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February 10, 2014

**Via Hand Delivery**
Thomas S. Burack, Chairman
Site Evaluation Committee
N.H. Department of Environmental Services
29 Hazen Drive
Concord, NH 03302-0095

**Re: Docket 2014-_____: Application of New England Power Company d/b/a National Grid, for a Certificate of Site and Facility for an Energy Facility for Construction of a New 230 kV Tap Line in Littleton, New Hampshire**

Dear Chairman Burack:

Enclosed for filing with the New Hampshire Site Evaluation Committee ("Committee"), in the above-captioned matter, please find an original and 18 copies of the Application of New England Power Company d/b/a National Grid ("NEP" or the "Company") for a Certificate of Site and Facility to construct a new 230 kilovolt ("kV") tap line in Littleton, New Hampshire (the "Tap Line").

NEP proposes to construct a new 230 kV Tap Line off of the Company's existing C203 transmission line and connect it to a second autotransformer to be installed within the Littleton Substation located in Littleton, New Hampshire. The Littleton Substation is owned by Public Service of New Hampshire ("PSNH"), a wholly-owned subsidiary of Northeast Utilities. As the Application is for a new electric transmission line rating in excess of 200 kV, the Project is considered an "energy facility" under RSA 162-H:2, and therefore is subject to the application requirements and review process established in RSA 162-H:7 and New Hampshire Administrative Rule Site 301.05.

The proposed project is small in scale and only marginally above the Committee's jurisdictional threshold. It is designed to resolve regional reliability issues previously identified by ISO-NE and will therefore support the development of the local and regional economies. The Company will build the new Tap Line immediately adjacent to an existing right-of-way that is currently occupied by three other transmission tap lines, and the project is expected to have negligible impacts on the environment, aesthetics, historic sites, and public health and safety.

The Company does not expect much, if any, opposition to the project. On June 25, 2013 and July 23, 2013, NEP representatives appeared before the Littleton Zoning Board of Appeals as a courtesy to discuss the proposed project and answer questions. NEP subsequently sent letters to the Littleton Board of Selectmen and various Town officials, state representatives, the North Country Council and local snowmobile clubs describing the project and inviting comment. As of the date of this filing, NEP has not received any responses.

Because the project is driven by reliability needs identified by ISO-NE, the Applicant seeks to address the problem as soon as practicable to ensure that the area is provided with a dependable energy source. The Applicant would like to begin construction in September 2014 and complete its work by December 2014.

Therefore, to the extent possible, the Applicant requests that the committee expedite its review of the Project. The proposed project is a simple undertaking designed to fix an issue within the electrical grid and does not require extensive analyses of a wide range of issues.

Thank you for your assistance and consideration in this matter. Please do not hesitate to contact me with any questions or concerns.

Sincerely,

Barry Needleman

Enclosures

cc: Allen Brooks, Esq., N.H. Attorney General's Office
Town of Littleton

**New Hampshire Site Evaluation Committee Docket No. 2014_____**

# Application of New England Power Company d/b/a National Grid for a Certification of Site and Facility

# Littleton, New Hampshire

Prepared for **New England Power Company d/b/a National Grid**
**Waltham, MA**

Prepared by **Vanasse Hangen Brustlin, Inc.**
**Bedford, New Hampshire**

February 2014

# NEW HAMPSHIRE SITE EVALUATION COMMITTEE

## Docket No. 2014-_____

# APPLICATION OF NEW ENGLAND POWER COMPANY d/b/a NATIONAL GRID

# FOR CERTIFICATE OF SITE AND FACILITY

# FOR CONSTRUCTION OF A NEW 230 kV TAP LINE IN LITTLETON, NH

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## EXECUTIVE SUMMARY

New England Power Company d/b/a National Grid ("NEP" or the "Company") is proposing to construct a new 230 kV tap line ("Tap Line") off of the Company's existing C203 transmission line (the "Project") to the Littleton Substation, located at 266 Foster Hill Road, Littleton, NH and owned by Public Service of New Hampshire ("PSNH"), a wholly-owned subsidiary of Northeast Utilities ("NU"). The new Tap Line would be located to the west of an existing right-of-way (the "Site"), be approximately 0.2-mile in length, and be supported by four new wooden structures.

This is a reliability project. The purpose of the Tap Line is to provide power to a second autotransformer in the Littleton Substation that PSNH will install in order to address the reliability needs for the New Hampshire and Vermont areas that were identified by ISO-NE with participation from NEP, Vermont Electric Power Company, Unitil and Northeast Utilities.[1] Specifically, an outage of the existing 230/115 kV autotransformer at Littleton Substation causes overloads on the 115/13.8 kV transformer T7 at Moore Substation. The second transformer will resolve these thermal and voltage violations.

The proposed C203 Tap Line is an "energy facility" as that term is defined under RSA 162-H:2, VII(e) because it is "[a] new electric transmission line of design rating in excess of 200 kilovolts." Accordingly, the Project is jurisdictional to the SEC and requires a Certificate of Site and Facility before construction may begin.

The Project Site is primarily zoned Rural with the northernmost portion of the Site zoned as Commercial III. The Site comprises forested land located immediately to the west of an existing ROW that is currently occupied by three other transmission lines. The existing tap ROW is approximately 450 feet wide and would be widened through tree clearing by approximately 135 feet to accommodate the new C203 Tap Line and to ensure proper clearances from falling trees.

NEP has studied environmental resources at the Project Site in detail and has consulted with the appropriate state and federal resource agency staff. NEP has designed the Project to minimize environmental impacts to the maximum extent practicable and has proposed measures to minimize any potential negative construction impacts.

The Company also performed a visual impact analysis, which confirms that the Project will not have an unreasonable adverse effect on aesthetics. The Site is not generally accessible by or visible to the general public except for limited views from I-93 and will be located in an area already developed as an electrical transmission ROW.

---

[1] See ISO-NE studies Vermont/ New Hampshire Transmission System 2011 Needs Assessment (November 2011) and its Follow-up Analysis to the 2011 New Hampshire/ Vermont Needs Assessment (April 2012), available at http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/ pac/key_study_areas/vt_nh/.

## LIST OF ACRONYMS

| | |
|---|---|
| BMP | Best Management Practices |
| FERC | Federal Energy Regulatory Commission |
| ISO-NE | Independent System Operator – New England, Inc. |
| NEFF | New England Forestry Foundation, Inc. |
| NEP | New England Power Company |
| NHDES | New Hampshire Department of Environmental Services |
| NHDHR | New Hampshire Division of Historic Resources |
| NHDOT | New Hampshire Department of Transportation |
| NHF&G | New Hampshire Fish & Game Department |
| NHNHB | New Hampshire Natural Heritage Bureau |
| NHWAP | New Hampshire Wildlife Action Plan |
| PSNH | Public Service of New Hampshire |
| PUC | New Hampshire Public Utilities Commission |
| TC | TransCanada Hydro Northeast, Inc. |
| USACE | U.S. Army Corps of Engineers |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Service |
| VHB | Vanasse Hangen Brustlin, Inc. |
| ZBA | Littleton Zoning Board of Appeals |

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Appendix B: PSNH & TransCanada Authorization Letters

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VHB Letter to NHNHB, January 16, 2014
NHNHB Data Review Memo, February 20, 2013

Appendix F: Combined Phase IA-IB Sensitivity Assessment and Intensive Archeological Investigation of the Project Site

Appendix G: NHDHR Request for Project Review; Determination of No Effect Memo dated November 12, 2013

Appendix H: Letter to Littleton Off Road Riders, January 16, 2014

Appendix I: Written Notification of the Project to the Town of Littleton
Written Notification of the Project to the North Country Council
Minutes from Littleton Zoning Board of Appeals' regularly scheduled public meetings held on June 25 and July 23, 2013.

Appendix J: NHDES Section 401 Water Quality Certification Request

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Appendix L: Visual Impact Report

Appendix M: Gradient Report on EMF Levels

## APPLICATION INFORMATION

### (a) SIGNATURE OF APPLICANT

Certification by Marie Jordan of New England Power Company d/b/a National Grid.

In accordance with RSA 162-H:8, I, Marie Jordan, a Senior Vice President of New England Power Company d/b/a National Grid, do hereby swear and affirm that the information contained in this Application is true and accurate to the best of my knowledge and belief.

I also certify that, as an Applicant to the New Hampshire Site Evaluation Committee, New England Power Company d/b/a National Grid agrees to provide such information as the Committee shall require to carry out the purposes of RSA 162-H.

Name: Marie Jordan
Title: Senior Vice President

Date: January 28, 2014

State of Massachusetts
County of Middlesex

On this 28 day of January, 2014, personally appeared before me the above-named Marie Jordan, Senior Vice President of New England Power Company d/b/a National Grid, and swore and affirmed that the information contained in this Application is true and accurate to the best of her knowledge and belief.

Notary Public Mark R. Rielly
My commission expires: 8/15/14

## (b) APPLICANT INFORMATION

**(1) Name:**

New England Power Company d/b/a National Grid

**(2) Mailing address, telephone, fax and email address:**

40 Sylvan Road, Waltham, MA 02451
Tel: 781-907-2111
Fax: 781-907-5701
Attn: Mark R. Rielly, Senior Counsel
mark.rielly@nationalgrid.com

**(3) Name and address of Applicant's parent company:**

National Grid USA
40 Sylvan Road, Waltham, MA 02451

**(4) If Applicant is a corporation:**

**a. Place of incorporation:**

Commonwealth of Massachusetts

**b. Principal place of business:**

40 Sylvan Road
Waltham, MA 02451

**c. Names and addresses of principal directors, officers and stockholders**

The names and addresses of the principal directors and officers of New England Power Company d/b/a National Grid can be found in Appendix A.

National Grid USA holds 100% of the outstanding common stock of New England Power Company.

**(5) If Applicant is an association, the names and residences of association members:**

N/A

**(6) Whether Applicant is owner or lessee of Site or facility, or has some legal or business relationship to it.**

NEP is an easement holder with certain perpetual rights and easements for the transmission and distribution of electricity in, over, across, under, through and upon certain portions of the property located in Littleton, New Hampshire, owned in fee by TransCanada Hydro Northeast, Inc. ("TC"), and Public Service of NH ("PSNH") upon which the Project would be built. See Appendix B. NEP owns the existing electric facilities located within the transmission right of way and will be the owner of the facilities to be built for this Project. NEP's easement rights are more particularly described in the Schedule of Reservation attached to that certain Deed dated August 21, 1998 and recorded with the Grafton County Registry of Deeds in Book 2338, Page 899. TC acquired title to the property by that certain Deed dated March 24, 2005, and recorded with the Grafton County Registry of Deeds in Book 3123, Page 610. NEP has requested the expansion of the width of NEP's easement area by approximately 200 feet to accommodate the construction, reconstruction, installation, repair, replacement, maintenance, operation and patrolling of the proposed tap line. TC has indicated its intent to grant the additional easement rights requested, subject only to negotiating the legal agreement.

TC granted to New England Forestry Foundation, Inc. ("NEFF") a conservation easement over the property pursuant to that certain Grant of Conservation Easement dated June 9, 2008, and recorded with the Grafton Registry of Deeds in Book 3525, Page 203. NEFF has consented to NEP's use of the expanded area for utility purposes.

PSNH owns the Littleton Substation and the parcel of land that it is located on pursuant to that certain Deed dated December 17, 1971, and recorded with the Grafton Registry of Deeds in Book 1144, Page 476. PSNH has consented to construction of the Project and the process of obtaining easement rights on their property is currently underway.

**(7) Statement of assets and liabilities of Applicant**

Relevant excerpts of NEP's most recent audited Balance Sheets (March 31, 2013 and March 31, 2012) are attached hereto as Appendix C.

## (c) SITE INFORMATION

**(1) Location and Site address of proposed facility:**

The Site is located in Littleton, NH on the west side of the existing right-of-way ("ROW") that runs between the C203 transmission line and the Littleton Substation located at 266 Foster Hill Road (Tax Map 41-8) and just south of Interstate 93 (Styles Bridge Highway). As depicted in Figure 1, the ROW is occupied by three other existing transmission tap lines. The existing C203 transmission line runs adjacent to the existing D204 line from the Moore Substation in Littleton, NH to Comerford Substation in Monroe, NH. The

Littleton Substation is owned by PSNH, but the existing C203/D204 transmission lines are owned, operated, and maintained by NEP.

**(2) Site acreage shown on attached property map and located by scale on a U. S. Geological Survey or GIS map:**

The Site is approximately 3.5 acres of land zoned primarily as Rural (R). Figure 2 shows the location of the Site on a USGS map.

**(3) Location of residences, industrial buildings, other structures and improvements within or adjacent to the Site:**

Figure 2 is an aerial photograph showing the Site and the location of surrounding residences and other uses and structures.

The Site is primarily zoned Rural with the northernmost portion of the Site zoned as Commercial III. The Site is comprised of forested land located immediately to the west of an existing ROW that is currently occupied by three other transmission lines, including a tap line from the D204 and its supporting wooden structures. The existing ROW is approximately 450 feet wide. The ROW would be widened by tree clearing along its entire length by approximately 135 feet to a total of approximately 585 feet wide to accommodate the new C203 Tap Line. This ROW expansion is needed so that the edge of the ROW is 100 feet from the centerline of the proposed C203 Tap Line. This 100-foot distance mirrors the C203 mainline and is an industry standard for 230kV transmission lines previously installed in similar configurations to provide a safety buffer to ensure that no fallen trees could possibly reach any of the conductors or the shieldwires.

Residential properties located adjacent to the Site are zoned Rural. To the north of the Site are NEP's C203 transmission line, which would be tapped, and its D204 transmission line. The center of the C203/D204 main line transmission corridor is the dividing point between the Rural and Commercial (C-III) zoning districts. The property to the south of the Site is PSNH's Littleton Substation. PSNH has consented to the construction of the Project and the process of obtaining additional easement rights on their property is currently underway. The adjacent properties to the west of the Site are largely undeveloped forest land owned by TC and the State of New Hampshire. The TC- owned property (Tax Map 29-8) is part of a conservation easement (dated June 12 2008) granted to the NEFF. The conservation easement is associated with the Federal Energy Regulatory Commission ("FERC") relicensing of the Fifteen Mile Falls Hydroelectric project (License No. 2077). NEFF has consented to NEP's use of the expanded area for utility purposes. The State-owned property is administered by the Adjutant General's Department and is not designated as public open space or parkland. To the east of the Site is a continuation of land owned by TC as well as undeveloped residential property. No commercial or industrial property is located adjacent to the Site.

**(4) Identification of wetlands and surface waters of the state within or adjacent to the Site:**

The Project is not expected to have an adverse impact on wetlands or surface waters of the state within or adjacent to the Site.

The Site is located within the watershed of the Connecticut River on a north facing slope, with the highest elevations located at the southern end of the Project Site. This topographic setting creates an overall hydrologic flow direction of south to north, towards the Connecticut River which is located approximately 0.5 miles away. Wetlands within the Project Site were delineated by VHB wetland scientists in June, July, and August of 2013 in accordance with the *Corps of Engineers Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (January 2012). A single large wetland complex occupies most of the Project Site. This wetland complex includes palustrine forested ("PFO"), palustrine scrub-shrub ("PSS"), palustrine emergent ("PEM"), and limited palustrine open water ("POW") components according to *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979, revised 1985). One intermittent and one perennial stream channel also exist beyond the western limits of the Project Site and are associated with the wetland complex. A large part of the wetland complex is located within an existing maintained transmission ROW and thus exhibits characteristics (e.g., vegetative cover) typically found in this type of environment. Outside of the existing, maintained transmission ROW, PFO components are present within the wetland boundary.

Wetlands and surface waters within or adjacent to the Site are described in detail in the application forms, design plans, and maps provided in support of New Hampshire Department of Environmental Services ("NHDES") Standard Dredge and Fill Permit Application, referenced in Section (d) of this Application, and included as Appendix D.

**(5) Identification of natural and other resources at or within or adjacent to the Site:**

**a. Habitat and Natural Resources:**

<u>Threatened, Endangered, or Rare Plants, Animals and Natural Communities</u>

The Project is not expected to have an adverse impact on listed species habitat or protected natural resources.

The Company consulted The New Hampshire Natural Heritage Bureau ("NHNHB") regarding the occurrence of rare plant, animal or natural

communities within vicinity of the proposed Project. NHNHB indicated historical records of rare plants, Bald Eagles and an exemplary natural community in the vicinity of the Project Site in a response memo dated February 20, 2013, which is included as Appendix E. NHNHB recommended coordination with New Hampshire Fish and Game Department ("NHF&G") to further determine the status and location of the species in relation to the proposed Project Site.

Only common plant species were observed within the Project Site during the course of wetland delineations by VHB wetland scientists in June, July, and August of 2013. (See VHB Ltr. to NHNHB, Jan. 16, 2014, attached as Appendix E.) Follow up field surveys were conducted by VHB on three separate occasions in June, July and October 2013 to determine presence/absence of species listed in the NHNHB report. None of the listed species were found during the course of the follow-up field investigations. Based on the results of the Site surveys, the NHNHB determined that the Project would have no effect on protected plant species (See NHNHB response dated January 27, 2014 included as Appendix E).

Further consultation with NHF&G occurred in relation to the Bald Eagle as listed on the NHNHB report. The NHNHB report indicated that Bald Eagles have been recorded along the Connecticut River associated with the Moore Dam located approximately one-half mile north of the Project Site. Based on the location of the Site and distance from the Connecticut River and the lack of suitable wintering habitat within the Project Site, VHB concluded that the proposed Project should not result in adverse impacts to Bald Eagles. NHF&G concurred with this finding in its response, which is included as Appendix E.

The Project was also reviewed for the presence of federally-listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's ("USFWS") New England Field Office website. Based on the information currently available, VHB determined that no federally listed or proposed, threatened or endangered species or critical habitats under the jurisdiction of the USFWS are known to occur within the Site (See USFWS "no known occurrences" letter dated January 7, 2014 included as Appendix E).

