Memorandum

To: C.A. Denison Lumber Company / Halifax Quarry Project File

Date: August 14, 2015

Project #: 57595.00

From: Tyler Gingras, PE
Adam Crary, PWS, PWD

Re: Halifax Quarry – Response to Halifax Zoning Board of Adjustment: Additional Questions

---

On behalf of C.A. Denison Lumber Company, VHB is providing the following comment responses or information requested by the Town of Halifax Zoning Board of Adjustment ("ZBA") in the summer of 2015, in association with a proposed project to develop a dimensional stone quarry on land owned by the C.A. Denison Lumber Company in Halifax, Vermont (the "Project"). The following is a list of applicable information requests as paraphrased from ZBA, with VHB responses immediately following each request.

ZBA Question A: Please identify all VHB site visits by date, time, and parties in attendance (inclusive of ANY staff). Please also provide the methods used to assess flora, fauna, and general resources, as well as the findings made by VHB staff on these visits.

VHB Response: Numerous visits to the site have been made by both VHB and ANR staff. The following table identifies the site visits that have occurred to date.

Please note that this list of site visits was generated based on a cursory review of VHB's records, and may not be exhaustive.

Date	Entity	Personnel	Purpose of Site Visit
11/13/2012	VHB	Burt	Initial natural resources inventory
11/14/2012	VHB	Burt, Scott, Sibley	Initial natural resources inventory
6/6/2013	VHB	Gingras	Engineering review of site layout
6/18/2013	VHB	Burt, Martin, Sibley	Additional natural resources inventory
9/13/2013	ANR/VHB	Mojo, Chalmers, Will (ANR); Crary, Gingras (VHB)	Review natural resources and the Project
10/17/2013	VHB	Crary, Burt, Larson	Wetland delineation revisions
11/15/2013	ANR/VHB	Menees (ANR); Wildey (VHB)	Stream crossing review
12/6/2013	ANR	Chalmers	Review VHB's wetland delineation revisions
1/7/2014	ANR/VHB	Hammond (ANR); Burt (VHB)	Review necessary wildlife habitat and the Project
August 2014	ANR	Hammond	Review necessary wildlife habitat and the Project

40 IDX Drive, Building 100
Suite 200
South Burlington, VT 05403

Memorandum

VHB's natural resources assessments, including those required for documenting and assessing floral and faunal resources, follows standard or required federal or state methods, guidelines, and/or precedence as determined by both state (Vermont) and federal resource management or regulatory programs. VHB's methods are documented in general in the technical memorandum entitled Natural Resources Assessments, dated 12/30/13- this memo is attached as attachment 1, for reference. VHB has followed the same protocols on this project that VHB has used on similar investigations for permitted projects.

VHB's findings related to natural resources documentation and Project assessment that are not set forth in the Natural Resources Assessment technical memorandum are documented in whole, or pertinent part, in the documents included in Attachments 2 and 3. These documents were prepared by VHB in large part subsequent to resource or project review and comment by the Vermont Agency of Natural Resources staff, and could in general be considered supplement to the Natural Resources Assessment.

ZBA Question B: Considering the potential changes in the pH of site runoff (caused by runoff flowing across the proposed quarry site), does this project have a pH management plan?

VHB Response: As part of the approved NPDES Multi-Sector General Permit (MSGP) for stormwater discharges associated with industrial activity, section 3.5 in the Stormwater Pollution Prevention Plan (SWPPP) states that pH in the waters receiving flow from the proposed site is to be maintained between 6.5 and 8.5. This allowable range of stream pH values is consistent with the allowable range of pH levels stated in Standard 3-01 B.9 within the Vermont Water Quality Standards to "ensure full support of the aquatic biota, wildlife, and aquatic wildlife uses."

No pH monitoring plan is proposed or has been required for this site. According to VHB staff familiar with testing the pH of receiving waters downstream of quarries, abnormal pH is not a common concern for quarries in this region (the staff member consulted was unable to recall a sample that depicted abnormal pH).

Attachments

1. 12-30-2013 Natural Resources Assessment Memo
2. 12-4-2013 Revised Natural Resources Map, Wetlands and Streams Delineation Summary, and Wetland Data Sheets
3. 1-16-2015 Deer Wintering / Softwood Cover Management Map

ATTACHMENT

Transportation
Land Development
Environmental
Energy
Services

Vanasse Hangen Brustlin, Inc.

7056 US Route 7
Post Office Box 120
North Ferrisburgh, Vermont 05473
802.497.6100
Fax 802.425.7799

Memorandum

To: Halifax Quarry Project File

Date: December 30, 2013

Project No.: 57595.00

From: Joseph L. Burt, Wildlife Biologist
Adam R. Crary, PWS, PWD

Re: Natural Resource Assessments

INTRODUCTION

At the request of C. A. Denison Lumber Co., Inc. ("Client"), Vanasse Hangen Brustlin, Inc. ("VHB") conducted a natural resource investigation on an approximate 50-acre study area in support of a planned quarry site ("Project") on a portion the Client's property located west of Josh Road in Halifax, Vermont. This technical memorandum describes the study area characteristics, assessment methodologies, and applicable resource determinations for the study area.

The natural resources assessment study for the Project included both database review and a field study, and was designed to include an evaluation of the following Act 250 criteria:

- Streams (§ 6086(a)(1)(E))
- Wetlands (§ 6086(a)(1)(G))
- Rare or Irreplaceable Natural Areas ("RINA")(§ 6086(a)(8)), and Necessary Wildlife Habitat and Endangered Species (§ 6086 (a)(8)(A)).

A description of the site conditions is presented below. A description of the individual methodologies for each resource assessment and the findings are presented in the section following the site description. Included in the Attachment are Natural Resources Map (page 1); Summary of Delineated Streams (page 2); Summary of Delineated Wetlands (pages 3 and 4); Representative Site Photographs (pages 5 through 14); U.S Army Corps of Engineers ("USACE") Wetland Determination Forms (pages 15 through 47); Vermont Wetland Rules ("VWR") Wetland Evaluation Forms (Pages 48 through 80); Potential Rare, Threatened, and Endangered Species and Significant Natural Communities in the Project Region and Onsite Habitats Summary (page 81); USFWS Natural Resources of Concern (pages 82 through 84); Vegetation Communities and Plant Assemblages- Partial Species Checklist (page 85).

SITE DESCRIPTION

The approximately 50-acre study area is located within the Southern Vermont Piedmont biophysical region of Vermont, within the Deerfield River sub-basin (HUC 8- 01080203). The study area encompasses a larger land area than what the proposed project would involve, in order to capture wetland resources or buffers proximal to the project activity for classification or potential impact evaluation. In general, the study area is moderately sloping with exposed bedrock faces. Elevations across the site range from approximately 1,200 to 1,500 feet above-sea-level. It follows an existing maintained logging road to an existing landing. The study area extends off the existing road along a forested portion where a proposed spur road connects to the proposed quarry location. The proposed quarry location has an existing logging road within and has exposed bedrock in places. The maintained woods road carries logging trucks to the existing landing, has parallel ditching as well as HDPE culverts draining ditches and streams under the road. Forests within the study area are uneven aged and actively managed for timber harvesting. Forest community types observed includes Northern Hardwood Forest, Hemlock Forest, and Hemlock-Northern Hardwood Forest. According to the Natural Resources Conservation Service ("NRCS"), the dominant soil types within the quarry study area are Marlow fine sandy loam (8 to 25 percent slopes) and Berkshire-Tunbridge (15 to 25 percent slopes), which are not considered hydric by the NRCS.

ASSESSMENT METHODOLOGIES, FINDINGS, AND CONCLUSIONS

General methodologies for assessing natural resources as they relate to the Act 250 natural resource criteria reviewed are outlined below. Findings and conclusions follow the methodologies for each resource. The December 13, 2013 Site Plan was used to calculate potential impacts to resources.

STREAMS (§ 6086(a)(1)(E))
This Act 250 criterion requires that projects will, when feasible, maintain natural stream channel condition, and will not endanger the health, safety, or welfare of the public or adjoining landowners (10 V.S.A. § 6086(a)(1)(E)).

VHB Environmental Scientists conducted field work in the study area on November 14, 2012 and June 18, 2013 to delineate and characterize any on-site stream channels. When applicable, flagging tape delineating stream characteristics including Top of Bank ("TOB") and Top of Slope ("TOS") were placed in the field pursuant to the Agency of Natural Resources ("ANR") ANR Riparian Buffer Guidance (ANR 2005). Stream ordinary high water ("OHW") width, if applicable, is recorded using methods detailed in the "Regulatory Guidance Letter: Subject – Ordinary High Water Identification" (USACE 2005). Flow regimes are preliminarily classified as ephemeral, intermittent, or perennial and are determined based on qualitative observations of instream hydrology indicators and geomorphic characteristics that were present at the time of observation, and are subject to professional judgment.

VHB determined the size of stream watersheds through review of the Vermont Department of Environmental Conservation ("VT DEC") Stream Watershed Sizes Maps (VT DEC 2011). The

watershed size can be used to determine jurisdictional determinations under the Vermont ANR Stream Alteration Regulatory Program.

Riparian buffers adjacent to streams and rivers, consistent with the ANR Buffer Guidance (ANR 2005) have been designated for perennial and intermittent streams within the study areas. 50-foot buffers from the field mapped stream center (for narrow channels) or top of bank/top of slope is used (see the Natural Resources Map on page 1 of the Attachment).

VHB identified 15 stream segments within the study area (see the Summary of Delineated Streams on page 2 of the Attachment, and Representative Natural Resource Photographs on pages 5 through 14 of the Attachment).

Stream 2013-TB-CM-2 is a mapped VHD stream (Unnamed Tributary to the Green River) and was delineated on the northeastern boundary. This stream segment is outside of the Study Area but the 50 foot buffer would still be within the Study Area. Stream, 2012-SC-JB-1, is perennial, and has an average OHW of approximately three feet, is predominately a step pool complex stream, with well defined- two foot average banks, and fish species were observed. The other stream segments mapped within the Study Area are ephemeral and intermittent drainages to these two larger stream channels (2013-TB-CM-2 and 2012-SC-JB-1). See Representative Photographs of Natural Resource features on pages 5 through 14 of the Attachment.

VT DEC has field reviewed the stream delineations and determinations. Additionally, a Vermont Department of Fish and Wildlife ("VTFW") fisheries biologist field reviewed the project in the fall 2013.

The proposed project access road will require crossings or activities in one intermittent, three ephemeral, and one perennial stream channel segments. The area of unavoidable impacts for the proposed access road are quite small and the proposed crossings have been designed in a manner that maintains natural flow and condition to the extent possible. The quantified impact areas consist of 191 square feet (127 linear feet) of the intermittent segment, 151 square feet (103 linear feet) of the ephemeral segments, and 373 square feet (124 linear feet) of the perennial stream channel. One ephemeral stream will be permanently or secondarily impacted by the quarry access road and grading for the stormwater management system. Permanent impacts to this stream will be 407 square feet (271 linear feet) and secondary impacts from channel disconnection below the disturbance will be 80 square feet (53 linear feet). The project has been designed to avoid and minimize work within the designed riparian buffers, but some buffer impacts are unavoidable from the proposed access road and access road stormwater treatment, representing 0.67 acres, including0.23 acres of perennial stream buffer.

Impacts to the perennial stream will require a Stream Alteration Permit ("SAP") from VT DEC, which the Client has applied for on December 17, 2013. The proposed access road stream impacts should be exempt from Clean Water Act Section 404 jurisdiction, as the project will be designed to follow Best Management Practices ("BMPs") for stream crossings pursuant to the requirements of 40 CFR 233.22(i)

allowing the access road to be exempt from Section 404 requirements. Stream impacts will be minimized by following the BMPs outlined in the December 13, 2013 Site Plan including EPSC measures designed in accordance with the *Vermont Standards and Specifications for Erosion Prevention and Sediment Control* (2006), as well as BMPs within the SAP. The road has been designed to avoid stream impacts to the extent possible and the quarry operation will not impact any streams. Therefore, through project design avoidance, minimization, and incorporation of BMPs, and relevant permitting review, the project will maintain natural stream channel condition, and will not endanger the health, safety, or welfare of the public or adjoining landowners.

WETLANDS (§ 6086(a)(1)(G))

The wetlands criterion under Act 250, requires that the proposed project comply with the VWR (NRB 2010). The VWR regulate significant wetlands (Class I and Class II wetlands) and their buffers. The USACE regulates the placement of fill and resulting cumulative impacts to federally jurisdictional wetlands (regardless of Vermont wetland classification) and waters for single and complete projects under the USACE Section 404 permit program, as well as the related VT DEC Section 401 Water Quality Certification review process.

Delineations are made pursuant to the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region Routine Determination Method* (USACE 2012). Wetlands are identified in the field with pink flagging. Field notes are taken to record information such as proposed wetland classifications, general characteristics, potential functions and values of the wetland, any unique qualities observed during the study area assessment, along with other considerations relevant to support study area findings. Wetlands are classified in accordance with the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al. 1979). Wetland functions and values are evaluated based on the field notes and observations according to functional evaluation from the VWR (VT NRB 2010). Wetland features are located in the field using a Trimble® GPS unit capable of sub-meter accuracy and post-processed using Trimble® Pathfinder software.

When applicable, summary spreadsheets or narrative text are prepared to detail wetland characteristic relative to the criteria for classifying significant wetlands under the VWRs, as well as VHB's proposed wetland classifications under the VWRs. USACE Wetland Determination Data Forms (see pages 15 through 47 in the Attachment) are completed for on-site wetlands in which data are collected along the wetland and upland boundary. Wetland Function and Value Evaluation Forms are also completed (see pages 48 through 80 of the Attachment).

VHB Environmental Scientists conducted wetland assessments on November 14, 2012, June 19 and October, 2013. Based on the results of VHB's field delineation, there are 15 features that would meet either the USACE and/or the ANR's jurisdictional criteria for wetlands within the study area (see the Delineated Wetlands Summary Table in the Attachment, pages 3 and 4). Three VHB delineated wetlands, 2012-RS-2, 2013-CM-2, and 2013-AC-8 would be considered Class II wetlands. (See the Natural Resources Map on page 1 of the Attachment). The Class II wetlands are part of a mapped VSWI complex. This complex provides functions Water Storage for Flood Water and Storm Runoff (5.1), Surface and Ground Water Protection (5.2), Wildlife Habitat (5.4), and Erosion Control through

Binding and Stabilizing the Soil (5.10) at a significant level. It is a palustrine emergent and scrub shrub wetland complex, partially within a forested setting, and has dominant vegetation of sensitive fern (*Onoclea sensibilis*), speckled alder (*Alnus incana*), and eastern hemlock (*Tsuga canadensis*). This wetland meets presumptions of size (a) and stream stabilization (b); for Representative Natural Resources Photographs of delineated wetlands see pages 5 through 14 of the Attachment.

Wetland 2012-RS-1 drains to three ephemeral channels (2012-SC-RS-1, 2012-SC-JB-4, and 2012-SC-NS-1). It is not contiguous with a mapped VSWI wetland and provides VWR function 5.1, at an insignificant level, and therefore, should be considered a Class III wetland. VT DEC has field reviewed the project, wetland delineations, and proposed wetland classification.

The project has been designed to avoid and minimize impacts to wetlands, significant or otherwise, including the siting of the quarry site and decreasing the footprint to avoid Class III wetlands. However, the proposed access road will result in unavoidable minor impacts to two Class III wetlands. Permanent impacts to these wetlands from road construction will total 1,305 square feet. The proposed access road wetland impacts should be exempt from Clean Water Act Section 404 jurisdiction, as the project will be designed to follow BMPs for wetland crossings pursuant to the requirements of 40 CFR 233.22(i) allowing the access road to be exempt from Section 404 requirements. Impacts will be minimized by following the BMPs outlined in the December 13, 2013 Site Plan, including the use of iron seep controls. As such, the project will not impact any Class II wetlands and not be required to obtain a Vermont Wetlands Permit and therefore comply with the VWRs. The project also minimizes impacts to Class III wetlands.

RARE OR IRREPLACEABLE NATURAL AREAS (RINA) (§ 6086(a)(8)), AND NECESSARY WILDLIFE HABITAT AND ENDANGERED SPECIES (§6086(a)(8)(A))

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

RARE AND IRREPLACEABLE NATURAL AREAS

The Vermont Wildlife Diversity Program ("WDP") can recommend that significant natural communities be deemed RINA as part of the four-part test required by Criterion 8[1]. Determinations of "Significance" are ultimately made by the WDP after utilizing a combination of community ranking, current condition (age, degree of disturbance), and landscape context (size, degree of fragmentation) in order to determine an "Element (or Community) Occurrence Ranking". Rare (S1 and S2) natural communities can be considered significant when quality-ranked A, B, or C. Uncommon (S3) and common (S4) types require a quality rank of A or B to be considered significant. Very common (S5)

[1] Act 250 Section 8 requires that a project be shown to have no undue adverse effect on RINAs (10 V.S.A. § 6086(a)(8)). While the statute does not define a RINA, the Act 250 natural resources board has developed a four-part test to determine whether a project satisfies Criterion 8 with respect to RINAs. First, it must determine whether the project is located in a natural area. Second, it determines whether the natural area is rare and irreplaceable. Third, it determines whether the project will have an adverse effect on the RINA. Fourth, it determines whether the adverse effect, if any, would be undue.

types require an A-rank (ANR 2004). Under review, upon determining that a community is Significant, the WDP can therefore consider recommending RINA designation for a particular community type. The WDP can recommend that significant natural communities be considered RINA under Criterion 8, based on the combination of the natural community rarity and quality ranking. The presence of rare, threatened, or endangered ("RTE") species and these communities may be used by the WDP to make RINA recommendations.

