C 7.1

(SEE PROFILE SHEETS: P 5.2 & P 7.1)

IBERDROLA RENEWABLES

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DATE: NOVEMBER 2013
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ARCHIVE #: H-5107

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WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL CRANE SOUTH
TURBINE SITE C-2
CENTRAL CRANE
G CRANE

SHEET NUMBER: C 5.5

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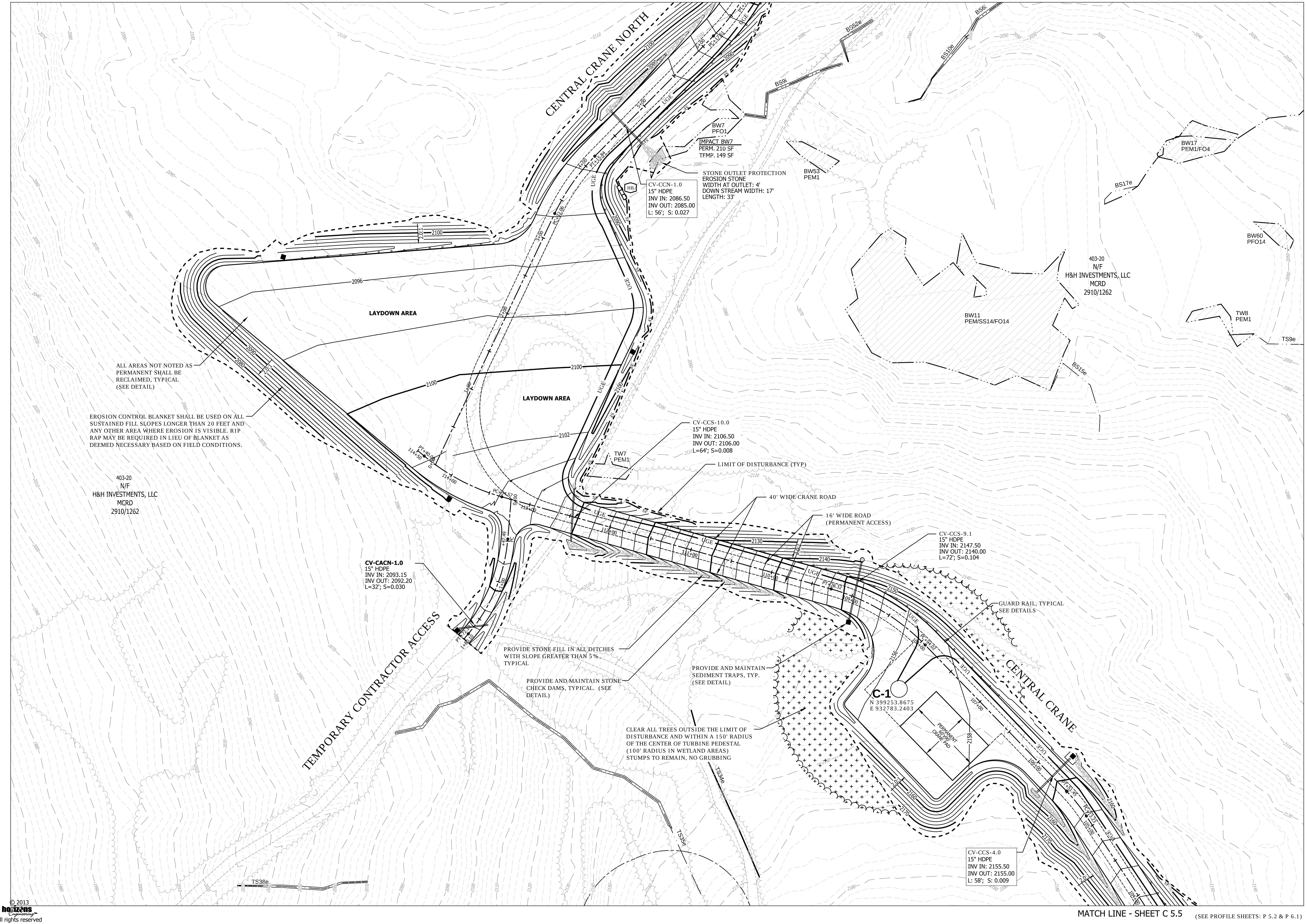
MATCH LINE - SHEET C 6.1



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MATCH LINE - SHEET C 5.5

(SEE PROFILE SHEETS: P 5.2 & P 6.1)

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WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL CRANE
CENTRAL CRANE NORTH
TURBINE SITE C-1

SHEET NUMBER: C 5.6

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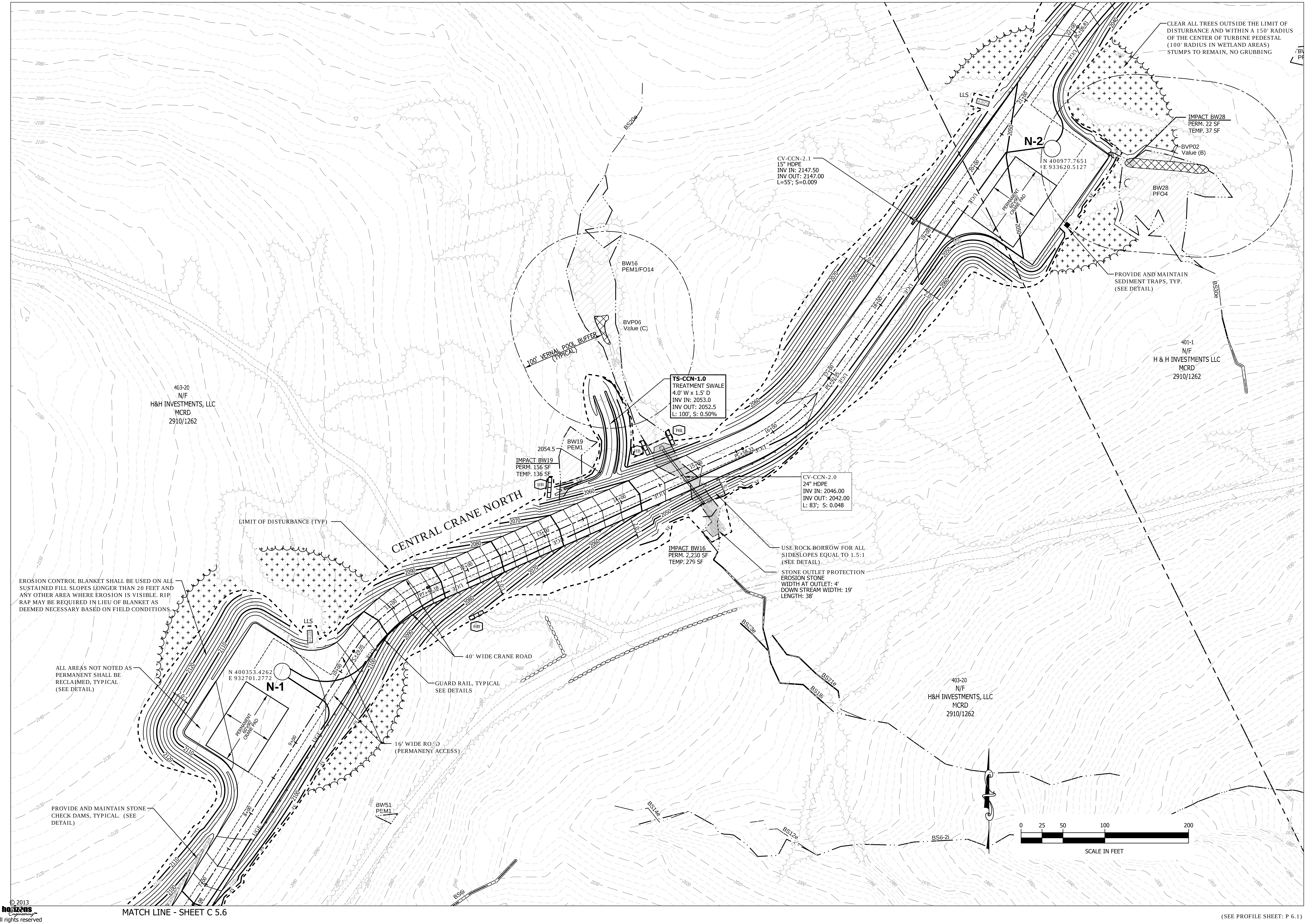
MATCH LINE - SHEET C 6.2



MATCH LINE - SHEET C 5.6

(SEE PROFILE SHEET: P 6.1)

IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE:	NOVEMBER 2013
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WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL CRANE NORTH
TURBINE SITES N-1 & N-2

SHEET NUMBER: C 6.1

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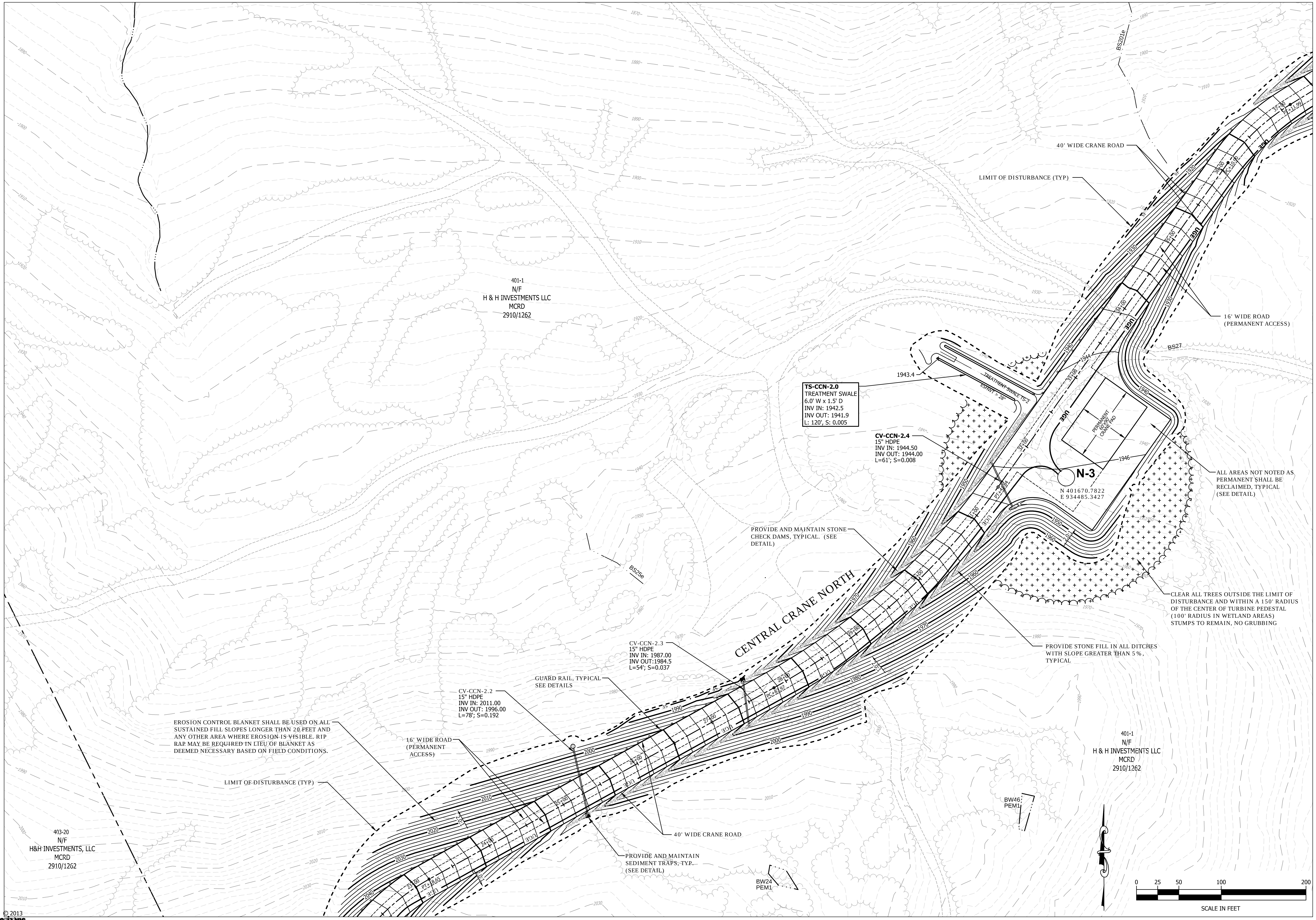