**b. Cultural and Historical Resources**

VHB completed a site file review at the New Hampshire Division of Historic Resources ("NHDHR") on July 23, 2013. This review revealed that there are no known above-ground historical resources present in the Project Site. Field verification indicated that there is one building over 50 years old in proximity to the Site – i.e., the residence located at 290 Foster Hill Road located south of the Site. The house appears to date to the mid-19th century and has not been inventoried or listed in the National or State Registers.

Since the Project involves ground disturbing activities, and because preliminary review of the Project indicated that the Site is within an area considered sensitive for archaeological resources, NEP commissioned a combined Phase IA-IB sensitivity assessment and intensive archaeological investigation of the Project Site, which is included in Appendix F. The Phase IA-IB investigation found no cultural resources.

NEP submitted a Request for Project Review to the NHDHR on October 30, 2013. On November 12, 2013, NHDHR determined that the project has "no potential to cause effects" to historic properties. See Appendix G.

**c. Community Resources and Development**

The Site is located entirely within privately held land managed for electrical transmission. There are a number of community recreational resources associated with the Fifteen Mile Falls Recreation Area that are located approximately 1/2 mile or more from the Site; specifically, the Moore Dam, Moore Dam Visitor Center, and the Boat Launch at the Moore Dam. Given that these resources are located at least 1/2 mile from the Site and located on the opposite side of Interstate 93, the Project will not result in any unreasonably adverse impacts to such community resources.

In addition to the recreational resources previously mentioned, there is a snowmobile trail that follows the existing gravel access road located on the west side of the D204 Tap line. The snowmobile trail then continues west along the C203/D204 transmission line corridor to Route 135 (Monroe Road) in Littleton. The Project will not adversely affect snowmobile access around the Littleton Substation and would not result in any impacts to the snowmobile trail itself. The Company discussed the Project with the Vermont Association of Snow Travelers, which indicated that it did not maintain any trails on the ROW or in the vicinity. The Company attempted to call the Littleton Off Road Riders snowmobile club and followed-up with a letter to the club on January 16, 2014 describing the Project and inviting comment. See Letter to Littleton Off Road Riders, Appendix H. The club has not responded as of the date of this application.

**(6) Information to show that the proposed Site and facility will not unduly interfere with orderly development of the region with due consideration given to the views of municipal and regional planning commissions and municipal governing boards.**

The Project will not unduly interfere with the orderly development of the region. To the contrary, by helping to resolve the reliability issues identified by ISO-NE, as noted above, the Project will support the development goals of the individual municipalities as well as the region as a whole.

As noted above, the Project will not adversely affect nearby recreational resources. The Project also will not produce any permanent noise, dust, odor, or emissions impacts. To the extent that there are any such impacts during construction, they will be temporary and negligible and the Company would work with affected persons to implement mitigation measures.

The Project will not have any adverse impact on Littleton's infrastructure insofar as it will not increase the demand for municipal sewer, water, fire or police services. Transportation related to construction and operation of the Tap Line will be consistent with the local roadway's designation as a truck route and the existing use of the Site and surrounding area. Truck traffic will be routed to prevent impacts in the downtown area and NEP will cooperate with local officials throughout the Project to minimize and mitigate truck traffic impacts, if any.

The Project is an appropriate use of the land. The Littleton Zoning Ordinance does not specifically regulate electric transmission structure uses, however, "public utility substations" are allowed by special exception in the Rural district where the ROW is located. In July, 2013, the Littleton Zoning Board of Appeals ("ZBA") approved PSNH's application for Special Exceptions to allow related work at the Littleton Substation. Even though the Project is not subject to ZBA jurisdiction, NEP representatives took the opportunity to appear before the ZBA at the regularly scheduled public meetings regarding PSNH's application (held on June 25 and July 23, 2013) and explain the purpose and scope of the Project. The minutes of these hearings are included in Appendix I. The ZBA inquired about height, noise, lighting and whether the Tap Line was associated with the proposed Northern Pass project, which it is not. The Board unanimously approved PSNH's application after finding that "the Site was an appropriate location for such a use. . . . that that property values would not be reduced . . . [and] that the request would not be a nuisance or cause an unreasonable hazard." ZBA Minutes, June 25, 2013, at 2 (Appendix I).

NEP subsequently sent a letter, dated October 30, 2013, to the Town Board of Selectmen, the Littleton Fire Chief, the Town Manager and the Planning Department and Zoning Board of Appeals. The letter described the Project scope and schedule and invited comments. NEP enclosed a USGS Site location map as well as a map depicting the proposed structure locations as well as wetland resources. The Company also contacted the Police Chief by letter dated January 13, 2014.

NEP also evaluated whether the Project was consistent with the latest draft of the Littleton Master Plan. Broadly speaking, the Littleton Master Plan is intended to achieve a number of economic and environmental goals, including accommodating future development in the community and promoting economic development. See Littleton Master Plan, at 9 and Ch. 7. The Project is consistent with these goals since enhancing the reliability of electrical service will, in turn, support the development of the local and regional economies.

The Plan also aims at preserving the integrity of the Town's natural resources, with particular attention to wetlands. See id. § 9.0, at 32-35. More specifically, the Plan calls for mitigation to offset wetland loss where projects impact more than 10,000 square feet of wetland. The Project does not even approach that threshold; it will permanently impact only 64 square feet of wetlands. See Wetlands Permit Application, at 3 (Appendix D). The Master Plan also focuses on preventing non-point sources of pollution through the use of Best Management Practices ("BMP"). As explained in greater detail in Section (i)(4) below, the Company will achieve this goal by implementing its well-developed Construction BMP Guidance Manual (EG-303NE), which has proven successful in preventing non-point sources of pollution during construction projects. The Company will also ensure that a trained Environmental Monitor is present on-Site to ensure compliance with the Company's guidelines and any permit conditions.

The Littleton Master Plan also highlights the importance of conserving open space. See id. § 13.0, at 43-45. The Site is located in an area protected by a conservation easement held by NEFF. NEFF has authorized the Company to undertake the Project and given the relatively small size of the Project Site, has expressed no concerns about the impact to the conservation value of surrounding land.

On a regional level, the Company contacted the North Country Council, which acts as the regional planning commission. Specifically, the Company's counsel spoke to Regional Planner Tara Bamford on December 27, 2013 and on that same date sent Ms. Bamford a letter and supporting information detailing the Project. By email dated January 7, 2014, Ms. Bamford replied as follows:

> Thank you for contacting me and sending follow-up information about your planned improvements. Maintenance and upgrade of the transmission system necessary for using and exporting the region's renewable energy resources is consistent with the North Country Council's plans and policies. I don't see any issues with this proposal.

Finally, the Company also contacted state Senator Jeff Woodburn and Representative Ralph Doolan by letter dated January 13, 2014 to advise them of the Project and to invite their comments. As of the date of this application, no comments have been received from any state or local official regarding the Project.

## (d) INFORMATION ABOUT OTHER REQUIRED PERMITS AND APPLICATIONS

### (1) Identification of all other federal and state government agencies having jurisdiction, under state or federal law, to regulate any aspect of the construction or operation of the proposed facility.

The following federal and state agencies have jurisdiction over the construction or operation of the proposed Project:

- NHDES, Water Division, Wetlands Bureau (NH RSA 482-A, relative to dredge and fill in wetlands);
- NHDES, Water Division, Watershed Management Bureau (Section 401 of the Clean Water Act, related to state certification that the USACE wetlands permit complies with state water quality standards);
- NHDHR (Section 106 of the National Historic Preservation Act and NH RSA 227-C regarding cultural resource protection);
- NHNHB (authority under RSA 217-A, the NH Native Plant Protection Act, to review Project impacts to state-listed threatened and endangered plant species);
- NHF&G (authority under RSA 212-A, the NH Endangered Species Conservation Act, to review impacts to state-listed threatened and endangered wildlife species);
- USACE (Section 404 of the Clean Water Act relative to wetland protection);
- USFWS (Endangered Species Act of 1973 relative to protection of federally-listed threatened and endangered species); and
- New Hampshire Public Utilities Commission ("PUC") (general regulatory jurisdiction over the operation (but not construction) of transmission facilities under RSA 362:2 and RSA 374:3).

### (2) Documentation that demonstrates compliance with the application requirements of such agencies.

Information satisfying the application requirements of such agencies with jurisdiction has been included within the agency application forms contained in the Appendices listed in the following Section d.(3).

In addition, NEP concluded that the Project did not require a determination of "no hazard" to air navigation from the Federal Aviation Administration in part because the Project will not exceed 200 feet in height above ground level. See 14 CFR § 77.9.

The New Hampshire Department of Transportation ("NHDOT") has regulatory authority over highway safety, including the transportation of oversized loads. NEP and its contractors have not yet determined whether any aspect of Project construction will be subject to NHDOT jurisdiction, but if so, NEP and/or its construction contractors will obtain the requisite permits or provide the requisite notice.

**(3) A copy of the completed application forms for each such agency.**

Appendix D: Joint NHDES/USACE Standard Dredge and Fill Permit Application

Appendix J: NHDES Section 401 Water Quality Certification Request

Appendix G: NHDHR Request for Project Review

**(4) Identification of any requests for waivers from the information requirements of any state agency or department whether represented on the committee or not.**

The Applicant has not requested waivers from any state agency or department and does not intend to do so.

## (e) ENERGY FACILITY REQUIREMENTS

The proposed C203 Tap Line is an "energy facility" as that term is defined under RSA 162-H:2, VII(e) because it is "[a] new electric transmission line of design rating in excess of 200 kilovolts."

**(1) The type of facility being proposed**

The facility is a new 230 kV transmission Tap Line approximately 0.2 miles long that will connect NEP's existing C203 line to the Littleton Substation owned by PSNH.

**(2) A description of the process to extract, produce, manufacture, transport, or refine the source of energy**

N/A

**(3) The facility's size and configuration**

The new C203 Tap Line is a 230kV line spanning from the existing C203 line to the proposed bus structure inside Littleton Substation. The Tap Line will be approximately 1160 feet (0.2 miles) in length and will consist of four wood pole transmission structures. These structures include a 35-foot, 3-pole terminal dead

end structure, two H-frame suspension structures at 70 and 80-feet tall, respectively, and one guyed 80-foot H-frame dead end structure. The spacing and height of the structures will be similar to the spacing and height of the structures on the adjacent D204 tap line. The conductor (795 ACSR "Drake" model) will span the structures in three phases beginning with the three-pole terminal dead end structure and ending at the bus. Two 3/8" seven-strand extra-high strength ("EHS") steel shield wires will begin at the second tap structure and will terminate at the substation bus. Project Plans are included as Appendix K.

**(4) The ability to increase the capacity of the facility in the future**

The capacity of the Tap Line is limited by the 230kV capacity of the main line. NEP would not be able to increase the capacity of the Tap Line without first increasing the capacity of the main line. NEP has not determined that such an upgrade is needed for reliability purposes or otherwise and is unaware of ISO-NE having made any such determination. Accordingly, NEP has no plan to undertake such an upgrade.

**(5) Raw materials used, as follows**

**a. An inventory, including amounts and specifications**

Not applicable.

**b. A plan for procurement, describing sources and availability**

Not applicable.

**c. A description of the means of transporting**

Not applicable.

**(6) Production information, as follows**

**a. An inventory of products and waste streams**

Not applicable.

**b. The quantities and specifications of hazardous materials**

Not applicable.

**c. Waste management plans**

Not applicable.

## (f) BULK POWER OR RENEWABLE ENERGY FACILITY

Not applicable.

## (g) TRANSMISSION LINE

### (1) Location shown on U.S Geological Survey Map;

A USGS map showing the Project location is included as Figure 2.

### (2) Corridor width for:

**a. New route; or**

Not applicable.

**b. Widening along existing route**

In order to comply with applicable clearance requirements, NEP will widen the existing ROW by approximately 135 feet to the west.

### (3) Length of line

Approximately 0.2 miles.

### (4) Distance along new route

Not applicable.

### (5) Distance along existing route

Approximately 0.2 miles.

### (6) Voltage (design rating)

230kV

### (7) Any associated new generating unit or units

Not applicable.

### (8) Type of construction (described in detail)

The proposed C203 Tap Line will be located on an expansion of easement property owned by NEP of which the general public does not have access to for security reasons. Currently, a locked access gate is located at the entrance to the

PSNH Littleton Substation off of Moore Court which will be the main access point to the new C203 Tap Line ROW. Additional signage and access gates will be installed as necessary to deter unauthorized personnel from entering the ROW.

All existing access roads within the Project area ROW will be maintained in accordance with established Company ROW access maintenance procedures in order to provide authorized personnel unrestricted access to the ROW during emergency situations which could pose a direct threat to the health and safety of the general public.

The proposed 230kV C203 Tap Line will involve the installation of four new structures consisting of two dead end terminal structures with guys and anchors, two H-Frame Tangent structures and one Running Angle with guys and anchors. Cross section plans of these structures are provided in Appendix K. The Tap Line will utilize 795 kcmil ACSR for its Conductors, and two 3/8" EHS Galvanized Steel for the overhead ground wires. The C203 Tap Line will connect to the mainline via vertical tap wires.

Site clearing will be completed by mechanical tree cutting equipment. After the clearing has been completed, traditional 1'x4'x16' wooden swamp mats will be used temporarily as mitigation measure to minimize soil rutting, compaction, and disturbance. Swamp mats will be used as necessary in all areas where wetlands will be crossed by construction equipment and vehicles to gain access to each new pole location and also surrounding each new pole location during installation work to provide a stable work surface. Additional matting will be required adjacent to Structure #1 (See Figure 3) to allow room for staging of wire reels during overhead wire pulls.

The structures will be set into directly embedded steel culverts. The culverts will be pre-dug into the earth using excavators or augers/drilling equipment. The new wooden poles will be lowered into the holes by boom trucks and digger derricks. After the poles have been plumbed the open area between the walls of the culvert and the pole will be filled with 3/4-inch crushed gravel.

Once the poles have been set, the H-Frame tangent structures will be framed. The cross-arms will be hoisted by boom trucks and cranes will be used to aid in the fastening of the cross-arm to the structure. The insulator assemblies and conductor travelers will then be mounted to the cross arm, and strut guy wires will be installed. The shield wire hardware will be mounted to the pole tops and conductor travelers will be installed accordingly.

At the dead end structures and running angle structures, the poles will be set in the same fashion as the tangents, except that anchors also will be installed at these locations as well as guy wires. The anchors will be installed as surveyed and the guy wires will be attached to the poles and partially tensioned.

After the structure framing is complete, pilot ropes will be strung where the three conductors and two shield wires are to be installed through the travelers. The pulling ropes will then be pulled to the reel end of the pulling operation. The pull rope will be "married" to the new conductor by pulling grips and swivels, and the new conductor will be pulled into place via a pulling machine and tensioner and then dead ended on one side. This process will continue for the remaining conductors and shield wires.

Once all of the new conductors and shield wires are installed they will be tensioned as specified and dead ended on the other end of the wire setup. From there, the travelers which were previously installed will be replaced with their permanent suspension units and clipped into place. After that has been completed the guy wires on the running angle and dead end structures will be retensioned until the structures are plumb.

**(9) Construction schedule, including start date and scheduled completion date**

The Applicant has requested expedited treatment of this Application given its relative simplicity and the fact that little or no opposition is expected. If such review occurs, applicant anticipates that construction will begin in September 2014 and is expected to be completed in December 2014.

**(10) Impact on system stability and reliability**

The Project is driven by reliability needs that were identified by ISO-NE in its Vermont/ New Hampshire Transmission System 2011 Needs Assessment (November 2011) and its Follow-up Analysis to the 2011 New Hampshire/ Vermont Needs Assessment (April 2012), both of which were prepared with participation from NEP, Vermont Electric Power Company, Unitil and Northeast Utilities. Specifically, the outage of the existing 230/115 kV autotransformer at Littleton Substation causes overloads on the 115/13.8 kV transformer T7 at Moore Substation.

Alternative solutions to the identified need were evaluated throughout the ISO-NE Solutions Study stage, as documented in New Hampshire/Vermont Transmission Solution (April 2011), and Follow-up Analysis to the 2011 New Hampshire/Vermont Solutions Study (April 2012). These ISO-NE studies and associated materials are available on ISO-NE website: http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/ key_study_areas/vt_nh/. ISO-NE determined that the preferred solution to resolve the need is the addition of a new transformer in PSNH's Littleton Substation and the associated construction of the new C203 Tap Line. This solution has been presented multiple times to the ISO-NE Planning Advisory Committee. The ISO-NE Reliability Committee determined that the proposed Project would not have any adverse effect on the reliability or operating characteristics of the existing transmission system of any Transmission Owner or other Market Participant.

## (h) FACILITY DESCRIPTION, ENVIRONMENTAL, AND FINANCIAL, TECHNICAL AND MANAGERIAL CAPABILITY

### (1) Description in detail of the type and size of each major part of the proposed facility

#### a. Conductor

The new conductors to be installed are as follows:

| | Conductor | Shieldwire |
|---|---|---|
| **Type** | 795 ACSR "Drake" | 3/8" EHS Steel |
| **Diameter** | 1.107 in | 0.360 in |
| **Lbs/Ft** | 1.093 lbs | 0.273 lbs |
| **RBS** | 31500 lbs | 15,400 lbs |

#### b. Supporting Structures

The four new transmission line support structures and bus structure that will be installed are as follows:

| Str. # | Type | Back Span | Line Angle | Height/ Class | Guys | Anchors | Work |
|---|---|---|---|---|---|---|---|
| **1** | 3 Pole Terminal Deadend | - | - | (3) 35' CL2 | 3 | 3 | Install new structure & T-Taps to mainline |
| **2** | H-Frame Suspension w/ SW Dead End | 169 | - | (2) 70' CL1 | 2 | 2 | Install new structure |
| **3** | H-Frame Suspension w/ SW in Suspension | 354 | - | (2) 80' CL1 | - | - | Install new structure |
| **4** | H-Frame Dead End | 329 | 1.48 deg R | (2) 80' CL1 | 8 | 8 | Install new structure |
| **Bus** | Bus (within substation) | 315 | - | - | - | - | Attach conductor and shieldwire |

**(2) Identification of the Applicant's preferred location and any other options for the Site of each major part of the proposed facility**

Because three other transmission tap lines already exist within the ROW, there are only two feasible alternatives to vertically tap off of the C203 mainline and construct the C-203 Tap Line to the north side of the Littleton Substation. NEP's preferred alternative is to construct the proposed Tap Line westerly of the existing D204 tap line (the "Western Alternative"). For this Western Alternative, NEP would coordinate the location of the new C203 Tap Line structures with the existing structures on the D204 tap line to avoid a staggered visual field. The second alternative would be to construct the C203 Tap Line from the Littleton Substation on the eastern side of the ROW between the Q-195 tap line and the 345 kV 3315 line (the "Eastern Alternative"). Figure 4 shows the approximate location of the two proposed routes.

