April 8, 2014

Ref: 57083.01

Ms. Laura Lapierre, Section Chief
Watershed Management Division - Wetlands Section
Vermont Department of Environmental Conservation
1 National Life Drive, Main 2
Montpelier, VT 05620-3522

RE: Hannaford Supermarket and Pharmacy
Hinesburg, Vermont
Revised Individual Section 401 Water Quality Certification Application

Dear Laura:

On behalf of Martin's Foods of South Burlington (Applicant), and in support of the proposed Hannaford Supermarket and Pharmacy Store (Project) located in Hinesburg, Vermont, Vanasse Hangen Brustlin, Inc. (VHB) has prepared a revised application for Individual Section 401 Water Quality Certification (WQC), pursuant to 33 CFR §1341.

As you are aware, there have been minor changes to the Project since the submittal of the original 401 WQC Application dated June 13, 2013. These are not new changes. In fact, they have been included in the Applicant's other Agency of Natural Resources (ANR) and U.S. Army Corps of Engineers (USACE) permit applications: Stormwater, Erosion Prevention and Sediment Control, and Wetlands. In brief summary, the Applicant is no longer proposing to extend the culvert under Vermont Route 116, which conveys Patrick Brook, in order to widen the road and include a left-turn lane for the south-bound side. In addition, the Applicant will re-construct two existing stormwater ditches located south and north of Commerce Street, and an existing stormwater basin north of Commerce Street. These stormwater ditches and basin are covered under the Commerce Park Association Stormwater Permit #3034-9010.R issued in 2011 by the Stormwater Management Section of the Department of Environmental Conservation. Accordingly, these changes are included in other permit applications you have previously reviewed.
During the USACE permit review process, off site wetlands were determined to be jurisdictional waters of the U.S. As a result, VHB revised the proposed impacts to wetlands that would result from Project construction to include identified off site areas. These off site areas, which include the stormwater ditches and pond mentioned above, are considered non-jurisdictional wetlands by the ANR Wetlands Division.

Vanasse Hangen Brustlin, Inc.
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Therefore, the proposed total for wetlands impacts on and off the main site (Lot 15) as a result of Project construction is 90,330 square feet (2.07 acres).

The enclosed attachments, which include updated materials reflecting the above mentioned information, have already been included in the other ANR and USACE permit applications. The attached materials are the same as what you have previously reviewed.

As requested via telephone call on March 21, 2014, please find attached a complete electronic copy on CD of the revised 401 WQC Application. Please don't hesitate to contact me at (802) 497-6153 should you have any questions. Thanks for your continued assistance with and review of this project.

Sincerely,
VANASSE HANGEN BRUSTLIN, INC.

Brad Ketterling
Senior Environmental Scientist

DBK/pbw
Enclosures

cc: Tyler Sterling, Martin's Foods of South Burlington, Inc.
Marty Abair, Project Manager, USACE (cover letter only)
Gail Henderson-King, White + Burke, Real Estate Investment Advisors (cover letter only)
Paul O'Leary, O'Leary-Burke Civil Associates, LLC (cover letter only)

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VERMONT DEC
WATERSHED MANAGEMENT DIVISION

VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

APPLICATION FOR INDIVIDUAL § 401 WATER QUALITY CERTIFICATION

Section 1: Applicant Information				
Name: William E. McKenney		**Title or Position:** Senior Site Engineering Project Manager		
Company Name: Martin's Foods of South Burlington, Inc.				
Mailing Address: P.O. Box 1000		**City:** Portland	**State:** ME	**Zip:** 04104
Phone: (207) 885-2092	**Fax:**	**E-mail:** Bill.McKenney@Delhaize.com		
Section 2: Alternate contact within your organization (not required)				
Name: n/a		**Title or Position:**		
Mailing Address:		**City:**	**State:**	**Zip:**
Phone:	**Fax:**	**E-mail:**		
Section 3: Consultant Information (a consultant is not required)				
Name: Brad Ketterling*		**Title or Position:** Senior Environmental Scientist		
Company Name: Vanasse Hangen Brustlin, Inc.				
Mailing Address: 7056 U.S. Route 7, P.O. Box 120		**City:** North Ferrisburgh	**State:** VT	**Zip:** 05473
Phone: 802-497-6100	**Fax:** 802-425-7799	**E-mail:** bketterling@vhb.com		

→ Place a * next to the individual's name listed above that should be the primary contact during the application process ←

Section 4: Fee (submit appropriate fee with application)

Amount of fee: $20,000 (Paid by Applicant previously, by check number: 0100007177)

One percent of project cost **$5,240,000 x 1% = 52,400** **($200.00 minimum fee $20,000.00 maximum fee)**

Section 5: Project Details (fill in information and check appropriate boxes)

Project / Site Name: Hannaford Supermarket and Pharmacy, Hinesburg, Vermont	
Nearest City, Town or Major Landmark: Town of Hinesburg	**County:** Chittenden County

Resource Proposed for Alteration:
- ☐ **Stream/River**
- ☒ **Wetland**
- ☐ **Lake/Pond/Reservoir**

Name of Resource: Wetlands within the Winooski River watershed (HUC 8#: 02010003)

Type(s) of proposed alteration(s):
- ☐ Road Crossing
- ☐ Utility Line
- ☐ Intake/Outfall Structure
- ☐ Stream or Wetland Restoration
- ☐ Dredging
- ☐ Launch Ramp
- ☒ Wetland Fill/Excavation
- ☐ Bank Stabilization
- ☐ Hydroelectric Operation
- ☐ Impoundment
- ☒ Other: Re-construct existing stormwater infrastructure

Proposed Project Component	**Latitude: (decimal degrees, NAD83):**	**Longitude: (decimal degrees, NAD83):**
Approximate Center of Proposed Project Area (Supermarket/Pharmacy)	44.3337	-73.1092
Approximate Stormwater Basin Location	44.3355	-73.1114

Brief Project Description (a more detailed description is requested in Section 8): The proposed Project includes the construction of an approximately 36,000 square foot Hannaford Supermarket and Pharmacy, 128 parking spaces, an access drive from Commerce Street, an underground operational stormwater treatment system, and landscaping. The Applicant is also proposing to make improvements to existing stormwater ditches (north and south of Commerce Street) and to the existing stormwater basin north of Commerce Street.

Do any other alterations require approval from any other state, federal, or local government agency associated with the project site? If yes, provide brief description and status of approval and permit/application numbers.

- Amendment to Existing Act 250 Land Use Permit #4C0654 (as amended), assigned #4C0654-14 (Pending)
- Vermont Department of Environmental Conservation (DEC) – Watershed Management Division (WMD) – Stormwater Section – Construction Phase Stormwater General Permit (3-9020) (Pending)
- DEC WMD – Stormwater Section – Stormwater Management General Permit (3-9015) (Pending)
- U.S. Army Corps of Engineers – Individual CWA Section 404 Permit Authorization (NAE-2010-0717) (Pending)
- DEC WMD Wetlands Program–Vermont Wetland Determination Petition (2013-040) (Pending)

Section 6. Directions to Project Site

From Points North: Take Interstate 89 south to Exit 14E (for US Route 2 East) toward Williston. Turn right on to VT Route 116/Hinesburg Road. After approximately 10 miles turn left onto Commerce Street. The entrance to the Project site is approximately 600 feet on the right; the Project site shares an entrance with the existing National Bank of Middlebury.

From Points South: Take Interstate 89 north to Exit 14E (for US Route 2 East) toward Williston. Turn right on to VT Route 116/Hinesburg Road. After approximately 10 miles turn left onto Commerce Street. The entrance to the Project site is approximately 600 feet on the right; the Project site shares an entrance with the existing National Bank of Middlebury.

Section 7: Project Schedule (fill in information and check appropriate boxes).

How long will it take to perform the proposed activity? The proposed duration of construction is 2 years.

Is any portion of the activity complete now? Yes ☐ No ☒
If yes, describe the extent of the completed portion below:

The required information in sections 8 -12 must be submitted on a separate sheet(s) and submitted in the same numbered format as presented. If you believe that a certain request does not pertain to your project, explain the reason. This information may be submitted electronically.

Section 8: Project Description

8.1 A narrative description of the scope of the project
8.2 USGS topographic map indicating the exact location of the project (can be photographic copy)
8.3 Photographs of the resource(s) proposed for alteration with location description (photo locations should be noted on map)
8.4 A narrative description of the existing stream, lake and/or wetland characteristics including, but not limited to, dimensions (e.g., depth, length, average width), substrate and riparian vegetation
8.5 A narrative description of the proposed stream, lake and/or wetland characteristics including, but not limited to, dimensions (e.g., depth, length, average width), substrate and riparian vegetation
8.6 In the case of wetlands, include a wetland delineation with delineation forms and site map denoting location of data points

Section 9: Purpose and Justification

9. Describe the purpose for the proposed activity and overall project

See enclosed document entitled *Supplemental Narrative for Application Sections 8 through 12.*

Section 10: Alternatives

10. Describe all alternatives considered, including what has been done to avoid or minimize impacts to streams, wetlands and lakes/ponds/reservoirs.
See enclosed documents entitled *Supplemental Narrative for Application Sections 8 through 12*, and *Alternative Site Analysis in Support of an Application for an Individual Section 401 Permit*, as well as follow-up responses to comments requested by Marty Abair.

Section 11: Mitigation

11.1 A detailed discussion of any proposed mitigation.
11.2 If you believe mitigation is not required, state the reason or cite the regulation to support this position

See enclosed document entitled *Supplemental Narrative for Application Sections 8 through 12.*

Section 12: Technical and Other Required Information

12.1 Detailed plans, blueprints, or legible sketches of present site conditions and the proposed activity. Plans must be 8.5 x 11 inches. Additional larger plans may also be submitted to aid in application review. The detailed plans need to include dimensions of the existing and proposed stream or wetland such as depth, length, average width, substrate and riparian vegetation.
12.2 If mitigation is proposed, submit detailed plans, blueprints, or legible sketches of the proposed mitigation
12.3 For both the proposed activity and mitigation, provide a discussion and timeline of the proposed project sequencing
12.4 Location and type of erosion prevention and sediment control measures for the proposed alterations
12.5 A discussion on how the proposed activity will be performed (construction methods)
12.6 Provide any required discharge-specific materials (See Permit Application Guide for §401 Water Quality Certification)
12.7 Provide information necessary for project review under Vermont's Anti-Degradation Policy (See Permit Application Guide for §401 Water Quality Certification)

Section 13: Certification and Signature:

I certify under penalty of law that this document and all attachments were prepared at my request or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I recognize that by signing this application, I am giving consent for the Commissioner of the Department, or a duly authorized representative, at reasonable times and upon presentation of credentials, to enter upon and inspect the subject property to verify information in, and process, the §401 application.

Printed Name	Official Title	Signature	Date
William E. McKenney	Senior Site Engineering Project Manager		3/27/2014

Section 14: Where do I send my application?

Vermont Department of Environmental Conservation
Watershed Management Division
1 National Life Drive, Main 2
Montpelier, VT 05620-3522

Section 15: Administrative Information (Official Use Only).

Date Received:	File# assigned	Fee paid: ☐ No	Application administratively complete: Yes ☐ No ☐	Technically Complete Application date:

Vanasse Hangen Brustlin, Inc.

Hannaford Supermarket and Pharmacy
Hinesburg, Vermont

Vermont Agency of Natural Resources Department of Environmental Conservation
Watershed Management Division

Application for Individual Section 401 Water Quality Certification
List of Attachments

June 13, 2013
Revised: April 2, 2014

Attachment 1: Hannaford Supermarket and Pharmacy – Hinesburg, Vermont - Application for Individual Section 401 Water Quality Certification – Supplemental Narrative for Application Section 8 through 12, Prepared by VHB, revised April 1, 2014

Attachment 2: Hannaford Supermarket and Pharmacy Site Location Map, prepared by VHB, dated March 31, 2014

Attachment 3: *Natural Resource Assessments – Proposed Hannaford Supermarket, Hinesburg, Vermont* summary memorandum, Prepared by VHB, dated December 13, 2010, revised: February 13, 2013

Supplemental Wetland/ Waters Delineation Assessments – Proposed Hannaford Supermarket, Hinesburg, Vermont summary memorandum, Prepared by VHB, dated February 29, 2012

Attachment 4: Representative Photographs – Hannaford Supermarket and Pharmacy – Hinesburg, Vermont, Prepared by VHB

Proposed Hannaford Supermarket and Pharmacy –Impact Exhibits; Prepared by VHB; dated November 6, 2013

Hannaford Supermarket and Pharmacy – Wetland Impact Analysis table; Prepared by VHB, dated October 4, 2013

Attachment 5: Hannaford Supermarket and Pharmacy – Summary of Additional Permits Required from Other Agencies for the Project; Prepared by VHB; dated March 28, 2014

Attachment 6: Hannaford Supermarket and Pharmacy – Plan Set, Prepared by O'Leary – Burke Civil Associates, PLC., SE Group, and Bast & Rood Architects; dated March 11, 2013, Components Revised June 20, 2013 and October 2, 2013

Stormwater Calculations for Lot #15 – Giroux Commercial Park – Commercial Street – Hinesburg, Vermont [for a Stormwater Discharge General Permit (3-9015) Application], prepared by O'Leary-Burke Civil Associates, PLC, February 12, 2013

Lot #15 – Giroux Commercial Park – Commerce Street extension – Moderate Risk Construction General Permit Application (3-9020), Prepared by O'Leary – Burke Civil Associates, PLC, dated February 14, 2013

Attachment 7: Hannaford Supermarket and Pharmacy, Hinesburg, Vermont – Alternative Site Analysis in Support of an Application for an Individual Section 404 Permit; Prepared by White + Burke; dated May 3, 2013

"USACOE – Alternatives Analysis Additional Questions and Answers"; Prepared by White + Burke; dated September 19, 2013

"USACOE – Alternatives Analysis Additional Questions and Answers"; Prepared by White + Burke; dated December 5, 2013

Hannaford Supermarket and Pharmacy, Hinesburg, Vermont – Mitigation Credit Analysis table, Prepared by VHB, dated REVISED: October 4, 2013

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Vanasse Hangen Brustlin, Inc.

Hannaford Supermarket and Pharmacy
Hinesburg, Vermont

Vermont Department of Environmental Conservation
Watershed Management Division

Application for Individual Section 401 Water Quality Certification
Supplemental Narrative for Application Sections 8 through 12

June 13, 2013
Revised: April 8, 2014

On behalf of Martin's Foods of South Burlington, Inc. (Applicant), and in support of the proposed Hannaford Supermarket and Pharmacy project in Hinesburg, Vermont ("Hannaford" or "Project), Vanasse Hangen Brustlin, Inc. (VHB) has prepared this supplemental narrative for an Application for Individual Section 401 Water Quality Certification (WQC), pursuant to 33 USC § 1341. This narrative provides the additional required information, which is not included in the WQC Application form, for Sections 8 through 12. Where appropriate, VHB has provided materials as Attachments which have been prepared for other permit applications required for the Project, including the Applicant's Individual Section 404 Permit Application, an application for coverage under the Operational Phase Stormwater General Permit (3-9015), and an application for coverage under the Construction Phase Stormwater General Permit (3-9020). The Applicant has also submitted a Vermont Wetland Determination Petition to the Vermont Agency of Natural Resources (ANR) Department of Environmental Conservation (DEC) Watershed Management Division (WMD) Wetlands Program to officially classify the wetland within the Project area. The DEC issued the Wetland Determination on April 2, 2014 determining the wetlands on the Project site are Class III.

VHB has prepared the following sections, which reference the appropriate WQC application form sections, and supporting documents which are included in the Attachments, in order to provide a complete WQC application. This document and the attached materials have been prepared according to guidance found in the "Permit Application Guide for §401 Water Quality Certification" provided by the ANR DEC WMD.