(SEE PROFILE SHEET: P 6.1)

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IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

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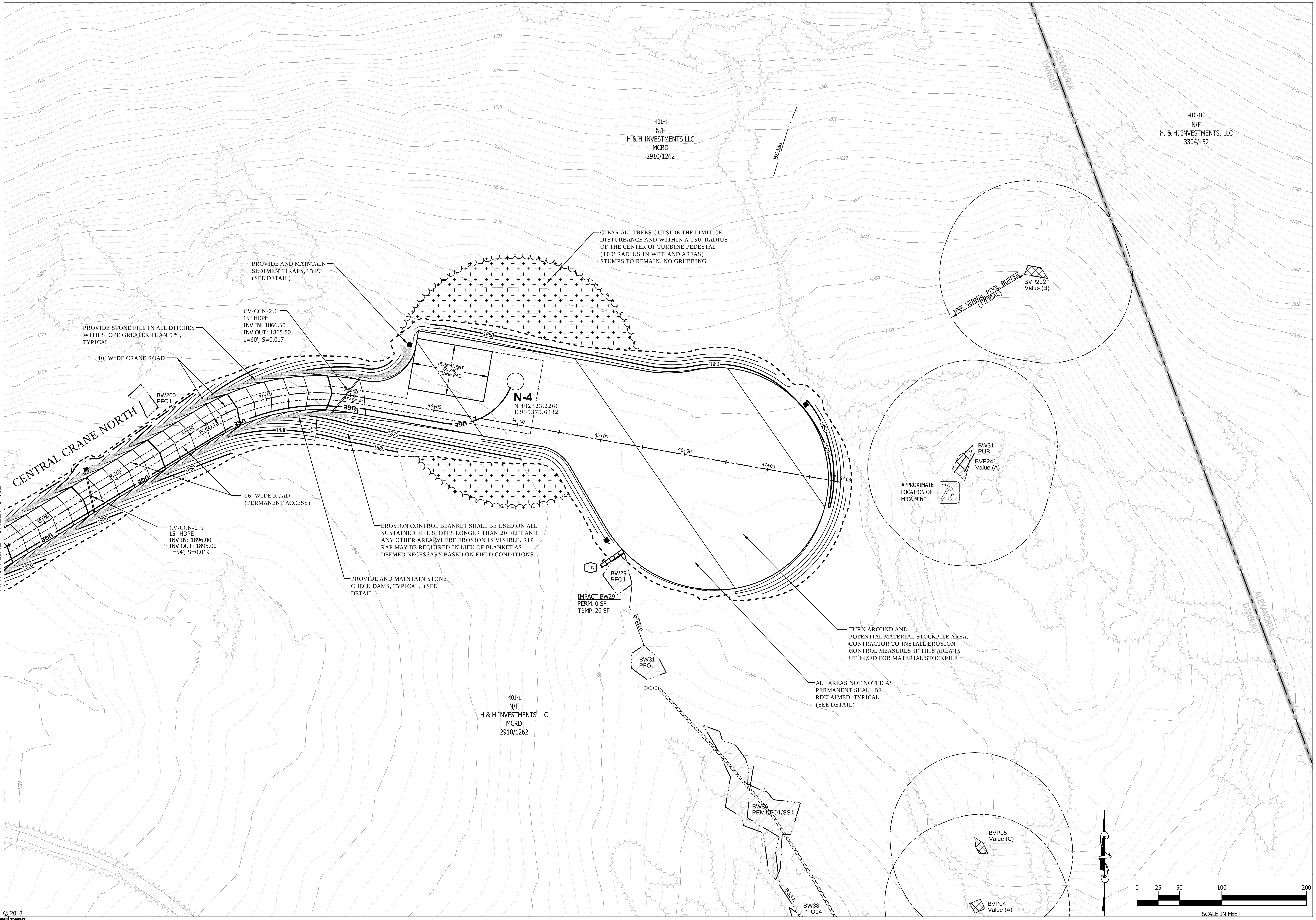
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL CRANE NORTH
TURBINE SITE N-3

SHEET NUMBER: C 6.2



(SEE PROFILE SHEET: P 6.1)

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IBERDROLA RENEWABLES

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DATE:	NOVEMBER 2013
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CHECK'D BY:	AJC
ARCHIVE #:	H-5107

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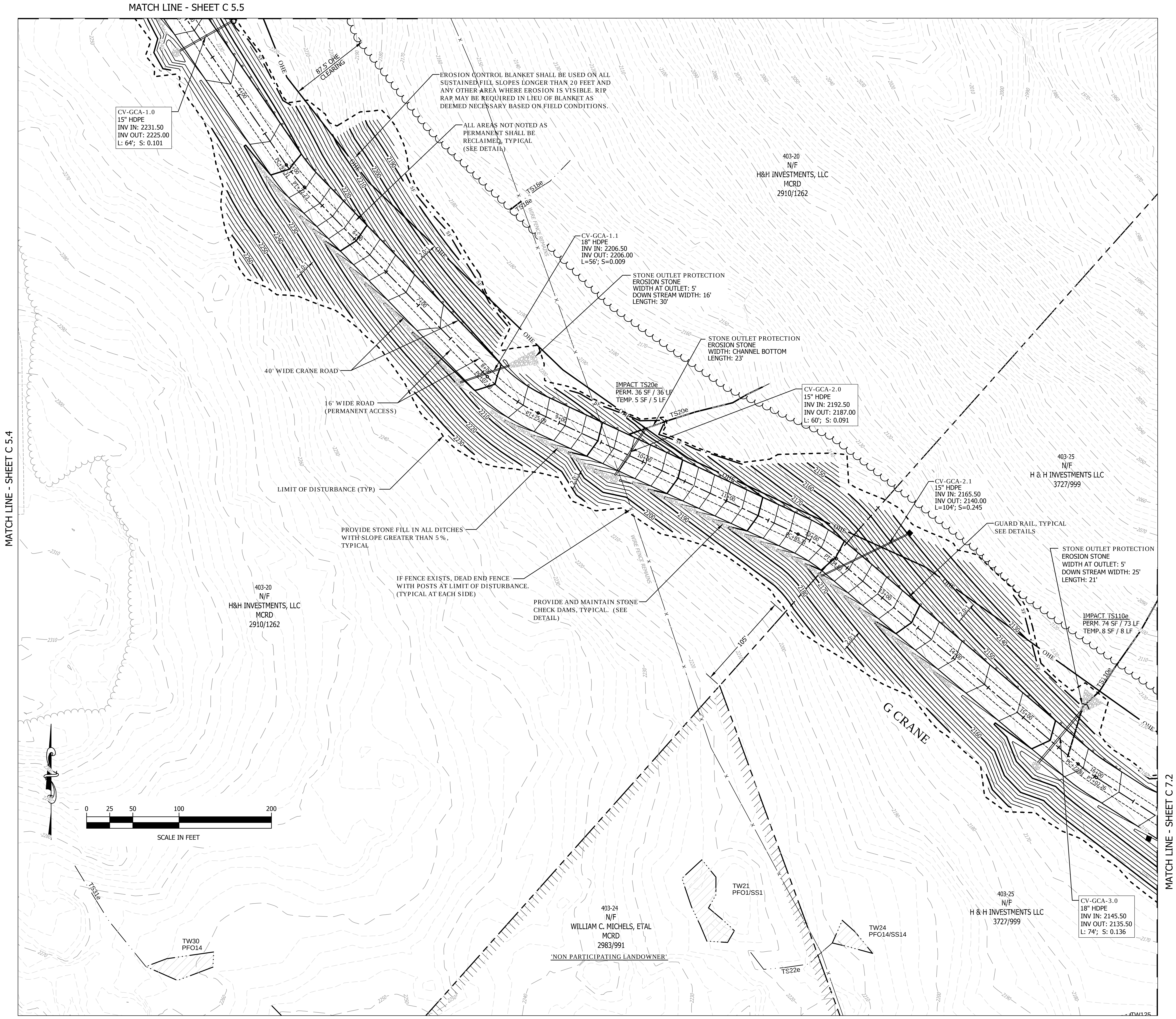
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL CRANE NORTH
TURBINE SITE N-4

SHEET NUMBER: C 6.3



CV-GCA-1.0
15" HDPE
INV IN: 2231.50
INV OUT: 2225.00
L: 64'; S: 0.101

EROSION CONTROL BLANKET SHALL BE USED ON ALL SUSTAINED FILL SLOPES LONGER THAN 20 FEET AND ANY OTHER AREA WHERE EROSION IS VISIBLE. RIP RAP MAY BE REQUIRED IN LIEU OF BLANKET AS DEEMED NECESSARY BASED ON FIELD CONDITIONS.