With respect to the Project site, VHB field staff reviewed the on-site natural community or vegetative assemblage types. *Wetland, Woodland, Wildland: A guide to the natural communities of Vermont* (Thompson and Sorenson 2005) was used to define what constitutes a natural community as well as characterize the natural communities within the study area. Information gathered in the field was used to compile a list of onsite natural community or vegetative assemblage types. This methodology is used to characterize on-site community type and condition as well as identify any natural communities the WDP could consider RINA during Act 250 review. The results are also used to define habitat characteristics and reference them against known on-site habitat.

From this review, VHB identified three natural communities present within the study area, Hemlock Forest (S4, common), Hemlock-Northern Hardwood Forest (S4), and Northern Hardwood Forest (S5-common and widespread). Natural community mapping is shown in the Natural Resources Map (Attachment, Page 1). VHB proposes that the natural communities within the study area would not be considered a significant natural community as they should be considered B-ranked (some minor alteration of vegetation structure and composition by selective logging) examples of these common community types, and therefore would not be considered for RINA designation.

NECESSARY WILDLIFE HABITAT

Necessary Wildlife Habitat (NWH) is most often defined as deer wintering habitat, black bear habitat (beech/oak mast tree stands or wetland habitat), black bear travel corridors, or in some cases, moose overwintering area.

VHB researched available deer wintering area, bear mast stand, and bear wetland habitat mapping provided by the ANR to determine if the study area is situated within or adjacent to mapped NWH.

A database review of available NWH determined that there is no state-mapped NWH within the study area. Field surveys by VHB wildlife biologist staff determined there to be a potential deer wintering area ("DWA") within the study area. It occurs to the north, east, and south of the planned quarry location and also covers a portion of the area studied for a planned access road to the quarry (see Natural Resources Map, Attachment, page 1). The DWA is composed of mature hemlock with dense canopy enclosure and abundant browse. Evidence of use by deer during winter observed includes previous year's winter browsing and trails. The VTFW wildlife biologist will be field reviewing the results of VHB's mapping, and the project, in early January 2014.

The project has been designed to minimize direct impacts to the DWA in design of the roadway and quarry site, including limiting quarry site operation to outside the winter months from November to

April. However, the proposed road will directly impact 1.55 acres and the quarry will impact 0.17 acre of the DWA. 11.2 acres of VHB-mapped DWA within the study area will be within 300 feet of the proposed quarry and road, but due to winter shut down of the quarrying operations, indirect impacts would be minimal. The operations of the project will occur outside the winter months, from April to November, weather and road conditions permitting. The project applicant expects to continue dialogue with the VTFWD to discuss project impacts to DWA, including mitigative measures if determined to be necessary.

A large VSWI mapped wetland occurs east of the existing landing (contiguous with 2012-RS-2, 2013-CM-2, and 2013-AC-8) and is potential bear wetland habitat. A field review by VHB wildlife biologist staff during June, 2013 of this potential wetland habitat determined the vegetation to be adequate for spring foraging. Evidence of bear use was also observed including paths through wetland 2013-AC-8 and scat located on upland surrounding the wetland. The VTFW wildlife biologist will be field reviewing the results of VHB's mapping, and the project, in early January 2014.

The project has been designed to avoid any direct impacts to potential bear wetland habitat. The quarry site is approximately 130 feet from the closest bear wetland habitat and the proposed road is approximately 220 feet from potential bear wetland habitat. Indirect impacts to bear wetland habitat have been minimized by designing the project to extract the rock without the use of blasting. Further, vehicle trips in/out of the quarry are expected to be minimal, currently anticipated to be employee trips and approximately five loaded truck trips per week during times of operation with a maximum of ten loaded truck trips per week. The current use of the property is active forest management, therefore, the proposed uses of the project should not significantly increase indirect disturbance compared to existing conditions. The project applicant expects to continue dialogue with the VTFW to discuss project impacts to DWA, including mitigative measures if determined to be necessary.

ENDANGERED SPECIES

Endangered Species include those that are defined as "threatened" or "endangered" on the Vermont state endangered species list and the state threatened species list, and that are protected under the Vermont Endangered Species Rule. Those species protected under the federal Endangered Species Act are included as well.

In order to identify the potential occurrence of rare or sensitive species, particularly those that are federal or Vermont-listed threatened or endangered[2], and quantify available onsite habitat condition relative to each, VHB researched the Vermont WDP database for the presence of known element occurrences (EOs) of rare, threatened, endangered, or significant natural community types within and adjacent to the study area. A two-mile radius was used when querying the WDP database and a project review was requested and received from the WDP. Typically, the list of known EOs from within the study area region is then referenced against the known habitat criteria for the species and compared to the available habitats within the study area.

[2] Federal-listed species are protected under the U.S. Endangered Species Act and Vermont-listed species are protected under 10 V.S.A. §123.

Using known EO data and on-site habitat condition information, in combination with reviewing the list of known rare plants and animals for any on-site natural communities (from *Wetland Woodland Wildland: a guide to the natural communities of Vermont*) (Thompson and Sorenson 2005), the list of EOs were compared against known habitat type located on site. Additionally, VHB reviewed the U.S. Fish and Wildlife Information Planning and Conservation System ("IPaC") for federally listed species within the project region.

Based on database review, there are no WDP-mapped RTE species mapped within the study area (see Attachment, page 81, Potential Rare, Threatened, and Endangered Species and Significant Natural Communities in the Project Region and Onsite Habitats Summary). A review of the WDP database and project vicinity review provided by the WDP to VHB on November 28, 2012 determined that one Vermont rare (S2) plant, farwell's water-milfoil (*Myriophyllum farwellii*), is known to occur within a two-mile radius of the study area. Farwell's water-milfoil is typically found in submerged edges of lakes or ponds, which is not a habitat found within the study area. From the IPaC review, dwarf wedgemussel (*Alasmidonta heterodon*) and northeastern bulrush (*Scirpus ancistrochaetus*) (both federally endangered species) are known to occur in the project locale (see USFWS Natural Resources of Concern in the Attachment, pages 82 through 84). Dwarf wedgemussel is typically found in large, slow moving streams and northeastern bulrush is typically found in wetlands with seasonably fluctuating water levels, neither of these habitats occur within the study area. Thus, VHB did not conduct targeted field surveys for farwell's water-milfoil, dwarf wedgemussel, or northeastern bulrush. VHB scientist, Joseph Burt conducted a targeted field survey on June 18, 2013 for the following species known to occur in onsite natural communities:

- Male fern (*Dryopteris filix-mas*)(S2S3- State Threatened)
- Three-birds orchid (*Triphora trianthophora*)(S1- State Threatened)
- Pine drops (*Pterospora andromedea*)(S1- State Endangered).

These species are known to be present in similar natural communities as found within the Project Study Area. None of these species were identified during the field survey. A list of species identified during field surveys is included on page 85 of the Attachment

ATTACHMENT

- Natural Resources Map
- Summary of Delineated Streams
- Summary of Delineated Wetlands
- Representative Site Photographs
- U.S Army Corps of Engineers ("USACE") Wetland Determination Forms
- Vermont Wetland Rules ("VWR") Wetland Evaluation Forms
- Potential Rare, Threatened, and Endangered Species and Significant Natural Communities in the Project Region and Onsite Habitats Summary
- USFWS Natural Resources of Concern
- Vegetation Communities and Plant Assemblages- Partial Species Checklist

REFERENCES

Argentine, C.C. 2008. Vermont Act 250 Handbook. Putney Press, Brattleboro, VT.

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

Thompson, E.H, E.S. Sorenson. 2005. Wetland, Woodland, Wildland: A guide to the natural communities of Vermont. Vermont Department of Fish and Wildlife and the Nature Conservancy. Hanover, NH. Pp. 24.

U.S. Army Corps of Engineers (USACE). 2005. "Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification." No. 05-05. Available online at: http://www.usace.army.mil/cw/cecwo/reg/rglsindx.htm.

U.S. Army Corps of Engineers (USACE). 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-09-19. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Army Corps of Engineers (USACE). 1999. U.S. Army Corps of Engineers – New England District. 1999. The Highway Methodology Workbook: Supplement: Wetland Functions and Values – A Descriptive Approach. NAEEP-360-1-30a.

U.S. Department of Agriculture – Natural Resource Conservation Service (USDA NRCS). 2006. Soil Survey of Bennington County, Vermont.
Available online at: http://soildatamart.nrcs.usda.gov/Manuscripts/VT003/0/Bennington.pdf

Vermont Agency of Natural Resources (ANR). 2005. Riparian Buffer Guidance: December 9, 2005. Available online at http://www.state.vt.us/site/ht ml/buff/anrbuffer2005.htm.

Vermont Department of Environmental Conservation (VT DEC). 2011. Stream Watershed Sizes-Halifax (Map). Available online at: http://www.vtwaterquality.org/rivers/docs/SA_SWS/StreamAlterations_Halifax.pdf

Vermont Department of Environmental Conservation (VT DEC). 2006. Low Risk Site Handbook for Erosion Prevention and Sediment Control. Available online at: http://www.vtwaterquality.org/stormwater/docs/construction/sw_low_risk_site_handbook.pdf

Vermont Department of Fish and Wildlife (VTFW). 1999. Guidelines for the Review and Mitigation of Impacts to White-tailed Deer Winter Habitat in Vermont. Available online at:

http://www.vtfishandwildlife.com/library/Reports_and_Documents/Fish_and_Wildlife/Guidelines_for_the_Review_and_Mitigation_of%20Impacts_to_White-Tailed_Deer_Winter_Habitat.pdf

Vermont Department of Fish and Wildlife (VTFW). 2006. Guidelines for the Review and Mitigation of Impacts to Significant Black Bear Habitat in Vermont.

Vermont Natural Resources Board (NRB). 2010. Vermont Wetland Rules. Effective August 1, 2010. Available online at: http://www.nrb.state.vt.us/wrp/rulemaking/wetlands2010/filedruledocs/VWR%207-16-10.pdf

Vermont Natural Resources Board (VT NRB). 2011. Vermont Water Quality Standards (Vt. Code R 12 004 052), Effective December 30, 2011.

ATTACHMENT

C. A. Denison Lumber Co.
Halifax Quarry
Halifax, Vermont
Natural Resources Map

October 30, 2013
Revised: December 26, 2013

VHB Identified Potential Bear Wetland Habitat

VHB Identified Potential Bear Wetland Habitat

Approximate Location of Proposed Crossing

VHB Study Area
Approximately 53 Acres
42°47'17.9"N
72°42'11.836"W

TOWN OF HALIFAX

Deer Park Brook

2013-CM-2
2013-CM-3
2012-RS-1
2012-RS-2
2013-AC-1
2013-AC-2
2013-CM-1
2013-AC-3
2013-AC-4
2013-AC-5
2013-AC-6
2013-JB-1
2013-AC-7
2013-AC-8
2013-AC-9

2012-SC-JB-3
2012-SC-JB-1
2012-SC-JB-4
2012-SC-RS-1
2012-SC-NS-1
2012-SC-NS-1a
2013-SC-AC-1
2013-SC-JB-5
2013-SC-RS-2
2013-SC-JB-2
2013-SC-JB-6
2012-SC-RS-3
2012-SC-RS-4
2012-SC-RS-4a
2013-SC-JB-1
2013-SC-CM-1
2013-TB-DP3
2013-TB-CM-2

2012-DP-JB-1Up
2012-DP-CM-1Wet
2012-DP-RS-1Wet
2012-DP-RS-1Up
2013-DP-AC-4Wet
2013-DP-AC-5Up
2013-DP-AC-6Wet
2013-DP-AC-6Up
2013-DP-JB-1Wet

1400
1350
1300
1250
1200
1150
1450
1500

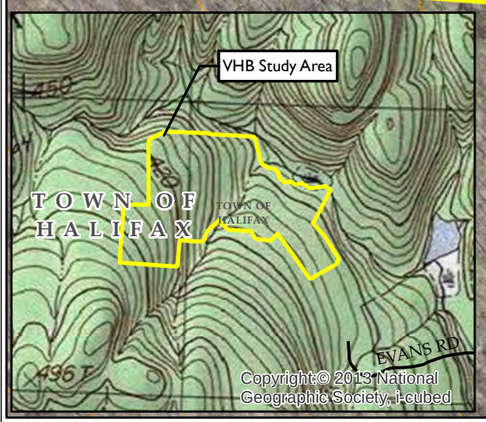


Image courtesy of USGS Earthstar Geographics, SIO © AND

- Conceptual Project Area
- VHB Delineated Streams
  - Ephemeral
  - Intermittent
  - Perennial
- VHB Study Area
- VHB Culverts
- VHB Delineated Wetlands
  - Potential Class II
  - Potential Class III
- Delineation Data Point Locations
- Potential 50ft Class II Wetland Buffer
- Potential 50ft Riparian Buffer
- Hemlock - Northern Hardwood Forest
- Hemlock Forest
- Northern Hardwood Forest
- Cut Over Northern Hardwood Forest
- ANR Deer Wintering Area (2011)
- VHB Proposed Deer Wintering Area
- VHD Stream (2008)
- VHD Waterbody (2008)
- ANR Bear Wetland (2011)
- ANR Bear Mast (2011)
- ANR Bear Crossing (2011)
- ANR Natural Heritage EOs (2013)
- VSWI Wetlands (2012)
- 50 ft. Contour
- Town Boundary

N

200 100 0 200
Feet

Sources: Background Aerial from Bing (2012); Roads by VTrans (2012); Database of Vermont Natural Resources Data provided by VCGI; Bear Wetland, Mast & Crossing by ANR (2011), WDP Element Occurences by ANR (2013), VSWI Wetlands by ANR (2012), VHD Streams & Waterbodies by USGS (2010); Deer Wintering Areas by ANR (2012), Contours generated from HydroDEM by VCGI (2009); Study Area, Culvert Locations, Delineation Data Point Locations, Delineated Streams, Delineated Wetlands, Stream Buffers, Wetland Buffers, Proposed Deer Wintering Area, Deer Wintering Area Continues and Community Types by VHB (2012-2013)

VHB Vanasse Hangen Brustlin, Inc.

F:\57595.00 Halifax Quarry NR\GIS\Project\Halifax Quarry_NR_Map_landscaped-revise.mxd Exported by: jburt

C.A. Denison Lumber Co. - Halifax Quarry
Halifax, Vermont
Summary of Delineated Streams
Prepared by VHB (RMS, JLB, ARC)
December 26, 2013

VHB Delineated Streams							
Stream ID	**Stream Name**	**Associated Wetlands**	**OHW Width (ft)[1]**	**Stream Flow Regime[2]**	**Watershed Size > 0.5 square miles (Yes/No)[3]**	**VWQS Classification (2011)[4]**	**Comments**
2012-SC-RS-1	-	2012-RS-1	1	Ephemeral	No	B	Originates in skidder rut within Wetland 2012-RS-1; headcut located at Flag 4.
2012-SC-RS-2	-	-	1	Ephemeral	No	B	Drains from non-jurisdictional ditch through wetland 2012-RS-2 on the northside of the road.
2012-SC-RS-3	-	-	1	Ephemeral	No	B	Drains a non-jurisdictional ditch; gravel/muck substrate
2012-SC-RS-4	-	-	1	Ephemeral	No	B	Muck/gravel/bedrock substrate; drains under existing road via culvert
2012-SC-RS-4a	-	-	1	Ephemeral	No	B	Drains non-jurisdictional ditch; channel forms below culvert outlet; gravel substrate
2012-SC-RS-5	-	-	1	Ephemeral	No	B	Gravel substrate; drains under existing road via culvert
2012-SC-RS-6	-	2012-RS-3	1 to 3	Intermittent	No	B	Cobble/clay substrate; undercutting, bank erosion and suspended culvert observed
2012-SC-RS-7	-	-	1 to 3	Intermittent	No	B	Cobble/bedrock substrate; 4-6 inches deep
2012-SC-RS-8	-	2012-NS-3	1	Ephemeral	No	B	Muck substrate; drains under existing road via culvert
2012-SC-NS-1	-	2012-RS-1	1	Ephemeral	No	B	Drains through heavily logged area; drains from 2012-RS-1 into 2012-SC-JB-1.
2012-SC-NS-1a	-	-	1	Ephemeral	No	B	Organic substrate; small ephemeral portion draining to 2012-SC-NS-1
2012-SC-NS-2	-	2012-NS-2	2	Ephemeral	No	B	Drains from Wetland 2012-NS-2 (outside study area); cobble/gravel substrate
2012-SC-NS-2a	-	-	1	Intermittent	No	B	lower reach portion of 2012-SC-NS-2; cobble/gravel substrate
2012-SC-JB-1	-	2012/2013-CM-1; 2013-CM-2; 2013-AC-8	3	Perennial	No	B	Gravel/cobble substrate; fish species observed; well defined 2 foot banks; step pool upper reach; lowe reach low gradient with gravel substrate dissipating in beaver impoundment of Deer Park Brook
2012-SC-JB-3	-	-	2.5	Intermittent	No	B	Gravel/cobble substrate; well defined banks; stream continues outside the study area
2012-SC-JB-4	-	2012-RS-1	1.5	Ephemeral	No	B	Connects with 2012-SC-RS-1; disturbed in logging road; bedrock substrate upgradient and gravel/sediment substrate downgradient
2012-SC-JB-6	-	-	2	Intermittent	No	B	Gravel/Cobble substrate ; flows under existing road via culvert
2012-SC-JB-7	-	-	1	Ephemeral	No	B	Sediment substrate; drains from non jurisdictional ditch
2012-SC-JB-8	-	2012-JB-1	1.5	Ephemeral	No	B	Sediment substrate; drains under road via culvert
2013-SC-CM-1	-	-	3	Intermittent	No	B	Organic and small crushed stone substrate; well defined channel; low banks
2013-TB-CM-2	UT to Green River (locally, Deer Park Brook)	-	20	Perennial	Yes	B	Channel segment of Deer Park Brook in nothern portion of study area; Right TOB delineated; Boulder and cobble substrate; bedrock outcrops; step pools
2013-TB-DPB	UT to Green River (locally, Deer Park Brook)	-	25	Perennial	Yes	B	Channel segment of Deer Park Brook in eastern portion of study area; Right TOB delineated; upstream end of delineated channel ends at impounding beaver dam (no channel immediately observable in impoundment); OHW avg is >25'
2013-SC-AC-1	-	-	2	Ephemeral	No	B	small overflow channel draining wetland 2013-AC-1 during high precipitation events and serving to connect this wetland to 2013-AC-8
2013-SC-JB-1	-	-	2	Ephemeral	No	B	Channel not well-defined; <0.5' banks; detritus/gravel substrate; drains overland runoff to wetland 2013-AC-6
2013-SC-JB-2	-	-	2	Ephemeral	No	B	Channel not well-defined; <0.5' banks; detritus/gravel substrate; drains high precip discharge from wetland 2013-AC-5 and dissipates before reaching Deer Park Brook

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

[2]Stream flow regime determined based on qualitative observations of instream hydrology indicators and geomorphic characteristic and are subject to professional judgment.