Application Section 8: Project Description

8.1 A narrative description of the scope of the project

The proposed Hannaford Supermarket and Pharmacy would include the following components:

- Construction of an approximately 36,000 square foot (sf) supermarket and pharmacy commercial building;
- Construction of a paved access drive from Commerce Street, a parking lot with approximately 128 spaces including landscaped islands and 24-foot wide drive lanes, and a product delivery area;
- Construction of an underground, operational stormwater treatment system to treat on-site stormwater runoff. This system would capture roof and paved area runoff using a closed system that will be treated entirely onsite; and

Improvements to two existing stormwater ditches (north and south of Commerce Street) and an existing stormwater treatment basin (north of Commerce Street), are covered under the Commerce Park Association Stormwater Permit #3034-9010.R.

8.2 USGS topographic map indicating the exact location of the Project

A USGS-based Site Location Map, prepared by VHB, and dated March 31, 2014 is provided in Attachment 2.

8.3 Photographs of the resource(s) proposed for alteration with location description (locations should be noted on map)

Representative photographs of the wetlands which are proposed for alteration are provided in Attachment 4.

8.4 A narrative description of the existing stream, lake, and/or wetland characteristics including but not limited to, dimensions (e.g., depth, length, average width), substrate, and riparian vegetation

A full description of the wetland and overall existing conditions within the Project area is located in the summary memoranda entitled *Natural Resource Assessments – Proposed Hannaford Supermarket, Hinesburg, Vermont,* dated December 13, 2010 and revised February 13, 2013, and *Supplemental Wetland/ Waters Delineation Assessments – Proposed Hannaford Supermarket, Hinesburg, Vermont,* dated February 29, 2012, located in Attachment 3.

8.5 A narrative description for the proposed stream, lake and/or wetland characteristics including, but not limited to dimensions (e.g., depth, length, average width), substrate and riparian vegetation

Based on coordination with the U.S. Army Corps of Engineers ("USACE") during the Project design process, and prior to the permit applications submittal, VHB has differentiated wetland impacts into two types: permanent and secondary. Permanent impacts would result from the permanent placement of fill material within the wetland boundary. Secondary impacts have been calculated for the remaining wetland areas which are not proposed for permanent impact, but would either be permanently isolated and/or possibly have hydrology altered as a result of Project construction.

The impacted portion of the wetland feature, Wetland 2009/ 2010/ 2011-1, on the main Project site where the building would be constructed, would be filled in order install the stormwater treatment system, as well as to prepare the site for construction. The remaining portions of this wetland would remain unfilled. The wetland/ stormwater treatment features, located south and north of Commerce Street, will be re-constructed based on the Commerce Park Association Stormwater Permit #3034-9010.R in order to effectively treat stormwater runoff. Post-construction and once they have achieved final stabilization, these areas would look similar to pre-construction conditions.

Table 1. Hannaford Supermarket and Pharmacy - Summary of Impacts

Feature Type	**Permanent Impact (Sq Ft)**	**Temporary Impacts (Sq Ft)**	**Secondary Impacts (Sq Ft)**	***TOTAL IMPACTS (SQ FT)***	***TOTAL IMPACTS (ACRES)***
Proposed Wetland Impact	62,125	-	17,450	*79,575*	*1.83*
Proposed Wetland/ Stormwater Feature Impact	10,755	-	-	*10,755*	*0.25*
TOTAL PROPOSED IMPACTS (SQ FT):	*72,880*	*0*	*17,450*	*90,330*	*2.07*
TOTAL PROPOSED IMPACTS (ACRES):	*1.67*	*0.00*	*0.40*	*2.07*	-

8.6 In the case of wetlands, include a wetland delineation with delineation forms and site map denoting location of data points

The results of the wetland delineation for the entire Project area, including Wetland Determination Data Sheets and mapping showing their locations, are included with the natural resource summary memoranda in Attachment 3.

Application Section 9: Purpose and Justification

The proposed Project consists of new construction for a Hannaford Supermarket and Pharmacy on a vacant parcel within an existing commercial development in the center of Hinesburg Village. The construction of the proposed supermarket would provide a wide selection of groceries to serve the daily needs of residents for food shopping. Based on a regional study, Hannaford found that many Hinesburg residents currently travel to other communities to do some or all of their grocery shopping. A supermarket such as Hannaford would act as an "anchor store" for the community of Hinesburg and help attract customers to the area and in turn other local businesses. The proposed design incorporates safe vehicular and pedestrian connections that fulfill the Village's goal of connectivity within the existing transportation network. The proposed supermarket would also create approximately 94 new jobs (approximately 63 part-time and 31 full-time) with opportunities for a wide range of skills.

Additionally, Hannaford has committed to allocating a portion of the site when construction is completed, for use as an outdoor regional "farmers' market" during the appropriate seasons. In addition to complying with the Hinesburg Official Map, the space for the farmers' market will provide an accessible venue for local farmers to sell their products directly to residents.

Application Section 10: Alternatives

10.0 Describe all alternatives considered, including what has been done to avoid or minimize impacts to streams, wetlands and lakes/ponds/reservoirs.

A full alternatives analysis has been prepared by White and Burke Real Estate Investment Advisors, Inc. ("White + Burke") on behalf of the Applicant (see *Alternative Analysis* and subsequent, supplemental memoranda with additional supporting materials in Attachment 7), in order to fully describe the process by which the proposed location and store layout were chosen. The Applicant has made efforts to avoid and minimize impacts to the federally regulated wetland on site, conform to the Town of Hinesburg planning and zoning laws, and meet the design standards for a Hannaford Supermarket. The first step in Project design was to find a suitable site in the Town of Hinesburg that was within one of three zoning areas identified by the Town as appropriate for commercial development, as well as zoned for a retail space greater than 20,000 square feet. The Giroux Lot 15 parcel is the only available space that meets these criteria, and is the last available lot within an existing commercial development.

After the appropriate site was identified and selected, preliminary Project layouts were investigated and analyzed for impacts to wetlands, conformity to zoning and planning laws, and appropriateness for the proposed Project.

Application Section 11: Mitigation

11.1 A detailed discussion of any proposed mitigation.

The Applicant is proposing a contribution to the Vermont In-Lieu Fee ("ILF") Program, which is administered by Ducks Unlimited, Inc. in Vermont, as compensation for unavoidable impacts to Waters of the United States which would result from Project construction. The fee is determined by calculating the required amount of mitigation credit which would be required for Project impacts; the credit calculation takes into account the area and type (permanent, temporary, secondary) of impact as well as the type and quality of the features which would be impacted (emergent wetland, scrub-shrub wetland, forested wetland). The fee is determined by the watershed in which the Project is located; currently the fee for the Project area is $3.02/square foot of credit required. Although pre-application coordination was conducted regarding the possible mitigation scenarios, the USACE must approve the proposed required mitigation credits and resulting fee before the contribution is made.

- Wetland and Stream Mitigation Credits: 64,306 Square Feet
- Fee/ Mitigation Credit: $3.02/ Square Foot of Credit
- **TOTAL PROPOSED MITIGATION FEE: $194,204.88**

11.2 If you believe mitigation is not required, state the reason or cite the regulation to support this decision.

NA

Application Section 12: Technical and Other Required Information

12.1 Detailed plans, blueprints, or legible sketches of present site conditions and the proposed activity. Plans must be 8.5 x 11 inches. Additional larger plans may also be submitted to aid in application review. The detailed plans need to include dimensions of the existing and proposed stream or wetland such as depth, length, average width, substrate and riparian vegetation.

VHB has prepared a wetland impact analysis (Attachment 4), including impact exhibits on 8.5-inch by 11-inch sheets, which show existing and proposed conditions, as well as the location and layout of the proposed Project, which would result in impacts to the wetland located within the Project site.

The Hannaford Supermarket and Pharmacy Plan Set (Attachment 6) depicts existing conditions (Sheet C1), the proposed location and layout of the Hannaford Supermarket and Pharmacy and parking lot including various Project components (Sheet C2), proposed underground operational stormwater treatment system, utility (i.e., water, sewer, and electric) connections (Sheet C5), and the landscaping plan(Sheets L1 and L3). The Plan Set also includes a stormwater management plan (Sheets S1 to S6), lighting plan (Sheet L2), and various Project-specific details (Sheets C7 and C8).

The Project Plan Set includes typical details including proposed erosion prevention and sediment control ("EPSC") measures with installation descriptions, the proposed operational phase stormwater treatment system that would be installed on the site, and the proposed landscaping plan for the Project (Sheets E1 through E9).

12.2 If mitigation is proposed, submit detailed plans, blueprints or legible sketches of the proposed mitigation.

N/A. See preceding Section 11.1.

12.3 For both the proposed activity and mitigation, provide a discussion and timeline of the proposed project sequencing.

The Applicant must receive all the necessary state and federal permits before beginning construction. Assuming all approvals are in place, construction would begin in Summer 2015 with initial site preparation and EPSC installation, and would continue through Fall 2016 when the building construction

would be completed, and finish grading and final site stabilization would occur. The Project would be constructed in four Phases:

- Building pad and temporary stormwater control features;
- Construction of off-site stormwater improvements;
- Construction of roadways and parking area; installation of utilities and site grading; and
- Construction of commercial building, utility connections and finish site grading.

Contribution to the ILF would be made subsequent to final approval by the USACE, and before the start of Project construction.

12.4 Location and type of erosion prevention and sediment control measures for the proposed alterations.

The EPSC measures, which will be used during Project construction are described in the EPSC Plan Set, provided as a component of the overall Plan Set in Attachment 6. The locations of the various proposed EPSC measures are also included in this Plan Set, which provides details regarding the types of materials which will be used for EPSC measures.

12.5 A discussion on how the proposed activity will be performed (construction methods).

The methods and sequence that will be used during the Project construction are described in Sheets E1 through E9 (Attachment 6). Additional construction details are included on Sheets C7 and C8.

12.6 Provide any required discharge-specific materials.

The majority of the materials proposed to be discharged into the wetland within the Project site are necessary for site preparation for store construction, including stone fill and finer materials as well as footings for retaining walls and the building slab. As stated above, the Applicant is proposing to use an underground, operational stormwater treatment system, and materials and installation details are included in the Project Plan Set.

12.7 Provide information necessary for project review under Vermont's Anti-Degradation Policy (See Permit Application Guide for §401 Water Quality Certification)

In order to be eligible for Individual Section 401 WQC from the state, a Project must conform to the Vermont Water Quality Standards ("VWQS"), including the Anti-degradation Policy Section 1.03 of the

VWQS. On October 12, 2010, the Vermont DEC adopted the *Interim Anti-Degradation Implementation Procedure* ("Procedure") to implement the Anti-degradation Policy. This Procedure is applicable to the Project, and is understood to be a component of the Agency's consideration for the requested authorization for discharges to waters of the State ("Waters") requiring Individual WQC required by Section 401 for stream alterations and activities in wetlands (Section III.B.6 of the Procedure).

The Procedure review is segmented into three tiers: Tier 1 addresses protection of existing uses, Tier 2 the protection of higher quality waters, and Tier 3 the protection of outstanding resource waters. With respect to determination of existing uses (Tier 1), Section X.G of the Procedure identifies the process to be followed. During the Project design phase, the Applicant has attempted to ensure impacts to Waters have been avoided and then any unavoidable impacts have been minimized to the greatest extent feasible, in order to preserve existing uses. In addition, the Project design incorporates accepted best management practices ("BMPs") to protect receiving water quality during construction, including a site-specific EPSC plan, which is subject to DEC review and approval through the construction stormwater discharge permit process (an application for which has been submitted). Therefore, given the Project's design which incorporates BMPs subject to approval through the operational stormwater discharge permit process, it is expected that designated uses which are currently being achieved would be protected, and therefore, would continue to be achieved during the construction and operation of the Project. Thus, the proposed discharges would meet the applicable Tier 1 anti-degradation provisions of the Procedure.

With respect to Tier 2 (Protection of High Quality Waters) and review of the proposed impacts associated with the proposed Project, Section X describes the process for considering whether proposed discharges subject to Individual WQC, meet the criteria for protection of high quality waters. In particular, Section X.D.1.a states that, "Discharges that meet the requirements of a BMP or treatment and control manual that takes into consideration anti-degradation requirements during its adoption" automatically satisfies the Tier 2 review for the protection of high quality waters. For the Project, an application for Construction Phase Stormwater General Permit authorization(3-9020), filed concurrently with this application, with the narrative portion included as an Attachment with this permit application, [see the Plan Set and *Lot #15 – Giroux Commercial Park – Commerce Street extension – Moderate Risk Construction General Permit Application (3-9020)* in Attachment 6] has been prepared in conformance

with the Vermont DEC Standards and Specifications for Erosion Prevention and Sediment Control ("Standards"), which constitute the recognized BMPs.

In addition, the Applicant has also submitted an application for coverage under the Operation Phase Stormwater Discharge General Permit (3-9015) [see *Stormwater Calculations for Lot #15 – Giroux Commercial Park – Commercial Street – Hinesburg, Vermont* for a Stormwater Discharge General Permit (3-9015) Application]. In order to qualify for coverage under the General Permit, a project must conform to the regulations and guidance detailed in the Vermont Stormwater Management Manual ("VSMM")[1]. The Applicant has proposed to use a combination of an underground stormwater treatment system and grassed swales (new and existing), which will treat all stormwater runoff from the new impervious surfaces which would result from Project construction (i.e., parking lot and store roof), and which conforms to the VSMM standards. Therefore, the Project meets the Tier 2 anti-degradation provisions.

Tier 3 addresses the protection of the Outstanding Resource Waters in Vermont. Since, there are no Outstanding Resource Waters in the vicinity of the proposed Project, thus, Tier 3 review is not applicable.

[1] VT ANR. *The Vermont Stormwater Management Manual – Volume I Stormwater Treatment Standards*. April 2002.

Transportation
Land Development
Environmental
Services

Vanasse Hangen Brustlin, Inc.

7056 US Route 7
Post Office Box 120
North Ferrisburgh, VT 05473
Telephone 802.497.6100
Fax 802.425.7799
www.vhb.com

Memorandum

To: 57083.01 Project File

Date: December 13, 2010
Revised: February 13, 2013

Project No.: 57083.01

From: Adam R. Crary, PWS, PWD

Re: Natural Resource Assessments – Proposed Hannaford Supermarket and Pharmacy, Hinesburg, Vermont

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Vanasse Hangen Brustlin, Inc. (VHB) has conducted an assessment of natural resources for the above-referenced project located in the Town of Hinesburg, Vermont (Site Location Map, Attachment 1). The approximately 5.4-acre study site is located north of Mechanicsville Road, south of Commerce Street, and west of Thorn Bush Road and largely consists of the undeveloped Lot 15 of the Commerce Park commercial development. These assessments have been conducted for planning and permitting purposes related to the proposed supermarket development on the property as well as an area along Commerce Street where a sidewalk connection is proposed. The natural resources included in this assessment are for wetlands and other water features, as well as flood inundation within the property, and database reviews for rare species or significant natural communities.

This memorandum has been revised from a December 13, 2010 version following revisions to the wetland delineation completed per U.S. Army Corps of Engineers (USACE) field delineation review on June 15, 2011, and the completion of a Vermont Wetland Rules (VWRs) Wetland Evaluation.

EXISTING SITE CONDITIONS

The approximate 5.4-acre study area is located on a nearly level, cleared site. It is bounded on the north and west by existing commercial development. An elevated, paved pedestrian pathway separates the property from an existing man-made canal-way on the south and eastern limits. The subject property's southeastern boundary is generally situated within the canal-way. Based on 2004 contours derived from LIDAR data provided by the Chittenden County Metropolitan Planning Organization, the property elevations range from 336 to 348 feet above sea level (ASL). Of note is that the canal water surface is approximately 346-feet ASL, which is elevated above much of the property interior.