ALL AREAS NOT NOTED AS PERMANENT SHALL BE RECLAIMED, TYPICAL (SEE DETAIL)

403-20
N/F
H&H INVESTMENTS, LLC
MCRD
2910/1262

CV-GCA-1.1
18" HDPE
INV IN: 2206.50
INV OUT: 2206.00
L=56'; S=0.009

STONE OUTLET PROTECTION
EROSION STONE
WIDTH AT OUTLET: 5'
DOWN STREAM WIDTH: 16'
LENGTH: 30'

STONE OUTLET PROTECTION
EROSION STONE
WIDTH: CHANNEL BOTTOM
LENGTH: 23'

IMPACT TS20e
PERM. 36 SF / 36 LF
TEMP. 5 SF / 5 LF

CV-GCA-2.0
15" HDPE
INV IN: 2192.50
INV OUT: 2187.00
L: 60'; S: 0.091

40' WIDE CRANE ROAD

16' WIDE ROAD
(PERMANENT ACCESS)

LIMIT OF DISTURBANCE (TYP)

403-25
N/F
H & H INVESTMENTS LLC
3727/999

CV-GCA-2.1
15" HDPE
INV IN: 2165.50
INV OUT: 2140.00
L=104'; S=0.245

GUARD RAIL, TYPICAL
SEE DETAILS

STONE OUTLET PROTECTION
EROSION STONE
WIDTH AT OUTLET: 5'
DOWN STREAM WIDTH: 25'
LENGTH: 21'

IMPACT TS110e
PERM. 74 SF / 73 LF
TEMP. 8 SF / 8 LF

PROVIDE STONE FILL IN ALL DITCHES WITH SLOPE GREATER THAN 5%, TYPICAL

IF FENCE EXISTS, DEAD END FENCE WITH POSTS AT LIMIT OF DISTURBANCE. (TYPICAL AT EACH SIDE)

PROVIDE AND MAINTAIN STONE CHECK DAMS, TYPICAL. (SEE DETAIL)

403-20
N/F
H&H INVESTMENTS, LLC
MCRD
2910/1262

403-24
N/F
WILLIAM C. MICHELS, ETAL
MCRD
2983/991
'NON PARTICIPATING LANDOWNER'

403-25
N/F
H & H INVESTMENTS LLC
3727/999

CV-GCA-3.0
18" HDPE
INV IN: 2145.50
INV OUT: 2135.50
L: 74'; S: 0.136

(SEE PROFILE SHEET: P 7.1)

IBERDROLA
RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

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CHECK'D BY: AJC
ARCHIVE #: H-5107

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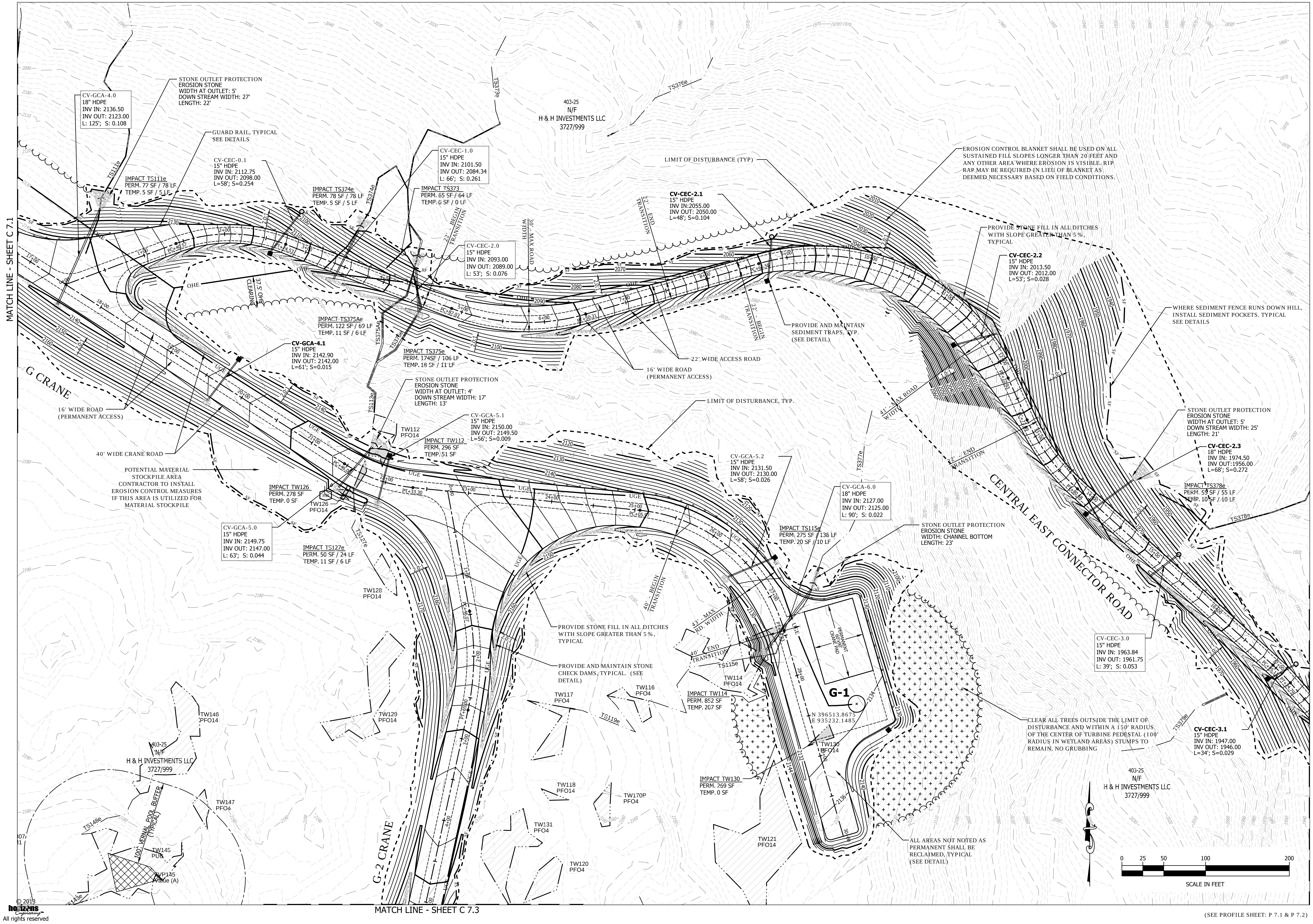
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE: G CRANE

SHEET NUMBER: C 7.1



(SEE PROFILE SHEET: P 7.1 & P 7.2)

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IBERDROLA RENEWABLES

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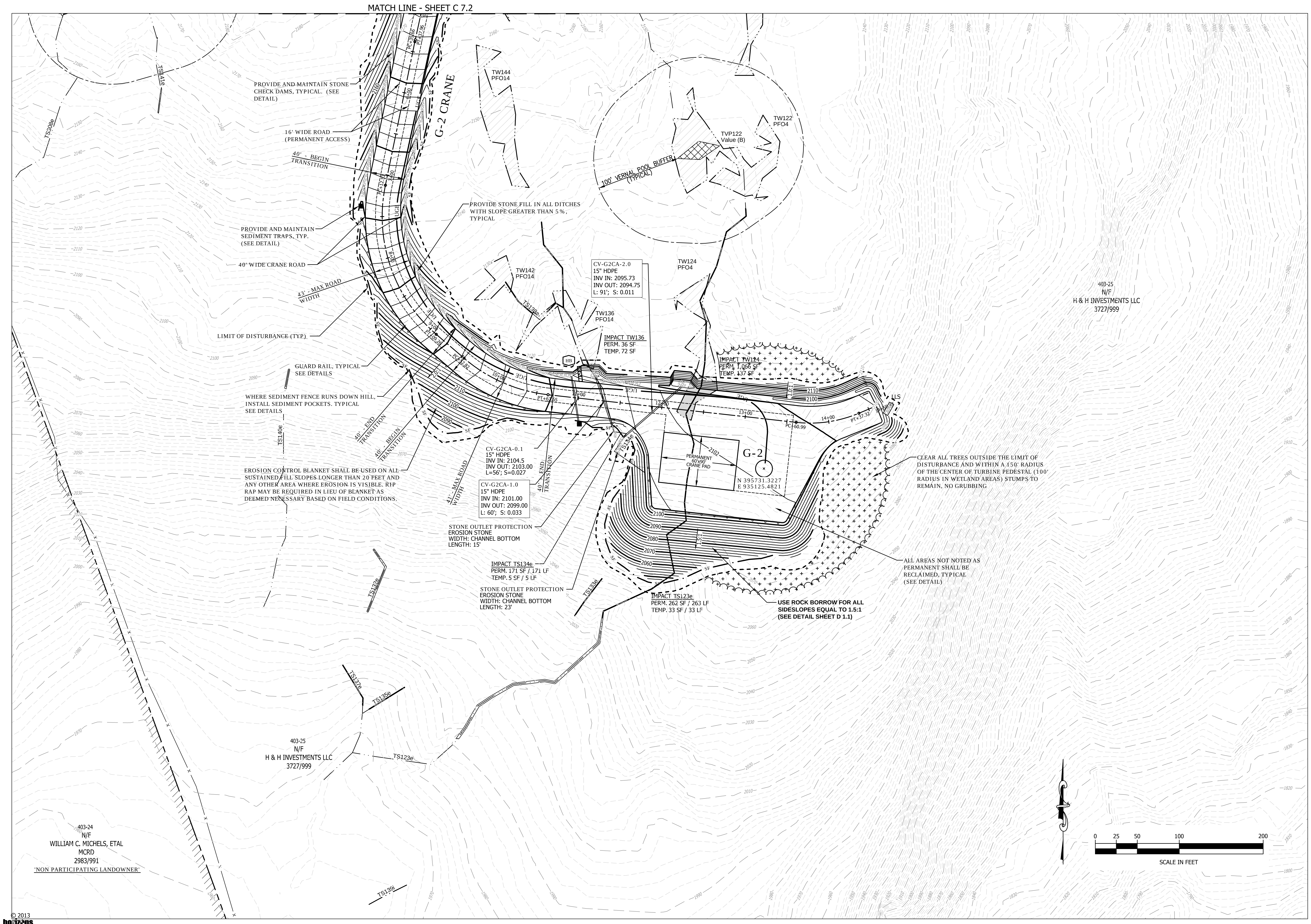
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
G CRANE
CENTRAL EAST CONNECT.
TURBINE SITE G-1
G-2 CRANE

SHEET NUMBER: C 7.2



(SEE PROFILE SHEET: P 7.1)