[3]Watershed size was determined from Vermont ANR Stream Alteration Regulatory Program mapping. Watershed Sizes Used as Guidance in Stream Alteration Regulations for the Town of Halifax

[4]Under Vermont Water Quality Standards (Vt. Code R. 12 004 052), Effective January 1, 2011, the waters found within the investigation area are considered Class B waters.

C.A. Denison Lumber Co. - Halifax Quarry
Halifax, Vermont
Summary of Delineated Wetlands
Prepared by VHB (RMS, JLB, ARC)
December 26, 2013

VHB Delineated Wetlands

Wetland ID	Delineated Area (Square Feet)[1] (**bold** indicates wetland continues past study area)	Cowardin Classification[2]	Vermont Wetland Rules Classification							Comments
			Contiguous to a VSWI-mapped Wetland?	Elevation greater than 2500 feet	Riparian Wetland Contiguous to Stream Channel? (Flow Regime)[4]	VWR Section 4.6 Presumptions[5]	VWR Section 5 Functional Criteria Presence/ Significance		VHB Proposed VWR Classification[7]	
							Type[6]	VHB-Proposed Significant?		
2012-RS-1	4,652	PEM	No	No	No	-	5.2	No	Class III	Emergent wetland; topographic depression; saturated to the surface; high water table; organic muck; dominant hydrophytic vegetation includes *Carex stricta* and *Eupatorium perfoliatum*
2012-RS-2	3460	PEM	Yes	No	No	a	5.1, 5.2, 5.4, 5.10	Yes	Class II	Emergent wetland; connects with large VSWI mapped feature; receives flow from culvert under access road; dominant hydrophytic vegetation includes *Onoclea sensibilis* and an unidentified *Carex* species
2013-CM-1	3065	PEM/PFO	No	No	No	-	5.2	No	Class III	Emergent wetland in forested setting; seep wetland feature located on side slope; drains to stream 2013-SC-JB-5; vegetation includes *Osmunda claytoniana* and *Osmunda regalis*
2013-CM-2	**15841**	PEM/PSS/ PFO	Yes	No	Yes (P)	a, b	5.1, 5.2, 5.4, 5.10	Yes	Class II	Saturated to the surface; drainage channels; well defined topographical break in slope; vegetation includes *Alnus incana, Onoclea sensibilis,* and *Tsuga canadensis.*
2013-CM-3	14664	PEM	No	No	No	-	5.1, 5.2	No	Class III	Emergent wetland along a plateau area with surrounding steep slopes; seep wetland with tip-ups; old logging road located within portion of wetland; saturated to surface; vegetation dominated by *Scirpus atrovirens* and *Carex crinita* ; wetland function at lower levels
2013-AC-1	4949	PFO	No	No	No	-	5.2	No	Class III	Seep wetland with hydrology increased by tree removal and skidder movement; ephemeral stream throughflows but but wetland independent of stream and does not provide riparian function; Primary drainage is ephemeral outlet channel to downstream VSWI; Typical vegetation is *Tsuga, Osmunda, Polystichum, Impatiens, Onoclea, Dryopteris* .
2013-AC-2	138	PEM	No	No	No	-	5.2	No	Class III	Wetland created where GW discharge intersects a soil borrow/log road ditch where hydrology is attenuated; peak flows discharge through log road culvert but no jurisdictional connection to downhill wetland 2013-AC-1; Typical vegetation is *Impatiens, Carex*
2013-AC-3	725	PEM	No	No	No	-	5.2	No	Class III	Wetland in depression augmented by old skidder movement; seep discharge; intermittent stream throughflows but wetland independent of stream and does not provide riparian function; Typical vegetation is *Onoclea, Impatiens, Osmunda, Polystichum.*
2013-AC-4	1738	PEM	No	No	No	-	5.2	No	Class III	Wetland in flat where ephemeral stream flow dissipates and hydro is augmented by tree removal; no downstream connections; Typical vegetation is *Onoclea, Impatiens, Eutrochium*
2013-AC-5	3797	PEM	No	No	No	-	5.2	No	Class III	Wetland in flat where ephemeral stream flow dissipates and hydro is augmented by tree removal; no downstream connections; Typical vegetation is *Onoclea, Impatiens, Eutrochium, Acer*
2013-AC-6	2174	PEM	No	No	No	-	5.2	No	Class III	PEM wetland opening created by tree removal from hemlock forest; most hydrology from ephemeral stream dissipation (wetland not serving riparian function) or overland inputs and wetland hydro/veg augmented by tree removal; wetland typical vegetation is *Impatiens, Onoclea* .
2013-AC-7	673	PEM	No	No	No	-	5.2	No	Class III	PEM wetland opening created by tree removal from hemlock forest; hydrology from overland inputs and seasonal high GW discharge; wetland hydro/veg augmented by tree removal; wetland typical vegetation is *Impatiens, Onoclea* .

C.A. Denison Lumber Co. - Halifax Quarry
Halifax, Vermont
Summary of Delineated Wetlands
Prepared by VHB (RMS, JLB, ARC)
December 26, 2013

VHB Delineated Wetlands

Wetland ID	Delineated Area (Square Feet)[1] (**bold** indicates wetland continues past study area)	Cowardin Classification[2]	Vermont Wetland Rules Classification							Comments
			Contiguous to a VSWI-mapped Wetland?	Elevation greater than 2500 feet	Riparian Wetland Contiguous to Stream Channel? (Flow Regime)[4]	VWR Section 4.6 Presumptions[5]	VWR Section 5 Functional Criteria Presence/ Significance		VHB Proposed VWR Classification[7]	
							Type[6]	VHB-Proposed Significant?		
2013-AC-8	**10091**	PFO/PSS	Yes	No	Yes (P)	a, b, c	5.1, 5.2, 5.4, 5.10	Yes	Class II	Discharge seeps in PFO and active beaver activity in PSS; black bear use noted, hydro from seep discharge, perennial stream inputs (Deer Park Brook and 2012-SC-JB-1), and ephemeral or intermittent stream inputs; beaver impoundment on Deer Park Brook creates wetland in eastern extent; Typical vegetation is *Alnus, Tsuga, Eutrochium, Onoclea, Impatiens,* and *Carex* species.
2013-AC-9	569	PFO	No	No	No	-	5.2	No	Class III	Wetland in depression augmented by old skidder movement; seep discharge; ephemeral stream throughflows but wetland independent of stream and does not provide riparian function; Typical vegetation is *Betula, Dennstaedtia, Dryopteris, Glyceria* .
2013-JB-1	543	PEM	No	No	No	-	5.2	No	Class III	PEM wetland opening in hemlock forest; most hydrology from ephemeral stream dissipation (wetland not serving riparian function) or overland inputs and wetland hydro/veg augmented by tree removal; wetland typical vegetation is I*mpatiens, Glyceria, Thelypteris* .

[1]All wetlands field-delineated per the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast and North Central Region. U.S. Army Corps of Engineers. 2012. Wetlands have been field reviewed by the VT DEC

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

[3]When the wetland is part of a natural community (undisturbed), *Wetland Woodland Wildland* (Thompson and Sorenson 2005) is used followed by Vermont Community ranking in parentheses (S1=very rare, S2=rare, S3=uncommon, S4=common, S5=very common). The natural community type is used in several instances to evaluate the wetland's significance under the Vermont Wetland Rules.

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

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

[6]VWR Section 5: Functional Criteria for Evaluating a Wetland's Significance: 5.1=Water Storage for Flood Water and Storm Runoff, 5.2=Surface and Groundwater Protection, 5.3=Fish Habitat, 5.4=Wildlife Habitat, 5.5=Exemplary Wetland Natural Community, 5.6=Rare, Threatened or Endangered Species Habitat, 5.7=Education and Research in Natural Sciences, 5.8=Recreational Value and Economic Benefits, 5.9=Open Space and Aesthetics, 5.10=Erosion Control Through Binding and Stabilizing the Soil.

[7]VHB-Proposed VWR Classification is based on review and application of the VWR effective September 15, 2010, particularly VHB's interpretation of Section 4.6 Presumptions and is subject to final determinations by the ANR-DEC

C.A. Denison Lumber Co– Halifax Quarry
Halifax, VT
Representative Site Photographs

Photograph 1. Overview of Wetland 2012-RS-1 looking north

Photograph 2. Overview of Stream 2012-SC-RS-1.

Photographs taken by VHB Environmental Scientists in November 2012 and June 18, 2013.

C.A. Denison Lumber Co– Halifax Quarry
Halifax, VT
Representative Site Photographs

Photograph 3. Overview of Stream 2012-SC-RS-3. Photograph taken downstream of access road

Photograph4. Overview of Stream 2012-SC-RS-4. Photograph taken upstream of the access road

C.A. Denison Lumber Co– Halifax Quarry
Halifax, VT
Representative Site Photographs

Photograph 5. Overview of Stream 2012-SC-JB-1 northwest of the existing landing area.

Photograph 6. Overview of Stream 2012-SC-JB-3, within the northwestern portion of the proposed quarry area.

Photographs taken by VHB Environmental Scientists in November 2012 and June 18, 2013.

C.A. Denison Lumber Co – Halifax Quarry
Halifax, VT
Representative Site Photographs

Photograph 7. Overview of Stream 2012-SC-JB-4 near Stream 2012-SC-JB-1.

Photograph 8. Overview of Stream 2012-SC-JB-5 in the area proposed for a new access road.

C.A. Denison Lumber Co– Halifax Quarry
Halifax, VT
Representative Site Photographs

Photograph 9. Wetland 2013-CM-1, proposed Class III wetland; looking northwest

Photograph 10. Wetland 2013-CM-2, proposed Class II wetland; looking northwest

C.A. Denison Lumber Co.– Halifax Quarry
Halifax, VT
Representative Site Photographs

Photograph 11. Wetland 2013-CM-3, proposed Class II wetland; photograph taken looking southwest

Photograph 12. Stream 2013-SC-JB-1, Perennial stream through wetland 2013-CM-2

C.A. Denison Lumber Co– Halifax Quarry
Halifax, VT
Representative Site Photographs

Photograph 13. Overview of existing landing area. Photograph taken looking west.

Photograph 14. View of existing skidder trail looking down towards the landing area.

C.A. Denison Lumber Co– Halifax Quarry
Halifax, VT
Representative Site Photographs

Photograph 15. Representative view of existing conditions within the proposed quarry area.

Photograph 16. Representative view of existing conditions within the Study Area. Note that hardwoods were selectively harvested from the Study Area leaving primarily hemlock.

Denison Lumber – Halifax Quarry
Halifax, VT
Representative Site Photographs

Photograph 17. Representative view of Hemlock- Northern Hardwood Forest community, which has had a large component of hardwood trees removed through logging

Photograph 18. Representative view of Hemlock Forest natural community and proposed Deer Wintering Area.

Photographs taken by VHB Environmental Scientists in November 2012 and June 18, 2013.

f:\57595.00 halifax quarry nr\sitephotos\halifax quarry photo layout.doc

Denison Lumber – Halifax Quarry
Halifax, VT
Representative Site Photographs

Photograph 19. Representative view of winter browsing from previous winter.

Photograph 20. Representative view of existing landing area and existing access road looking north to south.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site:	Halifax Quarry	City/County:	Halifax/Windham	Samp. Date:	10/17/2013
Applicant/Owner:	C.A. Denison Lumber Co.	State:	Verrmont	Sampling Point:	2013-AC6-Wet
Investigator(s):	JLB	Section, Township, Range:	Halifax		
Landform (hillslope, terrace, etc.):	Terrace	Local relief (concave, convex, none):	Concave	Slope (%):	
Subregion (LRR or MLRA):	LRR R	Lat: 42°47'16.202"N	Long: 72°41'49.937"W	Datum:	NAD83
Soil Map Unit:	Marlow fine sandy loam, 15 to 25 percent			NWI Class:	PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	NO	**Is This Sample Area**	
Hydric Soil Present?	YES	**Within a Wetland?**	NO
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2013-AC-6

Remarks:

Recent tree removal augments hydrology and vegetation

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Aquatic Fauna (B13)	X	Drainage Patterns (B10)
X	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)	X	Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?		Depth (inches):			
Water Table Present?	X	Depth (inches):	Surface		
Saturation Present? (includes capillary fringe)	X	Depth (inches):	Surface	**Wetland Hydrology Present?**	YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ET loss due to tree removal has increased hydrology

VEGETATION - Use scientific names of plants.

Sampling Point: 2013-AC6-Wet

	Absolute % Cover	Dom. Sp?	Indicator Status
Tree Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 10' RAD)			
1. Impatiens capensis Meerb.	63		FACW
2. Onoclea sensibilis L.	38		FACW
3.		X	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	101	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: _____ (A)

Dominants across all strata: 1 (B)

% Dominants OBL, FACW, FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW 101	x 2 =	202
FAC	x 3 =	
FACU	x 4 =	
UPL	x 5 =	
Sum: 101 (A)		202 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

_____ Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? _____

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

SOIL

Sampling Point: 2013-AC6-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1		7.5YR 3/4	2		PL	Silt Loam	
6-12	10YR 4/2		10YR 3/6	5		PL,M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

	Histosol (A1)		Polyvalue Below Surface (S8) (LRR R, MLRA 149B)		2cm Muck (A10) (LRR K, L, MLRA 149B)
	Histic Epipedon (A2)		Thin Dark Surface (S9) (LRR R, MLRA 149B)		Coast Prairie Redox (A16) (LRR K, L, R)
	Black Histic (A3)		Loamy Mucky Mineral (F1) (LRR K, L)		5cm Mucky Peat or Peat (S3) (LRR K, L, R)
	Hydrogen Sulfide (A4)		Loamy Gleyed Matrix (F2)		Dark Surface (S7) (LRR K, L)
	Stratified Layers (A5)		Depleted Matrix (F3)		Polyvalue Below Surface (S8) (LRR K, L)
	Depleted Below Dark Surface (A11)	X	Redox Dark Surface (F6)		Thin Dark Surface (S9) (LRR K, L)
	Thick Dark Surface (A12)		Depleted Dark Surface (F7)		Iron-Manganese Masses (F12) (LRR K, L, R)
	Sandy Mucky Mineral (S1)		Redox Depressions (F8)		Piedmont Floodplain Soils (F19) (MLRA 149B)
	Sandy Gleyed Matrix (S4)				Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
	Sandy Redox (S5)				Red Parent Material (TF2)
	Stripped Matrix (S6)				Very Shallow Dark Surface (TF12)
	Dark Surface (S7) (LRR R, MLRA 149B)				Other (Explain in Remarks)

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? YES

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax/Windham | Samp. Date: 10/17/2013

Applicant/Owner: C.A. Denison Lumber Co. | State: Verrmont | Sampling Point: 2013-AC6-UP

Investigator(s): JLB | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42°47'15.762"N | Long: 72°41'49.706"W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 15 to 25 percent | NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area**	
Hydric Soil Present?	NO	**Within a Wetland?**	NO
Wetland Hydrology Present?	NO	**If yes, optional Wetland Site ID:**	

Remarks:

Recent logging observed in the area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	Water-Stained Leaves (B9)	
High Water Table (A2)	Aquatic Fauna (B13)	
Saturation (A3)	Marl Deposits (B15)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	
Drift Deposits (B3)	Presence of Reduced Iron (C4)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	
Iron Deposits (B5)	Thin Muck Surface (C7)	
Inundation Visible on Aerial (B7)	Other (Explain in Remarks)	
Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Depth (inches):

Water Table Present? Depth (inches):

Saturation Present? Depth (inches):

(includes capillary fringe)

Wetland Hydrology Present? NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation greater than 14"

VEGETATION - Use scientific names of plants.