Based on a constructability and engineering field assessment performed on April 20, 2010, NEP prefers the Western Alternative based on the layout of the existing lines outside of Littleton Substation. The abundance of existing lines located to the east of the existing D204 tap does not leave sufficient space to build an additional 230kV tap line safely while complying with standard right-of-way distances, distances between lines and clearance design specifications and codes (the typical required right-of-way width for two 230kV H-Frame circuits in New England is 200 feet). By contrast, the western side of the D204 tap has adequate space for another tap line with clearing of the wooded area. Because it does not have the space constraints of the Eastern Alternative, NEP also prefers the Western Alternative from an ongoing maintenance perspective.

Furthermore, there is space available on the western side of the substation within the fence for the new C203 tap bus, thereby avoiding line crossings. Finally, an existing access road parallel to the D204 tap along the western side will provide adequate access during construction without obstructing access to the lines or requiring the construction of a new access road.

**(3) A description in detail of the impact of each major part of the proposed facility on the environment for each Site proposed**

NEP has studied environmental resources at the Site in detail and has consulted with the appropriate state and federal resource agency staff. NEP has designed the Project to minimize environmental impacts to the maximum extent practicable. Structures were Sited to enable the use of existing access roads within the existing ROW. Further, the Company will employ construction BMPs in accordance with its Construction BMP Guidance Manual (EG-303NE) during and after construction of the Project.

The Company has conducted thorough studies to assess any environmental impacts from the Project and has proposed measures to minimize any potential negative impacts. In summary:

- Aesthetics – A Visual Impact Report was conducted which demonstrates that the Project will not have an unreasonable adverse effect on aesthetics. This report is included as Appendix L.

- Historic Sites – Investigations of both archaeological resources and historic structures indicates that there would be no historic properties affected by the Project. The NHDHR has concurred with this finding. See NHDHR ltr. included as Appendix G.

- Air Quality – The Project will not create any permanent impact on air quality since it will not create any new permanent source of emissions. Any dust and tailpipe emissions from construction vehicles will be minor and temporary in nature. The Environmental Monitor will ensure that water trucks are used to suppress dust on-site when and that idling of construction trucks and equipment is kept to a minimum.

- Water Quality – The Project would not create any permanent water quality impact. There is a potential temporary impact to water quality related to erosion and siltation during construction. NEP has developed a plan to minimize the risk of this potential temporary impact. See infra § (i)(4).

- Natural Environment – The Project would involve unavoidable permanent impacts to 64 square feet of wetlands and approximately 46,805 square feet of temporary impacts, which would be restored following construction of the Project. There would be no impacts to threatened or endangered species, nor would the Project result in unreasonable adverse effects to wildlife populations or habitats.

**(4) A description in detail of the Applicant's proposal for studying and solving environmental problems**

As described in the preceding Section h.(3), the Company already has completed thorough environmental impact studies and proposed adequate measures to mitigate any impacts. To the extent that any unanticipated environmental impacts or concerns arise during construction, the Company's Environmental Monitor will be available to evaluate the situation and ensure that an appropriate response is taken, including communicating with the agencies with jurisdiction.

**(5) A description in detail of the Applicant's financial, technical and managerial capability to construct and operate the proposed facility**

NEP is a wholly-owned subsidiary of National Grid USA, which is a major electric and gas utility in the Northeastern United States. NEP's most recently audited Balance Sheets (March 31, 2013 and March 31, 2012), which are included in Appendix C, demonstrate that the Company has ample financial capability to undertake and complete this approximately $1.56 million Project.

NEP has comprehensive experience in planning, designing, engineering, permitting, constructing, financing, operating, maintaining and managing electric transmission infrastructure projects. Since the early 1900's, National Grid and its predecessor companies have constructed, operated and maintained countless electric transmission projects and facilities throughout the Northeast, including in New Hampshire. NEP owns and operates the C203 mainline that is being tapped as part of this Project.

NEP has the resources to use in-house and contract labor as needed for the installation, operation, repair, and removal of the project. NEP is not subject to any legal or regulatory actions that would adversely impact its ability to own or operate transmission facilities in New Hampshire or to execute the proposed Project.

**(6) A statement of assets and liabilities of the Applicant**

NEP's most recently audited Balance Sheets (March 31, 2013 and March 31, 2012) are provided in Appendix C.

**(7) Documentation that written notification of the proposed project, including appropriate copies of the application, has been given to the governing body of each community in which the facility is proposed to be located.**

Written notification of the proposed Project has been provided to the Town of Littleton. See Appendix I. The Applicant is providing copies of the Application to the Town of Littleton.

**(i) INFORMATION REGARDING EFFECTS OF THE FACILITY ON, AND PLAN FOR MITIGATION OF ANY EFFECTS FOR, THE FOLLOWING:**

**(1) Aesthetics**

A Visual Impact Report was completed for the proposed C203 Tap Line. See Appendix L. Specifically, a viewshed analysis of the surrounding Project Site and three photographic simulations (photomontages) of representative viewpoints of the Project Site were completed. The viewshed analysis illustrated that the Project would be visible only from a relatively limited area. These areas include

the existing cleared transmission ROW, and, to a limited extent, from a portion of the adjacent I-93 highway.

The photomontages further emphasize that the Project is not expected to interfere with the aesthetic interests of the general public. The primary viewpoint of the Project to the general public is from I-93, and the photomontage at this location shows the effect of the tree clearing on the existing tree line is almost unnoticeable to the viewer given the viewing distance (approximately 1,300 feet), the fact that the background view remains as forested land cover and that a viewer's observation would be limited to a few seconds due to travelling at high rates of speed. Abutters to the Project Site do not have a view of the existing ROW, and would not be able view the ROW after the completion of the Project.

The photomontage viewpoint from the fence line located at the north end of the Littleton Substation provides the best visualization of what the proposed C203 Tap Line would look like. All four proposed structures are visible and the proposed tree clearing along the west edge of the Project ROW is evident. Even from this viewpoint, the visual impact to the viewer is relatively low. One reason for this is that proposed C203 Tap Line structures are identical in size and type as the adjacent D204 tap line.

The Visual Impact Report found that the Project Site is not generally accessible by or visible to the general public except for limited views from I-93. Based on the fact that the Project would be located in an area already developed as an electrical transmission ROW, it concluded that the Project would not have an unreasonable adverse effect on aesthetics.

NEP expects that its construction contractors will typically work 10-12 hours per day Monday through Friday, depending on the season, and approximately 10 hours on Saturday. Occasional Sunday or holiday work, or extended work days may be required to accommodate work that needs to be performed during limited duration facility outage windows, to make up for time lost due to extended weather delays or to comply with permit requirements specifying completion of work during off hours when public inconvenience would be minimized.

The Company does not anticipate that construction will create inconvenience to residents due to construction noise. The closest residence to the ROW is approximately 1,200 feet away to the south and otherwise the ROW is surrounded by forested land and a major highway. Nevertheless, NEP will mitigate construction noise impacts by implementing the following mitigation measures as necessary:

- Requiring well-maintained equipment with functioning mufflers;
- Prohibiting extended idling of construction equipment when not performing a productive function;

- Operating stationary noise generating equipment, such as whole tree chippers or compressors, away from nearby residences, where the flexibility to do so exists;
- Confining the operation of noise generating equipment to daylight hours to the extent practicable;
- Complying with the requirements of local noise ordinances, if any, and seeking variances only when absolutely necessary; and
- Coordinating with ROW abutters when unusual levels of noise could be generated adjacent to their residences for extended periods, such as a rock-drilled foundation excavation of unusually long duration.

**(2) Historic Sites**

A site file review at the NHDHR was completed on July 23, 2013. The results of the site file review indicated that there are no known above-ground historical resources present in the Project Site. Field review indicated that there is one property, a house located at 290 Foster Hill Road, that lies south of the Project Site and is the closest building over 50 years old to the Project Site. The house, which appears to date to the mid-19th century, has not been inventoried or listed in the National or State Registers.

Since the Project involves ground disturbing activities, and because preliminary review of the Project indicated that the Project Site is within an area considered sensitive for archaeological resources, NEP commissioned a combined Phase IA-IB sensitivity assessment and intensive archaeological investigation of the Project Site, which is included as Appendix F. The Phase IA-IB investigation found no cultural resources.

NEP submitted a Request for Project Review to the NHDHR on October 30, 2013. NHDHR determined that the Project has "no potential to cause effects" to historic properties. The NHDHR's Determination of Effect Memo dated November 12, 2013 is included in Appendix G.

**(3) Air quality**

The Project will solely be used to transmit electricity, and will not combust any fuels to generate electricity and therefore will not create any air emissions or otherwise have an adverse impact on air quality. Any dust and vehicle emissions during construction will be temporary and minor in nature and will be controlled by the Environmental Monitor, who will ensure that water trucks are available to suppress dust when necessary and that vehicle idling is kept to a minimum.

## (4) Water quality

Surface Waters in or Adjacent to Project Site

The nearest surface water body consists of an unnamed intermittent stream that flows along the west side of the substation in a northwest direction just west of the proposed tree clearing area. The channel flows through a forested wetland before dissipating within the wetland (i.e., infiltrating and terminating) to the southwest of proposed Structure 4. See Figure 3. Another unnamed first order perennial stream also exists to the west of the proposed tree clearing area. The channel is located farther away from the Project Site and originates as an outlet of Reynolds Pond located along Foster Hill Road approximately 0.5 mile up-gradient (south) of the Project. The stream flows in a northwesterly path eventually traversing across the existing C203/D204 main line ROW corridor and into a culvert beneath the I-93 roadway. It then parallels the northbound side of I-93 and eventually empties into the Connecticut River just downstream of the Moore Dam at a point between the I-93 and NH 18 bridge crossings.

According to the 2012 NHDES 303(d) list of impaired water bodies, the only water quality impairments identified in the area streams relates to low pH levels in the Connecticut River below the Moore Dam and potentially elevated mercury levels in fish tissue in all streams as it relates to human fish consumption. Both the low pH levels and the potential elevated mercury levels in surface waters are statewide issues linked to regional atmospheric deposition and not directly related to local pollution sources. The proposed Project would not contribute or worsen the existing low pH or fish tissue mercury impairments in the area streams.

Discussion of Potential Impacts

The Project does not involve any water withdrawals or process water discharge.

The principal water quality concern associated with this activity relates to the potential for increased sediment erosion and movement during the construction period. As discussed below, various measures would be used during the construction period to minimize the erosion potential and sediment migration from the Site. A designated construction vehicle refueling area (if needed) would be properly sited and established with spill containment measures consistent with NEP Construction BMP Guidance Manual (EG-303NE).

No new impervious surfaces or petroleum liquid storage facilities would be constructed as part of the Project.

The proposed C203 Tap Line would require approximately 2.5 acres of tree clearing along approximately 1,100 feet of existing right-of-way. No discernible water quality impacts are anticipated to either the intermittent or the perennial stream located to the west of the Site since: (1) much of the proposed tree clearing

area appears to drain to the east into the ROW and away from the existing intermittent stream; and (2) approximately 50 feet of buffer distance will remain along much of channel course paralleling the ROW between the proposed clearing and the intermittent stream.

Construction of the Tap Line would not require the application of any herbicides or chemical treatments. Following construction of the Tap Line, future vegetation management controls would be similar to those currently used in the rest of the existing ROW, which primarily consists of periodic cutting and trimming and application of herbicides in accordance with the New Hampshire Division of Pesticide Control Special Permit and NEP's vegetation maintenance program.

Mitigation of Potential Water Quality Impacts

Prior to construction commencement, proper sedimentation and erosion controls would be implemented in accordance with NEP's Environmental BMP Guidance Manual for Construction Activity (EG-303NE). For construction projects, NEP requires that an Environmental Field Issue and/or Construction Stormwater Pollution Prevention Plan, as appropriate, be prepared prior to construction to provide specific details on the types of erosion control measures to be used and the inspection and maintenance provisions. Limits of clearing would also be clearly marked in the field prior to the start of construction to prevent any inadvertent excursion of clearing beyond what is necessary. Grubbing of stumps may occur in the vicinity of the new pole locations to allow the installation of the poles and safe access.

During the construction period, wooden swamp mats would be used in saturated soil areas to minimize soil disturbance and rutting from vehicle access and staging. A qualified Environmental Monitor hired by the Company will periodically monitor the limits of the construction activity and inspect the condition and effectiveness of the erosion control measures. Inspection and maintenance logs will be maintained to provide documentation of inspection observance and provide feedback to the construction contractor and owner as appropriate. Specified erosion control measures will include permanent stabilization measures to restore disturbed soils to a stabilized condition.

**(5) Natural environment**

Plant Communities

The Project Site presently consists of a 450-foot wide overhead transmission line ROW which contains four existing transmission lines. The ROW is almost entirely cleared and consists primarily of emergent and scrub-shrub wetland vegetation, except for a gravel access road which provides access along the western edge of the ROW and which varies from eight to sixteen feet in width.

Commonly observed shrubs typical to such settings include speckled alder (Alnus incana), meadowsweet (*Spiraea latifolia*), arrowwood (*Viburnum recognitum*), species of willow (*Salix* spp.), and glossy buckthorn (*Frangula alnus*). Occasional saplings include gray birch (*Betula populifolia*), red maple (*Acer rubrum*), eastern hemlock (*Tsuga canadensis*), and quaking aspen (*Populus* tremuloides). Common herbaceous and emergent vegetation includes: species of golden rod and aster (*Solidago* spp. and *Symphyotrichum* spp.) fringed sedge (*Carex crinita*), woolgrass (*Scirpus cyperinus*), bladder sedge (*Carex intumescens*), soft rush (*Juncus effusus*), sensitive fern (*Onoclea sensibilis*), tussock sedge (*Carex stricta*), broad-leaved cattail (*Typha latifolia*), cinnamon fern (*Osmunda cinnamomea*), reed canary grass (*Phalaris arundinacea*), and jewelweed (*Impatiens capensis*).

Construction of the new C203 Tap Line would require widening the existing cleared limits of the ROW westward into an undeveloped forest stand. This forested portion of the Project Site is a mix of northern hardwood-spruce-fir forested upland and wetland. Dominant overstory species within this forest stand includes white pine (*Pinus strobus*), spruce (*Picea rubens*), red maple and yellow birch (*Betula allegheniensis*). The forested wetland is part of the larger scrub-shrub and emergent wetland within the adjacent cleared ROW.

Broader plant community types were identified using data associated with the NHF&G 2006 Wildlife Action Plan ("NHWAP"). Four communities were identified within the Project Site including Northern Hardwood Conifer Forest, Hemlock-Hardwood-Pine Forest, Wet-Meadow Shrub Wetland, and Grassland. Northern Hardwood Conifer forest as mapped by NHF&G consumed the largest portion of the Project Site, however it does not reflect current Site conditions – i.e., the existing cleared transmission ROW.

Although construction of the C203 Tap Line would require additional clearing of approximately 2.5 acres of forested land, 2.1 acres of which is wetland, large forested tracts dominate the landscape surrounding the Project Site, specifically adjoining (to the west) the proposed clearing location. Construction of the C203 Tap Line would not have adverse impacts on the present vegetative composition of the landscape since the Project Site is already comprised largely of an existing overhead transmission line corridor and the proposed small amount of clearing relative to the large area of forested land surrounding the Site.

Wildlife Habitat

Wildlife habitat is provided by the forested, scrub-shrub, emergent and open water components of the Project Site's wetland complex. However, the sloping forested components of the Project Site where the majority of the Project impacts would occur are not significantly different in their general habitat characteristics relative to adjacent forested uplands. As previously stated, forested habitat is also ubiquitous within the Project vicinity.

The NHWAP contains a ranking of the state's wildlife habitat. The Project Site was reviewed for Highest Ranked Habitat as identified in the NHWAP and no such habitat would be affected by the Project. See Figure 5.

The most valuable wildlife habitat functions of the Project Site's wetlands are provided by an emergent marsh/aquatic bed/open water habitat component towards the interior of the large wetland complex located within the Project Site. This component of the wetland provides a small area of habitat that may be used by waterfowl and wading birds, a habitat type that is less common within the Project vicinity. This habitat component of the wetland would not be adversely impacted by the proposed Project, except perhaps for temporary impacts associated with construction activity.

Fish or shellfish habitat, if present, would be limited to the perennial stream to the northwest of the Project Site, and open water components of the wetland interior. The perennial stream has the potential to provide coldwater fishery habitat, although the stream is small and occupies a steep gradient. The open water within the wetland interior may provide warm water fish habitat, but the small size of the open water area is not likely to support a significant population of fish. Regardless, neither the perennial stream nor the open water habitat would be impacted by the proposed Project.

While the potential for such features exists within the Project Site, no vernal pools or potential vernal pools were identified during field investigations by VHB wetland scientists. One open water area is present within the interior of the large wetland complex present on-Site, which may potentially provide vernal pool breeding habitat. However, the open water area appears to be flooded on a permanent to semi-permanent basis and provides good habitat for species known to predate upon vernal pool amphibians and their egg masses, such as green frogs, bull frogs, turtles, and potentially even fish. This type of ponded or open water habitat does not generally provide favorable vernal pool habitat characteristics due to the high risk of predation.