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IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
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STATE OF NEW HAMPSHIRE ARTHUR JOHN COLVIN No. 13828 LICENSED PROFESSIONAL ENGINEER
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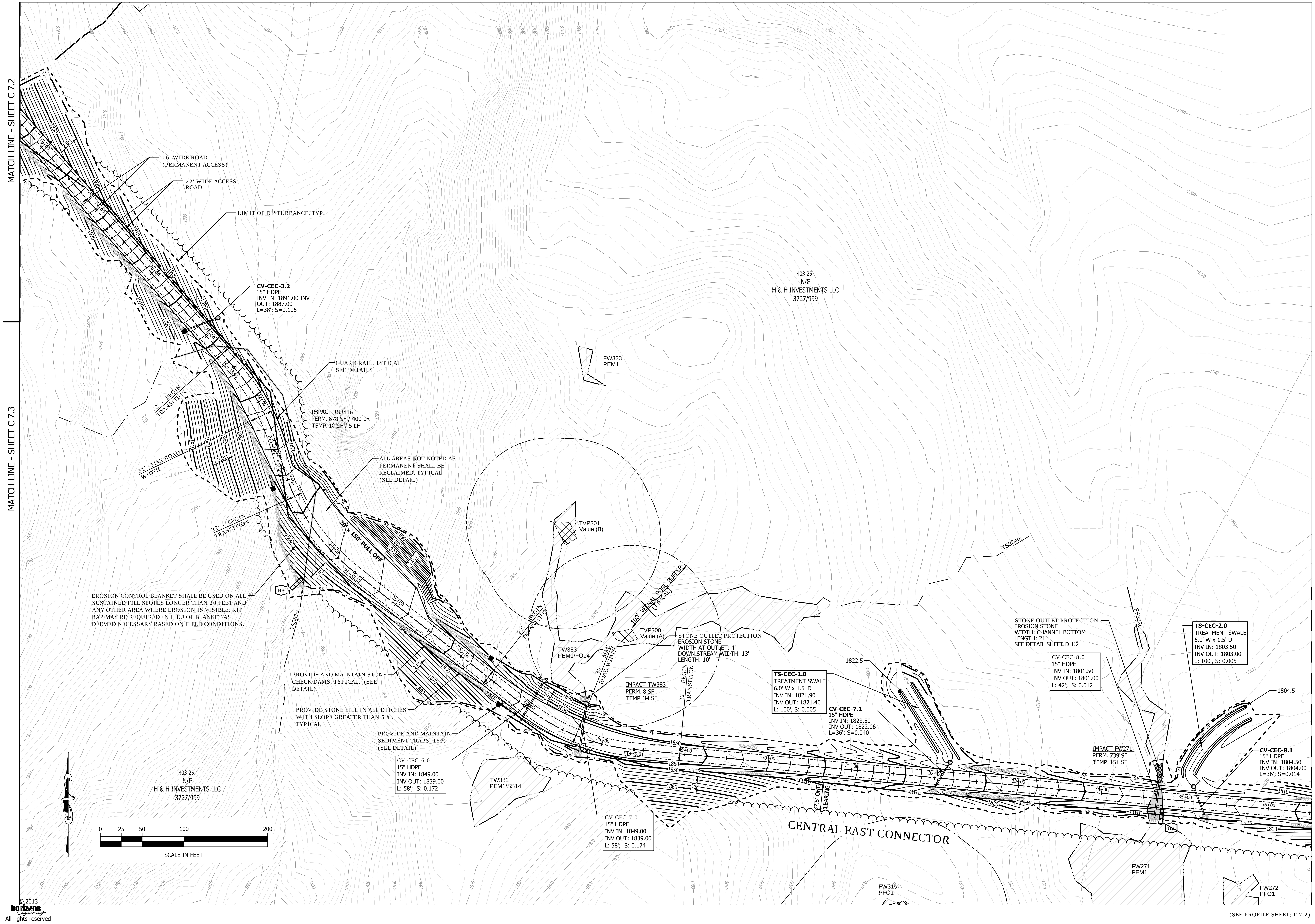
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
G-2 CRANE
TURBINE SITE G-2

SHEET NUMBER: C 7.3



(SEE PROFILE SHEET: P 7.2)

IBERDROLA RENEWABLES

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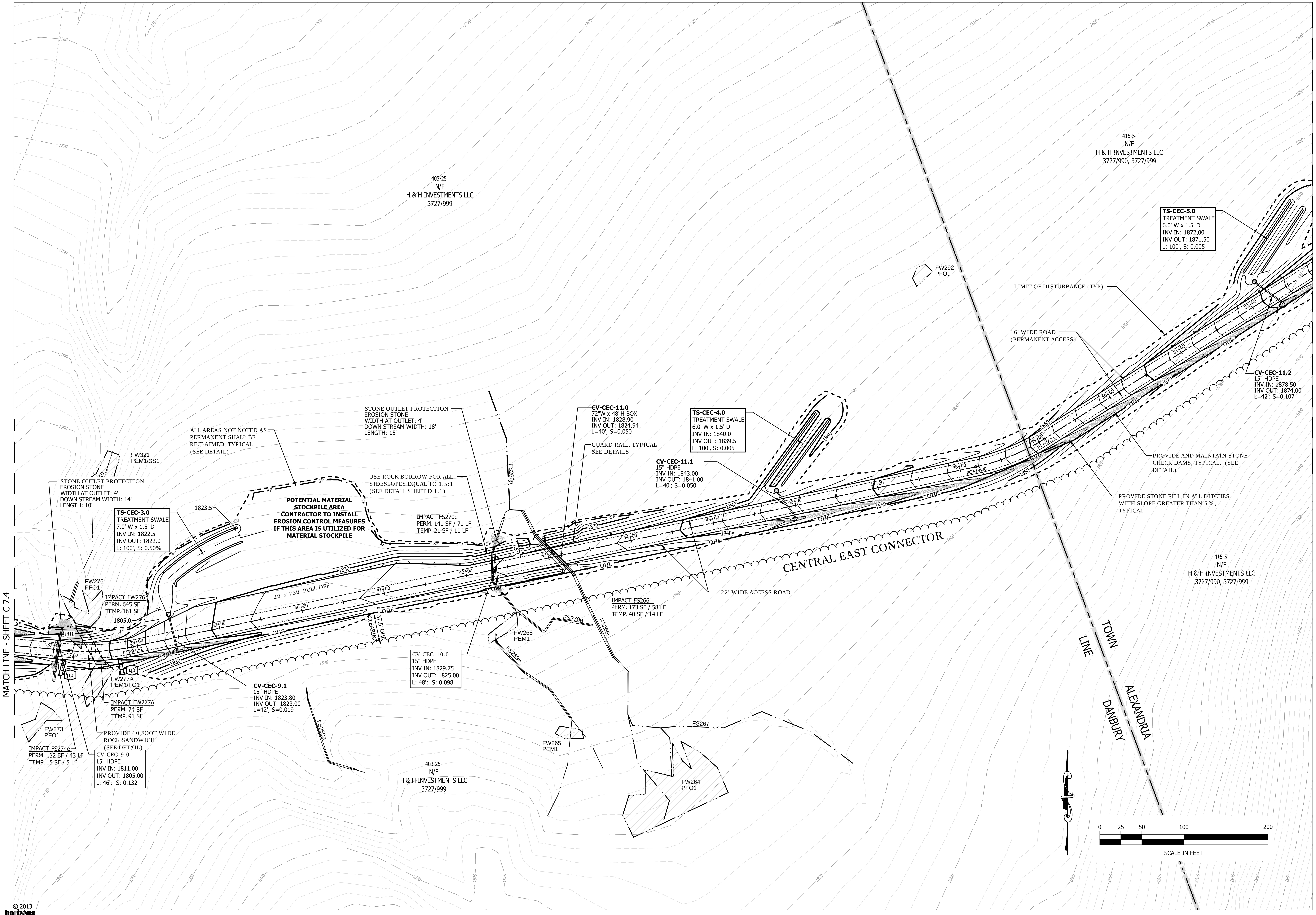
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE: CENTRAL EAST CONNECTOR

SHEET NUMBER: C 7.4



(SEE PROFILE SHEET: P 7.2)

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IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

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CHECK'D BY:	AJC
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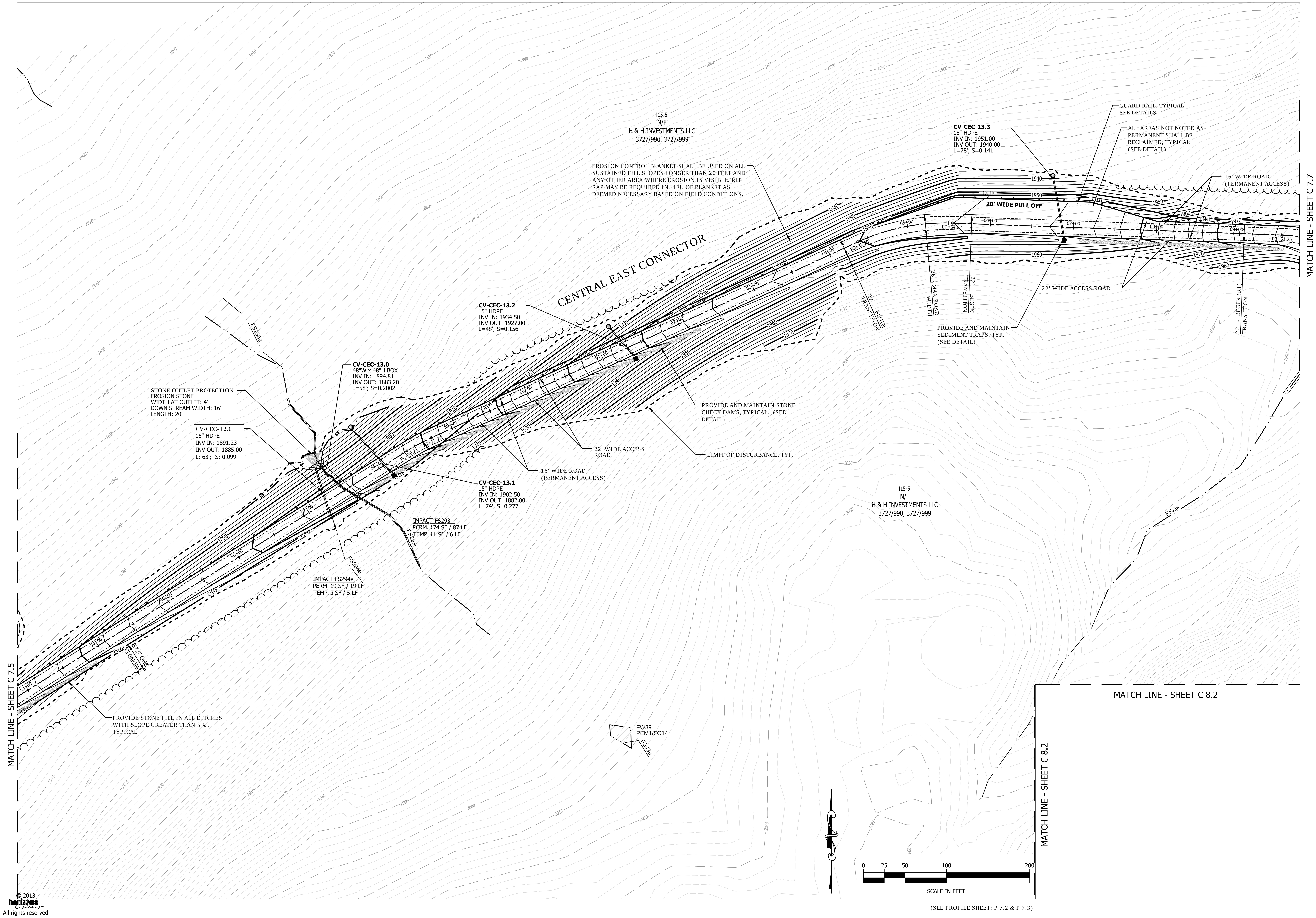
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL EAST CONNECTOR