Sampling Point: 2013-AC6-UP

	Absolute % Cover	Dom. Sp?	Indicator Status
Tree Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 10' RAD)			
1. Onoclea sensibilis L.	38		FACW
2. Impatiens capensis Meerb.	38		FACW
3. Rubus idaeus L.	15	X	FAC
4.			
5.			
6.	10		
7.			
8.			
9.			
10.			
11.			
12.			
	101	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 1 (A)

Dominants across all strata: 1 (B)

% Dominants OBL, FACW, FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW 76	x 2 =	152
FAC 15	x 3 =	45
FACU	x 4 =	
UPL	x 5 =	
Sum: 91 (A)		197 (B)

Prevalence Index = B/A = 2.16

Hydrophytic Vegetation Indicators:

X Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

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

SOIL

Sampling Point: 2013-AC6-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2						Silt Loam	
12-14	10YR 3/2		10YR 3/6	1		M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? NO

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax/Windham | Samp. Date: 10/17/2013

Applicant/Owner: C.A. Denison Lumber Co. | State: Verrmont | Sampling Point: 2013-JB1-WET

Investigator(s): JLB | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42°47'15.374"N | Long: 72°41'50.665"W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 15 to 25 percent | NWI Class: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area**	
Hydric Soil Present?	YES	**Within a Wetland?**	YES
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2013-JB-1

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Aquatic Fauna (B13)	X	Drainage Patterns (B10)
X	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)	X	Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?		Depth (inches):			
Water Table Present?	X	Depth (inches):	6		
Saturation Present? (includes capillary fringe)	X	Depth (inches):	Surface	**Wetland Hydrology Present?**	YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2013-JB1-WET

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 10' RAD)			
1. Impatiens capensis Meerb.	38		FACW
2. Glyceria canadensis (Michx.) Trin.	15		OBL
3. Thelypteris noveboracensis (L.) Nieuwl.	3	X	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	56	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 1 (A)

Dominants across all strata: 1 (B)

% Dominants OBL, FACW, FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:			Multiply By:
OBL	15	x 1 =	15
FACW	38	x 2 =	76
FAC	3	x 3 =	9
FACU		x 4 =	
UPL		x 5 =	
Sum:	56 (A)		100 (B)

Prevalence Index = B/A = 1.79

Hydrophytic Vegetation Indicators:

X Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

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

SOIL

Sampling Point: 2013-JB1-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1						Silt Loam	
4-12	10YR 3/1		5YR 3/6	5		PL,M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? YES

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax/Windham | Samp. Date: 10/17/2013

Applicant/Owner: C.A. Denison Lumber Co. | State: Verrmont | Sampling Point: 2013-AC4-UP

Investigator(s): JLB | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Convex | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42°47'17.082"N | Long: 72°41'46.115"W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 8 to 15 percent | NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	NO	**Is This Sample Area**	
Hydric Soil Present?	NO	**Within a Wetland?**	NO
Wetland Hydrology Present?	NO	**If yes, optional Wetland Site ID:**	

Remarks:

Selective tree removal in the area; data point located between wetlands 2013-AC-4 and 2013-AC-5

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	Water-Stained Leaves (B9)	
High Water Table (A2)	Aquatic Fauna (B13)	
Saturation (A3)	Marl Deposits (B15)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	
Drift Deposits (B3)	Presence of Reduced Iron (C4)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	
Iron Deposits (B5)	Thin Muck Surface (C7)	
Inundation Visible on Aerial (B7)	Other (Explain in Remarks)	
Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Depth (inches):

Water Table Present? Depth (inches):

Saturation Present? Depth (inches):

(includes capillary fringe)

Wetland Hydrology Present? NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation greater than 16"

VEGETATION - Use scientific names of plants.

Sampling Point: 2013-AC4-UP

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Fraxinus americana L.	38	X	FACU
2. Tsuga canadensis (L.) Carrière	38	X	FACU
3. Acer saccharum	15		FACU
4.			
5.			
6.			
7.			
	91	= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1. Fagus grandifolia Ehrh.	3	X	FACU
2. Prunus serotina Ehrh.	3	X	FACU
3.			
4.			
5.			
6.			
7.			
	6	= Total Cover	
Herb Stratum (Plot size: 10' RAD)			
1. Thelypteris noveboracensis (L.) Nieuwl.	38		FAC
2. Osmunda claytoniana L.	3		FAC
3.		X	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	41	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: (A)

Dominants across all strata: 5 (B)

% Dominants OBL, FACW, FAC: (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW	x 2 =	
FAC 41	x 3 =	123
FACU 97	x 4 =	388
UPL	x 5 =	
Sum: 138 (A)		511 (B)

Prevalence Index = B/A = 3.70

Hydrophytic Vegetation Indicators:

_____ Dominance Test is > 50%

_____ Prevalence Index is <= 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? NO

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

SOIL

Sampling Point: 2013-AC4-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/3						Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? NO

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax/Windham | Samp. Date: 10/17/2013

Applicant/Owner: C.A. Denison Lumber Co. | State: Verrmont | Sampling Point: 2013-AC4-WET

Investigator(s): ARC/JQL | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42°47'17.417"N | Long: 72°41'46.568"W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 8 to 15 percent | NWI Class: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area**	
Hydric Soil Present?	YES	**Within a Wetland?**	YES
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2013-AC-4

Remarks:

Recent tree removal augments hydrology and vegetation

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Aquatic Fauna (B13)		Drainage Patterns (B10)
X	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)	X	Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?		Depth (inches):	
Water Table Present?	X	Depth (inches):	10
Saturation Present? (includes capillary fringe)	X	Depth (inches):	Surface

Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2013-AC4-WET

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Acer rubrum L.	15	X	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1. Fagus grandifolia Ehrh.	15	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1. Sambucus nigra L.	3	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	3	= Total Cover	
Herb Stratum (Plot size: 10' RAD)			
1. Scirpus cyperinus (L.) Kunth	15		FACW
2. Solidago canadensis L.	15		FACU
3. Impatiens capensis Meerb.	15	X	FACW
4. Eupatorium maculatum L. var. maculatum	15		FACW
5. Onoclea sensibilis L.	15		FACW
6. Thelypteris noveboracensis (L.) Nieuwl.	3		FAC
7. Clematis virginiana L.	3		FAC
8. Glyceria melicaria (Michx.) F.T. Hubbard	3		OBL
9. Euthamia graminifolia (L.) Nutt.	3		FAC
10. Dryopteris intermedia (Muhl. ex Willd.) A. Gray	3		FACU
11. Polystichum acrostichoides	3		FACU
12.			
	93	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 3 (A)

Dominants across all strata: 4 (B)

% Dominants OBL, FACW, FAC: 75% (A/B)

Prevalence Index Worksheet:

Total % Cover of:			Multiply By:
OBL	3	x 1 =	3
FACW	63	x 2 =	126
FAC	24	x 3 =	72
FACU	36	x 4 =	144
UPL		x 5 =	
Sum:	126 (A)		345 (B)

Prevalence Index = B/A = 2.74

Hydrophytic Vegetation Indicators:

X Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

___ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

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

SOIL

Sampling Point: 2013-AC4-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
2-0							Muck	
0-12+	10YR 3/1		10YR 3/6			PL	Silt Loam	FFP redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? YES

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax / Windham | Samp. Date: 11/14/2012

Applicant/Owner: C.A. Denison Lumber Co. | State: Vermont | Sampling Point: 2012-DP-RS1-Up

Investigator(s): RMS | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42° 47' 14.877" N | Long: 72° 42' 3.431" W | Datum: NAD83

Soil Map Unit: Tunbridge-Lyman fine sandy loams, 15 to 25 percent slopes | NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	NO	**Is This Sample Area**	
Hydric Soil Present?	NO	**Within a Wetland?**	NO
Wetland Hydrology Present?	NO	**If yes, optional Wetland Site ID:**	

Remarks:

Past logging observed in the area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	Water-Stained Leaves (B9)	
High Water Table (A2)	Aquatic Fauna (B13)	
Saturation (A3)	Marl Deposits (B15)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	
Drift Deposits (B3)	Presence of Reduced Iron (C4)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	
Iron Deposits (B5)	Thin Muck Surface (C7)	
Inundation Visible on Aerial (B7)	Other (Explain in Remarks)	
Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Depth (inches):

Water Table Present? Depth (inches):

Saturation Present? Depth (inches):

(includes capillary fringe)

Wetland Hydrology Present? NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Approx. 0.69 inches of rain fell through the month of November; Approx. 0.61 during the 5 days prior to sampling (NOAA, Pittsfield, MA)

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2012-DP-RS1-Up

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Ostrya virginiana (Mill.) K. Koch	3		FACU
2. Fagus grandifolia Ehrh.	10	X	FACU
3. Fraxinus americana L.	3		FACU
4. Acer saccharum Marsh.	3		FACU
5.			
6.			
7.			
	19	= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1. Ulmus americana L.	5	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5	= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' RAD)			
1. Rubus allegheniensis Porter	10.5		FACU
2. Polystichum acrostichoides (Michx.) Schott	38		FACU
3. Dryopteris intermedia (Muhl. ex Willd.) A. Gray	20.5	X	FACU
4. Pteridium aquilinum (L.) Kuhn	5		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	74	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 1 (A)

Dominants across all strata: 3 (B)

% Dominants OBL, FACW, FAC: 33% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW 5	x 2 =	10
FAC	x 3 =	
FACU 93	x 4 =	372
UPL	x 5 =	
Sum: 98 (A)		382 (B)

Prevalence Index = B/A = 3.90

Hydrophytic Vegetation Indicators:

____ Dominance Test is > 50%

____ Prevalence Index is <= 3.0[1]

____ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? NO

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

SOIL

Sampling Point: 2012-DP-RS1-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 2/1						Fine Sandy Loam	Highly Organic
6-16+	10 YR 4/4						Fine Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? NO

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax / Windham | Samp. Date: 11/14/2012

Applicant/Owner: C.A. Denison Lumber Co. | State: Vermont | Sampling Point: 2012-DP-RS1-Wet

Investigator(s): RMS | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42° 47' 14.808" N | Long: 72° 42' 3.097" W | Datum: NAD83

Soil Map Unit: Tunbridge-Lyman fine sandy loams, 15 to 25 percent slopes | NWI Class: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area**	
Hydric Soil Present?	YES	**Within a Wetland?**	YES
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2012-RS1

Remarks:

Past logging observed in the area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

X	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Aquatic Fauna (B13)	X	Drainage Patterns (B10)
X	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)	X	Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?	X	Depth (inches):	1
Water Table Present?	X	Depth (inches):	0
Saturation Present? (includes capillary fringe)	X	Depth (inches):	0

Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Approx. 0.69 inches of rain fell through the month of November; Approx. 0.61 during the 5 days prior to sampling (NOAA, Pittsfield, MA)

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2012-DP-RS1-Wet

	Absolute % Cover	Dom. Sp?	Indicator Status
Tree Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1. Ulmus americana L.	5	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5	= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' RAD)			
1. Onoclea sensibilis L.	10.5		FACW
2. Dryopteris intermedia (Muhl. ex Willd.) A. Gray	10.5		FACU
3. Glyceria canadensis (Michx.) Trin.	38	X	OBL
4. Symphyotrichum novae-angliae (L.) G.L. Nesom	5		FACW
5. Eupatorium perfoliatum L.	5		FACW
6. Symphyotrichum novae-angliae (L.) G.L. Nesom	5		FACW
7.			
8.			
9.			
10.			
11.			
12.			
	74	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 2 (A)

Dominants across all strata: 2 (B)

% Dominants OBL, FACW, FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:			Multiply By:
OBL	38	x 1 =	38
FACW	30.5	x 2 =	61
FAC		x 3 =	
FACU	10.5	x 4 =	42
UPL		x 5 =	
Sum:	79 (A)		141 (B)

Prevalence Index = B/A = 1.78

Hydrophytic Vegetation Indicators:

X Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

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

SOIL

Sampling Point: 2012-DP-RS1-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16+							Muck	Highly Organic

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? YES

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax / Windham | Samp. Date: 11/14/2012

Applicant/Owner: C.A. Denison Lumber Co. | State: Vermont | Sampling Point: 2012-DP-JB2-Up

Investigator(s): JLB | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42° 47' 21.832" N | Long: 72° 41' 52.028" W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 3 to 8 percent slopes | NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	NO	**Is This Sample Area**	
Hydric Soil Present?	NO	**Within a Wetland?**	NO
Wetland Hydrology Present?	NO	**If yes, optional Wetland Site ID:**	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	Water-Stained Leaves (B9)	
High Water Table (A2)	Aquatic Fauna (B13)	
Saturation (A3)	Marl Deposits (B15)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	
Drift Deposits (B3)	Presence of Reduced Iron (C4)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	
Iron Deposits (B5)	Thin Muck Surface (C7)	
Inundation Visible on Aerial (B7)	Other (Explain in Remarks)	
Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?		Depth (inches):	
Water Table Present?	X	Depth (inches):	15
Saturation Present? (includes capillary fringe)	X	Depth (inches):	15

Wetland Hydrology Present? NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Approx. 0.69 inches of rain fell through the month of November; Approx. 0.61 during the 5 days prior to sampling (NOAA, Pittsfield, MA)

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2012-DP-JB2-Up

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Fagus grandifolia Ehrh.	5		FACU
2. Acer rubrum L.	15	X	FAC
3. Fraxinus americana L.	15	X	FACU
4.			
5.			
6.			
7.			
	35	= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1. Fagus grandifolia Ehrh.	15	X	FACU
2. Acer rubrum L.	3		FAC
3.			
4.			
5.			
6.			
7.			
	18	= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' RAD)			
1. Polystichum acrostichoides (Michx.) Schott	3		FACU
2. Osmunda claytoniana L.	3		FAC
3.		X	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	6	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 1 (A)

Dominants across all strata: 4 (B)

% Dominants OBL, FACW, FAC: 25% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW	x 2 =	
FAC 21	x 3 =	63
FACU 38	x 4 =	152
UPL	x 5 =	
Sum: 59 (A)		215 (B)

Prevalence Index = B/A = 3.64

Hydrophytic Vegetation Indicators:

____ Dominance Test is > 50%

____ Prevalence Index is <= 3.0[1]

____ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? NO

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

SOIL

Sampling Point: 2012-DP-JB2-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5 Y 3/3						Loam	
12-18+	2.5 Y 4/3						Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? NO

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax / Windham | Samp. Date: 11/14/2012

Applicant/Owner: C.A. Denison Lumber Co. | State: Vermont | Sampling Point: 2012-DP-JB2-Wet

Investigator(s): JLB | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42° 47' 4.487" N | Long: 72° 41' 38.080" W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 3 to 8 percent slopes | NWI Class: PEM/PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area**	
Hydric Soil Present?	YES	**Within a Wetland?**	YES
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2012-JB-2

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Aquatic Fauna (B13)		Drainage Patterns (B10)
X	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?		Depth (inches):	
Water Table Present?	X	Depth (inches):	4
Saturation Present? (includes capillary fringe)	X	Depth (inches):	0

Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Approx. 0.69 inches of rain fell through the month of November; Approx. 0.61 during the 5 days prior to sampling (NOAA, Pittsfield, MA)

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2012-DP-JB2-Wet

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' RAD)			
1. Onoclea sensibilis L.	60		FACW
2. Spiraea alba Du Roi	3		FACW
3. Carex L.	3	X	FAC
4. Glyceria canadensis (Michx.) Trin.	3		OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	69	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 1 (A)

Dominants across all strata: 1 (B)

% Dominants OBL, FACW, FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:			Multiply By:
OBL	3	x 1 =	3
FACW	63	x 2 =	126
FAC	3	x 3 =	9
FACU		x 4 =	
UPL		x 5 =	
Sum:	69 (A)		138 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

___ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

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

SOIL

Sampling Point: 2012-DP-JB2-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
12-0							Muck	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

X	Histosol (A1)		Polyvalue Below Surface (S8) (LRR R, MLRA 149B)		2cm Muck (A10) (LRR K, L, MLRA 149B)
	Histic Epipedon (A2)		Thin Dark Surface (S9) (LRR R, MLRA 149B)		Coast Prairie Redox (A16) (LRR K, L, R)
	Black Histic (A3)		Loamy Mucky Mineral (F1) (LRR K, L)		5cm Mucky Peat or Peat (S3) (LRR K, L, R)
	Hydrogen Sulfide (A4)		Loamy Gleyed Matrix (F2)		Dark Surface (S7) (LRR K, L)
	Stratified Layers (A5)		Depleted Matrix (F3)		Polyvalue Below Surface (S8) (LRR K, L)
	Depleted Below Dark Surface (A11)		Redox Dark Surface (F6)		Thin Dark Surface (S9) (LRR K, L)
	Thick Dark Surface (A12)		Depleted Dark Surface (F7)		Iron-Manganese Masses (F12) (LRR K, L, R)
	Sandy Mucky Mineral (S1)		Redox Depressions (F8)		Piedmont Floodplain Soils (F19) (MLRA 149B)
	Sandy Gleyed Matrix (S4)				Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
	Sandy Redox (S5)				Red Parent Material (TF2)
	Stripped Matrix (S6)				Very Shallow Dark Surface (TF12)
	Dark Surface (S7) (LRR R, MLRA 149B)				Other (Explain in Remarks)

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 12

Hydric Soil Present? YES

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax / Windham | Samp. Date: 11/14/2012

Applicant/Owner: C. A. Denison Lumber Co. | State: Vermont | Sampling Point: 2012-DP-JB1-Up (VSWI)