There is little topographic relief as the property generally slopes from southeast to northwest, with most site drainage via an off-site ditch-conveyance to Patrick Brook, located north of the property, although the property may serve to catch runoff from abutting properties. Commercial development of varying age surrounds the site. The Hinesburg, Vermont U.S. Post Office is located off the northeast corner. Most recently, a financial institution was constructed on a fill pad north of the subject property. This building's attendant access roadway occurs within the subject property ingress/egress to Commerce Street. Nearly the entire site is composed of cleared land that is periodically mowed, with the exception of the pedestrian path and canal-way corridor along the eastern boundary, which is landscaped with native tree and shrub material. The Natural Resources Map, included as Attachment 2, depicts landscape and site conditions within and adjacent to the subject property. Representative site photographs are included as Attachment 3.

The study site drains to the north via a ditched swale and road culvert system to Patrick Brook, situated approximately 700-feet to the north of the planned supermarket site. Patrick Brook is a tributary of the La Platte River, which drains to Lake Champlain (Winooski Watershed HUC 8#: 02010003). There are no wetlands mapped by the National Wetland Inventory (NWI) or the Vermont Significant Wetland Inventory (VSWI) within or adjacent to the study area.

According to information gathered through the Natural Resource Conservation Service (NRCS), the three soils series that occur within the investigation area are the Winooski very fine sandy loam, Limerick silt loam, and Munson and Raynham silt loams. Limerick soils are classified as hydric at a national level, Winooski soils are known to have hydric inclusions (Limerick) 5 percent of the time, and Munson and Raynham soils are known to have hydric inclusions (Raynham) 45% of the time.[1]

METHODOLOGY

Wetland and Waters Delineation:

VHB wetland scientists conducted initial wetland and water feature delineations in late October, 2009. A follow-up delineation study was conducted in late September 2010. Final revisions to the jurisdictional wetland boundaries were made following a delineation field review by Marty Abair of the USACE on June 15, 2011. The investigation area was surveyed for wetlands in October 2009 following the Routine Determination methodology outlined in the *Corps of Engineers Wetland Delineation Manual* (1987 Manual), and subsequent modifications, clarifications, and guidance[2]. Under normal circumstances, which were present within the investigation area, The 1987 Manual requires positive identification of hydric soils, hydrophytic vegetation, and wetland hydrology to qualify as a wetland. The limits of on-site wetland and water features subject to jurisdiction by the USACE and the State of Vermont

[1] Natural Resources Conservation Service (NRCS). 2009. Vermont Hydric Soils List.

[2] Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual,* Technical Report Y-87-1, U.S. Army Engineer Waterways Experiments Station.

Agency of Natural Resources (ANR) were flagged using pink wire stake flagging marked "Wetland Delineation" and sequentially numbered. The delineation flags were located by VHB in the field using a Trimble® ProXT GPS unit capable of sub-meter accuracy and post-processed using Trimble® Pathfinder software for enhanced accuracy. The Natural Resources Map, included as Attachment 2, depicts the GPS-located limits of the field reviewed on-site wetland and water features. Wetland Determination Data forms have been completed and field data collected under the 1987 Manual methods have been reported under the USACE regional wetland delineation supplement[3] which are provided in Attachment 4. The USACE field review evaluated the delineation in the context of the regional wetland delineation supplement currently utilized by the USACE.

The western bank of the canal was flagged according to the Vermont Agency of Natural Resources (ANR) *Riparian Buffer Guidance*[4] using orange survey tape and labeled by the type of survey. In this case, the "top-of-bank" was demarcated. These survey flags were also GPS-located and are depicted on the Natural Resources Map, Attachment 2. The Ordinary High Water (OHW) width was noted in the field and identified using guidance provided in the USACE *Regulatory Guidance Letter: Subject- Ordinary High Water Identification*.[5]

Flood Inundation Mapping;

In the fall of 2009, VHB (formerly VHB Pioneer) obtained information on flood inundation designations that may impact site use. To determine flood inundation hazards, the 100-year flood inundation hazard area was identified by the FEMA-FIRM mapping (as provided by the Chittenden County Regional Planning Commission). The 100-year floodplain is considered the "Special Flood Hazard Area," subject to inundation by the 1 percent annual chance flood.

Threatened and Endangered Species Identification:

In order to identify the known occurrence of rare or sensitive species within the project area, particularly those that are federal or Vermont-listed threatened or endangered[6], and quantify available onsite habitat condition relative to each, VHB researched the Vermont Natural Heritage Information Project (NHIP) 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 one mile radius was used when querying the NHIP database. The Element Occurrence Map, provided as Attachment 5, depicts the area of the database search.

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[3] Since the initial delineation fieldwork, the USACE has implemented a new wetland delineation method: *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast and North Central Region*. U.S. Army Corps of Engineers. 2009.

[4] Vermont Agency of Natural Resources. 2005. *Riparian Buffer Guidance*. Accessed online: www.anr.state.vt.us/site/html/buff/anrbuffer2005.htm

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

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

RESULTS

Wetland and Waters Delineation:

Based on the field delineation of on-site wetland and water features and subsequent USACE review, approximately 1.63 acres of the site meets federal wetland criteria, and would, therefore, be subject to USACE jurisdiction. VHB also proposes that onsite wetlands be considered Class III and not subject to the current VWRs[7], as discussed in more detail below. All on-site wetlands would be classified as Palustrine Emergent (PEM1Y) systems according to Cowardin classification.[8] Reed canary grass (*Phalaris arundinacea*) is the primary vegetative component. Wetland hydrology appears perched over a restrictive clay layer and is driven by retention of surface water (precipitation) inputs as well as lateral groundwater seepage under the pedestrian path originating from the canal. There is no direct surface water input. Surface water drainage is to the northwest, via a ditched system, located in the northwest property corner. These man-made ditches are part of a stormwater management system that was constructed for Commerce Park. The ditches drain to the north, passing through two culverts (one under the pedestrian path south of Commerce Street and one under Commerce Street) to a stormwater treatment basin north of Commerce Street, and eventually to Patrick Brook. Wetland hydrology indicators on-site include soil saturation, water stained leaves, algal mats, and oxidized rhizospheres. On-site hydric soil indicators, using the National Technical Committee for Hydric Soils criteria as part of the Northcentral and Northeast Region Wetland Delineation Supplement, most often is indicator F6 (Redox Dark Surface). Due to the nearly level topography across much of the site, the transition from wetland to upland is diffuse, but is most often identified by one or several indicators, including: loss of oxidized rhizospheres, shift from hydrophytic to non-hydrophytic vegetation communities [typically, the shift to Kentucky blue grass (*Poa pratensis*) or timothy (*Phleum pratense*)], loss of primary or secondary surface hydrology indicators (such as water stained leaves and algal matting), and/or a slight rise in topography.

Wetland Function and Value:

Based on a qualitative assessment of wetland condition using the parameters of the USACE Highway Methodology[9], the onsite wetland serves minimal function and value based on a combination of landscape considerations, vegetative cover and condition, and hydrogeomorphic setting. Principal wetland function and value provided, however limited, are those related to nutrient removal and sediment/toxicant retention. VHB has also completed a wetland functional evaluation according to the *Vermont Wetland Evaluation Form*, which is provided as Attachment 6. Based on this evaluation, the onsite wetlands do provide functions

[7] Agency of Natural Resources – Water Resources Panel. August 1, 2010. *Vermont Wetland Rules*: Vt. Code R. 12 004 056. Accessed online at http://nrb.state.vt.us/wrp/rules.htm

[8] Cowardin, L.M., Carter, V., Golet, F.C., LaRoe, E.T. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Government Printing Office. Washington D.C. GPO 024-010-00524-6. 103pp.

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

for Water Storage for Flood Water and Storm Runoff (VWRs Section 5.1) and Surface and Groundwater Protection (VWRs Section 5.2). However, due to several site and landscape considerations noted in the forms, the functional capacity for both is present at reduced values and should not be considered significant under the VWRs. See the site photographs (Attachment 3) for a representative view of on-site wetland condition.

Additionally, the 600 linear foot (lf) canal located within the eastern boundary meets federal waters criteria and would be subject to jurisdiction by the USACE. The property boundary largely lies within the canal-way; therefore, just the top of the west bank was flagged per ANR guidance. The canal however, ranges from approximately eleven to fifteen feet in OHW width, and typical water depths average approximately 20 inches. Due to the artificial channel conditions created by channelization, instream habitat is minimal and natural fluvial geomorphic channel modifications are absent. The western bank has been landscaped with native shrub species, a pedestrian path is situated above the western bank, and much of the eastern bank is composed of riprap bank stabilization along the Mechanicsville Road embankment. Downstream, off-site inspections reveal that the canal is controlled by a weir and stop-gate water control and intake structure located just west of VT Route 116 in Hinesburg. Upstream, off-site inspections revealed that water inputs are regulated by a concrete weir structure on Patrick Brook. Photograph 7 of Attachment 3 provides a representative view of onsite canal characteristics.

<u>Wetland Jurisdiction and VWRs Determinations:</u>
The initial delineation study and limits of wetlands jurisdictional under Section 404 of the federal Clean Water Act were discussed with Marty Abair of the USACE during a meeting on April 8, 2010 in which Ms. Abair confirmed the methods and the results corroborate her knowledge of the site from past site visits. As previously mentioned, Ms. Abair was able to field review the delineation on June 15, 2011, from which final revisions to the wetland boundary were made (the revisions are incorporated in the Natural Resources Map, included as Attachment 2).

In Vermont, significant wetlands and the provided function and values of such are protected by policy pursuant to 10 V.S.A. §6025(d)(5) and regulated under the VWRs, a program managed by the ANR Wetlands Division. Under the VWRs, both Class I and Class II wetlands are considered significant. Class III wetlands are not regulated under the VWRs. Class I wetlands are designated as such on the VSWI mapping or as determined by the Water Resources Panel of the Vermont Natural Resources Board. Class II wetlands are those included on the VSWI mapping or those that the ANR Secretary determines merits protection based on an evaluation of wetland functions and values set forth at 10 V.S.A. §6025(d)(5)(A)-(K) and Section 5 of the current (2010) VWRs. Under Section 5, a wetland or wetland complex is considered significant based on an evaluation of the provided number and extent of protected functions and values. These functions include:

5.1 Water Storage for Flood Water and Storm Runoff

5.2 Surface and Ground Water Protection
5.3 Fish Habitat
5.4 Wildlife Habitat
5.5 Exemplary Wetland Natural Community
5.6 Rare, Threatened, and 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

Under the VWRs Section 4.6 Presumptions (of wetland significance), the onsite wetland would meet Presumption 4.6.a as it is a wet meadow that is greater than 0.5 acre in size. However, based on the function and value assessment described above, the wetland functional capacities (5.1 and 5.2) are not provided at significant levels. Further, as part of previous Act 250 Land Use Permit review for other projects in the Commerce Park, the onsite wetlands (or portions thereof) have been determined by ANR Wetlands Division to be Class III under the former (2002) VWRs. The onsite wetland was field-reviewed on October 21, 2011 by Alan Quackenbush of the DEC Wetlands Section. During the field visit, Mr. Quackenbush concurred verbally with the VHB's assessment of the wetland as a Class III feature under the current (2010) VWRs; that it does not meet any of the VWRs' Section 5.0 significant function criteria necessary for a wetland to be considered Class II. At Mr. Quackenbush's request, VHB prepared a Vermont Wetland Determination Petition to be filed with the DEC Wetlands Section to confirm this classification.

Flood Inundation Mapping:
According to the current Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) having an effective date of July 18, 2011, a 100-year Special Flood Hazard Area for which elevations are determined (Zone AE) is located along the southern and eastern boundary of the study site and contained within an artificial drainageway (AKA the Canal, see Attachment 2). The base flood elevations for Zone AE at this location range from 346 to 347 feet above sea level (asl) and based on the project plans dated April 26, 2012, the flood hazard area does not extend into portions of the property proposed for development. Other Zone AE flood hazard areas in the vicinity are associated with Patrick Brook, which lies north of Commerce Street, and therefore have no bearing on the project.

The Town of Hinesburg Wetlands & Flood Hazard Areas map, effective May 5, 2011, includes the FEMA Special Flood Hazard Area discussed above. No fluvial erosion hazard (FEH) zone has been mapped within the project area by the Agency of Natural Resources (ANR). Gretchen Alexander, River Scientist with the Vermont Department of Environmental Conservation (DEC) Rivers Program, confirmed that no additional FEH zone is associated with the Canal at the project location and that the DEC concurs with the FEH as presented on the Wetlands and Flood Hazards Area Map adopted by the Town of Hinesburg.

Threatened and Endangered Species:
Through review of the NHIP database, one rare or sensitive species was identified that is known to occur within the one-mile radius of the project area, but there are no known species or significant natural community EOs within or adjacent to the Project site. This EO is a plant considered common globally and uncommon in Vermont (G5S3), but is not afforded protection under the federal Endangered Species Act or Vermont Endangered Species Law. No detailed species surveys were conducted but due to the degraded habitat conditions onsite (mowing, made-land, invasive species, etc.) and the prevalence of surrounding development, habitat is not suitable for any protected species to occur within the site.

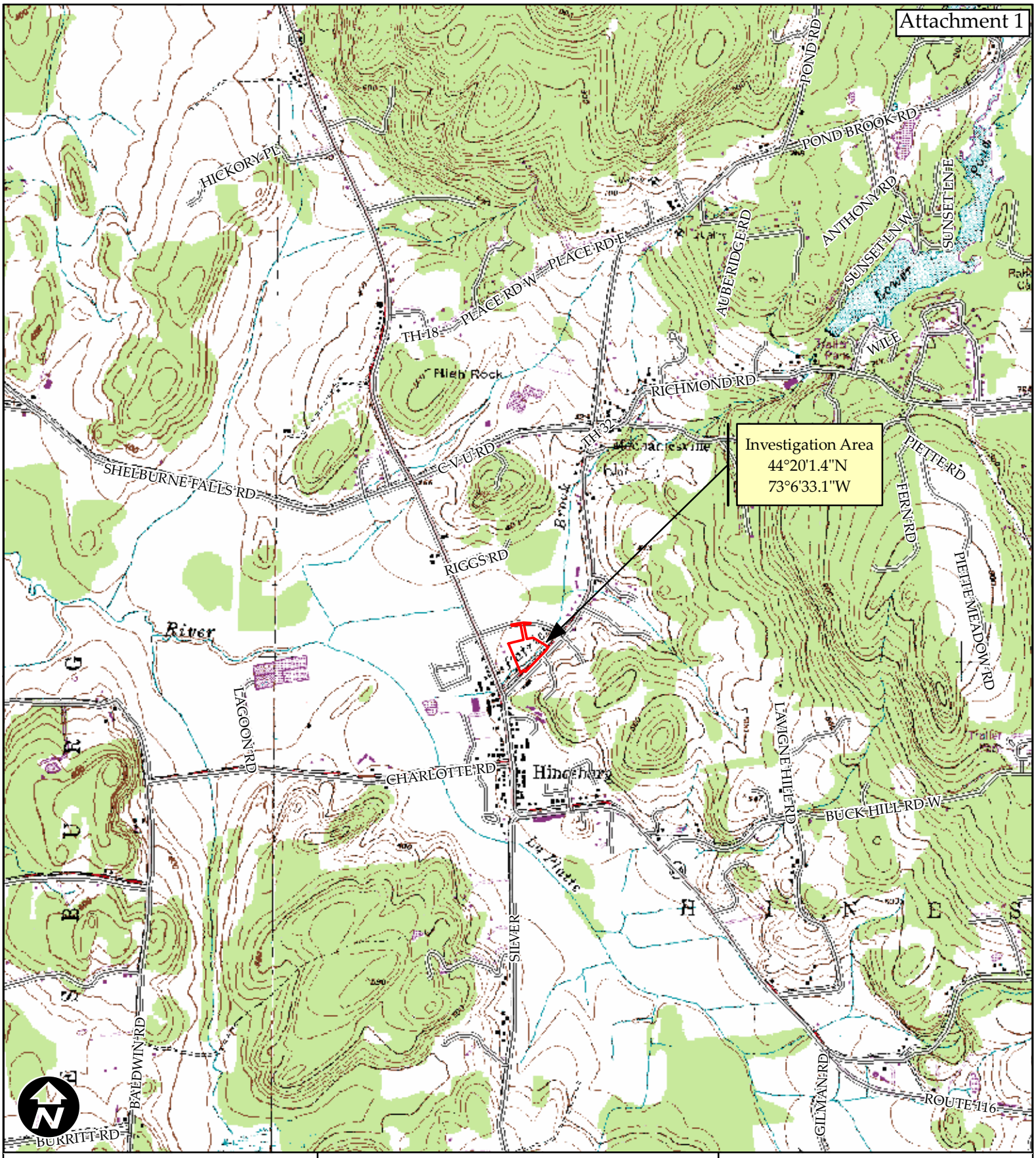
SUMMARY

VHB conducted assessments for wetland, waters, flood inundation hazard zones, and database reviews for threatened and endangered species within the approximately 5.4 acre study area in Hinesburg, Vermont on which a supermarket is proposed. From detailed wetland and waters delineations, there are 1.63 acres of PEM1Y, proposed Class III wetland, and 600 linear feet of a jurisdictional surface water associated with a channelized canal. A flood inundation hazard zone has been mapped within the subject property in association with the canal. There are no known threatened or endangered species within or adjacent to the project property. The results of these assessments are supported by documentation provided in the Attachment.