SHEET NUMBER: C 7.5



(SEE PROFILE SHEET: P 7.2 & P 7.3)

IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
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WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL EAST CONNECTOR

SHEET NUMBER: C 7.6

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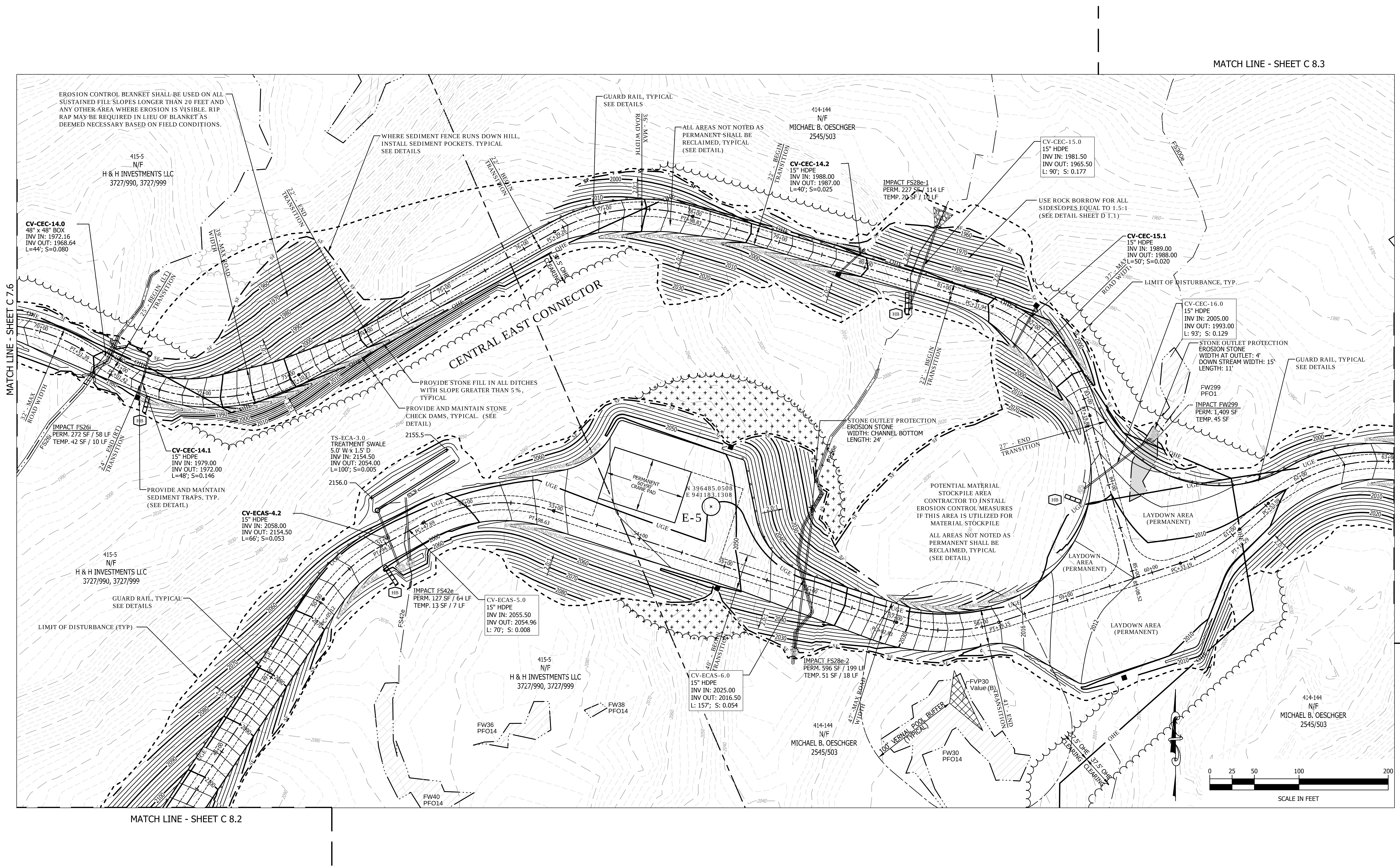


(SEE PROFILE SHEETS: P 7.3, P 8.1 & P 8.2)

IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE:	NOVEMBER 2013
PROJECT #:	13185
ENGIN'D BY:	JCD
DRAWN BY:	JCD
CHECK'D BY:	AJC
ARCHIVE #:	H-5107

STATE OF NEW HAMPSHIRE
ARTHUR JOHN COLVIN
No.13828
12/3/13

horizons Engineering Inc
34 School Street
Littleton, NH 03561
Phone 603.444.4111 - Fax 603.444.1343

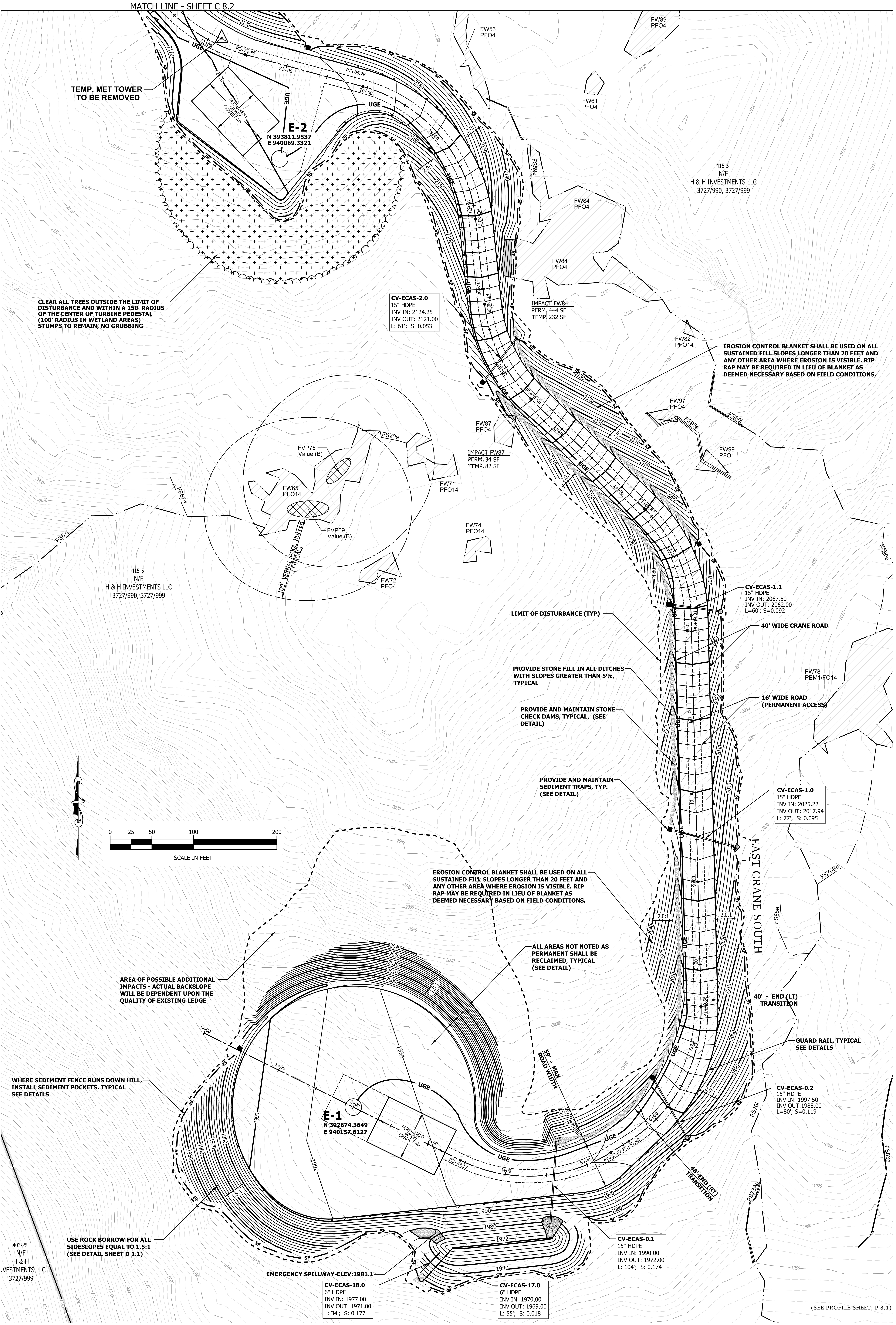
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
CENTRAL EAST CONNECTOR
TURBINE SITE E-5
EAST CRANE ROADS

SHEET NUMBER: C 7.7

MATCH LINE - SHEET C 8.2



TEMP. MET TOWER TO BE REMOVED

CLEAR ALL TREES OUTSIDE THE LIMIT OF DISTURBANCE AND WITHIN A 150' RADIUS OF THE CENTER OF TURBINE PEDESTAL (100' RADIUS IN WETLAND AREAS) STUMPS TO REMAIN, NO GRUBBING

CV-ECAS-2.0
15" HDPE
INV IN: 2124.25
INV OUT: 2121.00
L: 61'; S: 0.053

IMPACT FW84
PERM. 444 SF
TEMP. 232 SF

IMPACT FW87
PERM. 34 SF
TEMP. 82 SF

EROSION CONTROL BLANKET SHALL BE USED ON ALL SUSTAINED FILL SLOPES LONGER THAN 20 FEET AND ANY OTHER AREA WHERE EROSION IS VISIBLE. RIP RAP MAY BE REQUIRED IN LIEU OF BLANKET AS DEEMED NECESSARY BASED ON FIELD CONDITIONS.

CV-ECAS-1.1
15" HDPE
INV IN: 2067.50
INV OUT: 2062.00
L=60'; S=0.092

LIMIT OF DISTURBANCE (TYP)

40' WIDE CRANE ROAD

PROVIDE STONE FILL IN ALL DITCHES WITH SLOPES GREATER THAN 5%, TYPICAL

16' WIDE ROAD (PERMANENT ACCESS)

PROVIDE AND MAINTAIN STONE CHECK DAMS, TYPICAL. (SEE DETAIL)

PROVIDE AND MAINTAIN SEDIMENT TRAPS, TYP. (SEE DETAIL)

CV-ECAS-1.0
15" HDPE
INV IN: 2025.22
INV OUT: 2017.94
L: 77'; S: 0.095

EROSION CONTROL BLANKET SHALL BE USED ON ALL SUSTAINED FILL SLOPES LONGER THAN 20 FEET AND ANY OTHER AREA WHERE EROSION IS VISIBLE. RIP RAP MAY BE REQUIRED IN LIEU OF BLANKET AS DEEMED NECESSARY BASED ON FIELD CONDITIONS.