Investigator(s): JLB | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42° 47' 21.832" N | Long: 72° 41' 52.028" W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 15 to 25 percent slopes | NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	NO	**Is This Sample Area**	
Hydric Soil Present?	NO	**Within a Wetland?**	NO
Wetland Hydrology Present?	NO	**If yes, optional Wetland Site ID:**	n/a

Remarks:

Upland documentation in VSWI mapped area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Drainage Patterns (B10)
___ Saturation (A3)	___ Marl Deposits (B15)	___ Moss Trim Lines (B16)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Dry-Season Water Table (C2)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Crayfish Burrows (C8)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Saturation Visible on Aerial (C9)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Stunted or Stressed Plants (D1)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Geomorphic Position (D2)
___ Inundation Visible on Aerial (B7)	___ Other (Explain in Remarks)	___ Shallow Aquitard (D3)
___ Sparsely Vegetated Concave Surface (B8)		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present? ___ Depth (inches): ___

Water Table Present? ___ Depth (inches): ___

Saturation Present? ___ Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Approx. 0.69 inches of rain fell through the month of November; Approx. 0.61 during the 5 days prior to sampling (NOAA, Pittsfield, MA)

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2012-DP-JB1-Up (VSWI)

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Tsuga canadensis (L.) Carrière	50	X	FACU
2. Acer rubrum L.	0.5		FAC
3. Betula alleghaniensis Britton	15	X	FAC
4.			
5.			
6.			
7.			
	65.5	= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1. Acer saccharum Marsh.	3	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	3	= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' RAD)			
1. Dryopteris intermedia (Muhl. ex Willd.) A. Gray	3		FACU
2. Polystichum acrostichoides (Michx.) Schott	3		FACU
3. Dennstaedtia punctilobula (Michx.) T. Moore	30	X	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	36	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 1 (A)

Dominants across all strata: 4 (B)

% Dominants OBL, FACW, FAC: 25% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW	x 2 =	
FAC 15.5	x 3 =	46.5
FACU 59	x 4 =	236
UPL 30	x 5 =	150
Sum: 104.5 (A)		432.5 (B)

Prevalence Index = B/A = 4.14

Hydrophytic Vegetation Indicators:

_____ Dominance Test is > 50%

_____ Prevalence Index is <= 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? NO

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

SOIL

Sampling Point: 2012-DP-JB1-Up (VSWI)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1								Organic
0-10	10 YR 4/3						Loamy Sand	
10-14+	10 YR 3/6						Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? NO

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax/Windham | Samp. Date: 6/18/2013

Applicant/Owner: C.A. Denison Lumber Co. | State: Verrmont | Sampling Point: 2013-CM2-Wet

Investigator(s): CMM | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42°47'22.717"N | Long: 72°41'53.865"W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 15 to 25 percent | NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area**	
Hydric Soil Present?	YES	**Within a Wetland?**	YES
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2013-CM-2

Remarks:

Data point collected from wetland located northwest of existing log landing

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Aquatic Fauna (B13)	X	Drainage Patterns (B10)
X	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?		Depth (inches):	
Water Table Present?	X	Depth (inches):	0
Saturation Present? (includes capillary fringe)	X	Depth (inches):	0

Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Rainfall from June 1-18 was Approx. 3.9 inches; Rainfall 5 days prior was 0.87 inches (NOAA 2013)

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2013-CM2-Wet

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Tsuga canadensis (L.) Carrière	38	X	FACU
2. Betula alleghaniensis Britton	15	X	FAC
3.			
4.			
5.			
6.			
7.			
	53	= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' RAD)			
1. Impatiens capensis Meerb.	98		FACW
2. Tiarella cordifolia L.	3		FAC
3. Matteuccia struthiopteris (L.) Todaro	15	X	FACW
4. Onoclea sensibilis L.	3		FACW
5. Oclemena acuminata (Michx.) Greene	3		FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	122	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 2 (A)

Dominants across all strata: 3 (B)

% Dominants OBL, FACW, FAC: 67% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW 116	x 2 =	232
FAC 21	x 3 =	63
FACU 38	x 4 =	152
UPL	x 5 =	
Sum: 175 (A)		447 (B)

Prevalence Index = B/A = 2.55

Hydrophytic Vegetation Indicators:

X Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

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

Common mullein (Verbascum thapsus) (NI) present at 15% cover of herbaceous layer.

SOIL

Sampling Point: 2013-CM2-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
6-0"							Muck	
6-12	2.5 Y 3/1						Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

	2cm Muck (A10) (LRR K, L, MLRA 149B)
	Coast Prairie Redox (A16) (LRR K, L, R)
	5cm Mucky Peat or Peat (S3) (LRR K, L, R)
	Dark Surface (S7) (LRR K, L)
	Polyvalue Below Surface (S8) (LRR K, L)
	Thin Dark Surface (S9) (LRR K, L)
	Iron-Manganese Masses (F12) (LRR K, L, R)
	Piedmont Floodplain Soils (F19) (MLRA 149B)
	Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
	Red Parent Material (TF2)
	Very Shallow Dark Surface (TF12)
	Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? YES

Remarks:

VERMONT WETLAND EVALUATION FORM

Project Name: **C. A. Dennison Lumber Co. – Halifax Quarry** Project #:**57595.00**
Date**: 12/19/13** Investigator: **Chelsea M. Martin, Adam R. Crary, Ryan M. Scott**

SUMMARY OF FUNCTIONAL EVALUATION: **Wetland 2012-RS-2, 2013-CM-2, 2013-AC-8**

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

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

Note:

- ***When to use this form:*** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- ***Both a desktop review and field examination*** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- ***The entire wetland or wetland complex*** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- ***The surrounding upland and outflow area*** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use,

previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.

- ***Evaluation***: The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.
- ***Presumptions:*** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
    - **The wetland is mapped on the VSWI map**
    - **The wetland is contiguous to a VSWI mapped wetland**
    - **The wetland meets the presumptions of significance under Section 4.6**
    - The wetland has a preliminary determination that it is Class II

12/19/2013

1. Water Storage for Flood Water and Storm Runoff

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

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

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

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

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

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

- ☒ History of downstream flood damage to public or private property.
- ☒ Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
  - ☒ 1. Developed public or private property.
  - ☐ 2. Stream banks susceptible to scouring and erosion.
  - ☐ 3. Important habitat for aquatic life.
- ☒ The wetland is large in size and naturally vegetated.

12/19/2013

☐ Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.

- ☐ 1. A large amount of impervious surface in urbanized areas.
- ☐ 2. Relatively impervious soils.
- ☐ 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

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

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

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

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

- ☐ Presence of dead forest or shrub areas in sufficient amounts to result in diminished

nutrient uptake.

☐ Presence of ditches or channels that confine water and restrict contact of water with vegetation.

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

☐ Current use in the wetland results in disturbance that compromises this function.

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

☐ The wetland is adjacent to a well head or source protection area, and provides ground water recharge.

☐ The wetland provides flows to Class A surface waters.

☐ The wetland contributes to the protection or improvement of water quality of any impaired waters.

☒ The wetland is large in size and naturally vegetated.

3. Fish Habitat

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

☐ Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.

☐ Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.

☐ Documented or professionally judged spawning habitat for northern pike.

☐ Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.

☐ The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

12/19/2013

4. Wildlife Habitat

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

- ☒ Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
- ☐ Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
- ☐ Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
- ☐ Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
- ☐ Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
- ☒ Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
- ☐ Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
- ☒ Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
- ☐ Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
  - ☐ 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
  - ☐ 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
  - ☐ 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

☐ Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.

☐ Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.

☐ Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.

☒ Meets four or more of the following conditions indicative of wildlife habitat diversity:

☒ 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;

☒ 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;

☒ 3. Located adjacent to a lake, pond, river or stream;

☒ 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;

☒ 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;

☒ 6. One of the following:

☐ i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;

☒ ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;

☐ iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;

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

☒ Contains evidence that it is used by wetland dependent wildlife species.

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

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

☐ The wetland is small in size for its type and does not represent fugitive habitat in

developed areas (vernal pools and seeps are generally small in size, so this does not apply).

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

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

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

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

☒ The wetland complex is large in size and high in quality.

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

☐ Wetland is associated with an important wildlife corridor.

☐ The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

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

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

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

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

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

☐ Deep peat accumulation reflecting a long history of wetland formation;

☐ Forested wetlands displaying very old trees and other old growth characteristics;

☐ A wetland natural community that is at the edge of the normal range for that type;

- ☐ A wetland mosaic containing examples of several to many wetland community types; or
- ☐ A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

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

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

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

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

List name of species and ranking:

7. Education and Research in Natural Sciences

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

- ☐ Owned by or leased to a public entity dedicated to education or research.
- ☐ History of use for education or research.
- ☐ Has one or more characteristics making it valuable for education or research.

12/19/2013

8. Recreational Value and Economic Benefits

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

- ☐ Used for, or contributes to, recreational activities.
- ☐ Provides economic benefits.
- ☐ Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
- ☐ Used for harvesting of wild foods.

Comments:

9. Open Space and Aesthetics

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

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

10. Erosion Control through Binding and Stabilizing the Soil

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

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

What type of erosive forces are present?

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

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

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

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

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

- ☒ The stream contains high sinuosity.
- ☐ Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

VERMONT WETLAND EVALUATION FORM

Project Name: **C.A. Dennison Lumber Co. – Halifax Quarry** Project #:**57595.00**
Date**: 02/07/13** Investigator: **Chelsea M. Martin**

SUMMARY OF FUNCTIONAL EVALUATION: **Wetland 2013-CM-3**

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

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

Note:

- ***When to use this form:*** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- ***Both a desktop review and field examination*** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- ***The entire wetland or wetland complex*** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- ***The surrounding upland and outflow area*** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use,

previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.

- ***Evaluation***: The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.
- ***Presumptions:*** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
    - **The wetland is mapped on the VSWI map**
    - **The wetland is contiguous to a VSWI mapped wetland**
    - **The wetland meets the presumptions of significance under Section 4.6**
    - The wetland has a preliminary determination that it is Class II

12/19/2013

1. Water Storage for Flood Water and Storm Runoff

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

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

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

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

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

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

- ☐ History of downstream flood damage to public or private property.
- ☐ Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
  - ☐ 1. Developed public or private property.
  - ☐ 2. Stream banks susceptible to scouring and erosion.
  - ☐ 3. Important habitat for aquatic life.
- ☐ The wetland is large in size and naturally vegetated.

12/19/2013

☐ Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.

- ☐ 1. A large amount of impervious surface in urbanized areas.
- ☐ 2. Relatively impervious soils.
- ☐ 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

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

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

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

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

- ☐ Presence of dead forest or shrub areas in sufficient amounts to result in diminished

nutrient uptake.

- ☐ Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- ☒ Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- ☐ Current use in the wetland results in disturbance that compromises this function.

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

- ☐ The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
- ☐ The wetland provides flows to Class A surface waters.
- ☐ The wetland contributes to the protection or improvement of water quality of any impaired waters.
- ☐ The wetland is large in size and naturally vegetated.

3. Fish Habitat

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

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

12/19/2013

4. Wildlife Habitat

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

- ☐ Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
- ☐ Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
- ☐ Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
- ☐ Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
- ☐ Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
- ☐ Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
- ☐ Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
- ☐ Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
- ☐ Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
  - ☐ 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
  - ☐ 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
  - ☐ 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

☐ Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.

☐ Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.

☐ Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.

☐ Meets four or more of the following conditions indicative of wildlife habitat diversity:

- ☐ 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
- ☐ 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
- ☐ 3. Located adjacent to a lake, pond, river or stream;
- ☒ 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
- ☐ 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
- ☐ 6. One of the following:
  - ☐ i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
  - ☐ ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
  - ☐ iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;

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

☐ Contains evidence that it is used by wetland dependent wildlife species.

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

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

☐ The wetland is small in size for its type and does not represent fugitive habitat in

developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- ☐ The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- ☐ The current use in the wetland results in frequent cutting, mowing or other disturbance.
- ☐ The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.

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

- ☐ The wetland complex is large in size and high in quality.
- ☐ The habitat has the potential to support several species based on the assessment above.
- ☐ Wetland is associated with an important wildlife corridor.
- ☐ The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

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

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

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

- ☐ Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- ☐ Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
  - ☐ Deep peat accumulation reflecting a long history of wetland formation;
  - ☐ Forested wetlands displaying very old trees and other old growth characteristics;
  - ☐ A wetland natural community that is at the edge of the normal range for that type;

- ☐ A wetland mosaic containing examples of several to many wetland community types; or
- ☐ A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

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

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

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

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

List name of species and ranking:

7. Education and Research in Natural Sciences

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

- ☐ Owned by or leased to a public entity dedicated to education or research.
- ☐ History of use for education or research.
- ☐ Has one or more characteristics making it valuable for education or research.

8. Recreational Value and Economic Benefits

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

- ☐ Used for, or contributes to, recreational activities.
- ☐ Provides economic benefits.
- ☐ Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
- ☐ Used for harvesting of wild foods.

Comments:

9. Open Space and Aesthetics

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

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

10. Erosion Control through Binding and Stabilizing the Soil

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

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

What type of erosive forces are present?

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

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

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

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

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

- ☐ The stream contains high sinuosity.
- ☐ Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

VERMONT WETLAND EVALUATION FORM

Project Name: **C. A. Dennison Lumber Co. – Halifax Quarry** Project #:**57595.00**
Date**: 02/07/13** Investigator: **Ryan Scott, Adam Crary, Chelsea Martin**

SUMMARY OF FUNCTIONAL EVALUATION: **Wetland 2012-RS-1; 2013-AC-1, 2013-AC-2, 2013-AC-3, 2013-AC-4, 2013-AC-5, 2013-AC-6, 2013-AC-7, 2013-AC-9, 2013-CM-1, 2013-JB-1**

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

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

Note:

- ***When to use this form:*** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- ***Both a desktop review and field examination*** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- ***The entire wetland or wetland complex*** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- ***The surrounding upland and outflow area*** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use,

previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.

- ***Evaluation***: The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.
- ***Presumptions:*** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
    - **The wetland is mapped on the VSWI map**
    - **The wetland is contiguous to a VSWI mapped wetland**
    - **The wetland meets the presumptions of significance under Section 4.6**
    - The wetland has a preliminary determination that it is Class II

12/19/2013

1. Water Storage for Flood Water and Storm Runoff

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

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

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

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

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

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

- ☐ History of downstream flood damage to public or private property.
- ☐ Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
  - ☐ 1. Developed public or private property.
  - ☐ 2. Stream banks susceptible to scouring and erosion.
  - ☐ 3. Important habitat for aquatic life.
- ☐ The wetland is large in size and naturally vegetated.

12/19/2013

☐ Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.

- ☐ 1. A large amount of impervious surface in urbanized areas.
- ☐ 2. Relatively impervious soils.
- ☐ 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

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

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

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

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

- ☐ Presence of dead forest or shrub areas in sufficient amounts to result in diminished

nutrient uptake.

- ☐ Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- ☒ Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- ☐ Current use in the wetland results in disturbance that compromises this function.

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

- ☐ The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
- ☐ The wetland provides flows to Class A surface waters.
- ☐ The wetland contributes to the protection or improvement of water quality of any impaired waters.
- ☐ The wetland is large in size and naturally vegetated.

3. Fish Habitat

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

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

12/19/2013

4. Wildlife Habitat

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

- ☐ Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
- ☐ Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
- ☐ Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
- ☐ Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
- ☐ Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
- ☐ Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
- ☐ Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
- ☐ Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
- ☐ Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
  - ☐ 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
  - ☐ 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
  - ☐ 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

☐ Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.

☐ Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.

☐ Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.

☐ Meets four or more of the following conditions indicative of wildlife habitat diversity:

- ☐ 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
- ☐ 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
- ☐ 3. Located adjacent to a lake, pond, river or stream;
- ☒ 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
- ☐ 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
- ☐ 6. One of the following:
  - ☐ i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
  - ☐ ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
  - ☐ iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;

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

☐ Contains evidence that it is used by wetland dependent wildlife species.

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

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

☐ The wetland is small in size for its type and does not represent fugitive habitat in

developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- ☐ The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- ☐ The current use in the wetland results in frequent cutting, mowing or other disturbance.
- ☐ The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.

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

- ☐ The wetland complex is large in size and high in quality.
- ☐ The habitat has the potential to support several species based on the assessment above.
- ☐ Wetland is associated with an important wildlife corridor.
- ☐ The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

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

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

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

- ☐ Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- ☐ Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
  - ☐ Deep peat accumulation reflecting a long history of wetland formation;
  - ☐ Forested wetlands displaying very old trees and other old growth characteristics;
  - ☐ A wetland natural community that is at the edge of the normal range for that type;

- ☐ A wetland mosaic containing examples of several to many wetland community types; or
- ☐ A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

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

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

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

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

List name of species and ranking:

7. Education and Research in Natural Sciences

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

- ☐ Owned by or leased to a public entity dedicated to education or research.
- ☐ History of use for education or research.
- ☐ Has one or more characteristics making it valuable for education or research.

8. Recreational Value and Economic Benefits

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

- ☐ Used for, or contributes to, recreational activities.
- ☐ Provides economic benefits.
- ☐ Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
- ☐ Used for harvesting of wild foods.

Comments:

9. Open Space and Aesthetics

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

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

10. Erosion Control through Binding and Stabilizing the Soil

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

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

What type of erosive forces are present?