Endangered, Threatened or Rare Plants, Animals and Natural Communities

The NHNHB was consulted regarding the occurrence of rare plant, animal or natural communities within vicinity of the Project. NHNHB indicated historical records of rare plants, an exemplary natural community and Bald Eagles in the vicinity of the Project Site in a response memo dated February 20, 2013, and recommended coordination with NHF&G to further determine the status and location of the species in relation to the proposed Project Site.

Only common plant species were observed within the Project Site during the course of wetland delineations by VHB wetland scientists in June, July, and August of 2013. Follow up field surveys were conducted by VHB on three

separate occasions in July, August, and September 2013 to search for rare plant species listed in the NHNHB report. None of the listed species were found during the course of the follow up field investigations. Based on the results of the Site surveys, the NHNHB determined that the Project would have no effect on protected plant species. NHNHB determined that the Project would have no effect on protected plant species (See NHNHB response dated January 29, 2014 included as Appendix E).

Further consultation with the NHF&G occurred in relation to the Bald Eagle as listed on the NHNHB report. The NHNHB report indicated that Bald Eagles have been recorded along the Connecticut River associated with the Moore Dam located approximately one-half mile north of the Project Site. Based on the location of the Site and distance from the Connecticut River and the lack of suitable wintering habitat within the Project Site, VHB concluded that the proposed Project should not result in significant adverse impacts to Bald Eagles. The NHF&G concurred with this finding in its written response included in Appendix E.

The Project was reviewed for the presence of federally-listed or proposed, threatened or endangered species or critical habitat per instructions provided on the USFWS New England Field Office website. Based on the information currently available, it was determined that no federally-listed or proposed, threatened or endangered species or critical habitats under the jurisdiction of the USFWS are known to occur in the direct Project Site.

Wetlands and Water Quality

Since the Project Site is largely comprised of vegetated wetlands, the capacity of this environment to perform water quality and hydrologic functions such as groundwater discharge or recharge, flood flow alteration, sediment/toxicant/ pathogen retention, and nutrient removal exists. The sloping, glacial till geomorphic setting of the landscape within the Project Site allows for shallow groundwater discharge into the on-site wetlands, but limits groundwater recharge functions due to the presence of shallow dense soil horizons or bedrock that limit deep infiltration. The flatter PEM/POW interior of the large wetland complex may contribute to flood flow alteration by detaining surface runoff from surrounding slopes during precipitation events, but the ability to perform this function is constrained by a lack of a contributing watercourse and a lack of adjacent waterbody. Pollutant retention or removal functions may occur within the Project Site wetland, but a general lack of erosion, sediment, pollution, or excess nutrient sources within the drainage area limits water quality functions. Construction of the C203 Tap Line would not adversely impact water quality and hydrologic functions performed by the Project Site's wetlands. Refer to Section i.(4) for greater detail on water quality as it relates to the proposed Project.

## (6) Public health and safety

Construction, Operation, and Maintenance

The Company intends to construct, install, operate and maintain structures, equipment and lines associated with the 230 kV tap line in conformance with the PUC's Administrative Rules - *Chapter Puc 300 - Rules for Electric Service*. Specifically, the company will act in conformance with *Part Puc 306* which outlines "good utility practice" standards including, but not limited, to operating in such a manner to best accommodate the public, to prevent interference with other underground and above ground facilities, and in accordance to established safety standards. Safety standards to be adhered to include; (1) the National Electrical Safety Code C2-2002; (2) when applicable, the International Energy Conservation Code 2000 as adopted in RSA 155-A:1, IV; and (3) the Regional Transmission Organization – ISO New England.

Prior to the commencement of construction and throughout the operation and maintenance of the 230 kV Tap Line, the Company will develop and implement a health and safety program to educate its employees and protect those individuals from hazards associated with the work environment. The health and safety program will include a comprehensive set of guidelines outlining all required safety protocols such as procedures for resuscitation from electrical shock, and accident and property damage guidelines and reporting. As outlined in *Puc 306.07*, the PUC commission will periodically "inspect the works and system of each utility and the manner in which each utility has conformed and presently conforms to commission rules".

The Company will also maintain electric service in accordance with quality criteria outlined in *Puc 304* in order to better accommodate the health and safety of the public. This section of the rules specifies guidelines on frequency, voltage variation, interruptions of service, and voltage complaints.

Use of Herbicides for Vegetative Management

The Company will also implement a vegetative management plan within the 230 kV Tap Line ROW in accordance with established Company standard operating procedures for vegetation management operations within rights-of-way to ensure public safety and an acceptable level of service reliability. Through periodic vegetative maintenance, the Company will provide a safe environment for consumers, general public, and construction contractors by minimizing outages through "storm proofing" efforts and providing easy access for line maintenance and inspections. Vegetative management techniques typically include both mechanical and chemical control. Chemical control, specifically the selective use of herbicides will be applied in accordance with company policies and all applicable federal and state environmental laws and regulations which aim to protect the state's natural resources and the general public. Prior to applying any

herbicide, the Company will obtain any and all permits required, specifically those required through the New Hampshire Division of Pesticide Control in accordance with the Division's Administrative Rules *Chapter Pes 50 – Restriction on the Application of Pesticides by Commercial Applicators and Permittees.*

Electric and Magnetic Fields ("EMF")

The Company retained Gradient Corporation to analyze the impact that the Project would have on EMF levels in the vicinity of the Project. Gradient's final report is provided as Appendix M. In order to establish existing conditions, Gradient performed pre-Project EMF measurements in three different ROW transects. Gradient then modeled EMF levels at post-Project peak loads. Gradient found that post-Project electric and magnetic field levels either remained the same or *decreased* from pre-Project levels. See Gradient Report, at 1. Accordingly, Gradient concluded that the Project did not pose any public health concern, as follows:

> Overall, all measured and modeled EMF levels fall below the ICNIRP 60-Hz EMF safety guideline values of 2,000 mG for magnetic fields and 4.2 kV/m (ICNIRP, 2010). Therefore, there is no expectation of adverse health effects due to the EMF levels from the proposed project.

Gradient Report, at 17.

**(j) INFORMATION REGARDING THE EFFECTS OF THE FACILITY ON ORDERLY DEVELOPMENT OF THE REGION, INCLUDING APPLICANT'S ESTIMATE OF THE IMPACTS OF THE CONSTRUCTION AND OPERATION OF THE FACILITY ON:**

**(1) Local land use**

As detailed above in Section c.(6), the Littleton ZBA found, in connection with PSNH's application for work in its adjacent substation related to the Tap Line Project, that the use of the area for utility purposes is appropriate, would not reduce property values and would not create a nuisance or cause an unreasonable hazard. See ZBA Minutes, June 25, 2013, at 2 (Appendix I). Furthermore, by resolving a reliability need, the Project will support the development goals and policies of Littleton and the surrounding region. As discussed above in Section c.(6), the Company provided Project information and plans to the Littleton Board of Selectmen, the ZBA and Planning Board, the Fire and Police Chiefs the Town Manager, the North Country Council, and state representatives of District 1. None of these officials or governmental bodies expressed any objections to the construction and operation of the Project.

**(2) Local economy**

The Project is driven by the need to resolve the operational issue that an outage of the existing 230/115 kV autotransformer at Littleton Substation causes overloads on the 115/13.8 kV transformer T7 at Moore Substation. The proposed installation of a new Tap Line to a new transformer will eliminate this operational problem and thereby mitigate the risk of overloads in the service area. Long-term economic benefits to the State and its residents, particularly those served by the northern New Hampshire electrical transmission network, will result from providing the infrastructure for economic growth and enhanced system reliability. A detailed, quantitative estimate of temporary and permanent economic benefits of the Project would be expensive and time-consuming and is not prudent for a Project of the size. However, the costs of not resolving the thermal and voltage violations in the system could be significant.

**(3) Local employment**

While NEP anticipates that the Project will have some short-term benefit to local businesses, which will provide key support services to contractors, such as fuel delivery, food services, it does not expect the Project to have any net impact on local employment.

## (k) PRE-FILED TESTIMONY AND RESUMES

**(1) Patrick Quigley, Project Manager**

Attached hereto is the prefiled testimony of Patrick Quigley, who is NEP's Project Manager for this Project. As Project Manager, Mr. Quigley is responsible for organizing the Project team, ensuring that the appropriate level of financing is available, and ensuring that the Project is delivered on time, on budget and in compliance with all applicable laws and regulations. Mr. Quigley's testimony discusses the Project purpose and scope, construction schedule and methods, including construction noise, Company financial and managerial capability as well as community outreach and interactions and orderly regional development. Mr. Quigley will also summarize the EMF report prepared by Gradient.

**(2) Peter Walker, Director, Environmental Services, Vanasse Hangen Brustlin, Inc.**

Attached hereto is the prefiled testimony of Peter Walker, who is the Director of Environmental Services for Vanasse Hangen Brustlin, Inc. ("VHB") and has over 20 years of environmental expertise in the analysis of project impacts, in the development and presentation of mitigation measures, and in interactions with federal and state environmental agencies. Under Mr. Walker's supervision, VHB is responsible for all environmental, cultural and historic resources, and aesthetics analysis in support of the Project.

**STATE OF NEW HAMPSHIRE**

**BEFORE THE SITE EVALUATION COMMITTEE**

**Docket No. SEC _____**

**APPLICATION OF NEW ENGLAND POWER COMPANY d/b/a NATIONAL GRID FOR CERTIFICATE OF SITE AND FACILITY FOR CONSTRUCTION OF A NEW 230 kV TAP LINE IN LITTLETON, NH**

# TESTIMONY OF PATRICK J. QUIGLEY ON BEHALF OF NEW ENGLAND POWER COMPANY d/b/a NATIONAL GRID

**Q. Please state your name, title and business address.**

**A.** My name is Patrick J. Quigley. I am a Lead Project Manager employed by National Grid USA Service Company, Inc. My business address is 40 Sylvan Road, Waltham, Massachusetts 02451.

**Q. Briefly summarize your educational background and work experience.**

**A.** I have a Bachelor of Science in Electrical Engineering Technology from Northeastern University and over 10 years of experience in project management in the electric utility industry.

**Q. Please provide information about New England Power Company.**

**A.** New England Power Company d/b/a National Grid ("NEP" or the "Company") is a regulated New Hampshire public utility that maintains and operates electric transmission assets throughout New England, including hundreds of miles of transmission line in New Hampshire. The Company provides services to numerous regional electric companies including Granite State Electric. NEP is a wholly-owned subsidiary of National Grid USA and maintains a principal place of business at 40 Sylvan Road, Waltham, MA 02451.

**Q. What is the purpose of your testimony?**

**A.** I am submitting testimony in support of NEP's application ("Application") for a Certificate of Site and Facility ("Certificate") to construct a new 230 kv tap line in Littleton, New Hampshire (the "Project"). I will describe the Project facility and site, explain the system reliability need that the Project is designed to meet, and discuss why the Project will not have an

adverse impact upon the local economy or orderly development in the region. In addition, I will summarize the results of the report prepared by Gradient Corporation, our consultant regarding the electro-magnetic field ("EMF") effects of the Project.

**Q. What is your role in relation to the Project?**

**A.** As Lead Project Manager, I am responsible for coordinating all transmission line engineering, protection engineering, scheduling, environmental and other permitting, cost estimating, construction and close-out for the Project. Ultimately, I am responsible for ensuring that the Project is constructed and placed in-service on-time and on-budget.

**Q. Please describe the type of facility that NEP seeks to build.**

**A.** NEP seeks to construct a new 230 kV tap line off of the Company's existing C203 transmission line to the Littleton Substation, located at 266 Foster Hill Road in Littleton, NH, and owned by Public Service of New Hampshire ("PSNH"). The new tap line will be approximately 0.2 miles in length and will provide power to a second autotransformer in the Littleton Substation, which is designed to address reliability needs for the New Hampshire and Vermont areas.

**Q. Please describe the location and characteristics of the proposed Project site.**

**A.** The Project will be sited in Littleton, NH on the west side of an existing right of way ("ROW") that is currently occupied by three electric transmission lines, including a tap line with wooden supporting structures from NEP's D204 transmission line. The proposed new tap line will run between NEP's C203 transmission line and PSNH's Littleton Substation located

just south of Interstate 93. The existing ROW is approximately 450 feet wide and will be widened to the west by approximately 135 feet to accommodate the new C203 tap line. This expansion is necessary to ensure that the boundary of the expanded ROW meets the clearance standard of 100 feet from the centerline of the proposed C203 tap line.

The proposed Project site consists of approximately 3.5 acres and includes a 2.3 acre ROW that NEP will acquire from TransCanada Hydro Northeast, Inc. ("TC"). The property owned by TC across which NEP will acquire a ROW is largely forested, and the nature of the Project requires that trees be cleared to the boundary of the newly expanded ROW to establish safe clearances from trees and other utility structures. TC has authorized NEP to file this Application. The area encompassed by the Project site is primarily zoned "Rural," though its northernmost portion is zoned as "Commercial III."

NEP's D204 and C203 transmission lines are located to the north of the Project site. Immediately to the south of the Project site is PSNH's Littleton Substation. The area to the west of the Project site comprises parcels of largely undeveloped forest land owned by TC and the State of New Hampshire. The property owned by TC is protected by a conservation easement granted to the New England Forestry Foundation Inc., which has consented to construction of the Project. The State-owned property is not designated as public open space or park land. To the east of the Site is a continuation of the land owned by TC as well as undeveloped residential property that is zoned Rural.

**Q. What are the major components and configuration of the new tap line?**

**A.** The new tap line will be approximately 1160 feet, or approximately 0.2 miles, in length and comprise four wooden pole transmission structures. These will include one 35-foot,

3-pole terminal dead-end structure, two H-frame suspension structures at 70 and 80-feet tall, respectively, and one guyed 80-foot H-frame dead-end structure. In order to minimize visual disturbance, the spacing and height of the transmission structures will be similar to the spacing and height of the structures on NEP's adjacent D204 tap line running between the Moore Substation in Littleton, NH to the Comerford Substation in Monroe, NH. A 795 kcmil aluminum conductor steel reinforced (ACSR) "Drake" conductor will span the new transmission structures in three phases beginning with the 3-pole terminal dead-end structure and ending at a bus structure in the Littleton Substation. Two 3/8-inch, seven-strand extra high strength galvanized steel shield wires will begin at the second tap structure and terminate at the Littleton Substation bus structure. The proposed C203 tap line will connect to the mainline via vertical tap wires.

Specific details about the tap line components and configuration, as well as the Project construction process, are set forth in Sections (e) and (g) of NEP's Application.

**Q. How will the Project affect regional system reliability and stability?**

**A.** NEP is undertaking the Project to address regional system reliability needs identified by ISO New England ("ISO-NE") in its New Hampshire / Vermont 2011 Transmission System Needs Assessment (November 3, 2011), and its subsequent Final Follow-up Analysis to the 2011 New Hampshire / Vermont Needs Assessment (April 13, 2012), both of which were prepared with participation from NEP, Vermont Electric Power Company, Unitil and Northeast Utilities. Specifically, the addition of a second autotransformer in the Littleton Substation and the associated construction of the new C203 tap line are designed to prevent overloading on the 115/13.8 kV transformer T7 at the Moore Substation caused by an outage of the existing 230/115 kV autotransformer at the Littleton Substation.

While identifying regional system reliability needs, ISO-NE also thoroughly evaluated various potential solutions in a Solutions Study phase, as documented in reports published on April 9, 2011 (the New Hampshire / Vermont Transmission Solutions Study) and April 13, 2012 (the Final New Hampshire / Vermont Transmission Solutions Study Report). The New Hampshire/Vermont preferred solution includes construction of the new C203 tap line and was presented multiple times to the ISO-NE Planning Advisory Committee. The ISO-NE Reliability Committee reviewed proposed plan applications for system improvement projects in New Hampshire, including the proposed C203 tap line that is the subject of NEP's Application, and did not identify any adverse effect upon the reliability or operating characteristics of existing transmission facilities or the system of any market participant.

**Q. Does the Project have the potential to unduly interfere with the orderly development of the region?**

**A.** No. The Project is consistent with and will actually promote orderly regional development because it is designed to address the system reliability issues identified by ISO-NE. NEP has reviewed the Littleton Master Plan as well as the North Country Council's policies and reports and confirmed that the Project is appropriately sited and will not have any adverse impacts on orderly development in the region. NEP also provided Project details to Ms. Tara Bamford, a North Country Council Regional Planner, on December 27, 2013. Ms. Bamford responded by email on January 7, 2014, stating that: "Maintenance and upgrade of the transmission system necessary for using and exporting the region's renewable energy resources is consistent with the North Country Council's plans and policies. I don't see any issues with this proposal."

Furthermore, even though the Project is not subject to ZBA jurisdiction, I and other NEP representatives took the opportunity to appear before the ZBA at the regularly scheduled public meetings regarding PSNH's application for related work at its Littleton Substation held on June 25 and July 23, 2013. I explained the purpose, scope, and potential impacts of the Project. The ZBA inquired about height, noise, lighting and whether the tap line was associated with the proposed Northern Pass project, which it is not. The Board unanimously approved PSNH's application.

NEP also sent a letter, dated October 30, 2013, to the Town Board of Selectmen, the Littleton Fire Chief, the Town Manager and the Planning Department and Zoning Board of Appeals describing the Project scope and schedule and invited comments. NEP sent similar letters dated January 13, 2014 to the Littleton Police Chief, state Senator Jeff Woodburn and Representative Ralph Doolan. As of the date of this Application, no state or local official or body has expressed any concern regarding construction of the proposed Project.