ALL AREAS NOT NOTED AS PERMANENT SHALL BE RECLAIMED, TYPICAL (SEE DETAIL)

AREA OF POSSIBLE ADDITIONAL IMPACTS - ACTUAL BACKSLOPE WILL BE DEPENDENT UPON THE QUALITY OF EXISTING LEDGE

40' - END (LT) TRANSITION

GUARD RAIL, TYPICAL SEE DETAILS

CV-ECAS-0.2
15" HDPE
INV IN: 1997.50
INV OUT:1988.00
L=80'; S=0.119

WHERE SEDIMENT FENCE RUNS DOWN HILL, INSTALL SEDIMENT POCKETS. TYPICAL SEE DETAILS

48'-END (RT) TRANSITION

CV-ECAS-0.1
15" HDPE
INV IN: 1990.00
INV OUT: 1972.00
L: 104'; S: 0.174

USE ROCK BORROW FOR ALL SIDESLOPES EQUAL TO 1.5:1 (SEE DETAIL SHEET D 1.1)

EMERGENCY SPILLWAY-ELEV:1981.1

CV-ECAS-18.0
6" HDPE
INV IN: 1977.00
INV OUT: 1971.00
L: 34'; S: 0.177

CV-ECAS-17.0
6" HDPE
INV IN: 1970.00
INV OUT: 1969.00
L: 55'; S: 0.018

(SEE PROFILE SHEET: P 8.1)

SHEET TITLE:
EAST CRANE SOUTH
TURBINE SITES E-1 & E-2

SHEET NUMBER: C 8.1

WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

horizons Engineering inc
34 School Street
Littleton, NH 03561
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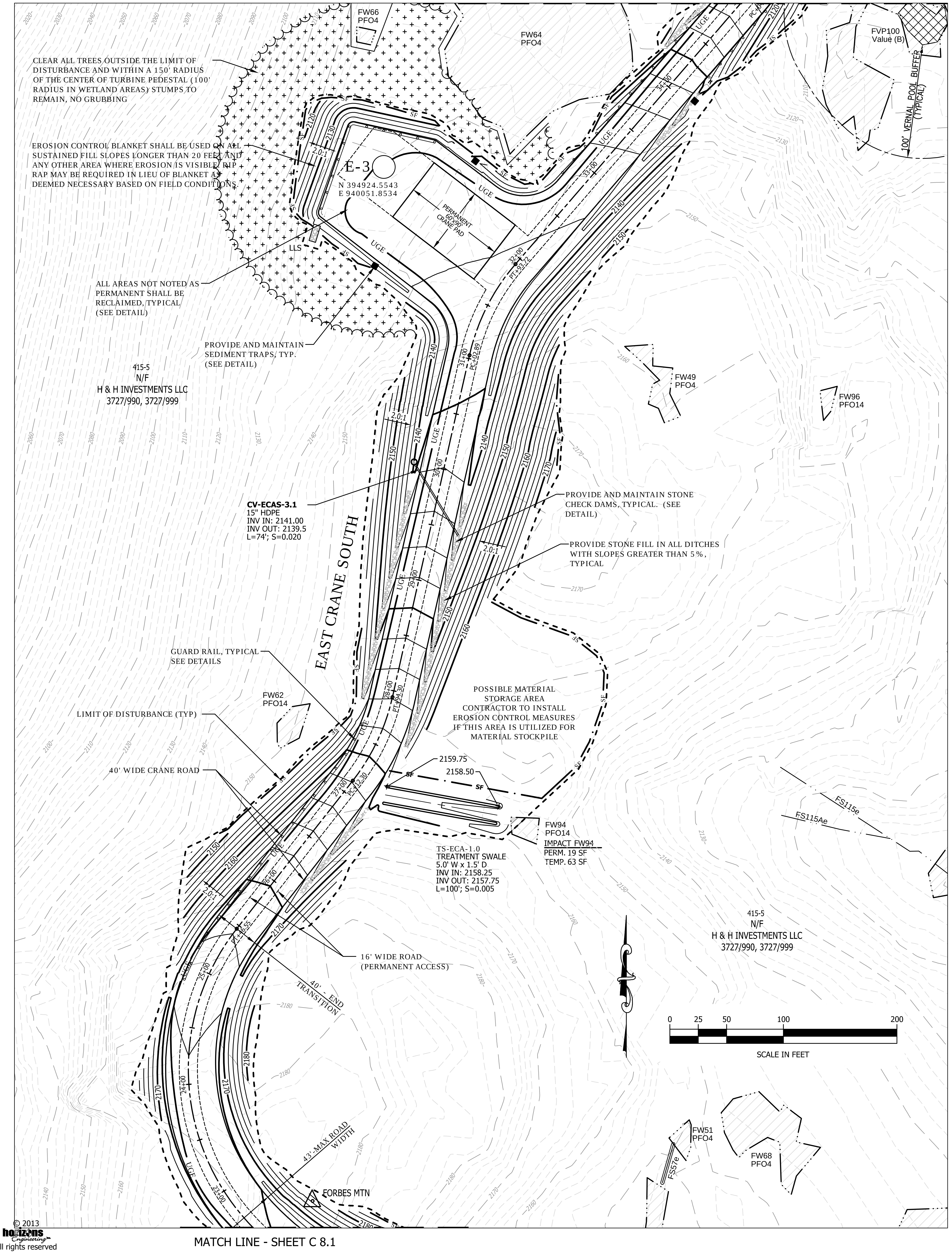
STATE OF NEW HAMPSHIRE
ARTHUR JOHN COLVIN
No. 13828
PROFESSIONAL ENGINEER
11/27/13

DATE:	NOVEMBER 2013
PROJECT #:	13185
ENGIN'D BY:	DEB
DRAWN BY:	DEB
CHECK'D BY:	AJC
ARCHIVE #:	H-5107

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

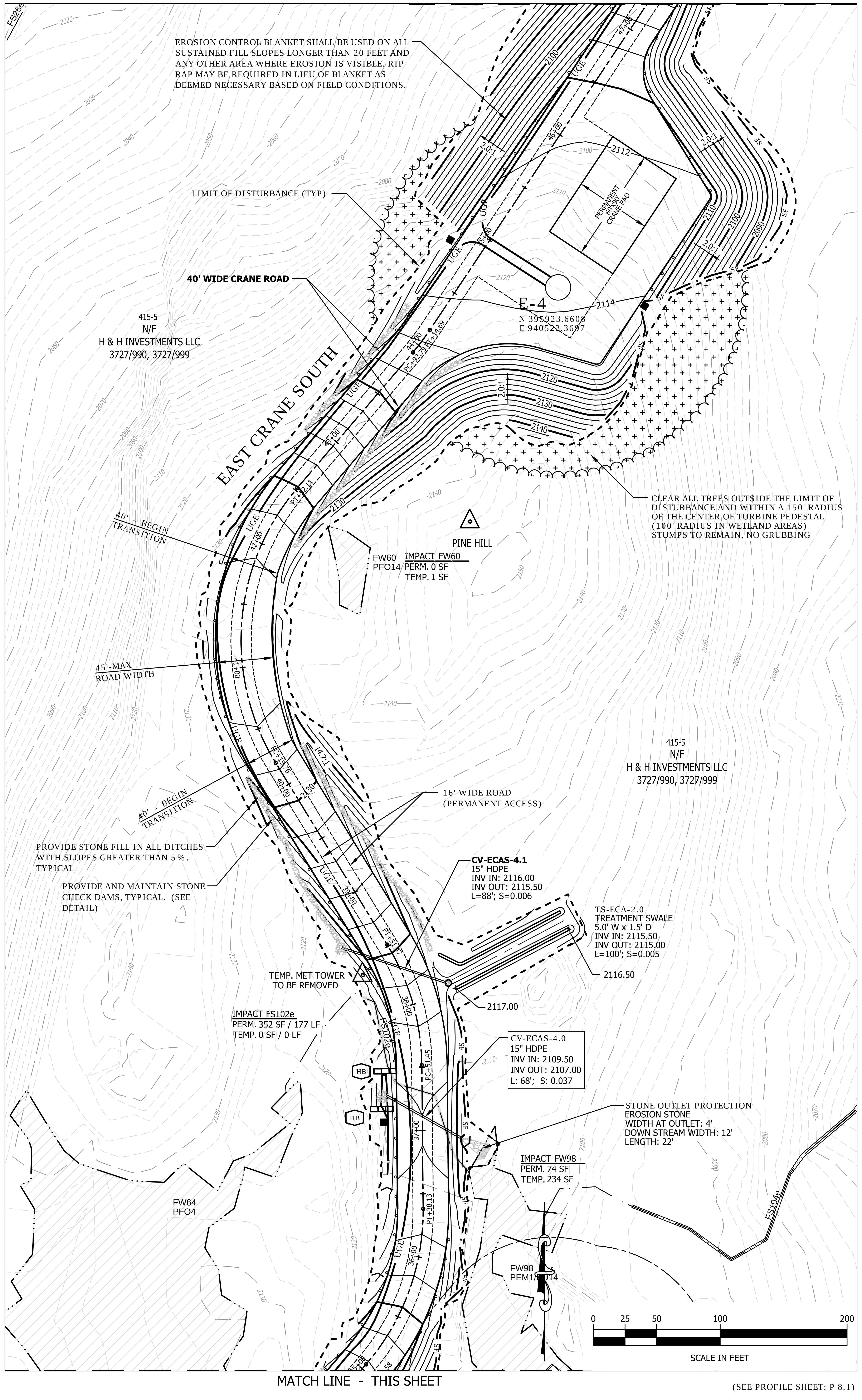
IBERDROLA RENEWABLES

MATCH LINE - THIS SHEET



MATCH LINE - SHEET C 8.1

MATCH LINE - SHEET C 7.7



MATCH LINE - THIS SHEET

(SEE PROFILE SHEET: P 8.1)

IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
PROJECT #: 13185
ENGIN'D BY: DEB
DRAWN BY: DEB
CHECK'D BY: AJC
ARCHIVE #: H-5107

ARTHUR JOHN COLVIN No.13828
11/21/13

horizons Engineering Inc
34 School Street
Littleton, NH 03561
Phone 603.444.4111 - Fax 603.444.1343

WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
EAST CRANE SOUTH
TURBINE SITES E-3 & E-4