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

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

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

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

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

- ☐ The stream contains high sinuosity.
- ☐ Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

C.A. Denison Lumber Co.- Halifax Quarry
Potential Rare, Threatened, and Endangered Species and Significant Natural Communities in the Project Region and Onsite Habitats Summary
Prepared by VHB (J. Burt)
December 24, 2013

Species	Common Name	Type	State Rank	Global Rank	VT Status	Federal Status	Last Observed (at EO Location)	Habitat Description[1]	Potential habitat onsite (Y/N)	Targeted in 2013 Survey (Y/N)
Pterospora andromedea	Pinedrops	Plant	S1	G5	E	-	-	Deciduous to mixed evergreen forests	Yes	Yes
Thelypteris hexagonoptera	Broad beech fern	Plant	S2	G5	-	-	-	Prefers moist, rich, woodland soils.	Yes	No (not listed)
Dryopteris filix-mas	Male fern	Plant	S2	G5	T	-	-	Cool moist woods, talus slopes, generally limey soils	Yes	Yes
Triphora trianthophora	Three-birds orchid	Plant	S1	G3G4	T	-	-	Deciduous forests, usually in association with *Fagus grandifolia* on slopes and benches	Yes	Yes
Myriophyllum farwellii	Farwell's water-milfoil	Plant	S2	G5	-	-	1991	submergent edges of ponds and lakes	No	No

[1]Sources for habitat description listed below:

Gleason, Henry A. and Cronquist, Aurthur. 1991. *Manual of Vascular Plants of Northeaster United States and Adjacent Canada*. The New York Botanical Garden.

Thompsen, Elizabeth H. and Sorenson, Eric R. 2005. *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont*. Vermont Department of Fish and Wildlife and The Nature Conservancy.

Newcomb, Lawrence. 1977. *Newcomb's Wildflower Guide*. Little, Brown, and Company, Boston

EFloras.org. http://www.efloras.org/index.aspx

Haines, Arthur. 2011. *Flora Novae Angliae*. New England Wildflower Society/Yale University Press, New Haven, CT. 973 Pp.

U.S. Fish and Wildlife Service

Natural Resources of Concern

This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

NEW ENGLAND ECOLOGICAL SERVICES FIELD OFFICE
70 COMMERCIAL STREET, SUITE 300
CONCORD, NH 03301
(603) 223-2541
http://www.fws.gov/newengland

Project Name:

Halifax Quarry

Project Counties:

Windham, VT

Project Type:

Mining

Endangered Species Act Species List (USFWS Endangered Species Program).

There are a total of **2** threatened, endangered, or candidate species, and/or designated critical habitat on your species list. Species on this list are the species that may be affected by your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Please contact the designated FWS office if you have questions.

Species that may be affected by your project:

Clams	Status	Species Profile	Contact

U.S. Fish and Wildlife Service

Natural Resources of Concern

Dwarf wedgemussel (*Alasmidonta heterodon*)	Endangered	species info		New England Ecological Services Field Office
Flowering Plants				
Northeastern bulrush (*Scirpus ancistrochaetus*)	Endangered	species info		New England Ecological Services Field Office

FWS National Wildlife Refuges (USFWS National Wildlife Refuges Program).

There are **1** refuges in your refuge list

Silvio O. Conte National Fish And Wildlife Refuge (413) 863-0209 52 AVENUE A TURNERS FALLS, MA01376	refuge profile

FWS Migratory Birds (USFWS Migratory Bird Program).

Most species of birds, including eagles and other raptors, are protected under the Migratory Bird Treaty Act (16 U.S.C. 703). Bald eagles and golden eagles receive additional protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668). The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

NWI Wetlands (USFWS National Wetlands Inventory).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these

U.S. Fish and Wildlife Service

Natural Resources of Concern

requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

Denison Lumber- Halifax Quarry
Vegetation Communities and Plant Assemblages - Partial Species Checklist
Halifax, Vermont
Prepared by VHB (J. Burt)
December 17, 2013

Scientific Name	Common Name	Family	Northern Hardwood Forest	Hemlock Forest	Hemlock-Northern Hardwood Forest
Acer pensylvanicum L.	striped maple	Aceraceae	x	x	x
Acer rubrum L.	red maple	Aceraceae	x	x	x
Acer saccharum Marsh.	sugar maple	Aceraceae	x	x	x
Acer spicatum Lam.	mountain maple	Aceraceae	x	x	x
Adiantum pedatum L.	northern maidenhair	Pteridaceae	x		x
Alnus incana (L.) Moench	gray alder	Betulaceae	x		x
Betula alleghaniensis Britt.	yellow birch	Betulaceae	x	x	x
Carya cordiformis (Wangenh.) K. Koch	bitternut hickory	Juglandaceae	x		x
Cirsium P. Mill.	thistle	Asteraceae	x		x
Dennstaedtia punctilobula (Michx.) T. Moore	eastern hayscented fern	Dennstaedtiaceae	x		x
Dryopteris intermedia (Muhl. ex Willd.) Gray	intermediate woodfern	Dryopteridaceae	x	x	x
Dryopteris marginalis (L.) Gray	marginal woodfern	Dryopteridaceae	x	x	x
Fagus grandifolia Ehrh.	American beech	Fagaceae	x	x	x
Fraxinus americana L.	white ash	Oleaceae	x		x
Huperzia lucidula (Michx.) Trevisan	shining clubmoss	Lycopodiaceae		x	
Impatiens capensis Meerb.	jewelweed	Balsaminaceae	x		x
Lychnis coronaria (L.) Desr.	rose campion	Caryophyllaceae	x		x
Lycopodium obscurum L.	rare clubmoss	Lycopodiaceae	x		x
Mitchella repens L.	partridgeberry	Rubiaceae	x		x
Onoclea sensibilis L.	sensitive fern	Dryopteridaceae	x		x
Osmunda regalis L.	royal fern	Osmundaceae	x		x
Ostrya virginiana (P. Mill.) K. Koch	hophornbeam	Betulaceae	x		x
Phytolacca americana L.	American pokeweed	Phytolaccaceae	x		x
Pinus strobus L.	eastern white pine	Pinaceae	x		x
Polystichum acrostichoides (Michx.) Schott	Christmas fern	Dryopteridaceae	x	x	x
Populus grandidentata Michx.	bigtooth aspen	Salicaceae	x		x
Pyrola elliptica Nutt.	waxflower shinleaf	Pyrolaceae	x	x	x
Quercus rubra L.	northern red oak	Fagaceae	x		x
Rubus idaeus L.	American red raspberry	Rosaceae	x		x
Rubus setosus Bigelow	setose blackberry	Rosaceae	x		x
Sambucus racemosa L.	red elderberry	Caprifoliaceae	x		x
Thelypteris noveboracensis (L.) Nieuwl.	New York fern	Thelypteridaceae	x		x
Tsuga canadensis (L.) Carr.	eastern hemlock	Pinaceae	x	x	x
Urtica dioica L.	stinging nettle	Urticaceae	x		x
Viburnum lantanoides Michx.	hobblebush	Caprifoliaceae	x	x	x

Notes:

Species nomenclature follows the Flora of North America Project (USDA,NRCS 2004).

Botanical data collected November 2012 and June 2013, by Environmental Scientist: Joseph Burt (VHB)

Denison Lumber Company
Halifax Quarry
Halifax, Vermont
Natural Resources Map

October 30, 2013
Revised: December 4, 2013

Potential Bear Wetland Habitat

Potential Bear Wetland Habitat

2013-CM-2

2013-CM-2

2013-AC-8

2013-AC-8

2012-RS-2

2013-AC-9

2013-AC-1

2013-AC-3

2013-AC-2

2013-AC-4

2013-CM-1

2013-AC-5

2012-RS-1

2013-AC-6

2013-JB-1

2013-AC-7

2013-CM-3

VHB Study Area
Approximately 53 Acres
42°47'17.9"N
72°42'11.836"W

TOWN OF HALIFAX

VHB Study Area

TOWN OF HALIFAX

EVANS RD

Copyright © 2013 National Geographic Society, i-cubed

Image courtesy of USGS State of Michigan

- Conceptual Project Area
- VHB Delineated Streams
  - Ephemeral
  - Intermittent
  - Perennial
- VHB Study Area
- VHB Culverts
- VHB Delineated Wetlands
  - Potential Class II
  - Potential Class III
- Delineation Data Point Locations
- Potential 50ft Class II Wetland Buffer
- Potential 50ft Riparian Buffer
- Hemlock - Northern Hardwood Forest
- Hemlock Forest
- Northern Hardwood Forest
- Cut Over Northern Hardwood Forest
- ANR Deer Wintering Area (2011)
- VHB Proposed Deer Wintering Area
- VHD Stream (2008)
- VHD Waterbody (2008)
- ANR Bear Wetland (2011)
- ANR Bear Mast (2011)
- ANR Bear Crossing (2011)
- ANR Natural Heritage EOs (2013)
- VSWI Wetlands (2012)
- 50 ft. Contour
- Town Boundary

N

200 100 0 200
Feet

Sources: Background Aerial from Bing (2012); Roads by VTrans (2012); Database of Vermont Natural Resources Data provided by VCGI; Bear Wetland, Mast & Crossing by ANR (2011), WDP Element Occurences by ANR (2013), VSWI Wetlands by ANR (2012), VHD Streams & Waterbodies by USGS (2010); Deer Wintering Areas by ANR (2012), Contours generated from HydroDEM by VCGI (2009); Study Area, Culvert Locations, Delineation Data Point Locations, Delineated Streams, Delineated Wetlands, Stream Buffers, Wetland Buffers, Proposed Deer Wintering Area, Deer Wintering Area Continues and Community Types by VHB (2012-2013)

VHB Vanasse Hangen Brustlin, Inc.

F:\57595.00 Halifax Quarry NR\GIS\Project\Halifax Quarry_NR_Map_landscaped-revise.mxd Exported by: jtherrien

Dennison Lumber Co. - Halifax Quarry
Halifax, Vermont
Summary of Delineated Wetlands
Prepared by VHB (RMS, JLB, ARC)
December 4, 2013

VHB Delineated Wetlands

Wetland ID	Delineated Area (Square Feet)[1] (**bold** indicates wetland continues past study area)	Cowardin Classification[2]	Vermont Wetland Rules Classification							Comments
			Contiguous to a VSWI-mapped Wetland?	Elevation greater than 2500 feet	Riparian Wetland Contiguous to Stream Channel? (Flow Regime)[4]	VWR Section 4.6 Presumptions[5]	VWR Section 5 Functional Criteria Presence/ Significance		VHB Proposed VWR Classification[7]	
							Type[6]	VHB-Proposed Significant?		
2012-RS-1	4,652	PEM	No	No	No	-	5.1	No	Class III	Emergent wetland; topographic depression; saturated to the surface; high water table; organic muck; dominant hydrophytic vegetation includes *Carex stricta* and *Eupatorium perfoliatum*
2012/2013-RS-2	3460	PEM	Yes	No	No	a	5.1	Yes	Class II	Emergent wetland; connects with large VSWI mapped feature; receives flow from culvert under access road; dominant hydrophytic vegetation includes *Onoclea sensibilis* and an unidentified *Carex* species
2012-RS-3	1213	PEM/PFO	No	No	No	-	5.1	No	Class III	Emergent wetland in a forested setting; drains to 2012-SC-RS-6; Organic muck; dominant hydrophytic vegetation includes *Onoclea sensibilis* and *Phalaris arundinacea*
2012-NS-1	744	PEM/PSS	No	No	No	-	5.1	No	Class III	Emergent/scrub shrub feature; swale feature; saturated to the surface; high water table; wetland drainage patterns; oxidized root channels; dominant hydrophytic vegetation includes *Onoclea sensibilis* and *Fraxinus pennsylvanica*
2012-NS-3	4481	PEM/PFO	No	No	No	a	5.1, 5.2	Yes	Class II	Emergent wetland in a forested setting; connects with larger complex outside study area; toe of slope feature; saturated to the surface; organic muck; hydrophytic vegetation includes *Onoclea sensibilis* and an unidentified *Glyceria* species

Dennison Lumber Co. - Halifax Quarry
Halifax, Vermont
Summary of Delineated Wetlands
Prepared by VHB (RMS, JLB, ARC)
December 4, 2013

VHB Delineated Wetlands

Wetland ID	Delineated Area (Square Feet)[1] (**bold** indicates wetland continues past study area)	Cowardin Classification[2]	Vermont Wetland Rules Classification							Comments
			Contiguous to a VSWI-mapped Wetland?	Elevation greater than 2500 feet	Riparian Wetland Contiguous to Stream Channel? (Flow Regime)[4]	VWR Section 4.6 Presumptions[5]	VWR Section 5 Functional Criteria Presence/ Significance		VHB Proposed VWR Classification[7]	
							Type[6]	VHB-Proposed Significant?		
2012-JB-1	644	PEM/PFO	No	No	No	a	5.1, 5.2	Yes	Class II	Emergent wetland in forested setting; connects with larger complex outside study area; swale feature; saturated to the surface; high water table; dominant hydrophytic vegetation includes *Onoclea sensibilis*
2012-JB-2	1151	PEM/PSS	Yes	No	Yes (P)	a, b, c,	5.1, 5.2, 5.4, 5.10	Yes	Class II	Emergent/scrub shrub feature; large beaver influenced wetland with perennial unnamed tributary to green river (outside study area); high water table; organic muck; dominance vegetation includes *Juncus effusus* and *Spiraea alba*
2013-CM-1	3065	PEM/PFO	No	No	No	-	5.2	No	Class III	Emergent wetland in forested setting; seep wetland feature located on side slope; drains to stream 2013-SC-JB-5; vegetation includes *Osmunda claytoniana* and *Osmunda regalis*
2013-CM-2	**15841**	PEM/PSS/ PFO	Yes	No	Yes (P)	a, b	5.1, 5.2, 5.10	Yes	Class II	Saturated to the surface; drainage channels; well defined topographical break in slope; vegetation includes *Alnus incana, Onoclea sensibilis,* and *Tsuga canadensis.*
2013-CM-3	14664	PEM	No	No	No	-	5.1, 5.2	No	Class III	Emergent wetland along a plateau area with surrounding steep slopes; seep wetland with tip-ups; old logging road located within portion of wetland; saturated to surface; vegetation dominated by *Scirpus atrovirens* and *Carex crinita* ; wetland function at lower levels

Dennison Lumber Co. - Halifax Quarry
Halifax, Vermont
Summary of Delineated Wetlands
Prepared by VHB (RMS, JLB, ARC)
December 4, 2013

VHB Delineated Wetlands

Wetland ID	Delineated Area (Square Feet)[1] (**bold** indicates wetland continues past study area)	Cowardin Classification[2]	Vermont Wetland Rules Classification							Comments
			Contiguous to a VSWI-mapped Wetland?	Elevation greater than 2500 feet	Riparian Wetland Contiguous to Stream Channel? (Flow Regime)[4]	VWR Section 4.6 Presumptions[5]	VWR Section 5 Functional Criteria Presence/ Significance		VHB Proposed VWR Classification[7]	
							Type[6]	VHB-Proposed Significant?		
2013-AC-1	4949	PFO	No	No	No	-	5.1, 5.2	No	Class III	Seep wetland with hydrology increased by tree removal and skidder movement; ephemeral stream throughflows but but wetland independent of stream and does not provide riparian function; Primary drainage is ephemeral outlet channel to downstream VSWI; Typical vegetation is *Tsuga, Osmunda, Polystichum, Impatiens, Onoclea, Dryopteris* .
2013-AC-2	138	PEM	No	No	No	-	5.1, 5.2	No	Class III	Wetland created where GW discharge intersects a soil borrow/log road ditch where hydrology is attenuated; peak flows discharge through log road culvert but no jurisdictional connection to downhill wetland 2013-AC-1; Typical vegetation is *Impatiens, Carex*
2013-AC-3	725	PEM	No	No	No	-	5.1, 5.2	No	Class III	Wetland in depression augmented by old skidder movement; seep discharge; intermittent stream throughflows but wetland independent of stream and does not provide riparian function; Typical vegetation is *Onoclea, Impatiens, Osmunda, Polystichum.*
2013-AC-4	1738	PEM	No	No	No	-	5.1	No	Class III	Wetland in flat where ephemeral stream flow dissipates and hydro is augmented by tree removal; no downstream connections; Typical vegetation is *Onoclea, Impatiens, Eutrochium*

Dennison Lumber Co. - Halifax Quarry
Halifax, Vermont
Summary of Delineated Wetlands
Prepared by VHB (RMS, JLB, ARC)
December 4, 2013

VHB Delineated Wetlands										
Wetland ID	**Delineated Area (Square Feet)[1]** (**bold** indicates wetland continues past study area)	**Cowardin Classification[2]**	**Vermont Wetland Rules Classification**							**Comments**
			Contiguous to a VSWI-mapped Wetland?	**Elevation greater than 2500 feet**	**Riparian Wetland Contiguous to Stream Channel? (Flow Regime)[4]**	**VWR Section 4.6 Presumptions[5]**	**VWR Section 5 Functional Criteria Presence/ Significance**		**VHB Proposed VWR Classification[7]**	
							Type[6]	**VHB-Proposed Significant?**		
2013-AC-5	3797	PEM	No	No	No	-	5.1	No	Class III	Wetland in flat where ephemeral stream flow dissipates and hydro is augmented by tree removal; no downstream connections; Typical vegetation is *Onoclea, Impatiens, Eutrochium, Acer*
2013-AC-6	2174	PEM	No	No	No	-	5.1	No	Class III	PEM wetland opening created by tree removal from hemlock forest; most hydrology from ephemeral stream dissipation (wetland not serving riparian function) or overland inputs and wetland hydro/veg augmented by tree removal; wetland typical vegetation is *Impatiens, Onoclea* .
2013-AC-7	673	PEM	No	No	No	-	5.1	No	Class III	PEM wetland opening created by tree removal from hemlock forest; hydrology from overland inputs and seasonal high GW discharge; wetland hydro/veg augmented by tree removal; wetland typical vegetation is *Impatiens, Onoclea* .
2013-AC-8	**10091**	PFO/PSS	Yes	No	Yes (P)	a, b, c	5.1, 5.2, 5.3, 5.4, 5.10	Yes	Class II	Discharge seeps in PFO and active beaver activity in PSS; black bear use noted, hydro from seep discharge, perennial stream inputs (Deer Park Brook and 2012-SC-JB-1), and ephemeral or intermittent stream inputs; beaver impoundment on Deer Park Brook creates wetland in eastern extent; Typical vegetation is *Alnus, Tsuga, Eutrochium, Onoclea, Impatiens,* and *Carex* species.