ATTACHMENTS

- Attachment 1 - Site Location Map
- Attachment 2 - Natural Resources Map
- Attachment 3 - Representative Site Photographs
- Attachment 4 - Wetland Determination Forms
- Attachment 5 - Element Occurrence Map
- Attachment 6 - Vermont Wetland Evaluation Form

ATTACHMENTS



Legend

Investigation Area

VTRANS Roads

Hannaford Supermarket and Pharmacy
Hinesburg, Vermont
Site Location Map

December 7, 2010

2,000 1,000 0 2,000

Feet

Sources: USGS Topo; Mount Philo and Hinesburg Quads (1987) from VCGI (2006); Road data from VCGI (2008); Investigation Area from OLeary and Burke (2010).

VHB *Vanasse Hangen Brustlin, Inc.*

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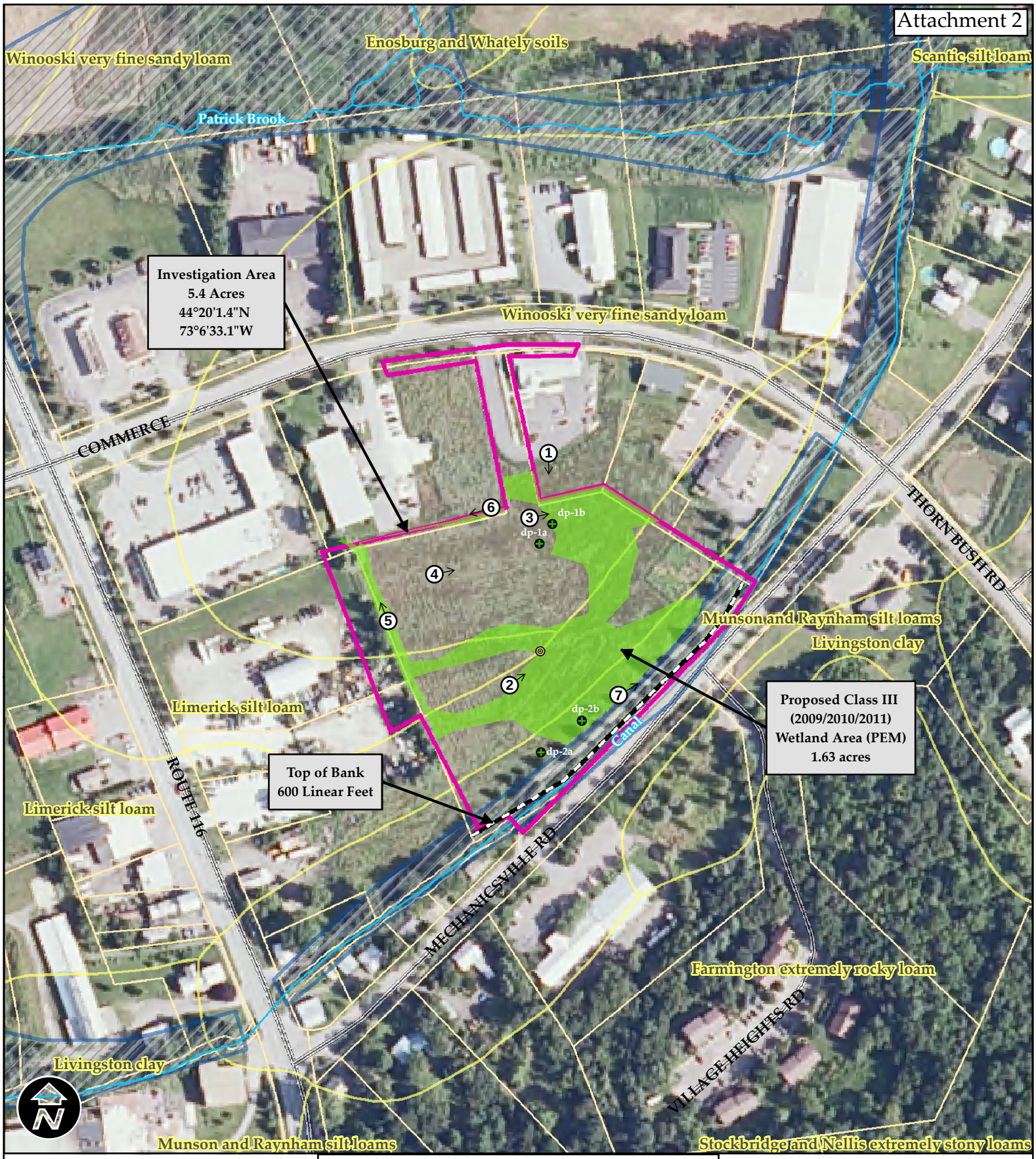
Prepared by: PBW



Legend

- Sewer Manhole
- Data Point (VHB)
- Proposed Class III Wetland (VHB, 2009-2011)
- VHB Investigation Area
- VHB Top of Bank
- VSWI Wetland
- VHD Streams
- FEMA - 100-yr Flood Zone
- Photo Number and Orientation
- Soils
- Parcel Boundaries
- Roads

Prepared by: JAT

Proposed Hannaford Supermarket
Hinesburg, Vermont
Natural Resources Map

December 14, 2010
Revised: August 10, 2011

200 100 0 200
Feet

Sources: Background: 2009 NAIP Ortho from VCGI (2010); Road data from VCGI (2008); Stream data from VCGI (2010); Investigation Area data from Oleary Burke Survey (2010); Soils provided by the NRCS (2008); VHB wetland and top of bank GPS'd by VHB using Trimble Unit (2009/2010/2011); Flood Data digitized from FEMA.

VHB Vanasse Hangen Brustlin, Inc.

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Attachment 3

Representative Site Photographs

Proposed Hannaford Supermarket and Pharmacy, Hinesburg, Vermont

Photograph 1: Overall view of typical field conditions looking south from the National Bank of Middlebury.

Photograph 2: Typical view of PEM wetland and the upland transition near delineation flag 2009-1-C9.

Photographs taken by Adam R. Crary, PWS, PWD, of VHB on October 20, 2009.

Representative Site Photographs

Proposed Hannaford Supermarket and Pharmacy, Hinesburg, Vermont

Photograph 3: Typical wetland condition in the northern region (note: reed canary grass dominated).

Photograph 4: Typical non-wetland field condition (note: Kentucky bluegrass dominated).

Photographs taken by Adam R. Crary, PWS, PWD, of VHB on October 20, 2009.

Representative Site Photographs

Proposed Hannaford Supermarket and Pharmacy, Hinesburg, Vermont

Photograph 5: Ditched PEM wetland condition near delineation flag 2009-1-B14.

Photograph 6: Offsite drainage ditch providing hydrology conveyance near delineation flag 2009-1-A1.

Photographs taken by Adam R. Crary, PWS, PWD, of VHB on October 20, 2009.

Representative Site Photographs

Proposed Hannaford Supermarket and Pharmacy, Hinesburg, Vermont

Photograph 7: Typical view of the canal, pedestrian path, and Mechanicsville Road along eastern property boundary.

Photographs taken by Adam R. Crary, PWS, PWD, of VHB on October 20, 2009.

Attachment 4

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: HANNAFORD SUPERMARKET & PHARMACY City/County: CHITTENDEN COUNTY Samp. Date: 10/20/2009

Applicant/Owner: MARTINS FOOD OF SOUTH BURLINGTON, INC. State: VERMONT Sampling Point: 2009-1-A

Investigator(s): VHB (ADAM R. CRARY, PWS, PWD) Section, Township, Range: HINESBURG

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

Subregion (LRR or MLRA): LRR R Lat: 44°20'1.4"N Long: 73°6'33.1"W Datum:

Soil Map Unit: LIMERICK SILT LOAM NWI Class: UPLAND

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

Are Vegetation, Soil, or Hydrology significantly disturbed? NO Normal Circumstances? YES

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

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

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

Remarks:

UPLAND DATA POINT NEAR 2009-1-B3; NON-HYDROPHYTIC VEGETATION AND LACK OF SURFACE HYDROLOGY INDICATORS USED FOR THE DELINEATION IN THIS AREA; 1987 USACE MANUAL USED BUT DATA REPORTED IN THE NC AND NE REGIONAL SUPPLEMENT FORM (2009)

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)
	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):	8
Saturation Present? (includes capillary fringe)	X	Depth (inches):	2 - 5

Wetland Hydrology Present? YES

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

Remarks:

ORC'S FROM 0-5" (SURFACE); SEASONAL OR PRECIPITATION EVENT HYDROLOGY PERCHED ON CLAY LENS (NO SURFACE HYDRO INDICATORS); END OF GROWING SEASON HYDROLOGY; Rainfall 5 days prior 0" (NOAA 2009)

VEGETATION - Use scientific names of plants.

Sampling Point: 2009-1-A

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.	2	X	
	2	= Total Cover	

Herb Stratum (Plot size: 10' RAD)			
1. Phalaris arundinacea L.	25	X	FACW
2. Poa pratensis L.	63	X	FACU
3. Securigera varia (L.) Lassen	1		NI
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	89	= 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	25	x 2 =	50
FAC		x 3 =	
FACU	63	x 4 =	252
UPL		x 5 =	
Sum:	88 (A)		302 (B)

Prevalence Index = B/A = 3.43

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).

ANNUALLY MOWED FIELD

SOIL

Sampling Point: 2009-1-A

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		7.5YR 3/4		C	PL	SILT LOAM	REDOX IS C, M, D
4-14	10YR 3/2		10YR 4/3		C	M	SILTY CLAY LOAM	REDOX IS F, F, F
14-19+	10Y 4/1		10YR 4/6		C	M	SILTY CLAY	REDOX IS M,C,P

[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: CLAY LENS

Depth (inches): 14

Hydric Soil Present? YES

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: HANNAFORD SUPERMARKET & PHARMACY City/County: CHITTENDEN COUNTY Samp. Date: 10/20/2009

Applicant/Owner: MARTINS FOOD OF SOUTH BURLINGTON, INC. State: VERMONT Sampling Point: 2009-1-B

Investigator(s): VHB (ADAM R. CRARY, PWS, PWD) Section, Township, Range: HINESBURG

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

Subregion (LRR or MLRA): LRR R Lat: 44°20'1.4"N Long: 73°6'33.1"W Datum:

Soil Map Unit: LIMERICK SILT LOAM NWI Class: PEM1Y

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 Within a Wetland?**	YES
Hydric Soil Present?	YES		
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2009-1-B

Remarks:

WETLAND NEAR DELINEATION FLAG 2009-1-B3; 1987 USACE MANUAL USED BUT DATA REPORTED IN THE NC AND NE REGIONAL SUPPLEMENT FORM (2009); WETLAND DISTINGUISHED FROM ADJACENT UPLAND BY HYDROPHYTIC VEGETATION BECOMING DOMINANT, PRESENCE OF SURFACE HYDROLOGY INDICATORS, AND SLIGHT TOPOGRAPHICAL DEPRESSION

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)	X	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)
X	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):	5
Saturation Present? (includes capillary fringe)	X	Depth (inches):	3-8

Wetland Hydrology Present? YES

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

Remarks:

END OF GROWING SEASON HYDROLOGY

VEGETATION - Use scientific names of plants.

Sampling Point: 2009-1-B

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. Phalaris arundinacea L.	87	X	FACW
2. Poa pratensis L.	15		FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	102	= 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	87	x 2 =	174
FAC		x 3 =	
FACU	15	x 4 =	60
UPL		x 5 =	
Sum:	102 (A)		234 (B)

Prevalence Index = B/A = 2.29

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).

ANNUALLY MOWED FIELD

SOIL

Sampling Point: 2009-1-B

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
0-3	10YR 3/2						MUCKY LOAM	OA HORIZON
3-10	10YR 3/2		10YR 3/6		C	PL	SILT LOAM	REDOX IS M,M,D
10-17+	10Y 4/1		10YR 4/6		C	M	SILTY CLAY	REDOX IS M,C,P

[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: CLAY LENS

Depth (inches): 10

Hydric Soil Present? YES

Remarks:

RESTRICTIVE LAYER SHALLOWER THAN ADJACENT UPLAND = WATER TABLE PERCHED CLOSER TO SURFACE

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: HANNAFORD SUPERMARKET & PHARMACY City/County: CHITTENDEN COUNTY Samp. Date: 10/20/2009

Applicant/Owner: MARTINS FOOD OF SOUTH BURLINGTON, INC. State: VERMONT Sampling Point: 2009-2-A

Investigator(s): VHB (ADAM R. CRARY, PWS, PWD) Section, Township, Range: HINESBURG

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

Subregion (LRR or MLRA): LRR R Lat: 44°20'1.4"N Long: 73°6'33.1"W Datum:

Soil Map Unit: MUNSON AND RAYNHAM SILT LOAMS NWI Class: UPLAND

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

Are Vegetation, Soil, or Hydrology significantly disturbed? NO Normal Circumstances? YES

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

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

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

Remarks:

1987 USACE MANUAL USED BUT DATA REPORTED IN THE NC AND NE REGIONAL SUPPLEMENT FORM (2009); DATA POINT NEAR DELINEATION FLAG 2009-1-C13; AREA DISTINGUISHED AS UPLAND BY NON-HYDROPHYTIC VEGETATION, NO WETLAND HYDROLOGY, AND RISE IN TOPOGRAPHY

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial (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):	18
Saturation Present? (includes capillary fringe)		Depth (inches):	

Wetland Hydrology Present? NO

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

Remarks:

END OF GROWING SEASON;

VEGETATION - Use scientific names of plants.

Sampling Point: 2009-2-A

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. Poa pratensis L.	87	X	FACU
2. Phalaris arundinacea L.	15		FACW
3. Securigera varia (L.) Lassen	3		NI
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105	= 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	15	x 2 =	30
FAC		x 3 =	
FACU	87	x 4 =	348
UPL		x 5 =	
Sum:	102 (A)		378 (B)

Prevalence Index = B/A = 3.71

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).