SHEET NUMBER: C 8.2

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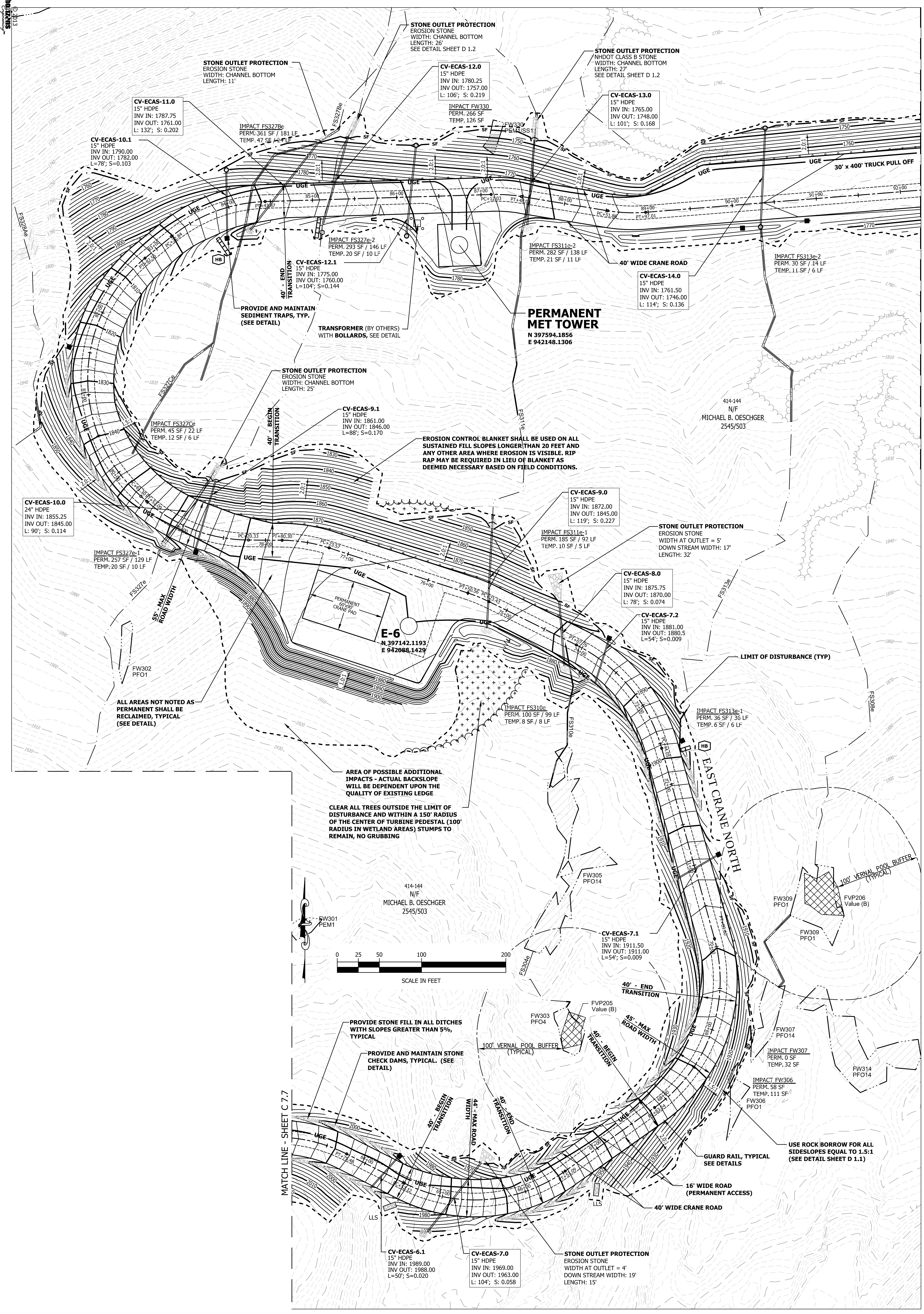

(SEE PROFILE SHEET: P 8.1-8.2)

SHEET TITLE:
EAST CRANE NORTH
TURBINE SITE E-6
MET TOWER SITE

SHEET NUMBER: C 8.3

WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

horizons Engineering Inc
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Littleton, NH 03561
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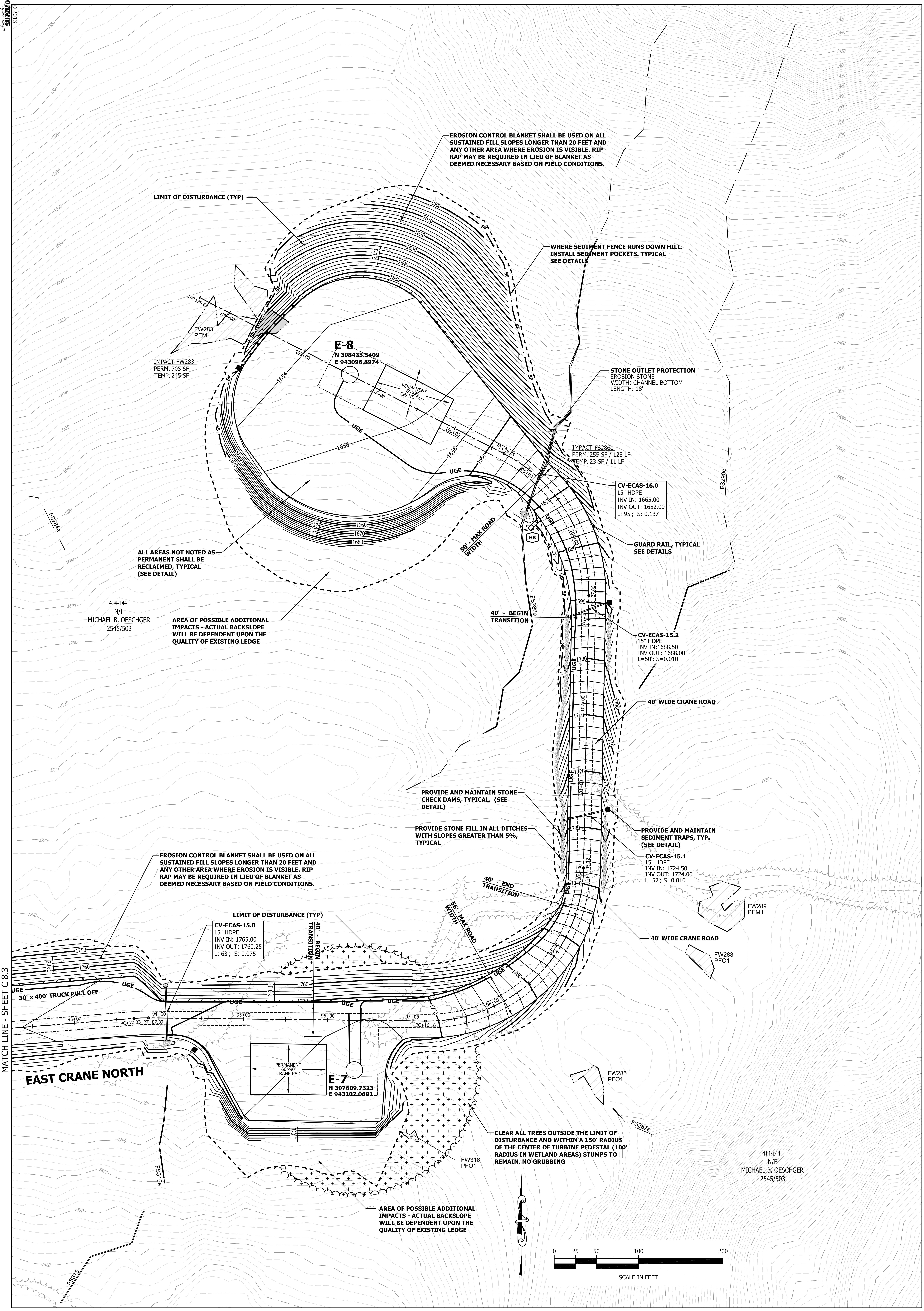
ARTHUR JOHN COLVIN No.13828
11/21/13

DATE: NOVEMBER 2013
PROJECT #: 13185
ENGIN'D BY: DEB
DRAWN BY: DEB
CHECK'D BY: AJC
ARCHIVE #: H-5107

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

IBERDROLA RENEWABLES



(SEE PROFILE SHEET: P 8.2)

SHEET TITLE:

EAST CRANE NORTH
TURBINE SITES E-7 & E-8

SHEET NUMBER: C 8.4

WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

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STATE OF NEW HAMPSHIRE
ARTHUR JOHN COLVIN
No.13828
11/21/13

DATE: NOVEMBER 2013					
PROJECT #: 13185					
ENGIN'D BY: DEB					
DRAWN BY: DEB					
CHECK'D BY: AJC					
ARCHIVE #: H-5107	NO.	DATE	REVISION DESCRIPTION	ENG	DWG

IBERDROLA RENEWABLES

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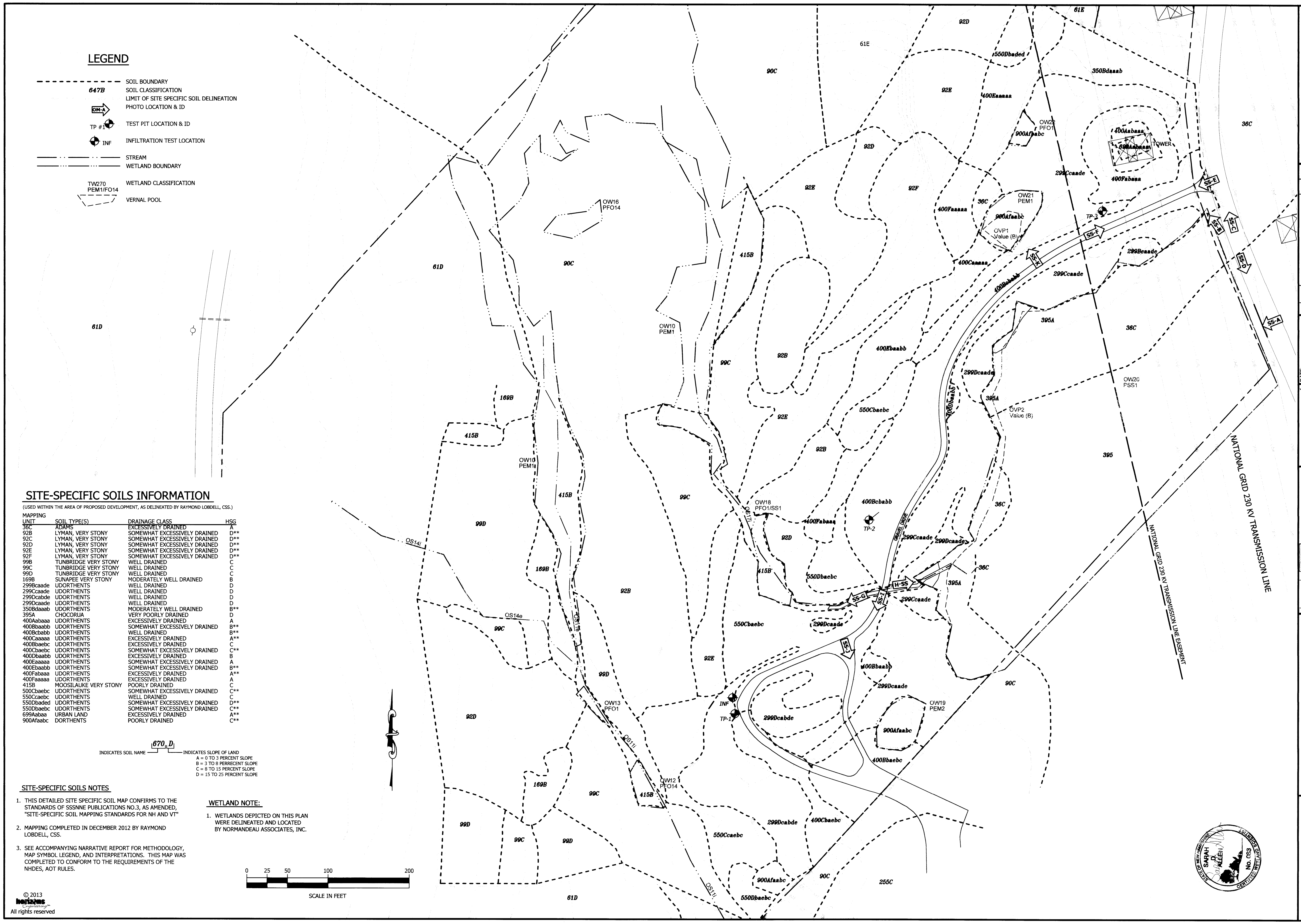