The Project will be sited entirely within privately held land managed for electrical transmission and will not have any effect on nearby community recreational resources. For example, community recreational resources associated with the Fifteen Miles Falls Recreation Area (including the Moore Dam and its associated visitor center and boat launch) are at least 0.5 miles from the Project site and separated from the site by the I-93 interstate highway. Though there is a snowmobile trail that exists to the west of the D204 tap line, the expansion of the transmission corridor to accommodate the C203 tap line will not have any adverse impact on the trail. The Company has reached out to both the Vermont Association of Snow Travelers, which indicated that it did not maintain any trails on the ROW or in the vicinity, and the Littleton Off Road Riders, which has not responded to NEP's letter dated January 16, 2014.

Furthermore, the Project will not have any adverse impact on Littleton's infrastructure because it will not increase the demand for municipal sewer, water, fire or police services. Transportation related to construction and operation of the tap line will be consistent with the designation of local roadways and truck traffic will be routed to prevent impacts in the downtown area. Construction of the Project will not produce any permanent noise, dust, odor, or emissions impacts; to the extent that there are any temporary impacts during construction, they will be negligible.

**Q. How will the Project affect the local economy and local employment?**

**A.** As explained above, the Project is designed to resolve a system reliability issue that has been identified by ISO-NE in its New Hampshire / Vermont regional needs assessment. The proposed new C203 tap line will eliminate the operational cause of the problem and thereby improve system reliability in the local service area. Infrastructure improvements that enhance system reliability can only have a positive effect on economic growth and may result in long-term economic benefits to the State and its residents, particularly those served by the northern New England electrical transmission network. In the short term, construction of the Project will create benefits to local businesses, including restaurants and fueling stations that will service employees and contractors working on the Project.

Notwithstanding these potential benefits to the local economy, NEP does not anticipate that the Project will have any net impact on local employment.

**Q. Please describe any alternative sites considered by NEP and explain why NEP selected the proposed Project site.**

**A.** There are only two feasible options for expanding the existing transmission tap line corridor ROW (which already includes three transmission tap lines) to accommodate the proposed C203 tap line: a western alternative and an eastern alternative. NEP's preferred solution is the western alternative, which entails construction of the proposed tap line to the west of the existing D204 tap line as described more fully herein and in NEP's Application. The eastern alternative would involve construction of the C203 tap line from the Littleton Substation on the eastern side of the ROW between the existing Q-195 tap line and the 345-kV 3315 line. Figure 4 to NEP's Application shows the approximate location of the two proposed routes.

NEP selected the western alternative as its preferred solution based upon a constructability and engineering field assessment that it performed in April 2010. The configuration of existing transmission tap lines located to the east of the existing D204 tap line does not allow sufficient space to safely build the proposed C203 230kV tap line while complying with standard right-of-way distances, distances between tap lines, and clearance design specifications and codes.[1] By contrast, there is adequate space for the installation of an additional tap line to the western side of the D204 tap line. The western alternative also enables NEP to coordinate the location of the new C203 tap line structures with the existing D204 tap line structures to avoid a staggered visual field.

The western alternative is also superior to the eastern alternative because there is space available within the fence on the western side of the Littleton Substation for installation of the new C203 tap bus structure. Installation of the bus structure on the western side of the substation will avoid line crossings. Finally, there is an existing access road parallel to the D204 tap along

[1] The typical required right-of-way width for two 230kV H-Frame circuits in New England is 200 feet.

the western side of the ROW that will provide adequate access to the Project during construction without obstructing access to the existing lines or requiring the construction of a new access road.

Accordingly, the western alternative is preferable from the design, constructability, safety and ongoing maintenance perspectives, whereas the eastern alternative is not optimal.

**Q. Did NEP investigate whether the Project would affect EMF Levels?**

**A.** Yes. The Company retained Gradient Corporation to analyze the impact that the Project would have on EMF levels in the vicinity of the Project. Gradient's final report is provided as Appendix M to the Application. Gradient performed pre-Project measurements establish existing conditions and then modeled EMF levels at post-Project peak loads. Gradient found that post-Project electric and magnetic field levels either remained the same or *decreased* from pre-Project levels. See Gradient Report, at 1.

**Q. Does this conclude your pre-filed testimony?**

**A.** Yes.

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# Patrick J. Quigley

## Profile:

Results oriented, hands on construction and operations management in all facets of the electrical industry with a focus on safety, quality, production and financial performance. Has proven skill sets in labor management, material purchasing, scheduling, estimating, cost controls, forecasting, environmental management, customer and labor negotiations, public relations, document control, Computer Aided Design, and permit applications.

## Education

**Northeastern University, Boston, MA**
Bachelor of Science
Major: Electrical Engineering Technology

## Experience

**2013 - Present** **National Grid, Complex Project Management**

***Lead Project Manager – 230kV C-203Tap Project***

- Project consists of clearing land, installing (4) new 230kV structures and stringing .2 miles of new conductor to energize a Northeast Utilities Autotransformer in their Littleton Substation in Littleton, NH.
- Project consists of obtaining easements to extend existing ROW for new 230kV C-203 Tap Line, SEC Permits and regular environmental permits.
- Responsible for all transmission line engineering, protection engineering, scheduling, environmental, costs, and construction activities for project.

***Lead Project Manager – C-181 / D182 Refurbishment Project***

- Project consists of replacing approximately 260 wood 115kV structures and installing 27 miles of OPGW.
- Responsible for all transmission line engineering, scheduling, environmental, costs, and construction activities for project.

***Lead Project Manager – NERC CIP Projects***

- 23 substations (including joint owned facilities) met the Bulk Electric System requirements under FERC Order #773, making the RTUs in the stations become Cyber Critical Assets. Security measures to be installed at these 23 substations included card readers, video and stationary cameras in and around the control houses of the substations.

- Responsible for all substation engineering, telecom engineering, information systems engineering, project schedule, Verizon Business coordination, project schedules, cost control, construction and Senior Management steering committee updates.

***Lead Project Manager – 2391 23kV Backup***

- Project is to install 2.2 miles of new 23kV Aerial Cable and autoflip-flop switchgear to operate as a backup to the existing 23kV 2391 circuit.
- Responsible for all distribution line engineering, substation engineering, protection engineering, civil engineering, schedule, construction and cost control for the project.

**2006 – 2013** **Hawkeye LLC Transmission Group, Portsmouth, NH**

***Project Manager – National Grid B154-C155 Reconductoring Project***

- Reframing and reconductoring of the parallel B154 and C155 circuits (14.5 miles each) with 1590 kcmil ACSR. Replaced 8 wood structures with 8 steel structures on foundations.
- Responsible for the environmental compliance for the project as well as subcontracted work. Participated in all environmental field audits.
- Maintained project cost controls, plans, procedures, document control, and project schedule.

***Project Manager – Bangor Hydro Electric Co. Line 64 Rebuild***

- Rebuild of the 44 mile 115kV H-Frame Line 64 to steel angle structures, and double bundle 795 ACSR Conductor.
- Managed 55 employees, 6 managers, and 8 subcontractors (including heavy lift helicopter for pole flights as well as a helicopter line crew)
- Designed and maintained project cost controls, plans, procedures, document control, project schedule, fleet maintenance.
- Managed union labor relations with the IBEW as well as the project steward
- Maintained a team proactive environment with Bangor Hydro Electric's project management, project inspectors, and environmental monitors.

***Project Manager – Bangor Hydro Electric Co. Keene Rd Substation***

- Established (2) 115kV Wooden Double Bundle Transmission Line reroutes, (2) 345kV Steel Double Bundle Transmission Lines reroutes and established (1) new 345kV tie between the new 345kV Keene Rd Substaiton, the existing 115kV Keene Rd Substation and the 345kV SVC Station.
- Procured all materials to complete the project
- Project consisted of 4 mobilizations and 4 demobilizations to accommodate the substation construction, substation commissioning and transmission line commissioning.

***Project Manager – Orange & Rockland Utilities Line 31 Rebuild***

- Rebuild of 115kV Double Circuit Wood and Steel Monopole Line
- Designed and applied for NY State Thruway, NYDOT, Metro North Railroad Permits
- Managed subcontractors to install 7 caissons as well as rock drilling

***Project Manager – Orange & Rockland Utilities Cell Site Modifications***

- Install site, structure and equipment grounds on existing steel structures. Replaced and reinforced steel lattice towers on 69kV, 138kV and 345kV Lines
- Procured materials, organized outage and live line recloser work with Orange and Rockland representatives

***Project Manager – Orange & Rockland Utilities 119/121 Lines Structure Replacement***

- Replaced 2 existing steel poles, replaced double circuit 138kV conductor and transferred 192 count OPGW to new structures for NYS Rte 17 construction project
- Created work plans, traffic control drawings, obtained NYS highway permits, and coordinated with NYS DOT Prime Contractor for road access
- Scheduled work with foundation installation, Orange and Rockland Distribution crews, local telecommunications company, and Rte 17 highway construction crews, and NYSDOT

***Project Manager – NSTAR Rebuild 389 Line***

- Rebuild approximately 3 miles, replaced tangent structures and installed double static wire (6 miles) in Walpole, Massachusetts

***Project Manager – Orange & Rockland Utilities #57 & 58 Line Rebuild***

- Replace a 6 mile double circuit 69kV including wood pole work and steel tower modifications
- Coordinated with Orange & Rockland for scheduling of line outages, and overall job performance

***Project Manager – National Grid #801 Line Delevan-Machias NY***

- Replace 12 energized 34.5kV structures and transfer conductors
- Maintained weekly status reports with National Grid, project schedule, and design changes

***Estimator -***

- Estimating various Transmission and Sub-Transmission (34.5kV and higher) projects

**Halpin Line Construction Company LLC, Weymouth, MA**
***Project Manager - NSTAR RFP 1311 Unit Contract; Hyannis, Plymouth, New Bedford and Martha's Vineyard Service Centers***

- Project Manager for all Overhead Maintenance, Automation, Circuit Walkdowns, Reconductoring, and Conversion Projects
- Create and maintain project schedules for all projects, ongoing and future work
- Value engineer construction projects with NSTAR senior supervisors
- Maintained, controlled and distributed all owner supplied materials for all projects
- Coordinate switching orders (large and small)
- Responsible to maintain and dispatch storm restoration crews for all NSTAR Service Areas

***Project Manager – North Attleboro Electric Department, Circuits E-2 & E3 Reconductoring Project Old Post Rd & Allen Ave***

- Reconductor 1.5 miles 13.8kV Spacer Cable and establish new E-3 circuit

***Project Manager – Blue Hills Project Quincy, MA Barletta Construction***

- Designed 13.8 kV Spacer Cable system to feed a water reservoir
- Coordinated tree trimming, rock drilling and overhead line crews to construct new express feeder

**2003 - 2006** **Mass Electric Construction Company, Boston, MA**

***115 kV XLPE Cable System, Northeast Utilities, Bethel, CT***

- Electrical Superintendent for 115kV XLPE Cable installation, fiber optic cable installation, and fiber optic splice & termination operations
- Field Engineer for trenching & conduit installation
- Assisted with the creation of as-built drawings for job turnover

***Assistant Project Manager – Power Group***

- Estimate substations, overhead power lines, vaults, transmission lines and outdoor switchyards
- Assist project managers run jobs
- Create Job Schedules using Primavera Project Planner and Microsoft Project

**2000 - 2003** **Mass Electric Construction Company, Boston, MA**

***Cooperative Education Student***

- Assist Senior Estimators in producing estimates for large and small jobs
- Responsible for Material Orders at the Boston Convention and Exhibition Center project
- Assist in the creation of a Job Schedule, including trade tasking for short-term look ahead schedules as they factor into maintaining the critical path for the job
- Utilized Auto CAD for producing change estimates as design adjustments are made
- Performed on site engineering studies, such as short circuit studies and cable tray capacity studies
- Performed Quality Control/Quality Assurance studies at Lake Road Power Generating Plant project following ISO 2000 guidelines

## Computer Skills

Microsoft Office 2007 Suite, AutoCAD, Primavera P6, Microsoft Project, PowerPlant, Small World GIS, SAP, SAP GUI

**STATE OF NEW HAMPSHIRE**

**BEFORE THE SITE EVALUATION COMMITTEE**

**Docket No. SEC _____**

**APPLICATION OF NEW ENGLAND POWER COMPANY d/b/a NATIONAL GRID FOR CERTIFICATE OF SITE AND FACILITY FOR CONSTRUCTION OF A NEW 230 kV TAP LINE IN LITTLETON, NH**

# TESTIMONY OF PETER J. WALKER
# ON BEHALF OF NEW ENGLAND POWER COMPANY
# d/b/a NATIONAL GRID

**Q. Please state your name, title and business address.**

A: My name is Peter J. Walker. I am Director of Environmental Services at Vanasse Hangen Brustlin, Inc. ("VHB"). My business address is 6 Bedford Farms Drive, Bedford, New Hampshire 003110.

**Q. Briefly summarize your educational background and work experience.**

**A:** I respectfully refer the SEC to a current copy of my resume, which is attached hereto. In summary, I hold an MS in Biology from the University of Vermont as well as a BA in Biology and Environmental Studies from Williams College. I have served on the Board of Directors of the NH Association of Natural Resource Scientists and the Corporate Wetlands Restoration Partnership. I am also a member of several professional associations, including the American Water Resources Association, the Society of Ecological Restoration and the Soil and Water Conservation Society.

As noted, I currently am VHB's Director of Environmental Services for northern New England. In this role I have directed and led a number of projects involving a wide variety of environmental disciplines including natural resource assessments, wetland and water quality studies, oil and hazardous materials surveys, historical and archaeological investigations, stream and wetland restoration studies, and NEPA Environmental Impact Statements. I previously served as an administrator with the NH Department of Environmental Services Wetlands Bureau where I oversaw the technical review of projects affecting streams and rivers throughout the state, including supervising all wetlands and shoreland protection permitting and resources staff.

**Q. What is the purpose of your testimony?**

**A.** I am submitting testimony in support of an application ("Application") by New England Power Company d/b/a National Grid ("NEP" or "the Company") for a Certificate of Site and Facility ("Certificate") to construct a new 230 kV tap line in Littleton, New Hampshire (the "Project" or the "C203 Tap Line"). I will describe the impact of the Project to wetlands, surface waters, and the natural environment and resources within and adjacent to the Project site. I will also address the Visual Impact Report prepared by VHB and the effect the Project will have upon the viewshed and aesthetic character of the region. Lastly, I will describe the effect the Project will have upon cultural and historic resources.

**Q. What is your role in relation to the Project?**

**A.** VHB is responsible for environmental analysis in support of the Project and serves as technical experts during the NH Site Evaluation Committee's review of the Project. I have supervised all aspects of VHB's environmental analyses and its preparation of all applications to all state environmental agencies with jurisdiction over the Project.

## WETLANDS AND SURFACE WATERS

**Q. Please describe the New Hampshire wetlands and surface waters within or adjacent to the Project site.**

**A.** The Project site is located within the watershed of the Connecticut River on a north-facing slope, creating an overall hydrologic flow from south to north towards the Connecticut River, which is located approximately 0.5 miles away. There are no streams located within the boundaries of the Project site. Outside the western limits of the Project site, we

mapped a small, isolated intermittent channel as well as a small perennial stream that flows in a northwesterly direction and eventually discharges into the Connecticut River.

A single large wetland complex including palustrine forested wetland, palustrine scrub-shrub, palustrine emergent wetland, and limited palustrine open water components occupies most of the Project site.[1,2] A portion of the wetland complex is located within the existing transmission right-of-way ("ROW") that will be expanded by the Project.

Wetlands and surface waters within or adjacent to the Project site are described in detail in the New Hampshire Department of Environmental Services Standard Dredge and Fill Permit Application attached as Appendix D to NEP's Application.

**Q. Are there any potential impacts to wetlands, surface water, or water quality as a result of the Project?**

**A.** The proposed Project has been carefully designed to minimize impacts to jurisdictional wetland areas to the maximum extent practical; the impacts to wetlands would be relatively limited and not unreasonably adverse. However, wetland impacts could not be entirely avoided due to the prevalence of wetlands within and adjacent to this existing transmission corridor. A total of 64 square feet of wetlands would be permanently filled to install nine new wooden utility poles within wetlands, associated with four new H-frame or triple-pole structures.

Although the permanent loss of wetlands associated with the Project is only 64 square feet, there would be some temporary impacts during construction. A total of 46,805 square feet of temporary wetland impact will result from the use of swamp matting to access each new

[1] VHB wetland scientists delineated the wetlands within the Project site in accordance with the *Corps of Engineers Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (January 2012).
[2] VHB's nomenclature is based upon *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979, revised 1985).

structure location and to create a stable work platform during structure installation. The intent of the swamp mats is to allow for equipment access while minimizing the disturbance to the soil surface.

In addition to the direct permanent and temporary wetland impacts under the jurisdiction of RSA 482-A, up to 90,135 square feet of forested wetlands would be indirectly impacted by clearing of forested wetlands. While this area would remain wetland, they would be converted from forested wetlands to scrub-shrub wetlands. This is necessary to extend the tap line ROW, allow for the installation of the pole structures, and to meet the vegetation horizontal clearance requirements. Note that clearing will be conducted in a manner to avoid disturbing the soil surface. There would be no grubbing or grading, and proper Best Management Practices ("BMPs") would be used during clearing activities to prevent excess rutting.

The Project does not require any water withdrawals or necessitate any process water discharge. Moreover, while the wetlands within the Project site's boundaries have the potential to perform certain water quality and hydrologic functions, the Project would not lead to a significant, permanent loss of wetlands and therefore such functions would remain intact.[3] To protect water quality, NEP will implement BMPs, including spill containment measures, consistent with NEP's construction guidelines.

Furthermore, no measureable water quality impacts are anticipated to either the intermittent or the perennial stream located to the west of the Project as a result of tree-clearing activity. Much of the proposed clearing area drains in an easterly direction into the ROW (i.e., away from the existing streams), and a forest buffer zone typically 50 feet or more will remain between the proposed clearing area and the stream channels.

[3] A detailed description of the potential water quality and hydrologic functions of the Project site wetlands, as well as the geographic features of the site influencing those functions, is included in the NEP Application at pgs. 32-36.