ANNUALLY MOWED FIELD AT BASE OF ELEVATED PEDESTRIAN PATH; Quercus bicolor PLANTED NEARBY

SOIL

Sampling Point: 2009-2-A

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
0-9	10YR 3/2						SILT LOAM	A HORIZON
9-15	2.5Y 4/2		10YR 3/6		C	M	SILTY CLAY	REDOX IS C,M,P
15-19+	10YR 4/6		10YR 4/2		D	M	CLAY	DEPLETIONS ARE M,M,D

[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)
- X 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: CLAY

Depth (inches): 15

Hydric Soil Present? YES

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: HANNAFORD SUPERMARKET & PHARMACY City/County: CHITTENDEN COUNTY Samp. Date: 10/20/2009

Applicant/Owner: MARTINS FOOD OF SOUTH BURLINGTON, INC. State: VERMONT Sampling Point: 2009-2-B

Investigator(s): VHB (ADAM R. CRARY, PWS, PWD) Section, Township, Range: HINESBURG

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

Subregion (LRR or MLRA): LRR R Lat: 44°20'1.4"N Long: 73°6'33.1"W Datum:

Soil Map Unit: MUNSON AND RAYNHAM SILT LOAMS NWI Class: PEM1Y

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 Within a Wetland?**	YES
Hydric Soil Present?	YES		
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2009-1-C

Remarks:

1987 USACE MANUAL USED BUT DATA REPORTED IN THE NC AND NE REGIONAL SUPPLEMENT FORM (2009); DATA POINT NEAR DELINEATION FLAG 2009-1-C13; WETLAND DISTINGUISHED FROM ADJACENT UPLAND BY HYDROPHYTIC VEGETATION BECOMING DOMINANT AND PRESENCE OF SURFACE HYDROLOGY INDICATORS

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)	X	Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
	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)
X	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Stunted or Stressed Plants (D1)
X	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? (includes capillary fringe)	X	Depth (inches):	0-7

Wetland Hydrology Present? YES

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

Remarks:

END OF GROWING SEASON HYDROLOGY; HYDROLOGY AUGMENTED BY SEEPAGE PIPING FROM UPSLOPE CANAL

VEGETATION - Use scientific names of plants.

Sampling Point: 2009-2-B

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. Phalaris arundinacea L.	87	X	FACW
2. Poa pratensis L.	15		FACU
3. Verbena hastata L.	3		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105	= 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	90	x 2 =	180
FAC		x 3 =	
FACU	15	x 4 =	60
UPL		x 5 =	
Sum:	105 (A)		240 (B)

Prevalence Index = B/A = 2.29

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).

ANNUALLY MOWED FIELD

SOIL

Sampling Point: 2009-2-B

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
0-5	10YR 3/2						SILT LOAM	AO HORIZON
5-12	10YR 3/1		10YR 3/6		C	PL	SILTY CLAY LOAM	REDOX IS C,M,D
12-20+	2.5Y 5/2		10YR 5/6		C	M	CLAY LOAM	REDOX IS M,C,P

[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.

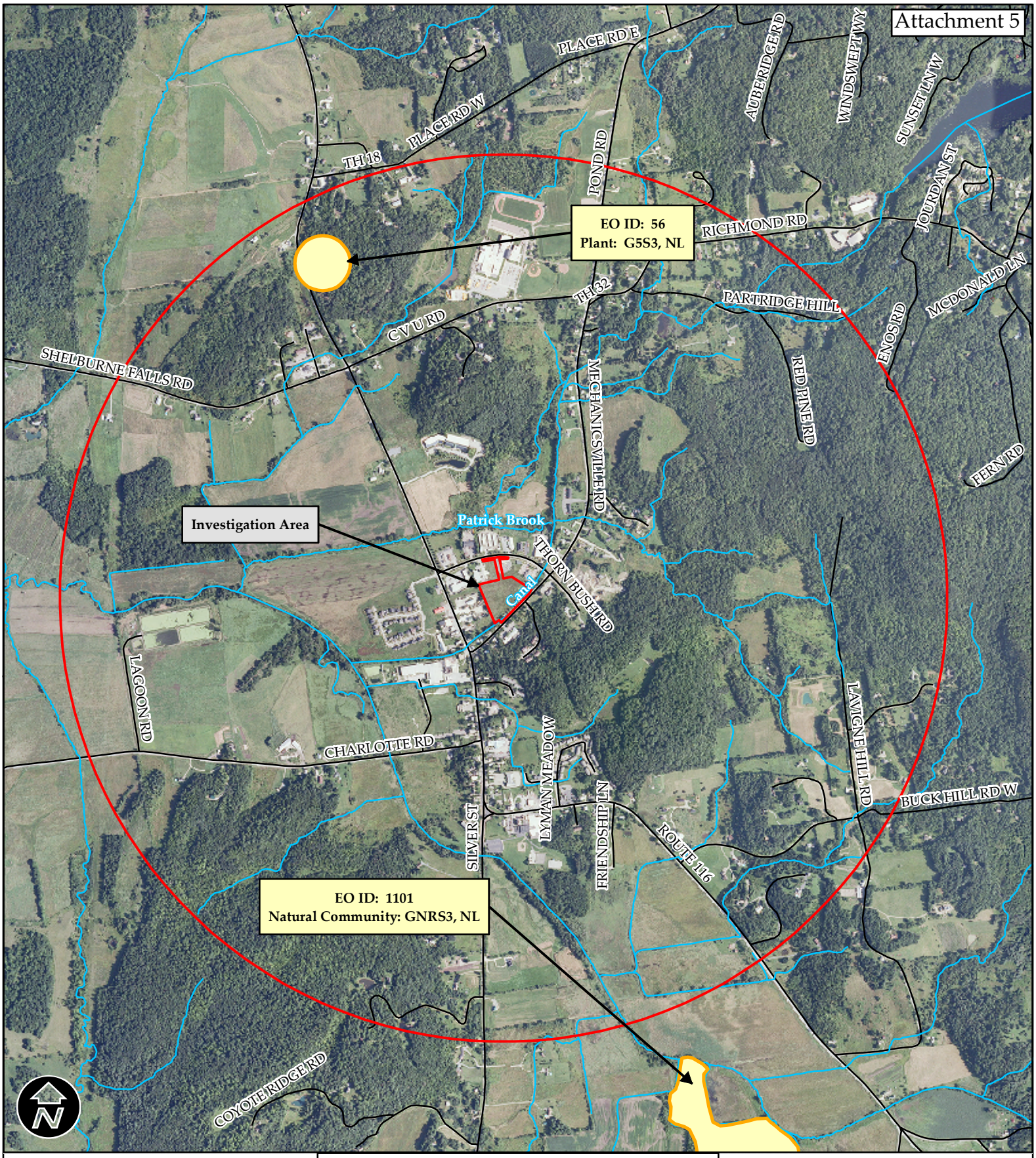
Restrictive Layer (if observed):

Type: CLAY

Depth (inches): 12

Hydric Soil Present? YES

Remarks:



Legend

- Element Occurence
- VHD Stream
- VHB Investigation Area
- VTrans Roads

Prepared by: JAT

Hannaford Supermarket and Pharmacy
Hinesburg, Vermont
Element Occurrence Map

December 8, 2010

1,500 750 0 1,500
Feet

Sources: Background: 2009 NAIP Ortho from VCGI (2010); VTrans Road data from VCGI (2010); VHD Stream data from VCGI (2010); EO Data from ANR (2010); Investigation Area from Oleary Burke Survey (2010).

VHB *Vanasse Hangen Brustlin, Inc.*

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Attachment 6

VERMONT WETLAND EVALUATION FORM

Project Name: HANNAFORD HINESBURG Project #: VHB #57083.01

Date: AUGUST 2011 Investigator: VHB (A. CRARY)

SUMMARY OF FUNCTIONAL EVALUATION:
Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff	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 NO
  - The wetland is contiguous to a VSWI mapped wetland NO
  - The wetland meets the presumptions of significance under Section 4.6
  - The wetland has a preliminary determination that it is Class II NO

WOULD MEET PRESUMPTION 4.6A, BASED ON SIZE > 0.5 ACRE. PER THIS ASSESSMENT OF VWRS SECTION 5.0 FUNCTIONS, NONE ARE FOUND TO BE SIGNIFICANT AND THE WETLAND SHOULD NOT BE CONSIDERED SIGNIFICANT.

9/14/2010

1. Water Storage for Flood Water and Storm Runoff*

Yes No

☒ 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. NO INLET. OUTLET VIA VEGETATED DITCH.
- ☒ 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. VALUE REDUCED BY ANNUAL MOWING
- ☐ 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. NO STREAM
- ☒ 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. NONE KNOWN

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.

HIGH FLOOD STORAGE CAPACITY IN PATRICK BROOK AND LAPLATTE RIVER FLOODPLAINS.

☐ 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. ACTIVE D/S FLOODING IN ACTIVE FLOODPLAINS - UNKNOWN OF LOSS.
- ☐ 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.

PRIVATE PROPERTY D/S, BUT NOT LIKELY TO BE IMPACTED BY LOSS OF THIS WETLAND STORAGE CAPACITY.

- ☐ The wetland is large in size and naturally vegetated. NOT NATURALLY VEGETATED

*FUNCTIONAL VALUE REDUCED DUE TO SEVERAL CONSIDERATIONS:
- NO INLET/DITCHED OUTLET
- EXISTING STORMWATER CONTROLS IN PLACE
- NO ASSOCIATED WATERS
- VEGETATION REGULARLY MOWED
- PRECIPITATION INPUTS, PRIMARILY
- HIGH STORAGE CAPACITY IN W'SHED.

☐ 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. NEW IMPERVIOUS IN WSHED IS TREATED BY STORMWATER CONTROLS
- ☐ 2. Relatively impervious soils.
- ☐ 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

☒ Function is present (Yes) and likely to be significant (No): Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- ☐ Constricted or no outlets. OUTLET VIA VEGETATED DITCH/CULVERTS
- ☐ Low water velocity through dense, persistent vegetation. No FLOWS, VEGETATION DENSE, BUT MOWED
- ☐ Hydroperiod permanently flooded or saturated. No, SEASONALLY
- ☐ Wetlands in depositional environments with persistent vegetation wider than 20 feet. No
- ☐ Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula. No
- ☐ Presence of seeps or springs. No - PERCHED ON CLAY SOILS
- ☐ Wetland contains a high amount of microtopography that helps slow and filter surface water. NO
- ☐ Position in the landscape indicates the wetland is a headwaters area. NO
- ☐ Wetland is adjacent to surface waters. No (DOWNHILL FROM MAN-MADE CANAL)
- ☐ Wetland recharges a drinking water source. No (CLAY SOIL RESTRICTION)
- ☐ Water sampling indicates removal of pollutants or nutrients. UNKNOWN
- ☐ Water sampling indicates retention of sediments or organic matter. UNLIKELY
- ☒ Fine mineral soils and alkalinity not low. CLAY SOILS
- ☒ 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. PAVED PARKING, BOARDWALKS, SIDEWALK ON 3 SIDES

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.

- [x] 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. No YES YES
- [x] Current use in the wetland results in disturbance that compromises this function. MOWING, DITCH MAINTENANCE, EXISTING STORMWATER CONTROLS

- [ ] 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. No
  - [ ] The wetland provides flows to Class A surface waters. No
  - [ ] The wetland contributes to the protection or improvement of water quality of any impaired waters. No
  - [ ] The wetland is large in size and naturally vegetated.
    Yes No

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. NO
  - [ ] 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. NO
  - [ ] Documented or professionally judged spawning habitat for northern pike. No
  - [ ] Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species. NO
  - [ ] 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. No

9/14/2010

4. Wildlife Habitat

☐ Function is ~~present~~ No 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population. No
- ☐ 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. No
  - ☐ 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams. No
  - ☐ 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance. No

- ☐ 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. No

- ☐ 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. No

- ☐ 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. NOT LIKELY

- ☐ 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; NO

  - ☐ 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp; NONE

  - ☐ 3. Located adjacent to a lake, pond; river or stream; No

  - ☐ 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land; No, <50%

  - ☐ 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water; No OPEN WATER

  - ☒ 6. One of the following:

    - ☐ i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile; NOT CONNECTED

    - ☐ 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; WITHIN 1/4 MILE OF PFO AND PSS WETLANDS

- ☐ Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and No

- ☐ Contains evidence that it is used by wetland dependent wildlife species. RED-WINGED BLACKBIRD NESTING NOTED-NOT WETLAND DEPENDANT, THOUGH.

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.

NA (NO FX PROVIDED)

- ☐ 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.

NA (NO FX PROVIDED)

☐ 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

No

☐ 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. NO

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. No
- ☐ Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to: NONE
  - ☐ 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. No NONE

- ☐ 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. No

- ☐ Can be readily observed by the public; and
  - ☐ Possesses special or unique aesthetic qualities; or No
  - ☐ Has prominence as a distinct feature in the surrounding landscape; No
- ☐ Has been identified as important open space in a municipal, regional or state plan.

NO, "OFFICIAL MAP" FOR HAMESBURG IDENTIFIES AS "FUTURE COMMUNITY FACILITY"

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: NONE - SEE NOTE AT END*
  - ☐ 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.

9/14/2010

What type of erosive forces are present?

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

NA

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.

* WETLAND SEPERATED FROM CANAL BY AN ELEVATED PEDESTRIAN PATH (PAVED) - THE CANAL HAS A NRE-RIVERS MAPPED FEET ZONE EXTENDING INTO THE WETLAND. THE CANAL IS NOT SUBJECT TO NORMAL FLUVIAL PROCESSES, IS SEPERATED BY THE PATHWAY, AND THEREFORE THE WETLAND CANNOT PROVIDE THIS FUNCTION TO THE CANAL.

Transportation
Land Development
Environmental
Services

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Memorandum

To: 57083.01 Project File

Date: February 29, 2012

Project No.: 57083.01

From: Adam R. Crary, PWS, PWD, Nick Sibley

Re: Supplemental Wetland/Waters Delineation Assessments – Proposed Hannaford Supermarket, Hinesburg, Vermont

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Vanasse Hangen Brustlin, Inc. (VHB) has conducted additional assessments of natural resources for the proposed Hannaford Supermarket Project located in the Town of Hinesburg, Vermont (see Site Location Map on page 1 of the Attachment). The approximately 1.7-acre investigation area is located north of Commerce Street, east of VT Route 116, south of and adjacent to Patrick Brook, and north of the existing Mobil gas station and convenience store. The investigation area consists largely of the area around the existing stormwater treatment pond (STP), known as Basin 3. This assessment, conducted on December 7, 2011, was undertaken for planning and permitting purposes associated with proposed stormwater structure upgrades which are being considered as part of construction of the Hannaford Project. VHB has prepared this memorandum as a supplement to the technical memorandum, *Natural Resource Assessments – Proposed Hannaford Supermarket, Hinesburg, Vermont*, prepared by VHB, dated December 13, 2010, and revised August 15, 2011.

EXISTING SITE CONDITIONS

The approximately 1.7-acre investigation area is located within an open setting that consists of little topographic relief. It is bounded to the north by Patrick Brook, to the east by commercial development, to the south by Commerce Street, and to the west by commercial development and VT Route 116. The investigation area generally slopes from south to north, with drainage occurring over land into Patrick Brook. Based on 2004 contours created from light detection and ranging (LIDAR) data, provided by the Chittenden County Metropolitan Planning Organization, elevations within the study area range from 332 to

338 feet above sea level (ASL). Most of the investigation area is cleared open field, with the western portion mowed regularly as part of the ongoing landscaping for the Mobil gas station and convenience store. The Natural Resources Map, included on Page 2 of the Attachment, depicts landscape and site conditions within and adjacent to the investigation area. Representative site photographs are included on pages 4 through 10 of the Attachment.