Dennison Lumber Co. - Halifax Quarry
Halifax, Vermont
Summary of Delineated Wetlands
Prepared by VHB (RMS, JLB, ARC)
December 4, 2013

VHB Delineated Wetlands

Wetland ID	Delineated Area (Square Feet)[1] (**bold** indicates wetland continues past study area)	Cowardin Classification[2]	Vermont Wetland Rules Classification							Comments
			Contiguous to a VSWI-mapped Wetland?	Elevation greater than 2500 feet	Riparian Wetland Contiguous to Stream Channel? (Flow Regime)[4]	VWR Section 4.6 Presumptions[5]	VWR Section 5 Functional Criteria Presence/ Significance		VHB Proposed VWR Classification[7]	
							Type[6]	VHB-Proposed Significant?		
2013-AC-9	569	PFO	No	No	No	-	5.2	No	Class III	Wetland in depression augmented by old skidder movement; seep discharge; ephemeral stream throughflows but wetland independent of stream and does not provide riparian function; Typical vegetation is *Betula, Dennstaedtia, Dryopteris, Glyceria* .
2013-JB-1	543	PEM	No	No	No	-	5.1	No	Class III	PEM wetland opening in hemlock forest; most hydrology from ephemeral stream dissipation (wetland not serving riparian function) or overland inputs and wetland hydro/veg augmented by tree removal; wetland typical vegetation is I*mpatiens, Glyceria, Thelypteris* .

[1]All wetlands field-delineated per the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast and North Central Region. U.S. Army Corps of Engineers. 2012. Wetlands have been field reviewed by the VT DEC

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

[3]When the wetland is part of a natural community (undisturbed), *Wetland Woodland Wildland* (Thompson and Sorenson 2005) is used followed by Vermont Community ranking in parentheses (S1=very rare, S2=rare, S3=uncommon, S4=common, S5=very common). The natural community type is used in several instances to evaluate the wetland's significance under the Vermont Wetland Rules.

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

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

[6]VWR Section 5: Functional Criteria for Evaluating a Wetland's Significance: 5.1=Water Storage for Flood Water and Storm Runoff, 5.2=Surface and Groundwater Protection, 5.3=Fish Habitat, 5.4=Wildlife Habitat, 5.5=Exemplary Wetland Natural Community, 5.6=Rare, Threatened or Endangered Species Habitat, 5.7=Education and Research in Natural Sciences, 5.8=Recreational Value and Economic Benefits, 5.9=Open Space and Aesthetics, 5.10=Erosion Control Through Binding and Stabilizing the Soil.

[7]VHB-Proposed VWR Classification is based on review and application of the VWR effective September 15, 2010, particularly VHB's interpretation of Section 4.6 Presumptions and is subject to final determinations by the ANR-DEC

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site:	Halifax Quarry	City/County:	Halifax/Windham	Samp. Date:	10/17/2013
Applicant/Owner:	Denison Lumber Co.	State:	Verrmont	Sampling Point:	2013-AC6-Wet
Investigator(s):	JLB	Section, Township, Range:	Halifax		
Landform (hillslope, terrace, etc.):	Terrace	Local relief (concave, convex, none):	Concave	Slope (%):	
Subregion (LRR or MLRA):	LRR R	Lat: 42°47'16.202"N	Long: 72°41'49.937"W	Datum:	NAD83
Soil Map Unit:	Marlow fine sandy loam, 15 to 25 percent			NWI Class:	PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	NO	**Is This Sample Area**	
Hydric Soil Present?	YES	**Within a Wetland?**	NO
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2013-AC-6

Remarks:

Recent tree removal augments hydrology and vegetation

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Aquatic Fauna (B13)	X	Drainage Patterns (B10)
X	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)	X	Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?		Depth (inches):			
Water Table Present?	X	Depth (inches):	Surface		
Saturation Present? (includes capillary fringe)	X	Depth (inches):	Surface	**Wetland Hydrology Present?**	YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ET loss due to tree removal has increased hydrology

VEGETATION - Use scientific names of plants.

Sampling Point: 2013-AC6-Wet

	Absolute % Cover	Dom. Sp?	Indicator Status
Tree Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 10' RAD)			
1. Impatiens capensis Meerb.	63		FACW
2. Onoclea sensibilis L.	38		FACW
3.		X	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	101	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: _____ (A)

Dominants across all strata: 1 (B)

% Dominants OBL, FACW, FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW 101	x 2 =	202
FAC	x 3 =	
FACU	x 4 =	
UPL	x 5 =	
Sum: 101 (A)		202 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

_____ Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? _____

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

SOIL

Sampling Point: 2013-AC6-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1		7.5YR 3/4	2		PL	Silt Loam	
6-12	10YR 4/2		10YR 3/6	5		PL,M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

	Histosol (A1)		Polyvalue Below Surface (S8) (LRR R, MLRA 149B)		2cm Muck (A10) (LRR K, L, MLRA 149B)
	Histic Epipedon (A2)		Thin Dark Surface (S9) (LRR R, MLRA 149B)		Coast Prairie Redox (A16) (LRR K, L, R)
	Black Histic (A3)		Loamy Mucky Mineral (F1) (LRR K, L)		5cm Mucky Peat or Peat (S3) (LRR K, L, R)
	Hydrogen Sulfide (A4)		Loamy Gleyed Matrix (F2)		Dark Surface (S7) (LRR K, L)
	Stratified Layers (A5)		Depleted Matrix (F3)		Polyvalue Below Surface (S8) (LRR K, L)
	Depleted Below Dark Surface (A11)	X	Redox Dark Surface (F6)		Thin Dark Surface (S9) (LRR K, L)
	Thick Dark Surface (A12)		Depleted Dark Surface (F7)		Iron-Manganese Masses (F12) (LRR K, L, R)
	Sandy Mucky Mineral (S1)		Redox Depressions (F8)		Piedmont Floodplain Soils (F19) (MLRA 149B)
	Sandy Gleyed Matrix (S4)				Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
	Sandy Redox (S5)				Red Parent Material (TF2)
	Stripped Matrix (S6)				Very Shallow Dark Surface (TF12)
	Dark Surface (S7) (LRR R, MLRA 149B)				Other (Explain in Remarks)

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? YES

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax/Windham | Samp. Date: 10/17/2013

Applicant/Owner: Denison Lumber Co. | State: Verrmont | Sampling Point: 2013-AC6-UP

Investigator(s): JLB | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42°47'15.762"N | Long: 72°41'49.706"W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 15 to 25 percent | NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area**	
Hydric Soil Present?	NO	**Within a Wetland?**	NO
Wetland Hydrology Present?	NO	**If yes, optional Wetland Site ID:**	

Remarks:

Recent logging observed in the area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	Water-Stained Leaves (B9)	
High Water Table (A2)	Aquatic Fauna (B13)	
Saturation (A3)	Marl Deposits (B15)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	
Drift Deposits (B3)	Presence of Reduced Iron (C4)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	
Iron Deposits (B5)	Thin Muck Surface (C7)	
Inundation Visible on Aerial (B7)	Other (Explain in Remarks)	
Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Depth (inches):

Water Table Present? Depth (inches):

Saturation Present? Depth (inches):

(includes capillary fringe)

Wetland Hydrology Present? NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation greater than 14"

VEGETATION - Use scientific names of plants.

Sampling Point: 2013-AC6-UP

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 10' RAD)			
1. Onoclea sensibilis L.	38		FACW
2. Impatiens capensis Meerb.	38		FACW
3. Rubus idaeus L.	15	X	FAC
4.			
5.			
6.	10		
7.			
8.			
9.			
10.			
11.			
12.			
	101	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 1 (A)

Dominants across all strata: 1 (B)

% Dominants OBL, FACW, FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW 76	x 2 =	152
FAC 15	x 3 =	45
FACU	x 4 =	
UPL	x 5 =	
Sum: 91 (A)		197 (B)

Prevalence Index = B/A = 2.16

Hydrophytic Vegetation Indicators:

X Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

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

SOIL

Sampling Point: 2013-AC6-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2						Silt Loam	
12-14	10YR 3/2		10YR 3/6	1		M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? NO

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax/Windham | Samp. Date: 10/17/2013

Applicant/Owner: Denison Lumber Co. | State: Verrmont | Sampling Point: 2013-JB1-WET

Investigator(s): JLB | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42°47'15.374"N | Long: 72°41'50.665"W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 15 to 25 percent | NWI Class: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area**	
Hydric Soil Present?	YES	**Within a Wetland?**	YES
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2013-JB-1

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Aquatic Fauna (B13)	X	Drainage Patterns (B10)
X	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)	X	Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?		Depth (inches):	
Water Table Present?	X	Depth (inches):	6
Saturation Present? (includes capillary fringe)	X	Depth (inches):	Surface

Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2013-JB1-WET

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 10' RAD)			
1. Impatiens capensis Meerb.	38		FACW
2. Glyceria canadensis (Michx.) Trin.	15		OBL
3. Thelypteris noveboracensis (L.) Nieuwl.	3	X	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	56	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 1 (A)

Dominants across all strata: 1 (B)

% Dominants OBL, FACW, FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:			Multiply By:
OBL	15	x 1 =	15
FACW	38	x 2 =	76
FAC	3	x 3 =	9
FACU		x 4 =	
UPL		x 5 =	
Sum:	56 (A)		100 (B)

Prevalence Index = B/A = 1.79

Hydrophytic Vegetation Indicators:

X Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

___ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

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

SOIL

Sampling Point: 2013-JB1-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1						Silt Loam	
4-12	10YR 3/1		5YR 3/6	5		PL,M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? YES

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax/Windham | Samp. Date: 10/17/2013

Applicant/Owner: Denison Lumber Co. | State: Verrmont | Sampling Point: 2013-AC4-UP

Investigator(s): JLB | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Convex | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42°47'17.082"N | Long: 72°41'46.115"W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 8 to 15 percent | NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	NO	**Is This Sample Area**	
Hydric Soil Present?	NO	**Within a Wetland?**	NO
Wetland Hydrology Present?	NO	**If yes, optional Wetland Site ID:**	

Remarks:

Selective tree removal in the area; data point located between wetlands 2013-AC-4 and 2013-AC-5

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	Water-Stained Leaves (B9)	
High Water Table (A2)	Aquatic Fauna (B13)	
Saturation (A3)	Marl Deposits (B15)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	
Drift Deposits (B3)	Presence of Reduced Iron (C4)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	
Iron Deposits (B5)	Thin Muck Surface (C7)	
Inundation Visible on Aerial (B7)	Other (Explain in Remarks)	
Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Depth (inches):

Water Table Present? Depth (inches):

Saturation Present? Depth (inches):

(includes capillary fringe)

Wetland Hydrology Present? NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation greater than 16"

VEGETATION - Use scientific names of plants.

Sampling Point: 2013-AC4-UP

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Fraxinus americana L.	38	X	FACU
2. Tsuga canadensis (L.) Carrière	38	X	FACU
3. Acer saccharum	15		FACU
4.			
5.			
6.			
7.			
	91	= Total Cover	

Sapling Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Shrub Stratum (Plot size: 15' RAD)			
1. Fagus grandifolia Ehrh.	3	X	FACU
2. Prunus serotina Ehrh.	3	X	FACU
3.			
4.			
5.			
6.			
7.			
	6	= Total Cover	

Herb Stratum (Plot size: 10' RAD)			
1. Thelypteris noveboracensis (L.) Nieuwl.	38		FAC
2. Osmunda claytoniana L.	3		FAC
3.		X	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	41	= Total Cover	

Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: (A)

Dominants across all strata: 5 (B)

% Dominants OBL, FACW, FAC: (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW	x 2 =	
FAC 41	x 3 =	123
FACU 97	x 4 =	388
UPL	x 5 =	
Sum: 138 (A)		511 (B)

Prevalence Index = B/A = 3.70

Hydrophytic Vegetation Indicators:

_____ Dominance Test is > 50%

_____ Prevalence Index is <= 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? NO

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

SOIL

Sampling Point: 2013-AC4-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/3						Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? NO

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax/Windham | Samp. Date: 10/17/2013

Applicant/Owner: Denison Lumber Co. | State: Verrmont | Sampling Point: 2013-AC4-WET

Investigator(s): ARC/JQL | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42°47'17.417"N | Long: 72°41'46.568"W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 8 to 15 percent | NWI Class: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area**	
Hydric Soil Present?	YES	**Within a Wetland?**	YES
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2013-AC-4

Remarks:

Recent tree removal augments hydrology and vegetation

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Aquatic Fauna (B13)		Drainage Patterns (B10)
X	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)	X	Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?		Depth (inches):	
Water Table Present?	X	Depth (inches):	10
Saturation Present? (includes capillary fringe)	X	Depth (inches):	Surface

Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2013-AC4-WET

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Acer rubrum L.	15	X	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1. Fagus grandifolia Ehrh.	15	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1. Sambucus nigra L.	3	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	3	= Total Cover	
Herb Stratum (Plot size: 10' RAD)			
1. Scirpus cyperinus (L.) Kunth	15		FACW
2. Solidago canadensis L.	15		FACU
3. Impatiens capensis Meerb.	15	X	FACW
4. Eupatorium maculatum L. var. maculatum	15		FACW
5. Onoclea sensibilis L.	15		FACW
6. Thelypteris noveboracensis (L.) Nieuwl.	3		FAC
7. Clematis virginiana L.	3		FAC
8. Glyceria melicaria (Michx.) F.T. Hubbard	3		OBL
9. Euthamia graminifolia (L.) Nutt.	3		FAC
10. Dryopteris intermedia (Muhl. ex Willd.) A. Gray	3		FACU
11. Polystichum acrostichoides	3		FACU
12.			
	93	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

# Dominants OBL, FACW, FAC:	3	(A)
# Dominants across all strata:	4	(B)
% Dominants OBL, FACW, FAC:	75%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:			Multiply By:
OBL	3	x 1 =	3
FACW	63	x 2 =	126
FAC	24	x 3 =	72
FACU	36	x 4 =	144
UPL		x 5 =	
Sum:	126 (A)		345 (B)

Prevalence Index = B/A = 2.74

Hydrophytic Vegetation Indicators:

X Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

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

SOIL

Sampling Point: 2013-AC4-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
2-0							Muck	
0-12+	10YR 3/1		10YR 3/6			PL	Silt Loam	FFP redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? YES

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax / Windham | Samp. Date: 11/14/2012

Applicant/Owner: Denison Lumber Co. | State: Vermont | Sampling Point: 2012-DP-RS1-Up

Investigator(s): RMS | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42° 47' 14.877" N | Long: 72° 42' 3.431" W | Datum: NAD83

Soil Map Unit: Tunbridge-Lyman fine sandy loams, 15 to 25 percent slopes | NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	NO	**Is This Sample Area**	
Hydric Soil Present?	NO	**Within a Wetland?**	NO
Wetland Hydrology Present?	NO	**If yes, optional Wetland Site ID:**	

Remarks:

Past logging observed in the area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	Water-Stained Leaves (B9)	
High Water Table (A2)	Aquatic Fauna (B13)	
Saturation (A3)	Marl Deposits (B15)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	
Drift Deposits (B3)	Presence of Reduced Iron (C4)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	
Iron Deposits (B5)	Thin Muck Surface (C7)	
Inundation Visible on Aerial (B7)	Other (Explain in Remarks)	
Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Depth (inches):

Water Table Present? Depth (inches):

Saturation Present? Depth (inches):

(includes capillary fringe)

Wetland Hydrology Present? NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Approx. 0.69 inches of rain fell through the month of November; Approx. 0.61 during the 5 days prior to sampling (NOAA, Pittsfield, MA)

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2012-DP-RS1-Up

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Ostrya virginiana (Mill.) K. Koch	3		FACU
2. Fagus grandifolia Ehrh.	10	X	FACU
3. Fraxinus americana L.	3		FACU
4. Acer saccharum Marsh.	3		FACU
5.			
6.			
7.			
	19	= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1. Ulmus americana L.	5	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5	= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' RAD)			
1. Rubus allegheniensis Porter	10.5		FACU
2. Polystichum acrostichoides (Michx.) Schott	38		FACU
3. Dryopteris intermedia (Muhl. ex Willd.) A. Gray	20.5	X	FACU
4. Pteridium aquilinum (L.) Kuhn	5		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	74	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 1 (A)

Dominants across all strata: 3 (B)

% Dominants OBL, FACW, FAC: 33% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW 5	x 2 =	10
FAC	x 3 =	
FACU 93	x 4 =	372
UPL	x 5 =	
Sum: 98 (A)		382 (B)

Prevalence Index = B/A = 3.90

Hydrophytic Vegetation Indicators:

____ Dominance Test is > 50%

____ Prevalence Index is <= 3.0[1]

____ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? NO

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

SOIL

Sampling Point: 2012-DP-RS1-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 2/1						Fine Sandy Loam	Highly Organic
6-16+	10 YR 4/4						Fine Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? NO

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax / Windham | Samp. Date: 11/14/2012