Vegetation management following construction of the tap line is not expected to have any significant impact on surface waters or wetlands. NEP will implement a vegetative management plan within the 230 kV tap line ROW in accordance with established Company standard operating procedures for vegetation management operations within rights-of-way to ensure public safety and an acceptable level of service reliability. Vegetative management techniques typically include both mechanical and chemical control. Chemical control, specifically the selective use of herbicides will be applied in accordance with company policies and all applicable federal and state environmental laws and regulations which aim to protect the state's natural resources and the general public. Prior to applying any herbicide, the Company will obtain any and all permits required, specifically those required through the New Hampshire Division of Pesticide Control in accordance with the Division's Administrative Rules *Chapter Pes 50 – Restriction on the Application of Pesticides by Commercial Applicators and Permittees.*

There is a potential for a temporary increase in sediment erosion and movement during the Project construction period. However, as discussed below, NEP will implement mitigation measures to minimize the risk of erosion.

**Q. How will NEP mitigate potential impacts to wetlands, surface waters, or water quality?**

**A.** NEP will implement proper sedimentation and erosion controls in accordance with NEP's construction guidelines prior to commencing Project construction.[4] During the construction period, the use of wooden swamp mats in saturated soil areas will minimize soil

[4] NEP requires that an Environmental Field Issue and/or Construction Stormwater Pollution Prevention Plan be prepared, as necessary, prior to construction to specify the erosion control measures to be implemented in connection with a project.

disturbance and rutting caused by vehicle access and staging. A qualified environmental monitor hired by the Company will periodically monitor construction activity and inspect the condition and effectiveness of erosion control measures at the Project site, and will maintain inspection and maintenance logs and provide feedback to NEP and its contractor. NEP will restore any disturbed soils to a stabilized condition to prevent any permanent erosion impacts.

**NATURAL ENVIRONMENT AND RESOURCES**

**Q. What steps did NEP take to determine whether there are any threatened, endangered, or rare plant or animal habitats within or adjacent to the Project site?**

**A.** NEP first consulted the New Hampshire Natural Heritage Bureau ("NHNHB") regarding the historical occurrence of rare plant, animal or natural communities within the vicinity of the proposed Project site. NHNHB's historical records indicated the previous existence of protected species to the north of the Project site: three rare plant species, an exemplary natural community, and bald eagles. The NHNHB report recommended that NEP conduct pre-construction field surveys for the identified plant species, and to coordinate with the New Hampshire Department of Fish and Game ("NHF&G") to determine if the Project would result in impacts to the bald eagle, which has been observed using the Connecticut River and Moore Reservoir to the north of the site.

**Q. Did VHB observe any rare plant communities during its evaluation of the Project site?**

**A.** No. VHB observed only common plant species within the Project area during the course of the wetland delineations described above, which occurred in June, July, and August of

2013.[5] VHB also conducted rare plant field surveys of the Project site in July, August and September 2013 to search for the rare plant species identified by the NHNHB. None of the identified species were found during the course of VHB's field investigations.

**Q. Please describe any wildlife habitat that may be affected by the Project.**

**A.** The forested, scrub-shrub, emergent and open water components of the wetlands complex within the Project site's boundaries provide natural wildlife habitats. These habitats already exist largely within the existing transmission corridor ROW and will not be adversely impacted by the expansion of the ROW to accommodate the new tap line. Moreover, the sloping forested components of the Project site where the majority of the tree-clearing impacts will occur are not significantly different in their general habitat characteristics relative to the forested habitat that is ubiquitous within the larger Project vicinity. Thus, the Project will not have an unreasonable adverse impact upon vegetative wildlife habitats within or adjacent to the Project site.

VHB has confirmed that none of the habitats mapped as highest ranked by ecological condition by NHF&G in its 2006 Wildlife Action Plan (revised in 2010) will be affected by the Project as none fall within the Project boundaries. This includes highest ranked wildlife habitat in the state as well as within ecoregional subsections of NH, and supporting landscapes viewed as critical to the preservation of priority habitat. The most valuable wildlife habitat function provided by the wetland complex within the Project site's boundaries consists of an emergent marsh / aquatic bed / open water habitat component towards the interior of the complex. This

[5] VHB identified four broader plant community types within the Project site using data from the NHF&G 2006 Wildlife Action Plan: Northern Hardwood Conifer Forest, Hemlock-Hardwood-Pine Forest, Wet-Meadow Shrub Wetland, and Grassland. Northern Hardwood Conifer forest as mapped by NHF&G occupied the largest portion of the Project site. However, the 2006 Wildlife Action Plan however does not reflect current site conditions, including the existing cleared transmission ROW.

small area of habitat has the potential to be used by waterfowl and wading birds, and represents a habitat type that is less common than the forested habitat within the larger vicinity of the proposed Project. However, the Project will have no direct adverse impact on this habitat, which already exists within the existing transmission corridor.

To the extent that there is any fish or shellfish habitat, it will be limited to the perennial stream at the far northwestern corner of the Project site and open water components of the wetland interior. Though the perennial stream has the potential to provide cold water fishery habitat, it is small and occupies a steep gradient. The open water component of the wetland interior could potentially provide a warm water fish habitat, but the open water area is small. In any event, neither the perennial stream nor the open water habitat will be adversely impacted by the proposed Project.

VHB field scientists identified no vernal pools during its field investigations. Though the open water component of the wetland complex provides a potential vernal pool breeding habitat, it appears to be flooded on a permanent to semi-permanent basis and provides an attractive habitat for species known to predate upon vernal pool amphibians and their egg masses.

**Q. Based upon VHB's analysis, will the Project have an adverse impact on any threatened, endangered, or rare plant or animal habitats within or adjacent to the Project site?**

**A.** No. As explained above, VHB observed only common plant species within the Project area during the course of its wetland delineations, and based on VHB's findings, NHNHB determined that the Project will not have an adverse effect on any protected plant species. See NHNHB response memo attached to NEP Application as Appendix E. Furthermore,

while construction of the new tap line requires the clearing of approximately 2.5 acres of forested land (2.1 acres of which is wetland), large forested tracts dominate the landscape surrounding the Project site. Thus, because the Project site largely comprises an existing overhead transmission line corridor and the proposed amount of vegetative clearing is minor relative to the large area of surrounding forested land, the Project will not have an adverse impact on existing plant communities or the general vegetative landscape.

VHB consulted with NHF&G regarding the bald eagles identified by NHNHB as having been observed along the Connecticut River near Moore Dam, which is located approximately 0.5 miles north of the Project site. Based on the distance between the Project site and the point of observation along the Connecticut River, as well as the lack of suitable wintering habitat within the Project site, VHB concluded that the proposed Project will not have an adverse impact on bald eagles. NHF&G concurs with this finding. See NHF&G letter attached to NEP Application as Appendix E.

The Project site was also reviewed for the presence of federally-listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's ("USFWS") New England Field Office website. Based on the information currently available, VHB determined that no federally listed or proposed, threatened or endangered species or critical habitats under the jurisdiction of the USFWS are known to occur within the Project site. See USFWS "no known occurrences" letter attached to NEP Application as Appendix E).

**AESTHETICS**

**Q. Did VHB perform a visual impact assessment for the proposed Project?**

**A.** Yes. A copy of the Visual Impact Report ("VIR") regarding the proposed new C203 Tap Line is attached to the NEP Application as Appendix L. The potential visual impact of the Project, as assessed in the VIR, is a function of two important factors: visibility of the proposed Project structures and the visual absorption capacity of the surrounding landscape. Project visibility is a measure of the extent to which the Project may be visible from surrounding areas, the number of potential viewers, the context for the view, and the duration of the view. "Visual absorption capacity" is the capacity of the surrounding landscape to absorb development without negatively impacting scenic quality, which is primarily dependent on vegetation cover, landform, and the presence of other development.

**Q. Please describe generally the findings set forth in the VIR.**

**A.** VHB conducted a viewshed analysis of the area surrounding Project site and created three photomontages of representative viewpoints of the Project site. The viewshed analysis shows that the Project will only be visible from the existing cleared transmission ROW and a limited portion of the I-93 highway. Only the latter viewpoint is accessible by the general public, and only northbound traffic will have a view of the proposed C203 Tap Line. Motorists traveling north on I-93 at the speed limit of 65 mph will have only a seven second view of the new tap line, which will appear in combination with the existing structures within the transmission ROW; moreover, northbound motorists will not have a direct line of sight to the tap line and will have to divert their attention from the road to see it. The photomontage for this location demonstrates that the effect of the tree clearing on the existing tree line will be virtually

unnoticeable to a viewer from I-93, primarily due to the significant viewing distance of approximately 1,300 feet.

The fence line located at the north end of the Littleton Substation, which is inaccessible by the general public, provides the clearest view of the proposed C203 Tap Line. All four (4) proposed structures will be visible and the proposed tree clearing along the west edge of the Project ROW will be evident. Even from this viewpoint, however, the visual impact to the viewer is relatively low, as the proposed C203 tap structures are identical in size and type as the existing adjacent D204 tap line that is already viewable from the same location. The only potential viewers that would normally have access to this location are NEP and PSNH employees.

Finally, a photomontage from the viewpoint of a residential home abutting the Project site demonstrates that abutters to the Project site do not presently have a view of the existing ROW, and will not have a view of the ROW after the completion of the Project. Specifically, the tree clearing to expand the existing ROW will not impact the abutter's view, and none of the new proposed transmission structures will be visible from abutting viewpoints.

**Q. Based upon VIR, will the Project have an unreasonably adverse aesthetic impact?**

**A.** No. The Project site is not accessible by or visible to the general public except for limited views from I-93. Furthermore, the Project will be located in an area already developed as an electrical transmission ROW, minimizing any potential aesthetic impacts to viewers. Thus, the Project would not have an unreasonable adverse effect on regional aesthetics.

## CULTURAL AND HISTORIC RESOURCES

**Q. Will the Project affect any cultural or historical resources?**

**A.** No. NEP conducted a file review at the New Hampshire Division of Historic Resources ("NHDHR") in July 2013 and concluded that there are no known above-ground historical resources within the Project site. NEP also conducted a field review and determined that there is one residential property abutting the Project site that is the location of a home apparently dating to the mid-19$^{th}$ century, though it has not been inventoried or listed in the National or State Registers of Historic Places. A photomontage prepared from the vantage point of this property and included as a part of the Visual Impact Report (submitted as Appendix L to NEP's Application) indicates that there will be no view of the proposed new tap line or the extended transmission ROW following completion of the Project.

The Project site is within an area considered to be sensitive for potential archeological resources. Because the Project involves ground-disturbing activities, NEP commissioned a combined Phase IA-IB sensitivity assessment and intensive archaeological investigation of the Project site. This investigation found no archaeological resources. Based on NEP's findings as presented in a Request for Project Review, NHDHR determined on November 12, 2013 that the Project has no potential to affect historical resources.

**Q. Does this conclude your pre-filed testimony?**

**A.** Yes.

**Peter J. Walker**

Director, Environmental Services

Mr. Walker directs VHB's northern New England Environmental Services. He applies his 20 years of environmental expertise in the analysis of project impacts, in the development and presentation of mitigation measures, and in interactions with federal and state environmental agencies. His professional experience includes the following projects and programs:

**Mr. Walker is the Director of Environmental Services for northern New England. Previously, he was an administrator with the NH Department of Environmental Services Water Division. In that role, Mr. Walker oversaw the technical review of projects affecting streams and rivers throughout the state, including supervising wetlands and shoreland protection permitting and resources staff. Since joining VHB, Mr. Walker has directed and led a number of projects including NEPA Environmental Impact Statements, natural resource and planning investigations, stream and wetland restoration studies.**

**22 years of professional experience**

## Energy and Utilities

**National Grid, C203 230kV Tap, NHSEC Review, Littleton, NH**
Mr. Walker is serving as project manager for National Grid's construction a new 230kv tap to the existing Public Service Company of New Hampshire (PSNH) substation located in Littleton, NH. The project will involve the construction of a tap line approximately 0.4 miles in length from the C203 mainline to the substation. The structures on either side of the tap point along the mainline may require replacement during this project. VHB is responsible for all environmental analysis in support of the project with the exception of EMF modeling and will serve as technical experts during the NH Site Evaluation Committee's review of the project.

**Liberty Energy Utilities, 1L4 New Supply, Lebanon-Enfield, NH**
Current Environmental Project Manager for Liberty Utilities' plan to construct a new 7.3-mile, 15kV electrical distribution secondary supply line, known as the 1L4 line, from Lebanon Substation #1 to the Enfield Substation#7. The project ROW crosses through residential, commercial and rural landscape environments and follows along existing roadways for portions of its total length. A small portion of the project ROW in Lebanon, NH is located adjacent to the Mascoma River, while other portions of the ROW cross over perennial streams, most notably Blodgett Brook and Hardy Hill Brook in Lebanon. Key environmental permitting issues are wetlands and vernal pools, a local wetland protection ordinance that required a variance, invasive species and archaeological sensitive areas.

**Iberdrola Renewables, 48-MW Wind Farm, Groton, NH**
Principal-in-Charge and Project Manager for development of a 48-MW commercial wind farm in central New Hampshire. Overseeing development of site engineering, natural resource studies and environmental permitting. Since the project involves the construction of a renewable energy facility, compliance with RSA 162-H – the state law that regulates energy facility evaluation, siting, construction and operation– will drive the engineering and regulatory process at the state and local levels. Obtaining approval under this regulatory process requires demonstration that the project complies with all of the applicable state and local laws and regulations. This will include the requirements of the Town of Groton Planning Board, Zoning Board of Adjustment and Conservation Commission, the NH Department of Transportation (NHDOT), the NH Department of Environmental Services (NHDES), the NH Fish and Game Department, and the NH Natural Heritage Bureau.

**Iberdrola Renewables, 24-MW Wind Farm, Lempster, NH**
Served as Principal-in-Charge for environmental and engineering work in support of Iberdrola's development of a 24-MW wind farm on Lempster Mountain. Specific tasks included developing a GPS survey work flow to stake roadway centerline and turbine foundation locations, assisting with bridge design necessary to eliminate wetland

impacts from the project, completion of updated ASTM Phase 1 Hazardous Materials Environmental Site Assessments and completion of limited construction site inspections.

**30-MW Biomass Co-Generation Facility, Merrimack, NH**
Conducted environmental due diligence and developed permitting strategy for a 30-MW biomass fired co-generation plant in Merrimack, NH. Key issues involved site engineering, NH Energy Facility Site Evaluation Committee (NHSEC) jurisdiction, wetlands impacts, cooling water supply analysis and compliance with the Comprehensive Shoreland Protection Act.

**Proposed Marine LNG facility, Calais, ME**
Served as Principal-in-Charge and Project Manager for a proposed LNG Terminal and pipeline on Passamaquoddy Bay, Maine. The proposed facility includes development of a 330-acre site to support a marine pier, berthing and unloading facility that will support a proposed maximum normal throughput of 1.0 billion standard cubic feet per day. The LNG terminal will be connected to the existing Maritimes and Northeast interstate pipeline facility at its Baileyville Compressor station via a 24-mile, 36-inch high pressure natural gas pipeline. VHB's work included completion of terrestrial ecological studies including vegetation cover type mapping, freshwater wetlands mapping, vernal pools inventories, significant wildlife habitat surveys, freshwater shoreland bird surveys, and bald eagle surveys. VHB drafted FERC Resource Report 2 and 3 relatively to terrestrial ecological resources, and is providing on-going technical support for the US army Corps of Engineers and the Maine DEP permitting of the project.

**Algonquin Gas Transmission Company, Massachusetts, Connecticut and Rhode Island**
In-line inspection of natural gas pipelines presents special problems to the analysis of environmental impacts. Mr. Walker completed wetland survey of a 20-mile natural gas pipeline corridor, using aerial photograph interpretation. This information was used to secure environmental permits from the Massachusetts Department of Environmental Protection, the Rhode Island Department of Environmental Management, the US Environmental Protection Agency, the US Army Corps of Engineers, and the Town of Blackstone, Massachusetts. Mr. Walker also performed wetland delineations, permitting analysis, and environmental inspection for several pipeline projects in southern New England including a 7.5-mile, 16-inch replacement in Connecticut, the construction of the Canal Lateral in Bourne, Massachusetts and a 36-inch construction project in Berlin, Middleton, and Cromwell, Connecticut.

**National Grid Spicket River #13 Substation, Salem, NH**
Served as VHB's Principal-in-Charge for permitting with the NHDES Wetlands Bureau and USACE. Classified as a Major Project by NHDES, the project consists of upgrades to existing substation and construction of utility duct bank within Prime Wetland buffer and within Protected Shoreland Area.

**National Grid Comerford 230kV Substation/HVDC Converter Terminal Retirement, Monroe to Lisbon, NH**
VHB Principal-in-Charge for permitting with NHDES Wetlands Bureau and USACE. Classified as a Major Project by NHDES, the project consists of retiring an HVDC Converter Terminal Facility and 12-mile Ground Electrode Feeder line and involves temporary wetland impacts.

Continued, p. 3

**Public Sector Utility Project Experience**
As a former official of the NH Department of Environmental Services, Mr. Walker coordinated the Department's review of energy facility projects and provided testimony to the NH EFSEC during their review of several energy projects. For projects not subject to EFSEC review, Mr. Walker supervised review of the projects under the NH Dredge and Fill Act (RSA 482-A). Examples of Mr. Walker's utility project review experience at DES includes:

- PSNH Manufactured Gas Plant Remediation, Keene, NH
- PSNH 115kV Line 326 Reconstruction, Pelham, NH
- PSNH 34.5 kV transmission line 326 construction, Hudson, NH
- PNGTS North pipeline construction - Coos County, NH
- PNGTS/M&N Joint Facilities pipeline - Rockingham County, NH

**Transportation/NEPA**

**Draft and Final EIS, Spaulding Turnpike and Little Bay Bridge, Newington-Dover, NH**
Environmental Task Manager and Chief Editor for the preparation of a Draft and Final EIS for upgrade of a 3.5-mile section of the Spaulding Turnpike extending north from Exit 1 (Gosling Road) in Newington to the Dover Toll Plaza just north of Exit 6. The Spaulding Turnpike in this location spans the confluence of the Little Bay and Great Bay system with the Piscataqua River, one of NH's most sensitive environments. Mr. Walker directed the development of detailed engineering and environmental studies conducted within the framework of the EIS. Key issues include stormwater quality, marine habitat, historic properties, and effects on navigation, in addition to the preservation of adjacent Hilton Park, a popular public recreational resource. Developed a comprehensive mitigation strategy to offset the impact to approximately 20 acres of freshwater and tidal wetlands.