LEGEND

- - - - - - - -	SOIL BOUNDARY
647B	SOIL CLASSIFICATION
	LIMIT OF SITE SPECIFIC SOIL DELINEATION
OM-A	PHOTO LOCATION & ID
TP #1	TEST PIT LOCATION & ID
INF	INFILTRATION TEST LOCATION
—— · · ——	STREAM
—— · · · ——	WETLAND BOUNDARY
TW270 PEM1/FO14	WETLAND CLASSIFICATION
	VERNAL POOL

SITE-SPECIFIC SOILS INFORMATION

(USED WITHIN THE AREA OF PROPOSED DEVELOPMENT, AS DELINEATED BY RAYMOND LOBDELL, CSS.)

MAPPING UNIT	SOIL TYPE(S)	DRAINAGE CLASS	HSG
36C	ADAMS	EXCESSIVELY DRAINED	A
92B	LYMAN, VERY STONY	SOMEWHAT EXCESSIVELY DRAINED	D**
92C	LYMAN, VERY STONY	SOMEWHAT EXCESSIVELY DRAINED	D**
92D	LYMAN, VERY STONY	SOMEWHAT EXCESSIVELY DRAINED	D**
92E	LYMAN, VERY STONY	SOMEWHAT EXCESSIVELY DRAINED	D**
92F	LYMAN, VERY STONY	SOMEWHAT EXCESSIVELY DRAINED	D**
99B	TUNBRIDGE VERY STONY	WELL DRAINED	C
99C	TUNBRIDGE VERY STONY	WELL DRAINED	C
99D	TUNBRIDGE VERY STONY	WELL DRAINED	C
169B	SUNAPEE VERY STONY	MODERATELY WELL DRAINED	B
299Bcaade	UDORTHENTS	WELL DRAINED	D
299Ccaade	UDORTHENTS	WELL DRAINED	D
299Dcabde	UDORTHENTS	WELL DRAINED	D
299Dcaade	UDORTHENTS	WELL DRAINED	D
350Bdaaab	UDORTHENTS	MODERATELY WELL DRAINED	B**
395A	CHOCORUA	VERY POORLY DRAINED	D
400Aabaaa	UDORTHENTS	EXCESSIVELY DRAINED	A
400Bbaabb	UDORTHENTS	SOMEWHAT EXCESSIVELY DRAINED	B**
400Bcbabb	UDORTHENTS	WELL DRAINED	B**
400Caaaaa	UDORTHENTS	EXCESSIVELY DRAINED	A**
400Bbaebc	UDORTHENTS	EXCESSIVELY DRAINED	C
400Cbaebc	UDORTHENTS	SOMEWHAT EXCESSIVELY DRAINED	C**
400Dbaabb	UDORTHENTS	EXCESSIVELY DRAINED	B
400Eaaaaa	UDORTHENTS	SOMEWHAT EXCESSIVELY DRAINED	A
400Ebaabb	UDORTHENTS	SOMEWHAT EXCESSIVELY DRAINED	B**
400Fabaaa	UDORTHENTS	EXCESSIVELY DRAINED	A**
400Faaaaa	UDORTHENTS	EXCESSIVELY DRAINED	A
415B	MOOSILAUKE VERY STONY	POORLY DRAINED	C
500Cbaebc	UDORTHENTS	SOMEWHAT EXCESSIVELY DRAINED	C**
550Ccaebc	UDORTHENTS	WELL DRAINED	C
550Dbaded	UDORTHENTS	SOMEWHAT EXCESSIVELY DRAINED	D**
550Dbaebc	UDORTHENTS	SOMEWHAT EXCESSIVELY DRAINED	C**
699Aabaa	URBAN LAND	EXCESSIVELY DRAINED	A**
900Afaabc	DORTHENTS	POORLY DRAINED	C**

670 D

INDICATES SOIL NAME — 670

INDICATES SLOPE OF LAND — D

A = 0 TO 3 PERCENT SLOPE
B = 3 TO 8 PERRECENT SLOPE
C = 8 TO 15 PERCENT SLOPE
D = 15 TO 25 PERCENT SLOPE

SITE-SPECIFIC SOILS NOTES

1. THIS DETAILED SITE SPECIFIC SOIL MAP CONFIRMS TO THE STANDARDS OF SSSNNE PUBLICATIONS NO.3, AS AMENDED, "SITE-SPECIFIC SOIL MAPPING STANDARDS FOR NH AND VT"
2. MAPPING COMPLETED IN DECEMBER 2012 BY RAYMOND LOBDELL, CSS.
3. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS. THIS MAP WAS COMPLETED TO CONFORM TO THE REQUIREMENTS OF THE NHDES, AOT RULES.

WETLAND NOTE:

1. WETLANDS DEPICTED ON THIS PLAN WERE DELINEATED AND LOCATED BY NORMANDEAU ASSOCIATES, INC.

0 25 50 100 200

SCALE IN FEET

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SARAH D. ALLEN No. 093

IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 7, 2013
PROJECT #: 13185
ENGIN'D BY: RL
DRAWN BY:
CHECK'D BY: AJC
ARCHIVE #: H-5107

RAYMOND D. LOBDELL No. 007

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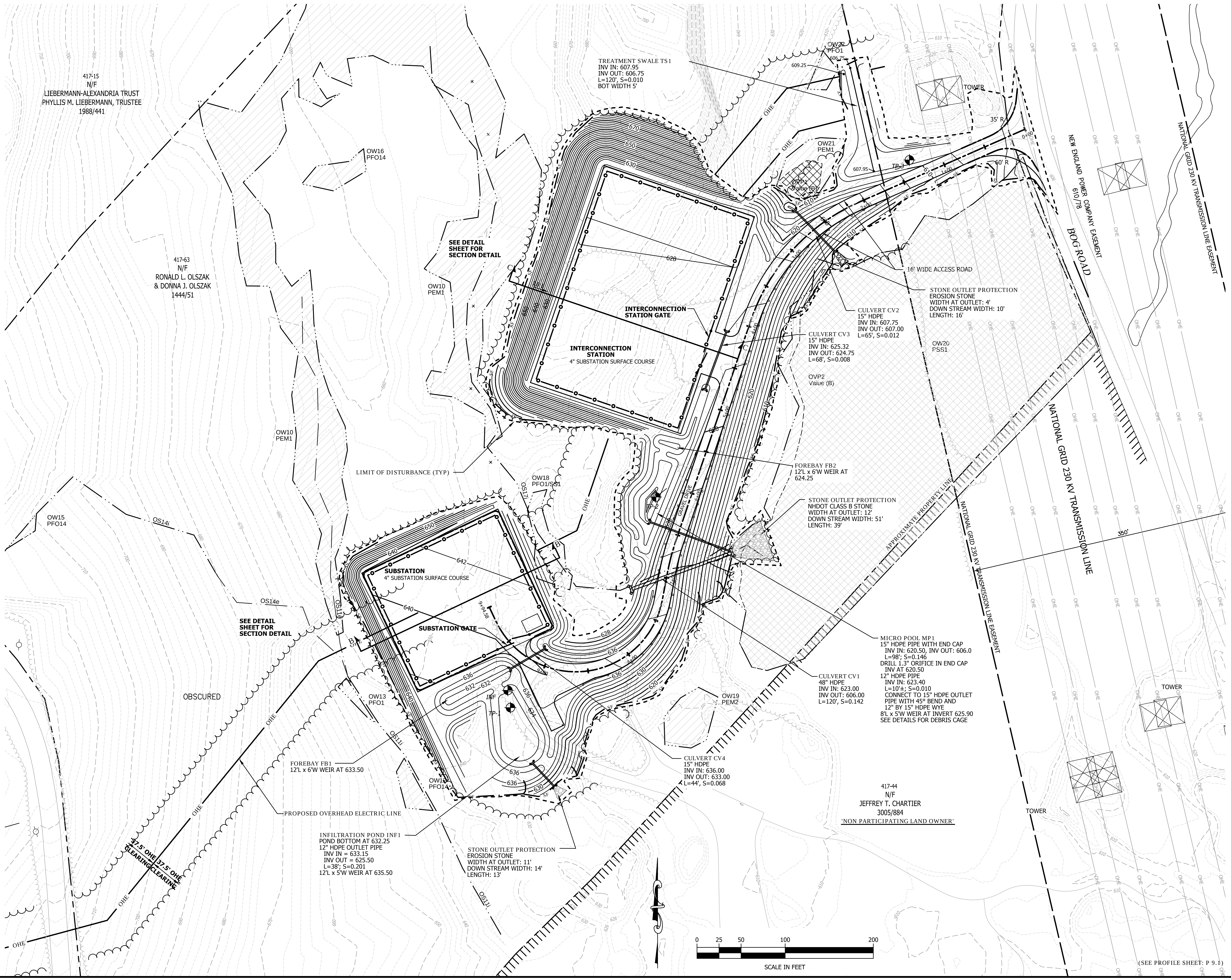
WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

SHEET TITLE:
SUBSTATION &
INTERCONNECECTION
STATION
EXISTING CONDITIONS

SHEET NUMBER: C 9.1 Ex



(SEE PROFILE SHEET: P 9.1)

IBERDROLA RENEWABLES

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: NOVEMBER 2013
PROJECT #: 13185
ENGIN'D BY: AJC
DRAWN BY: AJC
CHECK'D BY: AJC
ARCHIVE #: H-5107

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12/3/13

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WILD MEADOWS WIND PROJECT
ALEXANDRIA AND DANBURY, NH

70 PERCENT DESIGN

SHEET TITLE:
SUBSTATION & INTERCONNECECTION STATION SITE PLAN

SHEET NUMBER: C 9.1

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