The investigation area includes a ditch which drains to the north, passing under Commerce Street via two in-line culverts, before emptying into the Basin 3, constructed in 1989. The ditch is a man-made feature which functions to drain surface hydrology from Lot 15 in the Commerce Park, which is the proposed Hannaford Site. In addition to the conveyance of wetland hydrology from Lot 15, this ditch conveys surface runoff from the existing Commerce Park development to Patrick Brook, via Basin 3 . The Basin 3 STP was designed to contain stormwater runoff before reaching Patrick Brook. This feature was proposed and permitted to be constructed with an earthen berm on the north side with a corrugated metal outfall pipe. Cursory observations indicate the berm may not adequately control surface water and appears to allow flows to drain over land to the northwest, over the existing berm, and into Patrick Brook, rather than through the outfall pipe. These overland flows appear to have created new wetland conditions within the path of flow.

Patrick Brook is situated approximately 700-feet to the north of the proposed Hannaford supermarket site, and is a tributary of the La Platte River, which flows into Lake Champlain (Winooski Watershed HUC 8#: 02010003). The nearest wetland mapped by the National Wetland Inventory (NWI) and the Vermont Significant Wetland Inventory (VSWI) is approximately 600 feet from the investigation area to the northeast. A wetland mapped by the Town of Hinesburg is located approximately 25 feet north of the investigation area.

Soils data obtained from the Natural Resource Conservation Service (NRCS), indicate two soils series occur within the investigation area: Winooski very fine sandy loam and Limerick silt loam. Limerick soils are classified as hydric at a national level and are listed as poorly drained. Winooski soils are known to have hydric inclusions five percent of the time and are classified as moderately well-drained.

METHODOLOGY

Off-site Resource Analysis:

Since the investigation area includes man-made drainage features, VHB reviewed off-site mapping and other geographic data resources in an effort to determine whether wetland

features existed on-site prior to the construction of Basin 3 circa 1989. VHB scientists reviewed publically available GIS databases associated with hydrology, researched soil conditions within the investigation area, and inspected historic maps and aerial photographs to determine if there was evidence of hydric soils, surface hydrology or other indicators of wetland condition within the investigation area prior to Basin 3 construction. See Table 1 for a summary of the resources and conclusions derived.

Table 1: Basin 3 Off-Site Resource Analysis

Document/Source	Information Derived	Conclusions Derived on Presence / Absence of Wetlands
1906 U.S. Geological Survey (USGS) 15 Minute Topographic Quad[1]	Wetlands/waters not mapped within investigation area. No depressional topography.	Inconclusive
1948 USGS 15 Minute Topographic Quad[2]	Wetlands/waters not mapped within investigation area. No depressional topography.	Inconclusive
1987 USGS 7.5 Minute Topographic Quad[3]	Wetlands/waters not mapped within investigation area. No depressional topography.	Inconclusive
1984 USGS Aerial Photograph[4]	Some evidence of surface hydrology within investigation area.	Likely
Phelps Engineering Site Plans[5]	No wetlands indicated within investigation area.	Not likely
Vermont Significant Wetland Inventory (VSWI)[6]	No VSWI wetlands mapped within investigation area.	Not likely
National Wetland Inventory (NWI)[7]	No NWI wetlands mapped within investigation area.	Not likely
Hinesburg Wetlands Data[8]	Wetlands mapped approximately 25' north of investigation area.	Likely
Flood Insurance Rate Map - Town of Hinesburg[9]	Floodplain mapped within investigation area.	Likely

Table 1: Basin 3 Off-Site Resource Analysis		
Document/Source	**Information Derived**	**Conclusions Derived on Presence / Absence of Wetlands**
Hydric Soils Data[10]	Hydric soils present within investigation area (Limerick)	Likely
Soil Survey of Chittenden County, Vermont[11]	Hydric soils present within investigation area (Limerick)	Likely

[1]U.S. Geological Survey. 1906. Burlington, Vermont 15 Minute Quadrangle. Accessed online: http://www.docs.unh.edu/nhtopos/Burlington.htm. Accessed 1/24/2011.

[2]U.S. Geological Survey. 1948. Burlington, Vermont 15 Minute Quadrangle. Accessed online: http://www.docs.unh.edu/nhtopos/Burlington.htm. Accessed 1/24/2012.

[3]U.S. Geological Survey. 1987. Hinesburg, Vermont 7.5 Minute Quadrangle. Downloaded from VCGI (2006).

[4]U.S. Geological Survey. 1984. Aerial Photo Single Frame (Frame ID: ARNNAVT00500059). Accessed online: http://www.earthexplorer.usgs.gov. Accessed 1/24/2011.

[5]Phelps Engineering. 1986. Giroux 15 Lot Commercial Subdivision Site Plans - West.

[6]Vermont Agency of Natural Resources. 2010. Vermont Significant Wetland Inventory (VSWI) Shapefile. Downloaded
from VCGI, 2010.

[7]U.S. Fish and Wildlife Service. 2004. National Wetlands Inventory (NWI) Wetland Shapefile. Downloaded from VCGI, 2010.

[8]Appleton, J. and D.W. Goodwin. 1997. Town of Hinesburg Wetland Shapefile. UMASS Department of Forestry and Wildlife Management. Based on 1993 National Aerial Photography Program Color Infrared Aerial Photography.

[9]Federal Emergency Management Agency. Effective Date: 7/18/11. Flood Insurance Rate Map - Town of Hinesburg, Vermont (Community Panel: 50007C0403D). Accessed online: http://www.msc.fema.gov. Accessed 1/24/2011.

[10]Natural Resources Conservation Service. 2008. Geologic Soils Shapefile. Downloaded from VCGI, 2009.

[11]Soil Conservation Service. 1967. *Soil Survey of Chittenden County, Vermont*. U. S Department of Agriculture. 59-60pp.

Based on off-site resource analysis, VHB has concluded that wetlands could have been present within the investigation area at some time prior to Basin 3 construction. The presence of hydric soils within the investigation area, as well as the apparent evidence of surface hydrology depicted on the 1984 aerial photograph within the investigation area, suggest this is a strong likelihood (see Proposed Hannaford Supermarket - 1984 Aerial Map on page 3 of the Attachment).

<u>Wetland and Waters Delineation:</u>

Prior to delineations, the U.S. Army Corps of Engineers (USACE), White and Burke, and VHB representatives conducted a site visit on November 30, 2011, to discuss potential

wetland jurisdiction. VHB environmental scientists Patti Kallfelz-Werts and Nick Sibley conducted the wetland and waters delineations on December 7, 2011. Wetland delineations are made pursuant to the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region: Routine Determination Method*[1]. Although the delineation was conducted outside of the growing season (which is often from late April through mid-October)[2], present conditions, including vegetation remnants and non-frozen ground, allowed for the recording of wetland criteria data to make an accurate determination of the wetland boundaries. Wetlands were identified in the field with pink wetland delineation flagging or ground flags, which were removed subsequent to the survey for most of the investigation area. Field notes were taken to record information, such as proposed wetland classifications, general characteristics, potential functions and values of the wetland, any unique qualities observed during the site assessment, as well as other considerations relevant to support site findings. Wetland functions and values are evaluated based on the field notes and observations according to Section 5.0 of the *Vermont Wetland Rules* (VWR)[2]. The wetlands are classified in accordance with the *Classification of Wetlands and Deepwater Habitats of the United States*[3]. Wetland features were located in the field using a Trimble® GPS unit capable of sub-meter accuracy and post-processed using Trimble® Pathfinder software. USACE Wetland Determination Data Forms were completed for on-site wetlands for which data were collected along the wetland and upland boundary.

The southern top-of-bank of Patrick Brook was flagged according to the Vermont Agency of Natural Resources (ANR) *Riparian Buffer Guidance*[4], using orange survey tape and labeled with the year, type and name of feature, and flag number (i.e., 2011-TB-PB-#1). These survey flags were also GPS-located by the methods described above.

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[1]U.S. Army Corps of Engineers (USACE). 2009. *Interim 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.
[2]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/filedruleddocs/VWR%207-16-10.pdf
[3]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.
[4]Vermont Agency of Natural Resources (ANR). 2005. *Riparian Buffer Guidance*. Accessed online: www.anr.state.vt.us/site/html/anrbuffer2005.htm.

[2] The growing season determination is based on the 50% probability that air temperatures will be 28 degrees F or higher, as presented by the NRCS WETS Station VT1081 for Chittenden County, Vermont.

RESULTS

Three wetland features and one stream segment were delineated within the investigation area. The Proposed Hannaford Supermarket Natural Resources Map on page 2 of the Attachment depicts the location and extent of each feature. VHB has provided a general description of the delineated features below. USACE Wetland Determination Data forms are included on pages 11 through 22 of the Attachment. Vermont Wetland Evaluation Forms are included on pages 23 through 44 of the Attachment. Photographic documentation of delineated features is provided on pages 4 through 10 of the Attachment).

Wetland 2011-1:

Wetland 2011-1 is a proposed Class III wetland located in an open setting south of Commerce Street. It is a ditched swale that drains wetlands delineated as part of the proposed supermarket site and is connected hydrologically to the Basin 3 stormwater pond (Wetland 2011-2) via a road and sidewalk culvert system and ditched swale. Dominant vegetation includes narrowleaf cattail (*Typha angustifolia*), reed canarygrass (*Phlaris arundinacea*), waterhorehound (*Lycopus* spp.), and aster (*Aster* spp.). Soil saturation to the surface was observed within the wetland feature. Water storage for flood water and storm runoff and surface and groundwater protection are the principal functions provided, but at a minimal level. Due to restricted property access, wetland flagging was not hung to demarcate the extent of this wetland feature. From the adjacent sidewalk, points along the wetland boundary were GPS-surveyed using a rangefinder and compass to determine distance and bearing in regard to GPS points taken outside of the restricted access property area.

Wetland 2011-2:

Wetland 2011-2 is a proposed Class III wetland located within an open setting south of Patrick Brook, north of Commerce Street, and east of VT Route 116. It is connected hydrologically to wetland 2011 -1 and includes the existing Basin 3. Due to the absence of a berm on the west side of the stormwater pond, this structure does not appear to function as designed and drains overland into Patrick Brook, likely bypassing the intended outfall pipe. Dominant vegetation includes reed canary grass (*Phalaris arundinacea*), water horehound (*Lycopus americanus*), willowherb (*Epilobium* spp.), fringed sedge (*Carex crinita*), poverty rush (*Juncus tenuis*), and tall buttercup (*Ranunculus acris*). Indicators of hydrology include surface saturation, and water drainage patterns. The principal functions of this wetland feature include water storage for flood water and storm runoff, and surface and groundwater protection, albeit at minimal levels.

Wetland 2011-3:

Wetland 2011-3 is a proposed Class II wetland located between the northern berm of Basin 3 and Patrick Brook. Because this wetland feature is contiguous to a VSWI mapped wetland and is adjacent to a perennial stream with woody and dense herbaceous vegetation , VHB contends that it meets the VWR criteria for a significant wetland under the VWR, and would be considered a Class II wetland. Class II wetlands have a 50-foot buffer zone under the VWR, which is intended to protect the wetland and preserve the provided functions. This wetland is contiguous with Stream 2011-TB-PB-1 (Patrick Brook), and primarily receives water from overland flow augmented by a upstream, active beaver impoundment. Wetland 2011-3 has an emergent wetland vegetation community within the investigation area, but the larger wetland complex contains areas of scrub-shrub wetland vegetation communities. Dominant vegetation in the investigation area includes reed canary grass, and bentgrass (*Agrostis* spp.). Surface soil saturation and drift lines were observed within this wetland feature. The primary functions of the wetland as part of the larger complex include providing storage for flood water and storm runoff, surface and groundwater protection, wildlife habitat, and erosion control through binding and stabilizing the soil.

2011-TB-1:

Stream 2011-TB-1 (Patrick Brook) is a perennial stream that defines the northern boundary of the Basin 3 investigation area. This stream has an approximate 20-foot average ordinary high water width (OHW) and only the river left top-of-bank was flagged. From review of USGS mapping from 1906, 1948, and 1987, it appears this reach may have been channelized in the past, but has since naturalized with a shrub riparian zone and the development of channel sinuosity. The Federal Emergency Management Agency (FEMA) has mapped a 100-year floodplain with in this area. The substrate consists primarily of fine alluvium. Stream 2011-TB-1 is hydrologically connected to a mapped VSWI wetland, approximately 600 feet northeast of the investigation area, and is impounded in two locations by beaver dams. Stream 2011-TB-1 flows out of the investigation area and under VT Route 116 via a box culvert.

SUMMARY

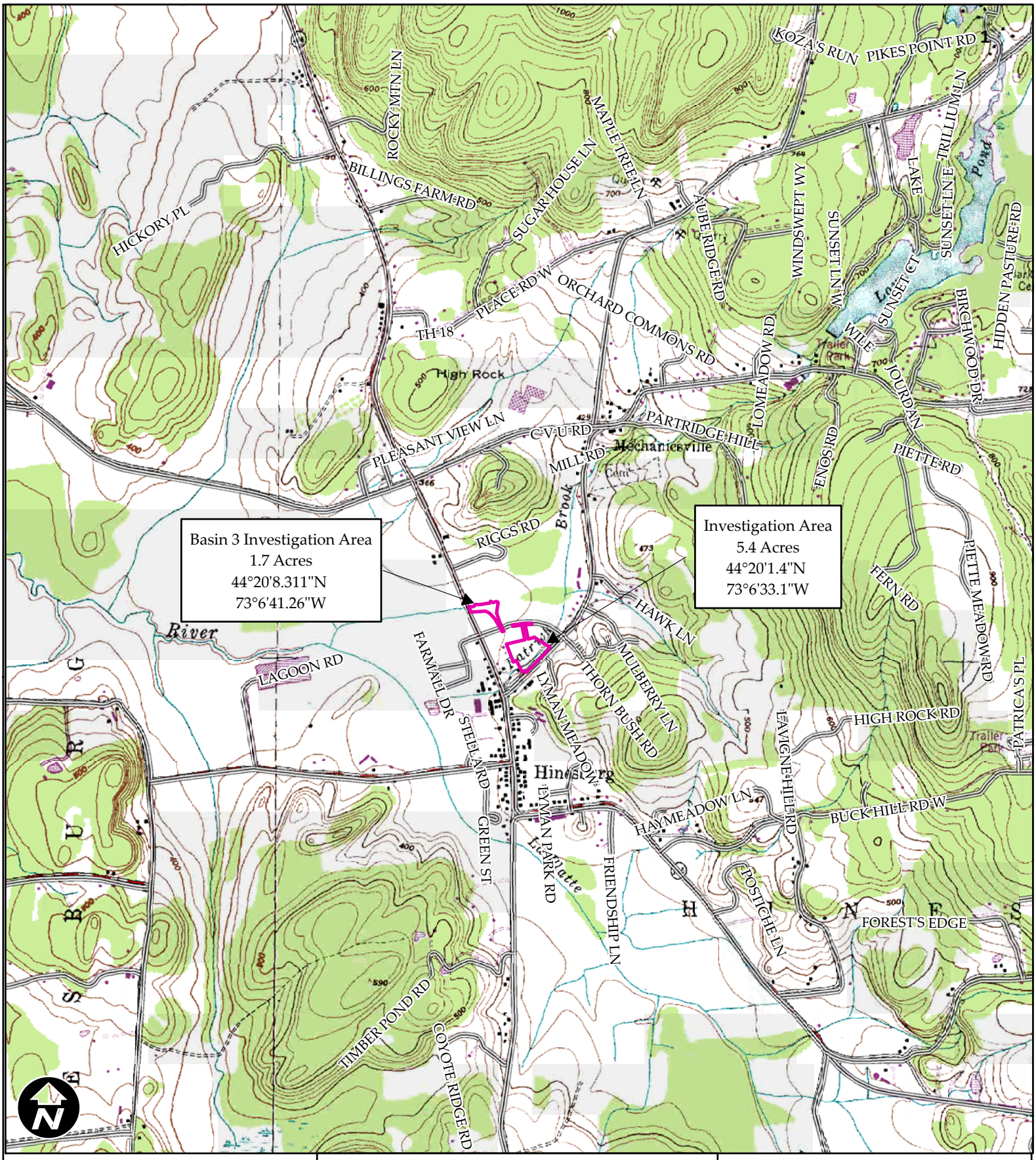
VHB conducted off-site assessments and research to determine the presence of potential wetlands within the investigation area prior to Basin 3 construction in 1989, as well as on-site assessments to determine the current extent of wetlands and waters within the approximately 1.7-acre investigation area, located in the Town of Hinesburg, Vermont.