**Draft and Final EIS for Interstate 93 Improvements, Salem to Manchester, NH**
Environmental Task Manager for the preparation of the Draft and Final EIS for approximately 20 miles of the main highway corridor in rapidly growing southern New Hampshire. Major environmental issues included wetlands and aquatic resources, floodplains, noise, and secondary effects. Directed preparation of US Army Corps of Engineers Section 404 permit application, including functional evaluation of wetland resources. Coordinated with the NH Department of Transportation and state and federal resource agencies to develop a strategy to mitigate for 85 acres of wetland impacts.

**NEPA Environmental Re-Evaluation, Nashua, NH**
Environmental Task Manager and Chief Editor of a NEPA Environmental Re-Evaluation of the Broad Street Parkway in Nashua, NH - a new 1.8-mile roadway that would provide a new connection to Nashua's downtown area *via* a second crossing of the Nashua River. After publication of a Final Environmental Impact Statement (FEIS) in 1997, progress on design and construction of the Parkway stalled. The environmental re-evaluation process allowed the City, FHWA and NHDOT officials, and state and federal resources agencies to assess whether a 1997 FEIS and the Record of Decision (ROD) remain valid or whether the changes that have occurred since the FEIS result in significant environmental impacts not previously evaluated which would require

Continued, p. 4

additional study, such as through the development of an Supplemental EIS (SEIS). As a result of the information in the Environmental Re-evaluation, FHWA was able to approve the continuation of the project without publication of additional environmental analysis. The Section 4(f) Evaluation was able to demonstrate that a new route through the Nashua Millyard met the Least Harm test, a significant finding because the same alignment had previously been rejected on grounds of excessive impacts to historic properties.

**Pingree Bridge, Mountain Road over Blackwater River, Salisbury, NH**
Environmental Task Manager for ongoing replacement of a 75' long town-owned steel truss superstructure on stone and concrete abutments under the NHDOT Municipally-Managed Bridge Aid Program. The project includes the design of a new, wider, single span, concrete deck on steel girder superstructure resting on concrete abutments and wingwalls set back from the existing abutments. A temporary bridge will be used during construction to minimize impacts.

**Redington Street Bridge over Ammonoosuc River, Littleton, NH**
Environmental Task Manager for ongoing replacement of a single span, steel, through truss (Pratt-type) of 120' center to center of bearing under the NHDOT Municipally-Managed Bridge Aid Program. The project includes developing an engineering report to investigate a variety of bridge replacement alignments and types to find the best fit for the Town of Littleton. Once the optimal option has been determined, VHB will move to final design which will include environmental permitting and required preparation of plans and specifications.

**Cotton Transfer Bridge Rehabilitation, Nashua, NH**
Directed pre-construction studies, wetlands permitting and NEPA compliance for the rehabilitation of this 19th century historic bridge across the Nashua River. Key issues included prime wetlands impacts, potential fisheries impacts and effects to historical resources. The bridge was listed on the National Register as a contributing element to the Nashua Manufacturing Historic District. Coordinated with NHDOT and the NH Division of Historical Resources under Section 106 of the NHPA, resulting in a finding of No Adverse Effect.

**Baboosic Brook Bridge Replacement, Merrimack, NH**
Served as environmental task manager for the replacement of an existing 1923 single span concrete/steel bridge over Baboosic Brook, including realignment of a small portion of Bedford Road. The environmental resources present within the project area relate primarily to the brook and its associated wetlands, floodplain, and habitat. VHB conducted a historical survey of the bridge and several adjacent homes, eventually finding that the bridge itself was eligible for the National Register of Historic Places. VHB coordinated with the NH State Historic Preservation Office (NH Division of Historical Resources) to make a Determination of Effect and develop a Memorandum Of Understanding that stipulated mitigation for the Adverse Effect of the project on the historic bridge.

**Environmental Assessment of the UNH Marine Science Laboratory, New Castle, NH**
Managed preparation of an Environmental Assessment and a formal consultation under Section 106 of the National Historic Preservation Act for a proposed new marine science

laboratory for UNH. The new lab will house the University's marine science faculty, contain classroom space and an aquaculture facility, and will provide docking for a new research vessel. Due to funding by the NOAA, construction must comply with NEPA. Key issues of analysis include potential impacts to historic resources, water quality, aesthetic impacts, and traffic impacts.

**NH 33 Bridge and Roadway Improvements, NEPA Categorical Exclusion, Portsmouth, NH**
Served as Environmental Task Manager for a NEPA Categorical Exclusion and Section 4(f) Evaluation for upgrades to approximately one mile of Greenland Road (NH 33) including replacement of a historic bridge over B&M Railroad tracks. This project will result in a new bridge with additional travel lanes on the same alignment, roadway improvements for bridge approaches, access for pedestrians and bicyclists, and intersection improvements, including several signals, throughout corridor. Local concerns addressed during the project design included impacts to historical and archaeological resources–adjacent to the project site are historically significant buildings, walks, fences, retaining walls, as well as a noted cemetery with colonial era grave sites. The project also involved unavoidable impacts to a public recreational resource. Section 106 of the National Historic Preservation Act and Section 4(f) of the USDOT Act were critical issues in addition to the typical NEPA process.

**Manchester-Boston Regional Airport, R/W 6-24 Environmental Assessment (EA), NH**
With completion of R/W 17-35, and a tremendous growth in enplanements, MHT was required under FAA Order 5200.8 to implement improvements to Runway 6-24, the crosswind runway at MHT, to conform to runway end safety area standards. VHB recently prepared an Environmental Assessment in accordance with the National Environmental Policy Act (NEPA) because MHT will use FAA funding for any proposed RSA improvements. Wetlands work is an important component of the overall project since important wetlands associated with Cohas Brook are just east of the existing Runway 24, including a state-designated Exemplary Natural Community. Because wetland impacts will likely result from the project, the consultant team coordinated with the NH Department of Environmental Services and US Army Corps of Engineers, the US EPA, US Fish and Wildlife Service, and even the National Marine Fisheries Service at the federal level and the NH Fish and Game Department, the NH Natural Heritage Bureau and the NH Division of Historical Resources at the state level.

**Manchester-Boston Regional Airport, ADF System Design-Build, Manchester, NH**
Directed development of an alternatives analysis and design-build performance specification for operational and structural solutions to manage water quality at the rapidly expanding Manchester Airport. Developed an RFP on behalf of the Airport to solicit design-build proposals to construct the recommended stormwater system. Assisted the Airport in the selection process, including coordination of pre-proposal meetings and correspondence and evaluation of proposals.

**Manchester-Boston Regional Airport, Woodlawn Avenue Pre-demolition Audit**
Oversaw a pre-demolition survey performed on seven buildings scheduled to be demolished as part of the Airport's proposed the new Parking Lot G. The buildings were originally constructed in the 1940's for use by the United States Air Force. The scope of services for this pre-demolition inspection included site reconnaissance and

Continued, p. 6

performing a survey to identify asbestos, surfaces coated with lead-based paint and miscellaneous oil and hazardous materials that will require removal prior to building demolition. VHB developed contract documents to assist the Airport with hiring a qualified contractor to do the abatement and demolition.

**Restoration/Watershed/Environmental Science**

**Great Dam Removal Feasibility and Impact Analysis, Exeter, NH**
Principal-in-Charge and Project Manager for a feasibility study for the removal of the Great Dam in Exeter, New Hampshire. The study will supplement previous and on-going studies by others, providing additional information to facilitate the Town's formulation of and consideration of alternatives. VHB is the lead consultant for this scope of work with overall responsibility for the study including geomorphic analysis, hydrological and hydraulic analysis, water supply, fish passage, dam and structural engineering, recreation and impacts to natural resources. This project is funded through NOAA, USEPA, USFWS and NHDES.

**Suncook River Avulsion Geomorphic Analysis, Epsom, NH**
Retained by the Town of Epsom and the NH Department of Environmental Services (NHDES) to provide analysis of the major avulsion event on the Suncook River. During the May 2006 floods, the Suncook River changed course. The new channel cut through a gravel pit and adjacent wetlands, bringing 150,000 cubic yards of sediment into the river. The VHB team: Completed fluvial geomorphological surveys to characterize the watershed and the current and former river channels; Developed an analysis of options for the future including leaving the river in its current location or restoring the river to its former channel; Developed conceptual designs for those alternatives using a natural channel design approach; and Communicated the study findings to the public in a way that facilitated the decision making process. The study was completed under a very aggressive schedule, given the urgency of the situation. Ultimately, the analysis was well received by the public, and led to the decision to leave the river in its new valley, although with substantial measures designed to stabilize the river and minimize property damage.

**Homestead Dam Feasibility Study & Final Design, Ashuelot River, West Swanzey, NH**
On behalf of a state and federal interagency task force, directed analysis of options for restoration of the Ashuelot River through removal or modification of the Homestead Woolen Mills Dam. Oversaw a full scope of environmental studies including survey, hydraulic and sediment modeling, hydrogeological studies, historical investigations, and habitat assessment. The project resulted in a decision-making document to help determine the fate of the Homestead Dam and the restoration of anadromous fish to the Ashuelot River basin. The project also involved a significant public coordination effort through the direction of public information meetings and coordination with a project advisory group.

**Merrimack River Watershed Wetland Restoration Master Plan, Northfield to Pelham, NH**
Working on behalf of the NH Department of Environmental Services (NHDES) to manage the development of a GIS model to identify and rank wetland and riparian restoration in New Hampshire's largest and most populous watershed. The plan will

Continued, p. 7

help the NHDES and the state's newly-created Aquatic Resource Mitigation Fund board of directors in their mission to cost-effectively restore and protect the state's natural resources. More than 15,800 contiguous wetland systems, excluding lacustrine environments, are located within the Merrimack River Watershed, comprising approximately 65,000 acres. The GIS-based study developed a method of identifying which of these wetlands has characteristics which make them a good candidate for restoration. A second component of the model developed a functional evaluation based on the *NH Method for Comparative Evaluation of Non-tidal Wetlands,* as well as other factors, to rank the candidate sites. From the study set, 30 sites were studied in the field, with conceptual restoration plans developed for each.

**Upper Merrimack River Management Plan Update, Northfield to Bow, NH**
Served as Principal-in-Charge for the development of an update to the River Management Plan for the Upper Merrimack River, which begins at the confluence of the Pemigewasset and Winnipesaukee Rivers and flows for approximately 30 miles through the communities of Franklin, Northfield, Boscawen, Canterbury, and Concord, to Garvins Falls in the town of Bow. This segment of the river was among the first designated for protection under the authority of the NH Rivers Management and Protection Act (RSA 483) in 1990. A Management Plan (required by RSA 483) was developed and adopted by the Upper Merrimack River Local Advisory Committee ("UMRLAC"). The existing management plan dates to 1994 and, in the opinion of the UMRLAC, enough changes have occurred in the last decade that the plan needs a complete rewrite. Under contract with the NH Department of Environmental Services Rivers Management and Protection Program ("NHDES RMPP") to update the Upper Merrimack River Management and Implementation Plan on behalf of the UMRLAC. VHB was contracted by the Central NH Regional Planning Commission to integrate existing materials into a new Management Plan for the Upper Merrimack River and to facilitate public involvement in the update process. The project will be a collaboration between the consultant, the CNHRPC and the UMRLAC members who, although volunteers, are dedicated to completion of the project and will assist VHB and the CNHRPC in meeting the project goals and timeline.

**Prime Wetlands Studies, Goffstown, Bedford, Chichester, and Hudson, NH**
Directed analysis of wetland systems in this community following the NH Comparative Methodology. Oversaw development of GIS-based analysis, including innovative aerial photography data acquisition on custom developed ArcPad application with integrated GPS. Analysis and mapping formed the basis for community designation of prime wetland systems and revisions to local ordinances, voted on by the communities of Goffstown and Bedford, at town meetings in March 2005 and 2006.

**Railway Brook Restoration Master Plan, Newington, NH**
Currently managing the development of a conceptual design study for the restoration of Railway Brook, a highly impacted urban stream in the Great Bay coastal watershed. The stream was severely altered, straightened and diverted during development of the former Pease AFB in Newington, NH in the 1950s. Historic aerial photographs and USGS maps show that the stream once discharged to the tidal portion of the Piscataqua River, but it was diverted into Little Bay. Mr. Walker oversaw the biological assessment of the brook, which found poor water quality and habitat and aquatic life that lacks diversity. He also oversaw the development of a geomorphological assessment that

Continued, p. 8

determined that large parts of the former channel and its floodplain and riparian wetlands are still intact. VHB has developed a conceptual plan for restoration of a 3,100 linear ft reach of the stream that would create a C5 Stream Type (Rosgen, 1996). Restoration of stream morphology including incorporation of a variety of natural rock/boulder structures, adjacent wetlands and improved water quality thereby enhancing habitat for aquatic life and diadromous fi sh; Permanent protection of the riparian corridor through a conservation easement for the 3,400 foot length of the restored brook.

**Stubbs Pond Restoration, Great Bay National Wildlife Refuge, Newington, NH**
Directing the assessment of management and restoration opportunities in Stubbs Pond, and the impoundment of Peverly Brook in Newington, NH. The site was once one of the largest salt marshes on the Great Bay in coastal New Hampshire, but was dammed by the US Air Force to serve recreational needs during development of Pease Air Force Base. With closure of the base, the area was turned over to the US Fish and Wildlife Service for management as a national wildlife refuge. In Phase 1 of the project, directed a sediment analysis program to determine whether contamination from the adjacent former base exists within Stubbs Pond. Sediment cores were collected by use of boat-mounted vibratory drilling apparatus, and sub-samples by depth were taken and analyzed for a variety of contaminants of concern. Phase 2, currently in scoping, will involve a detailed biological survey of the Pond, along with topographic and bathymetric mapping of the Pond and its vicinity. This information will be used to determine if restoration to a salt marsh environment is likely to be successful and, if so, what the ecological consequences of this management decision would be.

**Browns River Restoration, Seabrook, NH**
Directing restoration designs of the Browns River, under contract to the NH Coastal Program. The 42-acre Browns River marsh is one of the largest remaining tidal restriction projects in coastal New Hampshire. The marsh is located adjacent to Seabrook Nuclear Power Station and the restriction to the marsh is an undersized culvert under the old Boston and Maine Railroad embankment, now owned by the state. Directed the preparation of environmental and topographic surveys and engineering plans to remove the tidal restriction. Additionally, developed a soil sampling analysis and human health risk assessment to ensure the proper characterization and handling of potentially contaminated sediments at the construction site. Construction is expected in the summer of 2005.

**Black Brook Restoration, Gilford, NH**
Developed stream restoration plans to daylight approximately Black Brook, a perennial stream in Gilford, NH. The mitigation design created a riparian wetland adjacent to the new stream channel. Oversaw design of the stream channel and wetlands, as well as grading, bank stabilization, and planting plans.

**Wetlands Evaluation, Chittenden County Regional Planning Commission, Burlington, VT**
Through a research project funded by the Chittenden County Regional Planning Commission, assisted in the detailed evaluation of wetlands in a five town region of greater Burlington, VT. This study used the *Comparative Method for the Evaluation of Freshwater Wetlands in New Hampshire* to provide scientific information to municipal managers. Conducted field work, data analysis, and technical reporting in support of

Continued, p. 9

this effort.

**Town of Londonderry, NH, EPA Superfund Site Wetlands Analysis and Mitigation**
Designed plans to mitigate wetlands impacted by remedial activity at this site. Assisted in the functional evaluation of all on-site wetlands, and used this information to prepare a conceptual wetland mitigation design. Prepared grading and planting plans to create over five acres of wetlands to mitigate project related impacts, which is now constructed and functioning.

**Endangered Species and Water Quality at Missisquoi Bay Bridge, Swanton-Alburg, VT**
Directed pre-construction studies of endangered turtle species and water quality conditions, including intensive field study of turtles using radiotelemetry, associated with construction of a 3,600 linear feet multi-span bridge.

**NHDES Wetlands Bureau, Environmental Land Resources Technical Assistance**
Principal-in-Charge for a recently awarded contract with the NH Department of Environmental Services to provide technical and management support for the review and processing of wetland dredge and fill applications. Work includes determination of application completeness, assessing impacts of the proposed construction activities, coordination with others within the NHDES and its sister agencies as well as the public, identification of permit conditions and other findings appropriate to each site or project, and assistance with drafting of permit decisions. The work will be performed in accordance with RSA 482-A and Wetland Rules (Env-Wt 100-800) in support of the agency's review and action on wetlands permit applications.

**Cains Brook Salt Marsh Restoration, Seabrook, NH**
VHB is designing the restoration of approximately 35 acres of salt marsh in Seabrook, New Hampshire. During the initial baseline work, the extent of the invasive plant *Phragmites australis* (common reed) (which is the primary species of concern to be controlled by mechanical means, hand removal, herbicide treatment and reestablishment of tidal flowage) was mapped in numerous discreet stands on the marsh. Other less numerous invasive plant species, *Lythrum salicaria* (purple loosestrife) and *Typha angustifolia* (narrow-leaved cattail) were also noted on the marsh and are proposed to be controlled by herbicide application during the course of the project. Monitoring wells (84 in total) were installed in series on 14 transects (including 2 control transects). Nested vegetation plots were established randomly at monitoring stations located on each transect. Using these ecological data, VHB developed a set of final design plans for the restoration project including Grading and Planting Plans, Staging and Construction Sequence, Erosion and Sediment Control, and Identification of Impact Areas.