Applicant/Owner: Denison Lumber Co. | State: Vermont | Sampling Point: 2012-DP-RS1-Wet

Investigator(s): RMS | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42° 47' 14.808" N | Long: 72° 42' 3.097" W | Datum: NAD83

Soil Map Unit: Tunbridge-Lyman fine sandy loams, 15 to 25 percent slopes | NWI Class: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area**	
Hydric Soil Present?	YES	**Within a Wetland?**	YES
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2012-RS1

Remarks:

Past logging observed in the area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

X	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Aquatic Fauna (B13)	X	Drainage Patterns (B10)
X	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)	X	Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?	X	Depth (inches):	1
Water Table Present?	X	Depth (inches):	0
Saturation Present? (includes capillary fringe)	X	Depth (inches):	0

Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Approx. 0.69 inches of rain fell through the month of November; Approx. 0.61 during the 5 days prior to sampling (NOAA, Pittsfield, MA)

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2012-DP-RS1-Wet

	Absolute % Cover	Dom. Sp?	Indicator Status
Tree Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1. Ulmus americana L.	5	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5	= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' RAD)			
1. Onoclea sensibilis L.	10.5		FACW
2. Dryopteris intermedia (Muhl. ex Willd.) A. Gray	10.5		FACU
3. Glyceria canadensis (Michx.) Trin.	38	X	OBL
4. Symphyotrichum novae-angliae (L.) G.L. Nesom	5		FACW
5. Eupatorium perfoliatum L.	5		FACW
6. Symphyotrichum novae-angliae (L.) G.L. Nesom	5		FACW
7.			
8.			
9.			
10.			
11.			
12.			
	74	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

# Dominants OBL, FACW, FAC:	2	(A)
# Dominants across all strata:	2	(B)
% Dominants OBL, FACW, FAC:	100%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:			Multiply By:
OBL	38	x 1 =	38
FACW	30.5	x 2 =	61
FAC		x 3 =	
FACU	10.5	x 4 =	42
UPL		x 5 =	
Sum:	79 (A)		141 (B)

Prevalence Index = B/A = 1.78

Hydrophytic Vegetation Indicators:

X Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

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

SOIL

Sampling Point: 2012-DP-RS1-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16+							Muck	Highly Organic

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? YES

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax / Windham | Samp. Date: 11/14/2012

Applicant/Owner: Denison Lumber Co. | State: Vermont | Sampling Point: 2012-DP-JB2-Up

Investigator(s): JLB | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42° 47' 21.832" N | Long: 72° 41' 52.028" W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 3 to 8 percent slopes | NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	NO	**Is This Sample Area**	
Hydric Soil Present?	NO	**Within a Wetland?**	NO
Wetland Hydrology Present?	NO	**If yes, optional Wetland Site ID:**	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	Water-Stained Leaves (B9)	
High Water Table (A2)	Aquatic Fauna (B13)	
Saturation (A3)	Marl Deposits (B15)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	
Drift Deposits (B3)	Presence of Reduced Iron (C4)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	
Iron Deposits (B5)	Thin Muck Surface (C7)	
Inundation Visible on Aerial (B7)	Other (Explain in Remarks)	
Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

Surface Soil Cracks (B6)
Drainage Patterns (B10)
Moss Trim Lines (B16)
Dry-Season Water Table (C2)
Crayfish Burrows (C8)
Saturation Visible on Aerial (C9)
Stunted or Stressed Plants (D1)
Geomorphic Position (D2)
Shallow Aquitard (D3)
Microtopographic Relief (D4)
FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?		Depth (inches):	
Water Table Present?	X	Depth (inches):	15
Saturation Present? (includes capillary fringe)	X	Depth (inches):	15

Wetland Hydrology Present? NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Approx. 0.69 inches of rain fell through the month of November; Approx. 0.61 during the 5 days prior to sampling (NOAA, Pittsfield, MA)

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2012-DP-JB2-Up

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Fagus grandifolia Ehrh.	5		FACU
2. Acer rubrum L.	15	X	FAC
3. Fraxinus americana L.	15	X	FACU
4.			
5.			
6.			
7.			
	35	= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1. Fagus grandifolia Ehrh.	15	X	FACU
2. Acer rubrum L.	3		FAC
3.			
4.			
5.			
6.			
7.			
	18	= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' RAD)			
1. Polystichum acrostichoides (Michx.) Schott	3		FACU
2. Osmunda claytoniana L.	3		FAC
3.		X	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	6	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 1 (A)

Dominants across all strata: 4 (B)

% Dominants OBL, FACW, FAC: 25% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW	x 2 =	
FAC 21	x 3 =	63
FACU 38	x 4 =	152
UPL	x 5 =	
Sum: 59 (A)		215 (B)

Prevalence Index = B/A = 3.64

Hydrophytic Vegetation Indicators:

____ Dominance Test is > 50%

____ Prevalence Index is <= 3.0[1]

____ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? NO

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

SOIL

Sampling Point: 2012-DP-JB2-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5 Y 3/3						Loam	
12-18+	2.5 Y 4/3						Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? NO

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax / Windham | Samp. Date: 11/14/2012

Applicant/Owner: Denison Lumber Co. | State: Vermont | Sampling Point: 2012-DP-JB2-Wet

Investigator(s): JLB | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42° 47' 4.487" N | Long: 72° 41' 38.080" W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 3 to 8 percent slopes | NWI Class: PEM/PSS

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area**	
Hydric Soil Present?	YES	**Within a Wetland?**	YES
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2012-JB-2

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Aquatic Fauna (B13)		Drainage Patterns (B10)
X	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?		Depth (inches):			
Water Table Present?	X	Depth (inches):	4		
Saturation Present? (includes capillary fringe)	X	Depth (inches):	0	**Wetland Hydrology Present?**	YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Approx. 0.69 inches of rain fell through the month of November; Approx. 0.61 during the 5 days prior to sampling (NOAA, Pittsfield, MA)

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2012-DP-JB2-Wet

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' RAD)			
1. Onoclea sensibilis L.	60		FACW
2. Spiraea alba Du Roi	3		FACW
3. Carex L.	3	X	FAC
4. Glyceria canadensis (Michx.) Trin.	3		OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	69	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

# Dominants OBL, FACW, FAC:	1	(A)
# Dominants across all strata:	1	(B)
% Dominants OBL, FACW, FAC:	100%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:			Multiply By:
OBL	3	x 1 =	3
FACW	63	x 2 =	126
FAC	3	x 3 =	9
FACU		x 4 =	
UPL		x 5 =	
Sum:	69 (A)		138 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

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

SOIL

Sampling Point: 2012-DP-JB2-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
12-0							Muck	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

X	Histosol (A1)		Polyvalue Below Surface (S8) (LRR R, MLRA 149B)		2cm Muck (A10) (LRR K, L, MLRA 149B)
	Histic Epipedon (A2)		Thin Dark Surface (S9) (LRR R, MLRA 149B)		Coast Prairie Redox (A16) (LRR K, L, R)
	Black Histic (A3)		Loamy Mucky Mineral (F1) (LRR K, L)		5cm Mucky Peat or Peat (S3) (LRR K, L, R)
	Hydrogen Sulfide (A4)		Loamy Gleyed Matrix (F2)		Dark Surface (S7) (LRR K, L)
	Stratified Layers (A5)		Depleted Matrix (F3)		Polyvalue Below Surface (S8) (LRR K, L)
	Depleted Below Dark Surface (A11)		Redox Dark Surface (F6)		Thin Dark Surface (S9) (LRR K, L)
	Thick Dark Surface (A12)		Depleted Dark Surface (F7)		Iron-Manganese Masses (F12) (LRR K, L, R)
	Sandy Mucky Mineral (S1)		Redox Depressions (F8)		Piedmont Floodplain Soils (F19) (MLRA 149B)
	Sandy Gleyed Matrix (S4)				Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
	Sandy Redox (S5)				Red Parent Material (TF2)
	Stripped Matrix (S6)				Very Shallow Dark Surface (TF12)
	Dark Surface (S7) (LRR R, MLRA 149B)				Other (Explain in Remarks)

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 12

Hydric Soil Present? YES

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax / Windham | Samp. Date: 11/14/2012

Applicant/Owner: Denison Lumber Co. | State: Vermont | Sampling Point: 2012-DP-JB1-Up (VSWI)

Investigator(s): JLB | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42° 47' 21.832" N | Long: 72° 41' 52.028" W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 15 to 25 percent slopes | NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	NO	**Is This Sample Area**	
Hydric Soil Present?	NO	**Within a Wetland?**	NO
Wetland Hydrology Present?	NO	**If yes, optional Wetland Site ID:**	n/a

Remarks:

Upland documentation in VSWI mapped area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Drainage Patterns (B10)
___ Saturation (A3)	___ Marl Deposits (B15)	___ Moss Trim Lines (B16)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Dry-Season Water Table (C2)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Crayfish Burrows (C8)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Saturation Visible on Aerial (C9)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Stunted or Stressed Plants (D1)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Geomorphic Position (D2)
___ Inundation Visible on Aerial (B7)	___ Other (Explain in Remarks)	___ Shallow Aquitard (D3)
___ Sparsely Vegetated Concave Surface (B8)		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present? ___ Depth (inches): ___

Water Table Present? ___ Depth (inches): ___

Saturation Present? ___ Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? NO

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Approx. 0.69 inches of rain fell through the month of November; Approx. 0.61 during the 5 days prior to sampling (NOAA, Pittsfield, MA)

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2012-DP-JB1-Up (VSWI)

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Tsuga canadensis (L.) Carrière	50	X	FACU
2. Acer rubrum L.	0.5		FAC
3. Betula alleghaniensis Britton	15	X	FAC
4.			
5.			
6.			
7.			
	65.5	= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1. Acer saccharum Marsh.	3	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	3	= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' RAD)			
1. Dryopteris intermedia (Muhl. ex Willd.) A. Gray	3		FACU
2. Polystichum acrostichoides (Michx.) Schott	3		FACU
3. Dennstaedtia punctilobula (Michx.) T. Moore	30	X	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	36	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

# Dominants OBL, FACW, FAC:	1	(A)
# Dominants across all strata:	4	(B)
% Dominants OBL, FACW, FAC:	25%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW	x 2 =	
FAC 15.5	x 3 =	46.5
FACU 59	x 4 =	236
UPL 30	x 5 =	150
Sum: 104.5 (A)		432.5 (B)

Prevalence Index = B/A = 4.14

Hydrophytic Vegetation Indicators:

_____ Dominance Test is > 50%

_____ Prevalence Index is <= 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? NO

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

SOIL

Sampling Point: 2012-DP-JB1-Up (VSWI)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1								Organic
0-10	10 YR 4/3						Loamy Sand	
10-14+	10 YR 3/6						Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (LRR K, L, MLRA 149B)
- ___ Coast Prairie Redox (A16) (LRR K, L, R)
- ___ 5cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ___ Dark Surface (S7) (LRR K, L)
- ___ Polyvalue Below Surface (S8) (LRR K, L)
- ___ Thin Dark Surface (S9) (LRR K, L)
- ___ Iron-Manganese Masses (F12) (LRR K, L, R)
- ___ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ___ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? NO

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: Halifax Quarry | City/County: Halifax/Windham | Samp. Date: 6/18/2013

Applicant/Owner: Denison Lumber Co. | State: Verrmont | Sampling Point: 2013-CM2-Wet

Investigator(s): CMM | Section, Township, Range: Halifax

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%):

Subregion (LRR or MLRA): LRR R | Lat: 42°47'22.717"N | Long: 72°41'53.865"W | Datum: NAD83

Soil Map Unit: Marlow fine sandy loam, 15 to 25 percent | NWI Class:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? No | Normal Circumstances? Yes

Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area**	
Hydric Soil Present?	YES	**Within a Wetland?**	YES
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2013-CM-2

Remarks:

Data point collected from wetland located northwest of existing log landing

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Aquatic Fauna (B13)	X	Drainage Patterns (B10)
X	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?		Depth (inches):	
Water Table Present?	X	Depth (inches):	0
Saturation Present? (includes capillary fringe)	X	Depth (inches):	0

Wetland Hydrology Present? YES

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Rainfall from June 1-18 was Approx. 3.9 inches; Rainfall 5 days prior was 0.87 inches (NOAA 2013)

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 2013-CM2-Wet

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Tsuga canadensis (L.) Carrière	38	X	FACU
2. Betula alleghaniensis Britton	15	X	FAC
3.			
4.			
5.			
6.			
7.			
	53	= Total Cover	
Sapling Stratum (Plot size: 30' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Herb Stratum (Plot size: 5' RAD)			
1. Impatiens capensis Meerb.	98		FACW
2. Tiarella cordifolia L.	3		FAC
3. Matteuccia struthiopteris (L.) Todaro	15	X	FACW
4. Onoclea sensibilis L.	3		FACW
5. Oclemena acuminata (Michx.) Greene	3		FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	122	= Total Cover	
Woody Vines (Plot size: 15' RAD)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test Worksheet:

# Dominants OBL, FACW, FAC:	2	(A)
# Dominants across all strata:	3	(B)
% Dominants OBL, FACW, FAC:	67%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:	
OBL		x 1 =	
FACW	116	x 2 =	232
FAC	21	x 3 =	63
FACU	38	x 4 =	152
UPL		x 5 =	
Sum:	175 (A)		447 (B)

Prevalence Index = B/A = 2.55

Hydrophytic Vegetation Indicators:

X Dominance Test is > 50%

X Prevalence Index is <= 3.0[1]

Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

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

Common mullein (Verbascum thapsus) (NI) present at 15% cover of herbaceous layer.

SOIL

Sampling Point: 2013-CM2-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
6-0"							Muck	
6-12	2.5 Y 3/1						Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

	2cm Muck (A10) (LRR K, L, MLRA 149B)
	Coast Prairie Redox (A16) (LRR K, L, R)
	5cm Mucky Peat or Peat (S3) (LRR K, L, R)
	Dark Surface (S7) (LRR K, L)
	Polyvalue Below Surface (S8) (LRR K, L)
	Thin Dark Surface (S9) (LRR K, L)
	Iron-Manganese Masses (F12) (LRR K, L, R)
	Piedmont Floodplain Soils (F19) (MLRA 149B)
	Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
	Red Parent Material (TF2)
	Very Shallow Dark Surface (TF12)
	Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? YES

Remarks:

C. A. Denison Lumber Company
Halifax Quarry
Halifax, Vermont
Deer Wintering/Softwood Cover Management Area Map

January 16, 2015

Zone 1

Zone 2

Zone 5

Zone 4

Zone 6

Note: Approximate Area of Softwood Management for Deer Wintering Habitat (23.1 acres)

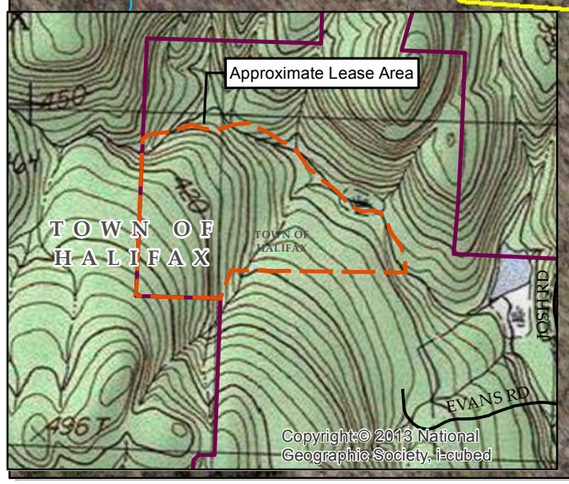
Approximate Lease Area
Approximately 69.5 Acres

VHB Study Area
Approximately 53 Acres
42°47'17.9"N
72°42'11.836"W

Approximate new gate location
to restrict access from April 15 to July 15
to protect bear habitat use.
See Project Plans.

Deer Part Brook

TOWN OF HALIFAX



Deer Wintering Area (DWA) and Softwood Cover Calculations:
DWA within Proposed Project Area - 1.7 Acres

Outside Project Area:
Softwood Cover and DWA within DWA Buffer - 13.5 Acres
Softwood Cover and DWA beyond DWA Buffer - 14.3 Acres
Total Softwood Cover and DWA within Leased Lands - 27.8 Acres

Image courtesy of USGS Earthstar Geographics SIO © 2014 Microsoft Corporation , Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

- Proposed Project Area
- Approximate DWA Management Area
- VHB Study Area
- Approximate Lease Area
- Property Boundary
- Forest Zones (FF)

VHB Delineated Streams
- Ephemeral
- Intermittent
- Perennial

VHB Delineated Wetlands
- Class II
- Class III
- ANR Deer Wintering Area (2011) *
- 300' Project DWA Buffer
- VHD Stream (2008)
- VHD Waterbody (2008)
- VSWI Wetlands (2012)
- Town Boundary

N

300 150 0 300
Feet

Sources: Background Aerial from Bing (2012); Roads by VTrans (2012); Database of Vermont Natural Resources Data provided by VCGI; VSWI Wetlands by ANR (2012), VHD Streams & Waterbodies by USGS (2010); Deer Wintering Areas by ANR (2012), Contours generated from HydroDEM by VCGI (2009); Study Area, Delineated Streams, Delineated Wetlands, Wetland Buffers, Proposed Deer Wintering Area, Proposed Project Area, Project DWA Buffer, Approximate Lease Area and Approximate Softwood Cover by VHB (2012-2014), Forest Zones by Fountain Forestry and Digitized by VHB (2014)

vhb

F:\57595.00 Halifax Quarry NR\GIS\Project\Halifax Quarry_Act250_Support.mxd Exported by: cmartin