Based on the results of the off-site assessments, VHB has concluded that wetlands were likely present within the investigation area prior to construction of Basin 3 in 1989. The likely presence of jurisdictional wetlands prior to Basin 3 construction suggests the Basin 3 wetlands (2011 -1 and 2011 -2) would meet USACE requirements for jurisdiction. From detailed wetland and waters delineations, there is one Class II and two Class III wetlands, and one perennial stream within the investigation area. The USACE has conducted field reviews prior to delineation studies, however the VT Department of Environmental Conservation has not field-reviewed the delineations or wetland classifications. The results of these assessments are supported by documentation provided in the Attachment.

ATTACHMENT

- Site Location Map
- Natural Resources Map
- 1984 Aerial Map
- Representative Site Photographs
- Wetland Determination Data Forms
- Vermont Wetland Evaluation Form

ATTACHMENT



Legend

VHB Investigation Area

VTRANS Roads

Hannaford Supermarket and Pharmacy
Hinesburg, Vermont
Site Location Map

December 14, 2010
Revised: February 27, 2012

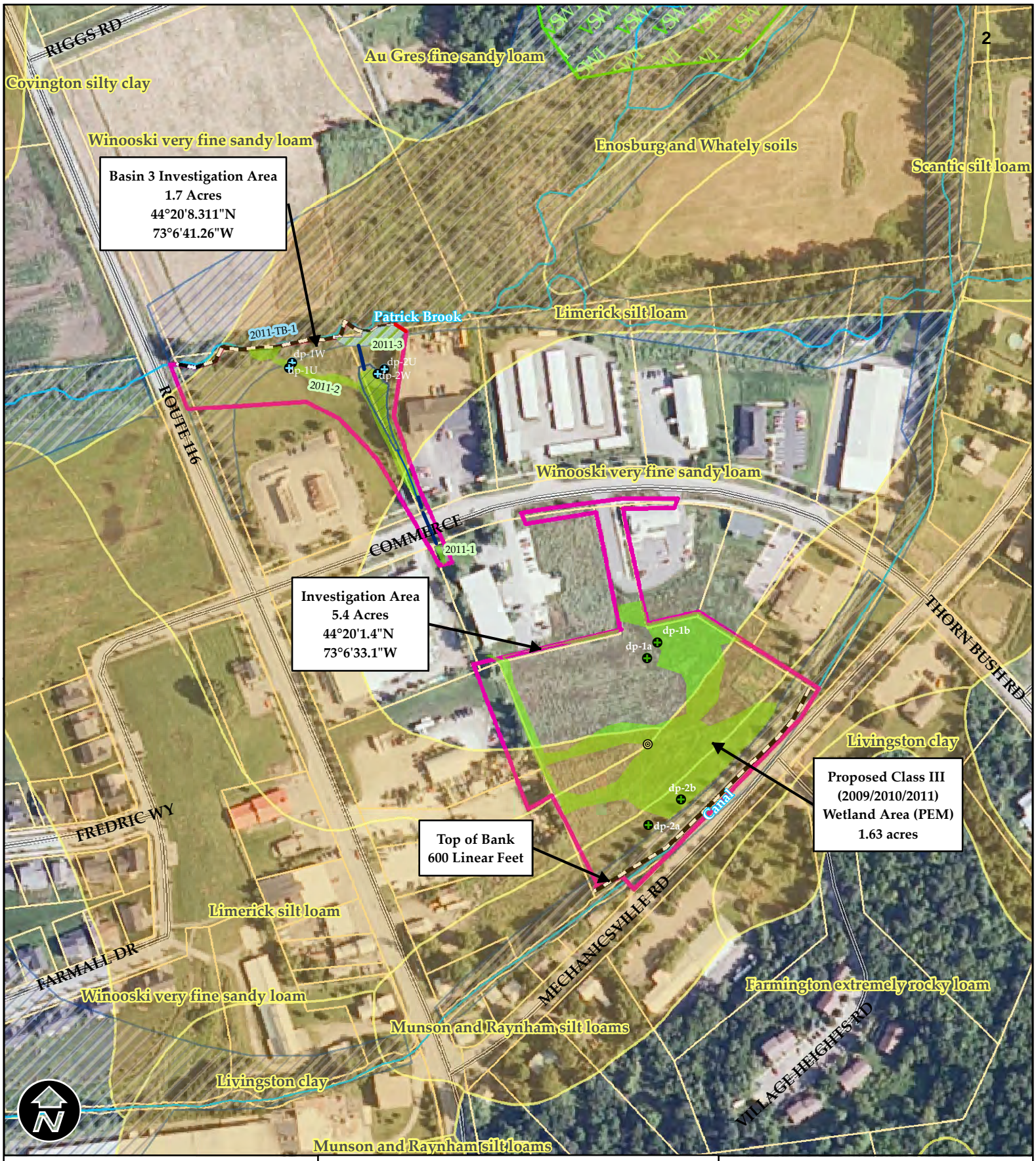
2,000 1,000 0 2,000
Feet

Sources: USGS Topo; Mount Philo and Hinesburg Quads (1987) from VCGI (2006); Road data from VCGI (2008); Investigation Area by VHB and uses some data from Oleary Burke Survey (2010, 2011).

VHB Vanasse Hangen Brustlin, Inc.

F:\57083.00\GIS\project\DGWhite_Hinesburg_site location.mxd

Prepared by: PBW/NRS



Legend

- VHB Investigation Area
- Proposed Class II Wetland (VHB, 2011)
- Proposed Class III Wetland (VHB, 2009-2011)
- Wetland Continues
- Approximate Stormwater Pond
- VHB Top of Bank
- Hydric Soils
- Ditch (VHB, 2011)
- Culvert (2011)
- Sewer Manhole
- Data Point (VHB, 2009)
- Data Point (VHB, 2011)
- VSWI Wetland
- VHD Streams
- FEMA - 100-yr Flood Zone
- Soils
- Parcel Boundaries
- Roads

Prepared by: JAT/NRS

Proposed Hannaford Supermarket
Hinesburg, Vermont
Natural Resources Map

December 14, 2010
Revised: February 27, 2012

250 125 0 250
Feet

Sources: Background: 2009 NAIP Ortho from VCGI (2010); Road data from VCGI (2008); Stream data from VCGI (2010); Investigation Area by VHB and uses some data from Oleary Burke Survey (2010, 2011); Soils provided by the NRCS (2008); VHB wetland and top of bank GPS'd by VHB using Trimble Unit(2009/2010/2011); Flood Data digitized from FEMA.

VHB Vanasse Hangen Brustlin, Inc.

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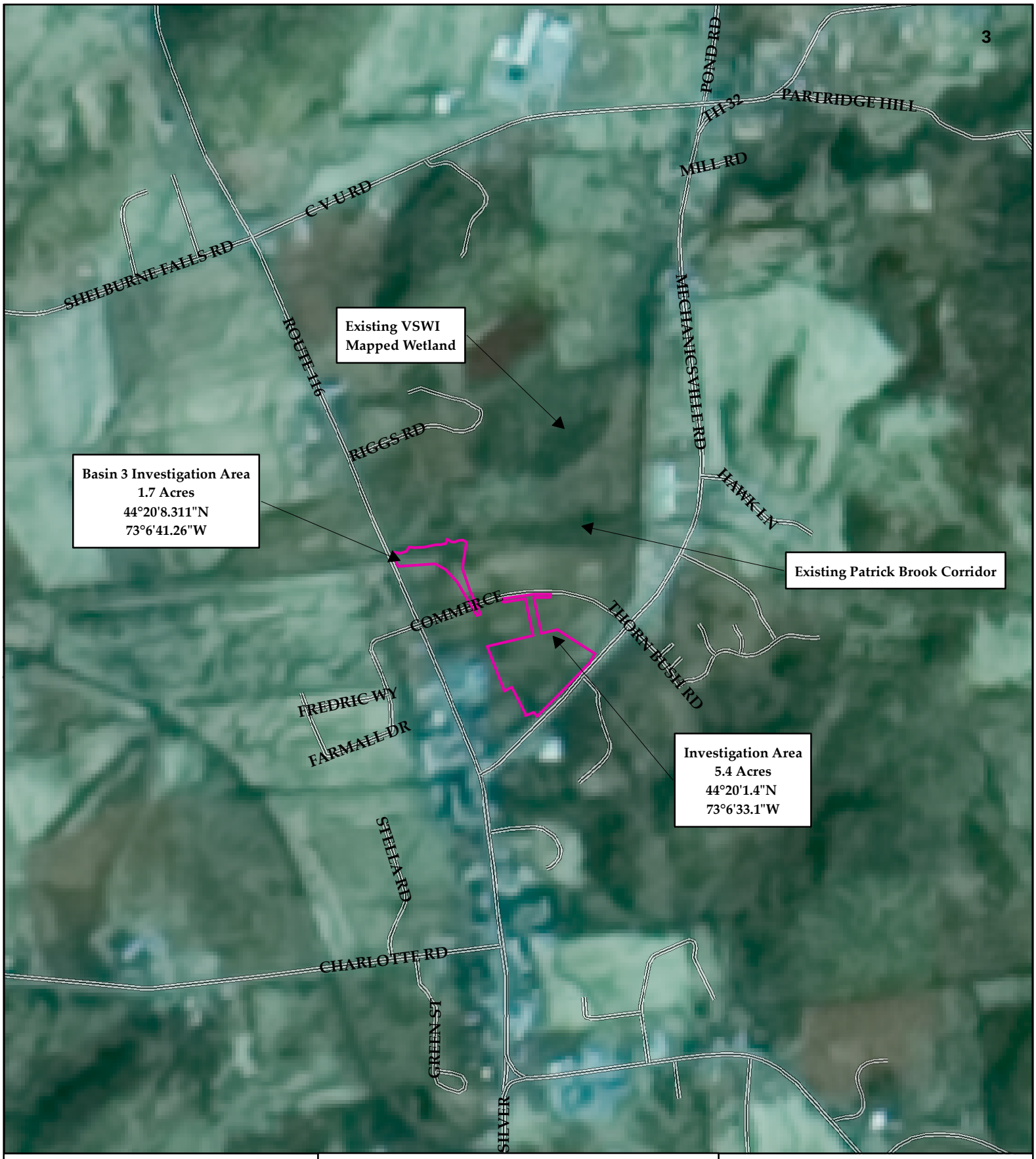

Legend

- VHB Investigation Area
- Roads

800 400 0 800

Feet

Proposed Hannaford Supermarket
Hinesburg, Vermont
1984 Aerial Map

February 27, 2012

Prepared by: NRS

Sources: Background: 1984 Aerial from USGS, Road data from VCGI (2008) Investigation Area by VHB and uses some data from Oleary Burke Survey (2010, 2011)

VHB Vanasse Hangen Brustlin, Inc.

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Basin 3 Wetland and Waters Delineation

Representative Site Photographs

Proposed Hannaford Supermarket and Pharmacy, Hinesburg, Vermont

Photograph 1: View of ditched swale wetland 2011-PBW-1 looking South from Commerce St.

Photograph 2: View of culvert inlet where proposed wetland 2011-PBW-1 drains under Commerce St.

Photographs taken by Patti Kallfelz-Werts of VHB on December 7, 2011.

Basin 3 Wetland and Waters Delineation

Representative Site Photographs

Proposed Hannaford Supermarket and Pharmacy, Hinesburg, Vermont

Photograph 3: View of culvert outlet and inlet between roadway and sidewalk north of Commerce St.

Photograph 4: View of culvert outlet on north side of Commerce St. sidewalk where waters from ditched swale 2011-PBW-1 enter wetland 2011-PBW-2.

Photographs taken by Patti Kallfelz-Werts of VHB on December 7, 2011.

Basin 3 Wetland and Waters Delineation

Representative Site Photographs

Proposed Hannaford Supermarket and Pharmacy, Hinesburg, Vermont

Photograph 5: View of 2011-PBW-2 looking North from Commerce St toward Basin 3.

Photograph 6: View of Basin 3 and 2011-PBW-2 looking South toward Commerce St.

Photographs taken by Patti Kallfelz-Werts of VHB on December 7, 2011.

Basin 3 Wetland and Waters Delineation

Representative Site Photographs

Proposed Hannaford Supermarket and Pharmacy, Hinesburg, Vermont

Photograph 7: View from Basin 3 and 2011-PBW-2 looking West towards Route 116. Notice upland berm to the right.

Photograph 8: View looking across non-wetland area towards wetland 2011-PBW-2 and Basin 3 from Rt. 116.

Photographs taken by Patti Kallfelz-Werts of VHB on December 7, 2011.

Basin 3 Wetland and Waters Delineation

Representative Site Photographs

Proposed Hannaford Supermarket and Pharmacy, Hinesburg, Vermont

Photograph 9: View of proposed Class II wetland 2011-PBW-3 and the Basin 3 berm adjacent to stream 2011-TB-PBW-1 (Patrick Brook) looking East.

Photograph 10: View of new beaver impoundment on Patrick Brook adjacent to wetland 2011-PBW-3

Photographs taken by Patti Kallfelz-Werts of VHB on December 7, 2011.

Basin 3 Wetland and Waters Delineation

Representative Site Photographs

Proposed Hannaford Supermarket and Pharmacy, Hinesburg, Vermont

Photograph 11: View of stream 2011-TB-PBW-1 (Patrick Brook) looking upstream towards beaver impoundment.

Photograph 12: View of stream 2011-TB-PBW-1 (Patrick Brook) looking downstream towards Rt. 116.

Photographs taken by Patti Kallfelz-Werts of VHB on December 7, 2011.

Basin 3 Wetland and Waters Delineation

Representative Site Photographs

Proposed Hannaford Supermarket and Pharmacy, Hinesburg, Vermont

Photograph 13: View of culvert at the intersection of stream 2011-TB-PBW-1 (Patrick Brook) and Rt. 116.

Photographs taken by Patti Kallfelz-Werts of VHB on December 7, 2011.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: HANNAFORD SUPERMARKET & PHARMACY City/County: CHITTENDEN COUNTY Samp. Date: 12/7/2011

Applicant/Owner: MARTINS FOOD OF SOUTH BURLINGTON, INC. State: VERMONT Sampling Point: dp-1U

Investigator(s): PATTI KALLFELZ-WERTS Section, Township, Range: HINESBURG

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

Subregion (LRR or MLRA): LRR R Lat: 44°20'8.287"N Long: 73°6'43.281"W Datum:

Soil Map Unit: LIMERICK SILT LOAM NWI Class: UPLAND

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

Are Vegetation, Soil, or Hydrology significantly disturbed? NO Normal Circumstances? YES

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

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

Hydrophytic Vegetation Present?	NO	**Is This Sample Area Within a Wetland?**	NO
Hydric Soil Present?	NO		
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2011-2

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)
	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?		Depth (inches):	
Saturation Present? (includes capillary fringe)	X	Depth (inches):	8

Wetland Hydrology Present? YES

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

Remarks:

0.39 inches of precipition in 5 days prior to 12/07/11 site visit (NOAA, 2011)

VEGETATION - Use scientific names of plants.

Sampling Point: dp-1U 12

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. Taraxacum officinale F.H. Wigg.	15	X	FACU
2. Phleum pratense L.	3		FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	18	= 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		x 2 =	
FAC		x 3 =	
FACU	18	x 4 =	72
UPL		x 5 =	
Sum:	18 (A)		72 (B)

Prevalence Index = B/A = 4.00

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).