## Previous Experience

**NH Department of Environmental Services Wetlands Bureau**
During his previous tenure at the NH Department of Environmental Services, Mr. Walker managed the Department's Wetlands and Shorelands Permitting and Resource sections, including supervision of a staff of twenty. Reviewed permit recommendations made by technical staff to ensure consistency, accuracy, and appropriate analysis of potential impacts to the natural environment. Supervised the Bureau's public outreach

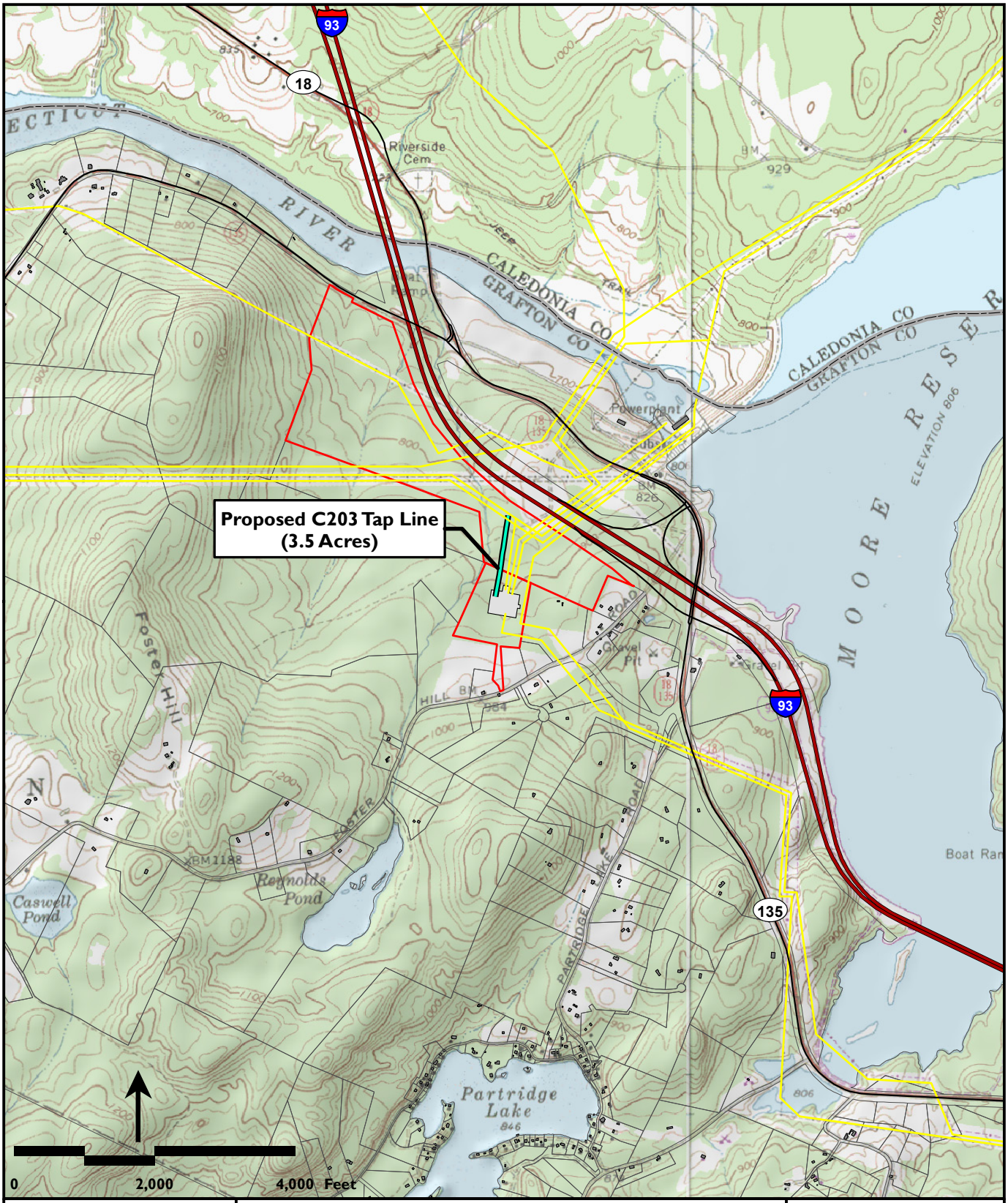
Continued, p. 10

program to educate citizens about wetlands. Coordinated wetland policy and rulemaking with other departmental personnel, state and federal resource agencies, and with the NH state legislature. Interpreted state law and administrative rules relating to wetlands and shorelands. Represented the Bureau before the NH Wetlands Council and in Superior Court on appealed decisions. Coordinated Department review of energy facility projects. Participated in a regional EPA working group to develop biological assessment methods applicable to wetland ecosystems. Also participated in state and regional interagency working groups focused on stream restoration in the Northeast.

| | |
|---|---|
| **Education** | MS, Biology, University of Vermont |
| | BA, Biology and Environmental Studies, Williams College |
| **Affiliations/ Memberships** | NH Association of Natural Resource Scientists, Board of Directors |
| | Corporate Wetlands Restoration Partnership, Board of Directors |
| | Society of Wetland Scientists |
| | Society of Ecological Restoration |
| | Soil and Water Conservation Society |

# Figures


- **Figure 1** ..... **USGS Site Location Map**
- **Figure 2** ..... **Project Vicinity Map**
- **Figure 3** ..... **Conceptual Project Layout**
- **Figure 4** ..... **Alternative Tap Line Routes**
- **Figure 5** ..... **Ranked Habitat Areas**




Legend

- Existing Transmission Line
- Proposed C203 Tap Line
- Project Parcels
- Assessor's Tax Parcels
- Littleton Substation

**NEW C203 230KV TAP LINE**

**Figure 1 - USGS Site Location Map**
**Foster Hill Road**
**Littleton, New Hampshire**

nationalgrid

VHB
Vanasse Hangen Brustlin, Inc.

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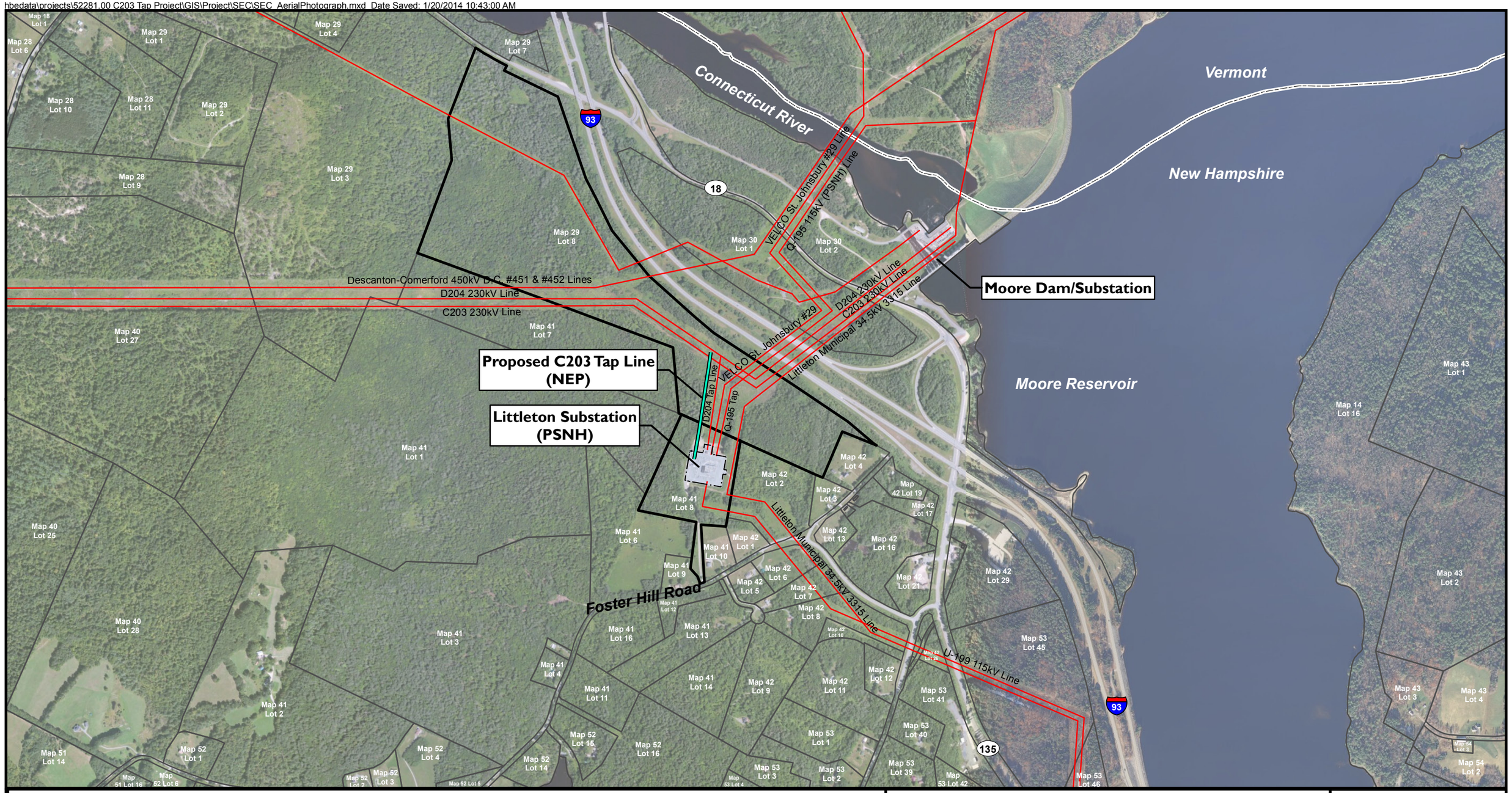


Project Parcels
Proposed C203 Tap Line
Littleton Substation Existing Fence Line
Existing Transmission Line
Assessor's Tax Parcels

Source:
NGRID T-SHEETS
VHB

0 1,000 2,000 Feet

## C203 New 230 kV Tap Line

Figure 2 - Project Vicinity Map
Foster Hill Road
Littleton, New Hampshire

nationalgrid

VHB
Vanasse Hangen Brustlin, Inc.

*THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE*

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Channel Not Mapped

N/F NEW HAMPSHIRE STATE OF
Map 41 Lot 1

N/F TRANSCANADA HYDRO
NORTHEAST INC
Map 41 Lot 7

Channel Not Mapped

Unnamed
Intermittent Stream

Unnamed
Perrenial Stream

N/F PUBLIC SERVICE CO OF N.H.
Map 41 Lot 8

Proposed ROW Limit

N/F TRANSCANADA
HYDRO NORTHEAST INC
Map 29 Lot 8

C203 Line

D204 Line

N/F BEAVERS, ANTHONY
Map 41 Lot 6

bus

4

3

2

1

Littleton
Substation

D204 Tap Line

Existing ROW Limit

VELCO St. Johnsbury #29 Line

PSNH Q195 Tap

34.5kV Littleton Municipal Line

N/F WILKENS,
WILLIAM & MAJORIE
Map 41 Lot 10

FOSTER HILL RD

N/F WINN, GREGORY H.
Map 42 Lot 1

I-93 Southbound

I-93 Northbound

93

93

D20

- Proposed C203 Tap Structure
- Existing Structure
- Proposed C203 Tap Line
- Existing Transmission Line
- Existing Easement Line
- Proposed ROW/Edge of Tree Clearing
- Existing Fence Line
- Proposed BUS
- Property Line
- Abutter Property Line
- Delineated Wetland Edge
- Wetland Resource Area
- Ditch
- Stream
- Stream Channel Not Mapped
- Existing Access Road
- Proposed Construction Work Platform (100'x100')
- Proposed Temporary Swamp Mat
- Proposed Erosion Control Barrier
- Stone Apron

Source:
NGRID T-SHEETS,
Existing Survey,VHB

0 200 400 Feet

**NEW C203 230 kV Tap Line**

Figure 3 - Conceptual Project Layout
Foster Hill Road
Littleton, New Hampshire

nationalgrid

VHB
Vanasse Hangen Brustlin, Inc.

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N/F NEW HAMPSHIRE STATE OF
Map 41 Lot 1

N/F TRANSCANADA HYDRO
NORTHEAST INC
Map 41 Lot 7

N/F PUBLIC SERVICE CO OF N.H.
Map 41 Lot 8

N/F TRANSCANADA
HYDRO NORTHEAST INC
Map 29 Lot 8

N/F BEAVERS, ANTHONY
Map 41 Lot 6

Western Alternative
(Preferred Route)

Littleton
Substation

C203 Line

D204 Line

D 204 Tap Line

VELCO St. Johnsburry #29 Line

PSNH Q195 Tap

Littleton Municipal Line

Eastern Alternative

N/F WILKENS,
WILLIAM & MAJORIE
Map 41 Lot 10

FOSTER HILL RD

N/F WINN, GREGORY H.
Map 42 Lot 1

I-93 Southbound

I-93 Northbound

93

Existing Structure
Existing Transmission Line
Existing Fence Line
bus
Property Line
Abutter Property Line
C203 Tap Line Alternative Routes

Source:
NGRID T-SHEETS
Existing Survey, VHB

0 200 400 Feet

**C203 New 230 kV Tap Line**

Figure 4 - Alternative Tap Line Routes
Foster Hill Road
Littleton, New Hampshire

nationalgrid

VHB
Vanasse Hangen Brustlin, Inc.

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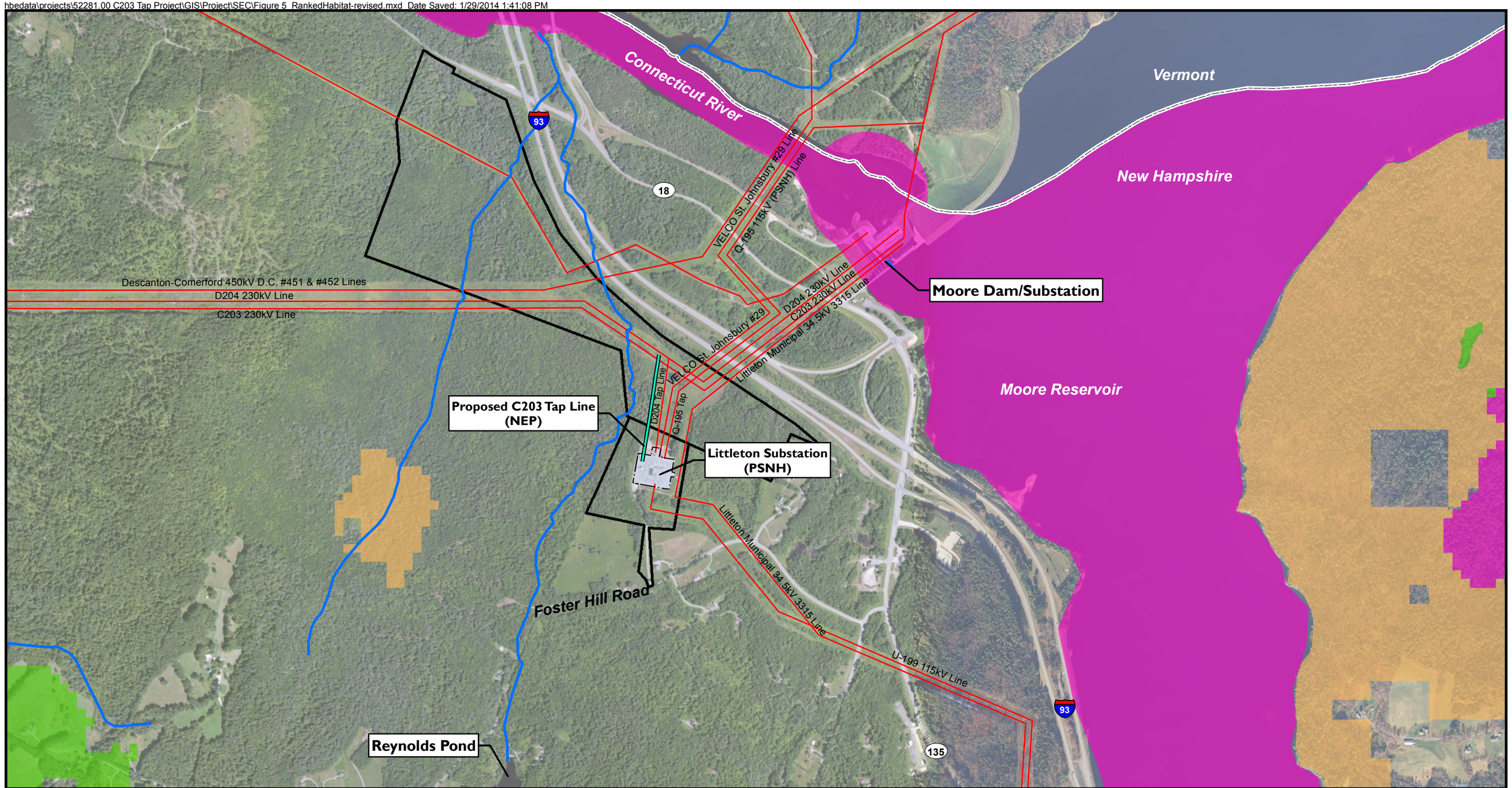


Project Parcels
Proposed C203 Tap Line
Littleton Substation Existing Fence Line
Existing Transmission Line
River/Stream (USGS)

New Hampshire Fish & Game Ranked Habitat Areas
Highest Ranked Habitat in NH
Highest Ranked Habitat in Biological Region
Supporting Landscapes

Source:
NGRID T-SHEETS
VHB

0 1,000 2,000 Feet

# C203 New 230 kV Tap Line

Figure 5 - Ranked Habitat Areas
Foster Hill Road
Littleton, New Hampshire

nationalgrid

VHB
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