Agrostis sp. noted within data plot (15%). Dactylis sp. noted within data plot (85%). Galium sp. also noted within data plot (3%).

SOIL

Sampling Point: dp-1U 13

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 3/2						SILT LOAM	A HORIZON
4-8	2.5Y 4/2						SILTY CLAY LOAM	B HORIZON

[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:

Gravel at 8".

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: HANNAFORD SUPERMARKET & PHARMACY City/County: CHITTENDEN COUNTY Samp. Date: 12/7/2011

Applicant/Owner: MARTINS FOOD OF SOUTH BURLINGTON, INC. State: VERMONT Sampling Point: dp-1W

Investigator(s): PATTI KALLFELZ-WERTS Section, Township, Range: HINESBURG

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

Subregion (LRR or MLRA): LRR R Lat: 44°20'8.414"N Long: 73°6'43.19"W Datum:

Soil Map Unit: LIMERICK SILT LOAM 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 Within a Wetland?**	YES
Hydric Soil Present?	YES		
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2011-2

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)	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):	8
Saturation Present? (includes capillary fringe)	X	Depth (inches):	8

Wetland Hydrology Present? YES

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

Remarks:

0.39 inches of precipition in 5 days prior to 12/07/11 site visit (NOAA, 2011)

VEGETATION - Use scientific names of plants.

Sampling Point: dp-1W 15

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.	2	X	
	2	= Total Cover	

Herb Stratum (Plot size: 10' RAD)			
1. Phalaris arundinacea L.	85	X	FACW
2. Solidago canadensis L.	3		FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	88	= 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:	2	(B)
% Dominants OBL, FACW, FAC:	50%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:			Multiply By:
OBL		x 1 =	
FACW	85	x 2 =	170
FAC		x 3 =	
FACU	3	x 4 =	12
UPL		x 5 =	
Sum:	88 (A)		182 (B)

Prevalence Index = B/A = 2.07

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? YES

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

Epilobium sp. also noted within data plot (3%).

SOIL

Sampling Point: dp-1W 16

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

Depth (in)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2						SILT LOAM	A HORIZON
6-12	5Y 5/2						SILTY CLAY LOAM	B HORIZON

[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)
- X 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:

Gravel at 12". Sample not dried, no redoximorphic features observed.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project Site: HANNAFORD SUPERMARKET & PHARMACY City/County: CHITTENDEN COUNTY Samp. Date: 12/7/2011

Applicant/Owner: MARTINS FOOD OF SOUTH BURLINGTON, INC. State: VERMONT Sampling Point: dp-2U

Investigator(s): PATTI KALLFELZ-WERTS Section, Township, Range: HINESBURG

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

Subregion (LRR or MLRA): LRR R Lat: 44°20'8.307"N Long: 73°6'40.699"W Datum:

Soil Map Unit: LIMERICK SILT LOAM NWI Class: UPLAND

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

Are Vegetation, Soil, or Hydrology significantly disturbed? NO Normal Circumstances? YES

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

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

Hydrophytic Vegetation Present?	YES	**Is This Sample Area Within a Wetland?**	NO
Hydric Soil Present?	NO		
Wetland Hydrology Present?	NO	**If yes, optional Wetland Site ID:**	2011-2

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial (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? (includes capillary fringe)	X	Depth (inches):	14

Wetland Hydrology Present? NO

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

Remarks:

0.39 inches of precipition in 5 days prior to 12/07/11 site visit (NOAA, 2011)

VEGETATION - Use scientific names of plants.

Sampling Point: dp-2U **18**

Tree Stratum (Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1. Pinus strobus L.	15	X	FACU
2. Picea rubens Sarg.	15	X	FACU
3.			
4.			
5.			
6.			
7.			
	30	= 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. Phalaris arundinacea L.	85	X	FACW
2. Solidago canadensis L.	15		FACU
3. Picea rubens Sarg.	15		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	115	= 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	85	x 2 =	170
FAC		x 3 =	
FACU	60	x 4 =	240
UPL		x 5 =	
Sum:	145 (A)		410 (B)

Prevalence Index = B/A = 2.83

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? YES

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

Heracleum sp. also noted within data plot (3%).

SOIL

Sampling Point: dp-2U 19

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
0-8	10YR 4/2						SILT LOAM	A HORIZON
8-14	2.5Y 5/3		2.5Y 5/6		C	M	/ELLY FINE SANDY L	B HORIZON

[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: HANNAFORD SUPERMARKET & PHARMACY City/County: CHITTENDEN COUNTY Samp. Date: 12/7/2011

Applicant/Owner: MARTINS FOOD OF SOUTH BURLINGTON, INC. State: VERMONT Sampling Point: dp-2W

Investigator(s): PATTI KALLFELZ-WERTS Section, Township, Range: HINESBURG

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

Subregion (LRR or MLRA): LRR R Lat: 44°20'8.209"N Long: 73°6'40.9"W Datum:

Soil Map Unit: LIMERICK SILT LOAM 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 Within a Wetland?**	YES
Hydric Soil Present?	YES		
Wetland Hydrology Present?	YES	**If yes, optional Wetland Site ID:**	2011-2

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)	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):	7
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:

0.39 inches of precipition in 5 days prior to 12/07/11 site visit (NOAA, 2011)

VEGETATION - Use scientific names of plants.

Sampling Point: dp-2W **21**

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. Phalaris arundinacea L.	98	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	98	= 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	98	x 2 =	196
FAC		x 3 =	
FACU		x 4 =	
UPL		x 5 =	
Sum:	98 (A)		196 (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: dp-2W 22

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

Depth (in)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	2.5Y 3/2						SILT LOAM	A HORIZON
10-14	2.5Y 4/1		10YR 4/6		C	M	SILTY CLAY LOAM	B HORIZON

[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)
- X 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:

Gravel at 14".

Digital 9-14-10 Version (received from ANR-DEC on 8/12/11)

VERMONT WETLAND EVALUATION FORM

Project Name: Hannaford - Hinesburg Project #: VHB # 57083.01

Date: December 2011 Investigator: VHB (P. Kallfelz-Werts, N. Sibley)

wetlands 2011-PBK-1 / 2011-PBK-2

SUMMARY OF FUNCTIONAL EVALUATION:

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

1. Water Storage for Flood Water and Storm Runoff	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 No
  - The wetland is contiguous to a VSWI mapped wetland No
  - The wetland meets the presumptions of significance under Section 4.6
  - The wetland has a preliminary determination that it is Class II No

Wetland is connected to the Lot 15 Wetland area via a man-made ditch and when considered with that wetland, would meet 4.6A, based on 70.5 acre size. However, per assessment of VWRs Section 5.0 functions, none are present at significant levels.

1/31/2012

1. Water Storage for Flood Water and Storm Runoff

Yes No

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

Yes No

- ☒ Constricted outlet or no outlet and an unconstricted inlet. Outlet overland around berm.
- ☒ 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. No Stream
- ☒ 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. None Known

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.

High Flood Storage Capacity in Patrick Brook and La Platte River Floodplain

☐ 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. Active downstream Flooding. Unaware of loss.
- ☐ 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. No

Private Property downstream, but not likely to be impacted by any loss of this wetland's Storage capacity.

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

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

New impervious in watershed is treated by stormwater controls

2. Surface and Ground Water Protection

☒ Function is present (Yes) and likely to be significant (No): Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- ☒ Constricted or no outlets. Outlet around berm
- ☒ Low water velocity through dense, persistent vegetation.
- ☐ Hydroperiod permanently flooded or saturated. No, Seasonally, or following Precipitation event
- ☐ Wetlands in depositional environments with persistent vegetation wider than 20 feet. Not throughout
- ☐ Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula. No
- ☐ Presence of seeps or springs. No
- ☐ Wetland contains a high amount of microtopography that helps slow and filter surface water. No
- ☐ Position in the landscape indicates the wetland is a headwaters area. No
- ☐ Wetland is adjacent to surface waters. No
- ☐ Wetland recharges a drinking water source. No
- ☐ Water sampling indicates removal of pollutants or nutrients. unknown
- ☐ Water sampling indicates retention of sediments or organic matter. unknown
- ☒ 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. Between roadway, Convenience Store, and Patrick Brook

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 NO

nutrient uptake.

- [x] 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. Complex is larger No No
- [ ] Current use in the wetland results in disturbance that compromises this function. No

- [ ] 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. No
  - [ ] The wetland provides flows to Class A surface waters. No
  - [ ] The wetland contributes to the protection or improvement of water quality of any impaired waters. No
  - [ ] The wetland is large in size and naturally vegetated. Complex is larger No

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. No
  - [ ] 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. No
  - [ ] 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. No
  - [ ] Documented or professionally judged spawning habitat for northern pike. No
  - [ ] Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species. No
  - [ ] 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. No

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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. No

- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population. No
- ☐ Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including: No
  - ☐ 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds. No
  - ☐ 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams. No
  - ☐ 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance. No

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- [ ] Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components. No

- [ ] 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. NO

- [ ] 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. Not Likely

- [ ] 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; No

  - [ ] 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp; None

  - [x] 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; NO < 50%

  - [ ] 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water; No open water

  - [x] 6. One of the following:

    - [x] 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; Not Connected

    - [ ] iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected; Not 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 No

- [ ] Contains evidence that it is used by wetland dependent wildlife species. No

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.

NA (No FXN Provided)

- [ ] 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.

NA (No FxN Provided)

☐ 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

No

☐ 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. No

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. No
- ☐ 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; None
  - ☐ 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 (No) 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. No

The wetland is also likely to be significant if any of the following apply: None

- ☐ 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 (No) 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. NONE
- ☐ History of use for education or research.
- ☐ Has one or more characteristics making it valuable for education or research.

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8. Recreational Value and Economic Benefits

☐ Function is present (NO) and likely to be significant: Any of the following characteristics indicate the wetland provides this function.

- ☐ Used for, or contributes to, recreational activities. NONE
- ☐ 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 (NO) 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 NO
  - ☐ Has prominence as a distinct feature in the surrounding landscape; NO
- ☐ Has been identified as important open space in a municipal, regional or state plan. NO

10. Erosion Control through Binding and Stabilizing the Soil

☐ Function is present (No) 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: None
  - ☐ Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
  - ☐ Good interspersion of persistent emergent vegetation and water along course of water flow.
  - ☐ Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

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What type of erosive forces are present?

- ☐ Lake fetch and waves None
- ☐ 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.

NA (No FxN Provided)

☐ 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.

Digital 9-14-10 Version (received from ANR-DEC on 8/12/11)

VERMONT WETLAND EVALUATION FORM

Project Name: Hannaford – Hinesburg Project #: VHB # 57083.01

Date: December 2011 Investigator: VHB (P. Kallfelz-Weras, N. Sibley)

wetland 2011 – PBK – 3

SUMMARY OF FUNCTIONAL EVALUATION:

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

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

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 No
  - The wetland is contiguous to a VSWI mapped wetland Yes
  - The wetland meets the presumptions of significance under Section 4.6
  - The wetland has a preliminary determination that it is Class II No

Would meet presumption 4.6 A and 4.6 C

Based upon evaluations, Significant function is likely present for water Storage for Flood Water and Storm runoff, Surface and ground water protection, and wildlife habitat.

1/31/2012

1. Water Storage for Flood Water and Storm Runoff

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

- ☐ Constricted outlet or no outlet and an unconstricted inlet. No
- ☒ 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. Within Patrick Brook Floodplain
- ☒ If a stream is present (Yes), its course is sinuous and there is sufficient woody vegetation (Yes) 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 (Yes) indicates wetland attenuates flooding. NOT KNOWN

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 (Yes) 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). NO
- ☐ Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland. No
- ☐ Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures. No
- ☐ 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. NO

☒ 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. unknown
- ☒ 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. No
  - ☐ 3. Important habitat for aquatic life. No
- ☒ The wetland is large in size (Yes) and naturally vegetated. Yes

1/31/2012

☐ 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. No
- ☐ 2. Relatively impervious soils. No
- ☐ 3. Steep slopes in the adjacent areas. No

2. Surface and Ground Water Protection

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

- ☐ Constricted or no outlets. No
- ☒ Low water velocity through dense, persistent vegetation.
- ☒ Hydroperiod permanently flooded or saturated.
- ☐ Wetlands in depositional environments with persistent vegetation wider than 20 feet. No
- ☐ Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula. No
- ☐ Presence of seeps or springs. No
- ☐ Wetland contains a high amount of microtopography that helps slow and filter surface water. No
- ☐ Position in the landscape indicates the wetland is a headwaters area. No
- ☒ Wetland is adjacent to surface waters. Adjacent to Patrick Brook.
- ☐ Wetland recharges a drinking water source. No
- ☐ Water sampling indicates removal of pollutants or nutrients. UNKNOWN
- ☐ Water sampling indicates retention of sediments or organic matter. UNKNOWN
- ☒ Fine mineral soils (Yes) and alkalinity not low. No
- ☐ 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. NO

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 NO

nutrient uptake.

- ☐ Presence of ditches or channels that confine water and restrict contact of water with vegetation. No, but Former ditching of Patrick Brook may diminish this functio
- ☐ 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. No
- ☐ Current use in the wetland results in disturbance that compromises this function. No

☒ 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. No
- ☐ The wetland provides flows to Class A surface waters. No
- ☐ The wetland contributes to the protection or improvement of water quality of any impaired waters. No
- ☒ The wetland is large in size (Yes) and naturally vegetated (Yes).

3. Fish Habitat

☐ Function is present (No) 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. No
- ☐ 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. No
- ☐ Documented or professionally judged spawning habitat for northern pike. No
- ☐ Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species. No
- ☐ 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. No

1/31/2012

4. Wildlife Habitat

☒ Function is present (Yes) and likely to be significant (likely): 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☐ 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. No
- ☒ Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population. Directly adjacent to Patrick Brook Beaver Dams
- ☐ 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. Not Known
  - ☐ 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams. No
  - ☐ 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance. No

1/31/2012

- [x] 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.

- [x] 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. NO

- [ ] 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; NO

  - [x] 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp; Yes

  - [x] 3. Located adjacent to a lake, pond, river or stream; Adjacent to Patrick Brook

  - [ ] 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land; NO, < 50%

  - [ ] 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water; NO, < 25% open water

  - [x] 6. One of the following:

    - [ ] i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile; NO

    - [x] 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; NO

- [ ] Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and NO

- [x] Contains evidence that it is used by wetland dependent wildlife species. Beavers

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 Yes NO

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. No
- ☐ The current use in the wetland results in frequent cutting, mowing or other disturbance. No
- ☐ The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species. No

☒ 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. No
- ☐ The wetland has been identified by ANR-F&W as important habitat. No

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. No

- ☐ 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. No

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. No, not mapped by NHIP
- ☐ Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to: NONE
  - ☐ 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~~ No 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. NO

The wetland is also likely to be significant if any of the following apply: NONE

- ☐ There is creditable documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists; NO
- ☐ There is creditable documentation that threatened or endangered species have been present in past 10 years; NO
- ☐ 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; NO
- ☐ There is creditable documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank). NO

List name of species and ranking: NA

7. Education and Research in Natural Sciences

☐ Function is ~~present~~ No and likely to be significant: Any of the following characteristics indicate the wetland provides this function. NONE

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

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8. Recreational Value and Economic Benefits

☐ Function is present (NO) and likely to be significant: Any of the following characteristics indicate the wetland provides this function. NONE

- ☐ 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 (No) and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. NONE

- ☐ 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 (NO) in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

☒ Function is present (Yes) and likely to be significant (No): 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. Along Patrick Brook
  - ☐ Good interspersion of persistent emergent vegetation (NO) and water along course of water flow. NO
  - ☐ Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

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What type of erosive forces are present?

- ☐ Lake fetch and waves NO
- ☐ High current velocities
- ☒ Water level influenced by upstream impoundment → Beaver impoundment, Patrick Brook / Canal water control structure upstream.

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. Yes

☐ 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. No
- ☐ Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor. UNKNOWN